CITY OF WEST LAKE HILLS, TEXAS
NOTICE OF BOARD OF ADJUSTMENT (BOA) REGULAR MEETING
Wednesday, June 22, 2022 at 7:00 PM

Notice is hereby given that the Board of Adjustment (BOA) of the City of West Lake Hills, Texas, will hold a Special Called Meeting on the 22nd day of June 2022 at 7:00 p.m., in the Council Chamber, Municipal Building, 911 Westlake Drive, West Lake Hills, Texas, at which time the following items will be discussed, to-wit:

**REMOTE ACCESS:**
Due to the COVID-19 status in Travis County, any citizens or applicants that wish to speak at the meeting are encouraged to attend virtually, as the number of people in the chambers will be limited due to physical distancing. Facial Coverings are not required, but highly recommended, and will be available for any that need one.

Join Zoom Meeting: Copy and Paste the link below:
https://us02web.zoom.us/j/3499549035?pwd=Qmc2dDVXWWZHSVFyK0xoSTJwMyswUT09

Meeting ID: 349 954 9035
Passcode:387042

If you wish to listen to the meeting via telephone: Dial (346) 248-7799, Meeting ID 349 954 9035, Password: 387042.

If you wish to speak during the meeting, please provide your name, phone number and the item number you wish to speak on to agrundman@westlakehills.gov by 1:00 P.M. on June 22, 2022.

Members of the public who wish to submit their written comments in lieu of speaking shall submit their comments by emailing agrundman@westlakehills.gov. Comments must be received by 1:00 P.M. on June 22, 2022.

1. Call to Order

2. Citizen Communications The City Council Welcomes Public Comments at this Point on any Issue. If the Issue is Listed on the Agenda, the Speaker May Choose to Comment During the Public Comment Period or When the Specific Agenda item is Taken Up by the Council Later in the Meeting. The Council Cannot Respond to Matters Not Listed on the Agenda Until a Future Meeting. Speakers Shall Limit Their Comments to Five (5) Minutes

Each

3. Consent Agenda All Consent Agenda Items Listed are Considered to be Routine by the City Council and Will be Enacted by One (1) Motion. No Separate Discussion or Action on any of the Items is Necessary Unless Desired by a Council Member or Citizen
    a. Approval of the June 8, 2022 Regular Meeting Minutes.

4. Land Use **412 Ridgewood Road** Discuss and consider action on an application for variances to encroach in a side building setback (West Lake Hills Code Section 22.03.281). Applicant Gregg and Christine Machon.

5. Land Use **5902 Bee Cave Road:** Discuss and consider action on an application for a variance request to encroach in a front setback, exceed the maximum allowable impervious cover and remove one tree with a trunk diameter of fourteen inches or greater (West Lake Hills Code Section 22.03.281 and 22.03.304). Applicant Hat Creek Burgers WLRE LLC (Scott Brown).

    **DUAL ACTION ITEM**

6. Adjournment

Approved by: Linda Anthony, Mayor

Certificate

I certify that the above Notice of the June 22, 2022 Board of Adjustment Special Called Meeting was posted on the bulletin board at the Municipal Building, 911 Westlake Drive, West Lake Hills, Texas on 17th day of June, 2022 by 5:00 pm. and will remain posted continuously until said meeting is convened.

Signed by: Ashby Grundman, City Secretary Designee

*The City of West Lake Hills is committed to compliance with the Americans with Disabilities Act. Reasonable accommodations and equal access to communications will be provided upon request.*

*All items on the agenda are for discussion and/or action. City Council reserves the right to adjourn into executive session at any time during the course of this meeting to discuss any of the matters listed above, as authorized by Texas Government Code Sections 551.071 (Consultation with Attorney), 551.072 (Deliberations about Real Property), 551.073 (Deliberations about Gifts*

*and Donations), 551.074 (Personnel Matters), 551.076 (Deliberations about Security Devices), and 551.086 (Economic Development).*

CITY OF WEST LAKE HILLS, TEXAS
MINUTES OF A BOARD OF ADJUSTMENT (BOA) REGULAR MEETING
Wednesday, June 8, 2022 at 7:00 PM

1. Call to Order

**With a quorum present, Chair Anthony called the meeting to order at 7:00 p.m. Members in attendance were Chair Linda Anthony and Board Members Rhonda McCollough, Brian Plunkett, Beth South, Gordon Bowman and Alternate Jim O'Connor for Board Member Darin Walker**

2. Citizen Communications

**Mayor Anthony opened the meeting for public comments. Hearing none, the public comment section was closed.**

3. All Consent Agenda Items Listed are Considered to be Routine by the City Council and Will be Enacted by One (1) Motion. No Separate Discussion or Action on any of the Items is Necessary Unless Desired by a Council Member or Citizen.

a. Approval of the April 13, 2022 Regular Meeting Minutes.

**Councilmember South moved to approve. Councilmember Plunkett seconds. Unanimous 5-0 approval.**

4. **3421 Bee Cave Road:** Discuss and consider action on an application for variance requests to encroach in a driveway setback, encroach in a building setback, remove two trees with trunk diameters of fourteen inches or greater, exceed the maximum allowed cut and fill and retaining wall in the front setback, and exceed the maximum allowed impervious cover (West Lake Hills Code Section 22.03.249, 22.03.281, 22.03.304, and 22.03.210). Applicant Ramon Aguirre.

**This is a dual action item. Councilmember Bowman moves to approval all variances. Councilmember Jim O'Connor seconds. Unanimous (6-0) approval.**

5. **104 Westhaven Drive:** Discuss and consider action on an application for a variance request to exceed the maximum allowed impervious cover (West Lake Hills Code Section 22.03.281). Applicant John Brown.

**Councilmember Plunkett moves to approve. Alternate Councilmember O'Connor seconds. Unanimous (6-0) approval.**

6. **5902 Bee Cave Road:** Discuss and consider action on an application for a variance request to encroach in a front setback, exceed the maximum allowable impervious cover and remove one tree with a trunk diameter of fourteen inches or greater (West Lake Hills Code Section 22.03.281 and 22.03.304). Applicant Hat Creek Burgers WLRE LLC (Scott Brown).

**Applicant has requested postponement to June 22, 2022.**

**Councilmember McCollough moves to accept postponement. Seconded by Alternate Councilmember O'Connor. Unanimous (6-0) acceptance.**

7. **412 Ridgewood Road** Discuss and consider action on an application for variances to encroach in a side building setback. (West Lake Hills Code Section 22.03.281). Applicant Gregg and Christine Machon.

**Jim and Adrian Keith of 410 Ridgewood were present to speak against the application.**

**Applicant requests postponement to June 22, 2022.**

**Alternate Councilmember O'Connor moves to accept postponement. Councilmember Plunkett seconds. Unanimous (6-0) acceptance.**

8. **703 Loma Linda:** Discuss and consider action on an application for a variance request to encroach into a building setback (West Lake Hills Code Section 22.03.281). Applicant Steven Johnson

**Councilmember Plunkett moves to approve. Alternate Councilmember O'Connor seconds. Unanimous (6-0) approval.**

9. **1407 Wildcat Hollow:** Discuss and consider action on an application for variances to encroach in a side building setback, excavate/grade in the front setback and to exceed the maximum allowed impervious cover (West Lake Hills Code Section 22.03.170 and 22.03.281). Applicant Andrew and Kaitlyn Coney.

**Councilmember Plunkett moves to approve. Councilmember Bowman seconds. Unanimous (6-0) approval.**

10. Adjournment

**Councilmember Bowman moves to Adjourn. Councilmember South seconds. Unanimous (6-0) approval.**

**Meeting adjourns at 8:09 p.m.**

Respectfully submitted,

_____

LINDA ANTHONY, MAYOR

ATTEST:

_____

Ashby Grundman, City Secretary Designee

These minutes were approved on _____, 2022.

DRAFT

**SETBACK ENCROACHMENT**
**STAFF REPORT** **JUNE 22, 2022**

**Project Address:** 412 Ridgewood Road

**Project Number:** 2022-1039

**Agenda Item:** Land Use: **412 Ridgewood Road** Discussion/recommendation on an application for a variance to encroach in a front and a side building setback (West Lake Hills Code Section 22.03.281). Applicant Gregg and Christine Machon.

**Applicant Information:** Gregg and Christine Machon

**Hearing Dates:**

| | |
|---|---|
| May 18, 2022, | ZAPCO |
| June 8, 2022, | Board of Adjustment |
| **June 22, 2022,** | **Board of Adjustment** |

**Location:** The subject property is located along the west side of Westlake Drive, north of Bee Cave Road and south of West Spring Drive.

**Property Information, Zoning & Site Characteristics:**

Owner: Gregg and Christine Machon
Legal Description: Lot 19 Ridgewood Village Section 2
Lot Size: 0.2323 acres (10,119.86 square feet)
Zoning: R1 – One Family Residential

The site is surrounded by a single-family residential property on all sides.

**Background & Analysis:**
The lot has an existing single-family residence on the site. The original variance had the carport going all the way up to the property line. The applicant has reduced the request by five feet and now is requesting a variance for an encroachment up to five feet from the property line.

The owners have no covered parking. In addition, they are proposing to remove the majority of the loose gravel and replace it with grass, reducing the overall impervious cover.

From the Owner's Application:
*We seek the city's approval to allow us to build an open but covered structure on the side of our home which we can use to safely store belongings and unseen from the front or the street. You can think of this most closely as a covered "carport" extending the width of our house and using materials consistent with the original home. We believe this is a much more elegant solution befitting the neighborhood, the city and the original architect and builder as opposed to adding another story to the home or materially changing the home's structural and architectural integrity.*

**Variance Criteria Review:**
When applying for a variance, the applicant has established by competent evidence that:

1. The strict or literal enforcement of the terms of this chapter, because of special conditions, will result in unnecessary hardship to the applicant.
   The application states **–** *"This home was built in 1965, well before the ordinances were established. There are only a few small remaining lots in WLH which are as small as our .23 acre lot. There is unnecessary hardship in requiring us to build within the current setbacks. This lot is small, the house was build and structured in such a way which prohibits adding any coverage for storage and parking. With a couple of life changing events, we have a necessary need for the additional storage."*

2. There will not be unreasonable disruption of the natural terrain or unreasonable destruction of existing flora.
   The application states – *"The driveway, parking and storage area are not being "added" to this property, we are simply requesting to add a covered area. We worked with a couple of architect to determine a design which is least obvious and the best which would blend in."*

3. There is no reasonable alternative to the requisite variance that will alleviate the difficulty or hardship complained of.
   The application states – *"We've considered tandem parking but that doesn't allow for the three cars to be parked on the driveway. The third would be forced to street park and take up the bike, walk lane and be disruptive to the postal service delivery. Additionally, the tandem parking doesn't address our need for storage."*

4. The variance will not be greater than the minimum required to alleviate the difficulty or hardship complained of.
   The application states – *"If we do not get the additional space for storage alone, we may have to either build up, which is a huge financial hardship, or move. We also didn't expect the two life changing events in our family, but here we are and we'll have to make choices on how to address them. If we don't receive the variance, the most likely change is that we would have to sell and move. We have considered every option, from off-site storage, build in storage without coverage, temporary covers, etc. But they all are not sufficient to meet our family needs. It ultimately is a hardship in not having the ability to utilize our property in a way that would be serve our family's needs."*

5. The variance does not violate the intent of the Zoning Ordinance or goals of the Comprehensive Plan.
   The application states **–** *"Our house and lot are pretty unique to this area of WHL. It is a one story, small lot which was built by an amazing architect. Our goal is to keep to the house style, the architects vision and WLH goals of staying natural and keeping to the integrity of our uniquely designed homes. We don't want to build up and lose another Stenger. The design of the cover was simplified to stay in his style."*

6. The variance will not adversely affect neighboring properties or interfere with the enjoyment of these properties by their owners.
   The application states – *"It is a side yard project. We've lived her since June of 2021 and our neighbor has frosting on their windows which face our home and do not use their side yard other than for a pathway and garbage bins. He won't see if from a window, the profile of the cover is minimal and isn't obtrusive into his field of view. We have trees and bushes between the home which will help with the obscuring most of it. From his side of the fence, he will see one beam running across and four posts across the span of our home. Those will be painted a muted medium grey to blend into the bark of the trees and bushes. So mostly he will see a beam running the length. We currently park our cars there so it won't be any difference and may in fact buffer the sounds of starting a car and closing a door as sound rises."*

**Outdoor Lighting**
Outdoor lighting is not proposed with this variance request. Any outdoor lighting will need to comply with the City's Code.

**Compliance with Adopted Uniform Building Code**
The property and future construction will have to comply with all applicable City codes.

**Subdivision**
This request will not change the subdivision.

**Comprehensive Planning Analysis**
The existing and future land use is in conformance with the City of West Lake Hills Master Plan.

**Zoning and Planning Commission Recommendation**
ZAPCO voted to recommend denial, unanimously, 4-0.

**Staff Recommendation**
Staff recommends: DENIAL of the variance request. However, it is important to note the efforts the applicant has made. They have letters of support from all property owners except the directly adjacent property owner and have attempted to communicate with them several times. They have reduced the carport from the original request by five feet and have continued to make efforts towards minimizing the request.

**Links to Relevant Code:**

- **Sec. 22.03.281 Schedule of Regulations**
- **Sec. 22.03.514 Criteria and process required for granting variance**

## ZONING MAP

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## AERIAL PHOTO

June 8, 2022

City of West Lake Hills (Board of Adjustments)
911 Westlake Drive
West Lake Hills, TX 78746

To the Chair of the City of West Lake Hills Board of Adjustments,

Gregg and Christine Machon, who reside at 412 Ridgewood Road, recently shared their revised plans to add a carport to the side of their house. The plans they shared preserve the architectural aesthetics of the house while minimizing the impact to the established setbacks. I feel this is a good compromise for them as it allows some element of covered parking while limiting any potential impact to the neighbors. Their house sits on a relatively small lot, and they have limited options to establish covered parking without tearing down the house, which would be a shame. Throughout the surrounding streets, there are several other houses which have structures that encroach into the setbacks, so their request is not out of line with what already exists.

Since moving into their residence, the Machons have worked hard to maintain and improve their house. They have embraced the neighborhood and have participated in the craziness of Halloween on Ridgewood and the over-the-top Christmas decorating that occurs during the holidays. Allowing them to build a structure that protects their vehicles from the elements and provides additional storage seems like a small concession in comparison to the positivity they bring to the neighborhood.

Please feel free to contact me with any questions.

Regards,

John Peck

417 Ridgewood Road
West Lake Hills, TX 78746
512.771.5375

June 08, 2022

City of West Lake Hills (Board of Adjustments)
911 Westlake Drive
West Lake Hills, Texas 78746

To the Chair of the City of West Lake Hills Board of Adjustments:

Recently, Gregg and Christine Machon, owners of the home at 412 Ridgewood Road, spoke with me about their variance request to build an open/covered structure on the side of their home (effectively a "carport"). Having reviewed their plans and drawings and understanding they want to use materials and aesthetics consistent with the original home (an A.D. Stenger mid-century home), I want to let you know that we support this request.

Since the Machons have moved into the neighborhood last Summer, they've continually improved the look of their home while being very friendly homeowners who I'm happy to call as neighbors. At this point, we've had enough "proof" that their tastes are consistent with those projects that we've seen get approved by the City and I have no doubt that this project will only enhance the beauty of their home and the street.

Thanks for your consideration.

Sincerely,

Laurel Stalk

Signature

Laurel Stalk

Homeowner's Name

Address

415 Ridgewood Rd.

June 08, 2022

City of West Lake Hills (Board of Adjustments)
911 Westlake Drive
West Lake Hills, Texas 78746

To the Chair of the City of West Lake Hills Board of Adjustments:

Recently, Gregg and Christine Machon, owners of the home at 412 Ridgewood Road, spoke with me about their variance request to build an open/covered structure on the side of their home (effectively a "carport"). Having reviewed their plans and drawings and understanding they want to use materials and aesthetics consistent with the original home (an A.D. Stenger mid-century home), I want to let you know that we support this request.

Since the Machons have moved into the neighborhood last Summer, they've continually improved the look of their home while being very friendly homeowners who I'm happy to call as neighbors. At this point, we've had enough "proof" that their tastes are consistent with those projects that we've seen get approved by the City and I have no doubt that this project will only enhance the beauty of their home and the street.

Thanks for your consideration.

Sincerely,

Zack Peckham

Signature

Zack Peckham & Jessica Ruiz

Homeowner's Name

Address

413 Ridgewood Road

June 08, 2022

City of West Lake Hills (Board of Adjustments)
911 Westlake Drive
West Lake Hills, Texas 78746

To the Chair of the City of West Lake Hills Board of Adjustments:

Recently, Gregg and Christine Machon, owners of the home at 412 Ridgewood Road, spoke with me about their variance request to build an open/covered structure on the side of their home (effectively a "carport"). Having reviewed their plans and drawings and understanding they want to use materials and aesthetics consistent with the original home (an A.D. Stenger mid-century home), I want to let you know that we support this request.

Since the Machons have moved into the neighborhood last Summer, they've continually improved the look of their home while being very friendly homeowners who I'm happy to call as neighbors. At this point, we've had enough "proof" that their tastes are consistent with those projects that we've seen get approved by the City and I have no doubt that this project will only enhance the beauty of their home and the street.

Thanks for your consideration.

Sincerely,

Julie Shands

Signature

419 Ridgewood Rd.
Austin TX

Homeowner's Name

Address

June 08, 2022

City of West Lake Hills (Board of Adjustments)
911 Westlake Drive
West Lake Hills, Texas 78746

To the Chair of the City of West Lake Hills Board of Adjustments:

Recently, Gregg and Christine Machon, owners of the home at 412 Ridgewood Road, spoke with me about their variance request to build an open/covered structure on the side of their home (effectively a "carport"). Having reviewed their plans and drawings and understanding they want to use materials and aesthetics consistent with the original home (an A.D. Stenger mid-century home), I want to let you know that we support this request.

Since the Machons have moved into the neighborhood last Summer, they've continually improved the look of their home while being very friendly homeowners who I'm happy to call as neighbors. At this point, we've had enough "proof" that their tastes are consistent with those projects that we've seen get approved by the City and I have no doubt that this project will only enhance the beauty of their home and the street.

Thanks for your consideration.

Sincerely,

Signature

Robert Emerson

Homeowner's Name

423 Ridgewood Rd

Address

June 08, 2022

City of West Lake Hills (Board of Adjustments)
911 Westlake Drive
West Lake Hills, Texas 78746

To the Chair of the City of West Lake Hills Board of Adjustments:

Recently, Gregg and Christine Machon, owners of the home at 412 Ridgewood Road, spoke with me about their variance request to build an open/covered structure on the side of their home (effectively a "carport"). Having reviewed their plans and drawings and understanding they want to use materials and aesthetics consistent with the original home (an A.D. Stenger mid-century home), I want to let you know that we support this request.

Since the Machons have moved into the neighborhood last Summer, they've continually improved the look of their home while being very friendly homeowners who I'm happy to call as neighbors. At this point, we've had enough "proof" that their tastes are consistent with those projects that we've seen get approved by the City and I have no doubt that this project will only enhance the beauty of their home and the street.

Thanks for your consideration.

Sincerely,

Victoria Reith

Signature

VICTORIA REITH

Homeowner's Name

416 Ridgewood Rd.

Address

June 17, 2022

City of West Lake Hills (Board of Adjustments)
911 Westlake Drive
West Lake Hills, Texas 78746

To the Mayor, City Council and Chair of the Board of Adjustments of the City of West Lake Hills:

Regarding the variance request of Gregg and Christine Machon at 412 Ridgewood Rd and following the June 8th BOA meeting when the decision was to postpone a decision until the June 22nd meeting, we wanted to provide an update to you on the actions that we have taken since the original variance meeting on May 18th. Below is a history and summary of those steps, in chronological order as best as we have documented and can recall:

**May 18th:** ZAPCO meeting. Recommendation: Denial. Mr. & Mrs. James Reich at 410 Ridgewood Rd were vocally opposed to approving "any" variance of the encroachment code.

**May 20th:** Gregg & Christine Machon met with their architect to share the Reich's concerns and 2 alternative designs were discussed and drawn up. 1.) A revision away FROM the 1' side setback (where 3 support beams would be) TO a 10' side setback for those same posts. The roof of the structure would overhang those beams and would be revised to a 5' setback. 2.) The second alternative and design was to change entirely the original design of the home built by A.D. Stenger in 1960 (which has been carefully preserved and renovated over the past 10 years) and turn the small bedroom in the front/right of the home into a 2-car garage and then build a 2nd story over the garage and kitchen extending the full width of the home. While this option is not preferred by the Machons, it does not require any variance – only a permit. The Machons fear that the Reichs would not prefer this option as they stated in the May 18th meeting that they enjoy the view of the neighborhood from their own 2nd story.

**June 6th & June 7th:** Gregg Machon knocked on the front door of the owners at 410 Ridgewood Rd twice to discuss these options with the Reichs. There was no answer on both occasions.

**June 7th & 8th:** Not being able to discuss these changes with the Reichs, Gregg & Christine Machon canvassed the street 2-3 houses on both sides of the home and both sides of the street and discussed the revised plans with their neighbors. They secured 7 signatures (from 7 discussions) from those neighbors and those approval letters have been provided to the Board.

**June 8th:** Gregg & Christine Machon drove a ¼ mile radius from their home to count, document and take pictures of very similar open-air carport/covered structures that were clearly built after the original home was built (to solve a very similar challenge that the Machons face). There are no less than 10 homes within a .2-mile radius from the Machons that were well outside of the established setback code and either received approval OR built the additions without the City of West Lake Hills approval.

**June 8th:** Board of Adjustment meeting. Recommendation: Denial. Gregg & Christine Machon presented their revised plans to the Board stating that they understood the concerns of the Board and of the Reichs and they've materially changed the plans to accommodate the Reichs. Mr. & Mrs. James Reich once again vocally opposed "any" variance approval and stated that they were at a "disadvantage" as they hadn't seen the revised plans. A discussion between the Board continued and Mayor Anthony recommended that a decision on the matter be delayed until June 22nd to provide time for the Reichs to review the proposal

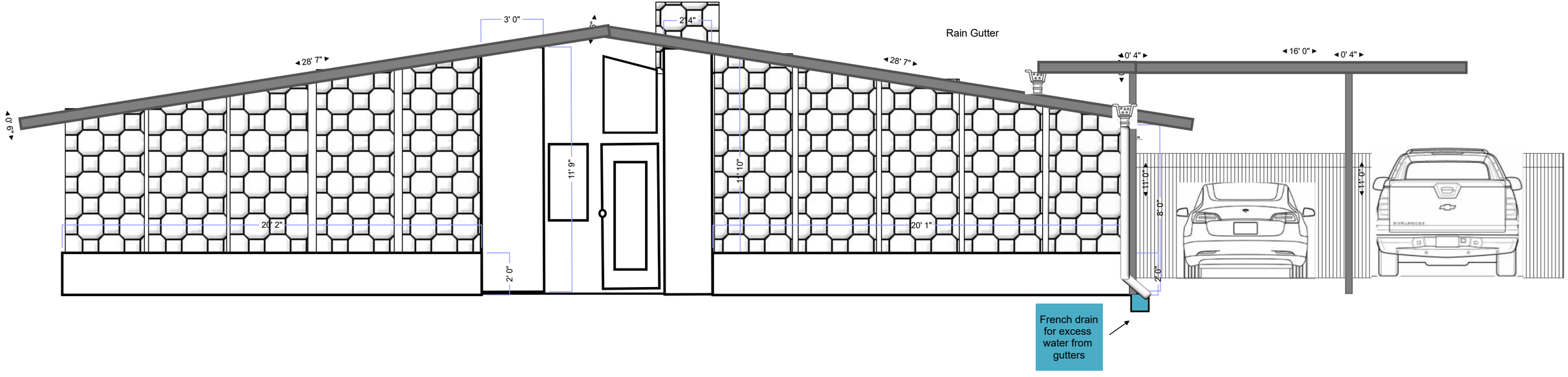
**June 13th:** Gregg and Christine Machon met with Ashby Grundman, AICP & Director of Building and Development Services for the City of West Lake Hills. The objective of the meeting was to provide some further background and information on what has been done by the Machons, to date, and to discuss a viable pathway for an approval to the revised variance request. Mr. Grundman requested some documents to submit to the Board in preparation for his meeting with Mayor Anthony and the upcoming meeting on June 22nd.

That brings us to the present-day. As part of this follow-up, we are submitting the: 1.) Revised Plan design. 2.) Approval letters from the referenced 7 neighbors. 3.) Document of the referenced 10 homes and a description of the addition and approximate setbacks. 4.) Zip folder with pictures of those homes and the add-on projects. We'd simply ask that these are reviewed by the Board in advance of the meeting and that perhaps one of the Board members drives by 412 Ridgewood Rd as well as reviews the addresses provided so that there's a solid understanding of the full scope of the situation. Should any member want to schedule a discussion with us, we'd more than welcome that opportunity. Gregg's mobile is 512-230-4373 and email is gjmachon@gmail.com.

We are looking forward to the upcoming meeting on the 22nd and expect that we will come to a reasonable solution. Thanks for your consideration!

Sincerely,

Gregg & Christine Machon
412 Ridgewood Road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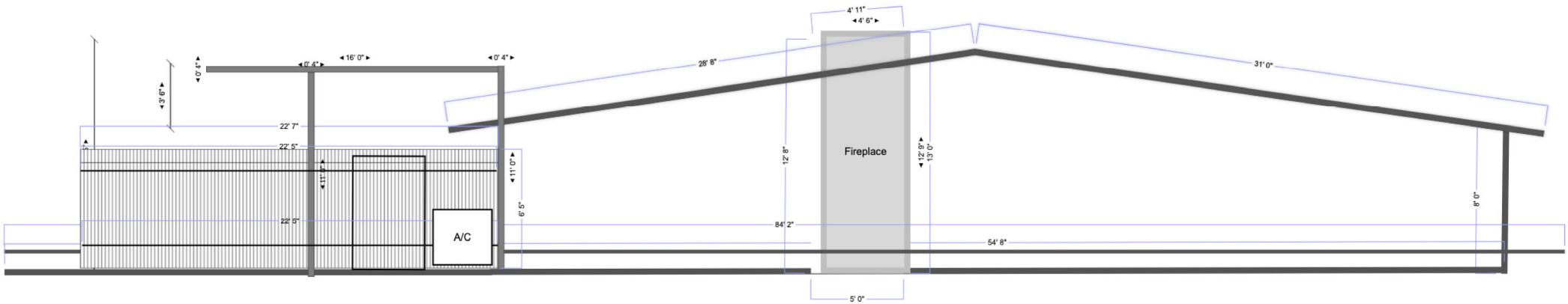
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84' 2"
54' 8"
8' 0"
5' 0"

**Supporting Documentation: Machon Variance for Open-Air Carport and Covered Storage/Seating Area**

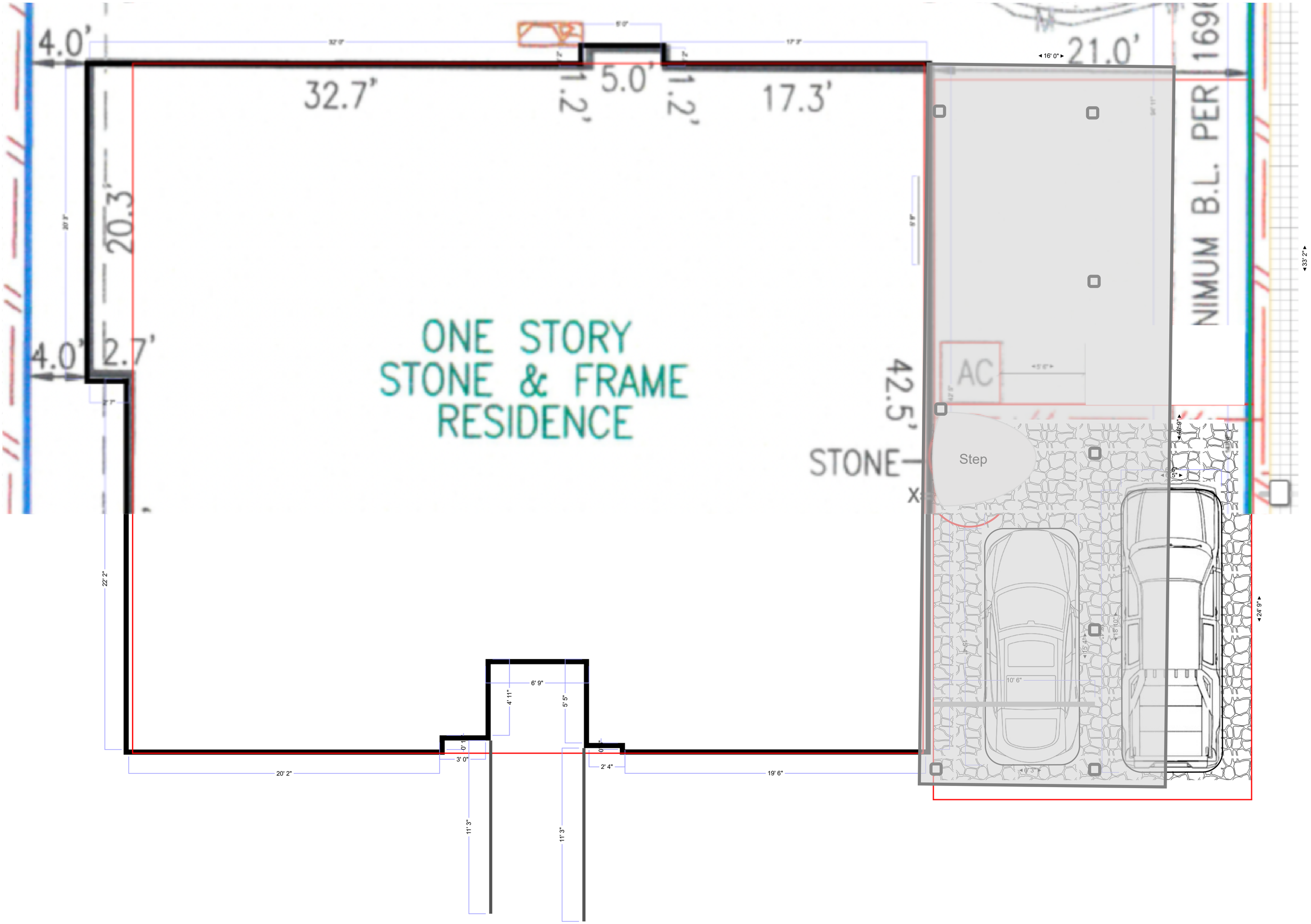
**412 Ridgewood Road**

**Note: There are no less than 10 Homes .2 miles (or less) from The Machon Home with Additions that are outside of the WLH ordinances**

| **Address** | **Description** | **Setback** |
|---|---|---|
| 412 Brady | Carport/Structure | 8’ Setback |
| 415 Brady | Carport/Structure | 7’ Setback |
| 421 Brady | Carport/Structure | 6’ Setback |
| 428 Brady | Carport/Structure | 5’ Setback |
| 429 Brady | Carport/Structure | On top of Property Line |
| 433 Brady | Carport/Structure | On top of Property Line |
| 437 Brady | Carport/Structure | 6’ Setback |
| 429 Ridgewood Road | Carport/Structure | 4’ Setback |
| 3302 Gentry Drive | Carport/Structure | 4’ Setback |
| 3303 Gentry Drive | Carport/Structure | 8’ Setback |

TEXAS
FVX-1445

DIANA'S WAY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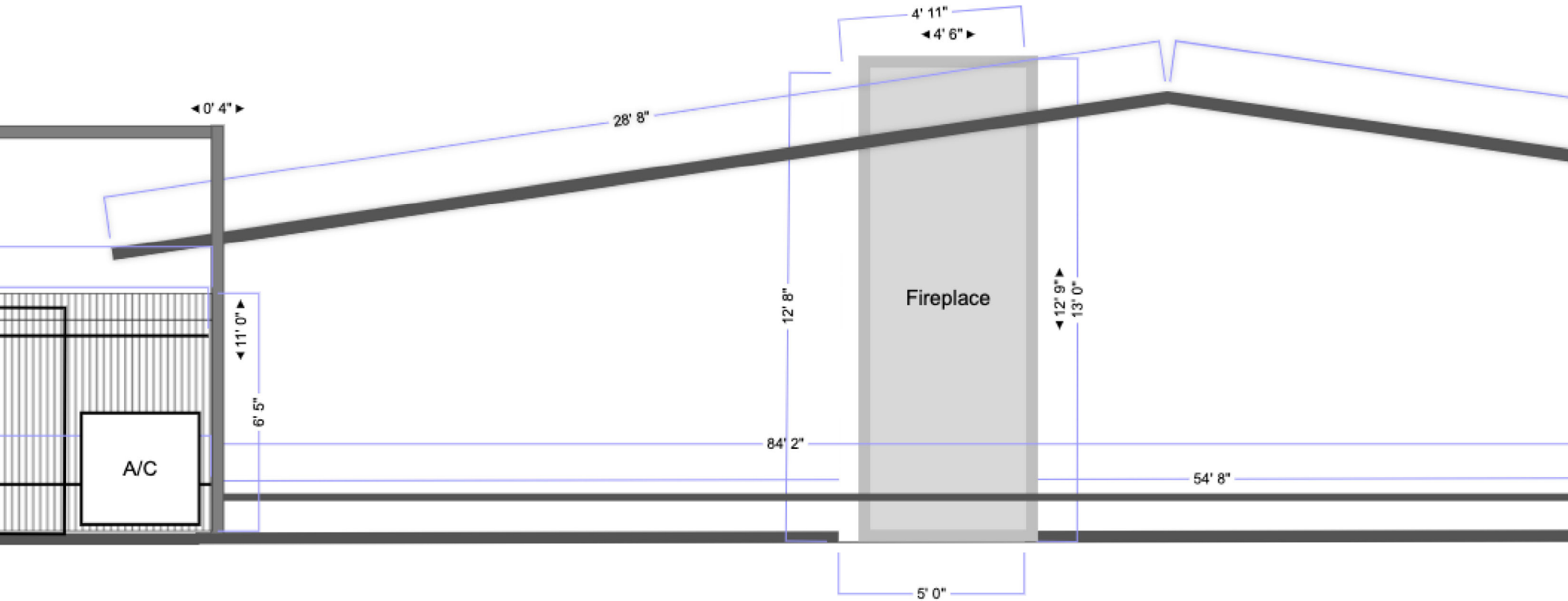
4' 11"
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**FRONT SETBACK, IMPERVIOUS COVER AND TREE VARIANCES**
**STAFF REPORT** **JUNE 22, 2022**

**Project Address:** 5902 Bee Cave Road (Hat Creek Burgers)

**Project Number:** 2022-1037

**Agenda Item:** Land Use: **5902 Bee Cave Road:** Discussion/recommendation on an application for a variance request to encroach in a front setback, exceed the maximum allowable impervious cover and remove one tree with a trunk diameter of fourteen inches or greater (West Lake Hills Code Section 22.03.281 and 22.03.304). Applicant Hat Creek Burgers WLRE LLC (Scott Brown).

**Applicant Information:** Scott Brown

**Hearing Dates:**

| | |
|---|---|
| April 20, 2022, | ZAPCO (ZAPCO meeting cancelled) |
| May 18, 2022, | ZAPCO |
| June 8, 2022, | Board of Adjustment/City Council (Applicant requested postponement) |
| **June 22, 2022,** | **Board of Adjustment/City Council** |

**Location:** The subject property is located at the northeast corner of Bee Cave Road and Loop 360.

**Property Information, Zoning & Site Characteristics:**

Owner: Hat Creek Burgers WLRE LLC
Legal Description: Lot 3 Collins & Bates Subdivision
Lot Size: 1.138 acres (49,571 square feet)
Zoning: B2 – Business 2

The site is surrounded by commercial properties to the north and east, and roadways to the south and west

**Background & Analysis:**
The lot is currently Hat Creek Burgers, and this is a proposed remodel and small addition. They are proposing to add two restrooms on the west side of the lot, which encroach in the front setback along Loop 360. They are also proposing to add to the roof, to make it match their other restaurants.

They are proposing an impervious cover of 78.65%. This site, with the incentives is allowed 43% impervious cover, and the existing site already exceeds the maximum allowable impervious cover. The total addition of impervious cover is 89 square feet. They are adding a dumpster pad for recycling.

They are requesting the removal of one tree, a 16-inch Live Oak, and will be required to replace 24 inches for this tree. The tree currently sits in the footprint of the outdoor dining area.

**Variance Criteria Review:**
When applying for a variance, the applicant has established by competent evidence that:

1. The strict or literal enforcement of the terms of this chapter, because of special conditions, will result in unnecessary hardship to the applicant.
   The application states **–** *"The setback on Loop 360 is 75' which bisects the existing building. The expansion of the roof size increases the encroachment. The existing tree in the deck cannot remain because it would penetrate the roof. The resulting impervious cover is less than existed on the site under the previous site use as a nursery, and an impervious cover variance was granted for the original Hat Creek Burgers site plan."*

2. There will not be unreasonable disruption of the natural terrain or unreasonable destruction of existing flora.
   The application states – *"The site has previously been graded, and the changes to grading and existing vegetation are very minor. The tree proposed for removal from the deck area has the entire root zone covered by roof and deck material and is limited in it's growth potential since it is surrounded by building structure."*

3. There is no reasonable alternative to the requisite variance that will alleviate the difficulty or hardship complained of.
   The application states – *"The site is quite small and has very small limits for alternative designs. There appear to not be any other alternatives to accomplish the proposed changes due to the existing site conditions."*

4. The variance will not be greater than the minimum required to alleviate the difficulty or hardship complained of.
   The application states – *"The entire roof expansion is above existing impervious cover, and the building is already sited across the 75' front building line. Additional structures in front of the building line are slated for removal. The dumpster site expansion adds the ability to add recycling to the site. The two additional parking spaces in the rear are being located over existing impervious cover, limiting the impact to the site."*

5. The variance does not violate the intent of the Zoning Ordinance or goals of the Comprehensive Plan.
   The application states **–** *"The proposed improvements create only limited changes to the site, and are mostly located on the Loop 360 side, or shielded from the north adjacent property by vegetation. The change in roof structure is proposed to bring the site into a standard presentation for the other Hat Creek locations. No change in use is proposed."*

6. The variance will not adversely affect neighboring properties or interfere with the enjoyment of these properties by their owners.
   The application states – *"The proposed improvements are shielded from the property owner to the north by vegetation that will remain unchanged. The east side property is likewise unaffected since the improvements are located primarily away from them. Both are commercial businesses."*

**Outdoor Lighting**
Outdoor lighting is not proposed with this variance request. Any outdoor lighting will need to comply with the City's Code.

**Compliance with Adopted Uniform Building Code**
The property and future construction will have to comply with all applicable City codes.

**Subdivision**
This request will not change the subdivision.

**Comprehensive Planning Analysis**
The existing and future land use is in conformance with the City of West Lake Hills Master Plan.

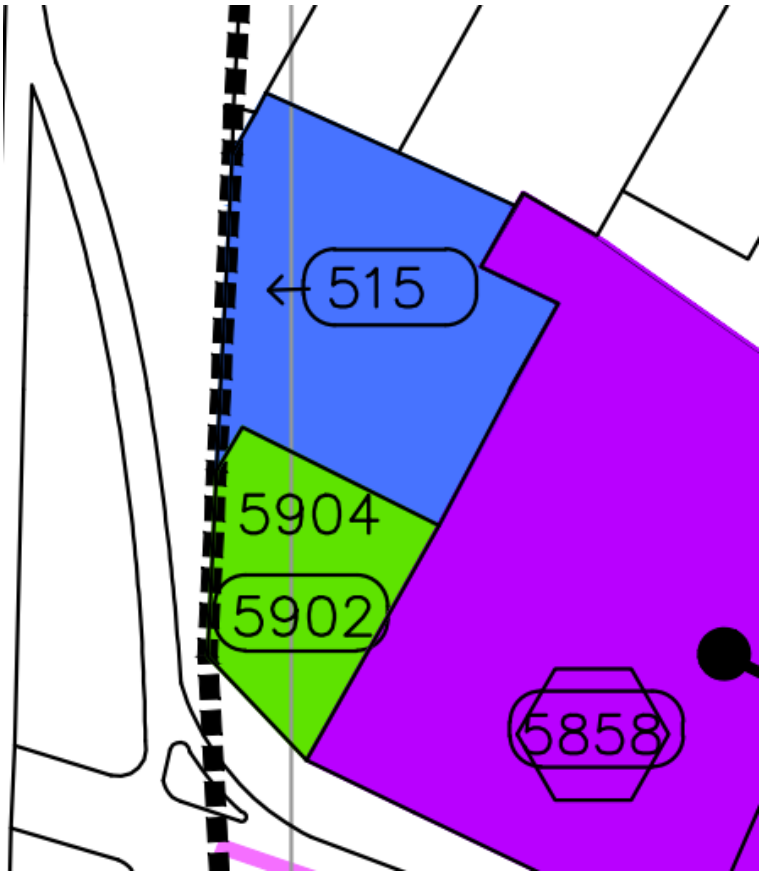
**Zoning and Planning Commission Recommendation**
ZAPCO voted to recommend approval of the setback and impervious cover variances but denial of the tree, unanimously, 4-0.

**Staff Recommendation**
Staff recommends: APPROVAL of the variance request as the lot already exceeds the maximum allowed impervious cover and the proposed improvements will help improve the functionality of the property.

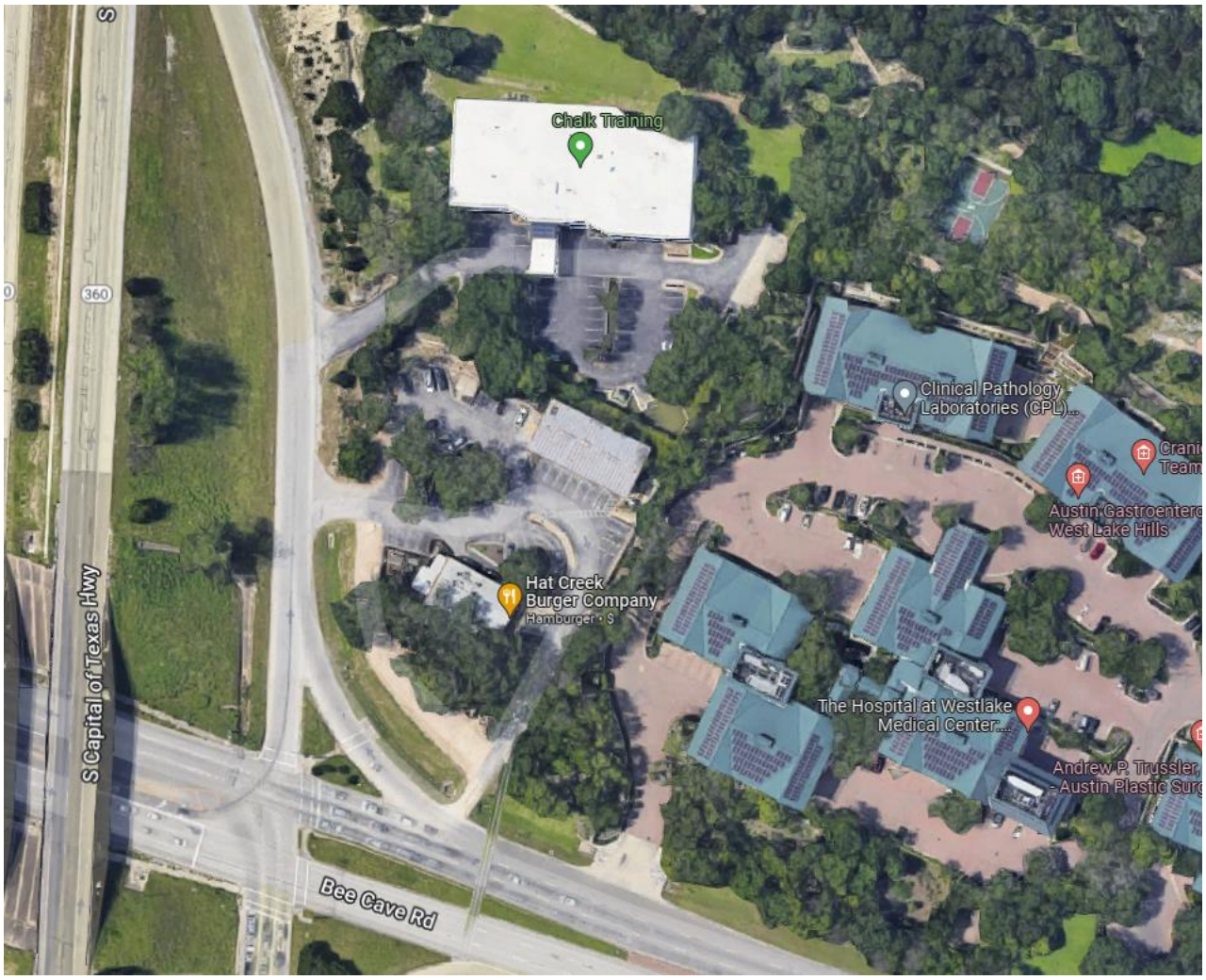
**Links to Relevant Code:**

- Sec. 22.03.281 Schedule of Regulations
- Sec. 22.03.514 Criteria and process required for granting variance
- Sec. 22.03.304 Tree and vegetation removal and replacement

**ZONING MAP**



## AERIAL PHOTO



**BLEYL ENGINEERING**
PLANNING • DESIGN • MANAGEMENT

7701 San Felipe, Suite 200
Austin, TX 78729
512-454-2400

June 16, 2022

Ashby Grundman
City of West Lake Hills
Director of Building & Development Services
911 Westlake Drive
West Lake Hills, Texas 78746

RE: Hat Creek Site Plan Modifications
Project Clarification

Dear Mr. Grundman:

The purpose of this letter is to provide clarification to the project regarding items discussed at the regularly scheduled West Lake Hills ZAPCO meeting of May 18, 2022.

- The primary project scope is to achieve branding of the existing restaurant to bring the site into a state of uniformity with other Hat Creek Burgers locations by constructing an A-frame roof structure above the existing restaurant building. In addition, indoor modifications to the restaurant layout are included in the scope.
- The restaurant rest rooms will be repositioned in a separate structure beneath the A-frame construction.
- An additional trash dumpster will be added to the site for recycling. The dumpster installation represents the only new impervious being added to the site. All other construction is over existing impervious cover.
- The existing site impervious cover is 78.52%. Proposed impervious cover is 78.78%. The impervious cover increase is 130 SF on the 1.13 acre site. (The site impervious cover when used as a nursery was 90.84%).
- The outdoor covered patio structures will be removed. The restroom facility will be further from the Loop 360 ROW than the outdoor structures. Encroachment into the existing 75' front building line (approved in 2011 with the original site plan) will remain.
- An arborist was retained by the owner to provide an analysis of the 16" live oak located with the existing deck that is proposed for removal. The arborist found the tree to be in poor health due to existing development, and deems the tree not likely to survive for an extended time frame beyond the proposed construction. This report has been provided to staff.

Thank you for your consideration of the Hat Creek Burgers Site Plan Modifications. We are available to answer any questions regarding the proposed

Sincerely,

Kenny Watkins

Kenny Watkins, PE
Project Manager

h:\jobfiles\hcb (hat creek burgers)\hcb 70359 (hat creek burgers plan revision)\07 permitting\site plan\comments\city review 2022-05-24\project clarification 2022-06-16.docx

Keith Brown
Austin Tree Experts
ISA Board Certified Master Arborist TX-0985B
[redacted]
www.AustinTreeExperts.com
(512) 996-9100

# Tree Condition Assessment

## Arborist Report

| | |
|---|---|
| **Date** | 16/06/2022 |
| **Project Name** | Hat Creek Burgers |
| **Address** | 5902 Bee Cave Rd |
| **City, State Zip** | Austin, TX 78746 |
| **Introduction** | This report contains tree condition information about a tree located at 5902 Bee Cave Road. The site is in the design phase of construction. |
| **Site Conditions** | The site is a restaurant. The restaurant is open seven days a weeks so site occupancy rate is very high. The tree is located in the patio. The tree trunk grows through the deck and the patio cover was built around the tree. More than 75% of the tree's critical root zone has roof cover. The site has a relatively steep slope. The entire site on the uphill side of the tree is developed with impervious cover. All surface water is shed away from the tree. The trees growing conditions are very arid. Soil is not readily available for evaluation. Given the slope and location, soil type is likely very thin clay in broken rocky substrate. |

## Tree Condition Information

### Trees

| | |
|---|---|
| **Tag Species and DBH** | Live oak in patio near patio doors |
| **Tree Description** | Canopy condition is poor. Foliage size is small (50% of normal size), color is slightly pale and canopy density is very thin. There is tip dieback on all the branch ends.<br><br>Root zone conditions are terrible and are the cause of tree decline in my opinion. The arid conditions described above virtually eliminates the opportunity for water to access the tree's root zone. Heat reflecting from the roof is exacerbating the water stress in the tree.<br><br>Structural integrity of the tree is fair. I did not observe any significant defects, however the lower trunk and root flares are not accessible for inspection.<br><br>In my opinion, the tree is in decline and there are really no meaningful site use changes that will reverse the trajectory of the tree's condition. I estimate the tree has less than 10 years safe life remaining. It's health has deteriorated to the point it is prone to attack by pests. If the wrong insect or disease invades, it could die sooner. In a construction scenario, it is unlikely the tree will survive the first summer past construction. |

Keith Brown
Austin Tree Experts
ISA Board Certified Master Arborist TX-0985B
[redacted]
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(512) 996-9100

## Tree Condition Assessment

photo 1

Keith Brown
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[redacted]
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## Tree Condition Assessment

photo 2

Keith Brown
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ISA Board Certified Master Arborist TX-0985B
[redacted]
www.AustinTreeExperts.com
(512) 996-9100

## Tree Condition Assessment

photo 3

Keith Brown
Austin Tree Experts
ISA Board Certified Master Arborist TX-0985B
[redacted]
www.AustinTreeExperts.com
(512) 996-9100

## Tree Condition Assessment

photo 4

BLEYL ENGINEERING
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12007 Technology Blvd., Suite 150
Austin, TX 78727
(512) 454-2400

March 21, 2022

Ashby Grundman
Director of Building and Development Services
City of West Lake Hills
911 Westlake Drive
West Lake Hills, Texas 78746

RE: **Eanes Aquatics Site Plan Improvements**
**4300 Westbank Drive**
**Austin Texas, 78746**
**Engineer's Summary Letter and Drainage Analysis**

Dear Mr. Grundman:

Bleyl Engineering is pleased to present the attached construction drawings for the proposed modifications to the Hat Creek Burgers site located on the northeast corner of Bee Cave Road and Capital of Texas Highway South. The project is located in the full purpose jurisdiction of the City of West Lake Hills in the Eanes Creek watershed and the Contributing Zone of the Edwards Aquifer. The property is Lot 3, Collins and Bates Subdivision.

