ADDENDUM
NO. 2

September 16, 2020

LaVille Elementary School and Jr./Sr. High School
2020 Improvements and Related Work
Lakeville, IN 46536

TO: ALL BIDDERS OF RECORD

This Addendum forms a part of and modifies the Bidding Requirements, Contract Forms, Contract Conditions, the Specifications, and the Drawings dated August 24, 2020, by Gibraltar Design. Acknowledge receipt of the Addendum in the space provided on the Bid Form. Failure to do so may subject the Bidder to disqualification.

This Addendum consists of Pages ADD 2-1 through ADD 2-2 and attached Addendum No. 2 from Gibraltar Design dated September 15, 2020 and consisting of 7 pages, Specification Section 07 21 19 - Foamed-in-Place Insulation, Specification Section 08 71 00 - Door Hardware, Specification Section 12 25 00 - Roller Shades and 31 drawings.

A. SPECIFICATION SECTION 00 20 00 - INFORMATION AVAILABLE TO BIDDERS

1. **Add:**

    a. The attached Geotechnical Engineering Investigation Report provided by Patriot Engineering and Environmental, Inc.

B. SPECIFICATION SECTION 00 00 20 - TABLE OF CONTENTS

Under Division 12 - Furnishings

1. **Add:**

    a. Specification Section 12 25 00 - Roller Blades

C. SPECIFICATION SECTION 01 12 00 - MULTIPLE CONTRACT SUMMARY

Under Article 3.03 Bid Categories make the following adjustments:

1. **BID CATEGORY NO. 1 - GENERAL TRADES**

   Add:

   a. Specification Section 12 25 00 - Roller Blades

   b. Clarification No. 30:
   The **Bid Category No. 1 Contractor** is responsible to provide all work associated with the erosion controls plan as indicated on the Contract Documents. The **Bid Category No. 1 Contractor** shall also maintain this scope of work for the duration of the Project or until permanent characteristics have been completed.

Report of Geotechnical Engineering Investigation
LaVille Elementary School Addition
12645 Tyler Road
Lakeville, Indiana
Patriot Project No.: 20-1020-04G

Prepared For:

Mr. Mitchell Mawhorter
Union-North United School Corporation
22601 Tyler Road
Lakeville, Indiana

Prepared By:

Patriot Engineering and Environmental, Inc.
6150 East 75th Street
Indianapolis, Indiana 46250

September 11, 2020

PATRIOT ENGINEERING
and ENVIRONMENTAL, Inc.
Engineering Value for Project Success

September 11, 2020

Mr. Mitchell Mawhorter
Union-North United School Corporation
22601 Tyler Road
Lakeville, Indiana

Re: Report of Geotechnical Engineering Investigation
LaVille Elementary School Addition
12645 Tyler Road
Lakeville, Indiana
Patriot Project No.: 20-1020-04G

Dear Stacy:

Attached is the report of our geotechnical engineering investigation for the above referenced project. This investigation was completed in general accordance with our Proposal No. P20-1031-04G dated July 20, 2020.

This report includes graphic logs of four (4) 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 investigation 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.

Irfan Syed
Geotechnical Engineer

Salim Ilmudeen, P.E.
Principal Engineer

SALIM M. ILMUDEEN
REGISTERED
10606266
STATE OF
INDIANA
PROFESSIONAL ENGINEER

CC: Mr. James Bulow, Lynch, Harrison & Brumleve, Inc
Mr. TonyAllen, Gibraltar Design

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REPORT OF GEOTECHNICAL ENGINEERING INVESTIGATION

LaVille Elementary School Addition
12645 Tyler Road
Lakeville, Indiana
Patriot Project No.: 20-1020-04G

1.0 INTRODUCTION

1.1 General

Union-North United School Corporation in conjunction with Gibraltar Design and LHB, Inc is planning the construction of an addition to the existing LaVille Elementary School located at 12645 Tyler Road in Lakeville, Indiana. The results of our geotechnical engineering investigation for the project are presented in this report.

1.2 Purpose and Scope

The purpose of this investigation 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 addition. 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 addition.

2.0 PROJECT INFORMATION

The proposed project is located at 12645 Tyler Road in Lakeville, Indiana. The project consists of high one (1)-story structure with mechanical mezzanine with a plan dimensions of approximately 53 feet by 116 feet and a minimum of 7 feet high retaining wall. The addition will be located on the south west corner of the existing building.

Based on information provided by Lynch, Harrison & Brumleve, Inc, we understand that the proposed structure will have wall loads not exceeding 2500 pounds per lineal feet (plf), isolated column loads not exceeding 100 kips.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Site Conditions

The project site is presently an open grassy area with isolated trees and wooded area located on the southwest side of the project area. The topography in the area proposed for construction is sloping towards west. Based on a site plan provided by the Client, existing grade elevations range from 881 to 890 feet across the building pad. It is our understanding that the planned finished floor elevation will be at approximately 883 feet to match the existing finished floor elevation of the existing building. The surrounding area is generally an area of agricultural and commercial development.

3.2 General Subsurface Conditions

Our interpretation of the subsurface conditions is based upon four (4) 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:

Topsoil – 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 four (4) boring locations. The topsoil layer was about 3 to 4 inches thick in the borings.

Silty and/or Sandy Clay (CL) - The topsoil layer is generally underlain by brown and gray, slightly moist to moist, medium stiff to very stiff, silty, and/or sandy clay. The silty and/or sandy clay layers typically extends to the termination depths of 20 feet below the existing ground surface. The natural moisture content of this material ranges from 9 to 24 percent (%). The silty and/or sandy clay layers have hand penetrometer values of 1.25 to 4.0 tons per square foot (tsf). Standard Penetration Test N-values (blow counts) in this material varied from 6 to 29 blows per foot (bpf).

Sand (SP-SM) – Below the silty and/or sandy clay layers, brown, slightly moist, dense, sand was encountered from 18.5 to 20 feet below existing grade at boring locations B-4. Standard Penetration Test N-values in this sand was 34 bpf.

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 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 water-bearing year-round.

Groundwater was observed during drilling in one (1) of the four (4) soil borings performed at the site at a depth of 8.0 feet below the existing ground surface. Groundwater was not observed in the remaining borings during drilling. Groundwater was not observed upon completion of drilling activities. The remaining borings were dry at the cave-in depths shown on the boring logs.

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 investigation.***

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

The proposed structure can be supported on spread footings bearing on the native medium stiff to very stiff sandy clays encountered at shallow depths or on new well-compacted and tested structural fill overlying the same. There is a potential to encounter

soft soils and marginal soils at the site. Therefore, we recommend that each footing subgrade be visually observed by a *Patriot* representative. Each foundation area should be probed using a DCP to a depth of 5 feet below the footing subgrade to determine that the underlying soil has a SPT blow count of 7 or more. 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 structure can be supported on spread footings bearing on the native medium stiff to very stiff sandy clays 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 2,500 pounds per square foot (psf) for the column footings or 2,000 psf for wall (strip) footings. 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"*.

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 36 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.

We estimate that the total foundation settlement should not exceed approximately 1 inch and that differential settlement should not exceed about ¾ inch. Careful field control during construction is necessary to minimize the actual settlement that will occur.

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.

4.3 Slab-on-grade

The near surface or shallow subgrade soils encountered within the proposed building footprint generally consist of medium stiff to very stiff sandy clays, which if properly prepared are suitable for floor slab support. However, there is a potential to encounter soft soils and marginal soils at the site. Therefore, if encountered at subgrade level, should be further undercut to accommodate the relatively heavy loads.

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. Indiana Department of Transportation (INDOT) No. 53 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 100 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 Lateral Earth Pressures (Retaining Walls)

For the design of retaining walls, the magnitude of the lateral earth pressure on the walls is dependent on the method of backfill placement behind the walls, the type of backfill soil, drainage provisions and whether or not the wall is permitted to yield during and/or after placement of the backfill. When a retaining wall is held rigidly against horizontal movement, the lateral pressure against the wall is greater than the "active" earth pressure that is typically used in the design of free-standing retaining walls. Therefore, rigid walls should be designed for higher "at-rest" pressures (using an at-rest lateral earth pressure coefficient, K_o), while yielding walls can be designed for active pressures (using an active lateral earth pressure coefficient, K_a).

It should be noted that the on-site clayey soils encountered are <u>not</u> suitable for use as backfill immediately against the loading dock walls. Therefore, provided ***a clean well-graded granular material is used for backfill***, a total soil unit weight (γ_t) of 125 pounds per cubic foot (pcf), an at-rest lateral earth pressure coefficient (K_o) of 0.45, an active lateral earth pressure coefficient (K_a) of 0.30, and a passive lateral earth pressure coefficient (K_p) of 3.4 can be used for calculating the lateral earth pressures. An equivalent fluid active pressure of 38 psf per foot of wall height is recommended for design purposes in conditions where the top of the wall is allowed to yield during backfilling. However, if the top of the wall will be fixed, an equivalent fluid at-rest pressure of 57 psf per foot of wall height is recommended for design purposes. This equivalent fluid pressure would increase linearly from zero (0) psf at the ground surface, to a maximum at the base of the wall.

When calculating passive earth pressure, the upper 3 feet of soil should be neglected due to the potential for frost disturbance or otherwise insufficiently compacted soil to appropriately generate the specified passive pressure. Additionally for design purposes, it should be recognized that in order for passive earth pressures to be fully developed, the wall must move laterally about 0.04H (where "H" equals the wall height). ***In most cases, passive earth pressures behind walls should not be considered in design.***

If hydrostatic pressure due to water build-up against the retaining walls is anticipated, the equivalent fluid pressure method will be changed for the soil. Rather, the lateral <u>earth</u> pressure should be computed using a total soil unit weight of 125 pcf above the highest anticipated water level, and a buoyant soil unit weight of 63 pcf below the highest anticipated water level. The earth pressure coefficient indicated above should be used above <u>and</u> below the water level to compute the lateral earth pressure. The <u>hydrostatic</u> pressure should be computed using the highest anticipated water level. The lateral earth pressure and hydrostatic pressure should be added to obtain the total lateral pressure on the wall.

Furthermore, in conjunction with and as a direct result of the lateral earth pressures defined above, the shear resistance against base sliding can be computed by multiplying the minimum normal force on the base of the footing times a coefficient of friction (μ) of 0.3. We recommend that for evaluation of sliding stability that a minimum factor of safety (F_S) of 1.5 is utilized for design purposes. Additionally, for design, the toe pressure for the retaining wall footings should not exceed the maximum allowable bearing pressure provided in Section 4.2 *"Foundations"*.

Table No. 1: Summary of Lateral Earth Design Pressures for Retaining Walls

Soil Unit Weight (γ_t)	At-Rest Coefficient (K_o)	Active Coefficient (K_a)	Passive Coefficient (K_p)	Coefficient of Friction (μ)	Minimum Factor of Safety (F_S)
125 pcf	0.45	0.30	3.4	0.3	1.5

4.5 Seismic Considerations

For structural design purposes, we recommend using a ***Site Classification of "C"*** as defined by the 2014 Indiana Building Code (modified 2012 International Building Code (IBC)). Furthermore, along with using a Site Classification of "C", 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.

Table No. 2: Seismic Design Spectral Response Acceleration Coefficients

Period (seconds)	Maximum Considered Spectral Response Acceleration Coefficient	Soil Factor	Design Spectral Response Acceleration Coefficient
0.2	S_S = 0.1 g	1.20	S_{DS} = 0.08 g
1.0	S_1 = 0.059 g	1.70	S_{D1} = 0.067 g

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 41.4738932 and longitude -86.3074055 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 2014 Indiana Building Code.

5.0 CONSTRUCTION CONSIDERATIONS

5.1 Site Preparation

All areas that will support foundations, floors, 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 area prior to construction.***

Approximately three (3) to four (4) 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. More extensive stripping should be expected in heavily wooded areas. 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. Proof rolling should consist of repeated passes of a loaded, pneumatic-tired vehicle such as a tandem-axle dump-truck or scraper. The proof rolling 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

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.

In addition, excavations that occur near existing in-use foundations should be carefully performed making a conscious effort not to undermine the support of the in-use foundations. If it is necessary to excavate soil adjacent to and below the bearing elevation of any in-use foundations, *Patriot* should be contacted to make further recommendations regarding these excavations. Please refer to Illustration "B" at the end of this report for further details.