## Existing Conditions

The site existed as a nursery business prior to development by the Hat Creek Burger Company in 2011. At that time, the site was processed through the City for approval with variances and has operated in its current configuration since that approval.

## Proposed Conditions

The proposed modifications to the site include a reconfiguration of the exterior roof structure, relocation of the restroom facilities parking lot modifications and expansion of the dumpster enclosure. The roof structure is being modified to coincide with all other locations of the Hat Creek enterprise to facilitate in the current branding theme of their other locations. This site was the initial restaurant in the business, and branding was not essential at the time the previous nursery building was remodeled into the existing restaurant.

The expansion of the dumpster enclosure will allow Hat Creek to add a second dumpster for recycling purposes and effectively manage the solid waste generated by the business. The expansion of the dumpster will necessitate the removal of 1 parking space(s) from the site. These spaces are being reconfigured in the location of existing impervious cover along the northern edge of the site. The total impervious cover for the site will now be 78.65%, which represents an insignificant increase of 0.13%. The increase is reflected on the Site Plan. The impervious cover

remains significantly lower than existed from the time when the site was utilized as a nursery. A variance to the now existing impervious cover amount to exceed the amount allowed by code was approved by the City in 2011.

## Drainage

We have performed a drainage analysis for the site. The drainage patterns for the site are not changed with the proposed site modifications. The increase in impervious cover causes an also insignificant increase in the rate of stormwater runoff when compared with the existing site plan. However, as is demonstrated on the Drainage Plan, the amount of runoff leaving the site is still substantially less than when the site operated under a previous use.

No public utility modifications are proposed with the remodel of the site. Water and wastewater plumbing lines will be reconnected to the newly proposed restroom location.

Temporary erosion and sedimentation controls are proposed to contain the runoff of sediment from the modifications to the parking lot. No stabilized construction entrance is proposed since both entry points to the site are already paved.

Thank you for your consideration of the Hat Creek Burgers Site Plan Modifications. I trust this letter and the accompanying documents will be sufficient for you to process this application through the City of West Lake Hills.

I can be reached at any time if you have questions about the project.

Sincerely,

Kenny Watkins, P.E.
Bleyl Engineering
Project Manager

h:\jobfiles\hcb (hat creek burgers)\hcb 70359 (hat creek burgers plan revision)\03 engineering\02 reports\hcb engineering summary letter.docx

**SPECIAL POWER OF ATTORNEY FORM**

KNOW ALL PERSONS BY THIS DOCUMENT that I, Scott Brown have made, constituted and appointed Bleyl Engineering to be my duly authorized representative in connection with an application dated 03-21-2022, to be heard by the Building Design Committee, Zoning & Planning Commission, and City Council/Board of Adjustment of the City of West Lake Hills, Texas. All representations, whether oral or written, made by the representative in support of the request have the full force and effect of the applicant's approval. I do by this document constitute the above named representative as my true and lawful attorney-in-fact to act in my name, place and stead, to do and perform any act in connection with such application which I myself might perform or do if I was personally present.

Scott Brown
Property Owner/Applicant Name

Property Owner/Applicant Signature

4407 Bee Caves Rd | WestlakeHills | TX | 78746
Street Address | City | State | Zip Code

(512)
Property Owner/Applicant Phone Number

This instrument was acknowledged before me on this the_____ day of _____, 20 _____.

Notary Public in and for the State of Texas

# NOTICE TO NEIGHBORS OF VARIANCE REQUESTS

**DATE OF NOTICE: March 22, 2022**

Greetings. You are hereby notified that **Hat Creek Burger WLRE, LLC)**, the recorded owner of a property located at **5902 Bee Cave Road** in the City of West Lake Hills, Texas have filed an Application with the City of West Lake Hills, Texas requesting variances according to the following Sections of the City's Code of Ordinances:

- **Section 22.03.281 – Encroachment into front building setback;**
- **Section 22.03.281(b) – Exceed maximum approved impervious cover; and**
- **Section 33.03.304 – Removal of a 16" Live Oak Tree.**

The request is so that the property owners may: **Expansion and improvement to a site plan.**

This application is scheduled to be considered at public hearings held by the Zoning and Planning Commission on **April 20, 2022** at **6:30 p.m.** and City Council/BOA on **May 11, 2022** at **7:00 p.m.** at West Lake Hills City Hall, located at 911 Westlake Drive, West Lake Hills, Texas. Please review the agenda packet, which will be posted online at https://www.westlakehills.org/281/Agendas-Minutes the Friday before the meetings by 5:00 p.m., to view the application and instructions on how to participate in the meetings. There shall include an opportunity for all interested persons to be heard. Please call City Hall at 512-327-3628 or email agrundman@westlakehills.gov if you have any questions. Thank you!

Mark Littrell, Zoning & Planning Secretary

ORIGINAL LAYOUT SIZE - 24X36

# Hat Creek Burgers
# Site Modifications

## 5902 Bee Cave Road
## West Lake Hills, Tx. 78746
## Jurisdiction: West Lake Hills

### Submittal Date: March 2022

Project Description: This project consists of the expansion and remodel of the restaurant, parking lot improvements and other impervious cover construction to associated retaining walls and the dumpster pad site on the 1.13 acre site. The total impervious cover is 61.70%

**Revisions/Corrections**

| No. | Description | Revise (R) Add (A) Void (V) Sheet No's | Total # Sheets in Plan Set | Net Change Imp. Cover (sq. ft.) | Total Site Imp. Cover (sq. ft.)/ [%] | City of West Lake Hills Approval /Date | Date Imaged |
|---|---|---|---|---|---|---|---|
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| | | | | | | | |

**Site Development Data Hat Creek Burgers**

Owner: Hat Creek Burger Company
Drew Gresset
4407 Bee Caves Road, Suite 511
Austin, Tx 78746
(512) 732-2025

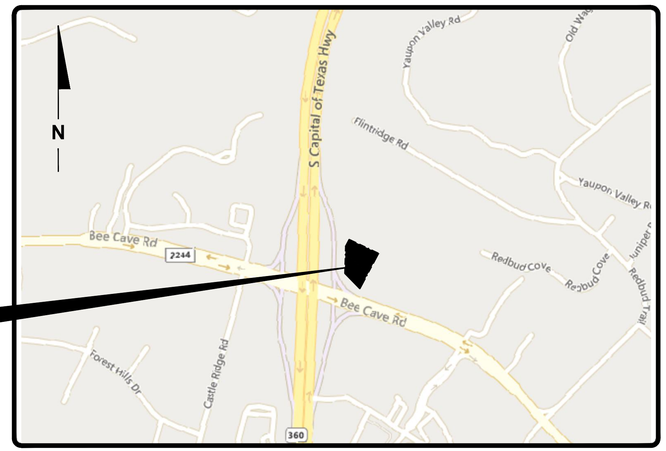
Engineer: Bleyl Engineering
Kenny Watkins
12007 Technology Blvd., Suite 150
Austin, Texas 78727
Phone: (512) 454-2400
kwatkins@bleylengineering.com

Landscape Architect: Company
Contact Person:
Address
City, Texas
Phone:
Email:

Legal Description: Lot 3, Collins and Bates Subdivision

This project is located within the Eanes Creek Watershed. No portion of this tract is within the boundaries of the 100 year flood plain of any waterway that is within the limits of study of the Federal Flood Insurance Administration FIRM panel #48453C0440J, dated January 22, 2020 for Travis County.

All temporary spoils and equipment storage areas shall have silt fence placed along the perimeter of the downslope side. Additional erosion/sedimentation controls may be required at the direction of the City's Environmental and Conservation Services Department Officer/Inspector. The contractor shall work closely with all City Personnel to insure adequacy of placement and maintenance of all erosion/sedimentation control devices. Only those construction entrances shown on the approved site plan shall be used for ingress and egress to and from site. In the event that additional entrance locations are required to facilitate placement of materials, the contractor shall construct a stabilized construction entrance in accordance with City of Austin Standard Details.




**Project Location Map**
**N.T.S.**
**Mapsco #583A**
**City of Austin Grid #E24**

I Kenny Watkins do hereby certify that the engineering work being submitted herein complies with all provisions of the Texas Engineering Practice Act, including Section 131.152(e).
I certify that these engineering documents are complete, accurate and adequate for the intended purposes, including construction, but are not authorized for construction prior to formal City approval.

This Document is Released for the Purpose of Interim Review Under Authority of
Kenny Watkins, P.E. (TX # 64738)
3/21/2022
Date
It is not to be used for Construction

**Sheet List Table**

| Sheet Number | Sheet Title |
|---|---|
| 1 | Cover |
| 2 | Existing Conditions & Demolition Plan |
| 3 | Grading & Erosion Control Plan |
| 4 | Site Plan |
| 5 | Drainage Area Map |

**Owners Certification**

As owner of this property, I intend to develop and maintain this property as described in this plan.

Jeff Buch

I, Kenny Watkins, do hereby certify that the public works and drainage improvements described herein have been designed in compliance with the City of Westlake Hills code of ordinances, the city master plan and city policy.

Kenny Watkins

**City Acceptance Block**

All responsibility for the adequacy of these plans remains with the engineer who prepared them. In accepting these plans, the City of Weslake Hills must rely on upon the adequacy of the work of the Design Engineer.

Accepted for Construction:
City Administrator

All responsibility for the adequacy of these plans remains with the Engineer who prepared them. In reviewing these plans, the City of West Lake Hills must rely upon the adequacy of the work of the Design Engineer.

Bleyl Engineering and its associates will not be held responsible for the accuracy of the survey or for design errors or omissions resulting from survey inaccuracies.

Release of this application does not constitute a verification of all data, information and calculations supplied by the applicant. The engineer of record is solely responsible for the completeness, accuracy and adequacy of his/her submittal, whether or not the application is reviewed for Code compliance by City engineers.


**BLEYL ENGINEERING**
PLANNING • DESIGN • MANAGEMENT
*12007 Technology Blvd, Ste 150, Austin TX 78727*
*Texas Firm Registration No. F-678*
*Tel. 512-454-2400*
*www.bleylengineering.com*
AUSTIN BRYAN CONROE HOUSTON


| Revision | Date | By | App | Comment |
|---|---|---|---|---|
| | | | | |

Prepared For:
Drew Gressett
Hat Creek Burgers
4407 Bee Cave Road, Ste 511
Austin, Texas 78746

HCB 70359 (HAT CREEK BURGERS PLAN REVISION)


**BLEYL ENGINEERING**
PLANNING • DESIGN • MANAGEMENT
*12007 Technology Blvd, Ste 150, Austin TX 78727*
*Texas Firm Registration No. F-678*
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AUSTIN BRYAN CONROE HOUSTON


**Cover**

Hat Creek Burgers
5902 Bee Caves Road
Austin, Texas 78746
Travis County

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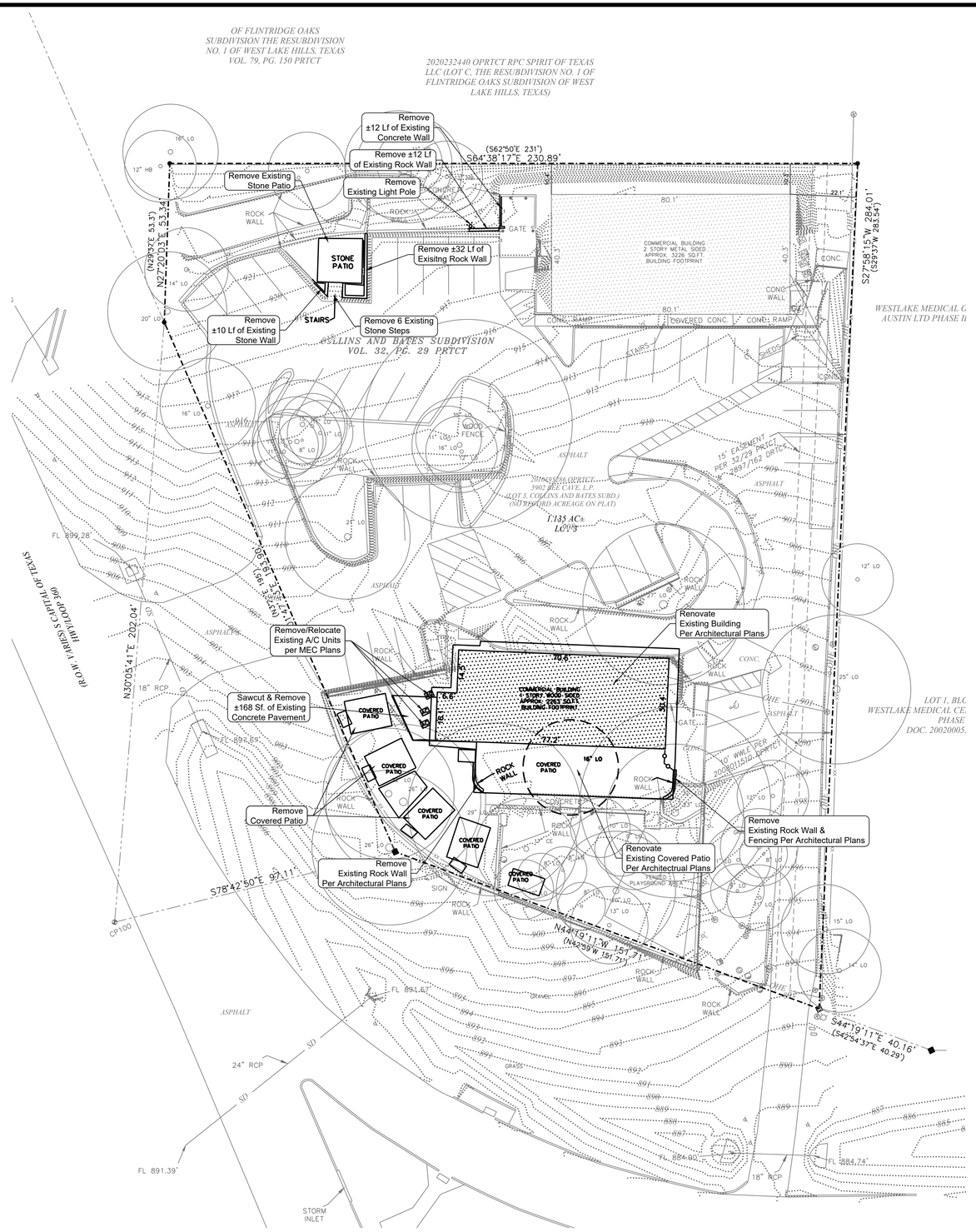
Kenny Watkins, P.E. (TX # 64738)
3/21/2022
Date
It is not to be used for Construction

Design: KW, CS
CAD: CS | Review: KW
Project No: HCB 70359
Sheet: 1 of TBD


@2022 HLJOBFILES\HCB (HAT CREEK BURGERS)\HCB 70359 (HAT CREEK BURGERS PLAN REVISION)\04 CAD\PLOT SHEETS\COVER.DWG 3/21/2022 Alexis Estrada

ORIGINAL LAYOUT SIZE - 24X36




## Tree Legend

| | |
|---|---|
| 3447 — Trees to remain | 3268H — Heritage Trees |
| 3268P — Protected Trees | 3268 — Trees to be Removed |

## Site Demolition Notes

1. Install all tree protection fencing as per sheet 3.
2. All demolition within the full critical root zone of preserved trees to be performed with hand tools only.
3. A pre-construction meeting with the Environmental Inspector is required prior to any site disturbance.
4. All abandoned piping is to be plugged.
5. Existing trees on the site are to remain unless noted otherwise.
6. Contractor is to remove all demolished materials from site, and to repair or replace any materials or items designated to remain.
7. Demolition work should be completed prior to any commencement of work on the proposed building remodel.

## Legal Description

Lot 3, Collins and Bates Subdivision.

## Benchmarks

TBM - Bee Caves entrance culvert 18" RCP east flowline.
Elevation = 884.74'

Texas 811
Call Before You Dig!!

The location of all existing utilities shown on these plans has been based upon record information only and may not match locations as constructed. The contractor shall contact Texas 811 for assistance in determining existing utility locations prior to beginning construction. Contractor shall field verify locations of utility crossings prior to beginning construction.

Release of this application does not constitute a verification of all data, information and calculations supplied by the applicant. The engineer of record is solely responsible for the completeness, accuracy and adequacy of his/her submittal, whether or not the application is reviewed for Code compliance by City engineers.

| Revision | Date | By | App | Comment |
|---|---|---|---|---|
| | | | | |

Prepared For:
Drew Gressett
Hat Creek Burgers
4407 Bee Cave Road, Ste 511
Austin, Texas 78746

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AUSTIN BRYAN CONROE HOUSTON

# Existing Conditions & Demolition Plan

## Hat Creek Burgers

5902 Bee Caves Road
Austin, Texas 78746
Travis County

This Document is Released for the Purpose of Interim Review Under Authority of
Kenny Watkins, P.E. (TX # 64738)
3/21/2022
Date
It is not to be used for Construction

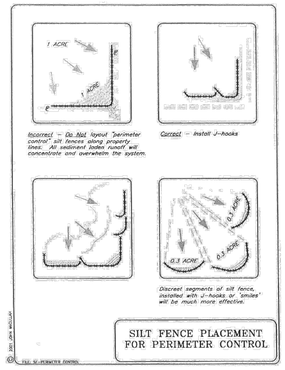
Design: KW, CS
CAD: CS | Review: KW
Project No: HCB 70359
Sheet: 2 of TBD

@2022 HUOBFILES\HCB (HAT CREEK BURGERS\HCB 70359 (HAT CREEK BURGERS PLAN REVISION)\04 CAD\PLOT SHEETS\DEMO PLAN.DWG 3/21/2022 Alexis Estrada

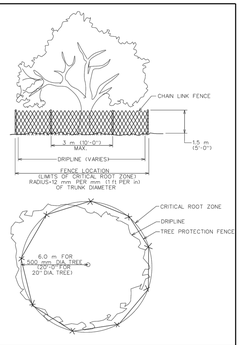
ORIGINAL LAYOUT SIZE - 24X36

©2022 H:\OBFILES\HCB (HAT CREEK BURGERS)\HCB 70359 (HAT CREEK BURGERS PLAN REVISION)\04 CAD\PLOT SHEETS\EROSION & SEDIMENTATION PLAN DWG 3/21/2022 Alexis Estrada

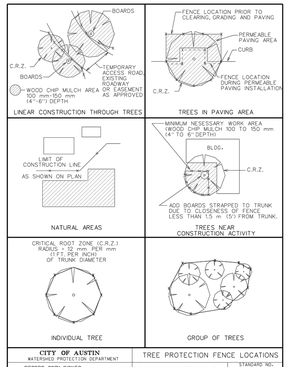
**Figure 1.4.5.G.3 Silt Fence Placement for Perimeter Control**



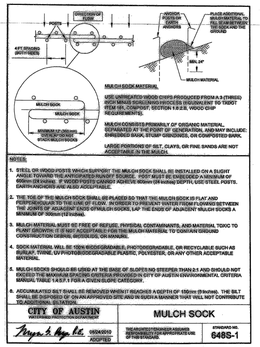

SILT FENCE PLACEMENT FOR PERIMETER CONTROL



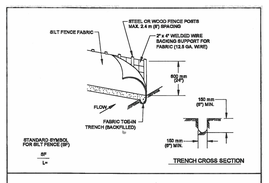

| CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT | | TREE PROTECTION FENCE TYPE A - CHAIN LINK | |
|---|---|---|---|
| RECORD COPY SIGNED BY J. PATRICK MURPHY | 11/5/99 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 610S-2 |




| CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT | | TREE PROTECTION FENCE LOCATIONS | |
|---|---|---|---|
| RECORD COPY SIGNED BY J. PATRICK MURPHY | 11/5/99 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 610S-1 |

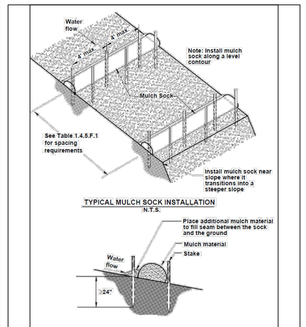

WOOD POSTS
MULCH SOCK
MULCH SOCK MATERIAL
MULCH SOCK DIA.
MULCH SOCK
MULCH MATERIAL
APT STAKES SPACED 3 m (10'-0") MAX.
MULCH SOCK
MULCH SOCK MATERIAL
USE SHREDDED WOOD CHIPS PRODUCED FROM A 3-STRIKE SCREENING PROCESS (SCREENING PROCESS DESIGNED BY TXDOT WITH 16", 3"&1" GRIZZLY SECTION + ELS, WOOD CHIP REQUIREMENTS).
MULCH CONSISTS PRIMARILY OF ORGANIC MATERIAL, SEPARATED AT THE POINT OF GENERATION, AND MAY INCLUDE: EMBEDDED BARK, STUMP GRINDINGS, OR COMPOSTED BARK.
LARGE PORTIONS OF SILT, CLAYS, OR FINE SANDS ARE NOT ACCEPTABLE IN THE MIXES.
NOTES:
1. STEEL OR WOOD POSTS WHICH SUPPORT THE MULCH SOCK SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300mm (12 inches). IF WOOD POSTS CANNOT ACHIEVE WIDH (18 inches) DEPTH, USE STEEL POSTS. EARTH ANCHORS ARE ALSO ACCEPTABLE.
2. THE TOE OF THE MULCH HOOD SHALL BE PLACED SO THAT THE MULCH SOCK IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW. IN ORDER TO PREVENT WATER FROM FLOWING BETWEEN THE JOINTS OF ADJACENT SOCKS WITHOUT LAP THE END OF ADJACENT MULCH SOCKS A MINIMUM OF 150mm (12"H)DING.
3. MULCH MATERIAL MUST BE FREE OF REFUSE, PHYSICAL CONTAMINANTS, AND MATERIAL TOXIC TO PLANT GROWTH. IT IS NOT ACCEPTABLE FOR THE MULCH MATERIAL TO CONTAIN GROUND CONSTRUCTION DEBRIS, ROOTBALLS, OR MINERAL.
4. SOCK MATERIAL WILL BE 100% BIODEGRADABLE, PHOTODEGRADABLE, OR RECYCLABLE SUCH AS BURLAP, TWINE, UV PHOTODEGRADABLE PLASTIC, POLYESTER, OR ANY OTHER ACCEPTABLE MATERIAL.
5. MULCH SOCKS SHOULD BE USED AT THE BASE OF SLOPES NO STEEPER THAN 3:1 AND SHOULD NOT EXCEED THE MINIMUM SPACING CRITERIA PROVIDED IN CITY OF AUSTIN ENVIRONMENTAL CRITERIA MANUAL TABLE 1.4.5.F.1 FOR A CHANNEL SLOPE CATEGORY.
6. ACCUMULATED SILT SHALL BE REMOVED WHENIT REACHES A DEPTH OF 150mm (6inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

| CITY OF AUSTIN | | MULCH SOCK | |
|---|---|---|---|
| Gregory S. Hogg, P.E. | 08/04/2010 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 648S-1 |

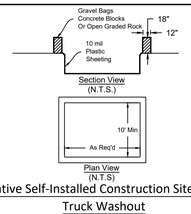



1. STEEL OR WOOD POSTS WHICH SUPPORT THE SILT FENCE SHALL BE INSTALLED ON A SLIGHT ANGLE TOWARD THE ANTICIPATED RUNOFF SOURCE. POST MUST BE EMBEDDED A MINIMUM OF 300 mm (12 INCHES). IF WOOD POSTS CANNOT ACHIEVE 300 mm (12 inches) DEPTH, USE STEEL POSTS.
2. THE TOE OF THE SILT FENCE SHALL BE TRENCHED IN WITH A SPADE OR MEDIUM/SIL TRENCHER, SO THAT THE DOWNSLOPE FACE OF THE TRENCH IS FLAT AND PERPENDICULAR TO THE LINE OF FLOW.
3. THE TRENCH MUST BE A MINIMUM OF 150 mm (6 Inches) DEEP AND 150 mm (6 Inches) WIDE TO ALLOW FOR THE SILT FENCE FABRIC TO BE LAID IN THE GROUND AND BACKFILLED WITH COMPACTED MATERIAL.
4. SILT FENCE FABRIC SHOULD BE SECURELY FASTENED TO EACH STEEL OR WOOD SUPPORT POST OR TO WOVEN WIRE , WHICH IS IN TURN ATTACHED TO THE STEEL OR WOOD FENCE POST.
5. INSPECTION SHALL BE MADE WEEKLY OR AFTER EACH RAINFALL EVENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
6. SILT FENCE SHALL BE REMOVED WHEN THE SITE IS COMPLETELY STABILIZED 80-A3 NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.
7. ACCUMULATED SILT SHALL BE REMOVED WHEN IT REACHES A DEPTH OF 150 mm (6 Inches). THE SILT SHALL BE DISPOSED OF ON AN APPROVED SITE AND IN SUCH A MANNER THAT WILL NOT CONTRIBUTE TO ADDITIONAL SILTATION.

| CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT | | SILT FENCE | |
|---|---|---|---|
| Gregory S. Hogg, P.E. | 9/12/01 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THE STANDARD. | STANDARD NO. 642S-1 |

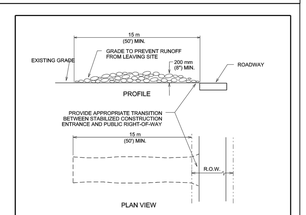



Mulch Sock Detail
(Figure 1.4.5.F)



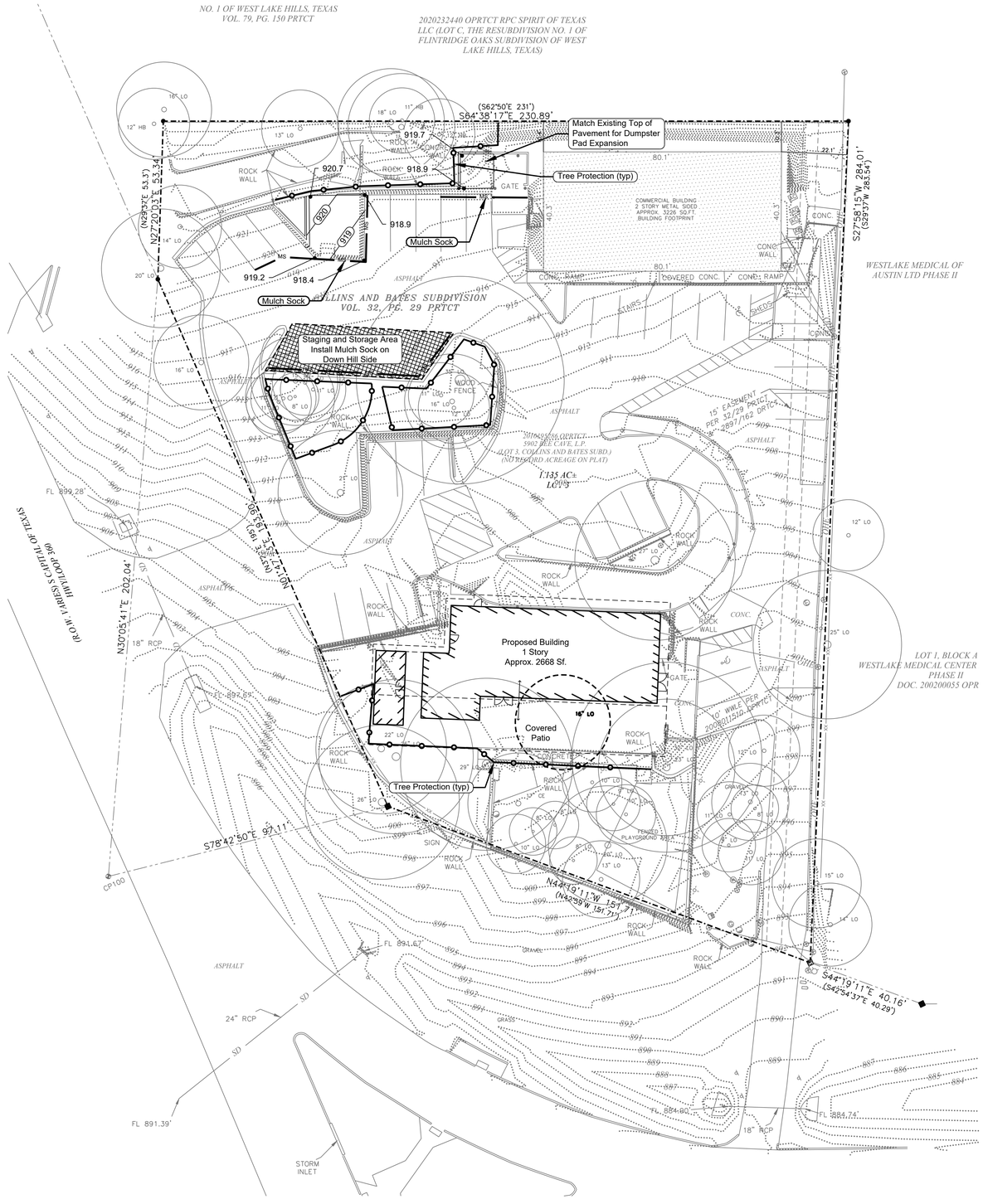

## Alternative Self-Installed Construction Site Concrete Truck Washout

1. The excavation for the concrete truck washout shall be a minimum of 10' wide and of sufficient length and depth to accommodate 7 gallons of washout water and concrete per truck per day and/or 50 gallons of washout water and concrete per pump truck per day.
2. In the event that the self-installed concrete truck washout is constructed above ground, it shall be 10' wide and 10' long with the same requirements for containment as described in item 1.
3. The containment area shall be lined with 10 mil plastic sheeting, without holes or tears. Where there are seams, these shall be secured according to manufacturers directions.
4. The plastic sheeting shall be of sufficient size so that it will overlap the top of the containment area and be wrapped around the gravel bags, concrete blocks or open graded rock as least 2 times.
5. The gravel bags or concrete blocks shall be placed abutting each other to form a continuous berm around the outer perimeter of the containment area.
6. The berm consisting of gravel bags, concrete blocks or open graded rock shall be no less than 18" high and no less that 12" wide.
7. The containment area shall not exceed 50% of capacity at any one time.
8. Solids shall be removed from containment area and disposed of properly and any damage to the plastic sheeting shall be repaired or sheeting replaced before next use.




NOTES:
1. STONE SIZE: 75-125 mm (3-5") OPEN GRADED ROCK.
2. LENGTH: AS EFFECTIVE BUT NOT LESS THAN 15 m (50').
3. THICKNESS: NOT LESS THAN 200 mm (8").
4. WIDTH: NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS/EGRESS.
5. WASHING: WHEN NECESSARY, VEHICLE WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC ROADWAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH OR WATERCOURSE USING APPROVED METHODS.
6. MAINTENANCE: THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC ROADWAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND, AS WELL AS REPAIR AND CLEAN OUT OF ANY MEASURES DEVICES USED TO TRAP SEDIMENT. ALL SEDIMENTS THAT IS SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADWAY MUST BE REMOVED IMMEDIATELY.
7. DRAINAGE: ENTRANCE MUST BE PROPERLY GRADED OR INCORPORATE A DRAINAGE SWALE TO PREVENT RUNOFF FROM LEAVING THE CONSTRUCTION SITE.

| CITY OF AUSTIN WATERSHED PROTECTION DEPARTMENT | | STABILIZED CONSTRUCTION ENTRANCE | |
|---|---|---|---|
| RECORD COPY SIGNED BY J. PATRICK MURPHY | 5/23/00 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. | STANDARD NO. 641S-1 |




0 20' 40'
Scale 1" = 20'

## Legend

- LOC — Proposed Limits of Construction
- SF — Proposed Silt Fence
- MS — Proposed Mulch Sock
- Proposed Tree Protection Fence
- Proposed Inlet Protection
- Tree to be Removed

## Legal Description

Lot 3, Collins and Bates Subdivision.

## Benchmarks

TBM - Bee Caves entrance culvert 18" RCP east flowline.
Elevation = 884.74'

## Erosion Notes

1. A preconstruction meeting with the Environmental Inspector is required prior to any site disturbance.
2. Silt fence type and installation shall comply with ECM 1.4.2(G)
3. If disturbed area is not to be worked on for more than 14 days, disturbed area needs to be stabilized by revegetation, mulch, tarp or revegetation matting.
4. Environmental Inspector has the authority to add and/or modify erosion/sedimentation controls on site to keep project in-compliance with the City of Austin Rules and Regulations. [LDC 25-8-183].
5. Contractor shall utilize dust control measures during site construction such as irrigation trucks and mulching as per ECM 1.4.5(A), or as directed by the Environmental Inspector.
6. The contractor will clean up spoils that migrate onto the roads a minimum of once daily. [ECM 1.4.4.D.4]

Texas 811
Call Before You Dig!!

The location of all existing utilities shown on these plans has been based upon record information only and may not match locations as constructed. The contractor shall contact Texas 811 for assistance in determining existing utility locations prior to beginning construction. Contractor shall field verify locations of utility crossings prior to beginning construction.

Release of this application does not constitute a verification of all data, information and calculations supplied by the applicant. The engineer of record is solely responsible for the completeness, accuracy and adequacy of his/her submittal, whether or not the application is reviewed for Code compliance by City engineers.

| Revision | Date | By | App | Comment |
|---|---|---|---|---|
| | | | | |

Prepared For:
Drew Gressett
Hat Creek Burgers
4407 Bee Cave Road, Ste 511
Austin, Texas 78746

BLEYL ENGINEERING
PLANNING • DESIGN • MANAGEMENT
12007 Technology Blvd, Ste 150, Austin TX 78727
Texas Firm Registration No. F-678
Tel. 512-454-2400
www.bleylengineering.com
AUSTIN BRYAN CONROE HOUSTON

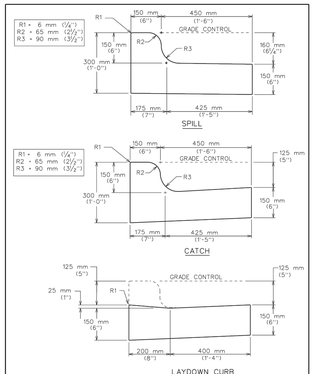
# Grading & Erosion Control Plan

## Hat Creek Burgers
5902 Bee Caves Road
Austin, Texas 78746
Travis County

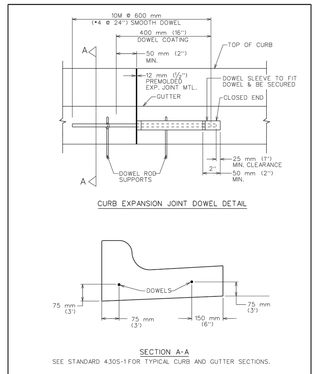
This Document is Released for the Purpose of Interim Review Under Authority of
Kenny Watkins, P.E. (TX # 64736)
3/21/2022
Date
It is not to be used for Construction

| | |
|---|---|
| Design: | KW, CS |
| CAD: | CS Review: KW |
| Project No: | HCB 70359 |
| Sheet: | 3 of TBD |

ORIGINAL LAYOUT SIZE - 24X36

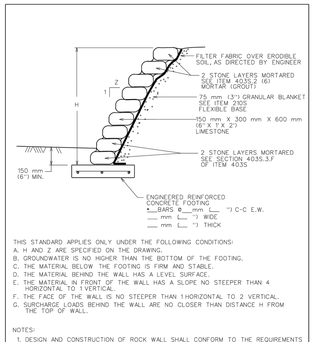



| CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS | | CURB AND GUTTER SECTION |
|---|---|---|
| RECORD COPY SIGNED BY LINO RIVERA | 9/25/99 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 430S-1 |




SEE STANDARD 430S-1 FOR TYPICAL CURB AND GUTTER SECTIONS.

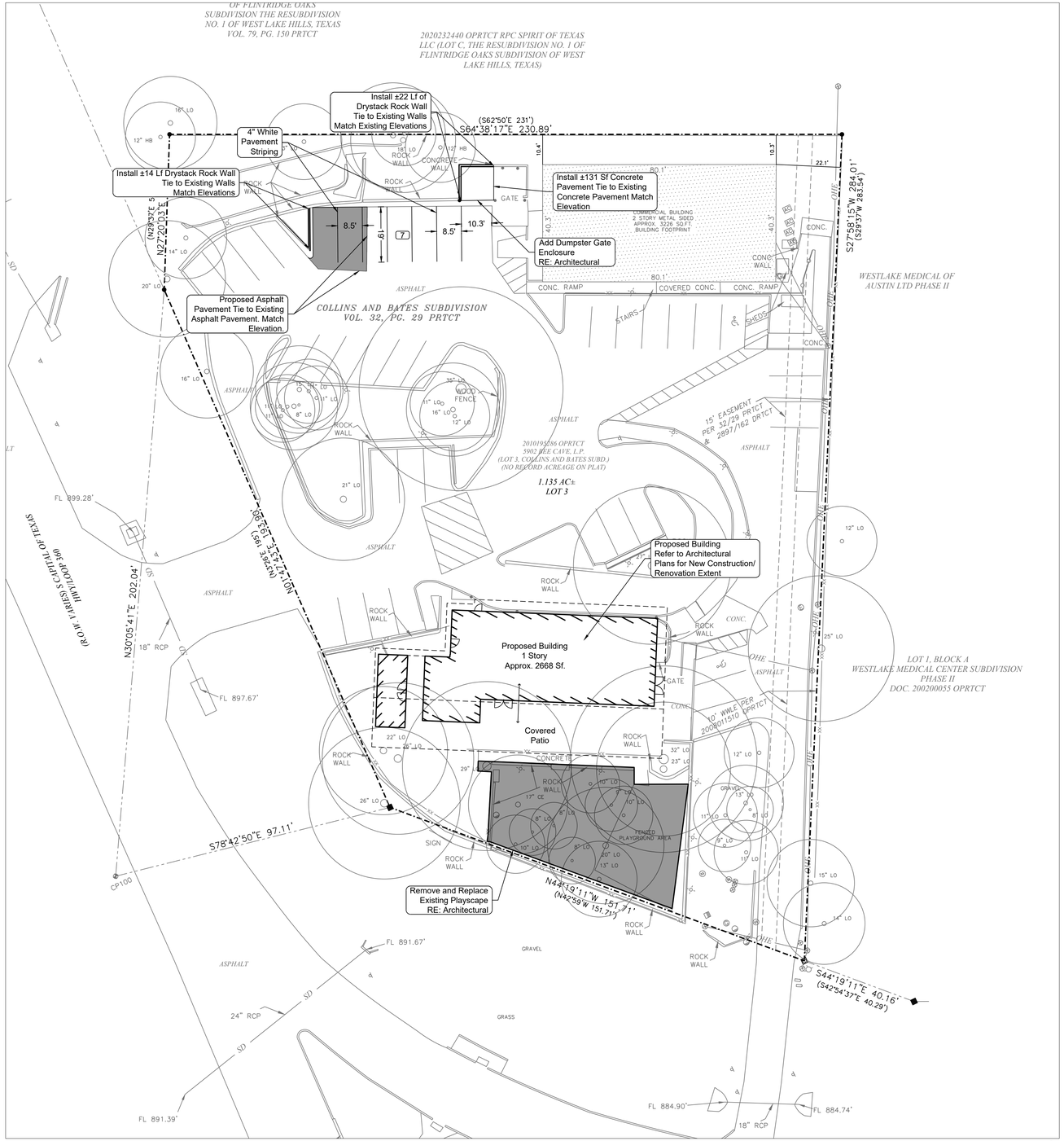
| CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS | | CURB EXPANSION JOINT DOWEL DETAIL |
|---|---|---|
| RECORD COPY SIGNED BY LINO RIVERA | 9/25/99 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 430S-3 |




THIS STANDARD APPLIES ONLY UNDER THE FOLLOWING CONDITIONS:
A. H AND Z ARE SPECIFIED ON THE DRAWING.
B. GROUNDWATER IS NO HIGHER THAN THE BOTTOM OF THE FOOTING.
C. THE MATERIAL BELOW THE FOOTING IS FIRM AND STABLE.
D. THE MATERIAL BEHIND THE WALL HAS A LEVEL SURFACE.
E. THE MATERIAL IN FRONT OF THE WALL HAS A SLOPE NO STEEPER THAN 4 HORIZONTAL TO 1 VERTICAL.
F. THE FACE OF THE WALL IS NO STEEPER THAN 1 HORIZONTAL TO 2 VERTICAL.
G. SURCHARGE LOADS BEHIND THE WALL ARE NO CLOSER THAN DISTANCE H FROM THE TOP OF WALL.

NOTES:
1. DESIGN AND CONSTRUCTION OF ROCK WALL SHALL CONFORM TO THE REQUIREMENTS OF CITY CODE 16-7-2, PLACEMENT OF FENCES IN STREET CORNER AREAS, AND THE CITY OF AUSTIN TRANSPORTATION CRITERIA MANUAL FOR MINIMM SIGHT DISTANCE.
2. CONCRETE SHALL CONFORM TO ITEM 403S, "CONCRETE FOR STRUCTURES".

| CITY OF AUSTIN DEPARTMENT OF PUBLIC WORKS | | DRY STACK ROCK WALL FOR SLOPE PROTECTION |
|---|---|---|
| RECORD COPY SIGNED BY BILL GARDNER | 03/13/06 ADOPTED | THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR APPROPRIATE USE OF THIS STANDARD. STANDARD NO. 623S-1 |




0 20' 40'

Scale 1" = 20'

## Legal Description

Lot 3, Collins and Bates Subdivision.