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, 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.

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 (ft^2) per lift for the building areas, at least one (1) test every 10,000 square feet (ft^2) 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 a depth of about 8.0 feet below the existing ground surface which is expected to be below the anticipated foundation excavation depths. 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 INVESTIGATIONAL PROCEDURES

6.1 Field Work

A total of four (4) soil borings were drilled, sampled, and tested at the project on August 31, 2020 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”. The soil borings were drilled to depths of 20 feet in the proposed building area. All depths are given as feet below the existing ground surface.

The borings were advanced using 3¼ 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 a mixture of auger cuttings and bentonite chips prior to demobilization for safety considerations.

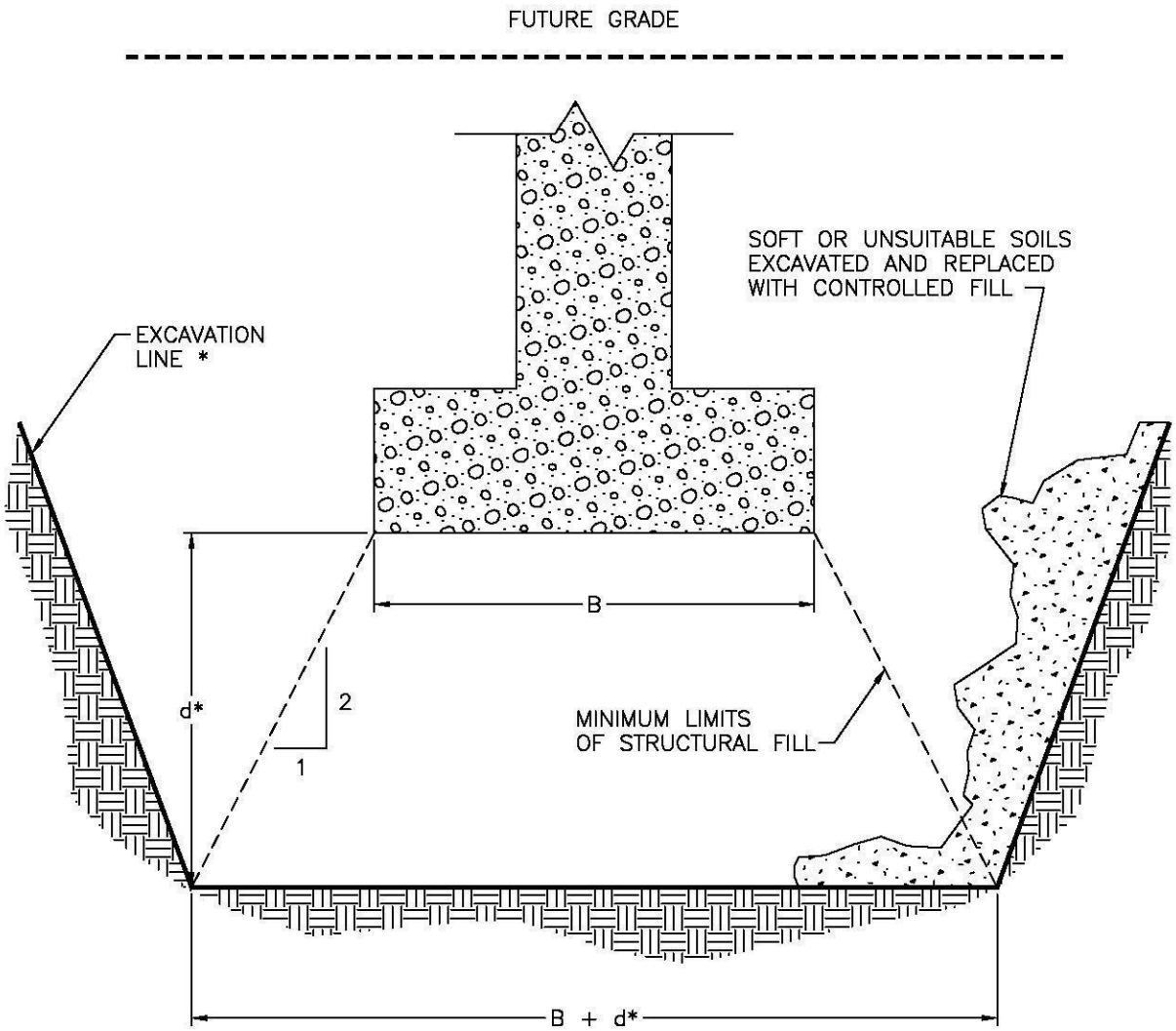
Upon completion of the boring program, the samples retrieved during drilling were returned to *Patriot*'s soil testing laboratory where they were visually examined and classified. A laboratory-generated log of each boring was prepared based upon the driller's field log, laboratory test results, and our 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 include natural moisture content determinations (ASTM D 2216) and an estimate of cohesive soil strength by using a hand penetrometer (q_p). The results of laboratory tests are summarized in Section 3.2 *"General Subsurface Conditions".* 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"*.



*d IS DEPTH TO SUITABLE SOILS

* IN COMPLIANCE WITH OSHA STANDARDS

PATRIOT ENGINEERING and Environmental, Inc.

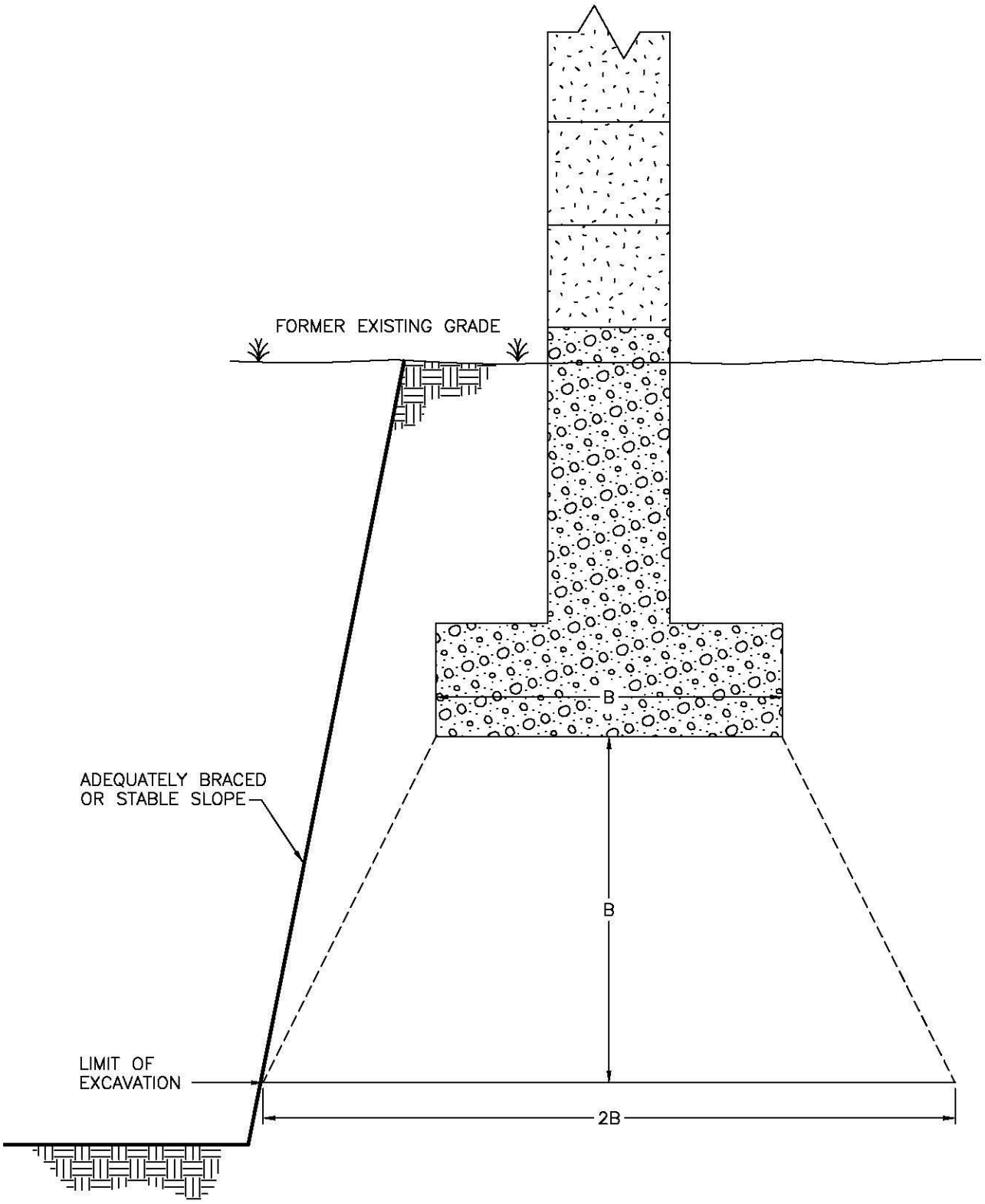
Engineering Value for Project Success

Consulting Environmental, Geotechnical and Materials Engineers

Excavation for Footings
In an Area of Fill
ILLUSTRATION A

job. no.:

figure:



PATRIOT ENGINEERING and Environmental, Inc.
Engineering Value for Project Success
Consulting Environmental, Geotechnical and Materials Engineers

Excavation Near Existing
In Use Foundations
ILLUSTRATION B

job. no.:

figure:

APPENDIX A

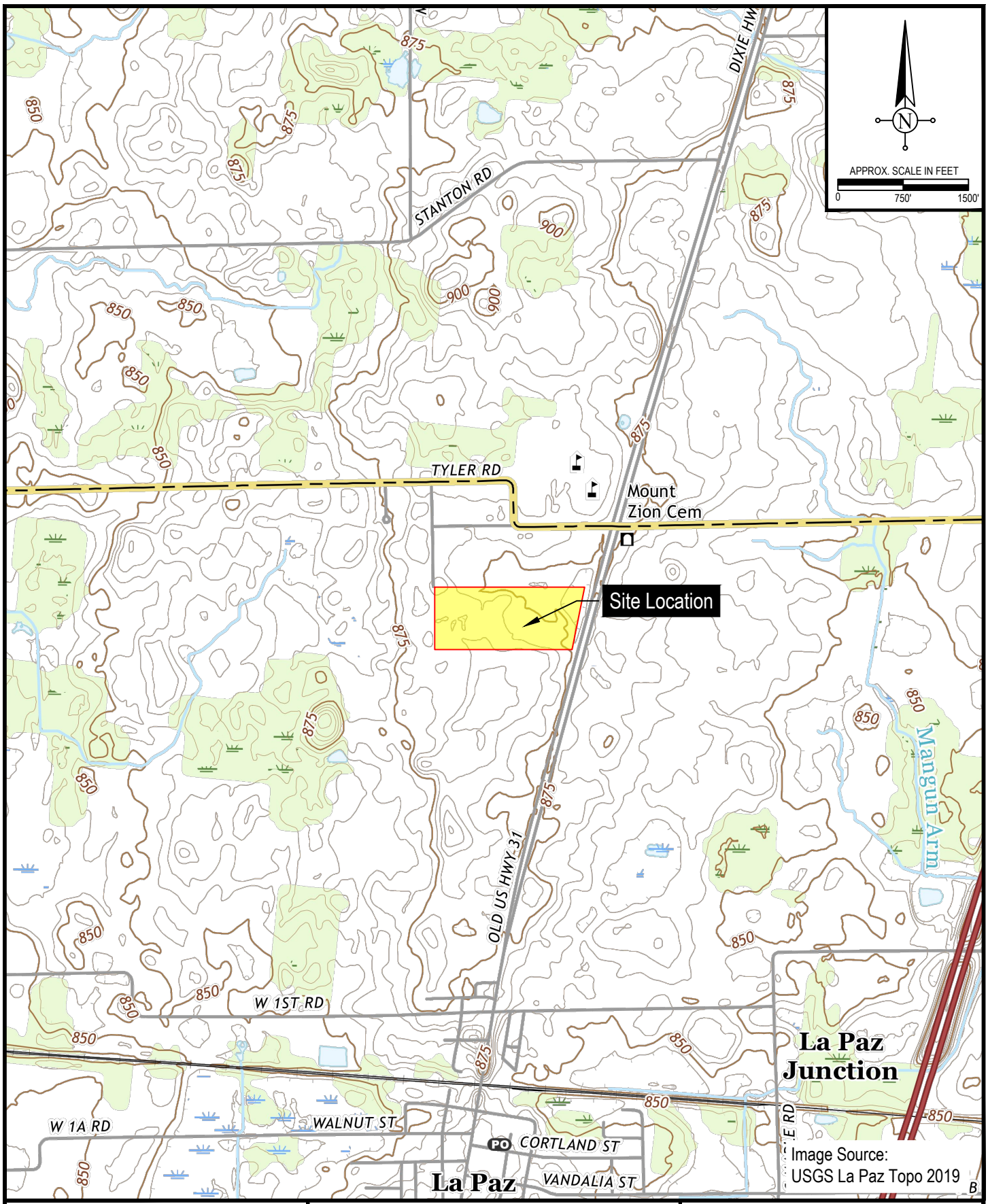
SITE VICINITY MAP (FIGURE NO. 1)