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Elevation = 884.74'

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| Revision | Date | By | App | Comment |
|---|---|---|---|---|
| | | | | |

Prepared For:
Drew Gressett
Hat Creek Burgers
4407 Bee Cave Road, Ste 511
Austin, Texas 78746

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AUSTIN BRYAN CONROE HOUSTON

# Site Plan

## Hat Creek Burgers
5902 Bee Caves Road
Austin, Texas 78746
Travis County

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Kenny Watkins, P.E. (TX # 64738)
3/21/2022
Date
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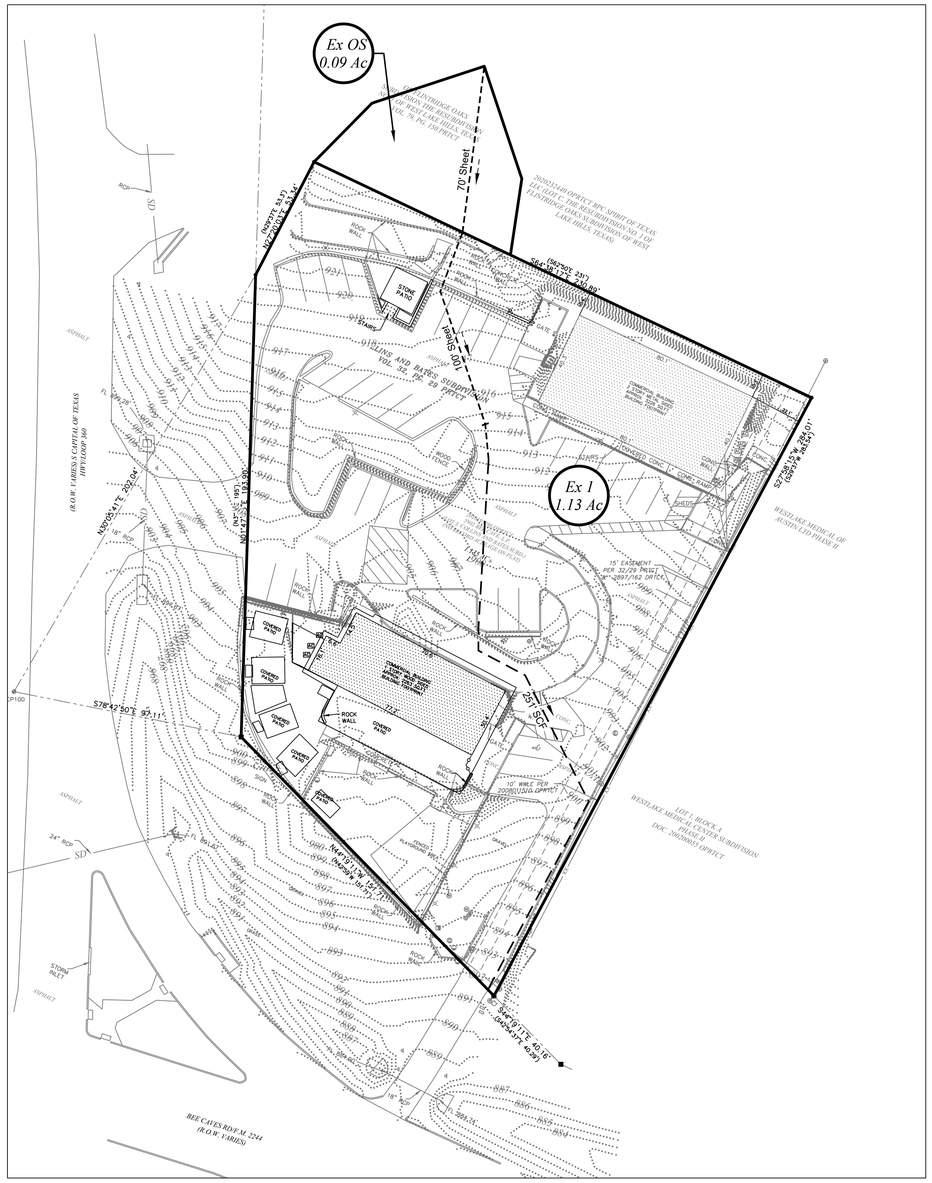
Design: KW, CS
CAD: CS | Review: KW
Project No: HCB 70359
Sheet: 4 of TBD

@2022 H:\JOBFILES\HCB (HAT CREEK BURGERS)\HCB 70359 (HAT CREEK BURGERS PLAN REVISION)\04 CAD\PLOT SHEETS\SITE PLAN COA DWG 3/21/2022 Alexis Estrada

ORIGINAL LAYOUT SIZE - 24X36




Existing Drainage Area Map

Proposed Drainage Area Map

**Existing Atlas 14 Rational Method Runoff Calculations (2011 - Predeveloped Nursery Site)**

Private Post-Development Rational Method Calculations

| Basin Name | Area (ac) | Impervious Cover (%) | Impervious Area (ac) | Pervious Area (ac) | $T_c$ (min) | 2-Year Storm Coefficient (C) | 2-Year Storm Intensity, I (in/hr) | 2-Year Storm Runoff, Q (cfs) | 10-Year Storm Coefficient (C) | 10-Year Storm Intensity, I (in/hr) | 10-Year Storm Runoff, Q (cfs) | 25-Year Storm Coefficient (C) | 25-Year Storm Intensity, I (in/hr) | 25-Year Storm Runoff, Q (cfs) | 100-Year Storm Coefficient (C) | 100-Year Storm Intensity, I (in/hr) | 100-Year Storm Runoff, Q (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ex OS | 0.09 | 0.00 | 0.00 | 0.09 | 5 | 0.34 | 6.31 | 0.19 | 0.40 | 9.61 | 0.35 | 0.44 | 11.79 | 0.47 | 0.51 | 15.42 | 0.71 |
| Ex 1 | 1.13 | 90.84 | 1.03 | 0.10 | 5 | 0.71 | 6.31 | 5.06 | 0.78 | 9.61 | 8.47 | 0.83 | 11.79 | 11.06 | 0.92 | 15.42 | 16.03 |

**Proposed Atlas 14 Rational Method Runoff Calculations (2011 - Original Hat Creek Burgers Site Plan)**

Private Post-Development Rational Method Calculations

| Basin Name | Area (ac) | Impervious Cover (%) | Impervious Area (ac) | Pervious Area (ac) | $T_c$ (min) | 2-Year Storm Coefficient (C) | 2-Year Storm Intensity, I (in/hr) | 2-Year Storm Runoff, Q (cfs) | 10-Year Storm Coefficient (C) | 10-Year Storm Intensity, I (in/hr) | 10-Year Storm Runoff, Q (cfs) | 25-Year Storm Coefficient (C) | 25-Year Storm Intensity, I (in/hr) | 25-Year Storm Runoff, Q (cfs) | 100-Year Storm Coefficient (C) | 100-Year Storm Intensity, I (in/hr) | 100-Year Storm Runoff, Q (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pro OS | 0.09 | 0.00 | 0.00 | 0.09 | 5 | 0.34 | 6.31 | 0.19 | 0.40 | 9.61 | 0.35 | 0.44 | 11.79 | 0.47 | 0.51 | 15.42 | 0.71 |
| Pro 1 | 1.13 | 78.52 | 0.89 | 0.24 | 5 | 0.65 | 6.31 | 4.61 | 0.73 | 9.61 | 7.93 | 0.79 | 11.79 | 10.53 | 0.86 | 15.42 | 14.91 |

**Post-Developed Atlas 14 Rational Method Runoff Calculations (2022)**

Private Post-Development Rational Method Calculations

| Basin Name | Area (ac) | Impervious Cover (%) | Impervious Area (ac) | Pervious Area (ac) | $T_c$ (min) | 2-Year Storm Coefficient (C) | 2-Year Storm Intensity, I (in/hr) | 2-Year Storm Runoff, Q (cfs) | 10-Year Storm Coefficient (C) | 10-Year Storm Intensity, I (in/hr) | 10-Year Storm Runoff, Q (cfs) | 25-Year Storm Coefficient (C) | 25-Year Storm Intensity, I (in/hr) | 25-Year Storm Runoff, Q (cfs) | 100-Year Storm Coefficient (C) | 100-Year Storm Intensity, I (in/hr) | 100-Year Storm Runoff, Q (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Pro OS | 0.09 | 0.00 | 0.00 | 0.09 | 5 | 0.34 | 6.31 | 0.19 | 0.40 | 9.61 | 0.35 | 0.44 | 11.79 | 0.47 | 0.51 | 15.42 | 0.71 |
| Pro 1 | 1.13 | 78.65 | 0.89 | 0.24 | 5 | 0.65 | 6.31 | 4.61 | 0.73 | 9.61 | 7.93 | 0.79 | 11.79 | 10.53 | 0.86 | 15.42 | 14.92 |

**CN Calculations**

| ID | Drainage Area: Open Space (Lawns, parks, golf courses, cemeteries, etc), Good Condition - 80 AC | Drainage Area: Impervious Areas - Paved parking lots, roofs, driveways, Streets and roads - Soil D - 98 AC | Total Area AC | Average Sum CN |
|---|---|---|---|---|
| | 80 | 98 | | |
| EX OS | 0.090 | 0.000 | 0.09 | 80 |
| EX 1 | 0.104 | 1.027 | 1.13 | 96 |
| PRO OS | 0.090 | 0.000 | 0.09 | 80 |
| PRO 1 | 0.241 | 0.889 | 1.13 | 94 |

**TIME OF CONCENTRATION**

| Drainage Area ID | OVERLAND SHEET FLOW n | Length | $P_2$* | Slope | Overland Travel Time | SHALLOW CONCENTRATED FLOW Slope | Distance | Surface ("Paved" or "Unpaved") | Velocity Coefficient** | Velocity | Shallow Concentrated Flow Travel Time | TOTAL Travel Distance | TOTAL Time of Concentration (Calculated) | TOTAL Time of Concentration (Computational) | TOTAL Lag Time (Calculated) | TOTAL Time of Concentration (Computational) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Name | none | ft | inches | ft/ft | min | ft/ft | ft | type | none | ft/s | min | ft | min | min | min | min |
| EX 1 | 0.150 | 100.00 | 4.14 | 0.1570 | 3.78 | 0.0900 | 251.00 | Paved | 20.33 | 6.10 | 0.69 | 351.00 | 4.46 | 5.00 | 2.68 | 3.00 |
| EX OS | 0.015 | 70.00 | 4.14 | 0.1000 | 0.54 | 0.0000 | 0.00 | Unpaved | 16.13 | 0.00 | 0.00 | 70.00 | 0.54 | 5.00 | 0.32 | 3.00 |
| PRO OS | 0.015 | 70.00 | 4.14 | 0.1000 | 0.54 | 0.0000 | 0.00 | Unpaved | 16.13 | 0.00 | 0.00 | 70.00 | 0.54 | 5.00 | 0.32 | 3.00 |
| PRO 1 | Developed | | | | | | | | | | | 351.00 | 4.46 | 5.00 | 2.68 | 3.00 |

0 30' 60'
Scale 1" = 30'

| Revision | Date | By | App | Comment |
|---|---|---|---|---|
| | | | | |

Prepared For:
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Drainage Area Map

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Kenny Watkins, P.E. (TX # 64738)
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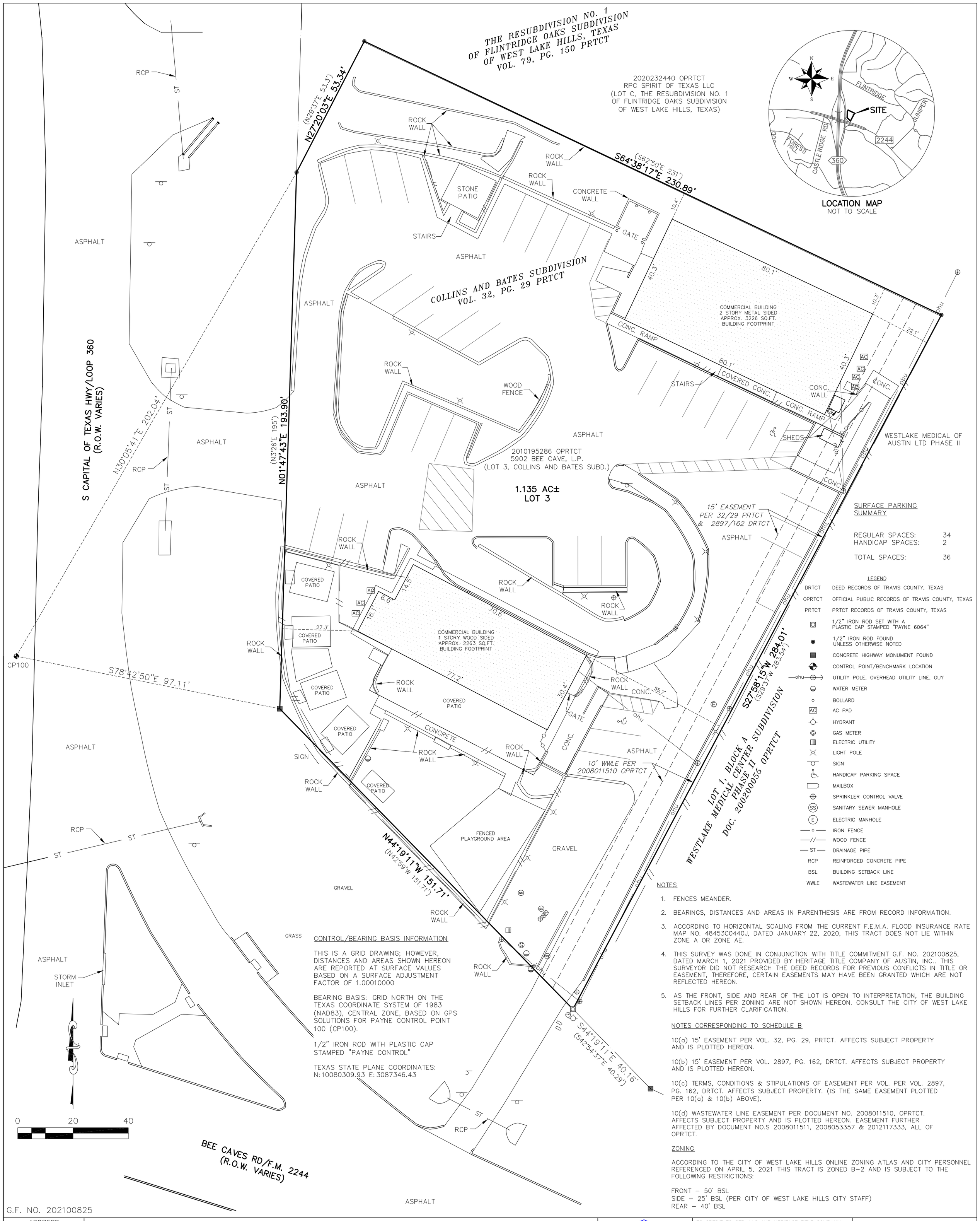
Design: KW, CS
CAD: CS | Review: KW
Project No: HCB 70359
Sheet: 5 of TBD

@2022 I:\JOBFILES\HCB (HAT CREEK BURGERS\HCB 70359 (HAT CREEK BURGERS PLAN REVISION\04 CAD\PLOT SHEETS\DRAINAGE AREA MAPS.DWG 3/21/2022 Alexis Estrada




SURFACE PARKING SUMMARY

| | |
|---|---|
| REGULAR SPACES: | 34 |
| HANDICAP SPACES: | 2 |
| TOTAL SPACES: | 36 |

LEGEND

| | |
|---|---|
| DRTCT | DEED RECORDS OF TRAVIS COUNTY, TEXAS |
| OPRTCT | OFFICIAL PUBLIC RECORDS OF TRAVIS COUNTY, TEXAS |
| PRTCT | PRTCT RECORDS OF TRAVIS COUNTY, TEXAS |
| | 1/2" IRON ROD SET WITH A PLASTIC CAP STAMPED "PAYNE 6064" |
| | 1/2" IRON ROD FOUND UNLESS OTHERWISE NOTED |
| | CONCRETE HIGHWAY MONUMENT FOUND |
| | CONTROL POINT/BENCHMARK LOCATION |
| —ohu— | UTILITY POLE, OVERHEAD UTILITY LINE, GUY |
| | WATER METER |
| | BOLLARD |
| AC | AC PAD |
| | HYDRANT |
| © | GAS METER |
| | ELECTRIC UTILITY |
| | LIGHT POLE |
| | SIGN |
| | HANDICAP PARKING SPACE |
| | MAILBOX |
| | SPRINKLER CONTROL VALVE |
| SS | SANITARY SEWER MANHOLE |
| E | ELECTRIC MANHOLE |
| —o— | IRON FENCE |
| —//— | WOOD FENCE |
| — ST — | DRAINAGE PIPE |
| RCP | REINFORCED CONCRETE PIPE |
| BSL | BUILDING SETBACK LINE |
| WWLE | WASTEWATER LINE EASEMENT |

CONTROL/BEARING BASIS INFORMATION

THIS IS A GRID DRAWING; HOWEVER, DISTANCES AND AREAS SHOWN HEREON ARE REPORTED AT SURFACE VALUES BASED ON A SURFACE ADJUSTMENT FACTOR OF 1.00010000

BEARING BASIS: GRID NORTH ON THE TEXAS COORDINATE SYSTEM OF 1983 (NAD83), CENTRAL ZONE, BASED ON GPS SOLUTIONS FOR PAYNE CONTROL POINT 100 (CP100).

1/2" IRON ROD WITH PLASTIC CAP STAMPED "PAYNE CONTROL"

TEXAS STATE PLANE COORDINATES:
N:10080309.93 E:3087346.43

NOTES

1. FENCES MEANDER.
2. BEARINGS, DISTANCES AND AREAS IN PARENTHESIS ARE FROM RECORD INFORMATION.
3. ACCORDING TO HORIZONTAL SCALING FROM THE CURRENT F.E.M.A. FLOOD INSURANCE RATE MAP NO. 48453C0440J, DATED JANUARY 22, 2020, THIS TRACT DOES NOT LIE WITHIN ZONE A OR ZONE AE.
4. THIS SURVEY WAS DONE IN CONJUNCTION WITH TITLE COMMITMENT G.F. NO. 202100825, DATED MARCH 1, 2021 PROVIDED BY HERITAGE TITLE COMPANY OF AUSTIN, INC.. THIS SURVEYOR DID NOT RESEARCH THE DEED RECORDS FOR PREVIOUS CONFLICTS IN TITLE OR EASEMENT, THEREFORE, CERTAIN EASEMENTS MAY HAVE BEEN GRANTED WHICH ARE NOT REFLECTED HEREON.
5. AS THE FRONT, SIDE AND REAR OF THE LOT IS OPEN TO INTERPRETATION, THE BUILDING SETBACK LINES PER ZONING ARE NOT SHOWN HEREON. CONSULT THE CITY OF WEST LAKE HILLS FOR FURTHER CLARIFICATION.

NOTES CORRESPONDING TO SCHEDULE B

10(a) 15' EASEMENT PER VOL. 32, PG. 29, PRTCT. AFFECTS SUBJECT PROPERTY AND IS PLOTTED HEREON.

10(b) 15' EASEMENT PER VOL. 2897, PG. 162, DRTCT. AFFECTS SUBJECT PROPERTY AND IS PLOTTED HEREON.

10(c) TERMS, CONDITIONS & STIPULATIONS OF EASEMENT PER VOL. PER VOL. 2897, PG. 162, DRTCT. AFFECTS SUBJECT PROPERTY. (IS THE SAME EASEMENT PLOTTED PER 10(a) & 10(b) ABOVE).

10(d) WASTEWATER LINE EASEMENT PER DOCUMENT NO. 2008011510, OPRTCT. AFFECTS SUBJECT PROPERTY AND IS PLOTTED HEREON. EASEMENT FURTHER AFFECTED BY DOCUMENT NO.S 2008011511, 2008053357 & 2012117333, ALL OF OPRTCT.

ZONING

ACCORDING TO THE CITY OF WEST LAKE HILLS ONLINE ZONING ATLAS AND CITY PERSONNEL REFERENCED ON APRIL 5, 2021 THIS TRACT IS ZONED B-2 AND IS SUBJECT TO THE FOLLOWING RESTRICTIONS:

FRONT – 50' BSL
SIDE – 25' BSL (PER CITY OF WEST LAKE HILLS CITY STAFF)
REAR – 40' BSL

G.F. NO. 202100825

| | |
|---|---|
| ADDRESS: | 5902 BEE CAVES RD., WEST LAKE HILLS, TX |
| JOB NUMBER: | 2102-001 |
| CLIENT: | HAT CREEK BURGERS |
| DATE: | 4/5/2021 |
| FIELD CREW: | DJ/JS |
| OFFICE: | LSB/PP |
| FB/PG: | BV18/41 |

# AS-BUILT SURVEY OF LOT 3, COLLINS AND BATES SUBDIVISION A SUBDIVISION OF RECORD RECORDED IN VOLUME 32, PAGE 29 PLAT RECORDS OF TRAVIS COUNTY, TEXAS

STATE OF TEXAS
REGISTERED
PHILLIP C. PAYNE
6064
PROFESSIONAL
LAND SURVEYOR

TO CREDIT TO CTP, LLC AND HERITAGE TITLE COMPANY OF AUSTIN, INC. EXCLUSIVELY, AND FOR USE WITH THIS TRANSACTION ONLY:

I HEREBY STATE TO THE BEST OF MY KNOWLEDGE: THAT THIS PLAT IS TRUE AND CORRECT ACCORDING TO AN ACTUAL SURVEY MADE ON THE GROUND ON MARCH 18, 2021; THAT ALL CORNERS ARE MONUMENTED AS SHOWN HEREON; AND THAT THERE ARE NO VISIBLE ENCROACHMENTS OR OVERLAPPING OF IMPROVEMENTS, EXCEPT AS SHOWN OR NOTED HEREON.

4/5/2021

PHILLIP C. PAYNE, R.P.L.S. NO. 6064
FIRM NO. 10194453

CITY OF WEST LAKE HILLS, TRAVIS COUNTY, TEXAS

PAYNE INDUSTRIES
302 W. Hopkins, Ste. 1A, San Marcos, TX 78666
(512) 663-0004 www.payne-ls.com

CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT

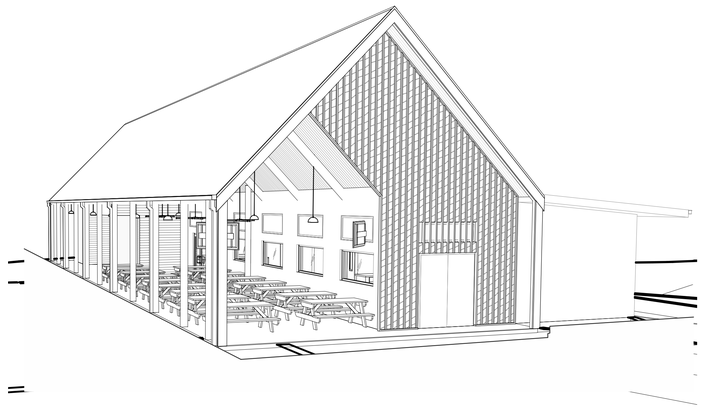
## OWNER PROVIDED CHART

| # | ITEM | SUPPLIED BY OWNER | INSTALLED BY GC | INSTALLED BY OWNER | FINISHING TOUCHES REQUIRED BY GC SUB | NOTES | REMARKS |
|---|---|---|---|---|---|---|---|
| 1 | WALK-IN COOLERS, CONDENSERS, COILS | X | | X | X | | |
| 2 | REFRIGERATION LINES TO ICE MACHINES AND WALK-INS | | X | | | | |
| 3 | STAINLESS STEEL WALL PANELING AT COOKLINE, PREP LINE AND DISHWASH AREA | | X | | | | |
| 4 | STAINLESS STEEL CORNER GUARDS | | X | | | | |
| 5 | STAINLESS STEEL CUSTOM KITCHEN EQUIPMENT | X | | X | | | |
| 6 | KITCHEN EQUIPMENT | X | | X | X | | |
| 7 | ALL LIGHT FIXTURES, LIGHT BULBS, AS INDICATED PER PLANS | | X | | | | LIGHT PACKAGE SUPPLIED AND INSTALLED BY G.C. |
| 8 | INTERIOR DECOR PACKAGE, ARTWORK | X | | | | | |
| 9 | TELEVISION | X | | X | | | |
| 10 | BUILDING SIGNS | X | | X | | | ROUGH INS BY G.C. |
| 11 | LANDSCAPE AND IRRIGATION | | | | | | CHASES BY G.C. |
| 12 | PYLON, AND/OR MONUMENT SIGN | X | | X | X | | FOUNDATION, CONDUIT AND WIRING BY G.C. |

1. ADA SIGNS FOR RESTROOM BY G.C. MISC. STICK ON SIGNS, DESIGNATING VARIOUS UTILITY ROOMS AND DELIVERY HOURS, THAT ARE FURNISHED BY OWNER, TO BE INSTALLED BY G.C.
2. G.C. TO PROVIDE CONDUIT WITH PULL STRINGS
3. RECEIVE AND PROTECT EQUIPMENT, COORDINATE WITH MEP TRADES AND SUPPLIER. GREASE PIPING FURNISHED AND INSTALLED BY G.C.

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746



## ARCHITECT'S CONSULTANTS

### STRUCTURAL ENGINEER
W.G.I.
WALNUT HILL LANE, SUITE #903
DALLAS, TX 75231

CONRAD LOVEJOY
PH: (214) 307 4767
conrad.lovejoy@wginc.com

### MECHANICAL ENGINEER
NOVA ENGINEERING
4819 TX-121 #12
THE COLONY, TX 75056

BRIAN MCFADDEN
PH: (972) 323 7300
bmcfadden@nova-engineering.net

### PLUMBING ENGINEER
NOVA ENGINEERING
4819 TX-121 #12
THE COLONY, TX 75056

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THE COLONY, TX 75056

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## OWNER'S CONSULTANTS

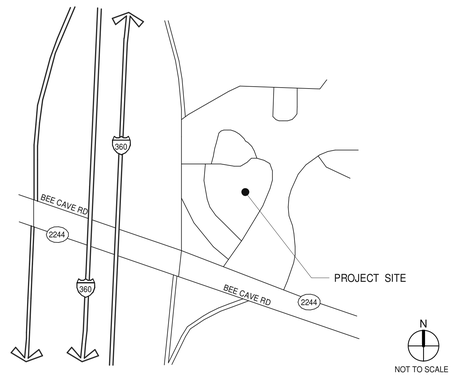
### CIVIL ENGINEER
BLEYL ENGINEERING
12007 Technology Blvd #150
Austin, TX 78727

KENNY WATKINS
PH: (512) 917 0630
kwatkins@bleylendineering.com

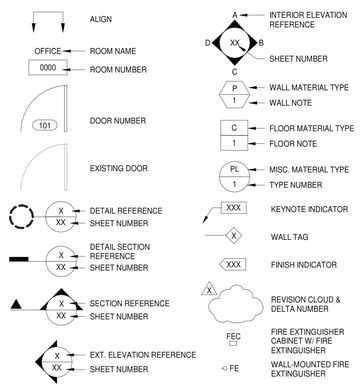
### KITCHEN VENDOR
TOP SHELF DESIGN

JIMMY DOBBS
PH: (214) 499 5096
jimmy@topshelfdesigngroup.com

## SITE LOCATION MAP




## SYMBOL LEGEND




## OWNER CONTACT

### HAT CREEK BURGER
HAT CREEK BURGER
4407 BEE CAVE RD., SUITE #212
AUSTIN, TX 78746

SCOTT BROWN
PH: (512) 732 1214
scott@hatcreekburgers.com

## GENERAL CONTRACTOR

### ALLIANCE BUILDERS
ALLIANCE BUILDERS
15436 FISHEER ISLAND DR
AUSTIN, TX 78717

BRAD WHITE
PH: (512) 584-5083
brad@alliancebuilders.us

## ARCHITECTURAL CONTACT

### WARE MALCOMB
1919 MCKINNEY AVENUE #100
DALLAS, TX 75201

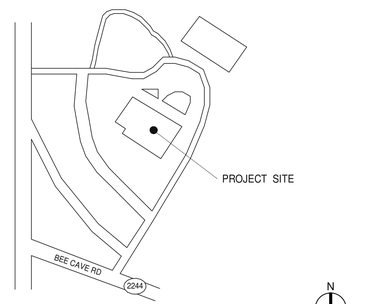
STEVEN COX
P 583.5379
scox@waremalcomb.com
PH: (281) 954 2514 ext. 1712
(940) 389 8835

## DEFERRED SUBMITTALS

DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ARCHITECT AND ENGINEERS OF RECORD WHO SHALL REVIEW AND PROVIDE NOTATION INDICATING DOCUMENTS HAVE BEEN REVIEWED AND FOUND TO BE IN GENERAL CONFORMANCE WITH THE BUILDING DESIGN. SUBMITTAL MATERIALS SHALL INCLUDE PLANS, DETAILS AND CALCULATIONS PREPARED AND SIGNED BY A STATE REGISTERED ENGINEER.
CONTRACTOR SHALL SUBMIT ARCHITECT AND ENGINEER REVIEWED SUBMITTAL MATERIALS TO THE BUILDING OFFICIAL FOR REVIEW AND PERMIT APPROVAL. DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED PRIOR TO OBTAINING THE BUILDING OFFICIAL'S APPROVAL OF THE SUBMITTAL.

1. EXTERIOR BUILDING SIGNAGE.

## SITE VICINITY MAP




## SHEET INDEX

TOTAL SHEETS 64

SHEET ISSUED ON DATE INDICATED, WITH MODIFICATIONS ●
SHEET ISSUED ON DATE INDICATED, NO MODIFICATIONS ○

| | | ISSUE 03/30/2022 |
|---|---|---|
| **ARCHITECTURAL** | | |
| T1.1 | TITLE SHEET | ● |
| T1.1a | PROJECT DATA | ● |
| A0.2 | GENERAL NOTES | ● |
| A0.2a | GENERAL NOTES | ● |
| A0.3 | ACCESSIBILITY DETAILS | ● |
| A1.0 | SITE PLAN | ● |
| A1.1 | OCCUPANCY AND EGRESS PLAN | ● |
| AD0.1 | DEMOLITION FLOOR PLAN | ● |
| AD0.2 | DEMOLITION CEILING PLAN | ● |
| AD0.3 | DEMOLITION ROOF PLAN | ● |
| AD0.4 | DEMOLITION EXTERIOR ELEVATIONS | ● |
| AD0.5 | DEMOLITION EXTERIOR ELEVATIONS | ● |
| A2.0 | FOUNDATION PLAN | ● |
| A2.1 | FLOOR PLAN | ● |
| A2.2 | REFLECTED CEILING PLAN | ● |
| A2.3 | FINISH PLAN AND SCHEDULE | ● |
| A3.0 | ROOF PLAN | ● |
| A4.1 | EXTERIOR ELEVATIONS | ● |
| A4.2 | EXTERIOR ELEVATIONS | ● |
| A5.0 | BUILDING SECTIONS | ● |
| A5.1 | BUILDING SECTIONS | ● |
| A5.2 | WALL SECTIONS | ● |
| A5.3 | WALL SECTIONS | ● |
| A6.1 | ENLARGED RESTROOM PLAN AND RESTROOM ELEVATIONS | ● |
| A6.2 | INTERIOR ELEVATIONS | ● |
| A6.3 | INTERIOR ELEVATIONS | ● |
| A6.4 | INTERIOR ELEVATIONS | ● |
| A7.1 | DOOR SCHEDULE AND WINDOW SCHEDULE | ● |
| A8.1 | EXTERIOR DETAILS | ● |
| A8.2 | WINDOW, DOOR AND INTERIOR DETAILS | ● |
| SP.1 | SPECIFICATIONS | ● |
| SP.2 | SPECIFICATIONS | ● |
| SP.3 | SPECIFICATIONS | ● |
| SP.4 | SPECIFICATIONS | ● |
| SP.5 | SPECIFICATIONS | ● |
| SP.6 | SPECIFICATIONS | ● |
| SP.7 | SPECIFICATIONS | ● |
| SP.8 | SPECIFICATIONS | ● |
| SP.9 | SPECIFICATIONS | ● |
| SP.10 | SPECIFICATIONS | ● |
| SP.11 | SPECIFICATIONS | ● |
| SP.12 | SPECIFICATIONS | ● |
| ARCHITECTURAL SHEET COUNT: 42 | | |
| **STRUCTURAL** | | |
| S-000 | COVER SHEET | ● |
| S-100 | GENERAL NOTES | ● |
| S-101 | SPECIAL INSPECTIONS | ● |
| S-200 | FOUNDATION PLAN | ● |
| S-210 | LOW FRAMING PLAN | ● |
| S-211 | HIGH FRAMING PLAN | ● |
| S-300 | TYPICAL FOUNDATION DETAILS | ● |
| S-301 | TYPICAL FOUNDATION DETAILS | ● |
| S-500 | TYPICAL FRAMING DETAILS | ● |
| S-501 | TYPICAL FRAMING DETAILS | ● |
| S-502 | ENLARGED FRAMING DETAILS | ● |
| S-503 | ENLARGED FRAMING DETAILS | ● |
| STRUCTURAL SHEET COUNT: 12 | | |
| **MECHANICAL** | | |
| MEP1.00 | COVERSHEET - MEP | ● |
| MEP1.01 | SPECIFICATIONS - MEP | ● |
| M2.01 | FLOOR PLAN - MECHANICAL | ● |
| MECHANICAL SHEET COUNT: 3 | | |
| **PLUMBING** | | |
| P2.00 | UNDERFLOOR PLAN - PLUMBING | ● |
| P2.01 | FLOOR PLAN - PLUMBING | ● |
| P5.01 | SCHEDULES AND DETAILS - PLUMBING | ● |
| PLUMBING SHEET COUNT: 3 | | |
| **ELECTRICAL** | | |
| E2.01 | FLOOR PLAN - ELECTRICAL | ● |
| ELECTRICAL SHEET COUNT: 1 | | |

WARE MALCOMB
ARCHITECTURE CIVIL ENGINEERING PLANNING INTERIORS BUILDING MEASUREMENT
1919 McKinney Avenue, Suite #100
Dallas, TX 75201
P 469.583.5379

REGISTERED ARCHITECT CHRISTOPHER PRATT 20198 STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

TITLE SHEET

| DATE | REMARKS |
|---|---|
| 03.03.2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

SHEET T1.1

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4/5/2022 4:59:24 PM

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# BUILDING ENVELOPE DATA

## FOR BUILDING SHELL:

| | |
|---|---|
| ROOF INSULATION | R-30 |
| WALL INSULATION | R-21 |

## HOLLOW METAL DOORS

| | |
|---|---|
| U-FACTOR | 0.5 |

# PROJECT DESCRIPTION

THIS IS AN EXISTING BUILDING REMODEL OF A PRE-MANUFACTURED METAL BUILDING WHERE WE'RE ADDING IN AN A-FRAME ELEMENT OVER HALF OF THE RESTAURANT TO BRING IT UP TO CURRENT HAT CREEK DESIGN STANDARDS. WE ARE ALSO RELOCATING THE RESTROOMS TO PROVIDE ADDITIONAL KITCHEN SPACE.

# ABBREVIATIONS

| | | | | | |
|---|---|---|---|---|---|
| ∠ | ANGLE | G.B. | GRAB BAR | R.B. | RUBBER / RESILIENT BASE |
| ℄ | CENTERLINE | G.C. | GENERAL CONTRACTOR | R.C.P. | REFLECTED CEILING PLAN |
| # | POUND or NUMBER | G.F.I. | GROUND FAULT INTERRUPT | R.D. | ROOF DRAIN |
| & | AND | GA. | GAUGE | R.O. | ROUGH OPENING |
| (E) | EXISTING | GALV. | GALVANIZED | R.O.W. | RIGHT OF WAY |
| @ | AT | GL. | GLASS | R.T.U. | ROOF TOP UNIT |
| ~ | DIAMETER or ROUND | GND. | GROUND | R.W.L. | RAIN WATER LEADER |
| Ø | DIAMETER | GR. | GRADE | RAD. | RADIUS |
| | | GYP. | GYPSUM | REF. | REFERENCE |
| A.D. | AREA DRAIN | | | REFR. | REFRIGERATOR |
| ACOUS. | ACOUSTICAL | H.B. | HOSE BIBB | REINF. | REINFORCE(D) |
| ADJ. | ADJUST, ADJUSTABLE or ADJACENT | H.C. | HOLLOW CORE | REQ. | REQUIRED |
| | | H.M. | HOLLOW METAL | RESIL. | RESILIENT |
| AGGR. | AGGREGATE | H.P. | HIGH POINT | RGTR. | REGISTER |
| AL. | ALUMINUM | H.V. | HIGH VOLTAGE | RM. | ROOM |
| APPROX. | APPROXIMATE(LY) | HDWD. | HARDWOOD | RWD. | REDWOOD |
| ARCH. | ARCHITECTURAL | HDWE. | HARDWARE | | |
| ASB. | ASBESTOS | HORIZ. | HORIZONTAL | S. | SOUTH |
| ASPH. | ASPHALT | HR. | HOUR | S.A.F. | SELF-ADHERED FLASHING |
| | | HT. | HEIGHT | S.C. | SOLID CORE |
| B.O.C. | BOTTOM OF CONCRETE | | | S.C.D. | SEAT COVER DISPENSER |
| B.O.M. | BOTTOM OF MULLION | I.D. | INSIDE DIMENSION | S.D. | SOAP DISPENSER |
| B.O.P. | BOTTOM OF PANEL | I.H.P. | INTERMEDIATE HIGH POINT | S.F. | SQUARE FOOT |
| B.O.R. | BOTTOM OF REVEAL | INSUL. | INSULATION or INSULATED | S.I. | SQUARE INCH |
| BD. | BOARD | INT. | INTERIOR | S.N.D. | SANITARY NAPKIN DISPENSER |
| BITUM. | BITUMINOUS | | | | |
| BLDG. | BUILDING | J.B. | JUNCTION BOX | S.N.R. | SANITARY NAPKIN RECEPTACLE |
| BLK. | BLOCK | JAN. | JANITOR | | |
| BLKG. | BLOCKING | JST. | JOIST | S.S. | STAINLESS STEEL |
| BM. | BEAM | JT. | JOINT | S.SK. | SERVICE SINK |
| BOT. | BOTTOM | | | S.T.C. | SOUND TRANSMISSION COEFFICIENT |
| | | K.O. | KNOCK-OUT | | |
| C.B. | CATCH BASIN | K.P. | KICK PLATE | SCHED. | SCHEDULE |
| C.G. | CORNER GUARD | K.W.H. | KILOWATT HOUR | SCWD. | SOLID CORE WOOD |
| C.I. | CAST IRON | KIT. | KITCHEN | SECT. | SECTION |
| C.O. | CASED OPENING | | | SH. | SHELF |
| C.O.M. | CENTER OF MULLION | L.P. | LOW POINT | SHR. | SHOWER |
| C.O.R. | CENTER OF REVEAL | L.S. | LIMESTONE | SHT. | SHEET |
| CAB. | CABINET | L.V. | LOW VOLTAGE | SIM. | SIMILAR |
| CEM. | CEMENT(ITIOUS) | L.W.C. | LIGHT WEIGHT CONCRETE | SPEC. | SPECIFIED or SPECIFICATION |
| CER. | CERAMIC | LAB. | LABORATORY | | |
| CLG. | CEILING | LAM. | LAMINATE(D) | SQ. | SQUARE |
| CLKG. | CAULKING | LAV. | LAVATORY | STA. | STATION |
| CLO. | CLOSET | LIN. | LINEAR | STD. | STANDARD |
| CLR. | CLEAR | LIQ. | LIQUID | STL. | STEEL |
| CNTR. | COUNTER | LKR. | LOCKER | STOR. | STORAGE |
| COL. | COLUMN | LT. | LIGHT | STRL. | STRUCTURE or STRUCTURAL |
| CONC. | CONCRETE | LTL. | LINTEL | | |
| CONN. | CONNECTION | LVR. | LOUVER | SUPP. | SUPPLEMENT or SUPPLEMENTARY |
| CONSTR. | CONSTRUCTION | | | | |
| CONT. | CONTINUOUS | M.B. | MOP BASIN | SUSP. | SUSPENDED |
| CORR. | CORRIDOR | M.C. | MEDICINE CABINET | SYMM. | SYMMETRICAL |
| CTR. | CENTER | M.O. | MASONRY OPENING | | |
| CTSK. | COUNTER-SUNK | MAINT. | MAINTENANCE | T&G | TONGUE AND GROOVE |
| | | MAN. | MANUAL | T. | TREAD |
| D.F. | DRINKING FOUNTAIN | MAS. | MASONRY | T.B. | TOWEL BAR |
| D.O. | DOOR OPENING | MAX. | MAXIMUM | T.C. | TOP OF CURB |
| D.S. | DOWNSPOUT | MECH. | MECHANICAL | T.D. | TRENCH DRAIN |
| D.S.P. | DRY STANDPIPE | MEMB. | MEMBRANE | T.O.C. | TOP OF CONCRETE |
| DBL. | DOUBLE | MET. | METAL | T.O.M. | TOP OF MULLION |
| DEPT. | DEPARTMENT | MEZZ. | MEZZANINE | T.O.P. | TOP OF PARAPET |
| DET. | DETAIL | MFR. | MANUFACTURER | T.O.R. | TOP OF REVEAL |
| DIA. | DIAMETER | MH. | MANHOLE | T.O.REC. | TOP OF DEEP RECESS |
| DIM. | DIMENSION | MIN. | MINIMUM | T.O.S. | TOP OF STEEL |
| DISP. | DISPENSER | MIR. | MIRROR | T.O.W. | TOP OF WALL |
| DN. | DOWN | MISC. | MISCELLANEOUS | T.P. | TOP OF PAVEMENT |
| DR. | DOOR | MTD. | MOUNTED | T.P.D. | TOILET PAPER DISPENSER |
| DWG. | DRAWING | MUL. | MULLION | T.V. | TELEVISION |
| DWR. | DRAWER | | | TEL. | TELEPHONE |
| | | N. | NORTH | TER. | TERRAZZO |
| E. | EAST | N.I.C. | NOT IN CONTRACT | THK. | THICK |
| E-J | EXPANSION JOINT | N.R.C. | NOISE REDUCTION COEFFICIENT | TOL. | TOLERANCE |
| E.P. | ELECTRIC PANELBOARD | | | TYP. | TYPICAL |
| E.W.C. | ELECTRIC WATER COOLER | N.T.S. | NOT TO SCALE | U.C. | UNDERCUT |
| EA. | EACH | NO. | NUMBER | U.H. | UNIT HEATER |
| EL. | ELEVATION | NOM. | NOMINAL | U.L. | UNDERWRITERS' LABORATORIES |
| ELEC. | ELECTRIC(AL) | | | | |
| ELEV. | ELEVATOR | O.A. | OVERALL | U.O.N. | UNLESS OTHERWISE NOTED |
| EMER. | EMERGENCY | O.C. | ON CENTER | UNF. | UNFINISHED |
| ENCL. | ENCLOSED or ENCLOSURE | O.D. | OUTSIDE DIAMETER | UR. | URINAL |
| EQ. | EQUAL | O.F. | OUTSIDE FACE | | |
| EQPT. | EQUIPMENT | O.H. | OVERHEAD or OPPOSITE HAND | V.C.T. | VINYL COMPOSITE TILE |
| EXP. | EXPANSION | | | V.I.F. | VERIFY IN FIELD |
| EXPO. | EXPOSED | OBS. | OBSCURE | V.P. | VISION PANEL |
| EXST. | EXISTING | OFF. | OFFICE | V.R. | VAPOR RETARDER |
| EXT. | EXTERIOR | OPNG. | OPENING | VAC. | VACUUM |
| | | OPP. | OPPOSITE | VERT. | VERTICAL |
| F.A. | FIRE ALARM | | | VEST. | VESTIBULE |
| F.A.R. | FLOOR AREA RATIO | P.C. | PRECAST | VIT. | VITREOUS |
| F.B. | FLAT BAR | P.J. | PANEL JOINT | | |
| F.D. | FLOOR DRAIN | P.LAM. | PLASTIC LAMINATE | W. | WEST |
| F.E. | FIRE EXTINGUISHER | P.S.F. | POUNDS PER SQUARE FOOT | W.C. | WATER CLOSET |
| F.E.C. | FIRE EXTINGUISHER CABINET | | | W.I. | WROUGHT IRON |
| | | P.T.D. | PAPER TOWEL DISPENSER | W.P. | WORKING POINT |
| F.F.E. | FINISH FACE ELEVATION | P.T.R. | PAPER TOWER RECEPTACLE | W.S. | WEATHER STOP or STRIPPING |
| F.H.C. | FIRE HOSE CABINET | | | | |
| F.O.C. | FACE OF CONCRETE | PL. | PLATE | W.W.F. | WELDED WIRE FABRIC |
| F.O.F. | FACE OF FINISH | PLAS. | PLASTER | W/ | WITH |
| F.O.M. | FACE OF MULLION | PLYWD. | PLYWOOD | W/O | WITHOUT |
| F.O.SH. | FACE OF SHEATHING | POL. | POLISH(ED) | WD. | WOOD |
| F.P. | FIREPROOF | PR. | PAIR | WPM | WATERPROOFING MEMBRANE |
| F.S. | FULL SIZE | PT. | POINT | | |
| FDN. | FOUNDATION | | | WRB | WEATHER / WATER RESISTIVE BARRIER |
| FIN. | FINISH(ED) | Q.T. | QUARRY TILE | | |
| FL. | FLOOR | QUAL. | QUALITY | WSCT. | WAINSCOT |
| FLASH. | FLASHING | QUAN. | QUANTITY | WT. | WEIGHT |
| FLUOR. | FLUORESCENT | | | | |
| FT. | FOOT or FEET | R. | RISER | | |
| FTG. | FOOTING | | | | |
| FURR. | FURRING | | | | |
| FUT. | FUTURE | | | | |

# PROJECT DATA

**APPLICABLE CODES**

| | |
|---|---|
| CITY OF: | WEST LAKE HILLS, TEXAS |
| BUILDING: | 2015 INTERNATIONAL BUILDING CODE |
| STRUCTURE: | 2015 INTERNATIONAL BUILDING CODE |
| MECHANICAL: | 2015 INTERNATIONAL MECHANICAL CODE |
| ELECTRICAL: | 2017 NATIONAL ELECTRICAL CODE |
| PLUMBING: | 2015 INTERNATIONAL PLUMBING CODE |
| FIRE / LIFE SAFETY: | 2015 INTERNATIONAL FIRE CODE |
| ENERGY: | 2015 ENERGY CONSERVATION CODE |
| FUEL/GAS: | 2015 INTERNATIONAL FUEL GAS CODE |
| ACCESSIBILITY: | 2012 ICC/ANSI A117.1-2012 AMERICAN NATIONAL STANDARD |

## CHAPTER 3 - USE & OCCUPANCY CLASSIFICATION

| OCCUPANCY | SECTION | USE | PROPOSED AREA (SF) |
|---|---|---|---|
| **A-2** | **(303.1)** | **RESTAURANT** | SEE ALLOWABLE AREA BELOW |

PROPOSED TOTAL BUILDING AREA — **2,461.84** S.F.

## CHAPTER 6 - TYPES OF CONSTRUCTION

TYPE OF CONSTRUCTION (602) — **TYPE:** IIIB

| | | |
|---|---|---|
| BUILDING ELEMENTS | **(TABLE 601)** | |
| STRUCTURAL FRAME | **0** | HR. |
| EXTERIOR BEARING WALLS | **0** | HR. |
| INTERIOR BEARING WALLS | **0** | HR. |
| EXTERIOR NON-BEARING WALLS | **SEE BELOW** | |
| INTERIOR NON-BEARING WALLS | **0** | HR. |
| FLOORS | **0** | HR. |
| ROOF | **0** | HR. |

## CHAPTER 9 - FIRE PROTECTION SYSTEMS

(903.3.1.1) AUTOMATIC SPRINKLER SYSTEM WILL BE PROVIDED AND INSTALLED WITH ACCORDANCE WITH NFPA 13.

(903.4) AUTOMATIC SPRINKLER SYSTEM MONITORING AND ALARMS WILL BE PROVIDED.

E.S.F.R. (EARLY SUPPRESSION FAST-RESPONSE) AUTOMATIC FIRE PREVENTION SPRINKLER SYSTEM PROVIDED THROUGHOUT. SPRINKLER DESIGN AND CALCULATIONS TO BE SUBMITTED UNDER SEPARATE PERMIT.

(910.1) EXCEPTION 2: SMOKE AND HEAT VENTS NOT REQUIRED WHERE E.S.F.R. SPRINKLER SYSTEM IS PROVIDED

(910.3.5) EXCEPTION: DRAFT CURTAINS NOT REQUIRED WHERE E.S.F.R. SPRINKLER SYSTEM IS PROVIDED.

## CHAPTER 10 - MEANS OF EGRESS (SEE OCCUPANCY AND EGRESS PLANS)

### SITE DATA

| | | |
|---|---|---|
| LOT | **XX,XXX,XXX S.F.** | (X.XX ACRES) |
| BUILDING 1 AREA | **X,XXX,XXX** | S.F. |
| BUILDING COVERAGE | **XXX** | % |
| LANDSCAPE AREA | **XXX,XXX** | S.F. |
| LANDSCAPE COVERAGE | **XXX** | % |
| PARKING REQUIRED | **1/300** | OFFICE |
| OFFICE | **XXXX** | REQUIRED |

BUILDING 1

| | | |
|---|---|---|
| STANDARD PARKING PROVIDED | **XXX** | STALLS |
| ACCESSIBLE PARKING PROVIDED | **XXX** | STALLS |
| TOTAL PARKING PROVIDED | **XXX** | STALLS |
| MOTORCYCLE PARKING PROVIDED | **XXX** | STALLS |

BUILDING 2

| | | |
|---|---|---|
| STANDARD PARKING PROVIDED | **XXX** | STALLS |
| ACCESSIBLE PARKING PROVIDED | **XXX** | STALLS |
| TOTAL PARKING PROVIDED | **XXX** | STALLS |
| MOTORCYCLE PARKING PROVIDED | **XXX** | STALLS |

ACCESSOR'S PARCEL NO.: **XXX-XXX-XXX**

WARE MALCOMB
ARCHITECTURE | CIVIL ENGINEERING
PLANNING | BRANDING
INTERIORS | BUILDING MEASUREMENT
1919 McKinney Avenue, Suite #1000
Dallas, TX 75201
P 469.583.5379

REGISTERED ARCHITECT CHRISTOPHER PRICE 20198 STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

PROJECT DATA

| DATE | REMARKS |
|---|---|
| 03/03/2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

SHEET
T1.1a

3/30/2022 6:54:38 PM

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CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT

## DOOR NOTES

1. VERIFY THAT ALL DOORS AND DOOR HARDWARE MEET THE REQUIREMENTS OF ALL GOVERNING CODES & STANDARDS. NOTIFY THE ARCHITECT IMMEDIATELY IN CASE OF DISCREPANCY.
2. FIELD MEASURE, AS REQUIRED, ALL DOORS PRIOR TO FABRICATION
3. PROVIDE SIGN IN CONTRASTING LETTERS OF 1 INCH OR MORE AT MAIN ENTRY STATING "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED".
4. VERIFY THAT EXISTING DOORS COMPLY WITH ACCESSIBILITY REQUIREMENTS.
5. RATED DOORS SHALL COMPLY WITH REQUIREMENTS OF ALL GOVERNING CODES & STANDARDS AND SHALL BEAR A LABEL FROM A RECOGNIZED AGENCY SHOWING THE SPECIFIC RATINGS.
6. ALL HARDWARE TO BE LEVER-TYPE GOVERNING CODES & ACCESSIBILITY STANDARDS.
7. DOOR HANDLES, PULLS OR KNOBS SHALL BE INSTALLED AT 40" ABOVE FINISH FLOOR. ALL OTHER OPERABLE PARTS OF DOOR HARDWARE (SUCH AS DEADBOLTS, KEYHOLES... ETC.) ARE TO BE CENTERED BETWEEN 34" AND 44" ABOVE FINISH FLOOR. IF EXISTING BUILDING STANDARD EXISTS, MATCH BUILDING STANDARD AND CONFIRM COMPLIANCE WITH ACCESSIBILITY REQUIREMENTS.
8. SPECIAL LOCKING DEVICES SHALL BE OF AN APPROVED TYPE.
9. PROVIDE WEATHER SEALS ON ALL EXTERIOR DOORS PER ANSI STANDARDS.
10. CONTRACTOR IS RESPONSIBLE TO COORDINATE & VERIFY ALL DOOR FRAME THROAT THICKNESS' FOR EACH LOCATION.
11. ALL DOOR FRAMES TO BE FACTORY FINISHED, U.O.N.
12. ALL WALL DOOR STOPS TO HAVE 2x6 BACKING IN THE WALL BEHIND.
13. MAXIMUM UNDERCUT OF ALL DOORS NOT IN A RATED COORIDOR SHALL NOT EXCEED 1/2" ABOVE FINISH FLOOR SURFACE.
14. CONTRACTOR SHALL REFINISH ANY BLEMISHED DOOR OR REPLACE SAID DOOR IF NOT ABLE TO REFINISH TO "AS NEW" CONDITION.
15. ALL DOORS TO BE OPERABLE FROM THE INSIDE WITHOUT A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT
16. ALL DOORS WITH ELECTRONIC SECURITY DOOR LOCKS MUST BE OPENABLE FOR EXITING PURPOSES UNDER ALL CONDITIONS. INCLUDING A POWER OUTAGE.
17. IF BUILDING STANDARDS ARE INCONSISTENT FOR DOORS, RELITES, HARDWARE, DOOR AND RELITE FRAMES OR OTHER STANDARD DETAILS, THEN CONTRACTOR MUST VERIFY WITH DESIGNER AND OWNER PRIOR TO CONSTRUCTION.

## ROOF NOTES

1. SEE MECHANICAL DRAWINGS FOR HVAC EQUIPMENT, SHAFT AND PENETRATION LOCATIONS.
2. CONTRACTOR SHALL VERIFY SIZES AND LOCATIONS OF ALL MECHANICAL EQUIPMENT PLATFORMS AND BASES, POWER, WATER AND DRAIN LOCATIONS AND INSTALLATION REQUIREMENTS WITH EQUIPMENT MANUFACTURERS PRIOR TO PROCEEDING WITH WORK. CHANGES TO ACCOMMODATE FIELD CONDITIONS OR MATERIAL SUBSTITUTIONS SHALL BE MADE WITHOUT ADDITIONAL CHARGE TO OWNER.
3. MECHANICAL AND PLUMBING EQUIPMENT PLATFORM DIMENSIONS SHALL BE A MINIMUM OF 0'-8" ABOVE ADJACENT ROOF ELEVATION.
4. VENTS THROUGH THE ROOF SHALL BE INSTALLED 10'-0" FROM AND TERMINATED 3'-0" ABOVE ANY FRESH AIR INTAKES.
5. SEE PLUMBING DRAWINGS FOR ALL ROOF DRAIN SIZES.
6. LEAD FLASHING TO BE USED AT ALL ROOF DRAIN AND OVERFLOW PENETRATIONS.
7. OVERFLOW SCUPPERS SHALL BE DESIGNED PER APPLICABLE CODES AND LOCATED 2 INCHES ABOVE THE LOW POINT OF THE ADJACENT FINISHED ROOF.
8. ALL INDIRECT WASTE PIPING ON ROOF SHALL BE TYPE "L" COPPER ATTACHED BY PIPE STRAPS NAILED TO A 2x4 REDWOOD BLOCKING. BLOCKING SHALL BE SET MASTIC AT 6'-0" O.C. PIPING SHALL BE SLOPED AND TERMINATE IN AN APPROVED RECEPTOR. PIPING TO BE INSTALLED PARALLEL AND PERPENDICULAR TO BUILDING ELEVATIONS.
11. SEE STRUCTURAL DRAWINGS FOR ROOF FRAMING.
12. ALL ROOF SURFACES SHALL SLOP AT A MINIMUM OF 1/4 INCH PER FOOT IN ALL DIRECTIONS. CRICKETS SHALL BE USED ON THE HIGH SIDE OF ALL EQUIPMENT PLATFORMS.
13. ALL ROOFING SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH LOCAL CITY AGENCY WIND DESIGN ORDINANCES.
14. ROOFING TO BE UL CLASS "A" FIRE-RETARDANT RATING AS MANUFACTURERED BY GAF, MANVILLE OR EQUAL.
15. ALL ROOF ELEVATIONS INDICATE BOTTOM OF SHEATHING FROM FINISHED FLOOR, DATUM ELEVATION 0'-0". SEE STRUCTURAL DRAWINGS.
16. REFER TO STRUCTURAL DRAWINGS TO CONFIRM ROOF ELEVATIONS.
17. T.O.P = TOP OF PARAPET (ON SITE PLAN ONLY).

## FIRE AUTHORITY NOTES

1. FINAL INSPECTION BY FIRE DEPARTMENT IS REQUIRED - SCHEDULE 2 DAYS IN ADVANCE.
2. THE PROJECT ADDRESS SHALL BE PROVIDED FOR ALL NEW AND EXISTING BUILDINGS IN A POSITION AS TO BE PLAINLY VISIBLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY PER LOCAL FIRE DEPARTMENT STANDARDS.
3. AN UNOBSTRUCTED ALL-WEATHER FIRE APPARATUS ACCESS ROAD SHALL BE IN PLACE PRIOR TO DELIVERY OF COMBUSTIBLE BUILDING MATERIALS TO THE SITE.
4. FIRE PREVENTION WATER SERVICE SHALL BE IN SERVICE PRIOR TO THE DELIVERY OF COMBUSTIBLE BUILDING MATERIALS TO THE SITE.
5. ACCESS GATES SHALL BE APPROVED PRIOR TO INSTALLATION AND SHALL BE IN COMPLIANCE WITH LOCAL FIRE AUTHORITY.
6. PRIVATE FIRE HYDRANTS, SPRINKLER CONTROL AND POST INDICATOR VALVES , AND RISERS TO FIRE DEPARTMENT CONNECTIONS SHALL BE PAINTED "SAFETY RED" PER LOCAL FIRE AUTHORITY.
7. ALL FIRE HYDRANTS SHALL HAVE A "BLUE REFLECTIVE PAVEMENT MARKER" INDICATING ITS LOCATION ON THE STREET OR DRIVE PER LOCAL FIRE AUTHORITY STANDARDS. ON PRIVATE PROPERTY THESE MARKERS ARE TO BE MAINTAINED IN GOOD CONDITION BY THE PROPERTY OWNER.
8. PROVIDE OUTSIDE GAS SHUT-OFF VALVE. PROVIDE SIGN INDICATION MAIN GAS AND ELECTRICAL SHUT-OFF PER LOCAL FIRE DEPARTMENT.
9. FIRE SPRINKLER SYSTEM(S) SHALL MEET STATE & LOCAL FIRE CODES AND BE PROVIDED TO PROTECT ENTIRE BUILDING INCLUDING PROJECTIONS OVER 4'-0".
10. FIRE SPRINKLER SYSTEM(S) AND ALL CONTROL VALVES, INCLUDING EXTERIOR SHALL BE SUPERVISED BY A.U.L LISTED CENTRAL ALARM STATION OR PER STATE & LOCAL FIRE CODES.
11. ALL VALVES CONTROLLING THE WATER SUPPLY FOR AUTOMATIC SPRINKLER SYSTEMS AND WATER-FLOW SWITCHES ON ALL SPRINKLER SYSTEMS SHALL BE
12. ELECTRICALLY MONITORED WHERE THE NUMBER OF SPRINKLERS IS 100 OR MORE. ELECTRICAL SUBCONTRACTORS TO INSTALL WIRING FOR FIRE SPRINKLER, ALARM BELL AND TELEPHONE WARNING AS REQUIRED BY FIRE DEPARTMENT.
13. INSTALLATION OF FIRE ALARM SYSTEMS SHALL BE IN ACCORDANCE WITH STATE & LOCAL FIRE CODES.
14. COMPLETE PLANS AND SPECIFICATIONS FOR ALL FIXED FIRE PROTECTION EQUIPMENTS INCLUDING AUTOMATIC SPRINKLERS AND OTHER FIRE-PROTECTION SYSTEMS, SHALL BE SUBMITTED BY INSTALLING CONTRACTOR. SUCH PLANS SHALL BE APPROVED BY LOCAL FIRE AUTHORITY PRIOR TO INSTALLATION.
15. ALL REQUIRED FIRE DOORS SHALL BEAR A LABEL FROM A RECOGNIZED AGENCY SHOWING THE SPECIFIC RATING.
16. EXIT SIGNS AND ILLUMINATION SHALL CONFORM TO ALL APPLICABLE BUILDING AND FIRE CODES.
17. EXIT DOORS SHALL BE OPERABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT.
18. PROVIDE OR MODIFY AS NEEDED SPRINKLER ALARM AND SMOKE DETECTION SYSTEM PER APPLICABLE CODES INCLUDING IF NECESSARY FIR HORNS, STROBE LIGHTS, CONTROL PANEL CONNECTIONS, SMOKE DETECTORS, AUDIO VISUAL ALARMS. SUBMIT SHOP DRAWINGS TO THE FIRE MARSHAL FOR APPROVAL.
19. LOCATIONS AND CLASSIFICATIONS OF FIRE EXTINGUISHERS SHALL BE IN ACCORDANCE WITH STATE & LOCAL FIRE CODES AND PLACEMENT IS SUBJECT TO THE APPROVAL OF THE FIRE INSPECTOR. VERIFY QUANTITY & EXACT LOCATION FROM FIRE DEPARTMENT PRIOR TO ORDERING.
20. AT LEAST ONE (1) FIRE EXTINGUISHER WITH A MINIMUM RATING OF 2-A-10B:C SHALL BE PROVIDED WITHIN 75'-0" MAXIMUM TRAVEL DISTANCE FOR EACH 6,000 SQUARE FEET OR PORTION THEREOF ON EACH FLOOR.
21. STORAGE, DISPENSING OR USE OF ANY FLAMMABLE AND COMBUSTIBLE LIQUIDS, FLAMMABLE AND COMPRESSED GASES, AND OTHER HAZARDOUS MATERIALS SHALL COMPLY WITH STATE & LOCAL FIRE CODES. THE STORAGE AND USE OF HAZARDOUS MATERIALS SHALL BE APPROVED BY THE FIRE AUTHORITY PRIOR TO ANY MATERIALS BEING STORED OR USED ON SITE. A SEPARATE PLAN SUBMITTAL IS REQUIRED PRIOR TO THE STORAGE AND USE OF HAZARDOUS MATERIALS.
22. A LETTER OF INTENDED USE MAY BE REQUIRED BY THE FIRE INSPECTOR.

## SITE NOTES

1. REFER TO LANDSCAPE DRAWINGS FOR CONCRETE WALKS, PAVING, BERMS, LANDSCAPING AND IRRIGATION.
2. REFER TO CIVIL DRAWINGS FOR SITE GRADING, DRAINAGE, CATCH BASINS, PAVING DETAILS, SITE UTILITIES, CURB AND GUTTER SWALES, FIRE HYDRANT LOCATIONS AND HORIZONTAL CONTROL DIMENSIONS.
3. REFER TO CIVIL DRAWINGS FOR POINT OF CONNECTIONS TO OFF-SITE UTILITIES. CONTRACTOR TO VERIFY ACTUAL UTILITY LOCATIONS.
4. ALL DIMENSION ON SITE PLAN ARE TO BE FACE OF CONCRETE WALL, FACE OF CONCRETE CURB, PROPERTY LINE OR CENTERLINE OF PARKING STALL, UNLESS OTHERWISE NOTED.
5. FIRE HYDRANTS SHALL BE INSTALLED IN ACCORDANCE WITH THE LOCAL FIRE DEPARTMENT STANDARDS.
6. ALL PARKING STALL STRIPING SHALL BE PER LOCAL JURISDICATION STANDARDS.
7. CONCRETE WALK SHALL RECEIVE EXPANSION JOINTS AT 50'-0" O.C MAX, AND CONTROL JOINTS AT 5'-0" O.C MAX, BETWEEN EXPANSION JOINTS, UNLESS NOTED OTHERWISE.

## FLOOR PLAN NOTES

1. ALL EXITS SHALL HAVE EXIT SIGNS.
2. ALL CONDUIT PIPING, IN ELECTRICAL ROOM TO BE CONCEALED WITHIN THE WALL CONSTRUCTION.
3. REFER TO PLUMBING, CIVIL AND SITE PLANS, FOR SIZE AND ROUTING OF ROOF DRAINAGE CONNECTION TO UNDERGROUND STORM DRAIN OR RUN TO DAYLIGHT AS SHOWN.
4. FLOORS SHALL BE SLOPED TO FLOOR DRAINS. COORDINATE WITH PLUMBING AND STRUCTURAL DRAWINGS. IN RATED FLOOR CONDITIONS, CONFIRM REMAINING FLOOR THICKNESS STILL CONFORMS TO MINIMUM RATING REQUIREMENT

## GLAZING NOTES

1. EACH LIGHT SHALL BEAR THE MANUFACTURER'S LABEL DESIGNATING THE TYPE AND THICKNESS OF THE GLASS.
2. GLASS SHALL BE FIRMLY SUPPORTED ON ALL FOUR EDGES
3. FIELD MEASURE ALL OPENINGS PRIOR TO FABRICATION.
4. FIXED OR OPERABLE GLAZING IN HAZARDOUS LOCATIONS AS DEFINED IN THE BUILDING CODE SHALL BE TEMPERED GLASS (SAFETY GLASS).
5. GLAZING IN SWINGING, SLIDING AND BIFOLD DOORS SHALL BE TEMPERED.
6. ALL GLAZING WITHIN A 24" ARC OF EITHER EDGE OF A DOOR AND WITHIN 60" OF THE FLOOR SHALL BE TEMPERED.
7. GLAZING IN WINDOWS: ALL GLAZING THAT MEETS ALL OF THE FOLLOWING CONDITIONS SHALL BE TEMPERED:

   7.1 THE EXPOSED AREA OF AN INDIVIDUAL PANE IS GREATER THAN 9 SF.
   7.2 THE BOTTOM EDGE IS LESS THAN 18" ABOVE THE FLOOR.
   7.3 THE TOP EDGE IS GREATER THAN 36" ABOVE THE FLOOR.
   7.4 WALKING SURFACE IS WITHIN 36". ALL GLASS SHALL COMPLY WITH
8. THE REQUIREMENTS OF THE STATE AND LOCAL CODES AND THE U.S. PRODUCT SAFETY COMMISSIONS: SAFETY STANDARDS FOR ARCHITECTURAL GLAZING MATERIALS.
9. WHERE JOINTS ARE REQUIRED IN MULTIPLE LITE SITUATIONS, SILICON IS TO BE PROVIDED U.O.NO.

## GENERAL PROJECT NOTES

### GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED SO AS TO COMPLY WITH ALL LEGAL, INDUSTRY AND PROJECT-SPECIFIC REQUIREMENTS AND STANDARDS INCLUDING WITHOUT LIMITATION OF THE FOLLOWING:

   A. ALL APPLICABLE BUILDING CODES
   B. ALL APPLICABLE SPECIALTY CODES INCLUDING THE MOST CURRENT ISSUES AND SUPPLEMENTS
   C. THE PROJECT MANUAL AND ASSOCIATED SPECIFICATIONS
   D. THE MANUFACTURER'S REQUIREMENTS OR RECOMMENDATIONS
   E. ALL APPLICABLE LANDLORD BUILDING STANDARDS
2. IN USING THESE PLANS FOR BIDDING OR CONSTRUCTION PURPOSES, ALL CONTRACTORS ARE REQUIRED TO REVIEW AND TREAT THEM AS A WHOLE IN ORDER TO IDENTIFY ALL REQUIREMENTS THAT DIRECTLY OR INDIRECTLY AFFECT THEIR PORTION OF THE WORK, EVEN REQUIREMENTS LOCATED IN SECTIONS DESIGNATED AS APPLICABLE TO OTHER TRADES OR IN DOCUMENTS PROVIDED BY OTHER MEMBERS OF THE PROJECT DESIGN TEAM. UNLESS EXPRESSLY PROVIDED OTHERWISE, THE INTENT IS TO INCLUDE ALL LABOR, MATERIALS, PRODUCTS AND SERVICES NECESSARY OR APPROPRIATE FOR THE COMPLETED PROJECT AS CALLED FOR OR REASONABLY IMPLIED FROM THE PLANS AND SPECIFICATIONS PROVIDED BY THE PROJECT'S DESIGN TEAM. IN CASE OF CONFLICTS OR OMISSIONS, THE AFFECTED CONTRACTOR IS REQUIRED TO EITHER OBTAIN DIRECTION FROM AN APPROPRIATE REPRESENTATIVE OF THE OWNER, OR OTHERWISE TO APPLY THE MORE STRINGENT OR COSTLY STANDARD.
3. IN INTERPRETING THESE PLANS, THE FOLLOWING GENERAL RULES APPLY:

   A. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DRAWINGS B. SPECIFIC NOTES AND DETAILS SHALL TAKE PRECEDENCE OVER GENERAL NOTES AND TYPICAL DETAILS
   C. WORK NOT PARTICULARLY SHOWN OR SPECIFIED SHALL BE THE SAME AS SIMILAR PARTS THAT ARE SHOWN AND SPECIFIED
   D. WORK SHOWN AS "NIC" IS FOR REFERENCE ONLY AND THE RESPONSIBILITY OF THE CONTRACTOR ONLY TO THE EXTENT THAT THIS WORK MAY REQUIRE SOME REASONABLE PROTECTION OR COORDINATION EFFORTS.
4. THESE PLANS AND SPECIFICATIONS ARE INTENDED TO REPRESENT ONLY THE FINISHED CONSTRUCTION. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION AND DEMOLITION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES INCLUDING ANY AND ALL SAFETY PRECAUTIONS AND PROGRAMS, AND SHALL INDEMNIFY TO THE FULLEST EXTENT ALLOWED BY LAW THE OWNER AND THE PROJECT DESIGN TEAM FROM AND AGAINST ANY AND ALL RELATED CLAIMS AND LIABILITY.
5. THESE PLANS AND SPECIFICATIONS ARE INTENDED TO SET FORTH THE REQUIREMENTS FOR CONSTRUCTION IN ONLY AN INDUSTRY-STANDARD LEVEL OF QUALITY AND DETAIL, AND THEY ARE INTENDED TO BE SUPPLEMENTED BY APPROPRIATE REQUESTS FOR INFORMATION (RFIs). ERRORS AND OMISSIONS ARE TO BE EXPECTED AND ANTICIPATED, AND ALL CONTRACTORS ARE REQUIRED TO CAREFULLY REVIEW THESE PLANS FOR ERRORS AND OMISSIONS AND TO BRING THESE ERRORS AND OMISSIONS TO THE ATTENTION OF AN APPROPRIATE OWNER REPRESENTATIVE IN A TIMELY MANNER; AND ANY CONTRACTOR WHO FAILS TO DO SO BEFORE BIDDING OR OTHERWISE PROCEEDING ASSUMES THE RISK OF ANY CONSEQUENCES.
6. SCALED DIMENSIONS SHOULD BE CONSIDERED ONLY APPROXIMATE; AND IN ANY EVENT ALL CONTRACTORS PROCEED AT THEIR OWN RISK IF THEY FAIL TO VERIFY AND FIELD MEASURE DIMENSIONS BEFORE PROCEEDING WITH ANY AFFECTED PROCUREMENT, FABRICATION OR CONSTRUCTION.
7. PLANS ARE TO BE CONSIDERED DIAGRAMMATIC IN NATURE AND INTENDED ONLY TO DEMONSTRATE THE RELATIONSHIP AMONG COMPONENT PARTS, AND NOT TO DEPICT SPECIFIC LOCATIONS.
8. CONTRACTOR RFI's ARE INTENDED TO OBTAIN INFORMATION NOT AVAILABLE FROM THE PLANS AND SPECIFICATIONS. RFI's WILL NOT BE PROCESSED THAT CAN BE ANSWERED BY A REVIEW OF THESE DOCUMENTS, THAT REQUEST DIMENSIONS THAT CAN BE OBTAINED FROM THE PLANS BY MATHEMATICAL CALCULATION THAT ARE IN EFFECT A SUBSTITUTION SUBMITTAL, OR THAT SEEK DIRECTION CONCERNING CONSTRUCTION MEANS AND METHODS OR SAFETY PRECAUTIONS. WHERE APPROPRIATE, RFI's SHOULD BE SPECIFIC AS TO WHICH PORTION OF THE PLANS AND SPECIFICATIONS NEEDS CLARIFICATION, AND WHAT INFORMATION IS REQUIRED.
9. NO DEVIATIONS OR OMISSIONS FROM THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS PROVIDED BY THE PROJECT'S DESIGN TEAM ARE ALLOWED WITHOUT THE EXPRESSED AUTHORIZATION OF AN APPROPRIATE OWNER REPRESENTATIVE, AND THE RESPONSIBLE CONTRACTOR WILL INDEMNIFY AND HOLD HARMLESS THE OWNER AND THE PROJECT DESIGN TEAM FROM AND AGAINST THE CONSEQUENCES OF ANY UNAUTHORIZED DEVIATIONS OR OMISSIONS. SUBSTITUTION SUBMITTALS WILL BE CONSIDERED ONLY IF THE PROPOSED SUBSTITUTION IMPROVES THE QUALITY OF THE PROJECT TO THE OWNER; AND IN NO EVENT WILL THE OWNER BE REQUIRED TO AUTHORIZE A SUBSTITUTION THAT IS NOT EQUAL IN QUALITY TO WHAT IS SPECIFIED.
10. DESIGN/BUILD CONTRACTOR SUBMITTALS WILL BE REVIEWED BY THE PROJECT DESIGN TEAM, IF AT ALL, ONLY FOR CONFORMANCE WITH THE AESTHETIC ASPECTS AND MAJOR SPACE LIMITATIONS OF THE PROJECT; AND EACH DESIGN/BUILD CONTRACTOR IS RESPONSIBLE FOR THE FOLLOWING:

    A. PREPARING ALL THE ENGINEERING AND OTHER DRAWINGS AND SPECIFICATIONS FOR THE COMPONENTS OF ITS DESIGN/BUILD UNDERTAKING.
    B. COMPLYING WITH THE PROJECT'S REQUIREMENTS AND SPACE LIMITATIONS.
    C. COORDINATION AND INTERFACING WITH OTHER TRADES AND CONSULTANTS.
    D. OBTAINING ANY REQUIRED OR APPROPRIATE APPROVALS FROM AUTHORITIES HAVING JURISDICTION OVER THE PROJECT.
    E. HAVING THEIR DESIGN CONSULTANTS SERVE AS THE PROFESSIONAL OF RECORD FOR THE PORTIONS OF WORK WHICH THEY DESIGN.
11. AT THE CONCLUSION OF THE CONSTRUCTION, EACH PRIME CONTRACTOR SHALL PROVIDE SUCH WRITTEN CERTIFICATION THAT THE CONSTRUCTION HAS BEEN PERFORMED IN COMPLIANCE WITH THE PROJECT'S APPROVED PLANS AND SPECIFICATIONS AS THE BUILDING OFFICIAL WITH JURISDICTION OVER THE PROJECT MAY REQUIRE, OR AS THE OWNER MAY REASONABLY REQUEST.
12. VERSIONS OF THESE PLANS PROVIDED IN ANY ELECTRONIC FORM ARE SUBJECT TO THE SAME PROVISION AS THE OTHER INSTRUMENTS OF SERVICE PREPARED BY OR ON BEHALF OF THE PROJECT DESIGN TEAM, INCLUDING WITHOUT LIMITATION THEIR COMMON LAW, STATUTORY OR OTHER RESERVED RIGHTS, INCLUDING COPYRIGHTS. A RECIPIENT IS GRANTED AT MOST A TRANSFERABLE NONEXCLUSIVE LICENSE TO REUSE THE PLANS SOLELY FOR PROJECT PURPOSES; AND NO RECIPIENT IS AUTHORIZED TO USE OR TO ALLOW THE USE OF ALL OR ANY PORTION OF THESE PLANS FOR ANY OTHER PURPOSE, AND ANY OTHER USE FOR ANY OTHER PURPOSE COULD CONSTITUTE ACTIONABLE PLAGIARISM. ANY ELECTRONIC DOCUMENTS WILL BE PROVIDED IN THE RESPONSIBLE DESIGN PROFESSIONAL'S STANDARD FORMATS AND CONVENTIONS AND WITH NO GUARANTEE OF THE ABSENCE OF VIRUSES OR OTHER HARMFUL MATERIAL, OR OF COMPATIBILITY WITH ANY RECIPIENT'S SOFTWARE OR HARDWARE SO THAT ANY USE WITH OR CONVERSION TO THE OTHER FORMS OR CONVENTIONS, OR THE USE WITH ANY PARTICULAR SOFTWARE OR HARDWARE, IS AT THE RECIPIENT'S SOLE RISK.

### JOB SITE NOTES

1. WHERE EXISTING TENANTS/BUSINESSES ARE ADJACENT TO THE JOB SITE/TENANT, THE CONTRACTOR SHALL MINIMIZE CONSTRUCTION NOISE - EXTREMELY NOISY CONSTRUCTION SHALL OCCUR AT NON-TYPICAL BUSINESS HOURS. CONTRACTOR SHOULD NOTIFY BUILDING REPRESENTATIVE OF SPECIAL CIRCUMSTANCES IN ADVANCE PRIOR TO WORK.
2. THE CONTRACTOR AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AND SURROUNDING AREA FREE FROM DUST AND DEBRIS. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR AND WATER POLLUTION CONTROL STANDARDS AND REGULATIONS OF THE STATE DEPARTMENT OF HEALTH.
3. CONSTRUCTION DEBRIS AND WASTES SHALL BE DEPOSITED AT AN APPROPRIATE SITE. THE CONTRACTOR SHALL INFORM THE BUILDING REPRESENTATIVE OF THE LOCATION OF DISPOSAL SITES.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR THE GENERAL CLEANING OF THE JOB AFTER ITS COMPLETION. WHERE APPLICABLE, CLEANING SHALL INCLUDE, BUT NOT BE LIMITED TO, THE EXTERIOR AND THE INTERIOR OF THE BUILDING, THE PATH OF TRAVEL TO THE JOB SITE, PARKING LOTS, ELEVATORS, LOBBIES, AND CORRIDOR CARPETS.
5. THE CONTRACTOR SHALL PROVIDE PEDESTRIAN PROTECTION, WHERE REQUIRED PER STATE AND LOCAL CODES.
6. IF TRENCHES OR EXCAVATIONS 5'-0" OR MORE IN DEPTH ARE REQUIRED, OBTAIN ISSUANCE OF A BUILDING OR GRADING PERMIT.
7. NO HAZARDOUS MATERIALS SHALL BE USED OR STORED WITHIN THE BUILDING WHICH DOES NOT COMPLY WITH THE LOCAL FIRE AUTHORITY AND STATE & COUNTY REQUIREMENTS.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR BLOCKING OFF SUPPLY AND RETURN AIR GRILLES, DIFFUSERS & DUCTS TO KEEP DUST FROM ENTERING INTO BUILDING AIR DISTRIBUTION SYSTEMS.
9. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO ENSURE THE SAFETY OF THE OCCUPANTS AND WORKERS AT ALL TIMES.
10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE COMPLETE SECURITY OF THE BUILDING AND SITE WHILE JOB IS IN PROGRESS AND UNTIL THE JOB IS COMPLETED.

### DRAWING NOTES

1. UNLESS OTHERWISE NOTED OR INDICATED, ALL DIMENSIONS ON THESE DOCUMENTS SHALL BE TO FACE OF CURB, FACE OF CONCRETE OR MASONRY, FACE OF FINISH OR CENTERLINE OF GRIDS.
2. ALL VERTICAL DIMENSIONS SHOWN ARE FROM FLOOR SLAB, U.O.N.
3. DIMENSIONS SHOWN IN FIGURES TAKE PRECEDENCE OVER DIMENSIONS SCALED FROM DRAWINGS. LARGE SCALE DRAWINGS AND DETAILS TAKE PRECEDENCE OVER SMALLER SCALE DRAWINGS.
4. THE TERM "ALIGN", AS USED IN THESE DOCUMENTS, SHALL MEAN TO ACCURATELY LOCATE FINISHES IN THE SAME PLANE.
5. "TYPICAL" AS USED IN THESE DOCUMENTS SHALL MEAN THAT THE CONDITION IS THE SAME OR REPRESENTATIVE FOR ALL SIMILAR CONDITIONS THROUGHOUT, U.O.N.
6. DETAILS ARE USUALLY KEYED AND NOTED "TYPICAL" ONLY ONCE, WHEN THEY FIRST OCCUR AND ARE REPRESENTATIVE OF ALL SIMILAR CONDITIONS THROUGHOUT, U.O.N.
7. COLUMN CENTERLINES (GRID LINES) ARE SHOWN FOR DIMENSIONING PURPOSES.
8. WHERE CONSTRUCTION DETAILS ARE NOT SHOWN OR NOTED FOR ANY PART OF THE WORK, THE DETAILS SHALL BE THE SAME AS FOR OTHER SIMILAR WORK IN THE SAME BUILDING.

### INTERIOR/EXTERIOR NOTES

1. WHERE ELECTRICAL, MECHANICAL AND/OR PLUMBING ITEMS, SUCH AS LIGHTS, DUCTS, PIPING, DOWNSPOUTS, ETC. ARE TO PENETRATE ANY BUILDING FOOTINGS, SLABS, FLOORS, STRUCTURAL FRAMING, WALL PARTITIONS, CEILINGS, ETC., IT IS REQUIRED THAT AN APPROPRIATELY SIZED OPENING OR CLEARANCE BE FURNISHED. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL ITEMS WITH THE CONSTRUCTION DOCUMENTS PRIOR TO THE INSTALLATION OF STRUCTURAL, MECHANICAL, PLUMBING AND ELECTRICAL WORK. ANY CONFLICT OR DISCREPANCY WITHIN CONSTRUCTION DOCUMENTS SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION FOR CLARIFICATION.
2. CONTRACTOR, ALONG WITH MECHANICAL CONTRACTOR, SHALL PROVIDE AND LOCATE ACCESS DOORS/PANELS IN WALL & CEILING CONSTRUCTION AS REQUIRED TO PROVIDE ACCESS TO MECHANICAL, FIRE SPRINKLER, PLUMBING & ELECTRICAL WORK. CONTRACTOR SHALL SUBMIT A PLAN OF ALL PROPOSED ACCESS PANEL LOCATIONS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
3. ALL PENETRATIONS AT RATED CONSTRUCTION SHALL BE PROTECTED TO MAINTAIN RATING.
4. WHERE OCCURS, CONTRACTOR SHALL PATCH ANY EXISTING WALLS AND/OR CEILINGS AS NEEDED TO REFURBISH THE LEASE SPACE AND REPAIR ALL DAMAGES CAUSED BY CONTRACTOR.
5. INTERIOR WALLS AND CEILINGS SHALL BE INSTALLED IN ACCORDANCE TO STATE & LOCAL CODES, INCLUDING REQUIREMENTS FOR FLAME SPREAD AND SMOKE DENSITY RATINGS FOR FINISH MATERIALS.
6. WHEN USED, ALL NOISE BARRIER BATTS (SOUND INSULATION) AND INSULATION BATTS SHALL BE NON-COMBUSTIBLE AND SHALL NOT CONTAIN OR UTILIZE OZONE DEPLETING COMPOUNDS.
7. ALL NEW CONSTRUCTION MATERIALS SHALL BE 100% ASBESTOS-FREE.

## PRE-CONSTRUCTION NOTES

1. PRIOR TO START OF CONSTRUCTION, A PRE-CONSTRUCTION MEETING IS TO BE HELD INCLUDING A RESPONSIBLE REPRESENTATIVE OF THE ARCHITECT, THE OWNER AND THE GENERAL CONTRACTOR. THE DISCUSSION WILL BE IN REGARDS TO THE ARCHITECT-OWNER-CONTRACTOR (AOC) CORRESPONDENCE PROCESSES AND PROCEDURES. AT A MINIMUM, THE FOLLOWING IS TO BE DISCUSSED:
2. AOC REGULARLY SCHEDULED MEETINGS

   2.1. WHEN
   2.2. WHERE
   2.3. HOW OFTEN
   2.4. IN PERSON VERSUS CONFERENCE CALLS
   2.5. APPROXIMATE ALOTTED TIME PER MEETING
3. CONSTRUCTION MEETING MINUTES

   3.1 . FORMAT FOR THE MINUTES
   3.2 . CONTRACTOR TO AUTHOR THE MINUTES
4. FORMAL CHANGES IN THE WORK

   4.1. ADDENDA AND BULLETINS ISSUED BY THE ARCHITECT
   4.2. CHANGE ORDER REQUESTS ISSUED BY THE CONTRACTOR
   4.3. CHANGE ORDERS ISSUED BY THE CONTRACTOR
   4.4. TRACKING MECHANISMS
5. REQUESTS FOR INFORMATION PROCESS

   5.1. TRACKING MECHANISM
   5.2. DEFINE Cc: RECIPIENT LIST
   5.3. STANDARD RESPONSE TIMES (2-5 WORKING DAYS IS STANDARD)
6. SUBMITTAL PROCESS

   6.1. TRACKING MECHANISM
   6.2. ISSUANCE SCHEDULE BY THE CONTRACTOR
   6.3. DEFINE Cc RECIPIENT LIST
   6.4. STAMPED REVIEWED AND APPROVED BY CONTRACTOR PRIOR TO SUBMISSION
   6.5. NON-REQUESTED SUBMITTALS MAY NOT BE REVIEWED
   6.6. STANDARD RESPONSE TIMES (7-10 WORKING DAYS IS STANDARD)
7. SUBSTITUTIONS

   7.1. REQUEST FORMS WITH REASONS AND BENEFIT FOR SUBSTITUTION
8. PAYMENT APPLICATIONS

   8.1. PROCESS
   8.2. SUBMITTAL DATE
   8.3. ANTICIPATED TURN-AROUND
9. PUNCH LISTS

   9.1. ONLY ONE PUNCH WALK TO BE PROVIDED BY DESIGN TEAM
   9.2 CONTRACTOR TO PUNCH AND MAKE CORRECTIONS OR CREATE A MINIMAL LIST OF CORRECTIONS PRIOR TO DESIGN TEAM PUNCH.
   9.3. A FINAL WALK WILL OCCUR ONLY IF THE ARCHITECT IS CONTRACTED TO DO SO.

## G.C. INSTRUCTIONS

SUBMITTALS

1. AT THE START OF JOB PROVIDE A SCHEDULE OF ALL ANTICIPATED SUBMITTALS AND DATES. FLAG SUBMITTALS WHICH ARE OR COULD BE CRITICAL PATH. FLAG SUBMITTALS THAT WILL BE REQUESTED TO BE EXPEDITED FASTER THAN THE STANDARD 7-10 DAYS.
2. A SUBMITTAL LOG IS TO BE MAINTAINED BY THE GENERAL CONTRACTOR AND A CURRENT COPY IS TO BE INCLUDED WITH EACH SUBMISSION.
3. ALL SUBMITTALS MUST BE REVIEWED AND APPROVED WITH A STAMP AND SIGNATURE BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION. THE REVIEW WILL INCLUDE BUT NOT BE LIMITED TO:

   3.1. CONFIRMING THAT THE SUBMITTAL MEETS THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
   3.2. COORDINATION HAS TAKEN PLACE WITH ALL INTERCONNECTING TRADES
   3.3. THE SUBMITTAL IS COMPLETE AND COMPREHENSIVE
   REQUESTS ON SUBMITTALS FOR DIMENSIONS WHICH CAN BE DISCERNABLE THROUGH MATHEMATICAL MEANS FROM INFORMATION ALREADY PROVIDED ON THE CONTRACT DOCUMENTS WILL NOT BE PROVIDED.
4. SUBMITTALS NOT REQUESTED BY THE CONTRACT DOCUMENTS MAY OR MAY NOT BE REVIEWED AT THE DESIGN TEAMS DISCRETION.
5. SUBMITTALS ARE TO BE ROUTED THROUGH THE ARCHITECT AND ARE NOT TO BE SENT DIRECTLY TO ARCHITECT'S CONSULTANTS UNLESS SPECIFICALLY AUTHORIZED BY THE ARCHITECT.
6. MINOR CHANGES IN THE WORK MAY OCCUR AS A RESULT OF THE DESIGN TEAM'S REVIEW. IF A CHANGE RESULTS IN MODIFICATIONS TO THE CONTRACT PRICE OR SCHEDULE, THE CONTRACTOR WILL ISSUE A CHANGE ORDER REQUEST FOR REVIEW AND APPROVAL BY THE OWNER AND ARCHITECT PRIOR TO PROCEEDING.

SUBMITTALS

1. THE GENERAL CONTRACTOR IS TO REVIEW ALL PROSPECTIVE RFI's AND MAKE EVERY EFFORT TO ANSWER THEM BEFORE SUBMITTING TO THE DESIGN TEAM.
2. MINOR CHANGES IN THE WORK MAY OCCUR AS A RESULT OF THE DESIGN TEAM'S REVIEW. IF A CHANGE RESULTS IN MODIFICATIONS TO THE CONTRACT PRICE OR SCHEDULE, THE CONTRACTOR WILL ISSUE A CHANGE ORDER REQUEST FOR REVIEW AND APPROVAL BY THE OWNER AND ARCHITECT PRIOR TO PROCEEDING.
3. AN RFI LOG IS TO BE MAINTAINED BY THE GENERAL CONTRACTOR AND A CURRENT COPY IS TO BE INCLUDED WITH EACH RFI SUBMISSION ALONG WITH ANY CRITICAL RESPONSE DUE DATES.
4. RFI's REGARDING METHODS AND MEANS OF CONSTRUCTION WILL NOT BE REVIEWED AND WILL BE REMOVED FROM THE RFI LOG.

CHANGE ORDERS

1. A COMPLETE SCHEDULE OF VALUES OF THE BASE CONTRACT IS TO BE PROVIDED TO THE OWNER AND ARCHITECT PRIOR TO THE START OF ANY WORK.
2. ALL CHANGE ORDER REQUESTS ARE TO BE REVIEWED AND APPROVED BY THE OWNER AND ARCHITECT PRIOR TO SUBMISSION OF A CHANGE ORDER.
3. CHANGE ORDER REQUESTS ARE TO INCLUDE A COMPLETE BREAKDOWN BY TRADE ALONG WITH TRADE BACK-UP AND UNIT PRICING WHERE APPLICABLE.
4. A CHANGE ORDER REQUEST AND CHANGE ORDER LOG IS TO BE MAINTAINED BY THE GENERAL CONTRACTOR AND SUBMITTED ALONG WITH EACH CHANGE ORDER REQUEST.

PROJECT SCHEDULE

1. A COMPLETE CONSTRUCTION SCHEDULE OF ALL PORTIONS OF THE WORK TO BE PROVIDED TO THE OWNER AND ARCHITECT PRIOR TO START OF ANY WORK.
2. THE SCHEDULE SHALL NOT EXCEED TIME LIMITS CURRENT UNDER THE CONTRACT DOCUMENTS.
3. THE SCHEDULE SHALL BE REVISED AT APPROPRIATE INTERVALS AS REQUIRED BY THE CONDITIONS OF THE WORK AND PROJECT AND THE CONTRACTOR SHALL NOTIFY THE OWNER AND ARCHITECT IF FOR ANY REASON THE SCHEDULE IS EXTENDED.
4. A THREE WEEK LOOK-AHEAD SHALL BE REVIEWED REGULARLY AT EACH AOC MEETING WHICH WILL BE IN-LINE WITH THE OVERALL CONSTRUCTION SCHEDULE.


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04/05/2022

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

GENERAL NOTES

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CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT

## DEMOLITION NOTES

1. DRAWINGS OF EXISTING CONDITIONS HAVE BEEN COMPILED FROM EXISTING DATA SUPPLIED BY THE OWNER TO THE ARCHITECT. THE ARCHITECT MAKES NO WARRANTY, EITHER EXPRESSED NOR IMPLIED, FOR THE ACCURACY OR THE COMPLETENESS OF THE EXISTING INFORMATION RECORDED. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICTS THAT MIGHT ARISE IN THE COURSE OF THE DEMOLITION WORK.
2. PROTECT AND VERIFY LOCATIONS OF EXISTING MECHANICAL, PLUMBING AND ELECTRICAL UTILITIES SCHEDULED TO REMAIN. WHERE DEMOLITION IS INDICATED, DISCONNECT AND REMOVE BACK TO NEAREST JUNCTION BOX OR PANEL. TERMINATE AND CAP DESIGNATED UTILITIES WITHIN THE DEMOLITION AREA. REFER TO THE MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ADDITIONAL INFO.
3. ALL EXISTING BUILDING UTILITIES SHALL REMAIN IN OPERATION DURING DEMOLITION AND CONSTRUCTION. REROUTE UTILITIES SERVING ADJACENT AREAS AS REQUIRED TO MAINTAIN UNINTERRUPTED SERVICE. ANY TEMPORARY INTERRUPTION OF SERVICE SHALL BE COORDINATED AND APPROVED BY THE FACILITY MANAGER, NOT LESS THAN 72-HOURS IN ADVANCE.
4. THE DEMOLITION PLAN KEYNOTES ARE DIAGRAMMATIC AND GENERAL IN NATURE. THEIR INTENT IS TO ILLUSTRATE THE COMPLETE DEMOLITION AND REMOVAL OF NON-STRUCTURAL ELEMENTS WITHIN THE SPACES INDICATED UNLESS NOTED OTHERWISE. FIELD VERIFICATION OF EXISTING CONDITIONS AND SPECIFIC QUANTITIES IS THE RESPONSIBILITY OF THE CONTRACTOR.
5. REMOVAL AND DISPOSAL OF DEMOLITION DEBRIS IS THE RESPONSIBILITY OF THE CONTRACTOR. VERIFY THE HAULING ROUTE THROUGH THE BUILDING, THE DEMOLITION STAGING AREA, AND THE LOCATION OF THE DUMPSTERS WITH THE OWNER PRIOR TO THE START OF DEMOLITION. DISPOSAL OF RUBBISH SHALL BE DONE IN A LEGAL MANNER.
6. THE OWNER RESERVES THE RIGHT TO SALVAGE ANY DEMOLISHED ITEM. CONTRACTOR TO VERIFY ITEMS TO BE SALVAGED FOR THE OWNER'S PURPOSE WITH THE OWNER PRIOR TO THE START OF DEMOLITION. REMOVE, PROTECT, CLEAN, AND REPAIR SALVAGED ITEMS AS REQUIRED FOR REUSE AND TURN OVER SUCH ITEMS AS DIRECTED BY THE OWNER.
7. INSTALLATION OF NEW WORK INCLUDING, BUT NOT LIMITED TO MECHANICAL, PLUMBING OR ELECTRICAL, MAY REQUIRE THE CONTRACTOR AND HIS SUBCONTRACTORS TO REMOVE AND REPLACE OR RE-FINISH EXISTING WALLS, FLOORS, OR CEILING TO MATCH EXISTING IN THE AREAS OF THE BUILDING NOT SHOWN ON THESE PLANS. THE CONTRACTOR SHALL INCLUDE ALL RELATED COSTS IN HIS BASE BID, WHETHER OR NOT THIS WORK IS SHOWN ON THESE PLANS.
8. AT ADJACENT SPACES NOT SCHEDULED FOR DEMOLITION, PATCH AND REPAIR DAMAGED FINISHES AND ITEMS AND FIXTURES TO REMAIN AND/OR REPLACE IN KIND TO MATCH EXISTING FROM DAMAGE DURING THE PROGRESS OF THE WORK.
9. PROVIDE TEMPORARY SAFETY BARRIERS REQUIRED BY CODE AND AS INDICATED TO INSURE PUBLIC SAFETY AND TO ALLOW EXISTING BUILDING OCCUPANCY. CONTRACTOR TO SUBMIT FOR OWNER APPROVAL, BARRIER LOCATIONS AND METHOD OF CONSTRUCTION PRIOR TO INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY REQUIRED BUILDING DEPARTMENT APPROVAL.
10. PROVIDE AND INSTALL DUST BARRIERS AT ALL OPENINGS FROM ADJACENT INTERIOR SPACES TO THE CONSTRUCTION AREA. PROVIDE ALL MEANS NECESSARY TO INHIBIT DUST FROM ENTERING OTHER PORTIONS OF THE FACILITY. SUBMIT PROPOSED BARRIER LOCATIONS TO THE OWNER AND THE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO THE START OF DEMOLITION AND CONSTRUCTION.
11. PROVIDE ADEQUATE SHORING, BRACING, BARRICADES AND PROTECTIVE MEASURES AS REQUIRED TO SAFELY EXECUTE THE WORK IN THE CONSTRUCTION AREA AND THE AREAS ADJACENT TO THE CONSTRUCTION AREA. CEASE OPERATIONS AND NOTIFY THE ARCHITECT IMMEDIATELY IF THE STRUCTURE APPEARS TO BE ENDANGERED. DO NOT RESUME OPERATIONS UNTIL CORRECTIVE MEASURES HAVE BEEN TAKEN.
12. PROVIDE TEMPORARY NON-COMBUSTIBLE CONSTRUCTION BARRIERS WHERE REQUIRED BY CODE AND THE GOVERNING FIRE AUTHORITY. AT A MINIMUM THE BARRIERS SHALL:
    A. BE FULL HEIGHT WALL FROM FLOOR TO CEILING.
    B. BE STUDS AT 24" O.C., WITH 5/8" TYPE 'X' GYPSUM BOARD.
    C. INCLUDE NON-COMBUSTIBLE ACCESS DOOR WITH (3) HINGES AND SPRING CLOSER.
13. CUT RIGID MATERIALS USING MASONRY SAW OR CORE DRILL. PNEUMATIC TOOLS ARE NOT ALLOWED WITHOUT PRIOR APPROVAL OF THE OWNER.
14. CONTRACTOR IS RESPONSIBLE FOR BUILDING SECURITY DURING DEMOLITION PHASE. PROTECT ALL OPENINGS FROM WEATHER CONDITIONS AND SECURE THEM TO PREVENT VANDALISM.
15. DO NOT PERFORM ANY WORK THAT COULD VOID WARRANTIES OF EXISTING WEATHER EXPOSED OR MOISTURE RESISTANT ELEMENTS WITHOUT PRIOR APPROVAL FROM THE OWNER.
16. THE ARCHITECT ASSUMES NO RESPONSIBILITY RELATING TO ANY TOXIC MATERIALS, INCLUDING ASBESTOS, AND ASSUMES NO RESPONSIBILITY TO ITS EXISTENCE OR REMOVAL. THE OWNER IS SOLELY RESPONSIBLE FOR CONTRACTING WITH A CONSULTANT OR SPECIALIST, LICENSED BY THE STATE, FOR SUCH SERVICES SHOULD THOSE SERVICES BE REQUIRED ON THE PROJECT.
17. IF THE EXISTING BUILDING CONSTRUCTION IS CLASSIFIED SUCH THAT FIREPROOFING INSULATION IS PRESENT, THEN THE CONTRACTOR, PRIOR TO STARTING ANY WORK, SHALL VERIFY THE CURRENT FIRE-RESISTANCE RATING(S) OF THE EXISTING BUILDING ELEMENT(S). IF THE EXISTING FIREPROOFING INSULATION IS DAMAGED/AFFECTED DURING THE COURSE OF THE WORK, AS DEFINED BY THIS PROJECT SCOPE, THEN THE CONTRACTOR SHALL PATCH/REPAIR THE FIREPROOFING INSULATION TO A CONDITION THAT SHALL MATCH OR EXCEED THE ORIGINAL FIRE-RESISTANCE RATING(S) OF THE EXISTING BUILDING ELEMENT(S).
18. EXISTING DOORS TO REMAIN, U.O.N.
19. STRUCTURAL ENGINEER TO REVIEW AND APPROVE THE LOCATION AND SIZE OF CORED AND CUT OPENINGS IN ELEVATED DECKS AS WELL AS THE MAXIMUM PENETRATION DEPTH OF DRILLED OR SHOT-ON ANCHORS AND OTHER FASTENERS.

## FINISH NOTES

1. NO FINISH SUBSTITUTIONS MAY BE MADE UNLESS APPROVED BY ARCHITECT.
2. CONTRACTOR MUST NOTIFY THE ARCHITECT OF ANY DISCREPANCY IN PLANS. FINISH ITEMS CLEARLY SHOWN IN PLANS, BUT OMITTED FROM SCHEDULES OR LEGENDS MUST STILL BE PROVIDED AND INSTALLED BY CONTRACTOR. CONTRACTOR TO VERIFY OMITTED FINISHED WITH ARCHITECT PRIOR TO ORDERING PRODUCTS.
3. INSTALL MATERIALS ACCORDING TO MANUFACTURER'S SUGGESTED INSTALLATION AND PREPARATION/MAINTENANCE SPECIFICATIONS OR BETTER, UNLESS OTHERWISE APPROVED OR NOTED.
4. APPLICATION OF CONTROLLED INTERIOR FINISHES SHALL BE IN CONFORMANCE WITH STATE & LOCAL CODES.
5. DECORATIVE MATERIALS SHALL BE MAINTAINED IN FLAME-RETARDANT CONDITION.
6. SUBMIT THE FOLLOWING SAMPLES FOR ARCHITECT'S APPROVAL:
    A. THREE (3) 12" X 12" SAMPLES FOR ALL PAINT, WALL COVERING FINISHES AND COLORS APPLIED TO A SUBSTRATE WHICH IS REPRESENTATIVE OF THE SURFACE TO BE FINISHED. SUBMIT PAINT SAMPLES FROM THE PAINT LOT OR LOTS INTENDED FOR APPLICATION.
    B. ONE (1) 24" X 24" MOCK-UP WITH SAMPLE SEAM (CENTERED) OF ALL WALL COVERING FINISHES AND COLOR.
    C. THREE (3) 12" X 12" SAMPLES OF ALL FLOOR COVERING.
    D. SUBMIT ACTUAL CUTTINGS OF EACH PRODUCT FOR COLOR/QUALITY CONTROL.
7. WHERE MATERIALS ARE NOT RETURNABLE, SUBMIT SAMPLES TO ARCHITECT AND SECURE APPROVAL BEFORE PLACING FULL ORDERS.
8. SUBMIT SEAMING PLAN FOR CARPET TO ARCHITECT FOR APPROVAL PRIOR TO CARPET ORDER.
9. NOTIFY ARCHITECT IMMEDIATELY OF ITEMS WITH LONG LEAD TIMES.
10. ALL PAINT FINISH OF METAL PARTS OF DOORS, HANDRAILS, PERIMETER ENCLOSURES, ETC. , SHALL BE SEMI-GLOSS, UNLESS NOTED OTHERWISE.
11. WHERE PAINT COLORS CHANGE, CORNERS ARE TO BE CUT-IN FREE OF OVERLAPPING.
12. PRIOR TO THE INSTALLATION OF WALL COVERINGS, SURFACES SHALL BE PROPERLY PREPARED WITH SEALER PER MANUFACTURER'S RECOMMENDATIONS.
13. CONTRACTOR TO VERIFY CONDITION AND LEVEL OF FLOOR SO AS TO RECEIVE NEW FINISHES WITHOUT BOWING AT FLOOR OR WALL BASE. CONTRACTOR IS RESPONSIBLE FOR ALL FLOOR PREPARATION.
14. ALL CARPETING SHALL BE INSTALLED WITH GLUE DOWN METHOD, UNLESS NOTED OTHERWISE.
15. ALL RESILIENT FLOORING TO BE INSTALLED WITH FULL TILE FROM THRESHOLD STRIP AND FULL TILE FROM WALL ADJACENT TO DOOR SWING, U.N.O.
16. PROVIDE AND INSTALL SPECIFIED BASE FOR ALL AREAS TO RECEIVE FLOORING.
17. CONTRACTOR SHALL PROVIDE PRE-FORMED RUBBER BASE CORNERS. DO NOT CUT OR BEND STRAIGHT BASE TO MAKE CORNERS.
18. MILLWORK LOWER CABINETS ARE NOT TO RECEIVE WALL BASE UNLESS INDICATED ON MILLWORK DETAILS.
19. FLOOR FINISHES TO CONTINUE UNDERNEATH "OPEN FLOOR" AREAS OF MILLWORK, INCLUDING SINK AREA AND AT ALL UNDER-COUNTER EQUIPMENT AREAS WHICH ARE OPEN TO THE FLOOR.
20. FLOORS SHALL BE SLOPED TO FLOOR DRAINS. COORDINATE WITH PLUMBING AND STRUCTURAL DRAWINGS. IN RATED FLOOR CONDITIONS, CONFIRM REMAINING FLOOR THICKNESS STILL CONFORMS TO MINIMUM RATING REQUIREMENT.
21. CONTRACTOR TO RUN CALCIUM CHLORIDE TEST ON ALL EXISTING OR NEW CONCRETE SLABS PRIOR TO INSTALLING ANY FLOORING AND COMPARE RESULTS WITH FLOORING MANUFACTURE'S RECOMMENDED MAXIMUM CONTENT FOR WARRANTIES AND ADHESIVE PRODUCTS.
22. PRIOR TO NEW FLOORING INSTALLATION REMOVE EXISTING FLOOR FINISHES. PATCH AND REPAIR SUB-FLOOR AS REQUIRED. PREPARE FLOORS AND TRANSITIONS AS REQUIRED FOR SMOOTH AND LEVEL FINISH PER APPLICABLE BUILDING CODES.
23. ALL FLOORING TRANSITIONS AMONG DIFFERING FLOORING MATERIAL ARE TO BE A FLUSH TRANSITION, U.O.N.
24. FEATHER SUB-FLOOR UP FOR TILE FLOORING TO CARPET CONDITIONS AND RESILIENT FLOORING TO CARPET CONDITIONS FOR FLUSH INSTALLATION.
25. INSTALL METAL TRANSITION STRIPS WHERE TILE MEETS ALL OTHER FLOORING TYPES. PROVIDE LOW PROFILE TRANSITION STRIP WHERE ALL OTHER DIFFERENT FLOOR TYPES MEET, VERIFY COLOR WITH ARCHITECT.
26. FLOOR COVERING INSTALLER TO FOLLOW MANUFACTURER'S SPECIFIED CARPET INSTALLATION INSTRUCTIONS, USING ADHESIVES AND INSTALLATION METHOD TO MAINTAIN PRODUCT'S WARRANTY. CONTACT CARPET SALES REPRESENTATIVE WITH QUESTIONS PRIOR TO PROCEEDING.
27. FLOOR COVERING INSTALLER TO FOLLOW MANUFACTURER'S SPECIFIED CONTOURED RUBBER BASE INSTALLATION INSTRUCTIONS USING ADHESIVES AND INSTALLATION METHODS REQUIRED TO MAINTAIN PRODUCT'S WARRANTY.
28. FLOOR COVERING INSTALLER REQUIRED TO PROVIDE MINIMAL SEAMS/JOINTS AT ALL LOCATIONS FOR FLOOR AND WALL BASE MATERIAL INSTALLATION. PROVIDE LOW VOC, BUT HEAVY DUTY ADHESIVES TO ENDURE HEAVY FOOT TRAFFIC, CARTS AND TO MAINTAIN PRODUCT'S WARRANTY.
29. PRIOR TO PAINTING, WALLS MUST BE PATCHED AND REPAIRED, CLEAN AND DRY AS TO LEAVE NO EVIDENCE OF PATCHING OR REPAIRS. ALL SCREW AND NAIL HEADS MUST BE SET AND SPACKLED. ALL JOINTS MUST BE TAPED AND COVERED WITH JOINT COMPOUND. JOINTS THAT ARE FILLED TO BE SANDED SMOOTH AND DUST REMOVED PRIOR TO RECEIVING NEW PAINT FINISH APPLICATION.
30. PRIOR TO PAINTING OVER WALL COVERING, SECURELY GLUE DOWN ANY LIFTING OR BUCKLING AND HIDE ALL SEAMING OR BUMPS.
31. WALLS TO HAVE AT LEAST ONE COAT OF COLORED PRIMER AND TWO COATS OF SPECIFIED PAINT FINISH TYPE. PAINT TO BE A LOW VOC UNLESS U.O.N. HIGH TRAFFIC/WEAR ABILITY WITH GOOD SCRUB AND CLEANING ABILITY. VERIFY ALL WITH TENANT OR OWNER PRIOR TO PURCHASING PAINT.
32. PAINT ANY UNFINISHED SPEAKER COVERS AND HVAC GRILLS IN GYPSUM BOARD WALLS AND CEILINGS TO MATCH ADJACENT PAINT COLOR AS SPECIFIED.
33. ALL EXPOSED MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION DUCTWORK AND PIPING IS TO BE PAINTED TO MATCH THE CEILING.
34. ALL NEWLY INSTALLED, PATCHED WORK AND ALL AFFECTED AREAS SHALL BE PAINTED. ALL PAINTING WORK SHALL BE PERFORMED TO COVER THE ENTIRE HORIZONTAL OR VERTICAL SURFACE TO THE CLOSEST CORNER IN ALL FOUR DIRECTIONS.
35. PRIOR TO INSTALLING WALL TILES AND WALL BASE TILE, WALLS MUST BE PATCHED AND REPAIRED, CLEAN AND DRY AND BE PROPERLY MEMBERED AND ALIGNED, SO, AS TO LEAVE NO EVIDENCE OF PATCHING OR REPAIRS. ALL SCREW AND NAIL HEADS MUST BE SET AND SPACKLED. ALL JOINTS MUST BE TAPED AND COVERED WITH JOINT COMPOUND. JOINTS THAT ARE FILLED ARE TO BE SANDED SMOOTH AND BUMP FREE WITH DUST REMOVED PRIOR TO RECEIVING MORTAR BED/BOND COAT AND WALL TILES.
36. ALL WALL TILES ARE TO HAVE A MORTAR BED/BOND COAT THICKNESS TO ACCOMMODATE THE VARYING THICKNESSES OF ALL MATERIAL TYPES OF TILE SPECIFIED FOR WALL INSTALLATION WITH A FLUSH FRONT FACE.
37. ALL TRANSLUCENT GLASS TILE SPECIFIED ARE TO RECEIVE UNIFORM COVERAGE BY BACK BUTTERING TILES AND TROWEL RIDGES FLATTENED PRIOR TO SETTING.
38. FLOORS OF TOILETS, BATHING AND SHOWER ROOMS SHALL HAVE A SMOOTH, HARD, NONABSORBENT SURFACE. THE INTERSECTION OF SUCH FLOORS WITH WALLS SHALL HAVE A SMOOTH, HARD, NONABSORBENT VERTICAL BASE AS SPECIFIED IN FINISH PLANS OR RESTROOM ELEVATIONS. BASE SHALL EXTEND UPWARD ONTO THE WALLS NOT LESS THAN 4 INCHES.
39. WALLS AND PARTITIONS WITHIN 2 FEET OF SERVICE SINKS, URINALS AND WATER CLOSETS SHALL HAVE A SMOOTH, HARD, NONABSORBENT SURFACE TO A HEIGHT OF NOT LESS THAN 4 FEET ABOVE THE FLOOR.