BORING LOCATION MAP (FIGURE NO. 2)

BORING LOGS

BORING LOG KEY

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

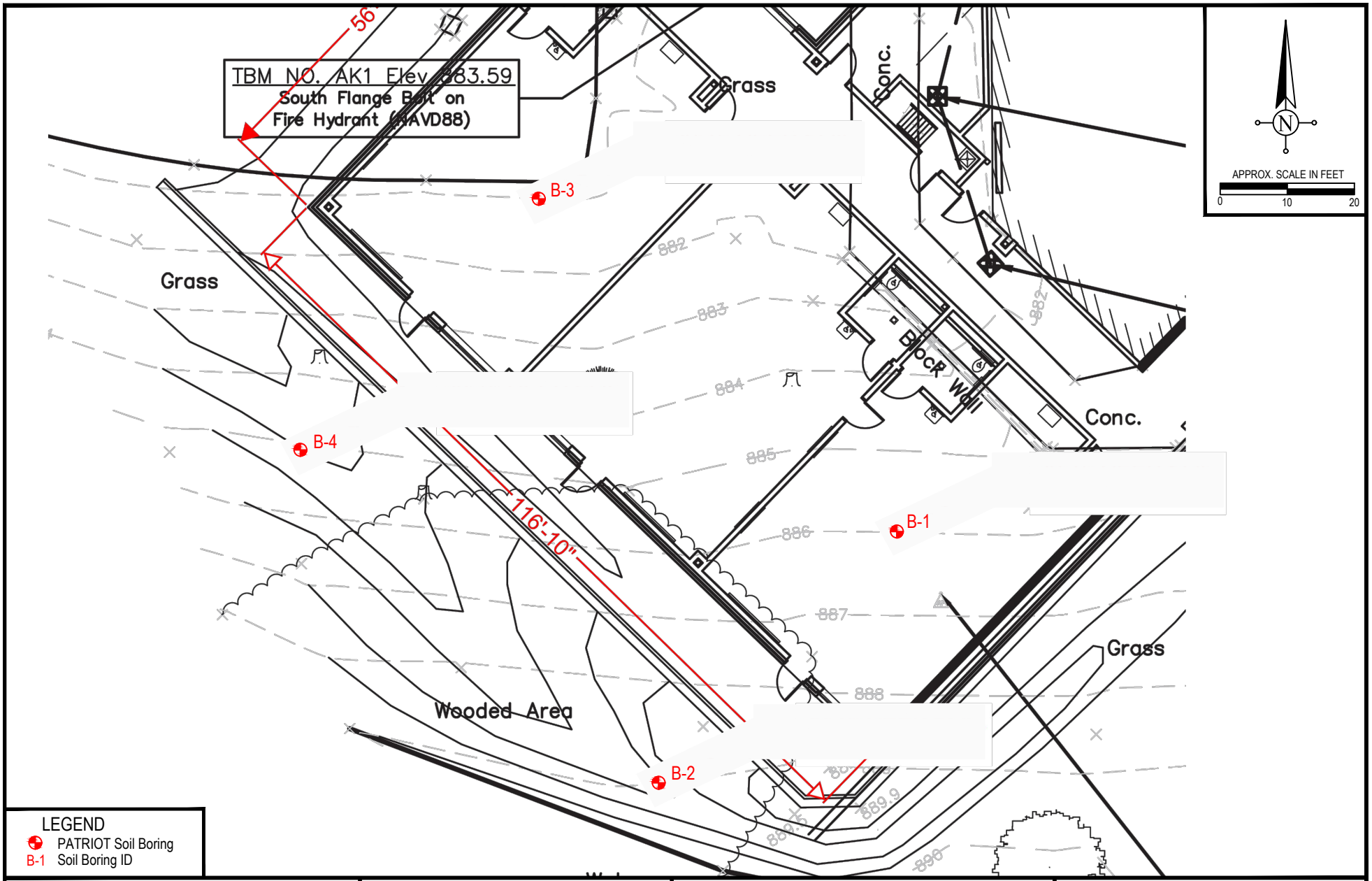


Patriot Engineering & Environmental, Inc.

Project: LaVille Elementary School Addition 12645 Tyler Road Lakeville, Indiana	
	Drawn By: J. DuMond
Project Number: 20-1020-04	Approved: I. Syed
Date: August 28, 2020	DWG: 20-1020-04_geo

Figure 1

Site Vicinity Map



Patriot Engineering & Environmental, Inc.

NOTES:
1. Boring locations were staked by PATRIOT. All locations are shown as approximate.
2. All locations were determined in the field with references to existing landmarks.
3. Image Source: Client's Site Plan
4. Scale as shown.

Project: LaVille Elementary School Addition
12645 Tyler Road
Lakeville, Indiana

	Drawn By: J. DuMond
Project Number:20-1020-04	Approved: I. Syed
Date: August 28, 2020	DWG: 20-1020-04_geo

Figure 2

Soil Boring Location Map

PATRIOT ENGINEERING and Environmental Inc.
Indianapolis, Terre Haute, Evansville, Fort Wayne, Lafayette, Bloomington Louisville, KY Dayton, Cincinnati, OH

LOG OF BORING B-1

LaVille Elementary School Addition
12645 Tyler Road
Lakeville, Indiana

Client Name	: Union North United School Corporation		
Project Number	: 20-1020-04G	Driller	: R. Zarobinski
Logged By	: I. Syed	Sampling	: Splitspoon
Start Date	: 8/31/2020		
Drilling Method	: HSA		

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth (Feet)	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0				TOPSOIL (4")						
		CL		Brown, slightly moist, stiff, SANDY CLAY with trace gravel	1	100	6/6/7		14	
		CL		Brown, slightly moist to moist, medium stiff to stiff, SANDY CLAY	2	89	2/2/4	1.25	15	
5		CL			3	100	4/5/5	1.5	19	
		CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY with interbedded sand seams	4	100	4/5/9	1.75	14	
10		CL			5	100	3/3/14	2.0	13	
15										Boring caved to 16.5 feet upon auger removal.
					6	100	6/11/14	3.0	15	
20				Boring terminated at 20 feet.						Groundwater was not encountered during drilling, nor upon completion.
25										

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LOG OF BORING B-2

LaVille Elementary School Addition
12645 Tyler Road
Lakeville, Indiana

Client Name	: Union North United School Corporation		
Project Number	: 20-1020-04G	Driller	: R. Zarobinski
Logged By	: I. Syed	Sampling	: Splitspoon
Start Date	: 8/31/2020		
Drilling Method	: HSA		

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth (Feet)	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0				TOPSOIL (4")						
		CL		Brown, slightly moist, very stiff to stiff, SANDY CLAY	1	100	7/7/9		9	
					2	94	5/5/7		9	
5		CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY with trace root material	3	100	5/5/6	3.0	13	
		CL		Brown, slightly moist to moist, stiff to medium stiff, SANDY CLAY with trace gravel	4	100	3/3/4	1.5	15	
10										
					5	94	3/4/4		23	
15										Boring caved to 17.5 upon auger removal.
		CL		Brown, slightly moist, very stiff, SANDY CLAY with trace interbedded sand seams	6	100	3/7/9	3.0	12	
20				Boring terminated at 20 feet.						Groundwater was not encountered during drilling, nor upon completion.
25										

PATRIOT ENGINEERING and Environmental Inc.
Indianapolis, Terre Haute, Evansville, Fort Wayne, Lafayette, Bloomington Louisville, KY Dayton, Cincinnati, OH

LOG OF BORING B-3

LaVille Elementary School Addition
12645 Tyler Road
Lakeville, Indiana

Client Name	: Union North United School Corporation		
Project Number	: 20-1020-04G	Driller	: R. Zarobinski
Logged By	: I. Syed	Sampling	: Splitspoon
Start Date	: 8/31/2020		
Drilling Method	: HSA		

Water Levels
- During Drilling - 8.0 feet
- After Completion - Dry
- After 24 Hours - N/A

Depth (Feet)	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0				TOPSOIL (3")						
		CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY	1	94	6/5/9		14	
					2	100	6/6/8	3.0	13	
5		CL		Brown, moist, stiff to very stiff, SILTY CLAY with interbedded sand seams	3	94	4/6/8	2.75	24	
	▼	CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY	4	89	4/7/8	3.25	15	
10		CL								
		CL		Brown and gray, slightly moist, very stiff, SANDY CLAY with trace gravel	5	94	8/12/9	4.0	15	
15		CL								Boring caved to 17.5 feet upon auger removal.
		CL		Brown and gray, slightly moist, very stiff, SANDY CLAY with some gravel	6	100	9/14/15		13	
20				Boring terminated at 20 feet.						Groundwater was not encountered during drilling, nor upon completion.
25										

PATRIOT ENGINEERING and Environmental Inc.
Indianapolis, Terre Haute, Evansville, Fort Wayne, Lafayette, Bloomington Louisville, KY Dayton, Cincinnati, OH

LOG OF BORING B-4

LaVille Elementary School Addition
12645 Tyler Road
Lakeville, Indiana

Client Name	: Union North United School Corporation		
Project Number	: 20-1020-04G	Driller	: R. Zarobinski
Logged By	: I. Syed	Sampling	: Splitspoon
Start Date	: 8/31/2020		
Drilling Method	: HSA		

Water Levels
- During Drilling - Dry
- After Completion - Dry
- After 24 Hours - N/A

Depth (Feet)	Water Level	USCS	GRAPHIC	DESCRIPTION	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
0				TOPSOIL (3.5")						
		CL		Brown, slightly moist, stiff, SANDY CLAY	1	100	5/5/6	2.0	12	
5					2	100	7/6/8	1.5	12	
					3	100	6/6/9		13	
10		CL		Brown, slightly moist, stiff, SANDY CLAY with trace gravel	4	100	7/6/7		12	
15		CL		Brown and gray, moist, stiff to very stiff, SANDY CLAY with interbedded sand seams	5	100	8/6/9	3.0	16	Boring caved to 17.0 feet upon auger removal.
20		SP-SM		Brown, slightly moist, dense, fine to medium grained, SAND with trace silt and trace gravel	6	100	12/13/21			
25				Boring terminated at 20 feet.						Groundwater was not encountered during drilling, nor upon completion.

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Engineering Value for Project Success
Consulting Environmental, Geotechnical and Materials Engineers

BORING LOG KEY

UNIFIED SOIL CLASSIFICATION SYSTEM
FIELD CLASSIFICATION SYSTEM
FOR SOIL EXPLORATION

NON COHESIVE SOILS
(Silt, Sand, Gravel and Combinations)

Density

Very Loose	-4 blows/ft. or less
Loose	-5 to 10 blows/ft.
Medium Dense	-11 to 30 blows/ft.
Dense	-31 to 50 blows/ft.
Very Dense	-51 blows/ft. or more

Grain Size Terminology

Soil Fraction		Particle Size	US Standard Sieve Size
Boulders		Larger than 12”	Larger than 12”
Cobbles		3” to12”	3” to 12”
Gravel:	Coarse	¾” to 3”	¾” to 3”
	Small	4.76mm to ¾”	#4 to ¾”
Sand:	Coarse	2.00mm to 4.76mm	#10 to #4
	Medium	0.42mm to 2.00mm	#40 to #10
	Fine	0.074mm to 0.42mm	#200 to #40
Silt		0.005mm to 0.074 mm	Smaller than #200
Clay		Smaller than 0.005mm	Smaller than #200

RELATIVE PROPORTIONS FOR SOILS

Descriptive Term	Percent
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

COHESIVE SOILS
(Clay, Silt and Combinations)

Consistency	Unconfined Compressive Strength (tons/sq. ft.)	Field Identification (Approx.) SPT Blows/ft.
Very 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 on logs are made by visual inspection.