## CEILING NOTES

1. SEE ELECTRICAL ENGINEERING DRAWINGS FOR SPECIFICATIONS OF LIGHT FIXTURES, SWITCHES, EXIT SIGNS, ETC.
2. CONTRACTOR TO VERIFY COMPATIBILITY OF LIGHT FIXTURES WITH THE CEILING SYSTEM.
3. ALL REPLACEMENT FLUORESCENT LAMPS TO MATCH BUILDING STANDARD OR ADJACENT EXISTING CONSTRUCTION - SAME COLOR AND MANUFACTURER.
4. FIELD VERIFY EXISTING CEILING GRID LOCATION AND NOTIFY ARCHITECT OF ANY DISCREPANCIES ON PLANS.
5. CONTRACTOR TO PROVIDE APPROPRIATE SIZED CUTOUTS ABOVE CEILINGS WHERE NON-RATED PARTITIONS EXTEND TO SLAB ABOVE AS NECESSARY FOR RETURN AIR CIRCULATION.
6. WHERE DISCREPANCIES IN LOCATION OF LIGHT FIXTURES, AIR DIFFUSERS, GRILLES, ETC. OCCUR ON THE ELECTRICAL PLANS, THE ARCHITECTURAL PLANS SHALL GOVERN. NOTIFY ARCHITECT OF ANY DISCREPANCIES FOR CLARIFICATIONS.
7. FIELD VERIFY ALL CLEARANCES OF DUCTS, PIPES, SPRINKLERS, ETC. AND NOTIFY ARCHITECT OF ANY CONFLICTS PRIOR TO INSTALLATION OF LIGHTS ETC.
8. PLACEMENT OF LIGHT FIXTURES IN AREAS WHERE MAIN DUCTS MAY CAUSE INTERFERENCE MUST BE APPROVED BY ARCHITECT PRIOR TO INSTALLATION.
9. CONDUIT ABOVE CEILING MUST BE A MINIMUM OF 12" ABOVE THE CEILING GRID.
10. NO COMBUSTIBLE MATERIALS SHALL BE USED IN THE PLENUM SPACE, INCLUDING ALUMINUM FLEX, ALUMINUM CONDUIT AND POT METAL CONNECTORS.
11. ALL JUNCTION BOXES AND MECHANICAL EQUIPMENT REQUIRING ACCESS FOR SERVICE SHALL BE LOCATED OVER ACOUSTICAL CEILINGS. NO ACCESS HATCHES SHALL BE INSTALLED IN GYPSUM BOARD CEILINGS WITHOUT PRIOR APPROVAL BY ARCHITECT. (NO EXCEPTION).
12. ALL SPRINKLER HEADS AT HARD-LID CEILINGS ARE TO BE FULLY RECESSED AND CONCEALED. HEADS ARE TO BE CENTERED BETWEEN LIGHTS IN A UNIFORM ARCHITECTURAL PATTERN, G.C TO PROVIDE A SUBMITTAL WITH SPRINKLER HEAD LOCATIONS FOR ARCHITECT'S APPROVAL PRIOR TO INSTALLATION.
13. ALL SPRINKLER HEADS PLACED IN WHITE CEILING TILE OR WHITE GYPSUM BOARD TO BE WHITE. ALL SPRINKLER HEADS IN COLORED CEILINGS ARE TO BE CUSTOM COLOR TO MATCH ADJACENT CEILING.
14. LOCATE RECESSED DOWN LIGHTS, WALL WASHERS, SMOKE DETECTORS, EXIT SIGNS, SPEAKERS, FIRE SPRINKLERS, ETC. IN CENTER OF 24"x24" CEILING TILES OR IN CENTER OF 24"x24" PORTION OF 24"x48" CEILING TILES. UNLESS OTHERWISE NOTED.
15. PROVIDE SWITCHES AND LIGHT SENSORS FOR OPEN AREAS AND PRIVATE OFFICES. ACTUAL LOCATION OF ALL SWITCHES TO BE DETERMINED BY ARCHITECT.
16. PROVIDE FIRE DAMPERS AT ALL SUPPLY AND RETURN AIR OUTLETS, INLETS OR DUCTS PENETRATING FIRE RATED ASSEMBLIES, ENCLOSURES, WALLS, FLOORS OR SURFACES, AS REQUIRED BY LOCAL CODES AND FIRE DEPARTMENT. REFER TO MECHANICAL ENGINEERING DOCUMENTS FOR SPECIFIC REQUIREMENTS.
17. CONTRACTOR SHALL PROVIDE EMERGENCY LIGHTING, STROBE LIGHTS, AUDIO-VISUAL ALARMS AND OCCUPANCY SENSORS TO MEET ALL APPLICABLE CODES.
18. CONTRACTOR SHALL PROVIDE LAMPS WITH TYPE IC RATED HOUSING WHERE FIXTURES COME IN DIRECT CONTACT WITH INSULATION.
19. ALL EXIT SIGN LOCATIONS SHALL BE COORDINATED WITH THE ARCHITECT.
20. EXIT SIGNS SHALL BE INTERNALLY OR EXTERNALLY ILLUMINATED AT ALL TIMES AND SHALL BE CONNECTED TO AN EMERGENCY POWER SYSTEM (BATTERIES, UNIT EQUIPMENT OR AN ON-SITE GENERATOR) THAT WILL AUTOMATICALLY ILLUMINATE THE EXIT SIGNS FOR A DURATION OF NOT LESS THAN 90 MINUTES.

## MILLWORK NOTES

1. CONTRACTOR MUST NOTIFY BUILDING OWNER/MANAGER OF ANY DISCREPANCY IN PLANS. FINISH ITEMS CLEARLY SHOWN IN PLANS, BUT OMITTED FROM SCHEDULES OR LEGENDS MUST STILL BE PROVIDED AND INSTALLED BY CONTRACTOR. CONTRACTOR TO VERIFY OMITTED FINISHES WITH BUILDING OWNER/MANAGER PRIOR TO ORDERING PRODUCTS.
2. SHOP DRAWINGS MUST BE PROVIDED FOR APPROVAL PRIOR TO FABRICATION ANY SUBSTITUTIONS MUST BE APPROVED BY THE ARCHITECT PRIOR TO FABRICATION.
3. MILLWORKER TO COORDINATE & VERIFY WITH CONTRACTOR FINAL LOCATION FOR CANTILEVERED COUNTERS FOR IN-WALL SUPPORT BRACKETS, PRIOR TO GYPSUM BOARD FINISHING OF WALLS. ALL FINAL INSTALLATION HEIGHTS FOR IN-WALL SUPPORT BRACKETS MUST MEET ALL APPLICABLE ACCESSIBILITY CODES AND STANDARDS WITH COUNTERTOP MATERIAL THICKNESS INCLUDED.
4. MATERIAL COLORS NOT LISTED SHALL BE REQUESTED FROM THE ARCHITECT ON SHOP DRAWING SUBMITTALS OR VIA RFIs.
5. ALL UPPERS TO BE LAMINATED TO MATCH BASE CABINETS. BOTH UPPERS & LOWER CABINETS IN WET AREAS TO HAVE MATCHING PVC EDGE, ALL OTHERS TO HAVE PLASTIC LAMINATE EDGE BANDING U.O.N.
6. ALL CABINETS AND DOORS SHALL BE CONSTRUCTED FROM 3/4" THICK MATERIAL, U.O.N. ON DETAILS.
7. BASE CABINETS ARE NOT TO RECEIVE WALL BASE UNLESS INDICATED ON FINISH PLANS OR ELEVATIONS.
8. ALL INTERIORS OF CLOSED CABINETS TO BE WHITE MELAMINE/POLYESTER OR APPROVED EQUAL, UNLESS OTHERWISE SPECIFIED.
9. ALL OPEN CABINETS OR SHELVES TO HAVE PLASTIC LAMINATE TO MATCH EXTERIORS.
10. NO 3/4" THICK SHELF SHALL SPAN LONGER THAN 32" WITHOUT SUPPORT.
11. ALL SHELVING TO BE ADJUSTABLE UNLESS OTHERWISE SPECIFIED.
12. ALL FILE PEDESTALS ARE TO BE CONFIGURED FOR "FRONT TO BACK" FILING AND BE ABLE TO ACCEPT METAL HANGERS TO ACCEPT PENDAFLEX TYPE FILE FOLDERS, UNLESS NOTED AS LATERAL.
13. ALL COUNTER TOPS TO BE 24" DEEP, UNLESS OTHERWISE SPECIFIED. WHERE NO BACKSPLASH IS SPECIFIED, COUNTER TOPS TO BE SCRIBED TIGHTLY TO BACK & SIDE WALLS.
14. ALL BACKSPLASHES TO BE SCRIBED TO WALLS, AND MUST BE FLUSH TO EDGE OF BASE, UNLESS OTHERWISE SPECIFIED. ALL COUNTER TRANSITION SEAMS MUST BE CAULKED SEALED, VERIFY EITHER MATCHING COLOR CAULK OR CLEAR SILICONE.
15. PROVIDE SIDE SPLASHES AT LOCATIONS ADJACENT TO WALLS OR WINDOWS, ESPECIALLY FOR SINKS U.O.N.
16. FACES OF PIGEONHOLES TO MATCH WORK SURFACE LAMINATE. COLOR OF EDGE BANDING ON ALL DOORS TO MATCH FACE MATERIAL.
17. IF PROVIDED, SEE SPECIFICATIONS/PROJECT MANUAL FOR ADDITIONAL REQUIREMENTS.
18. COUNTERTOPS SHALL HAVE A NOSING OF COUNTERTOP MATERIAL AT LEAST 3" DEEP, WHEREBY THE COUNTER MATERIAL EXTENDS INTO THE INSIDE OF THE CABINET, I.E. OVER THE DOOR (WHEN PRESENT).
19. END PANELS AND FRONT EDGES OF EDGE PANELS WHICH ARE PROUD OF THE INTERIOR CABINET SHALL BE FACED TO MATCH DOOR FRONTS.
20. ALL HINGED DOORS TO HAVE CLEAR SILENCERS TOP AND BOTTOM ON DOOR (NOT CABINET).
21. ALL DRAWERS GLIDES SHALL HAVE SILENCERS BUILT INTO THE GLIDE AND NOT INSTALLED ON THE DRAWER OR DRAWER FRONT.
22. ALL DRAWER GLIDES SHALL BE FULL EXTENSION.
23. PROVIDE FULL OVERLAY HINGES THAT OPEN ±105°, EXCEPT WHERE CABINETS ARE ADJACENT TO THE WALLS. PROVIDE HINGES WHICH LIMIT THE DOOR SWING TO KEEP THE DOOR PULL FROM DAMAGING THE WALL.

## FLOOR PLAN NOTES

1. CONTRACTOR AND ARCHITECT TO REVIEW & APPROVE CHALK LINES OF PARTITION LAYOUT PRIOR TO COMMENCEMENT OF PARTITION CONSTRUCTION.
2. CONTRACTOR TO VERIFY DIMENSIONS FOR ALL PLUMBING PARTITIONS.
3. EXTEND ALL STUDS AND WALL MATERIALS TO CONSTRUCTION ABOVE, U.O.N.
4. ALL CONDUIT PIPING TO BE CONCEALED WITHIN THE WALL CONSTRUCTION.
5. DOOR OPENINGS IN PARTITIONS NOT DIMENSIONED ARE TO BE LOCATED WITHIN 4" OF ADJACENT PERPENDICULAR PARTITION.
6. CONTRACTOR SHALL USE 6" METAL STUDS MINIMUM AT ALL PLUMBING WALLS. CONTRACTOR TO VERIFY ACTUAL DEPTH REQUIRED, ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT.
7. USE WATER RESISTANT GYPSUM BOARD AT ALL AREAS SUBJECT TO MOISTURE OR WHERE TILE IS USED.
8. ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH LOCAL AND NATIONAL CODES.
9. ALL HOT WATER LINES SHALL BE PROPERLY INSULATED. SEE PLUMBING DRAWINGS.
10. ALL PLUMBING CLEAN-OUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. CONTRACTOR SHALL COORDINATE ALL CLEAN-OUT LOCATIONS WITH EQUIPMENT, AND CABINETS. SUBMIT A PLAN OF ALL PROPOSED LOCATIONS TO ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION.
11. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ARCHITECT AND TENANT APPROVAL PRIOR TO MANUFACTURE OF ANY CABINET WORK, MILLWORK AND ANY OTHER SPECIAL ITEMS REQUIRING CUSTOM SHOP PREFABRICATION WORK.
12. PROVIDE AND INSTALL ALL NECESSARY WALL BACKING, STIFFENERS, BRACING, BACK-UP PLATES AND OR SUPPORTING BRACKETS AS REQUIRED FOR THE INSTALLATION OF WALL-MOUNTED OR SUSPENDED EQUIPMENT OR BUILT-IN ITEMS. VERIFY REQUIREMENTS WITH MANUFACTURERS PRIOR TO INSTALLATION. SUPPLY CATALOG CUT SHEETS FOR ARCHITECT'S APPROVAL.
13. PROVIDE AND INSTALL ALL NECESSARY ELECTRICAL CONNECTIONS AND PLUMBING SUPPLY, FITTINGS & CONNECTORS TO COMPLETE INSTALLATION OF APPLIANCES & EQUIPMENT INDICATED ON PLAN. VERIFY REQUIREMENTS WITH MANUFACTURERS PRIOR TO INSTALLATION. SUPPLY CATALOG CUT SHEETS FOR ARCHITECT'S APPROVAL.
14. EXACT LOCATION OF FIRE EXTINGUISHER CABINETS TO BE CONFIRMED WITH ARCHITECT BEFORE INSTALLATION. PROVIDE ADDITIONAL FIRE EXTINGUISHERS & CABINETS AS REQUIRED BY THE FIRE DEPARTMENT FIELD INSPECTORS.
15. UNLESS OTHERWISE NOTED, ALL GYPSUM BOARD SURFACES, WALLS, AND CEILINGS SHALL BE TAPED, SANDED SMOOTH TO A "LEVEL 4" FINISH, SO AS TO RECEIVE PAINT OR WALL COVERING MATERIAL.
16. PROVIDE SOUND INSULATION AT PERIMETER WALLS OF RESTROOMS, LOBBY, STAIRS, AND ACROSS CEILING OF RESTROOMS TO CREATE AN ACOUSTIC ENVELOPE, U.O.N.
17. PATCH AND FILL OPENINGS AT EXISTING GYPSUM BOARD PARTITIONS AND SOFFITS FOLLOWING REMOVAL OR INSTALLATION OF ANY SURFACE MOUNTED OR RECESSED FURNISHINGS, RECEPTACLES, UTILITY PIPING, SHELF STANDARDS & ALL OTHER SIMILAR ELEMENTS INDICATED TO BE REMOVED DURING THE DEMOLITION PHASE OR INSTALLED DURING THE CONSTRUCTION PHASE: TAPE AND SEAL ALL SEAMS WITH JOINT COMPOUND; APPLY NEW FINISH TO MATCH EXISTING FINISH AT ADJACENT GYPSUM BOARD SURFACES AND FEATHER NEW FINISH WITH EXISTING FINISH TO PROVIDE CONSISTENT & CONTINUOUS FINISH.
18. THE MAXIMUM CONTROL JOINT SPACING FOR WALLS AND CEILINGS WITHOUT PERIMETER RELIEF IS TO BE 30 LINEAR FEET OR 900 SQUARE FEET OF SURFACE AREA. WITH PERIMETER RELIEF IS TO BE 50 LINEAR FEET OR 2,500 SQUARE FEET OF SURFACE AREA. EXTERIOR JOINT SPACING IS TO BE 30 LINEAR FEET OR 900 SQUARE FEET OF SURFACE AREA.
19. CONSTRUCTION SEALANT JOINTS ARE REQUIRED AT CONTINUOUS GYPSUM BOARD SURFACES WITH DISSIMILAR WALL STRUCTURE.
20. PROVIDE DOUBLE STUDS AT BOTH JAMBS OF DOOR FRAMES AND HEADER.
21. PARTITIONS SHALL NOT BE FASTENED NOR BRACED TO DUCTWORK, CONDUIT OR PIPING.
22. DO NOT MECHANICALLY SECURE NEW STUD FRAMING TO EXISTING WINDOW FRAMES.

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REGISTERED ARCHITECT CHRISTOPHER PRICE 20198 STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

GENERAL NOTES

| DATE | REMARKS |
|---|---|
| 03.03.2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT

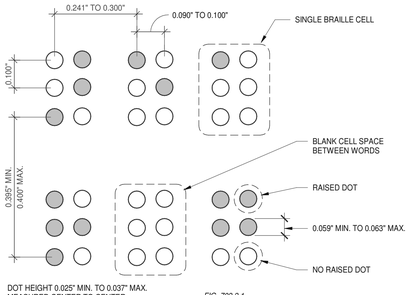



FIG. 703.3.1

## BRAILLE MEASUREMENT 21

SCALE: 3/8" = 1'-0"

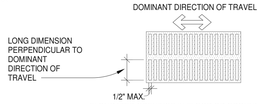
NOTES:

1. FLOOR AND GROUND SURFACES SHALL BE STABLE, FIRM AND SLIP RESISTANT.
2. CARPET OR CARPET TILE SHALL BE SECURELY ATTACHED AND SHALL HAVE A FIRM CUSHION, PAD OR BACKING OR NO CUSHION OR PAD. CARPET OR CARPET TILE SHALL HAVE A LEVEL LOOP, TEXTURED LOOP, LEVEL CUT PILE, LEVEL CUT/UNCUT PILE TEXTURE. PILE HEIGHT SHALL COMPLY WITH CARPET PILE HEIGHT FIGURE BELOW. EXPOSED EDGES OF CARPET SHALL BE FASTENED TO FLOOR SURFACES AND SHALL HAVE TRIM ON THE ENTIRE LENGTH OF THE EXPOSED EDGE. CARPET EDGE SHALL COMPLY WITH CHANGE IN LEVEL FIGURES BELOW.

CARPET PILE HEIGHT
FIG. 302.2

VERTICAL CHANGE IN LEVEL
FIG. 303.2

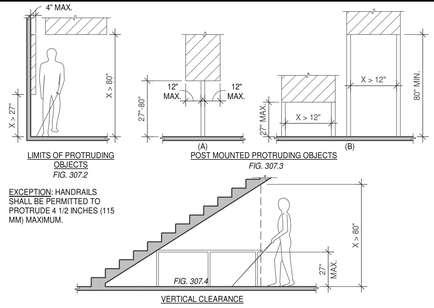
BEVELED CHANGE IN LEVEL
FIG. 303.3




ELONGATED OPENINGS IN FLOOR OR GROUND SPACE
FIG. 302.3

## FLOOR OR GROUND SURFACES & CHANGES IN LEVEL 16

SCALE: 1/2" = 1'-0"




LIMITS OF PROTRUDING OBJECTS
FIG. 307.2

POST MOUNTED PROTRUDING OBJECTS
FIG. 307.3

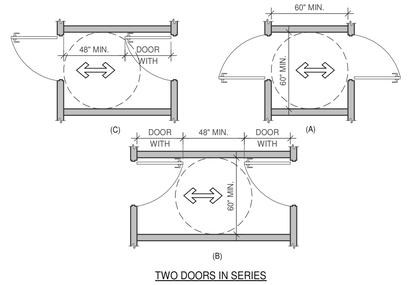
EXCEPTION: HANDRAILS SHALL BE PERMITTED TO PROTRUDE 4 1/2 INCHES (115 MM) MAXIMUM.

FIG. 307.4

VERTICAL CLEARANCE

## PROTRUDING OBJECTS 11

SCALE: 1/4" = 1'-0"



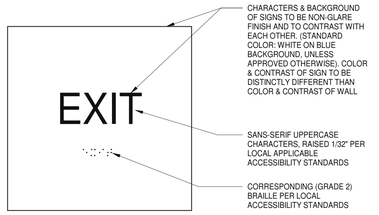

TWO DOORS IN SERIES

## DOORS, DOORWAYS & GATES 6

SCALE: 1/4" = 1'-0"

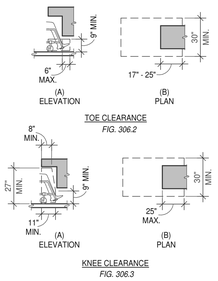
## ACCESSIBILITY NOTES

1. "THE ACCESSIBILITY GUIDELINES AND CODES" MENTIONED BELOW REFER TO ALL APPLICABLE LOCAL/STATE BUILDING CODES REFERENCED ON THE PROJECT DATA SHEET OF THIS SET IN ADDITION TO THE FEDERAL REQUIREMENTS OF THE ADA (THE AMERICANS WITH DISABILITIES ACT).
2. DETAILS ON THIS SHEET ARE FOR REFERENCE ONLY, REFER TO THE ACCESSIBILITY GUIDELINES AND CODES FOR ALL ACCESSIBILITY REQUIREMENTS.
3. THE GENERAL CONTRACTOR SHALL BECOME FAMILIAR WITH THE ACCESSIBILITY GUIDELINES AND CODES.
4. ANY DISCREPANCY CONTAINED HEREIN DOES NOT RELIEVE THE GENERAL CONTRACTOR OR OWNER FROM COMPLYING WITH THE ACCESSIBILITY GUIDELINES AND CODES.



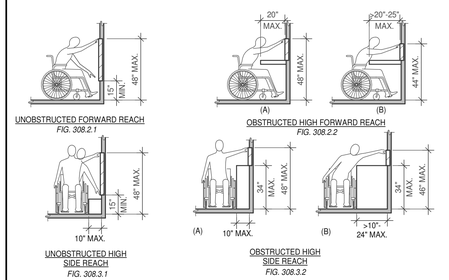

## TACTILE "EXIT" SIGN 22

SCALE: 3" = 1'-0"




## KNEE AND TOE CLEARANCE 17

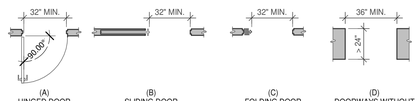
SCALE: 1/4" = 1'-0"



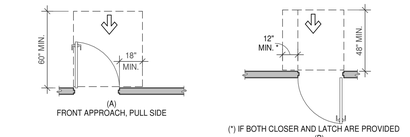

## REACH RANGES 12

SCALE: 1/4" = 1'-0"

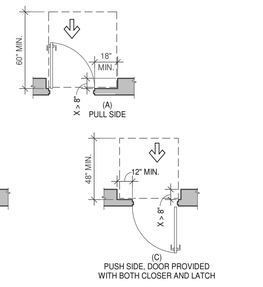
NOTES:
1. FLOOR OR GROUND SURFACE WITHIN REQUIRED MANEUVERING CLEARANCES SHALL COMPLY WITH [FLOOR OR GROUND SURFACES & CHANGES IN LEVEL] DETAIL AND SHALL HAVE A SLOPE NOT STEEPER THAN 1:48. CHANGES IN LEVEL ARE NOT PERMITTED AT DOOR LANDINGS.
2. THRESHOLDS, IF PROVIDED AT DOORWAYS SHALL BE 1/2" HIGH MAX. RAISED THRESHOLDS AND CHANGES IN LEVEL AT DOORWAYS SHALL COMPLY WITH [FLOOR OR GROUND SURFACES & CHANGES IN LEVEL] DETAIL.
3. HANDLES, PULLS, LATCHES, LOCKS AND OTHER OPERABLE PARTS ON DOORS AND GATES SHALL BE OPERABLE WITH ONE HAND AND SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OR THE WRIST.
4. THE FORCE REQUIRED TO ACTIVATE OPERABLE PARTS SHALL BE 5 LBS (22.5 N) MAX.
5. OPERABLE PARTS OF DOOR HARDWARE SHALL BE 34" MIN. AND 48" MAX. ABOVE THE FINISH FLOOR OR GROUND.
6. WHERE SLIDING DOORS ARE IN THE FULLY OPEN POSITION, OPERATING HARDWARE SHALL BE EXPOSED AND USABLE FROM BOTH SIDES.
7. DOOR AND GATE CLOSERS SHALL BE ADJUSTED SO THAT FROM AN OPEN POSITION OF 90° THE TIME REQUIRED TO MOVE THE DOOR TO A POSITION OF 12° FROM THE LATCH IS 5 SECONDS MIN.
8. DOOR AND GATE SPRING HINGES SHALL BE ADJUSTED SO THAT FROM THE OPEN POSITION OF 70° THE DOOR OR GATE SHALL MOVE TO THE CLOSED POSITION IN 1.5 SECONDS MIN.
9. THE FORCE FOR PUSHING OR PULLING OPEN A DOOR OR GATE SHALL BE AS FOLLOWS:
   9.1. INTERIOR HINGED DOORS AND GATES: 5 LBS (22.5 N) MAX.
   9.2. SLIDING OR FOLDING DOORS: 5 LBS (22.5 N) MAX.
   9.3. REQUIRED FIRE DOORS: THE MINIMUM OPENING FORCE ALLOWABLE BY THE APPROPRIATE ADMINISTRATIVE AUTHORITY, NOT TO EXCEED 15 LBS (66.7N).
   9.4. EXTERIOR HINGED DOORS: 5 LBS (22.5 N) MAX.
10. SWINGING DOOR AND GATE SURFACES WITHIN 10" OF THE FINISH FLOOR OR GROUND MEASURED VERTICALLY SHALL HAVE A SMOOTH SURFACE ON THE PUSH SIDE EXTENDING THE FULL WIDTH OF THE DOOR OR GATE. PARTS CREATING HORIZONTAL OR VERTICAL JOINTS IN THESE SURFACE SHALL BE WITHIN 1/16" OF THE SAME PLANE AS THE OTHER AND BE FREE OF SHARP OR ABRASIVE EDGES. CAVITIES CREATED BY ADDED KICK PLATES SHALL BE CAPPED.
11. WHERE AUTOMATIC AND POWER-ASSISTED DOORS AND GATES WITHOUT STANDBY POWER ARE PART OF A MEANS OF EGRESS THE CLEAR BREAK OUT OPENING AT SWINGING OR SLIDING DOORS AND GATES SHALL BE 32" MIN. WHEN OPERATED IN EMERGENCY MODE.




CLEAR WIDTH OF DOORWAYS



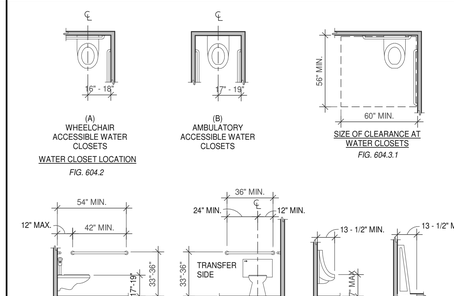

MANEUVERING CLEARANCE AT MANUAL SWINGING DOORS AND GATES




MANEUVERING CLEARANCE AT RECESSED DOORS AND GATES

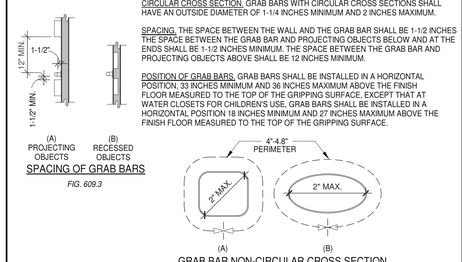
## DOORS, DOORWAYS & GATES 10

SCALE: 1/4" = 1'-0"




## WATER CLOSETS AND TOILETS COMPARTMENTS & URINALS 4

SCALE: 1/4" = 1'-0"



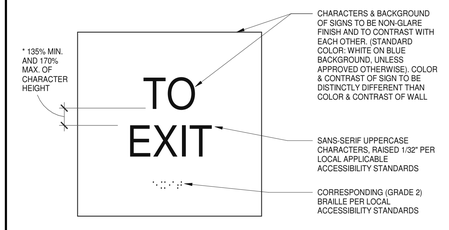

CIRCULAR CROSS SECTION. GRAB BARS WITH CIRCULAR CROSS SECTIONS SHALL HAVE AN OUTSIDE DIAMETER OF 1-1/4 INCHES MINIMUM AND 2 INCHES MAXIMUM.

SPACING. THE SPACE BETWEEN THE WALL AND THE GRAB BAR SHALL BE 1-1/2 INCHES THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS BELOW AND AT THE ENDS SHALL BE 1-1/2 INCHES MINIMUM. THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS ABOVE SHALL BE 12 INCHES MINIMUM.

POSITION OF GRAB BARS. GRAB BARS SHALL BE INSTALLED IN A HORIZONTAL POSITION, 33 INCHES MINIMUM AND 36 INCHES MAXIMUM ABOVE THE FINISH FLOOR MEASURED TO THE TOP OF THE GRIPPING SURFACE. EXCEPT THAT AT WATER CLOSETS FOR CHILDREN'S USE, GRAB BARS SHALL BE INSTALLED IN A HORIZONTAL POSITION 18 INCHES MINIMUM AND 27 INCHES MAXIMUM ABOVE THE FINISH FLOOR MEASURED TO THE TOP OF THE GRIPPING SURFACE.

## GRAB BARS 5

SCALE: 1/4" = 1'-0"




## TACTILE "TO EXIT" SIGN 23

SCALE: 3" = 1'-0"



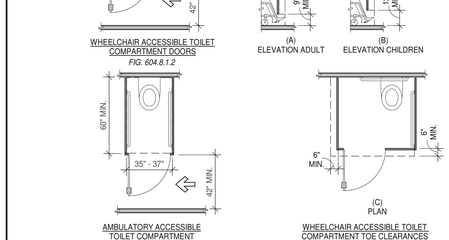

## CLEAR WIDTH 18

SCALE: 1/4" = 1'-0"



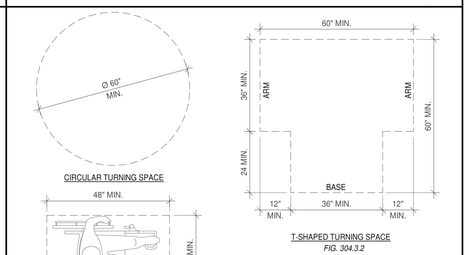

## MOUNTING HEIGHTS 13

SCALE: 1/4" = 1'-0"




## SIGNS 20

SCALE: 1/4" = 1'-0"




## CLEAR FLOOR OR GROUND SPACE 15

SCALE: 1/2" = 1'-0"

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04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

ACCESSIBILITY DETAILS

| DATE | ISSUE FOR PERMIT | REMARKS |
|---|---|---|
| 03/03/2022 | | |

| | |
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| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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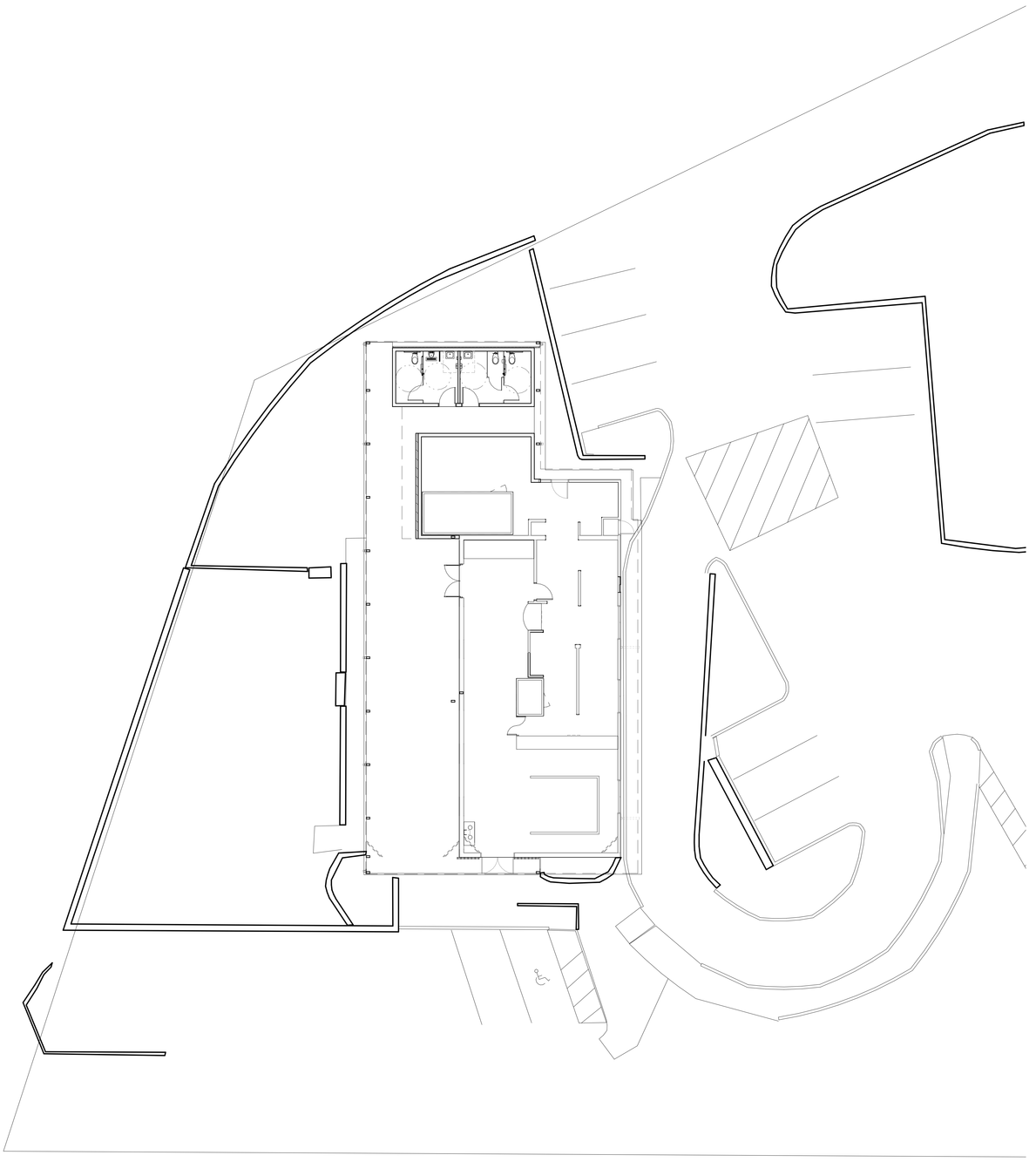

0 5' 10' 20' 50'
1"=10'

SITE PLAN
SCALE: 1" = 10'-0"
1
N

KEY PLAN
N

KEYNOTES:
SEE SHEET A0.2 & A0.3 FOR GENERAL NOTES

GENERAL NOTES
SEE SHEET A0.2 & A0.3 FOR GENERAL NOTES

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PAPM:
DRAWN BY: C.B.
STEVEN COX

JOB NO.: DAL21-0063-00

SITE PLAN

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# HAT CREEK - WEST LAKE

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HAT CREEK Burger Company

REGISTERED ARCHITECT CHRISTOPHER STEVEN COX STATE OF TEXAS
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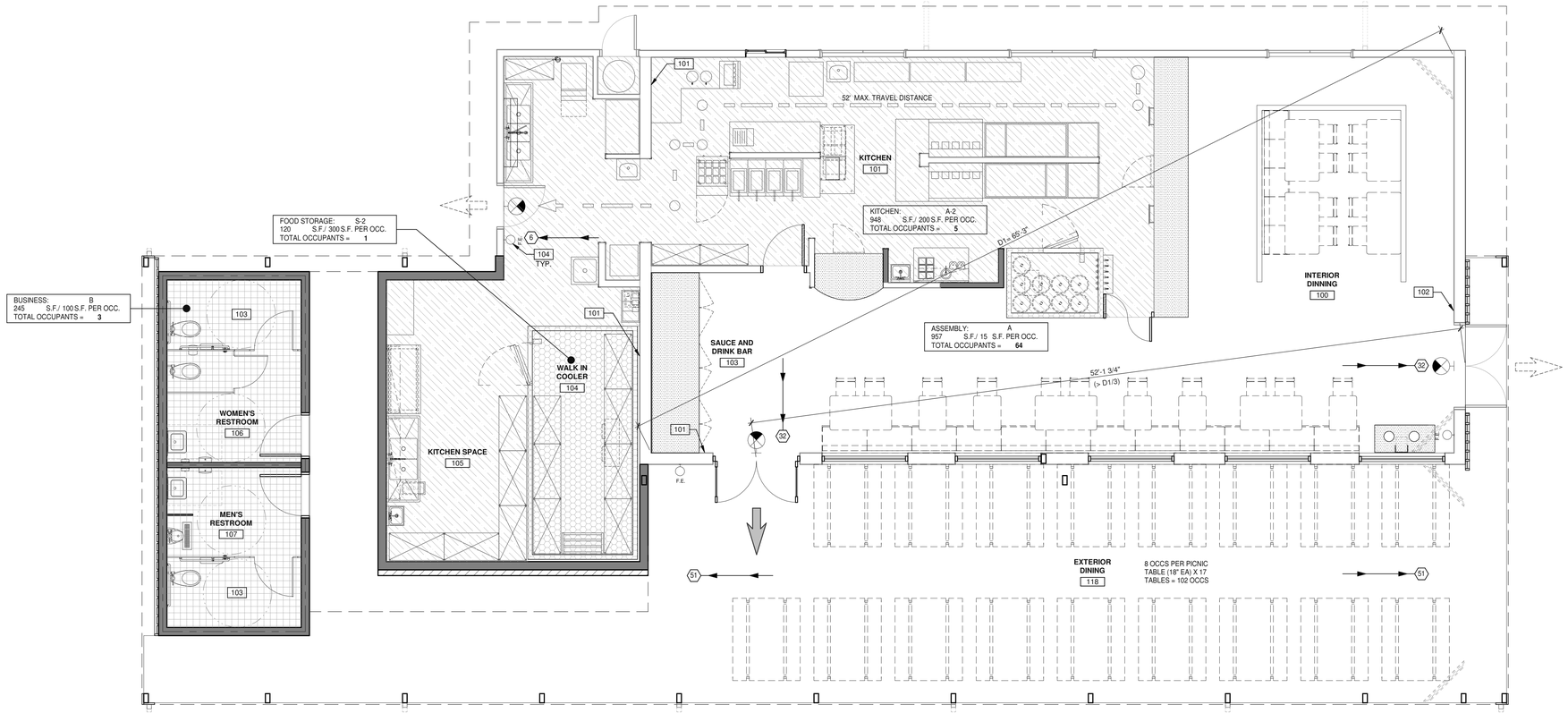


1/4"=1'-0"

0 2' 4' 8' 16'

## OCCUPANCY AND EGRESS PLAN

SCALE: 1/4" = 1'-0"

## RESTROOM SUMMARY

FIXTURES REQUIRED (BASED ON IPC TABLE 403.1):

| | | | | | | WC. M | WC. W | URINALS | LAVATORY M | LAVATORY W | DRINKING FOUNTAINS | SERVICE SINKS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BUSINESS | 245 S.F. | / 100 | = 3 | / 2 | = 2 | 1 | 2 | 1 | 1 | 1 | X | X |
| ASSEMBLY | 957 S.F. | / 15 | = 64 | / 2 | = 32 | X | X | X | X | X | X | X |
| ASSEMBLY A-2 | 948 S.F. | / 200 | = 5 | / 2 | = 3 | X | X | X | X | X | X | X |
| STORAGE S-2 | 120 S.F. | / 300 | = 1 | / 2 | = 1 | X | X | X | X | X | X | X |
| TOTAL REQUIRED | | | | | | 1 | 2 | 1 | 1 | 1 | X | X |
| TOTAL PROVIDED | | | | | | 1 | 2 | 1 | 1 | 1 | X | X |

## MAX. TRAVEL DISTANCE TO EXITS

MAXIMUM TRAVEL DISTANCE TO EXITS (1017.2 SPRINKLERED BUILDING)

A/ASSEMBLY..... 250 FEET MAX.

## EGRESS ANALYSIS

| FUNCTION SPACE AND OCCUPANCY | (N) GROSS AREA (SF) | (F) AREA PER OCC. FACTOR 1004.1 | (OL) = N/F OCCUPANT LOAD | NUMBER OF EXITS REQ'D 1006 | DOOR (AND OTHER EGRESS COMPONENTS) WIDTH REQ'D 1005.3.2 | NUMBER OF 32" CLR. EXITS PROVIDED (PER PLAN) | NUMBER OF 44" CLR. EXITS PROVIDED (PER PLAN) | NUMBER OF 64" CLR. EXITS PROVIDED (PER PLAN) | TOTAL DOOR WIDTH PROVIDED |
|---|---|---|---|---|---|---|---|---|---|
| | - | - | - | - | -*2 / -* | - | - | - | -* |
| OFFICE B - | SEE OFFICE EGRESS PLANS | | | | | | | | |

## LEGEND

- INDICATES AREA OF OCCUPANCY CLASSIFICATION A WITH OCCUPANT LOAD FACTOR OF 15 GROSS
- INDICATES AREA OF OCCUPANCY CLASSIFICATION A-2 WITH OCCUPANT LOAD FACTOR OF 200 GROSS
- INDICATES AREA OF OCCUPANCY CLASSIFICATION S WITH OCCUPANT LOAD FACTOR OF 300 GROSS
- INDICATES AREA OF OCCUPANCY CLASSIFICATION B WITH OCCUPANT LOAD FACTOR OF 100 GROSS

- REQUIRED EXIT.
- EXISTING EXIT.
- DIRECTION OF TRAVEL.
- MAXIMUM TRAVEL DISTANCE.
- 0 — AGGREGATE OCCUPANT LOAD AT DOOR.
- F.E. — FIRE EXTINGUISHER
- WALL-MOUNTED ILLUMINATED EMERGENCY EXIT SIGN ABOVE DOOR WITH BATTERY POWERED BACK-UP. SHADED QUADRANT INDICATES FACE OF LETTERING.

ADDITIONAL DIRECTIONAL EXIT SIGNS MAY BE REQUIRED PRIOR TO FINAL INSPECTION AND SUBJECT TO BUILDING INSPECTOR.

## KEYNOTES: -

ALL REQUIRED EXITS TO RECEIVE WALL-MOUNTED TACTILE EXIT SIGN WITH THE WORD "EXIT". (22 / A0.3)

101 WALL-MOUNTED TACTILE SIGN, INDICATING "EXIT ROUTE".
102 WALL-MOUNTED MAXIMUM OCCUPANCY SIGNAGE IN A CONSPICUOUS LOCATION STATING "MAXIMUM OCCUPANCY: XXX PERSONS" NEAR EXIT DOOR.
103 NEW FULLY ACCESSIBLE RESTROOM FACILITY.
104 FINAL LOCATION TO BE DETERMINED BY FIRE MARSHAL.

## GENERAL NOTES

SEE SHEET A0.2 & A.02a FOR GENERAL NOTES

1. POSTED SIGNS IN AN ASSEMBLY OCCUPANCY SHALL BE OF AN APPROVED LEGIBLE PERMANENT DESIGN AND SHALL BE MAINTAINED BY THE OWNER OR AUTHORIZED AGENT.

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04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

OCCUPANCY AND EGRESS PLAN

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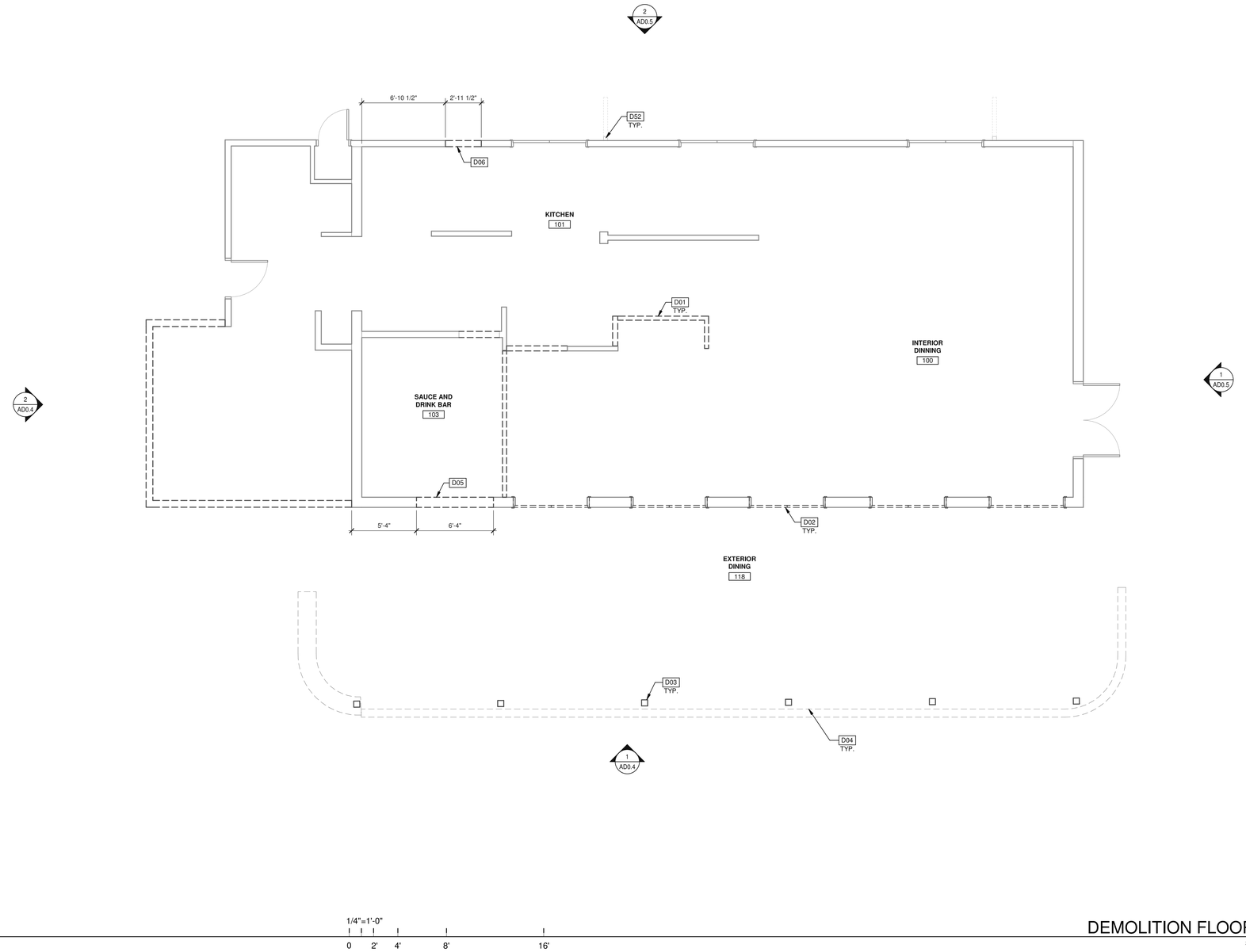


1/4"=1'-0"

0 2' 4' 8' 16'

## DEMOLITION FLOOR PLAN

SCALE: 1/4" = 1'-0"

N

## LEGENDS

- EXISTING WALL
- EXISTING CONSTRUCTION TO BE DEMOLISHED

## KEYNOTES: -

| | |
|---|---|
| D01 | REMOVE PARTITIONS AND RELATED ELECTRICAL OUTLETS AS INDICATED. TERMINATE ELECTRICAL LINES BACK TO POINT OF ORIGIN. |
| D02 | REMOVE DOOR ASSEMBLY. |
| D03 | REMOVE COLUMN. |
| D04 | REMOVE LOW WALL. |
| D05 | CUT-IN SECTION OF WALL AS REQUIRED FOR NEW PAIR OF 3'-0" DOORS. |
| D06 | CUT-IN SECTION OF WALL AS REQUIRED FOR NEW WINDOW. |
| D52 | EXISTING DOWNSPOUT TO REMAIN. |

## DEMOLITION FLOOR PLAN NOTES

SEE SHEET A0.2 & A.02a FOR GENERAL NOTES

- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICTS THAT MIGHT ARISE.

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DEMOLITION FLOOR PLAN

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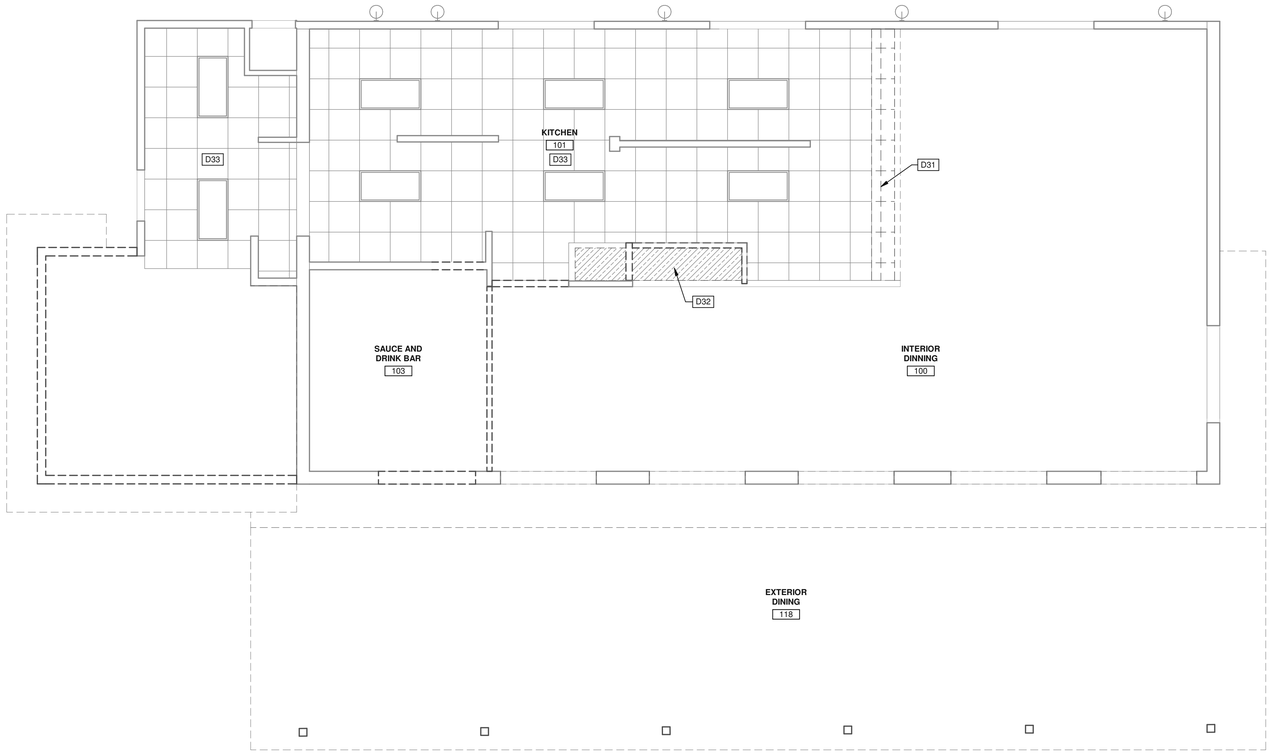


1/4"=1'-0"

0 2' 4' 8' 16'

## DEMOLITION CEILING PLAN

SCALE: 1/4" = 1'-0"

N

## LEGENDS

- EXISTING SUSPENDED CEILING GRID & TILES TO REMAIN
- EXISTING SUSPENDED CEILING GRID & TILES TO BE REMOVED
- EXISTING GYPSUM BOARD CEILING TO BE REMOVED
- EXISTING 2'x4' LIGHT FIXTURE TO REMAIN

## KEYNOTES: [-]

D31 REMOVE EXISTING CEILING GRID & TILES IN THIS AREA.
D32 REMOVE EXISTING GYPSUM BOARD CEILING IN THIS AREA.
D33 THE CEILING AND LIGHTING IN THIS AREA IS EXISTING TO REMAIN.

## DEMOLITION CEILING PLAN NOTES

SEE SHEET A0.2 & A.02a FOR GENERAL NOTES

- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICTS THAT MIGHT ARISE.

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DEMOLITION CEILING PLAN

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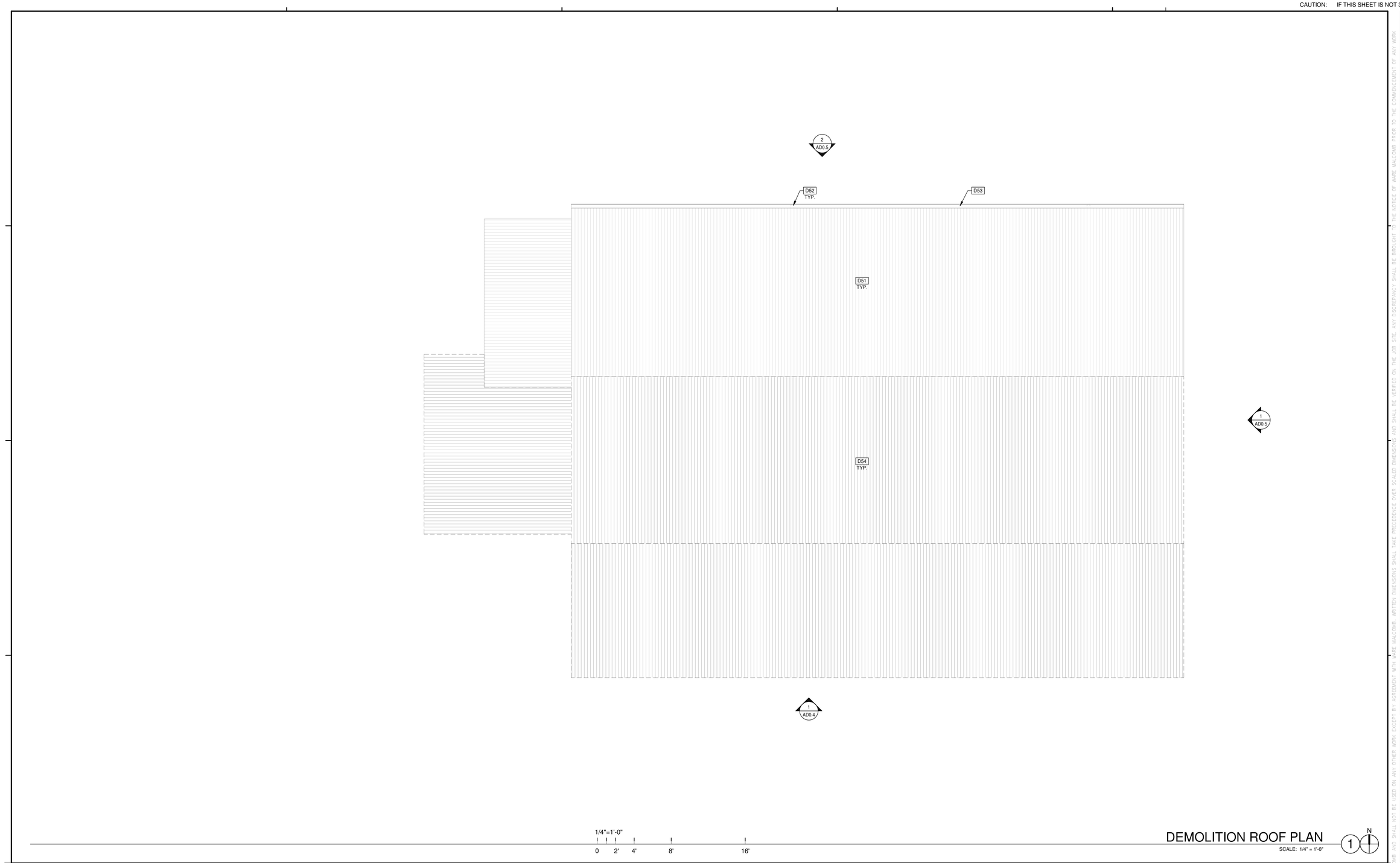


1/4"=1'-0"

0 2' 4' 8' 16'

## DEMOLITION ROOF PLAN

SCALE: 1/4" = 1'-0"

N

## KEYNOTES: [-]

D51 EXISTING ROOF TO REMAIN.
D52 EXISTING DOWNSPOUT TO REMAIN.
D53 EXISTING METAL GUTTER TO REMAIN.
D54 EXISTING METAL ROOF TO BE DEMOLISHED.

## DEMOLITION ROOF PLAN NOTES

SEE SHEET A0.2 & A.02a FOR GENERAL NOTES

- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICTS THAT MIGHT ARISE.

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DEMOLITION ROOF PLAN

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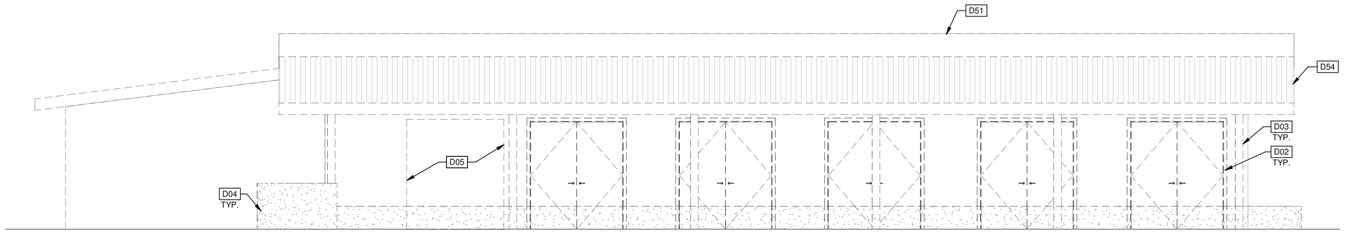
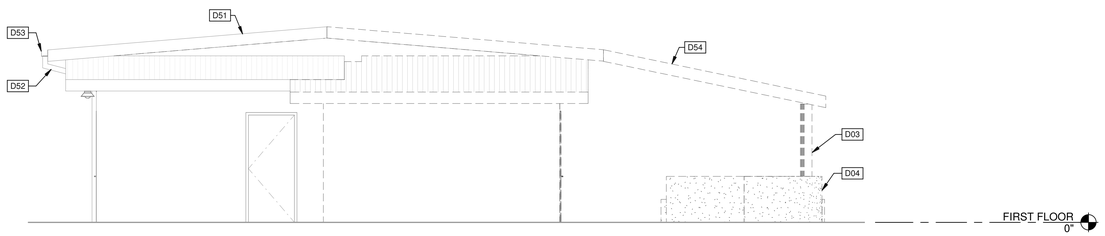



1/4"=1'-0"

0 2' 4' 8' 16'

## SOUTH DEMOLITION EXTERIOR ELEVATION 1

SCALE: 1/4" = 1'-0"




## WEST DEMOLITION EXTERIOR ELEVATION 2

SCALE: 1/4" = 1'-0"

### LEGEND

EXISTING ROOF TO BE DEMOLISHED.

EXISTING LOW WALL TO BE DEMOLISHED.

### KEYNOTES:

D02 REMOVE DOOR ASSEMBLY.
D03 REMOVE COLUMN.
D04 REMOVE LOW WALL.
D05 CUT-IN SECTION OF WALL AS REQUIRED FOR NEW PAIR OF 3'-0" DOORS.
D51 EXISTING ROOF TO REMAIN.
D52 EXISTING DOWNSPOUT TO REMAIN.
D53 EXISTING METAL GUTTER TO REMAIN.
D54 EXISTING METAL ROOF TO BE DEMOLISHED.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0 2' 4' 8' 16'

## NORTH DEMOLITION EXTERIOR ELEVATION 2

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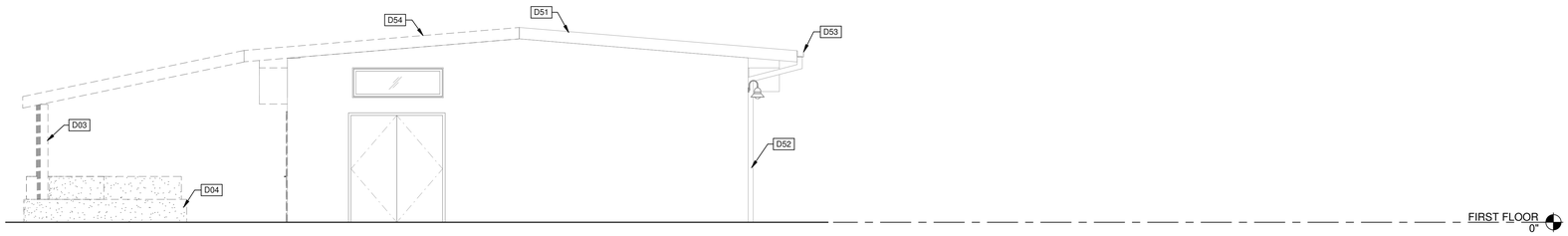


## EAST DEMOLITION EXTERIOR ELEVATION 1

SCALE: 1/4" = 1'-0"

### LEGEND

EXISTING ROOF TO BE DEMOLISHED.

EXISTING LOW WALL TO BE DEMOLISHED.

### KEYNOTES:

D03 REMOVE COLUMN.
D04 REMOVE LOW WALL.
D06 CUT-IN SECTION OF WALL AS REQUIRED FOR NEW WINDOW.
D51 EXISTING ROOF TO REMAIN.
D52 EXISTING DOWNSPOUT TO REMAIN.
D53 EXISTING METAL GUTTER TO REMAIN.
D54 EXISTING METAL ROOF TO BE DEMOLISHED.
D55 EXISTING WINDOW TO REMAIN.
D56 EXISTING DOOR TO REMAIN.

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HAT CREEK BURGER COMPANY

# HAT CREEK - WEST LAKE

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## DEMOLITION EXTERIOR ELEVATIONS

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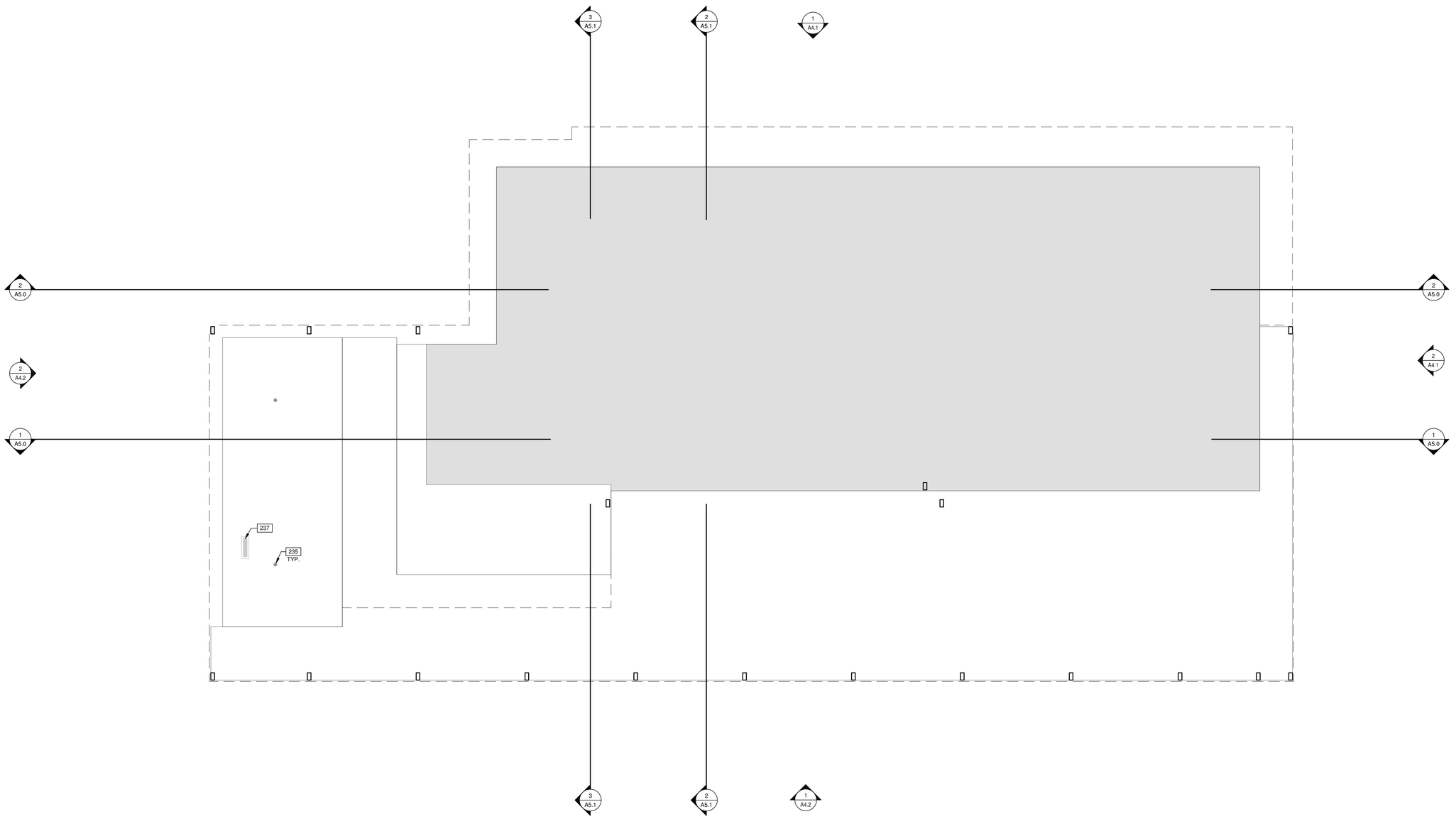


1/4"=1'-0"

0 2' 4' 8' 16'

## FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

N

## KEYNOTES:

| | |
|---|---|
| 235 | FLOOR DRAIN. |
| 237 | FLOOR TRENCH DRAIN. |

## LEGEND

NEW SLAB

EXISTING SLAB

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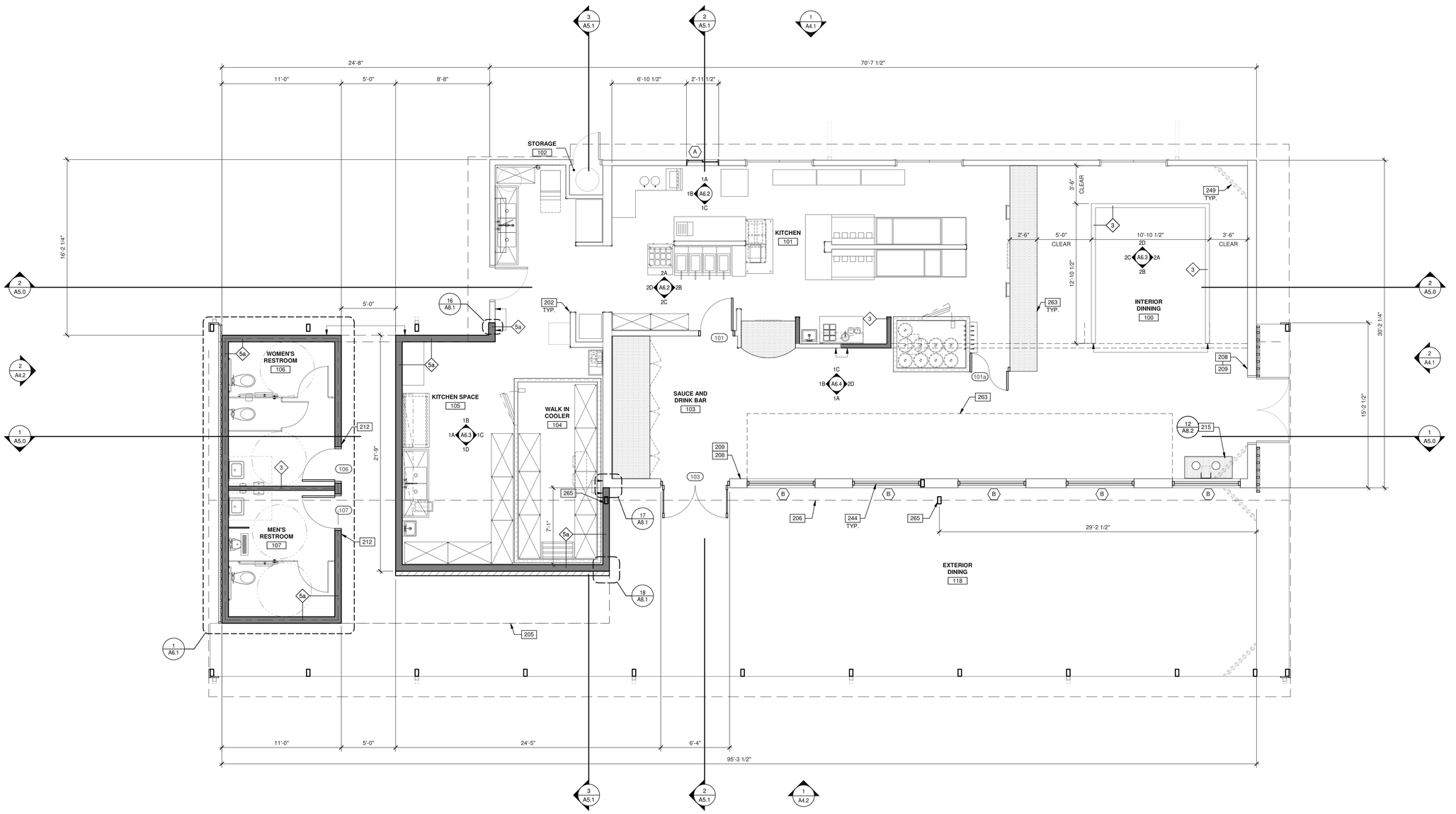


FLOOR PLAN

SCALE: 1/4" = 1'-0"

## LEGEND

| | |
|---|---|
| F.E. | FIRE EXTINGUISHER |
| ## | DOOR TAG - SEE DOOR SCHEDULE ON SHEET A7.1 |

## WALL LEGEND

- FULL HEIGHT WALL
- FULL HEIGHT WALL WITH SOUND BATT INSULATION
- PARTIAL HEIGHT WALLS
- ACME FULL SIZE BRICK
- COOLER / FREEZE WALL, BY KEC
- EXISTING WALL

## KEYNOTES:

| | |
|---|---|
| 202 | STAINLESS STEEL CORNER GUARD. |
| 205 | LINE OF ROOF OVERHANG ABOVE. |
| 206 | LINE OF ROOF RIDGE / VALLEY ABOVE. |
| 208 | OCCUPANCY LOAD SIGN, VERIFY EXACT LOCATION WITH FIRE MARSHAL PRIOR TO INSTALLATION. |
| 209 | TACTILE "EXIT ROUTE" SIGN, VERIFY FINAL LOCATION AND WORDING WITH FIRE MARSHAL PRIOR TO INSTALL. |
| 212 | RESTROOM SIGNAGE. |
| 215 | STEEL TRASH RECEPTACLE. |
| 244 | WINDOW AS SCHEDULED. |
| 249 | NEW TELEVISION. REFER TO ELECTRICAL DRAWINGS. |
| 263 | OUTLINE OF CEILING ABOVE. |
| 265 | NEW COLUMN. REFER TO STRUCTURAL DRAWINGS. |

## GENERAL NOTES

SEE SHEET A0.2 & A.02a FOR GENERAL NOTES

1. GENERAL CONTRACTOR SHALL PROVIDE EXTENSION PIECES AND LONGER FASTENERS, SHEET METAL COLLARS THRU EXTERIOR FINISHES FOR LIGHT FIXTURE, FA DEVICES, HB'S, ETC.

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REGISTERED ARCHITECT CHRISTOPHER PRATT 20198 STATE OF TEXAS

04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

FLOOR PLAN

| DATE | REMARKS |
|---|---|
| 03/03/2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

SHEET
A2.1

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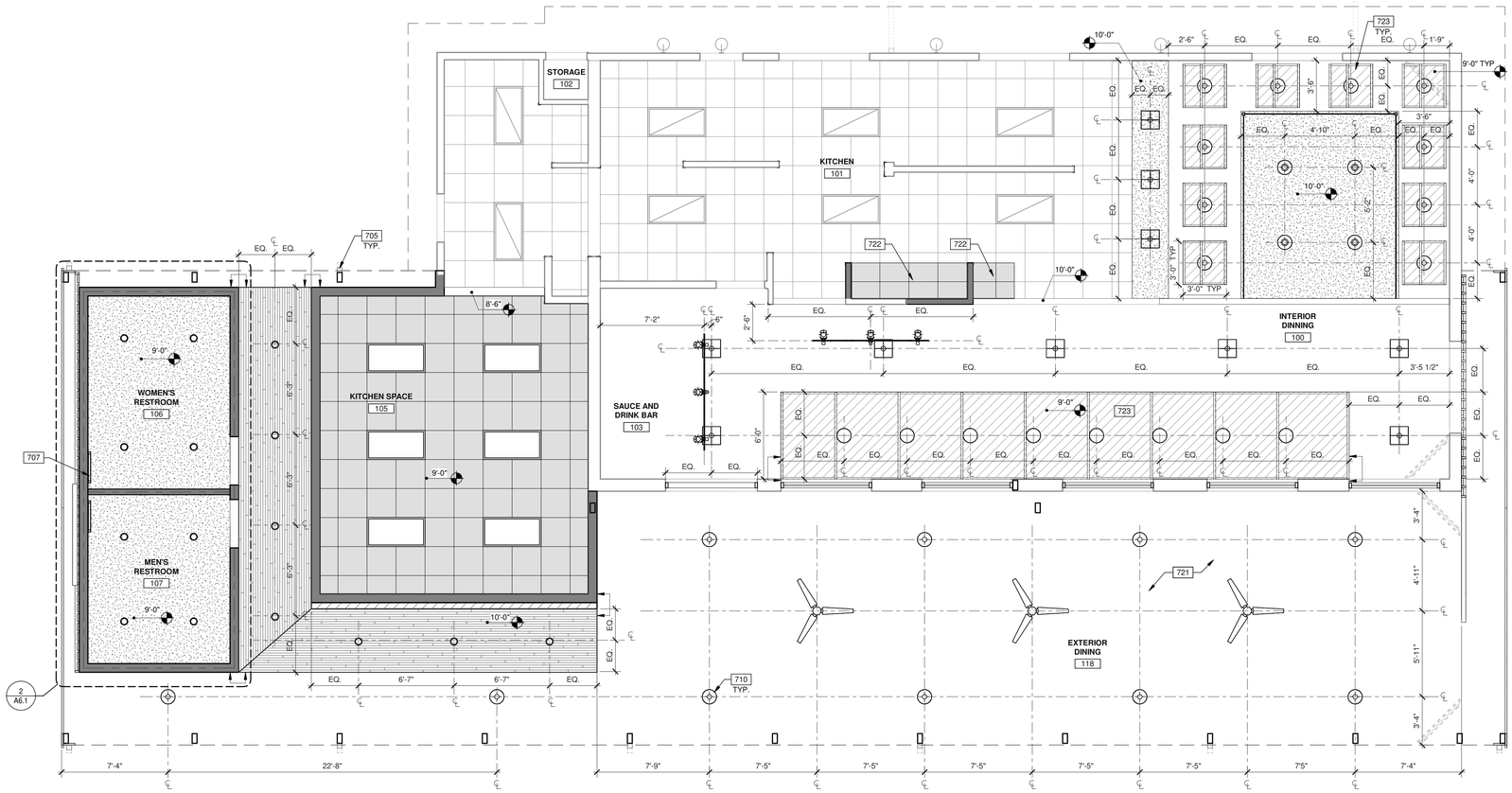


1/4"=1'-0"

0 2' 4' 8' 16'

## REFLECTED CEILING PLAN

SCALE: 1/4" = 1'-0"

N

## LEGEND

- EXISTING SUSPENDED CEILING GRID & TILES TO REMAIN
- NEW SUSPENDED CEILING SYSTEM THROUGHOUT TO BE ARMSTRONG/USG 2'x2' WHITE TILE
- NEW 5/8" GYPSUM BOARD CEILING OR SOFFIT - USE RATED MATERIAL & CONSTRUCTION WHERE REQUIRED.
- NEW 1/2" WOOD SOFFIT - USE RATED MATERIAL & CONSTRUCTION WHERE REQUIRED.
- NEW METAL SCREEN SUSPENDED.
- EXISTING 2'x4' LIGHT FIXTURE TO REMAIN.
- NEW 2'x4' LED LIGHT FIXTURE.
- RECESSED 6" OR 8" LED DOWNLIGHT.
- PENDANT LIGHT FIXTURE. INSTALL AT +10'-0" A.F.F.
- PENDANT LIGHT FIXTURE. INSTALL AT +7'-0" A.F.F.
- WALL-MOUNTED EXIT SIGN WITH BATTERY BACKUP, SHADED QUADRANT INDICATES FACE OF LETTERING, SIGN TO INCLUDE DIRECTIONAL ARROW AS INDICATED.

NOTE: ADDITIONAL DIRECTIONAL EXIT SIGNS MAY BE REQUIRED PRIOR TO FINAL INSPECTION AND SUBJECT TO BUILDING INSPECTOR.

## KEYNOTES:

| | |
|---|---|
| 705 | PREFINISHED METAL DOWNSPOUT AND GUTTERS. |
| 707 | CENTER LIGHT OVER RESTROOM LAVATORY. |
| 710 | MOUNT LIGHT FIXTURE TO WOOD SLEEPERS. |
| 721 | EXISTING HEATERS (CORNERS FACING PLAY GROUND) AND TVs (CLEARANCE OF FANS AND LIGHTS). |
| 722 | NEW LAY-IN CEILING TO MATCH EXISTING. |
| 723 | NEW METAL SUSPENDED SCREEN WITH METAL STUD FRAMING. |

## CEILING PLAN NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICTS THAT MIGHT ARISE.
2. NOTIFY ARCHITECT OF ANY DISCREPANCIES BETWEEN ARCHITECTURAL, ELECTRICAL, AND MECHANICAL DRAWINGS BEFORE PROCEEDING WITH INSTALLING THE WORK.
3. SEE FIXTURE SCHEDULE FOR FIXTURE TYPE DESIGNATIONS, AND TYPICAL MOUNTING HEIGHTS (U.O.N). COORDINATE MOUNTING OPTIONS WITH OWNER'S REPRESENTATIVE & ARCHITECT. NOTIFY OWNER/ARCHITECT OF ANY CONFLICTS WITH OTHER ELEMENTS PRIOR TO INSTALLATION.
4. ALL MATERIALS USED WITHIN CEILING PLENUM SHALL BE NON-COMBUSTIBLE.
5. IN GYPSUM BOARD CEILINGS THE LIGHTS, HVAC ELEMENTS, FIRE DEVICES, ETC. ARE TO ALIGN IN A NEAT AND REGULAR PATTERN. REVIEW LAYOUT WITH ARCHITECT PRIOR TO ROUGH-IN.
6. DEVICES IN ACOUSTICAL CEILING TILES TO BE CENTERED IN A 2'X2' TILE, OR 2'X2' PORTION OF A 2'X4' TILE, U.O.N.
7. GENERAL CONTRACTOR TO IDENTIFY QUANTITY AND LOCATIONS OF ALL ACCESS PANELS TO CEILING PLENUM SPACES IN GYPSUM BOARD CEILINGS: ACCESS PANELS TO BE AVOIDED WHERE POSSIBLE. IF AN ACCESS PANEL IS REQUIRED, COORDINATE LOCATION WITH ARCHITECT. CEILING ACCESS PANELS TO BE FLUSH FRAMELESS GYPSUM-BOARD INFILL PANELS.
8. SEE KEYNOTE INFORMATION FOR ANY REQUIRED CEILING INSULATION.
9. ALL ACOUSTICAL CEILING GRIDS & TILE TO BE CENTERED WITHIN A ROOM, U.O.N.
10. WHERE LIGHTING IS WITHIN MILLWORK OR WALL ELEMENTS SUCH AS MIRRORS, GC IS RESPONSIBLE TO COORDINATE WITH ALL ELECTRICAL TRADES.


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04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

REFLECTED CEILING PLAN

| DATE | REMARKS |
|---|---|
| 03/03/2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

SHEET
A2.2


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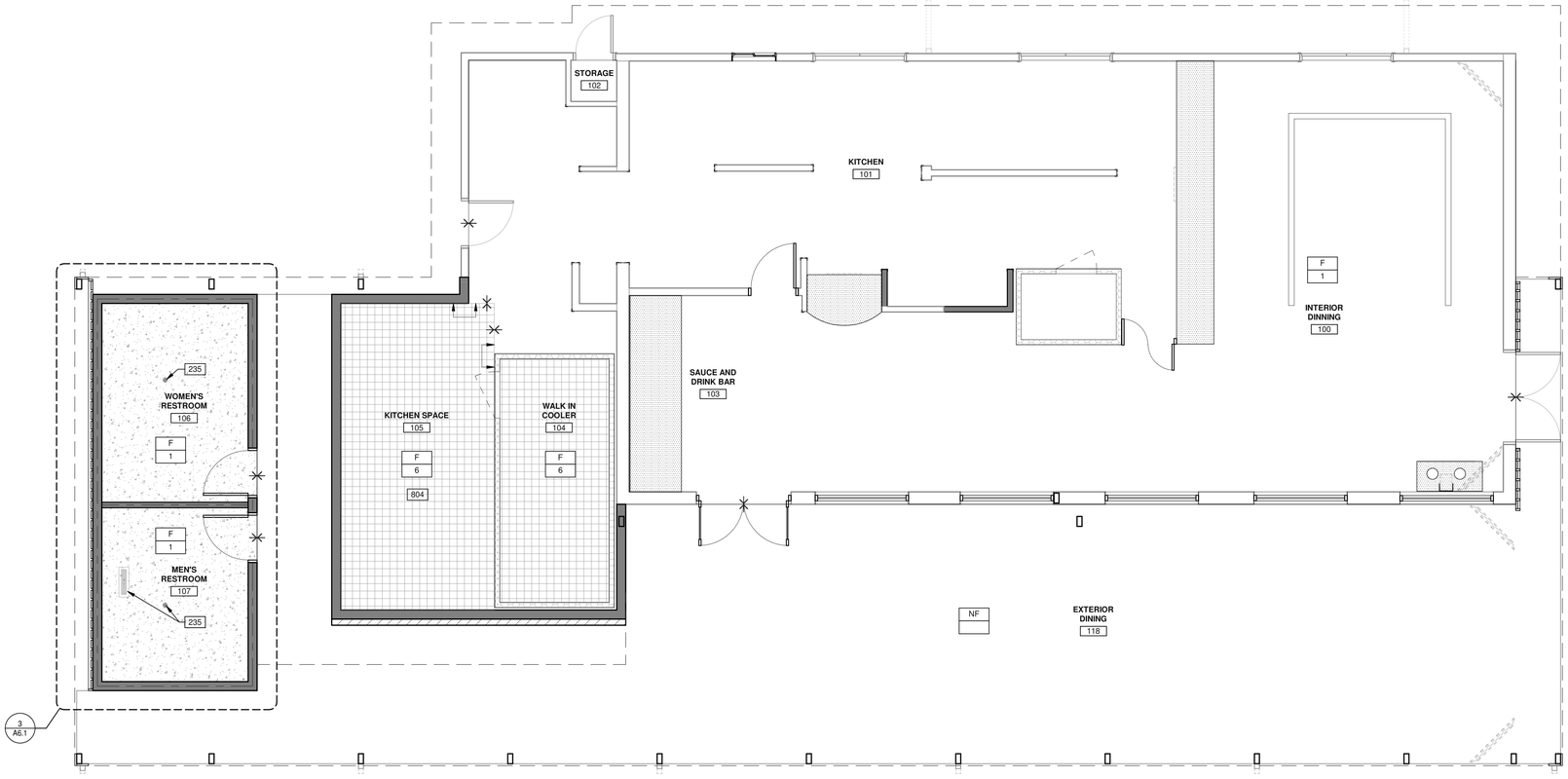


1/4"=1'-0"

0 2' 4' 8' 16'

## FINISH PLAN

SCALE: 1/4" = 1'-0"

1

N

## FINISHES

INDICATES LINE OF FLOOR TRANSITION

INDICATES LOCATION OF NON-TYPICAL WALL FINISH

INDICATES DIRECTION OF FLOORING INSTALLATION

### WALL FINISHES

P 2
ITEM: WHITE PAINT
MANUF.: SHERWIN WILLIAMS
DETAILS: IBIS WHITE, SW7000
FINISH: EGGSHELL

### BASE FINISHES

B 1
ITEM: STAINLESS STEEL BASE
MANUF.: DIAMOND LIFE
DETAILS: BASE MOLDING MX, 4" BRUSHED STAINLESS STEEL

B 2
ITEM: QUARRY TILE BASE
MANUF.: DAL-TILE
DETAILS: 0Q82 STORM GRAY

B 3
ITEM: METAL COVE BASE
MANUF.: SCHLUTER SYSTEMS
DETAILS: BRUSHED CHROME

### WALL FINISHES

WC 5
ITEM: CERAMIC TILE
MANUF.: CONCEPT SURFACES, COLOR: BOND GREY
DETAILS: SIZE: 12" X 24" VERTICAL STACK BOND, SEMI-POLISHED, STRAIGHT EDGE (NO BEVEL) GROUT: LATICRETE, #45 RAVEN

### FLOOR FINISHES

F 1
ITEM: INTEGRAL BLACK POLISHED CONCRETE
MANUF.: MICRO GUARD
COLOR/NO.: BASE SEALER: CONCRETE CLEAR WATERPROOFING SEALER, #AD702, SURFACE SEALER: HARD TILE CLEAR MATTE FINISH TREATMENT, #AD708, GRIND AND SEAL AFTER POUR

F 6
ITEM: GRAY QUARRY TILE
MANUF.: DAL-TILE
COLOR/NO.: 0Q82 STORM GRAY

NF
ITEM: NO FINISH
MANUF.:
COLOR/NO.:

## GENERAL NOTES

SEE SHEET A0.2 FOR GENERAL NOTES

1. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICTS THAT MIGHT ARISE.
2. CONTRACTOR TO INCLUDE ALL FLOOR PREPARATIONS IN BASE BID.
3. SEE ENLARGED PLANS, ELEVATIONS AND DETAILS FOR ADDITIONAL FINISH INFORMATION.
4. PREPARE WALLS TO RECEIVE (2) COATS EGGSHELL PAINT, U.O.N.
5. PROVIDE LEVEL 5 FINISH FOR WALLS UNDER SKYLIGHTS & AT WALL-WASH LIGHT FIXTURES.
6. COORDINATE WITH OTHER TRADES AT LOCATIONS OF SPECIALTY WALL FINISHES, BRANDING OR SIGNAGE FOR SPECIFIC WALL PREP.
7. ALL AREAS WITHIN PROJECT BOUNDARY TO RECEIVE PAINT **(P-1A)**, RUBBER BASE **(B-1)** AND CARPET **(CP-1)**, U.O.N.
8. ALL GYPSUM BOARD CEILINGS AND SOFFITS TO RECEIVE PAINT **(P-1B)**, U.N.O.
9. PAINT DECK ABOVE AND ALL EXPOSED MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION DUCTWORK AND PIPING IN OPEN CEILING AREAS.
10. ALL FINISHES TO BE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS.
11. ALL FINISH TRANSITIONS AT DOORS TO BE LOCATED CENTERED UNDER THE DOOR, U.O.N.
12. PROVIDE FLOORING TRANSITIONS AS FOLLOWS, U.O.N.:
    a. RUBBER REDUCING STRIP AT ALL TRANSITIONS BETWEEN CARPET AND RESILIENT FLOORING OR CONCRETE.
    b. STAINLESS STEEL TRIM BY SCHLUTER OR EQUAL, AT ALL TRANSITIONS BETWEEN TILE/STONE AND OTHER FINISHES.

## KEYNOTES: -

235 FLOOR DRAIN.
804 G.C. TO VERIFY MATERIAL SQ.FT. IN FIELD.

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04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

FINISH PLAN AND SCHEDULE

| DATE | REMARKS |
|---|---|
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| | |
|---|---|
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| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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A2.3

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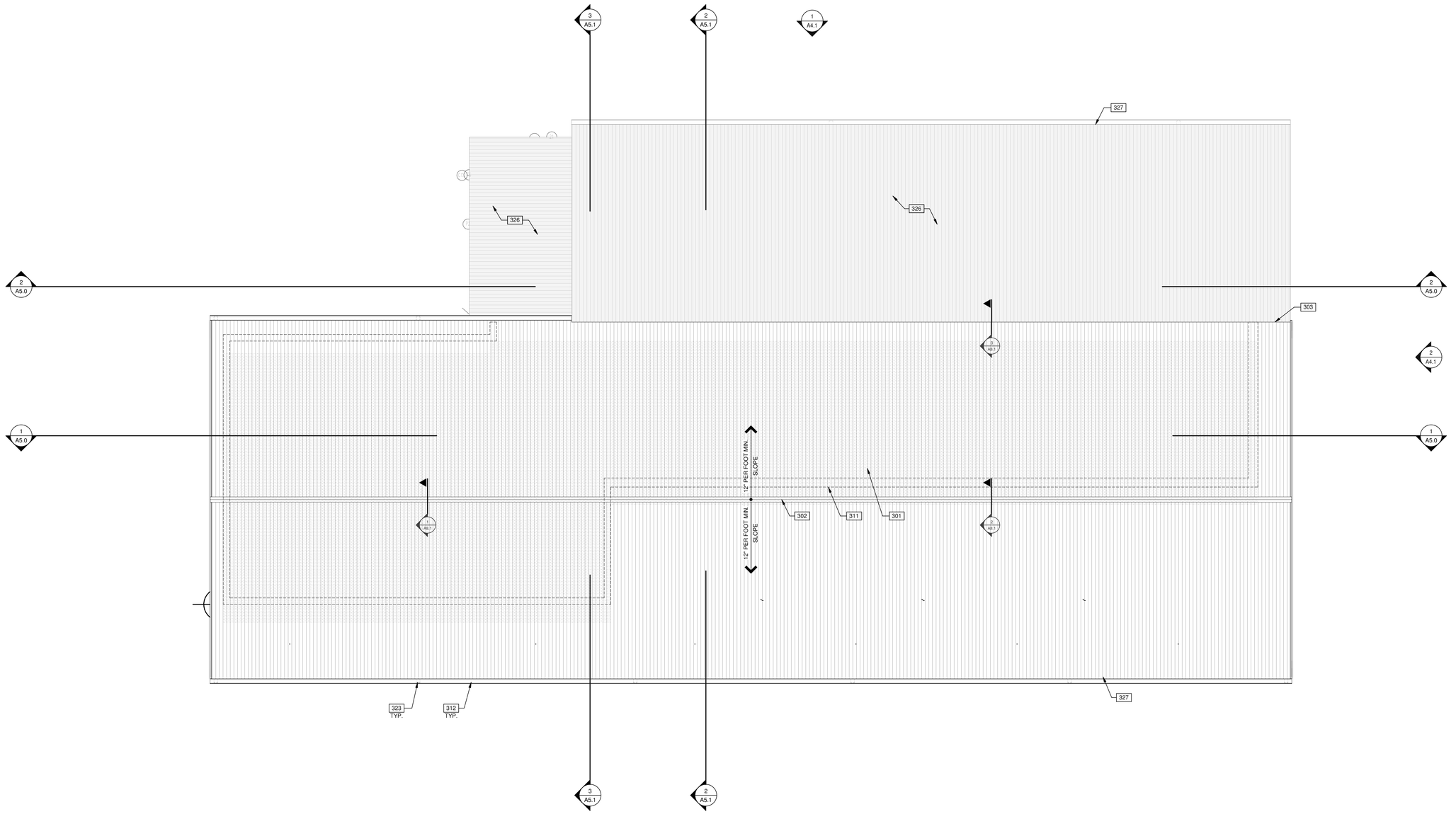


## ROOF PLAN

SCALE: 1/4" = 1'-0"

N

## ROOF FINISHES

| | | |
|---|---|---|
| R 1 | ITEM: | STANDING SEAM METAL |
| | MANUF.: | - |
| | COLOR/NO.: | GRAY (THIS COLOR NEEDS TO BE APPROVED BY SCOTT BROWN PRIOR TO ORDER AND INSTALLATION) |
| R 2 | ITEM: | PVC MEMBRANE |
| | MANUF.: | DUROLAST |
| | COLOR/NO.: | WHITE |
| | DETAILS: | 40 MIL PVC SINGLE PLY MEMBRANE |
| R 3 | ITEM: | PVC MEMBRANE |
| | MANUF.: | DUROLAST |
| | COLOR/NO.: | BLACK |
| | DETAILS: | 40 MIL PVC SINGLE PLY MEMBRANE PROVIDES AND INSTALLED BY KITCHEN VENDOR ON TOP OF EXTERIOR COOLER |

## LEGEND

**MATERIALS**

- R-1 STANDING SEAM METAL
- EXISTING STANDING SEAM METAL
- INDICATE INTERIOR OF BUILDING BELLOW OF ROOF

## ABBREVIATIONS

T.O.P. = TOP OF PARAPET
H.P. = TOP OF ROOFING - HIGH POINT
M.P. = TOP OF ROOFING - MID POINT
L.P.= TOP OF ROOFING - LOW POINT

## KEYNOTES: -

SEE SHEET A0.2 & A0.2a FOR GENERAL NOTES

| | |
|---|---|
| 301 | ROOF MEMBRANE FLASHING BELOW CORRUGATED METAL ROOFING AT ALL ENCLOSED AREAS. |
| 302 | ROOF RIDGE METAL CAP. |
| 303 | ROOF VALLEY. |
| 311 | LINE OF WALL BELLOW. |
| 312 | PREFINISHED METAL GUTTER. |
| 323 | PREFINISHED METAL DOWNSPOUT CONNECTED TO STORM DRAIN. |
| 326 | EXISTING ROOF. |
| 327 | PAINT EXISTING ROOFS TO MATCH NEW R-1 ROOFING COLOR. |

## GENERAL NOTES

1. ALL PIPES SHALL BE PAINTED ON THE ROOF.
2. GAS PIPES SHALL BE PAINTED SAFETY YELLOW.
3. VENT PIPES SHALL BE PAINTED WHITE.
4. ALL VENT PIPES SHALL HAVE A CHARCOAL AIR FILTER INSTALLED WITH THEM.