Standard Penetration Test - Driving a 2.0” O.D., $1^{3/8}$” I.D., sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30.0 inches. It is customary for **Patriot** to drive the spoon 6.0 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and making the tests are recorded for each 6.0 inches of penetration on the drill log (Example - 6/8/9). The standard penetration test results can be obtained by adding the last two figures (i.e. 8 + 9 = 17 blows/ft.).

Strata Changes - In the column “Soil Descriptions” on the drill log the horizontal lines represent strata changes. A solid line (———) represents an actually observed change, a dashed line (- - - - - -) represents an estimated change.

Groundwater observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc., may cause changes in the water levels indicated on the logs.

Groundwater symbols: ▼-observed groundwater elevation, encountered during drilling; ∇-observed groundwater elevation upon completion of boring.

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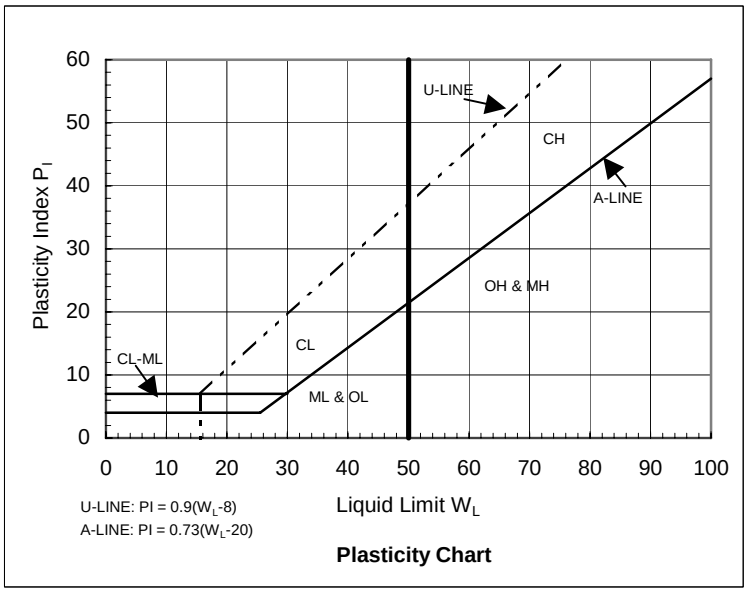
Unified Soil Classification System

Major Divisions			Group Symbol		Typical Names	Classification Criteria for Coarse-Grained Soils		
Coarse-grained soils (more than half of material is larger than No. 200)	Gravels (more than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (little or no fines)	GW		Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U \geq 4$ $1 \leq C_C \leq 3$	$C_U = \frac{D_{60}}{D_{10}}$	$C_C = \frac{D^2_{30}}{D_{10} D_{60}}$
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW ($C_U < 4$ or $1 > C_C > 3$)		
		Gravels with fines (appreciable amount of fines)	GM	d/u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below A line or $P_I < 4$	Above A line with $4 < P_I < 7$ are borderline cases requiring use of dual symbols	
			GC		Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above A line or $P_I > 7$		
	Sands (more than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (little or no fines)	SW		Well-graded sands, gravelly sands, little or no fines	$C_U \geq 6$ $1 \leq C_C \leq 3$	$C_U = \frac{D_{60}}{D_{10}}$	$C_C = \frac{(D_{30})^2}{D_{10} D_{60}}$
			SP		Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW ($C_U < 6$ or $1 > C_c > 3$)		
		Sands with fines (appreciable amount of fines)	SM	d/u	Silty sands, sand-silt mixtures	Atterberg limits below A line or $P_I < 4$	Limits plotting in hatched zone with $4 \leq P_I \leq 7$ are borderline cases requiring use of dual symbols	
			SC		Clayey sands, sand-clay mixtures	Atterberg limits above A line with $P_I > 7$		
Fine-grained soils (more than half of material is smaller than No. 200)	Silt and clays (liquid limit <50)		ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	1. Determine percentages of sand and gravel from grain size curve. 2. Depending on percentages of fines (fraction smaller than 200 sieve size), coarse-grained soils are classified as follows: Less than 5% - GW, GP, SW, SP More than 12% - GM, GC, SM, SC 5-12% - Borderline cases requiring dual symbols		
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays			
			OL		Organic silts and organic silty clays of low plasticity			
	Silts and clays (liquid limit >50)		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts			
			CH		Inorganic clays or high plasticity, fat clays			
			OH		Organic clays of medium to high plasticity, organic silts			
	Highly organic soils		PT		Peat and other highly organic soils			



Plasticity Chart

APPENDIX B

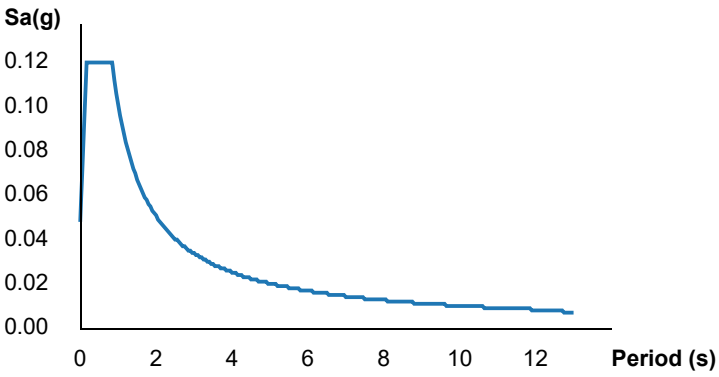
SEISMIC SITE CLASS EVALUATION

Hazards by Location

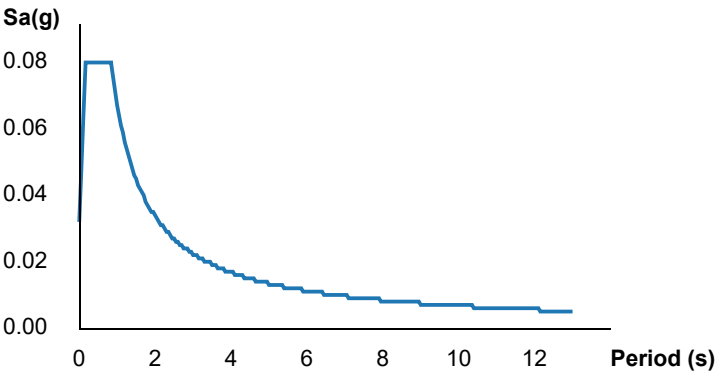
Search Information

Address:	12645 Tyler Rd, Lakeville, IN 46536, USA
Coordinates:	41.4738932, -86.3074055
Elevation:	882 ft
Timestamp:	2020-09-10T22:08:49.986Z
Hazard Type:	Seismic
Reference Document:	IBC-2012
Risk Category:	III
Site Class:	C

MCER Horizontal Response Spectrum



Design Horizontal Response Spectrum



Basic Parameters

Name	Value	Description
S_S	0.1	MCE_R ground motion (period=0.2s)
S_1	0.059	MCE_R ground motion (period=1.0s)
S_{MS}	0.12	Site-modified spectral acceleration value
S_{M1}	0.101	Site-modified spectral acceleration value
S_{DS}	0.08	Numeric seismic design value at 0.2s SA
S_{D1}	0.067	Numeric seismic design value at 1.0s SA

Additional Information

Name	Value	Description
SDC	B	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	1.7	Site amplification factor at 1.0s

CR_S	0.915	Coefficient of risk (0.2s)
CR_1	0.871	Coefficient of risk (1.0s)
PGA	0.046	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.055	Site modified peak ground acceleration
T_L	12	Long-period transition period (s)
SsRT	0.1	Probabilistic risk-targeted ground motion (0.2s)
SsUH	0.109	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.059	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.068	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.

Disclaimer

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

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APPENDIX C

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 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 ASCE Construction Division Journal, No. CO2, September 1964, page 37.

ADDENDUM TWO

Addendum Two (AD.02) to the drawings and specifications prepared by Gibraltar Design for **Laville Elementary School and Jr/Sr High School 2021 Improvements and Related Work** for **Union-North United School Corporation**, Lakeville, Indiana.

All Contractors bidding on this project shall read all of the items covered below and shall comply with all of the requirements as set forth, including any necessary refinements or additions generated by this Addendum and required by the intent of the original contract documents. All Contractors shall acknowledge on their bid form that they have received this Addendum, and Addendum One and include the appropriate content of same within their bid proposal.

SPECIFICATIONS

1. Specification Section 04 20 00 Unit Masonry

A. Add Paragraph 1.1 A.3 to read:

"3. Limestone Sill."

B. Revise Paragraph 1.7 A.2 to read:

"2. Provide full size drawing for cut stone."

C. Add Paragraph 2.6 C. to read:

"C. Cut limestone Sill."

D. Add Paragraph 3.3 C. to read:

"C. Cut limestone Sill."

E. Revise Paragraph 3.H to read:

"H. The Contractor will clean dirt from the top of concrete footings and concrete foundation walls prior to laying any block."

2. Specification Section 07 21 19 Foamed-in-Place Insulation

A. Replace Specification Section 07 21 19, Foamed-in-Place Insulation, in its entirety with Specification Section 07 21 19 included in this Addendum.

3. Specification Section 07 42 44 Composite Metal Panels

A. Replace Paragraph 2.4 B.3 a. with the following:

"a. A Color for Jr/Sr High School shall be selected from manufacturer's full range of colors, all lines available.

b. A Color different than that used at the Jr/Sr High School shall be selected for the Elementary School. Color shall be selected from manufacturer's full range of colors, all lines available."

B. Add Paragraph 3.3 A.4 to read:

"4. Sub-Girts: 20 gage steel, zinc-coated to 1.25 ounces per square foot coating in accordance with ASM A153; profile as indicated or required to accept building panel system for attachment to existing building substrate."

4. Specification Section 07 42 63 Metal Panel Siding –Field Assembled

A. Revise Paragraph 2.5 A. to read:

"A. Exposed Surfaces: 1.0 mil thick, 70 percent Kynar 500 type finish, over minimum 0.2 mil baked-on modified epoxy primer; of custom color finish to match the Specification Section 07 42 44 – Composite Metal Panels."

5. Specification Section 07 53 23 Roof Insulation and Membrane Roofing-EPDM

A. Revise Paragraph 2.1 B.1 to read:

"1. Color White."

B. Revise Paragraph 2.1 B. to read:

"B. Fully Adhered Unballasted System: Fire Retardant EPDM membrane, .060 inch thick, reinforced.

6. 1. "A. Specification Section 07 62 00 Sheet Metal Flashing

A. Revise Paragraph 1.7 A. to read:

"A. Furnish a notarized affidavit, signed by the contractors stating that all sheet metal work covered under this section of the specifications carries the Contractor's two (2) year unconditional warranty to replace, with new materials, at no additional expense, any materials, labor, or workmanship which show defects within said two (2) year period."

7. Specification Section 07 84 00 Firestopping

A. Revise Paragraph 1.7 A. to read:

"A. Convene a meeting with Firestopping Contractor and all other affected contractors and trades prior to starting work which involves cutting penetrations to identify fire assemblies and to determine proper procedures for cutting, patching, and sealing penetrations."

8. Specification Section 07 71 19 Aluminum Fascia and Copings

A. Replace top-of-page Header throughout section with: "LaVille Elementary School and Jr/Sr High School 2021 Improvements and Related Work."

9. Specification Section 08 71 00 Door Hardware

A. Replace Specification Section 08 71 00, Door Hardware in its entirety with Specification Section 08 71 00 included in this Addendum.

10. Specification Section 08 81 00 Glazing

A. Add Paragraph 2.2 F. to read:

"F. Translucent Glazing: Clear insulating glass units with internal translucent film core.