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04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

ROOF PLAN

| REMARKS | DATE |
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A3.0

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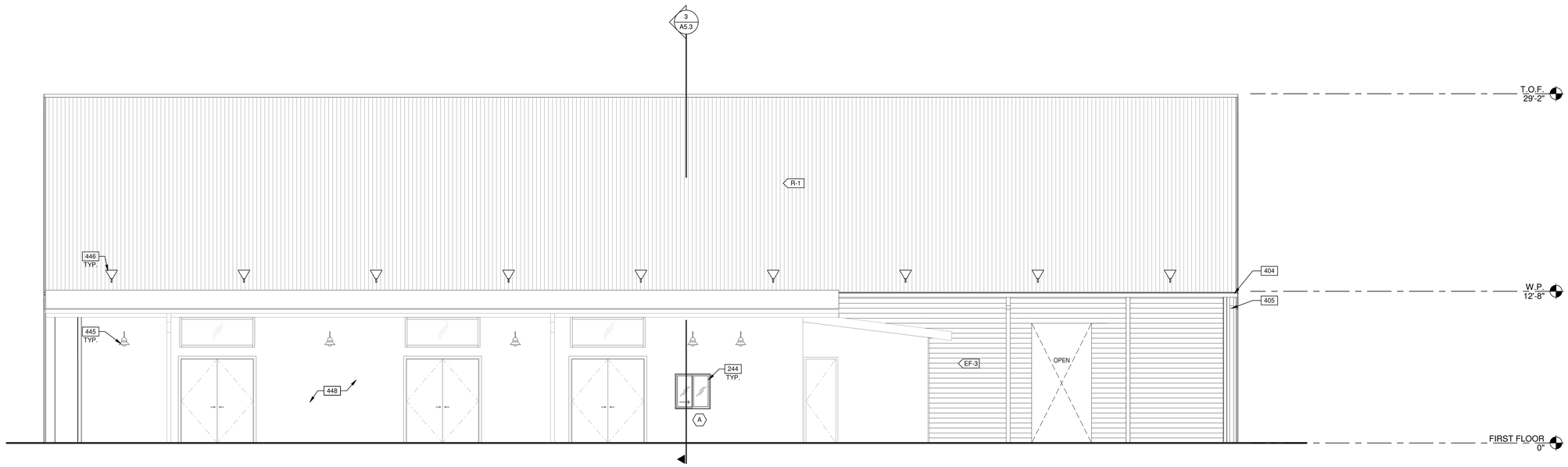
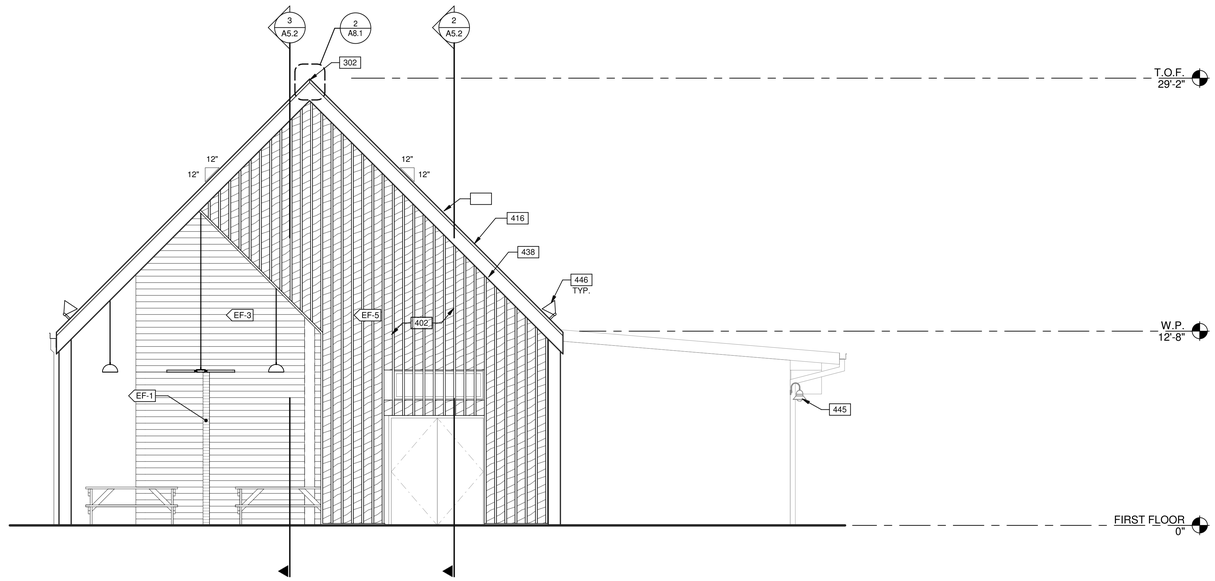



1/4"=1'-0"

0 2' 4' 8' 16'

## NORTH EXTERIOR ELEVATION 1

SCALE: 1/4" = 1'-0"




## EAST EXTERIOR ELEVATION 2

SCALE: 1/4" = 1'-0"

## LEGEND

**MATERIALS:**

- R-1 — STANDING SEAM METAL
- EF-1 — ITEM : BRICK; MANUF: YANKEE HILL; COLOR/NO: METRO IRON SPOT
- EF-2 — ITEM : CEDAR SHIPLAP SIDING; MANUF: -; COLOR/NO: 6" STAINED
- EF-3 — ITEM : CEDAR SHIPLAP SIDING; MANUF: -; COLOR/NO: 1"X4" STAINED CEDAR BOARDS 1/2" SPACING WITH 1 RED STRIPE (SECOND BOARD FROM THE TOP)
- EF-4 — ITEM : STANDING SEAM METAL; MANUF: -; COLOR/NO: GREY (THIS COLOR NEEDS TO BE APPROVED BY SCOTT BROWN PRIOR TO ORDER AND INSTALLATION)
- EF-5 — ITEM : CEDAR SHIPLAP SIDING; MANUF: -; COLOR/NO: 6" STAINED
- EF-6 — ITEM : BRAKE METAL; MANUF: -; COLOR/NO: COLOR SHALL MATCH STOREFRONT FINISH

**GLASS:**

- VISION GLASS

ALL GLASS USED ON THE ENVELOPE OF THE BUILDING TO BE:
XXXXXXX
U FACTOR = 0.28 AND SHGC = 0.28
GLASS WIND LOAD RESISTANCE CALCULATIONS ARE UNDER SEPARATE PERMIT

## KEYNOTES: ⬭

| | |
|---|---|
| 244 | WINDOW AS SCHEDULED. |
| 302 | ROOF RIDGE METAL CAP. |
| 402 | WOOD SLAT SCREEN WALL WITH 1" GAPS BETWEEN BOARDS. PAINT PLYWOOD BEHIND SLATS BLACK ON PLAYSIGN SHEAR WALLS. |
| 404 | PRE-FINISHED METAL GUTTER. |
| 405 | 4"X4" PRE-FINISHED DOWNSPOUT. |
| 416 | PRE-FINISHED METAL FINISH MATCH STANDING SEAM METAL ROOFING. |
| 438 | 2x WOOD FASCIA WITH PRE-FINISHED METAL FINISH. |
| 445 | WALL MOUNTED LIGHT FIXTURE. |
| 446 | ROOF MOUNTED UPLIGHT FIXTURE. |
| 448 | EXISTING RED PAINT. |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04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

EXTERIOR ELEVATIONS

| DATE | REMARKS |
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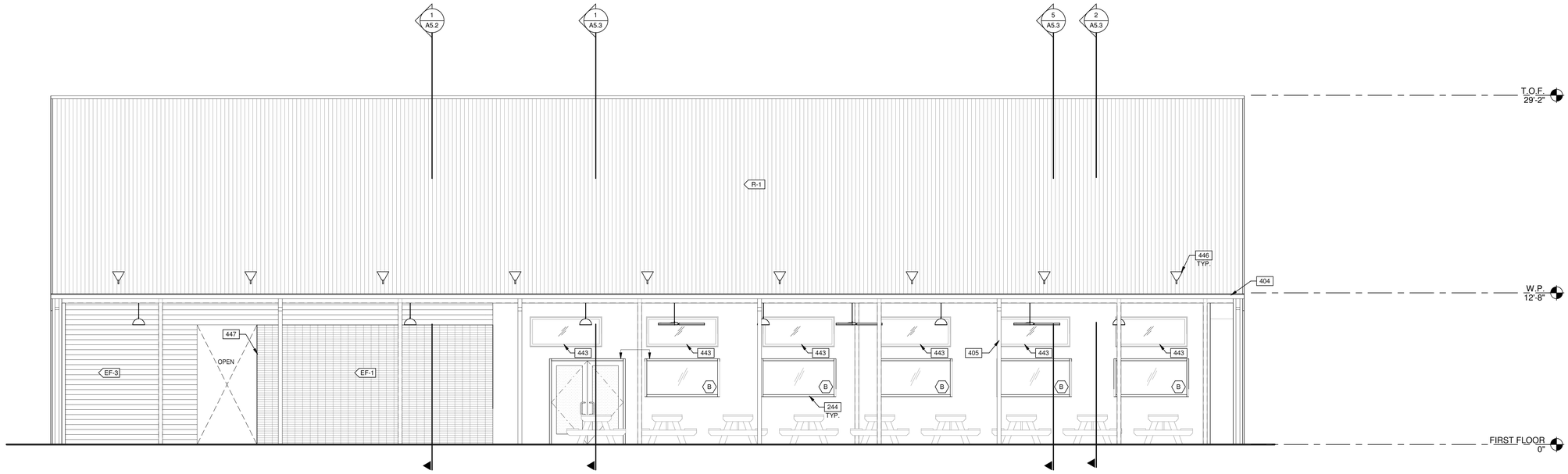
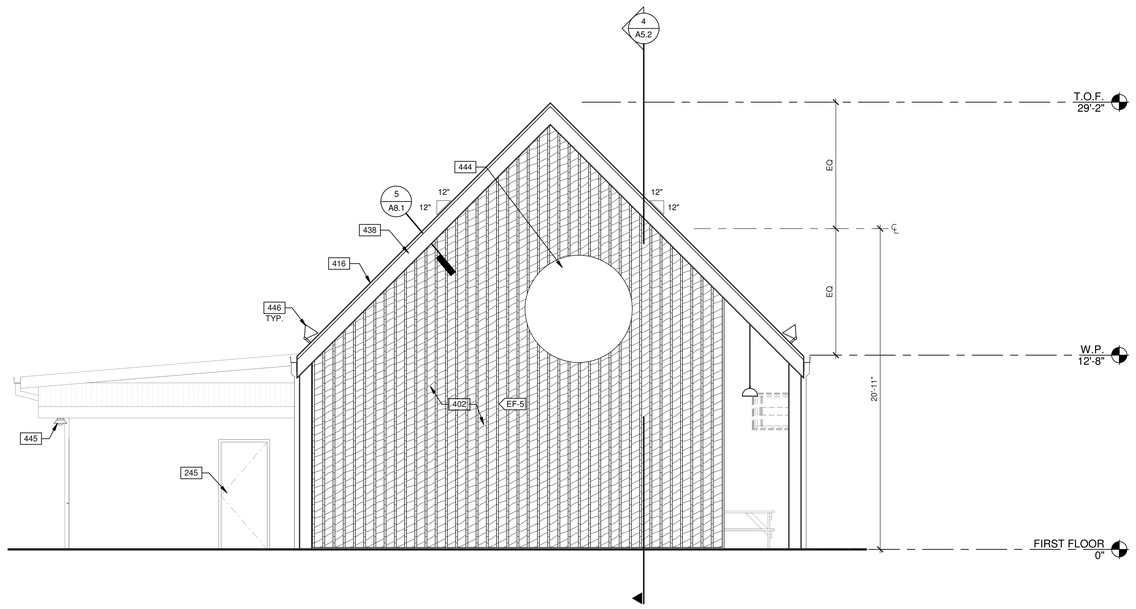



SOUTH EXTERIOR ELEVATION (1)
SCALE: 1/4" = 1'-0"




WEST EXTERIOR ELEVATION (2)
SCALE: 1/4" = 1'-0"

## LEGEND

**MATERIALS:**

- R-1 — STANDING SEAM METAL
- EF-1 — ITEM : BRICK; MANUF: YANKEE HILL; COLOR/NO: METRO IRON SPOT
- EF-2 — ITEM : CEDAR SHIPLAP SIDING; MANUF: -; COLOR/NO: 6" STAINED
- EF-3 — ITEM : CEDAR SHIPLAP SIDING; MANUF: -; COLOR/NO: 1"X4" STAINED CEDAR BOARDS 1/2" SPACING WITH 1 RED STRIPE (SECOND BOARD FROM THE TOP)
- EF-4 — ITEM : STANDING SEAM METAL; MANUF: -; COLOR/NO: GREY (THIS COLOR NEEDS TO BE APPROVED BY SCOTT BROWN PRIOR TO ORDER AND INSTALLATION)
- EF-5 — ITEM : CEDAR SHIPLAP SIDING; MANUF: -; COLOR/NO: 6" STAINED
- EF-6 — ITEM : BRAKE METAL; MANUF: -; COLOR/NO: COLOR SHALL MATCH STOREFRONT FINISH

**GLASS:**

- VISION GLASS

ALL GLASS USED ON THE ENVELOPE OF THE BUILDING TO BE:
XXXXXXX
U FACTOR = 0.28 AND SHGC = 0.28
GLASS WIND LOAD RESISTANCE CALCULATIONS ARE UNDER SEPARATE PERMIT

## KEYNOTES: [-]

| | |
|---|---|
| 244 | WINDOW AS SCHEDULED. |
| 245 | DOOR AS SCHEDULED. |
| 402 | WOOD SLAT SCREEN WALL WITH 1" GAPS BETWEEN BOARDS. PAINT PLYWOOD BEHIND SLATS BLACK ON PLAYSIGN SHEAR WALLS. |
| 404 | PRE-FINISHED METAL GUTTER. |
| 405 | 4"X4" PRE-FINISHED DOWNSPOUT. |
| 416 | PRE-FINISHED METAL FINISH MATCH STANDING SEAM METAL ROOFING. |
| 438 | 2x WOOD FASCIA WITH PRE-FINISHED METAL FINISH. |
| 443 | EXISTING TRANSOM WINDOWS. |
| 444 | SIGNAGE BY OWNER, COORDINATE POWER REQUIREMENTS. |
| 445 | WALL MOUNTED LIGHT FIXTURE. |
| 446 | ROOF MOUNTED UPLIGHT FIXTURE. |
| 447 | CONTROL JOINT IN BRICK SHALL ALIGN WITH ALUMINIUM COWLING AROUND WINDOW. |

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REGISTERED ARCHITECT CHRISTOPHER PROTZ 20198 STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

EXTERIOR ELEVATIONS

| DATE | REMARKS |
|---|---|
| 03.03.2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

SHEET
A4.2

3/30/2022 6:53:47 PM

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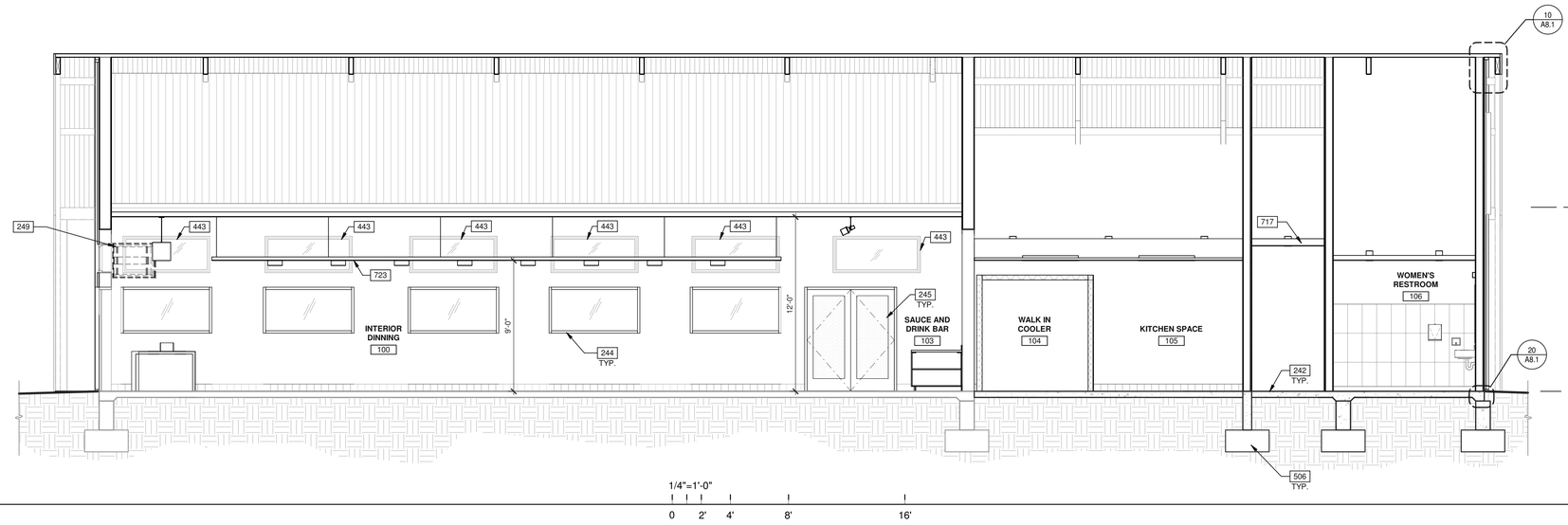
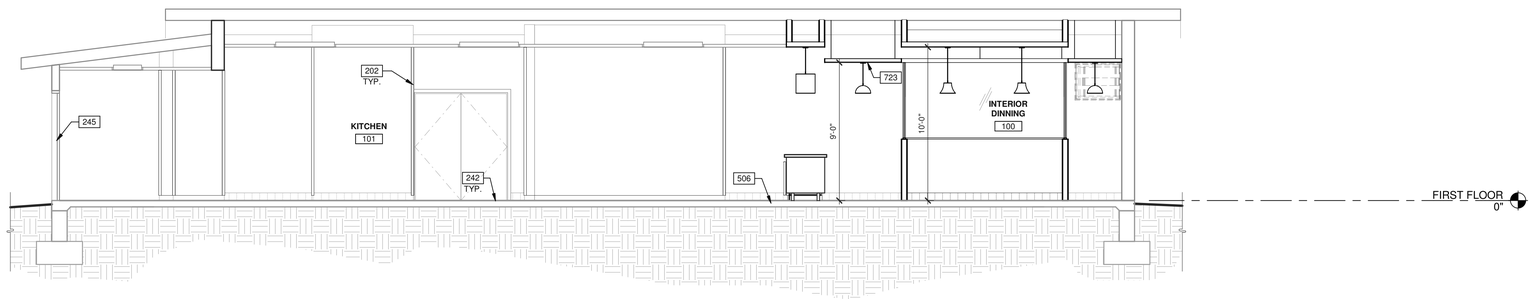



## BUILDING SECTION 1

SCALE: 1/4" = 1'-0"




## BUILDING SECTION 2

SCALE: 1/4" = 1'-0"

## KEYNOTES: -

SEE SHEET A0.2 & A.02a FOR GENERAL NOTES

| | |
|---|---|
| 202 | STAINLESS STEEL CORNER GUARD. |
| 242 | FLOORING AS SCHEDULED. |
| 244 | WINDOW AS SCHEDULED. |
| 245 | DOOR AS SCHEDULED. |
| 249 | NEW TELEVISION. REFER TO ELECTRICAL DRAWINGS. |
| 443 | EXISTING TRANSOM WINDOWS. |
| 506 | STRUCTURAL FOUNDATION. |
| 717 | LAY-IN CEILING AS SCHEDULED. |
| 723 | NEW METAL SUSPENDED SCREEN. |

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1919 McKinney Avenue, Suite #100
Dallas, TX 75201
P: 469.583.5379

REGISTERED ARCHITECT
CHRISTOPHER PROTZ
20198
STATE OF TEXAS

04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

BUILDING SECTIONS

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A5.0

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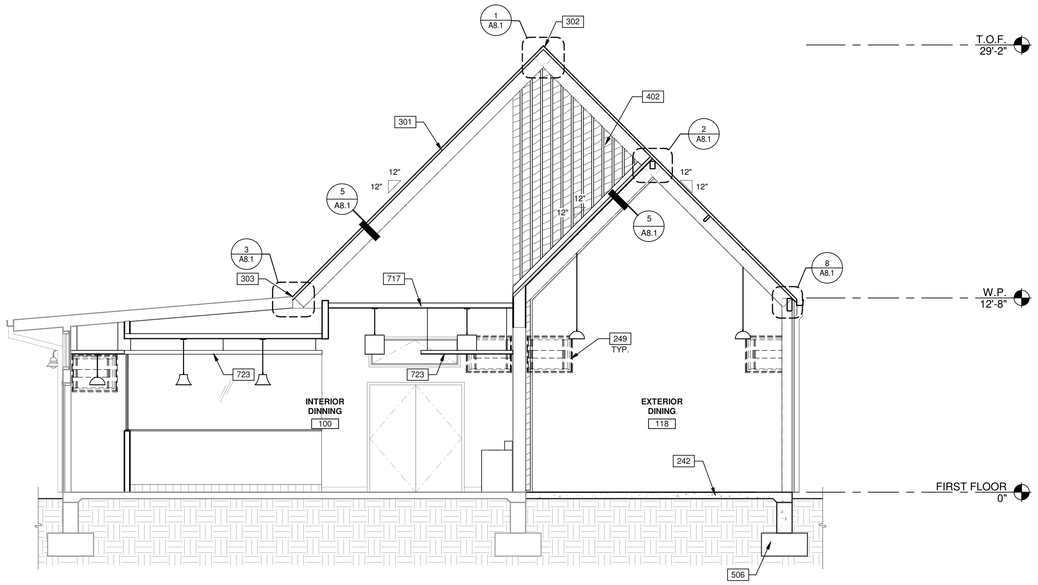
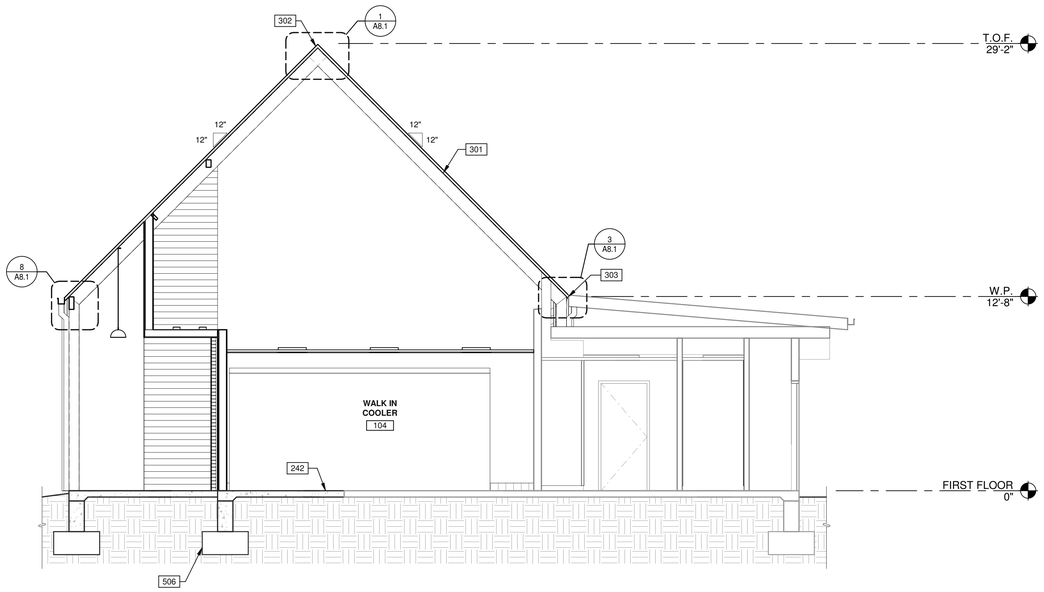



1/4"=1'-0"
0 2' 4' 8' 16'

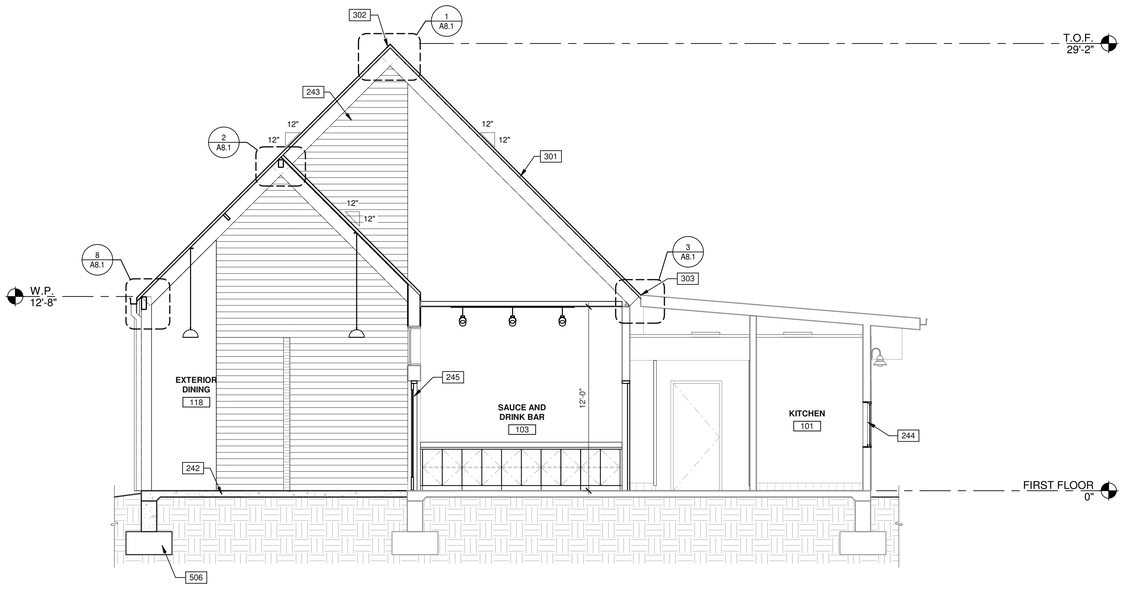
## BUILDING SECTION 1

SCALE: 1/4" = 1'-0"




## BUILDING SECTION 3

SCALE: 1/4" = 1'-0"




## BUILDING SECTION 2

SCALE: 1/4" = 1'-0"

## KEYNOTES: -

SEE SHEET A0.2 & A.02a FOR GENERAL NOTES

| | |
|---|---|
| 242 | FLOORING AS SCHEDULED. |
| 243 | WALL FINISH AS SCHEDULED. |
| 244 | WINDOW AS SCHEDULED. |
| 245 | DOOR AS SCHEDULED. |
| 249 | NEW TELEVISION. REFER TO ELECTRICAL DRAWINGS. |
| 301 | ROOF MEMBRANE FLASHING BELOW CORRUGATED METAL ROOFING AT ALL ENCLOSED AREAS. |
| 302 | ROOF RIDGE METAL CAP. |
| 303 | ROOF VALLEY. |
| 402 | WOOD SLAT SCREEN WALL WITH 1" GAPS BETWEEN BOARDS. PAINT PLYWOOD BEHIND SLATS BLACK ON PLAYSIGN SHEAR WALLS. |
| 506 | STRUCTURAL FOUNDATION. |
| 717 | LAY-IN CEILING AS SCHEDULED. |
| 723 | NEW METAL SUSPENDED SCREEN. |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## KEYNOTES:

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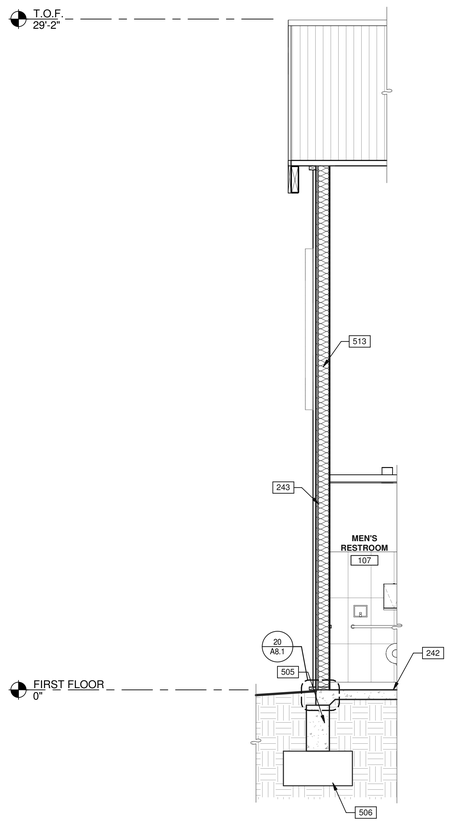
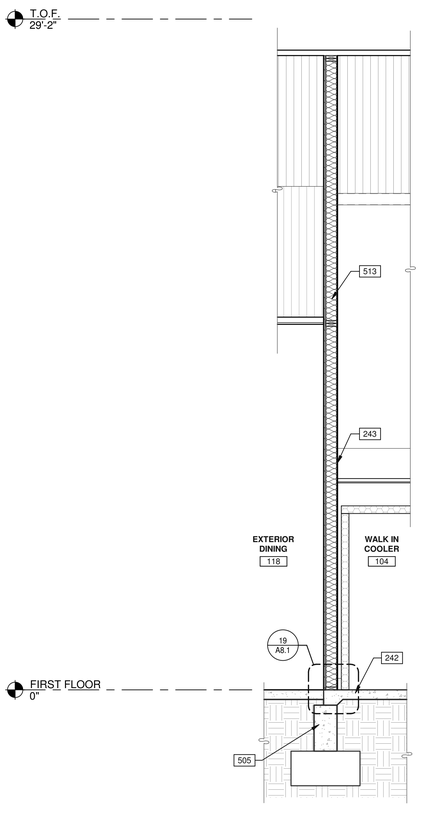
| | |
|---|---|
| 242 | FLOORING AS SCHEDULED. |
| 243 | WALL FINISH AS SCHEDULED. |
| 301 | ROOF MEMBRANE FLASHING BELOW CORRUGATED METAL ROOFING AT ALL ENCLOSED AREAS. |
| 505 | CONCRETE BEAM, RE: STRUCTURAL. |
| 506 | STRUCTURAL FOUNDATION. |
| 513 | R-21 BATT INSULATION. |

## WALL LEGEND

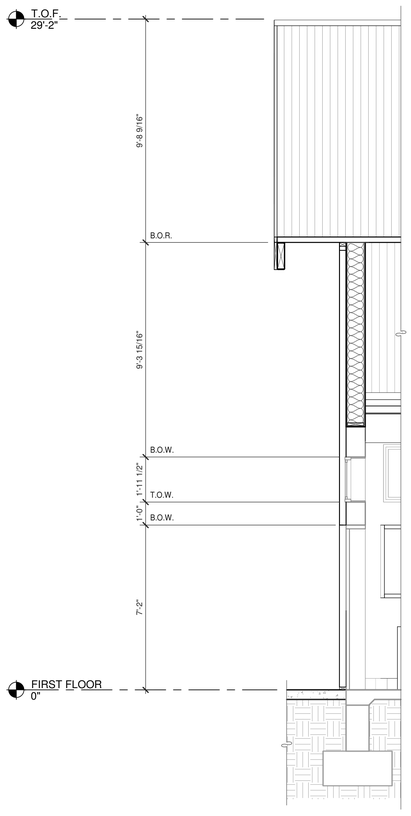
- FULL HEIGHT WALL
- FULL HEIGHT WALL WITH SOUND BATT INSULATION
- PARTIAL HEIGHT WALLS
- ACME FULL SIZE BRICK
- COOLER / FREEZE WALL, BY KEC
- EXISTING WALL



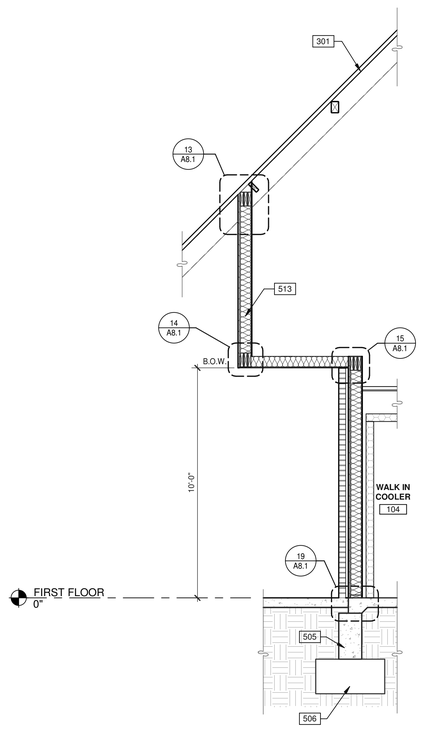

WALL SECTION 4
SCALE: 3/8" = 1'-0"




WALL SECTION 3
SCALE: 3/8" = 1'-0"




WALL SECTION 2
SCALE: 3/8" = 1'-0"




WALL SECTION 1
SCALE: 3/8" = 1'-0"

3/8"=1'-0"
0 1' 2' 4' 6' 12'

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| 244 | WINDOW AS SCHEDULED. |
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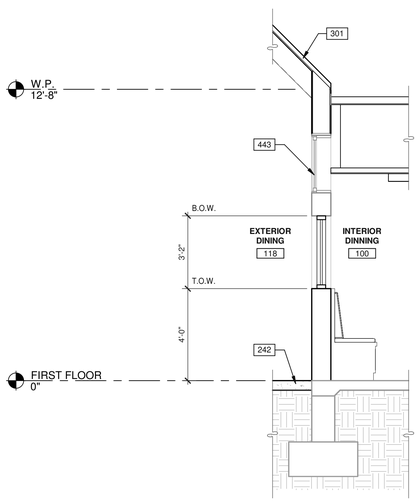
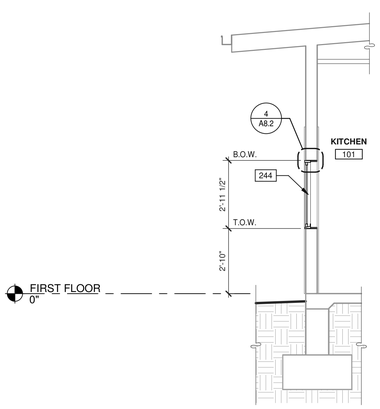
| 443 | EXISTING TRANSOM WINDOWS. |
| 505 | CONCRETE BEAM, RE: STRUCTURAL. |
| 506 | STRUCTURAL FOUNDATION. |

## WALL LEGEND

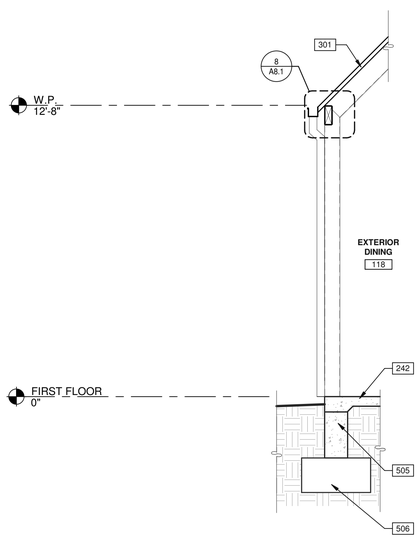
- FULL HEIGHT WALL
- FULL HEIGHT WALL WITH SOUND BATT INSULATION
- PARTIAL HEIGHT WALLS
- ACME FULL SIZE BRICK
- COOLER / FREEZE WALL, BY KEC
- EXISTING WALL



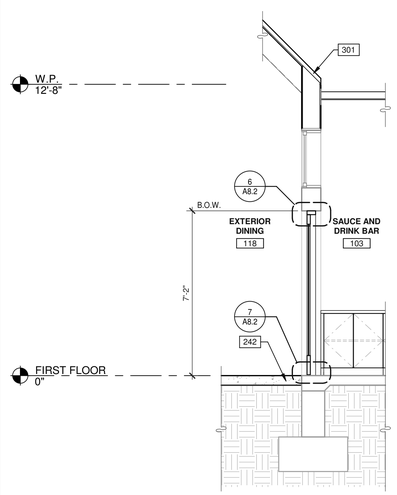

WALL SECTION 5
SCALE: 3/8" = 1'-0"




WALL SECTION 3
SCALE: 3/8" = 1'-0"




WALL SECTION 2
SCALE: 3/8" = 1'-0"




3/8"=1'-0"
0 1' 2' 4' 6' 12'

WALL SECTION 1
SCALE: 3/8" = 1'-0"

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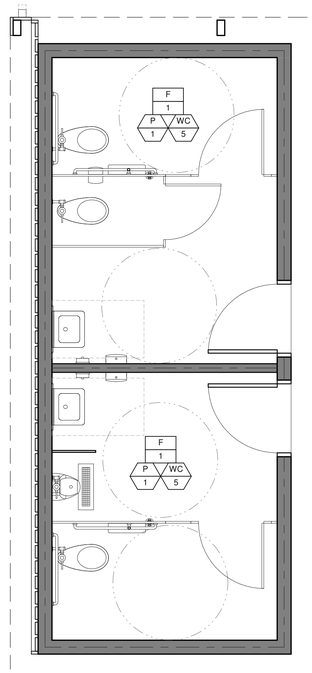
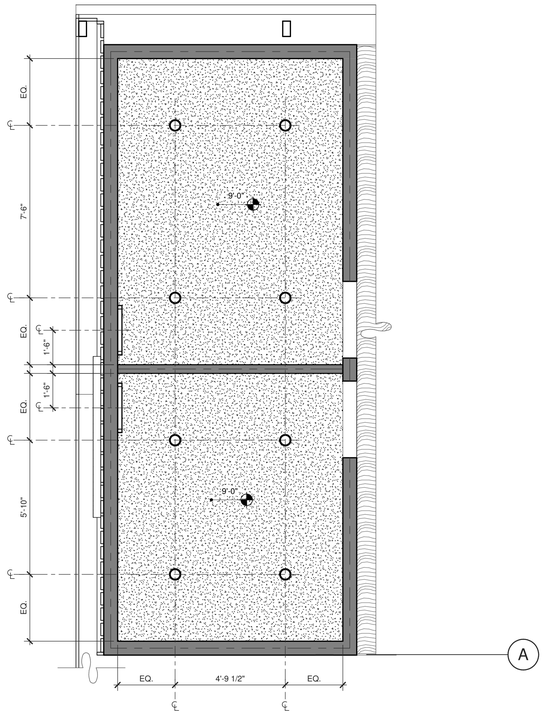
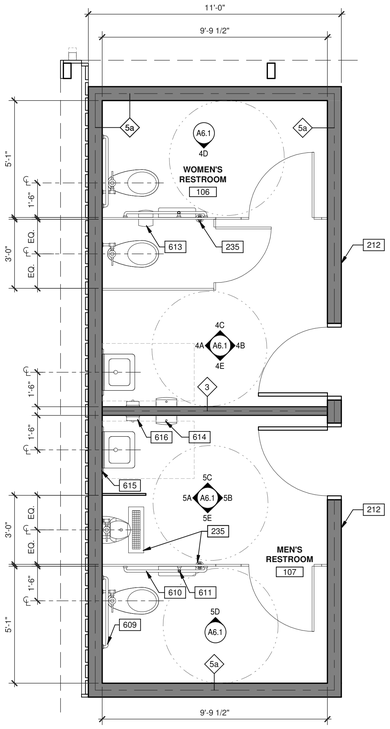



ENLARGED RESTROOM FINISH PLAN 3
SCALE: 3/8" = 1'-0"




ENLARGED RESTROOM CEILING PLAN 2
SCALE: 3/8" = 1'-0"




3/8"=1'-0"
0 1' 2' 4' 6' 12'

ENLARGED RESTROOM PLAN 1
SCALE: 3/8" = 1'-0"

N

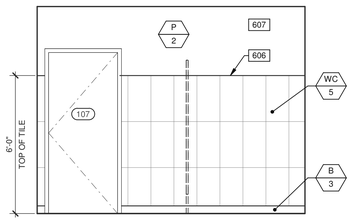
## GENERAL NOTES

SEE SHEET A0.2 & A.02a FOR GENERAL NOTES

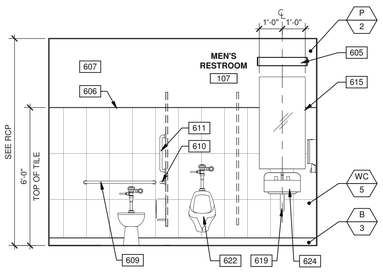
- THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES OR CONFLICTS THAT MIGHT ARISE.

## KEYNOTES:

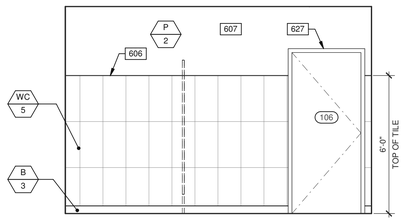
| | |
|---|---|
| 212 | RESTROOM SIGNAGE. |
| 235 | FLOOR DRAIN. |
| 604 | RED TOILET PARTITION, CONNECT UPPER BRACE TO TILE AND NOT GYPSUM BOARD. |
| 605 | WALL MOUNTED LIGHT FIXTURE. |
| 606 | 1/4" BRUSHED CHROME SCHLUTER TRIM. |
| 607 | PAINTED GYPSUM BOARD ABOVE TITLE WAINSCOT. |
| 609 | GRAB BARS (36"), MR. GRAB BAR, MGB-36B-Q, MATTE BLACK FINISH. |
| 610 | GRAB BARS (48"), MR. GRAB BAR, MGB-36B-Q, MATTE BLACK FINISH. |
| 611 | GRAB BARS (18"), MR. GRAB BAR, MGB-36B-Q, MATTE BLACK FINISH. |
| 612 | TOILET TISSUE DISPENSER, BOBRICK B-2892. |
| 613 | FEMENINE NAPKIN DISPOSAL (WOMEN ONLY), BOBRICK B-270. |
| 614 | RED PAPER TOWEL DISPENSER, BY OWNER. |
| 615 | MIRROR FRAME. |
| 616 | RED SOAP DISPENSOR, BY OWNER. |
| 619 | TRUEBRO PIPE WRAP FOR LAVATORY PIPES. |
| 620 | NEW WATER CLOSET - FULLY ACCESSIBLE, FLOOR-MOUNTED WITH FLUSH VALVE. |
| 622 | NEW WATERLESS URINAL - FULLY ACCESSIBLE, WALL-MOUNTED. |
| 624 | NEW LAVATORY - FULLY ACCESSIBLE, WALL-HUNG, SELF-RIMMING, PORCELAIN SINK WITH WRIST BLADE FAUCET CONTROLS. |
| 627 | BIRCH RESTROOM DOOR WITH HOLLOW METAL DOOR FRAME PAINTED P-4. |



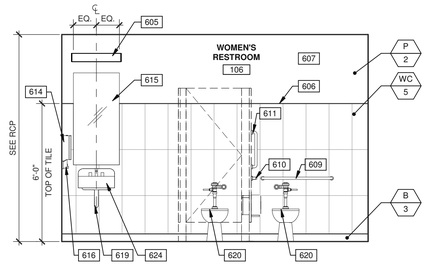

- 5B -



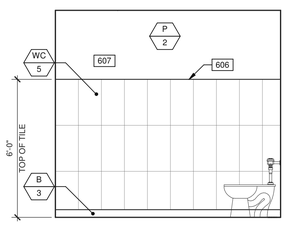

- 5A -



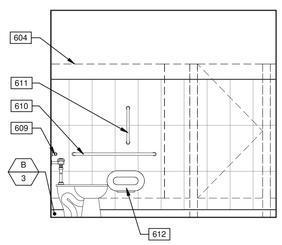

- 4B -



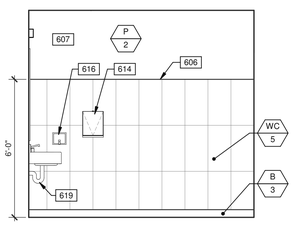

- 4A -



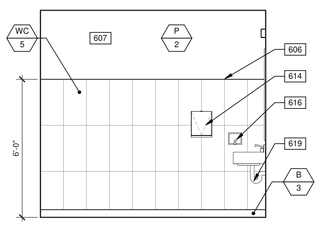

- 5E -



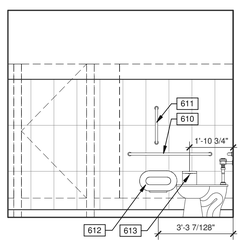

- 5D -



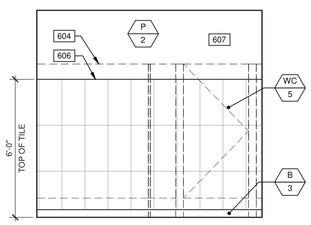

- 5C -




- 4E -




- 4D -

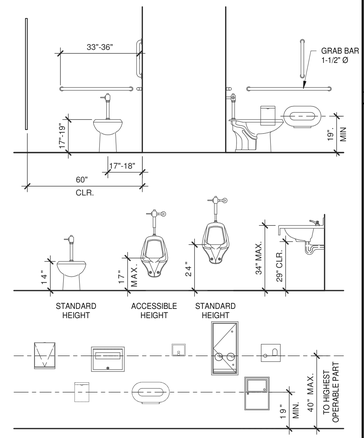



- 4C -

RESTROOM ELEVATIONS 5
SCALE: 3/8" = 1'-0"

RESTROOM ELEVATIONS 4
SCALE: 3/8" = 1'-0"

## RESTROOM MOUNTING HEIGHTS

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ENLARGED RESTROOM PLAN AND RESTROOM ELEVATIONS

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A6.1

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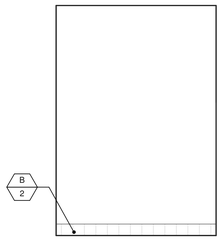
## KEYNOTES: -

SEE SHEET A0.2 & A.02a FOR GENERAL NOTES

249 NEW TELEVISION. REFER TO ELECTRICAL DRAWINGS.
723 NEW METAL SUSPENDED SCREEN.

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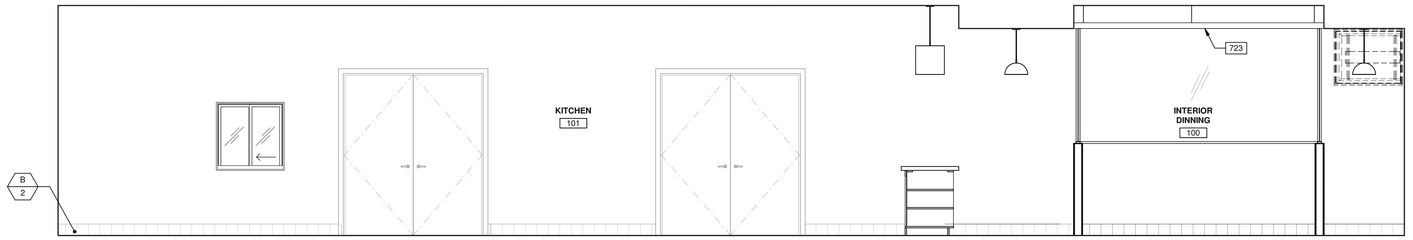
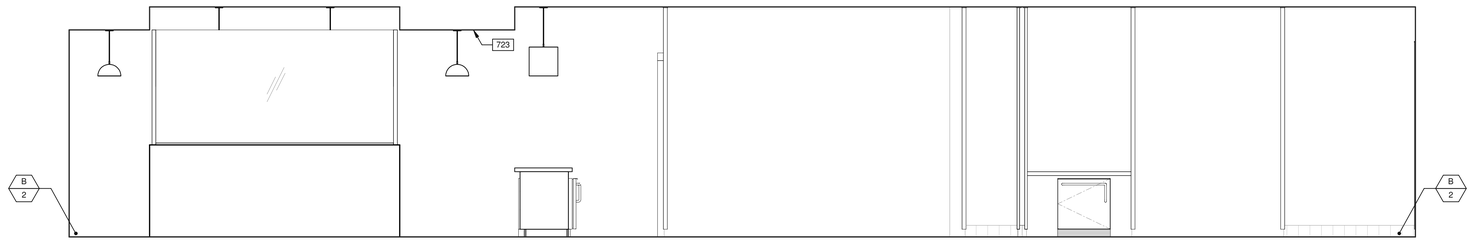
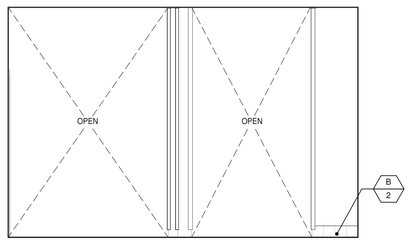



- 1A -




- 1C -

INTERIOR ELEVATIONS 1
SCALE: 3/8" = 1'-0"

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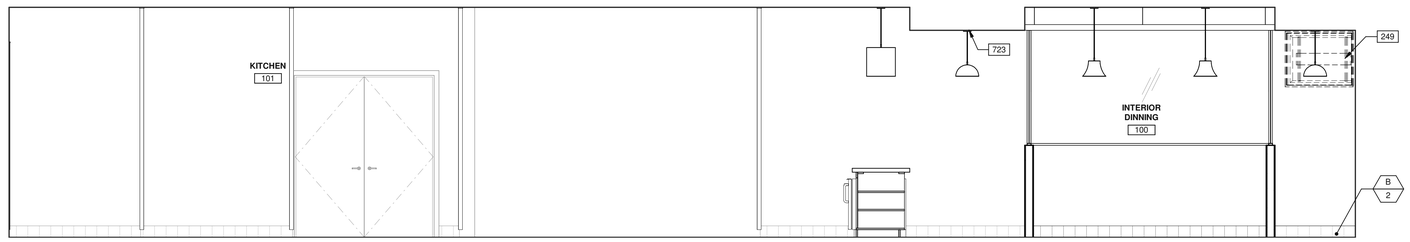
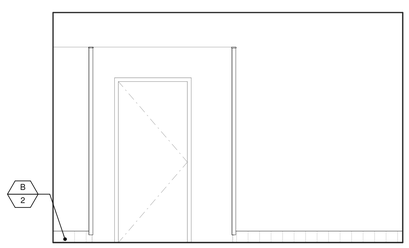
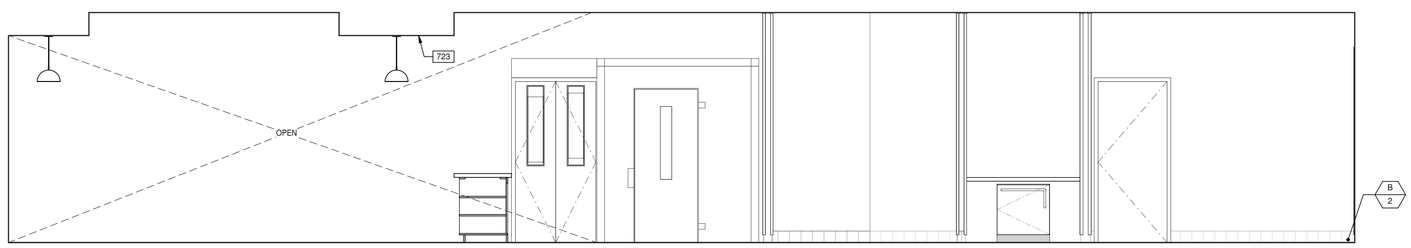



- 2A -




- 2D -




- 2C -

INTERIOR ELEVATIONS 2
SCALE: 3/8" = 1'-0"

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REGISTERED ARCHITECT CHRISTOPHER PROTZ 20198 STATE OF TEXAS
04/05/2022

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

INTERIOR ELEVATIONS

| DATE | REMARKS |
|---|---|
| 03.03.2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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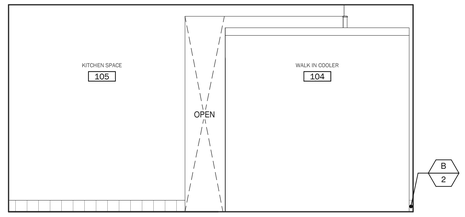
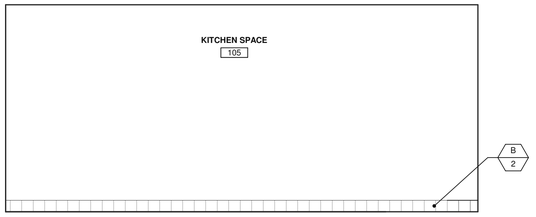



- 1B -

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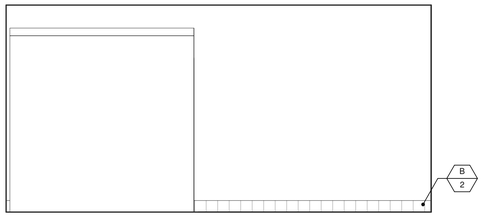


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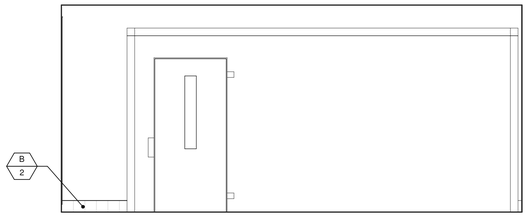
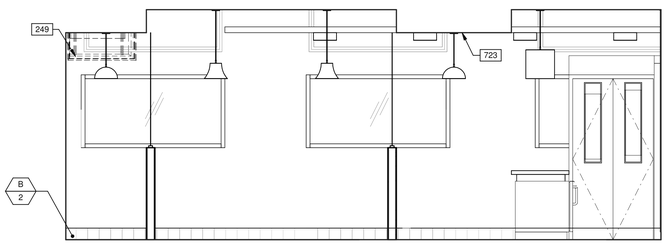


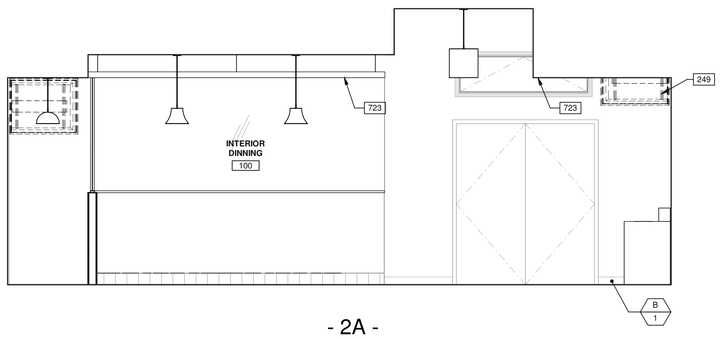

- 1C -

## INTERIOR ELEVATIONS 1

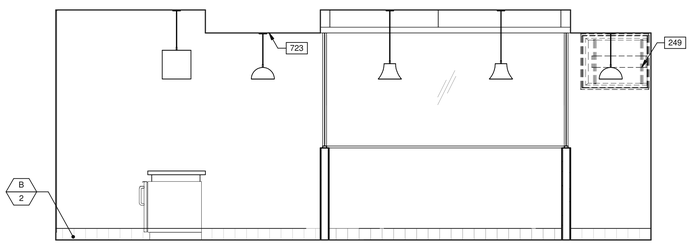
SCALE: 3/8" = 1'-0"



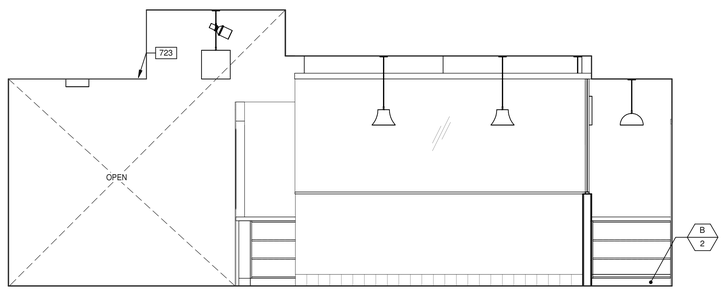

- 2B -




- 2A -




- 2D -




- 2C -

## INTERIOR ELEVATIONS 2

SCALE: 3/8" = 1'-0"

## KEYNOTES:

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249 NEW TELEVISION. REFER TO ELECTRICAL DRAWINGS.
723 NEW METAL SUSPENDED SCREEN.

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INTERIOR ELEVATIONS

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## KEYNOTES: -

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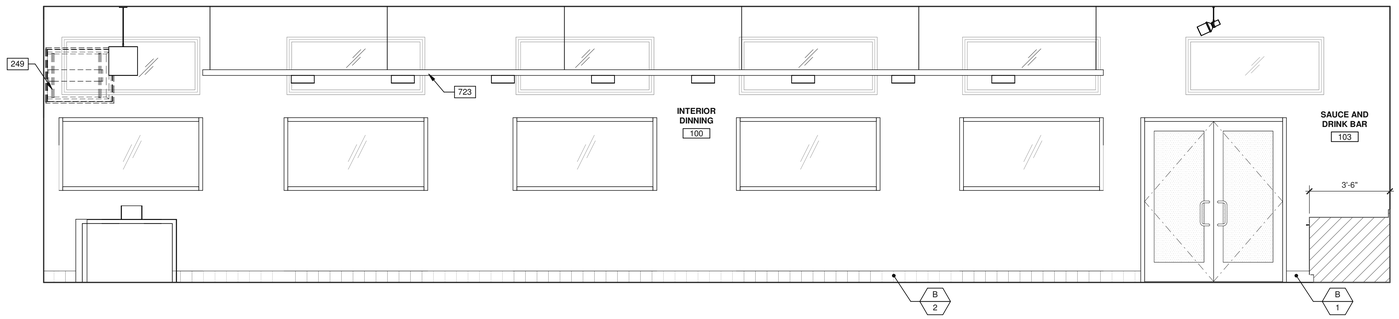
215 STEEL TRASH RECEPTACLE.
249 NEW TELEVISION. REFER TO ELECTRICAL DRAWINGS.
723 NEW METAL SUSPENDED SCREEN.

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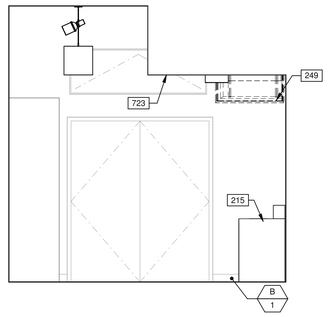
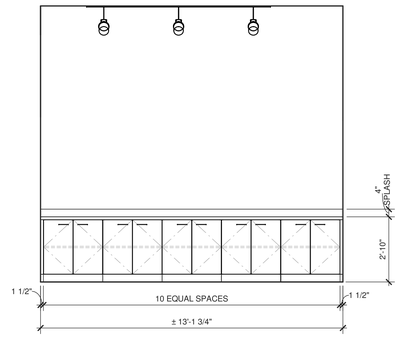



- 2D -

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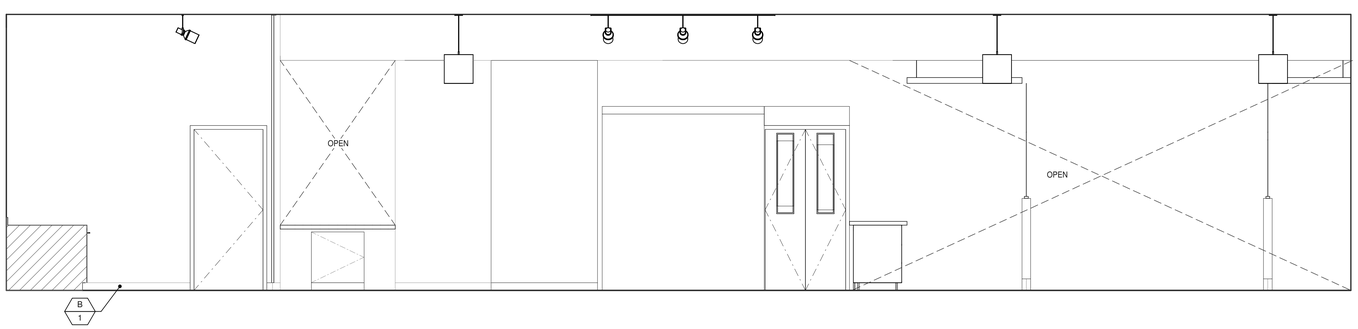


- 1C -

INTERIOR ELEVATIONS 1
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HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

INTERIOR ELEVATIONS

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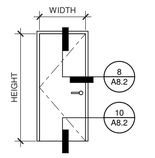
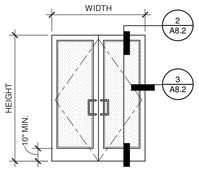
## DOOR TYPES




F1

SOLID FLUSH



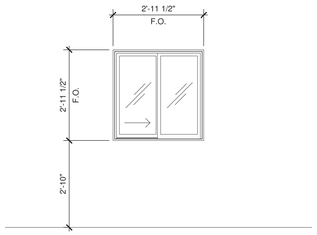

SF2

DOUBLE STOREFRONT

## DOOR SCHEDULE

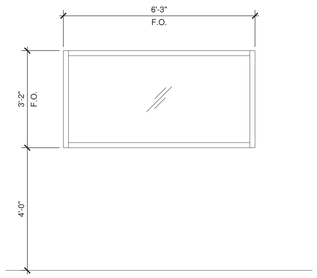
| DOOR NO. | ROOM NAME | DOOR TYPE | DOOR WIDTH | DOOR HEIGHT | DOOR THICK | DOOR MATERIAL | DOOR FINISH | FRAME MATERIAL | FRAME FINISH | FIRE RATING | HDWARE NO. | CARD READER | COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | SAUCE AND DRINK BAR | F1 | 3'-0" | 7'-0" | 1 3/4" | HOLLOW METAL | PAINTED | HOLLOW METAL | PAINTED | | | | |
| 101a | INTERIOR DINNING | E1 | 3'-6" | 7'-0" | 1 3/4" | HOLLOW METAL | PAINTED | STEEL | PAINTED | | | | |
| 103 | EXTERIOR DINING | SF2 | 6'-0" | 7'-0" | 1 3/4" | ALUMINUM STOREFRONT | CLEAR ANODIZED | ALUMINUM STOREFRONT | CLEAR ANODIZED | | B1 | | |
| 106 | WOMEN'S RESTROOM | F1 | 3'-0" | 7'-0" | 1 3/4" | WOOD | STAINED | HOLLOW METAL | PAINTED | | B4 | | |
| 107 | MEN'S RESTROOM | F1 | 3'-0" | 7'-0" | 1 3/4" | WOOD | STAINED | HOLLOW METAL | PAINTED | | B4 | | |

## WINDOW TYPES




A

WINDOW TYPE




B

WINDOW TYPE

## DOOR HARDWARE

B1 - STANDARD DOOR - RECEIVING
Each Assembly to have:

| | | | | |
|---|---|---|---|---|
| 1EA | CONTINUOUS HINGE | CFM HD1xDOOR HEIGHT | | PE |
| 1EA | EXIT DEVICE | DG1 8804 PSB | US32D | SA |
| 1EA | DOOR CLOSER | 351 PS | EN | SA |
| 1EA | KICK PLATE | K1050 10"x2" LDW 4BE CSK | US32D | RO |
| 1EA | DOOR STOP | 466 | BLACK | RO |
| 1EA | PANIC THRESHOLD | 2005AT MSES25SSxOPENING WIDTH | | PE |
| 1EA | GASKTING | 2891AS (HEAD AND JAMBS) | | PE |
| 1EA | RAIN GUARD | 346CxFRAME WIDTH | | PE |
| 1EA | SWEEP | 345ANBxDOOR WIDTH | | PE |
| 1EA | VIEWER | 622 | STNN | RO |

B3 - FIRE RISER DOOR
Each Assembly to have:

| | | | | |
|---|---|---|---|---|
| 1EA | CONTINUOUS HINGE | CFM HD1xDOOR HEIGHT | | PE |
| 1EA | STOREROOM LOCK | DG1 28 10G04 LL | US26D | SA |
| 1EA | DOOR CLOSER | 351 PS | EN | SA |
| 1EA | PANIC THRESHOLD | 2005AT MSES25SSxOPENING WIDTH | | PE |
| 1EA | GASKETING | 303CS (HEAD AND JAMBS) | | PE |
| 1EA | RAIN GUARD | 346CxFRAME WIDTH | | |
| 1EA | SWEEP | 345ANDxDOOR FRAME | | PE |

B4-RESTROOM DOOR
Each Assembly to have:

| | | | | |
|---|---|---|---|---|
| 3EA | HINGE | TA2714 4-1/2"x4-1/2" | US26D | MK |
| 1EA | PUSH PLATE | 70E | US 32D | RO |
| 1EA | DOOR PULL | 111 MTG-TYPE 1 | US32D | RO |
| 1EA | DOOR CLOSER | 1431 0P9 (AS REQUIRED) | EN | SA |
| 1EA | KICK PLATE | K1050 10"X2" LDW 4BE CSK | US32D | RO |
| 1EA | DOOR STOP | 406/441H (AS REQUIRED PER APPLICATION) | US32D | RO |
| 3EA | SILENCER | 608 | | RO |

B5 WOOD SINGLE DOOR -SERVICE YARD W/O PANIC HARDWARE
Each Assembly to have:

| | | | | |
|---|---|---|---|---|
| 2EA | HINGE | | | |
| 1EA | PULL | | | |
| 1EA | EXIT DEVICE (EXTERIOR RATED) | | | |
| 1EA | CLOSER | | EN | SA |
| 1EA | ARMOR PLATE | 8x2 LOW FH-CSK .050 | BLACK | RO |

## HARDWARE LEGEND

| | |
|---|---|
| MK | McKINNEY |
| PE | PEMKO |
| RO | ROCKWOOD MANUFACTURING CO., WWW.ROCKWOODMFG.COM, 1.800.458.2424 |
| AD | ADAMS RITE |
| SA | SARGENT |

## REMARK KEY NOTES

1. FLOOR STOPS SHALL BE INSTALLED 18" AWAY FROM DOOR FRAME.

## GENERAL NOTES

SEE SHEET A0.2 FOR GENERAL DOOR NOTES

1. REFER TO THE PARTITION PLAN AND SPECIFICATIONS (IF PROVIDED) FOR ADDITIONAL DOOR INFORMATION.
2. SOLID CORE TO BE LAMINATED WITH _____
3. DOOR FRAMES TO BE WESTERN INTEGRATED/TIMELY.
4. HOLLOW METAL DOORS TO BE PAINTED SAME COLOR AS THE ADJACENT WALL; FINISH TO BE SEMI-GLOSS. SEE FINISH SCHEDULE FOR ADDITIONAL INFORMATION.
5. PROVIDE RATED WIRE GLASS IN RATED ASSEMBLIES, U.O.N.
6. FIELD VERIFY OPENING WIDTH AND HEIGHT FOR ALL NEW DOORS IN EXISTING OPENINGS.
7. ALL HOLLOW METAL FRAMES TO BE WELDED TYPE, U.O.N.
8. RATED DOORS SHALL HAVE AUTOMATIC CLOSERS AND COMPLY WITH REQUIREMENTS OF ALL GOVERNING CODES & STANDARDS.

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HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

DOOR SCHEDULE AND WINDOW SCHEDULE

| DATE | REMARKS |
|---|---|
| 03/03/2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
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A7.1

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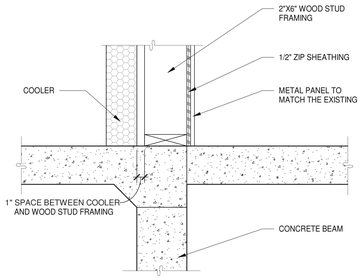
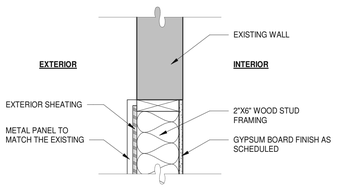



## COOLER SILL DETAIL 21

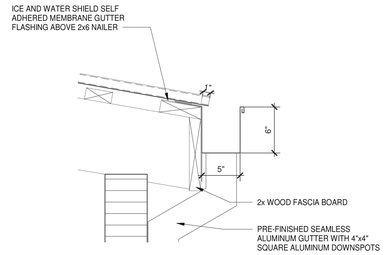
SCALE: 1 1/2" = 1'-0"




## WALL JOINT AT PERIMETER 16

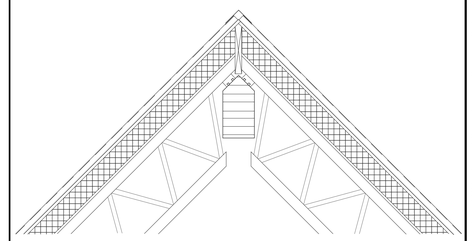
SCALE: 1 1/2" = 1'-0"

1. PRE-FINISHED 24 GAUGE SEAMLESS GALVANIZED ALUMINUM RAIN GUTTERS. SUPPORT GUTTERS WITH STEEL HIDDEN GUTTER HANGERS.
2. SEAMLESS GUTTERS TO BE 5"o, COLOR: GALVALUME.
3. GALVANIZED STEEL PRE-FINISHED SMOOTH SQUARE DOWNSPOUTS AND ELBOWS SHALL BE 4"x4" SQUARE IN PRE-FABRICATED LENGTHS OF AT LEAST 8 FEET, COLOR: GALVALUME, FLUTED DOWNSPOUTS AND ELBOWS WILL NOT BE ALLOWED.
4. USE POP-RIVETS TO JOIN ALL GUTTER MITERS AND DOWNSPOUT SECTIONS.
5. GUTTER HANGERS SHALL BE SECURED WITH #9 OR #10 GALVANIZED WOOD SCREWS WITH NEOPRENE-COATED WASHERS.
6. DOWNSPOUT STRAPS FASTENED TO STONE OR BRICK SHALL BE SECURED WUTH 1.25" TAPCON FASTENERS.
7. GUTTERS SHALL BE PLACED BEHIND METAL DRIP EDGE ROOF FLASHING.
8. HANGERS SHALL BE PLACED NO MORE THAN 30" APART.
9. DOWNSPOUT JUNCTIONS SHALL BE FASTENED WITH AT LEAST ONE RIVET.
10. ALL MITERS AND END CAPS SHALL BE SEALED WITH SELF-LEVELING SEALER.



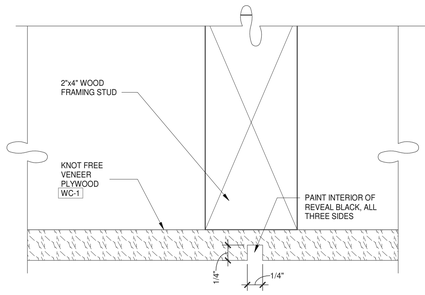

## TYPICAL GUTTER AND DRIP EDGE 6

SCALE: 1 1/2" = 1'-0"



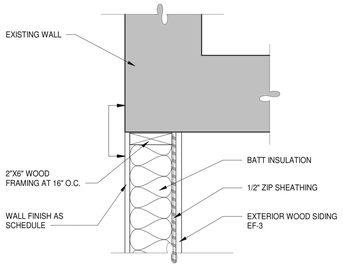
## RIDGE SECTION AT INTERIOR 1

SCALE: 3/4" = 1'-0"



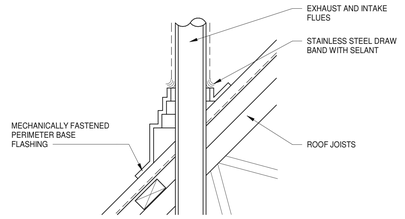

## WOOD FINISH JOINT DETAIL 22

SCALE: 1/2" = 1'-0"



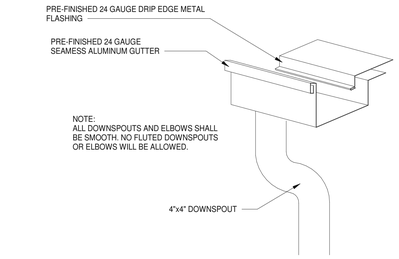

## WALL JOINT AT PERIMETER 17

SCALE: 1 1/2" = 1'-0"



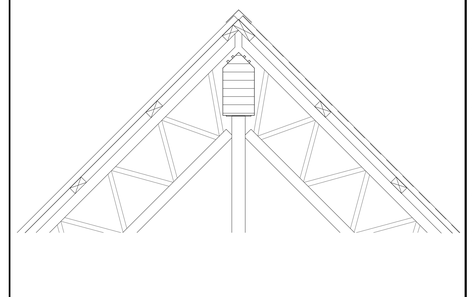

## PIPE PENETRATION DETAIL 12

SCALE: 3" = 1'-0"



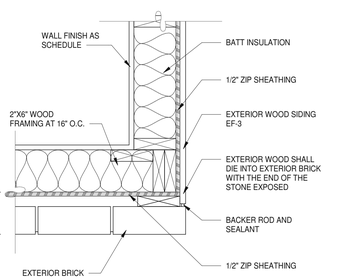

## GUTTER AND DOWNSPOUT DETAIL 7

SCALE: 1 1/2" = 1'-0"



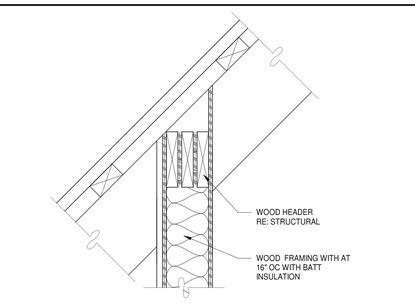
## RIDGE SECTION AT PATIO 2

SCALE: 3/4" = 1'-0"



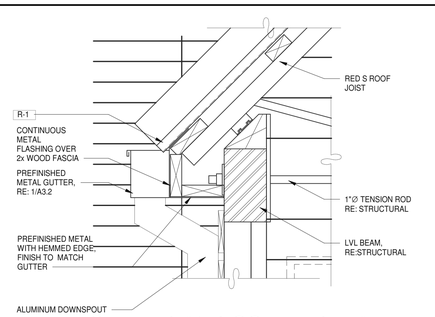

## BRICK TO WOOD CORNER 18

SCALE: 1 1/2" = 1'-0"



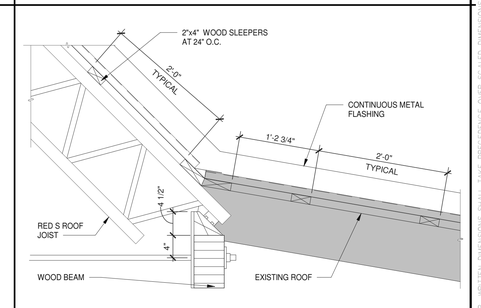

## WALL AT ROOF 13

SCALE: 1 1/2" = 1'-0"



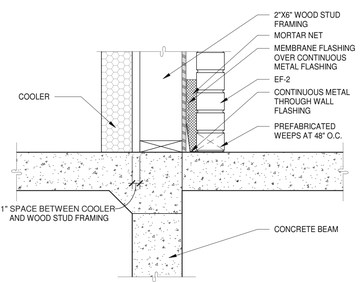

## GUTTER AND SOFFIT DETAIL 8

SCALE: 1 1/2" = 1'-0"



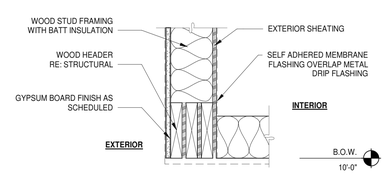

## SECTION AT SHED ROOF 3

SCALE: 3/4" = 1'-0"



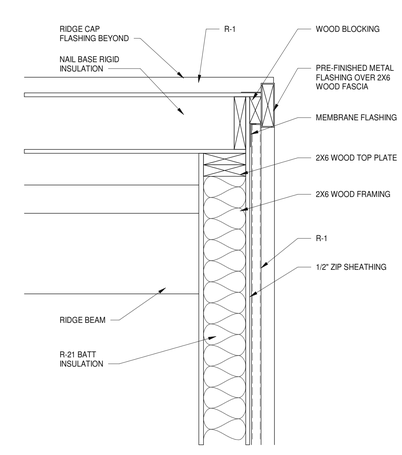

## COOLER SILL DETAIL 19

SCALE: 1 1/2" = 1'-0"



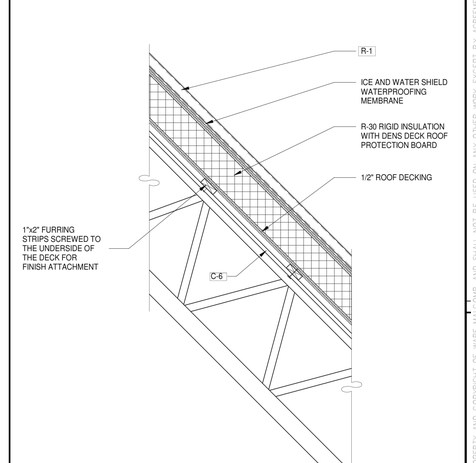

## DETAIL 14

SCALE: 1 1/2" = 1'-0"



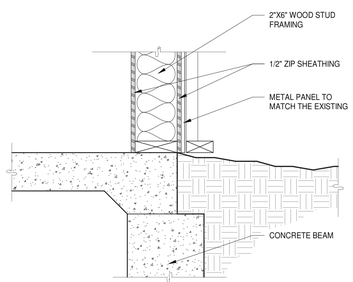

## RIDGE BEAM 10

SCALE: 1 1/2" = 1'-0"



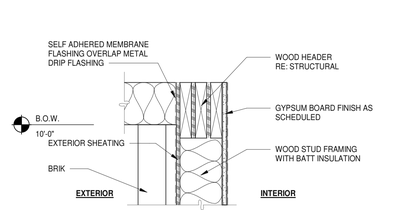

## INTERIOR DINING ROOF CONNECTION DETAIL 5

SCALE: 1 1/2" = 1'-0"




## WALL SILL DETAIL 20

SCALE: 1 1/2" = 1'-0"




## DETAIL 15

SCALE: 1 1/2" = 1'-0"

WARE MALCOMB
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REGISTERED ARCHITECT CHRISTOPHER PROFFITT 20198 STATE OF TEXAS

04/05/2022

HAT CREEK Burger Company

# HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

EXTERIOR DETAILS

| DATE | REMARKS |
|---|---|
| 03/03/2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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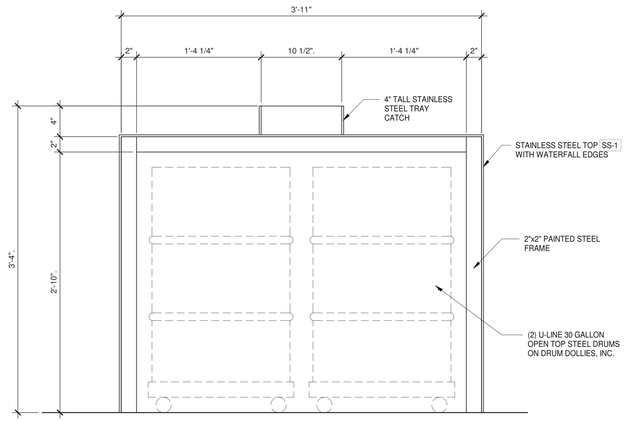
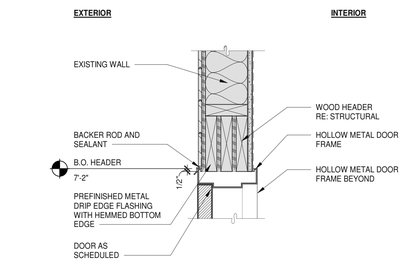
CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT



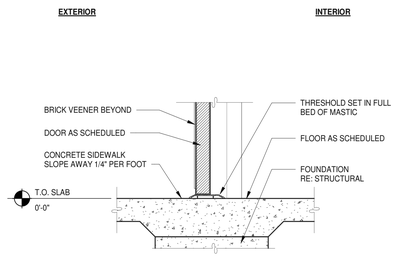

## TRASH CAN ELEVATION 12

SCALE: 1 1/2" = 1'-0"



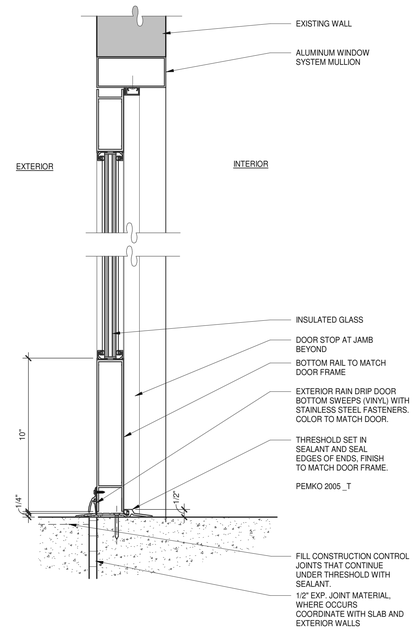

## RECEIVING DOOR HEAD 6

SCALE: 1 1/2" = 1'-0"



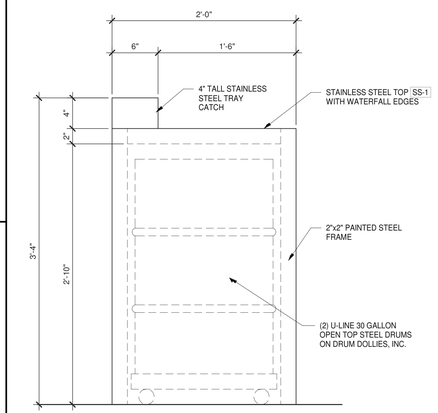

## MECHANICAL DOOR SILL 7

SCALE: 1 1/2" = 1'-0"



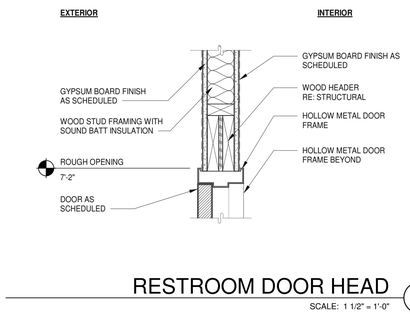

## STOREFRONT DOOR 2

SCALE: 3" = 1'-0"



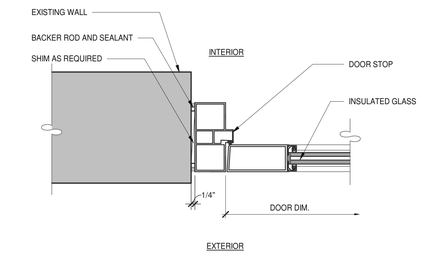

## TRASH CAN ELEVATION 14

SCALE: 1 1/2" = 1'-0"



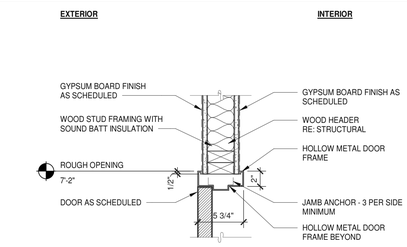

## RESTROOM DOOR HEAD 8

SCALE: 1 1/2" = 1'-0"



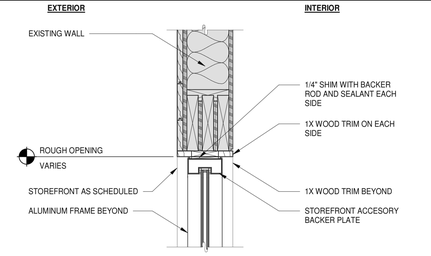

## STOREFRONT DOOR JAMB @ WALL 3

SCALE: 3" = 1'-0"



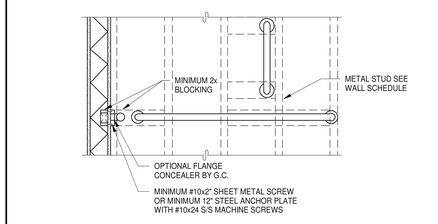

## RESTROOM DOOR JAMB 9

SCALE: 1 1/2" = 1'-0"



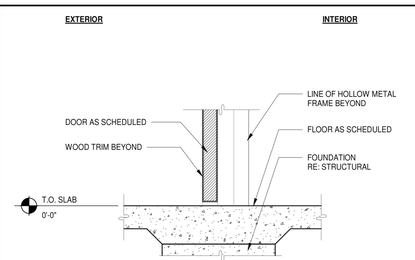

## TRANSOM HEAD (JAMB & SILL SIM) 4

SCALE: 1 1/2" = 1'-0"



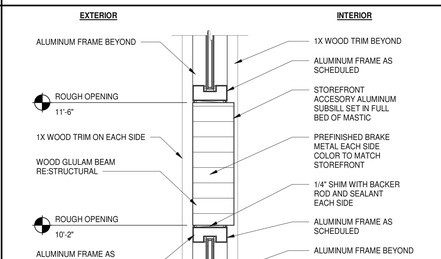

## TYPICAL GRAB BAR BLOCKING DETAIL 15

SCALE: 3" = 1'-0"




## RESTROOM DOOR SILL 10

SCALE: 1 1/2" = 1'-0"




## HEAD/TRANSOM SILL 5

SCALE: 1 1/2" = 1'-0"

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REGISTERED ARCHITECT CHRISTOPHER PROTZ 20198 STATE OF TEXAS

04/05/2022

HAT CREEK - WEST LAKE

5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

WINDOW, DOOR AND INTERIOR DETAILS

| DATE | REMARKS |
|---|---|
| 03/03/2022 | ISSUE FOR PERMIT |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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## DIVISION 0 - CONTRACT AND BID INFORMATION

### SECTION 00100 - INSTRUCTIONS TO BIDDERS

1. AIA DOCUMENT A701, LATEST EDITION, "INSTRUCTIONS TO BIDDERS" ARE INCLUDED AS PART OF THESE SPECIFICATIONS AD IF HEREIN REPRINTED IN FULL.
   A. A COPY OF AIA A701, LATEST EDITION MAY BE OBTAINED FROM OWNER, ARCHITECT, OR DIRECTLY FROM: THE AMERICAN INSTITUTE OF ARCHITECTS
   1735 NEW YORK AVENUE,
   N.W. WASHINGTON, D.C. 20006.
2. CONTRACTOR SHALL UTILIZE THE FOLLOWING DOCUMENTS, LATEST EDITION, IN THE NEGOTIATION AND EXECUTION OF THE PROJECT:
   A. AIA DOCUMENT A701 - INSTRUCTIONS TO BIDDERS
   B. AIA DOCUMENT G702 - APPLICATION AND CERTIFICATE FOR PAYMENT
   C. AIA DOCUMENT G703 - CONTINUATION SHEET
   D. AIA DOCUMENT G701 - CHANGE ORDER
   E. AIA DOCUMENT G705 - CERTIFICATES OF INSURANCE
   F. AIA DOCUMENT G706 - CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS
   G. AIA DOCUMENT A706 - CONTRACTOR'S AFFIDAVIT OF RELEASE OF LIENS
   H. AIA DOCUMENT A201 - GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION
   I. AIA DOCUMENT A101 - OWNER CONTRACTOR AGREEMENT FORM - STIPULATED SUM

### SECTION 00120 - SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

THE FOLLOWING SUPPLEMENTS MODIFY, CHANGE, DELETE FROM, OR ADD TO THE INSTRUCTIONS TO BIDDERS (AIA A701, LATEST EDITION) WHERE ANY ARTICLE OF THE INSTRUCTION TO BIDDERS IS MODIFIED OR ANY PARAGRAPH, SUB-PARAGRAPH, OR CLAUSE THEREOF IS MODIFIED OR DELETED BY THESE SUPPLEMENTAL INSTRUCTIONS THE UNALTERED PROVISIONS OF THE ARTICLE, PARAGRAPH, SUB-PARAGRAPH, OR CLAUSE SHALL REMAIN IN EFFECT.

1. ARTICLE 1, PARAGRAPH 1.8; ADD:
   BIDDING IS BY INVITATION FROM THE OWNER, ONLY
2. ARTICLE 3, PARAGRAPH 3.1.1 DELETE AND INSERT THE FOLLOWING:
   OWNER WILL PROVIDE EACH INVITED BIDDER A COMPLETE SET OF ELECTRONIC FILES (.PDF FORMAT) OF THE BIDDING DOCUMENTS. BIDDING CONTRACTOR WILL BE RESPONSIBLE FOR PRINTING AND DISTRIBUTION.
3. ARTICLE 4, PARAGRAPH 4.1.1 DELETE AND INSERT THE FOLLOWING:
   4.1.1 BIDS SHALL BE SUBMITTED ON FORMS IDENTICAL TO THE BUD FORM PROVIDED BY THE OWNER, ONE (1) ORIGINAL WITH ORIGINAL SIGNATURE(S). BIDS TRANSMITTED VIA FACSIMILE OR E-MAIL; PROVIDED THEY ARE RECEIVED BY THE PRESCRIBED DEADLINE, ARE ACCEPTABLE. ORIGINALS SHALL BE SENT BY OVERNIGHT SERVICE FOR NEXT DAY DELIVERY.
4. ARTICLE 4, PARAGRAPH 4.2:
   DELETE THIS PARAGRAPH IN IT'S ENTIRETY, AS NO BID SECURITY WILL BE REQUIRED.
5. ARTICLE 4, PARAGRAPH 4.4.1:
   THE STIPULATED TIME PERIOD SHALL BE CONSTRUED AS 120 CALENDAR DAYS.
6. ARTICLE 6, PARAGRAPH 6.2:
   DELETE THIS PARAGRAPH IN IT'S ENTIRETY.
7. ARTICLE 7, PARAGRAPH 7.1.1:
   DELETE THIS PARAGRAPH IN IT'S ENTIRETY, AS NO BOND WILL BE REQUIRED.
8. ARTICLE 7, PARAGRAPH 7.2.2:
   DELETE "UNLESS OTHERWISE PROVIDED" AND SUBSTITUTE "UNLESS OTHERWISE ACCEPTABLE TO THE OWNER".

### SECTION 00300 - BID FORM

1. THE FORM OF PROPOSAL WILL BE FURNISHED SEPARATELY BY THE OWNER.

### SECTION 00700 - GENERAL CONDITIONS

1. AIA DOCUMENT A201, LATEST EDITION, "GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION" ARE INCLUDED AS PART OF THESE SPECIFICATIONS SAME AS IF HEREIN REPRINTED IN FULL.
   A. A COPY OF AIA A201, MAY BE OBTAINED FROM OWNER; ARCHITECT, OR DIRECTLY FROM: THE AMERICAN INSTITUTE OF ARCHITECTS
   1735 NEW YORK AVENUE, N.W.
   WASHINGTON, D.C. 20006.

### SECTION 00800 - SUPPLEMENTARY CONDITIONS

THE FOLLOWING SUPPLEMENTS, MODIFY, CHANGE, DELETE FROM, OR ADD TO GENERAL CONDITIONS (AIA A201), WHERE ANY ARTICLE OF THE GENERAL CONDITIONS IS MODIFIED OR ANY PARAGRAPH, SUB-PARAGRAPH, OR CLAUSE THEREOF IS MODIFIED OR DELETED BY THESE SUPPLEMENTAL INSTRUCTIONS, THE UNALTERED PROVISIONS OF THE ARTICLE, PARAGRAPH, SUB-PARAGRAPH, OR CLAUSE SHALL REMAIN IN EFFECT.

1. ARTICLE 7, PARAGRAPH 7.3.6 IS FURTHER CLARIFIED AS FOLLOWS:
   WHEN THE OWNER AUTHORIZES THE CONTRACTOR RO PERFORM CHANGES OR ADDITIONS INVOLVING EXTRA LABOR AND MATERIAL, AND IF THE CONTRACTOR IS DIRECTED TO PROCEED ON THE BASIS OF THE ACTUAL COST OF LABOR AND MATERIAL BY CHANGE ORDER, THE FOLLOWING ALLOWANCES WILL BE ALLOWED FOR OVERHEAD (INCLUDING BOND AND INSURANCES) & PROFIT:
   (1) FOR THE CONTRACTOR: TO BE NOTED IN THE GENERAL CONTRACTOR'S BID SUBMITTAL.
   (2) EXTRA WORK COVERED BY UNIT PRICES AS REQUESTED IN THE BID FORM, INCLUDE CONTRACTOR'S OVERHEAD AND PROFIT.
   (3) SUPERINTENDENTS TIME SHALL NOT BE INCLUDED IN T&M EXTRA WORK.
2. ARTICLE 8, ADD PARAGRAPH 8.3.4:
   8.3.4 THE CONTRACTOR SHALL HAVE NO CLAIM FOR AN EXTENSION OF TIME UNLESS SUCH TIME IS STATED ON THE FACE OF A WRITTEN CHANGE ORDER AND APPROVED AND ACCEPTED IN WRITING BY THE OWNER ON SUCH CHANGE ORDER. ANY ATTEMPTED RESERVATION BY THE CONTRACTOR OR THE RIGHT TO SUBSEQUENTLY CLAIM ANY EXTENSION OF TIME NOT STATED ON THE FACE OF A WRITTEN CHANGE ORDER APPROVED AND ACCEPTED BY THE OWNER SHALL BE NULL AND VOID.
3. ARTICLE 9, PARAGRAPH 9.3.1; ADD THE FOLLOWING:
   PAYMENT REQUESTS MUST BE RECEIVED BY THE OWNER NO LATER THAN THE 26TH DAY OF EACH MONTH, AND MUST BE ACOMPANIED BY A LIEN WAIVER IN FULL EACH PARTICIPATING CONTRACTOR, SUBCONTRACTOR, AND SUPPLIER SEEKING PAYMENT. OWNER WILL NOT BE REQUIRED TO MAKE ANY PAYMENT WITHOUT THE REQUIRED LIEN WAIVERS.
4. ARTICLE 9, PARAGRAPH 9.4: DELETE IN IT'S ENTIRETY.
5. ARTICLE 9, PARAGRAPH 9.6.1: DELETE AND SUBSTITUTE:
   9.6.1 UPON RECEIPT OF CONTRACTOR'S APPLICATION FOR PAYMENT, OWNER WILL MAKE SUCH PAYMENT TO THE CONTRACTOR WITHIN 15 DAYS OR AS SOON AS PRACTICAL THEREAFTER.
6. ARTICLE 9, PARAGRAPHS 9.10.6 AND 9.10.7:
   9.10.6 BEFORE OWNER ISSUES FINAL PAYMENT HEREUNDER, THE CONTRACTOR SHALL SUBMIT TO THE OWNER:
   (A) AN AFFIDAVIT THAT ALL PAYROLL AND BILLS FOR MATERIAL AND EQUIPMENT, AND, OTHER INDEBTEDNESS CONNECTED WITH THE WORK FOR WHICH THE OWNER OR ITS PROPERTY MIGHT IN ANY WAY BE RESPONSIBLE, HAVE BEEN PAIN OTHERWISE SATISFIED.
   (B) THE CONSENT OF SURETY TO FINAL PAYMENT
   (C) IF REQUIRED BY THE OWNER, OTHER DATA ESTABLISHING PAYMENT OR SATISFACTION OF ALL SUCH OBLIGATIONS, SUCH AS RECEIPTS, RELEASES AND WAIVERS OF LIENS ARISING OUT OF THE CONTRACT DOCUMENTS, TO THE EXTEND AND IN SUCH FORM AS MAY BE DESIGNATED BY THE OWNER. IF ANY SUBCONTRACTOR AND/OR MATERIAL MAN REFUSES TO FURNISH A RELEASE OR WAIVER REQUIRED BY THE OWNER, THE CONTRACTOR MAY FURNISH A BOND, AT ITS EXPENSE, SATISFACTORY TO THE OWNER TO INDEMNIFY THE OWNER AGAINST SUCH LIEN. IF ANY SUCH LIEN REMAINS UNSATISFIED AFTER ALL PAYMENTS ARE MADE, THE CONTRACTOR SHALL REFUND TO THE OWNER ALL MONIES THAT THE OWNER MAY BE COMPELLED TO PAY IN DISCHARGING SUCH LIEN, INCLUDING WITHOUT LIMITATION, ALL COST AND REASONABLE ATTORNEYS' FEES.
   9.10.7 ALL WAIVERS AND SUBORDINATION AGREEMENTS REQUIRED HEREUNDER SHALL BE IN THE FORM ACCEPTABLE TO THE OWNER.
7. ARTICLE 11, DELETE FIRST PARAGRAPH OF 11.1.1 BEGINNING WITH "THE CONTRACTOR" ENDING WITH "...BE LIABLE", AND SUBSTITUTE THE FOLLOWING:
   11.1.1 PRIOR TO THE COMMENCEMENT TO THE WORK, CONTRACTOR SHALL PROCURE, AND CONTRACTOR SHALL MAINTAIN, ALL INSURANCE REQUIRED UNDER THIS PARAGRAPH 11.1.1 CONTRACTOR SHALL REQUIRE EACH SUBCONTRACTOR TO PROVIDE COVERAGE ADEQUATE TO PROTECT SUBCONTRACTOR AND IT'S EMPLOYEES. IF THE TERMS OF COVERAGE OF SUCH POLICIES ARE UNACCEPTABLE TO OWNER, CONTRACTOR AND/OR SUBCONTRACTOR SHALL REVISE THE COVERAGE OF OBTAIN ADDITIONAL COVERAGE AS REASONABLY REQUEST BY OWNER. OWNER'S APPROVAL OF CONTRACTOR'S AND ANY SUBCONTRACTOR'S INSURANCE SHALL NOT RELIEVE OR LIMIT THEIR LIABILITY UNDER THE CONTRACT DOCUMENTS. IN THE EVENT OF THE FAILURE OF CONTRACTOR TO FURNISH AND MAINTAIN SUCH INSURANCE, THEN THE OWNER SHALL HAVE THE RIGHT, BUT NOT THE OBLIGATION, TO TAKE OUT AND MAINTAIN SUCH INSURANCE FOR THE ACCOUNT OF CONTRACTOR. CONTRACTOR SHALL NOT ALLOW ANY SUBCONTRACTOR TO COMMENCE WORK ON ITS SUBCONTRACT UNTIL ALL INSURANCES REQUIRED OF SUBCONTRACTOR HAVE BEEN OBTAINED. CONTRACTOR SHALL PURCHASE AND MAINTAIN SUCH INSURANCE AS WILL PROTECT IT FROM CLAIMS SET FOTH BELOW WHICH MAY ARISE OUT OF ORRESULT FROM CONTRACTORS OPERATIONS UNDER THE CONTRACT DOCUMENTS, WHETHER SUCH OPERATIONS BE BY CONTRACTOR OR BY SUBCONTRACTOR OR BY ANYONE DIRECTLY OR INDIRECTLY EMPLOYES BY ANY OF THEM, OR BY ANYONE FOR WHOSE ACTS ANY OF THEM MAY BE LIABLE.
8. ARTICLE 11; DELETE PARAGRAPH 11.1.2 AND SUBSTITUTE THE FOLLOWING:

11.1.2 THE LIABILITY INSURANCE PURCHASED AND MAINTAINED BY CONTRACTOR PURSUANT TO THIS PARAGRAPH AND 11.1.1 SHALL INCLUDE THESE TYPES AND BE IN THE MINIMUM AMOUNTS AS FOLLOWS:
(A) WORKMAN'S COMPENSATION
(I) WORKKER'S OR WORKMAN'S COMPENSATION - MAXIMUM PERMITTED BY STATUE, UNLIMITED IF PERMITTED.
(II) EMPLOYER'S LIABILITY - $1 MILLION.
(B) COMPREHENSIVE GENERAL LIABILITY
BODILY INJURY AND PROPERTY DAMAGE HAVING A COMBINED SINGLE LIMIT OF $2 MILLION AND INCLUDING THE FOLLOWING COVERAGE:
(I) COMPREHENSIVE FORM
(II) PREMISES - OPERATIONS
(III) EXPLOSION AND COLLAPSE HAZARD
(IV) UNDERGROUND HAZARD
(V) PRODUCTS - COMPLETED OPERATIONS. HAZARD (WHICH MUST BE MAINTAINED FOR 2 YEARS COMMENCING WITH ISSUANCES OF THE FINAL CERTIFICATE OF PAYMENT)
(VI) BROAD FORM CONTRACTUAL INSURANCE
(VII) BROAD FORM PROPERTY DAMAGE (EXTENDED TO APPLY TO COMPLETED OPERATIONS)
(VIII) INDEPENDENT CONTRACTORS
(IX) PERSONAL INJURY (WITH EMPLOYEES AND CONTRACTUAL EXCLUSIONS DELETED)
(C) AUTOMOBILE LIABILITY (COMPREHENSIVE FORM) INSURING CONTRACTOR FOR OPERATIONS FOR ALL OWNED, HIRED, AND NON-OWNED VEHICLE LIMIT OF $2 MILLION.
(D) UMBRELLA EXCESS LIABILITY: $3 MILLION PER OCCURRENCE/AGREGATE.

9. ARTICLE 11, PARAGRAPH 11.3:
   DELETE ALL REFERENCES TO OWNER FURNISHED PROPERTY INSURANCE.
   THE