1. Product: Advanced Glazings LTD.; Solera L.
   a. External Veil: AGL-300.
   b. Internal Veil: AGL-300
   c. Visible Light Transmittance: 33 percent.
   d. U-Value: 0.26 to 0.27.
2. Unit Thickness: 1-inch
3. Location: Elementary Clerestory Alternate"

11. Specification Section 10 14 00 Signage

A. Replace Paragraph 1.3 1., 1.3 2., and 1.3 3. with the following:

"1. Include purchase and installation of signs for the following rooms: Elementary E-108, E-109, E-112; Jr/Sr High School C-129, C-130, C-131, E-101 and E-104. If the FACS Alternate is accepted: E-114, E-119."

Subparagraphs 1.3 2. and 1.3 3. have been deleted in their entirety.

12. Specification Section 11 40 00 Foodservice Equipment

A. Revise Paragraph 3.08 L. to read:

"L. The Owner has salvage rights to all existing equipment. Existing equipment that is not to be reused, or claimed by the Owner, shall be removed by the contractor, and disposed of as directed by the Construction Manager/Owner."

B. ITEMIZED SPECIFICATIONS, Page 24, first paragraph, last sentence to read: "System shall meet all requirements as set forth by NFPA 96, UL and NSF. Installation, start-up, air balance, to be provided by contractor."

C. Pages 27 and 28, Item 17:

1. Add Paragraphs i, j and k as follows:

   i. Horn Strobe

   j. Shut-off assembly box power

   k. Electric shut-off assembly box

2. Add the following Note to end of Item 17: KEC to provide building alarm interface compatible with existing building alarm system within each hood control panel.

D. Page 28: Change "UNIT PRICE FORM" TO "PRICE FORM".

13. Specification Section 12 25 00 Roller Shades

A. Add Specification Section 12 25 00, Roller Shades, included in this Addendum, to the Project Manual.

B. Roller shades shall be included for the following rooms only if the FACS Alternate is accepted: E-114 and E-119.

14. Specification Section 26 27 13 Electrical Service Entrance

A. Paragraph 1.5 B.1: Add the following contact information:

Jenny Spencer, American Electric Power-Indiana Michigan Power, jspencer@AEP.com

Fran Glenn, American Electric Power-Indiana Michigan Power, fglenn@AEP.com

15. Specification Section 28 82 83 Unit Ventilators

A. Tempspec is hereby approved to bid Unit Ventilators for this project. All requirements of the Drawings and Specifications shall be met, including the color selections.

DRAWINGS – LaVille Elementary School

16. Sheets A-101, A-103, A-104, A-301

A. Replace the above-listed drawings with four (4) revised, full-size drawings included in this Addendum.

17. Sheet M-101

A. Refer to attached, revised full-size drawing, included in this Addendum, for thermostats for rooftops added into classrooms.

18. Sheet M-200

A. Refer to attached, revised full-size drawing, included in this Addendum, for the following revisions:

1. TEF-1, TEF-2, TEF-3, GEF-1 were switched from thermostats to wall switches.
2. System manager control panel note has been added to Sheet Note 1.

19. Sheet P-100

A. Refer to attached, revised full-size drawing, included in this Addendum, for storm piping modified to match the above-ground plumbing plan.

20. Sheet P-201

A. Refer to attached, revised full-size drawing, included in this Addendum, for clarification of piping material that shall be used for all pumped sanitary piping.

21. Sheet E-001

A. Refer to attached, revised full-size drawing, included in this Addendum, for the following revisions:

1. Delete Note 6 from Electrical Symbol Schedule.
2. Adding abbreviation TP (Tamperproof) to the Symbol Schedule.

22. Sheet E-105

A. Refer to attached, revised full-size drawing, included in this Addendum, for the following revisions:

1. Add speakers in the corridors.
2. Change one of the lighting fixtures to a Type L-5E.
3. Change the lighting fixtures in Corridor E-102 to Type L-3 and L-3E.
4. Change the lighting fixture in Corridor D-149 to Type L-3.
5. Add push-to-call switches in Classrooms E-108, E-109 and E-112.

23. Sheet E-205

A. Refer to attached, revised full-size drawing, included in this Addendum, for the following revisions:

1. Delete Plan Notes 1 and 2 from the video and voice/data outlets in Classrooms E-108, E-109 and E-112.
2. Add Plan Note 6 to the disconnect and receptacle on roof for CU-1.
3. Add Area Smoke Detectors to Storage E-104 and Janitor E-105.

4. Clarifying Plan Note 7 to note to provide the power connection to AC-1 from CU-1.
5. Change ACU-M1 in Plan Note 8 to CU-1.

24. Sheet E-601

A. Refer to attached, revised full-size drawing, included in this Addendum, for the following revisions.

1. Delete Fixture Type F-1.
2. Modify Fixture Type L-5E.
3. Note lumens are minimum and wattages are maximums.
4. Change the controlled circuit for Relay RE-1 to XHD-15.

25. Sheet E-701

A. Refer to attached, revised full-size drawing, included in this Addendum, for the following revisions.

1. Clarifying feeders to Existing Panels “XHD” and “XL2” are existing.
2. Delete extra line from Panel “H10”.

DRAWINGS – LaVille Jr/Sr High School

26. Sheets G-101 and G-301

A. Replace the above-listed drawings with two (2) revised, full-size drawings included in this Addendum.

27. Sheet A-201 and A-210

A. Replace the above-listed drawings with two (2) revised, full-size drawings included in this Addendum.

28. Sheet DM104

A. Refer to attached, revised full-size drawing, included in this Addendum, for increased amount of gas piping being removed.

29. Sheet M-102

A. Refer to attached, revised full-size drawing, included in this Addendum, for changed size of hot water piping.

30. Sheet M-104

A. Refer to attached, revised full-size drawing, included in this Addendum, for changed the following revisions:

1. Changed size of hot water piping.
2. Note added about underground gas piping.

31. Sheet M-401

A. Refer to attached, revised full-size drawing, included in this Addendum, for the following revisions:

1. Changed size of hot water piping.
2. Corrected scale of tunnel plan.

32. Sheet DP104

A. Refer to attached, revised full-size drawing, included in this Addendum, for clarification of Sheet submitted in Addendum One.

33. Sheet E-001

A. . Refer to attached, revised full-size drawing for the following revisions:

1. Delete Note 6 from Electrical Symbol Schedule.

34. Sheets E-002

A. Refer to attached, revised full-size drawing for the following revisions:

1. Add electrical connections to new temperature control panels.

35. Sheet E-003

A. Add New Sheet E-003, included in this Addendum.

36. Sheet ED104

A. Refer to attached, revised full-size drawing included in this Addendum for the following revisions:

1. Showing demolition of existing overhead electrical service.
2. Clarifying work to be bid as an alternate bid.

37. Sheet E-401

A. Refer to attached, revised full-size drawing included in this Addendum for the following revisions:

1. Modifications to Foods E-114, Storage E-117 and Sewing E-119.
2. Modified Plan Notes.
3. Clarifying work to be bid as an Alternate Bid.

38. Sheet E-501

A. Refer to attached, revised full-size drawing included in this Addendum for modifications to details.

39. Sheet E-601

A. Refer to attached, revised full-size drawing included in this Addendum for the clarification of work to be bid as an Alternate Bid.

40. Sheet E-701

A. Refer to attached, revised full-size drawing included in this Addendum for the following revisions:

1. Modifying New Partial Demolition Power Distribution Diagram.
2. Clarifying work to be bid as an Alternate Bid.

41. Sheet E-702

A. Refer to attached, revised full-size drawing included in this Addendum for the following revisions:

1. Modifying New Partial Power Distribution Diagram.
2. Clarifying work to be bid as an Alternate Bid.

Pages 1 through 7, inclusive, Specification Sections 07 21 19, 08 71 00 and 12 25 00, and Thirty-One (31) full-size drawings constitute the total makeup of **Addendum Two**.

GIBRALTAR DESIGN

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SECTION 07 21 19
FOAMED-IN-PLACE INSULATION

1 General

1.1 Section Includes

A. Foamed-in place insulation at junctions of dissimilar wall and window or wall and roof materials to achieve thermal seal.

B. Filling miscellaneous voids in construction with foam insulation.

C. Foam-in place insulation for use in plenum.

1.2 Regulatory Requirements

A. Conform to applicable code for flame/fuel/smoke requirements.

1.3 Submittals

A. Submit product data under provisions of Division 1.

B. Include product description, insulation properties, and preparation requirements.

C. Submit manufacturer's installation instructions under provisions of Division 1.

D. Submit manufacturer's certificate under provisions of Division 1 that products meet or exceed specified requirements.

1.4 Quality Assurance

A. Manufacturer: Company specializing in plastic foam insulation with minimum three years experience.

B. Applicator: Certified and approved by manufacturer with current certification at time of installation.

2 Products

2.1 Foamed-In-Place Insulation - Acceptable Manufacturers – Non Plenum

A. Fomo Products, Inc., Norton, Ohio.

B. Dow Chemical, Midland, Michigan.

C. Basis-of-Design Product: Fomo Products; Handi-Seal.

2.2 Foamed-In-Place Insulation - Acceptable Manufacturers – Plenum

A. Basis-of-Design Product: Isolatek International CAFCO Blaze-Shield 11

2.3 Materials – Non Plenum

A. One component foamed-in-place polyurethane insulation with the following characteristics.

1. Thermal Conductivity: ASTM C177; Minimum k value at 75 degrees F, 0.224; minimum R value at 75 degrees F, 4.5.

2. Density: ASTM D1622; minimum 1.0 pounds per cubic foot.

3. Surface Burning Characteristics: ASTM E84; flame spread, 5; fuel contributed, 0; smoke developed, 10.

2.4 Materials – Plenum

A. Inorganic, Portland cement based spray-applied material.

1. Tested for surface burning characteristics in accordanace with ASTM E84 and is rated class A. Flame Spread 0, Smoke Developed 0. Combustibilty E136 = Noncombustible.

2. Thermal Conductivity: ASTM C518; Conductivity .30 BTU in/hr ft squared Degrees Ferenheight @ 75 degrees Ferenheight. R value R/ inch = 3.33

3 Execution

3.1 Inspection

A. Verify that surfaces are clean, dry, and free of matter that may inhibit insulation adhesion.

B. Beginning of installation means acceptance of substrate and project conditions.

3.2 Preparation

A. Mask and protect adjacent surfaces from over spray.

B. Contact Manufufacture for procedures on handling primed/ panted steel for proper adhesion.

C. All surfaces shall be fre of oil, grease, loose mill scale, dirt or other foreign materials.

3.3 Application

A. Apply insulation in accordance with manufacturer's instructions.

B. Be cautious of flammability of Non-Plenum insulation during and after installation.

C. Apply insulation to a uniform monolithic density without voids.

D. Do not apply to underside of roof deck until after construction roof traffic has ceased.

3.4 Field Quality Control

A. Field inspection will be performed in accordance with Division 1.

3.5 Protection

A. Protect finished installation in accordance with Division 1.

END OF SECTION

SECTION 08 71 00 – DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section includes:

1. Mechanical and electrified door hardware for:

a. Swinging doors.

2. Electronic access control system components, including:

a. Electronic access control devices.

3. 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. Exclusions: Unless specifically listed in hardware sets, hardware is not specified in this section for:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 Section "Alternates" for alternates affecting this section.
2. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
3. Division 26 sections for connections to electrical power system and for low-voltage wiring.
4. Division 28 sections for coordination with other components of electronic access control system.

1.03 REFERENCES

A. UL - Underwriters Laboratories

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

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Key Systems and Nomenclature

C. ANSI - American National Standards Institute

1. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties

1.04 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 requirements.
2. Highlight, encircle, or otherwise specifically identify on submittals deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.
3. Prior to forwarding submittal, comply with procedures for verifying existing door and frame compatibility for new hardware, as specified in PART 3, “EXAMINATION” article, herein.

B. Action Submittals:

1. Product Data: 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.

3. Samples for Verification: If requested by Architect, submit production sample or sample installations of each type of exposed 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: Submit schedule with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule as published by the Door and Hardware Institute. Indicate complete designations of each item required for each door or opening, include:

    a. Door Index; include door number, heading number, and Architects hardware set number.
    b. Opening Lock Function Spreadsheet: List locking device and function for each opening.
    c. Quantity, type, style, function, size, and finish of each hardware item.
    d. Name and manufacturer of each item.
    e. Operational Description of openings with any electrified hardware (locks, exits, electromagnetic locks, electric strikes, automatic operators, door position switches, magnetic holders or closer/holder units, and access control components). Operational description should include operational descriptions for: egress, ingress (access), and fire/smoke alarm connections.
    f. Fastenings and other pertinent information.
    g. Location of each hardware set cross-referenced to indications on Drawings.
    h. Explanation of all abbreviations, symbols, and codes contained in schedule.
    i. Mounting locations for hardware.
    j. Door and frame sizes and materials.
    k. Name and phone number for local manufacturer's representative for each product.
    l. Submittal Sequence: Submit door hardware schedule 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 that is critical in Project construction schedule.

5. Key Schedule:

    a. After Keying Conference, provide keying schedule listing levels of keying as well as explanation 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.
        1) 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.

6. Templates: After final approval of hardware schedule, provide templates for doors, frames and other work specified to be factory or shop prepared for door hardware installation.

C. Informational Submittals:

1. Qualification Data: For Supplier, Installer and Architectural Hardware Consultant.
2. Product data for electrified door hardware:

a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

3. Certificates of Compliance:

a. UL listings for fire-rated hardware and installation instructions if requested by Architect or Authority Having Jurisdiction.
b. Installer Training Meeting Certification: Letter of compliance, signed by Contractor, attesting to completion of installer training meeting specified in “QUALITY ASSURANCE” article, herein.
c. Electrified Hardware Coordination Conference Certification: Letter of compliance, signed by Contractor, attesting to completion of electrified hardware coordination conference, specified in “QUALITY ASSURANCE” article, herein.

4. Warranty: Special warranty specified in this Section.

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. Factory order acknowledgement numbers (for warranty and service)
d. Name, address, and phone number of local representative for each manufacturer.
e. Parts list for each product.
f. Final approved hardware schedule, edited to reflect conditions as-installed.
g. Final keying schedule
h. Copies of floor plans with keying nomenclature
i. As-installed wiring diagrams for each opening connected to power, both low voltage and 110 volts.
j. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

1.05 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.
2. Furnish finish hardware to comply with the requirements of the regulations for public building accommodations for physically handicapped persons of the governmental authority having jurisdiction and to comply with Americans with Disabilities Act.
3. Provide hardware for fire rated openings in compliance with NFPA 80 and state and local building code requirements. Provide only hardware that has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and door frame labels.

B. Supplier:

1. Mechanical Hardware

a. Shall be an established firm dealing in contract builders' hardware. Distributor must have adequate inventory, qualified personnel on staff and be located within 100 miles of the project. The distributor must be a factory-authorized dealer for all materials required. The supplier shall be or have in employment an Architectural Hardware Consultant (AHC).
b. Door Hardware distributor/supplier listed on the Bid Form shall be a factory authorized distributor for the hardware specified. This requirement will not be allowed to be med by a non-factory authorized dealer subcontracting to a factory authorized dealer. Any submitted bid that attempts to circumvent this requirement will be considered non-response and will be removed from consideration.

2. Electrified Hardware:

a. Shall be an experienced door hardware supplier who has completed projects with electrified door hardware similar in material, design, and extent to that indicated for this project, whose work has resulted in construction with a record of successful in-service performance, and who is acceptable to manufacturer of primary materials. The supplier must be a factory-authorized distributor for all materials required.
b. Shall prepare data for electrified door hardware, including shop drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this project.
c. Shall have experience in providing consulting services for electrified door hardware installations.

C. Installer Qualifications:

1. Qualified tradesmen, skilled in application of commercial grade hardware with record of successful in-service performance for installing door hardware similar in quantity, type, and quality to that indicated for this Project.

D. Architectural Hardware Consultant Qualifications: 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:

1. For door hardware, DHI-certified, Architectural Hardware Consultant (AHC).
2. Can provide installation and technical data to Architect and other related subcontractors.
3. Can inspect and verify components are in working order upon completion of installation.
4. Capable of producing wiring diagrams.
5. Capable of coordinating installation of electrified hardware with Architect and electrical engineers.

E. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

F. Fire-Rated Door Openings: Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed products tested by Underwriters Laboratories, 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.

G. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by testing agency acceptable to authorities having jurisdiction.

H. Accessibility Requirements: For door hardware on doors in an accessible route, comply with governing accessibility regulations cited in “REFERENCES” article, herein.

I. Keying Conference

1. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:

   a. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
   b. Preliminary key system schematic diagram.
   c. Requirements for key control system.
   d. Requirements for access control.
   e. Address for delivery of keys.

J. Pre-installation Conference

1. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
2. Inspect and discuss preparatory work performed by other trades.
3. Inspect and discuss electrical roughing-in for electrified door hardware.
4. Review sequence of operation for each type of electrified door hardware.
5. Review required testing, inspecting, and certifying procedures.

K. Coordination Conferences:

1. Installation Coordination Conference: Prior to hardware installation, schedule and hold meeting to review questions or concerns related to proper installation and adjustment of door hardware.
2. Electrified Hardware Coordination Conference: Prior to ordering electrified hardware, schedule and hold meeting to coordinate door hardware with security, electrical, doors and frames, and other related suppliers.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site.

B. 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.

1. Deliver each article of hardware in manufacturer’s original packaging.

C. Project Conditions:

1. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.
2. 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.

D. Protection and Damage:

1. Promptly replace products damaged during shipping.
2. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work.
3. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

E. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.07 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, access control, and keying 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.

1.08 WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Beginning from date of Substantial Completion, for durations indicated.

a. Closers:
1) Mechanical: 30 years.

b. Automatic Operators: 2 years.

c. Exit Devices:
1) Mechanical: 3 years.
2) Electrified: 1 year.

d. Locksets:
1) Mechanical: 3 years

e. Continuous Hinges: Lifetime warranty.
f. Key Blanks: Lifetime

2. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.

1.09 MAINTENANCE

A. Maintenance Tools: Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics and project suitability to insure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: “No Substitute.”

1. Where “No Substitute” is noted, submittals and substitution requests for other products will not be considered.

B. Approval of manufacturers and/or products other than those listed as “Scheduled Manufacturer” or “Acceptable Manufacturers” in the individual article for the product category shall be in accordance with QUALITY ASSURANCE article, herein.

C. 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.

D. 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. Fasteners

1. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation.
2. Furnish screws for installation with each hardware item. Finish exposed (exposed under any condition) 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 for hardware units exposed when door is closed except when no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless thru-bolts are required to fasten hardware securely. Review door specification and advise Architect if thru-bolts are required.
4. Install hardware with fasteners provided by hardware manufacturer.

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: Ives 5BB series.
2. Acceptable Manufacturers and Products: Hager BB series (ECBB series not approved), Bommer BB5000.

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. 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.
3. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

   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

4. Width of hinges: 4-1/2 inches (114 mm) at 1-3/4 inch (44 mm) thick doors, and 5 inches (127 mm) at 2 inches (51 mm) or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.

2.04 CONTINUOUS HINGES

A. Aluminum Geared

1. Manufacturers:

   a. Scheduled Manufacturer: Ives.
   b. Acceptable Manufacturers: Pemko, Select.

2. Requirements:

   a. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
   b. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
   c. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
   d. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
   e. On fire-rated doors, provide aluminum geared continuous hinges that are classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
   f. Provide aluminum geared continuous hinges with electrified option scheduled in the hardware sets. Provide with sufficient number and wire gage to accommodate electric function of specified hardware.
   g. Install hinges with fasteners supplied by manufacturer.
   h. 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 ELECTRIC POWER TRANSFER

A. Manufacturers:

a. Scheduled Manufacturer: Von Duprin EPT-10.
b. Acceptable Manufacturers: ABH PT1000, Securitron CEPT-10.

B. Provide power transfer with electrified options as scheduled in the hardware sets. Provide with number and gage of wires sufficient to accommodate electric function of specified hardware.

C. Locate electric power transfer per manufacturer's template and UL requirements, unless interference with operation of door or other hardware items.

2.06 MORTISE LOCKS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage L9000 series.
2. Acceptable Manufacturers and Products: No Substitutions – Owners Standard.

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. Indicators: Where specified, provide indicator window measuring a minimum 2 inch x 1/2 inch with 180 degree visibility. Provide messages color-coded with full text and/or symbols, as scheduled, for easy visibility.

   a. Outside Occupancy Indicator: Provide indicator above cylinder or emergency release for visibility while operating the lock that identifies an occupied/unoccupied status of the lock or latch.

3. Provide locks manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance.
4. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to "KEYING" article, herein.
5. Verify lock functions with owner prior to ordering.
6. 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.
7. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
8. Provide electrified options as scheduled in the hardware sets. Where scheduled, provide switches and sensors integrated into the locks and latches.
9. 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: Schlage 06A.
   b. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.07 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Von Duprin 99/33A series.
2. Acceptable Manufacturers and Products: No Substitutions – Owners Standard.

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. Verify exit device functions with owner prior to ordering.
4. Provide touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
5. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
6. Provide exit devices with deadlatching feature for security and for future addition of alarm kits and/or other electrified requirements.
7. Provide flush end caps for exit devices.
8. Provide exit devices with manufacturer’s approved strikes.
9. 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.
10. 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.
11. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
12. 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.
13. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
14. Provide electrified options as scheduled.
15. Top latch mounting: double or single tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
16. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.

    a. Tactile Warning (Knurling): Where required by authority having jurisdiction. Provide on levers on exterior (secure side) of doors serving rooms considered to be hazardous.

2.08 ELECTRIC STRIKES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Von Duprin 6000 Series.
2. Acceptable Manufacturers and Products: Folger Adam 300 Series, HES 1006 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.
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.

2.09 POWER SUPPLIES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: Schlage or Von Duprin PS900 series
2. Acceptable Manufacturers and Products No Substitutions

B. Requirements:

1. Provide power supplies, recommended and approved by manufacturer of electrified locking component, for operation of electrified locks, electrified exit devices, magnetic locks, electric strikes, and other components requiring power supply.
2. Provide appropriate quantity and size 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 appropriate option boards for power supplies necessary for proper operation of the electrified locking components as recommended by the manufacturer of the electrified locking components with consideration for each electrified component used in the system.
4. Provide regulated and filtered 24 VDC power supply and UL class 2 listed.
5. Options:

   a. Provide power supply, where specified, with internal capability of charging sealed backup batteries 24 VDC, in addition to operating DC load.
   b. Provide sealed batteries for battery back-up at each power supply where specified.
   c. Provide keyed power supply cabinet.

6. Provide power supply in an enclosure, complete, and requiring 120VAC to fused input.
7. Provide power supply with emergency release terminals, where specified, that allow release of all devices upon activation of fire alarm system complete with fire alarm input for initiating “no delay” exiting mode.

2.10 CYLINDERS

A. Manufacturers:

1. Scheduled Manufacturer: Match existing System.

B. Requirements:

1. Provide cylinders/cores, from the same manufacturer of locksets, compliant with ANSI/BHMA A156.5; latest revision, Section 12, Grade 1; permanent cylinders; 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. Match owner’s existing system.

3. Nickel silver bottom pins.

2.11 KEYING

A. Provide a factory registered keying system, complying with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Provide keying system capable of multiplex masterkeying.
2. Permanent cylinders/cores keyed by the manufacturer according to the following key system.

   a. Keying system as directed by the Owner.
   b. Match Owner's existing system.
   c. (Great)Grand Master Key System: Cylinders/cores operated by change (day) keys and subsequent masters (including grand/great grand) keys.

3. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements shall be cause for replacement of cylinders/cores involved at no additional cost to Owner.
4. Provide keys with the following features:

   a. Material: Nickel silver; minimum thickness of .107-inch (2.3mm).

5. Identification:

   a. Mark permanent cylinders/cores and keys with applicable blind code per DHI publication "Keying Systems and Nomenclature" for identification. Blind code marks shall not include actual key cuts.
   b. Identification stamping provisions must be approved by the Architect and Owner.
   c. Stamp keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE".
   d. Failure to comply with stamping requirements shall be cause for replacement of keys involved at no additional cost to Owner.
   e. Verify with owner if permanent cylinders/cores and/or keys are to be shipped directly to Owner or to Contractor.

6. Quantity: Furnish in the following quantities.

   a. Change (Day) Keys: 3 per cylinder/core.
   b. Permanent Control Keys: 3 (if required).
   c. Master Keys: 6 per master.
   d. Unused balance of key blanks shall be furnished to Owner with the cut keys.

2.12 KEY CONTROL SYSTEM

A. Manufacturers:

1. Scheduled Manufacturer: Telkee.
2. Acceptable Manufacturers: HPC, 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 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.

2.13 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 4040XP series.
2. Acceptable Manufacturers and Products: No Substitutions – Owners Standard.

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 high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2 inch (38 mm) diameter with 3/4 inch (19 mm) diameter double 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. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. 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.

2.14 ELECTRO-HYDRAULIC AUTOMATIC OPERATORS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product: LCN 4600 series.
2. Acceptable Manufacturers and Products: No Substitutions – Owners Standard.

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 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 valve, sweep valve, latch valve to control door.
6. Provide drop plates, brackets, or adapters for arms as required for details.
7. Provide hard-wired actuator switches for operation as specified.
8. Provide weather-resistant actuators at exterior applications.
9. 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.
10. 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.
11. Provide units with vestibule inputs that allow sequencing operation of two units, and SPDT relay for interfacing with latching or locking devices.

2.15 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Rockwood, Trimco.

B. Requirements:

1. Provide push plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick and beveled 4 edges. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
2. Provide push bars of solid bar stock, diameter and length as scheduled. Provide push bars of sufficient length to span from center to center of each stile. Where required, mount back to back with pull.
3. Provide offset pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
4. Provide flush pulls as scheduled. Where required, provide back-to-back mounted model.
5. Provide pulls of solid bar stock, diameter and length as scheduled. Where required, mount back to back with push bar.
6. Provide pull plates 4 inches (102 mm) wide by 16 inches (406 mm) high by 0.050 inch (1 mm) thick, beveled 4 edges, and prepped for pull. Where width of door stile prevents use of 4 inches (102 mm) wide plate, adjust width to fit.
7. Provide wire pulls of solid bar stock, diameter and length as scheduled.
8. Provide decorative pulls as scheduled. Where required, mount back to back with pull.

2.16 PROTECTION PLATES

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Rockwood, Trimco.

B. Requirements:

1. Provide kick plates, mop plates, and armor plates minimum of 0.050 inch (1 mm) thick, beveled four edges as scheduled. Furnish with sheet metal or wood screws, finished to match plates.
2. Sizes of plates:

a. Kick Plates: 10 inches (254 mm) high by 2 inches (51 mm) less width of door on single doors, 1 inch (25 mm) less width of door on pairs

2.17 OVERHEAD STOPS AND OVERHEAD STOP/HOLDERS

A. Manufacturers:

1. Scheduled Manufacturers: Glynn-Johnson.
2. Acceptable Manufacturers: Hiawatha, Sargent.

B. Requirements:

1. Provide heavy duty concealed mounted overhead stop or holder as specified for exterior and interior vestibule single acting doors.
2. Provide heavy duty concealed mounted overhead stop or holder as specified for double acting doors.
3. Provide heavy or medium duty and concealed or surface mounted overhead stop or holder for interior doors as specified. Provide medium duty surface mounted overhead stop for interior doors and at any door that swings more than 140 degrees before striking wall, open against equipment, casework, sidelights, and where conditions do not allow wall stop or floor stop presents tripping hazard.
4. Where overhead holders are specified provide friction type at doors without closer and positive type at doors with closer.

2.18 DOOR STOPS AND HOLDERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Rockwood, Trimco.

B. Provide door stops at each door leaf:

1. Provide wall stops wherever possible. Provide convex type where mortise type locks are used and concave type where cylindrical type locks are used.
2. Where a wall stop cannot be used, provide universal floor stops for low or high rise options.
3. Where wall or floor stop cannot be used, provide medium duty surface mounted overhead stop.

2.19 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer: Zero International, National Guard.
2. Acceptable Manufacturers: Reese.

B. Requirements:

1. Provide thresholds, weather-stripping (including door sweeps, seals, and astragals) and gasketing systems (including smoke, sound, and light) 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. Size of thresholds:

   a. Saddle Thresholds: 1/2 inch (13 mm) high by jamb width by door width
   b. Bumper Seal Thresholds: 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width

4. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.

2.20 SILENCERS

A. Manufacturers:

1. Scheduled Manufacturer: Ives.
2. Acceptable Manufacturers: Rockwood, Trimco.

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.

2.21 DOOR POSITION SWITCHES

A. Manufacturers:

1. Scheduled Manufacturer: Schlage.
2. Acceptable Manufacturers: GE-Interlogix.

B. Requirements:

1. Provide recessed or surface mounted type door position switches as specified.
2. Coordinate door and frame preparations with door and frame suppliers. If switches are being used with magnetic locking device, provide minimum of 4 inches between switch and magnetic locking device.

2.22 FINISHES

A. Provide finish for each item as indicated in the 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.

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. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Where on-site modification of doors and frames is required:

1. Carefully remove existing door hardware and components being reused. Clean, protect, tag, and store in accordance with storage and handling requirements specified herein.
2. Field modify and prepare existing door and frame for new hardware being installed.
3. When modifications are exposed to view, use concealed fasteners, when possible.
4. Prepare hardware locations and reinstall in accordance with installation requirements for new door hardware and with:

    a. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
    b. Wood Doors: DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."
    c. Doors in rated assemblies: NFPA 80 for restrictions on on-site door hardware preparation.

3.03 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. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

C. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

D. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

F. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

G. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated or one hinge for every 30 inches (750 mm) of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

H. Lock Cylinders: Install construction cores to secure building and areas during construction period.

   1. Replace construction cores with permanent cores as indicated in keying section.

I. Wiring: Coordinate with Division 26, ELECTRICAL 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.
   5. Testing and labeling wires with Architect's opening number.

J. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

K. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

L. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

M. 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.

N. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

O. 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.

P. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

Q. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

R. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.04 FIELD QUALITY CONTROL

A. Architectural Hardware Consultant: Engage qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

1. Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.05 FIELD INSPECTIONS:

A. Fire Door Assembly Inspection and Testing: Provide functional testing and inspection of fire door assemblies in accordance with NFPA 80-2007/2010. Inspections shall be performed by individuals certified by Intertek as a Fire Door Assembly Inspector, using reporting forms provided by the Door and Hardware Institute (DHI). Alternatively, inspections may be performed by individuals acceptable to the Architect, who have knowledge and understanding of the operating components of the applicable door type, and who have experience in preparing written reports of testing and inspection results.

1. Schedule fire door assembly inspection within 90 days of Substantial Completion of the Project.
2. Submit a signed, written final report as specified in Paragraph 1.4: Submittals.
3. Contractor shall correct all deficiencies and schedule a reinspection of fire door assemblies which were noted as deficient on the inspection report.
4. Inspector shall reinspect fire door assemblies after repairs are made.
5. Additional reinspections which are required due to incomplete repairs will be performed by the inspector at the expense of the Contractor.

3.06 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. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
2. 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, Installer's Architectural Hardware Consultant must examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.07 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary 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.

3.08 DEMONSTRATION

A. Provide training for Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

3.09 DOOR HARDWARE SCHEDULE

A. Hardware items are referenced in the following hardware. Refer to the above-specifications for special features, options, cylinders/keying, and other requirements.

B. Hardware Sets:

HARDWARE GROUP NO. 01

FOR USE ON DOOR #(S):
E-106A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY EPT	313AN	IVE
2	EA	POWER TRANSFER	EPT10	695	VON
1	EA	REMOVABLE MULLION	KR4954 STAB	695	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-DT 24 VDC	643E	VON
1	EA	ELEC PANIC HARDWARE	QEL-99-NL 24 VDC	643E	VON
1	EA	INTERFACE BOX	JB7		VON
1	EA	MORTISE CYLINDER/CORE	MATCH EXISTING	643E	
1	EA	RIM CYLINDER/CORE	MATCH EXISTING	643E	
1	EA	OH STOP	100SE	613	GLY
1	EA	SURFACE CLOSER	4040XP SCUSH	695	LCN
1	EA	SURF. AUTO OPERATOR	4642 TBWMS 120 VAC	695	LCN
1	EA	PA MOUNTING PLATE	4040XP-18PA	695	LCN
1	EA	CUSH SHOE SUPPORT	4040XP-30	695	LCN
1	EA	BLADE STOP SPACER	4040XP-61	695	LCN
1	EA	WEATHER RING	8310-801	PLA	LCN
1	EA	ACTUATOR, WALL MOUNT	8310-853T	630	LCN
1	EA	ACTUATOR	VESTIBULE ACTUATOR SPECIFIED WITH DOOR E-106B		LCN
1	EA		WEATHERSTRIP BY DOOR/FRAME MFR		B/O
2	EA	DOOR SWEEP	8198D	D	ZER
1	EA	THRESHOLD	8428DKB	DKB	NGP
1	EA	CREDENTIAL READER	BY ACCESS CONTROL PROVIDER	BLK	SCE
2	EA	DOOR CONTACT	7764	628	SCE
1	EA	POWER SUPPLY	PS904 900-4RL [COORDINATE WITH ACCESS CONTROL PROVIDER]	LGR	SCE
1	EA	DIAGRAM	ELEVATION		DLR
1	EA	DIAGRAM	POINT TO POINT		DLR

OPERATION: DOOR NORMALLY CLOSED AND LOCKED. DOORS CAN BE LEFT UNLOCKED AS PROGRAMMED BY ACCESS CONTROL.

UNLOCKED HOURS: PRESSING EITHER ACTUATOR WILL CYCLE AUTOMATIC OPERATOR AND MOMENTARILY OPEN DOOR. ALWAYS FREE EGRESS.

LOCKED HOURS: PRESENTING VALID CREDENTIAL WILL MOMENTARILY RETRACT ELECTRIFIED LATCH, ALLOWING ENTRY AND ACTIVATE EXTERIOR ACTUATOR. WHEN ACTIVE, PRESSING EXTERIOR ACTUATOR WILL CYCLE AUTOMATIC OPERATOR AND MOMENTARILY OPEN DOOR. ALWAYS FREE EGRESS.

DOOR CONTACTS TO MONITOR DOOR POSITION.

DUAL ACTUATOR (8310-855) FOR DOORS E-106A AND E-106B SPECIFIED WITH DOOR E-106B IN SET 02.

HARDWARE GROUP NO. 02

FOR USE ON DOOR #(S):
E-106B

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112XY	313AN	IVE
2	EA	DUMMY PUSH BAR	330-DT-990	643E	VON
1	EA	OH STOP	100SE	613	GLY
1	EA	SURFACE CLOSER	4040XP SCUSH	695	LCN
1	EA	SURF. AUTO OPERATOR	4642 TBWMS 120 VAC	695	LCN
1	EA	PA MOUNTING PLATE	4040XP-18PA	695	LCN
1	EA	CUSH SHOE SUPPORT	4040XP-30	695	LCN
1	EA	BLADE STOP SPACER	4040XP-61	695	LCN
1	EA	ACTUATOR, WALL MOUNT	8310-853T	630	LCN
1	EA	ACTUATOR, WALL MOUNT	8310-855	630	LCN
1	EA	DIAGRAM	ELEVATION		DLR
1	EA	DIAGRAM	POINT TO POINT		DLR

OEPRATION: PRESSING EITHER ACTUATOR WILL CYCLE AUTOMATIC OPERATOR AND MOMENTARILY OPEN DOOR. ALWAYS FREE EGRESS.

DUAL ACTUATOR (8310-855) FOR DOORS E-106A AND E-106B SPECIFIED WITH DOOR E-106B IN SET 02.

HARDWARE GROUP NO. 03

FOR USE ON DOOR #(S):
E-108B

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112XY	313AN	IVE
1	EA	PANIC HARDWARE	CD-99-NL	643E	VON
1	EA	MORTISE CYLINDER/CORE	MATCH EXISTING	643E	
1	EA	RIM CYLINDER/CORE	MATCH EXISTING	643E	
1	EA	SURFACE CLOSER	4040XP SCUSH	695	LCN
1	EA	PA MOUNTING PLATE	4040XP-18PA	695	LCN
1	EA	CUSH SHOE SUPPORT	4040XP-30	695	LCN
1	EA	BLADE STOP SPACER	4040XP-61	695	LCN
1	EA		WEATHERSTRIP BY DOOR/FRAME MFR		B/O
1	EA	DOOR SWEEP	8198D	D	ZER
1	EA	THRESHOLD	8428DKB	DKB	NGP

HARDWARE GROUP NO. 04

FOR USE ON DOOR #(S):
E-108A E-109A E-112A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	PANIC HARDWARE	LD-99-L-2SI-06	626	VON
2	EA	RIM CYLINDER/CORE	MATCH EXISTING	626	
1	EA	SURFACE CLOSER	4040XP RW/PA	689	LCN
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

HARDWARE GROUP NO. 05

FOR USE ON DOOR #(S):
E-104A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	L9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	AS REQUIRED	626	
1	EA	OH STOP	90S	689	GLY
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 06

FOR USE ON DOOR #(S):
E-105A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	L9080L 06A	626	SCH
1	EA	INTERFACE BOX	JB7		VON
1	EA	MORTISE CYLINDER	AS REQUIRED	626	
1	EA	ELECTRIC STRIKE	6212 FSE	630	VON
1	EA	OH STOP	90S	689	GLY
1	EA	SURFACE CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE
1	EA	CREDENTIAL READER	BY ACCESS CONTROL PROVIDER	BLK	SCE
1	EA	DOOR CONTACT	679-05WD/HM AS REQ	BLK	SCE
1	EA	POWER SUPPLY	PS902 900-4R [COORDINATE WITH ACCESS CONTROL PROVIDER]	LGR	SCE
1	EA	DIAGRAM	ELEVATION		DLR
1	EA	DIAGRAM	POINT TO POINT		DLR

OPERATION: DOOR NORMALLY CLOSED AND LOCKED. VALID CREDENTIAL MOMENTARILY RELEASES ELECTRIC STRIKE, ALLOWING ENTRY. DOOR REMAINS LOCKED UPON LOSS OF POWER. DOOR CONTACT TO MONITOR DOOR POSITION.

HARDWARE GROUP NO. 07

FOR USE ON DOOR #(S):
E-109B E-109C

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PANIC HARDWARE	LD-99-L-2SI-06	626	VON
1	EA	RIM CYLINDER/CORE	MATCH EXISTING	626	
1	EA	SURFACE CLOSER	4040XP SCUSH	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 08

FOR USE ON DOOR #(S):
E-107A E-110A E-111A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY W/DB & IND	L9496L 06A L583-363	626	SCH
1	EA	MORTISE CYLINDER	AS REQUIRED	626	
1	EA	SURFACE CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

HARDWARE GROUP NO. 09

FOR USE ON DOOR #(S):
C-102A C-102B

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	DOOR SHOE	92NWHDKB		NGP
1	EA	THRESHOLD	8428DKB	DKB	NGP
			BALANCE OF HARDWARE EXISTING		

HARDWARE GROUP NO. 10

FOR USE ON DOOR #(S):
E-117A

PROVIDE EACH OPENING WITH THE FOLLOWING:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	L9080L 06A	626	SCH
1	EA	MORTISE CYLINDER	AS REQUIRED	626	
1	EA	SURFACE CLOSER	4040XP RW/PA	689	LCN
1	EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1	EA	WALL STOP	WS406/407CVX	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

END OF SECTION

SECTION 12 25 00
ROLLER SHADES

1 General

1.1 Section Includes

A. Manually operated sunscreen roller shades.

1.2 References

A. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. NFPA 701 - Fire Tests for Flame-Resistant Textiles and Films.

1.3 Submittals

A. Submit under provisions of Division 1.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

C. Preparation instructions and recommendations.

D. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.

E. Storage and handling requirements and recommendations.

F. Mounting details and installation methods.

G. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, and relationship to adjacent work.

H. Window Treatment Schedule; For All Roller Shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.

I. Selection Samples: For each finish product specified, one set of shade cloth options, and aluminum finish color samples representing manufacturer's full range of available colors and patterns.

J. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements. Shadecloth sample and aluminum finish sample as selected. Mark face of material to indicate interior faces.

K. Maintenance Data: Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

1.4 Quality Assurance

A. Manufacturer Qualifications: Obtain roller shades through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.

B. Installer Qualifications: Installer trained and certified by the manufacturer with a minimum of ten years experience in installing products comparable to those specified in this section.

C. Fire-Test-Response Characteristics: Passes NFPA 701 small and large-scale vertical burn. Materials tested shall be identical to products proposed for use.

D. Anti-Microbial Characteristics: 'No Growth' per ASTM G21 results for fungi ATCC9642, ATCC 9644, ATCC9645.

E. Mock-Up: Provide a mock-up of two roller shade assemblies next to one another for evaluation of mounting, appearance spacing and accessories.

1. Locate mock-up in window designated by owner.

2. Do not proceed with remaining work until, mock-up is accepted by owner.

1.5 Delivery, Storage, And Handling

A. Deliver shades in factory-labeled packages, marked with manufacturer and product name, fire-test-response characteristics, and location of installation using same room designations indicated on Drawings and in the Window Treatment Schedule.

1.6 Project Conditions

A. Environmental Limitations: Install roller shades after finish work including painting is complete.

1.7 Warranty

A. Roller Shade Hardware, Chain, and Shadecloth: Manufacturer's standard twenty-five year limited warranty.

B. Roller Shade Installation: One year from date of Substantial Completion, not including scaffolding, lifts, or other means to reach inaccessible areas.

2 Products

2.1 Roller Shades – Acceptable Manufacturers

A. Basis of Design: MechoShade Systems, Inc., Long Island City, New York.

B. Requests for substitutions will be considered in accordance with provisions of Division 1.

C. Alternates: The following products and manufacturers may be bid as an alternate product. Any pricing for alternate products shall be listed separately from the base bid specified product. Any alternate pricing shall include line-by-line compliance or non-compliance with the specifications. If the alternate product is acceptable to the Architect, the specified manufacturer will be given the opportunity to provide an equivalent proposal.

1. Draper.

2.2 Applications/Scope

A. Roller Shade Schedule:

1. Manual operating, chain drive, sunscreen roller shades in all spaces shown on the Drawings. Mecho/5 system as manufactured by Mecho Shade Systems LLC.

a. Recessed in ceiling pocket.

b. Mounted at window head.

c. Ceiling mounted.

2. Brackets and mounting Hardware: As recommended by manufacture for mounting indicated field conditions and to accommodate fabric roll up size and weight.

2.3 Shade Cloth

A. Single-Fabric Shadecloth: MechoShade Systems, Inc., SoHo collection - Fabric: ShHo 1600 series 2 to 3 percent opening. 2x2 basket-weave pattern of fine yarn PVC and Polyester blend same colors as in 16000 (3 percent open

B. Color selected from manufacturer's standard colors.

2.4 Shade Band

A. Shade Bands: Construction of shade band includes the fabric, the hem weight, hem-pocket, shade roller tube, and the attachment of the shade band to the roller tube. Sewn hems and open hem pockets are not acceptable.

B. Hem Pockets and Hem Weights: Fabric hem pocket with RF-welded seams (including welded ends) and concealed hem weights. Hem weights shall be of appropriate size and weight for shade band. Hem weight shall be continuous inside a sealed hem pocket. Hem pocket construction and hem weights shall be similar, for all shades within one room.

C. Shade Band and Shade Roller Attachment:

1. Use extruded aluminum shade roller tube of a diameter and wall thickness required to support shade fabric without excessive deflection. Roller tubes less than 1.55 inches in diameter for manual shades, are not acceptable.

2. Provide for positive mechanical attachment of shade band to roller tube; shade band shall be made removable/replaceable with a "snap-on", snap-off" spline mounting, without having to remove shade roller from shade brackets.

3. Mounting spline shall not require use of adhesives, adhesive tapes, staples, and/or rivets.

4. Any method of attaching shade band to roller tube that requires the use of adhesives, adhesive tapes, staples, and/or rivets are not acceptable.

2.5 Shade Fabrication

A. Fabricate units to completely fill existing openings from head to sill and jamb-to-jamb, unless specifically indicated otherwise.

B. Openings requiring continuous multiple shade units with separate rollers: Locate roller joint at window mullion centers; butt rollers end to end.

C. Roll Width – As required to align with vertical window mullion. If mullion spacing is greater than width of fabric provide additional or individual roll per window opening between vertical mullion widths at each individual opening at no extra cost to project. Notify, owner, architect, construction manager prior to order.

D. Fabricate shadecloth to hang flat without buckling or distortion. Fabricate with heat-sealed trimmed edges to hang straight without curling or raveling. Fabricate unguided shadecloth to roll true and straight without shifting sideways more than 1/8 inch in either direction per 8 feet of shade height due to warp distortion or weave design.

E. Symmetrical light gap on both sides of shade – 1” total. Center gap on window mullions.

F. Fill openings from head to sill with ½ inch space between bottom bar and window sill.

G. Field measure finished openings and all field conditions prior to ordering or fabrication.

H. Fabricate hem as follows:

1. Bottom hem weights.

2. Provide battens in standard shades as required to assure proper tracking and uniform rolling of the shadebands. Contractor shall be responsible for assuring the width-to-height (W:H) ratios shall not exceed manufacturer's standards or, in absence of such standards, shall be responsible for establishing appropriate standards to assure proper tracking and rolling of the shadecloth within specified standards. Battens shall be roll-formed stainless steel or tempered steel, as required.

3. For railroaded shadebands, provide seams in railroaded multi-width shadebands as required to meet size requirements and in accordance with seam alignment. Seams shall be properly located. Furnish battens in place of plain seams when the width, height, or weight of the shade exceeds manufacturer's standards. In absence of such standards, assure proper use of seams or battens as required to, and assure the proper tracking of the railroaded multi-width shadebands.

4. Provide battens for railroaded shades when width-to-height (W:H) ratios meet or exceed manufacturer's standards. In absence of manufacturer's standards, be responsible for proper use and placement of battens to assure proper tracking and roll of shadebands.

5. Each Individual shade shall be individually operated.

2.6 Components

A. Access and Material Requirements:

1. Provide shade hardware allowing for the removal of shade roller tube from brackets without removing hardware from opening and without requiring end or center supports to be removed.

2. Provide shade hardware that allows for removal and re-mounting of the shade bands without having to remove the shade tube, drive or operating support brackets.

3. Use only Delrin engineered plastics by DuPont for all plastic components of shade hardware. Styrene based plastics, and/or polyester, or reinforced polyester will not be acceptable.

B. Manual Operated Chain Drive Hardware and Brackets:

1. Provide for universal, regular and offset drive capacity, allowing drive chain to fall at front, rear or non-offset for all shade drive end brackets. Universal offset shall be adjustable for future change.

2. Provide hardware capable for installation of a removable fascia, for both regular and/or reverse roll, which shall be installed without exposed fastening devices of any kind.

3. Provide shade hardware system that allows for removable regular and/or reverse roll fascias to be mounted continuously across two or more shade bands without requiring exposed fasteners of any kind.

4. Provide shade hardware system that allows for operation of multiple shade bands (multi-banded shades) by a single chain operator, subject to manufacturer’s design criteria. Connectors shall be offset to assure alignment from the first to the last shade band.

5. Provide positive mechanical engagement of drive mechanism to shade roller tube. Friction fit connectors for drive mechanism connection to shade roller tube are not acceptable

6. Provide shade hardware constructed of minimum 1/8-inch (3.18 mm) thick plated steel or heavier as required to support 150 percent of the full weight of each shade.

3 Execution

3.1 Examination

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Construction Manager of unsatisfactory preparation before proceeding.

3.2 Preparation

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 Installation

A. Install roller shades level, plumb, square, and true according to manufacturer's written instructions, and located so shade functions with pocket above, jamb conditions, mullions and all other field conditions including but not limited to columns closures, wall closures, wall transitions, Unit Ventilators, Unit Ventilator closures and all transitions. Allow proper clearances for window operation hardware.

B. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

C. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

D. Engage Installer to train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.

3.4 Protection

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION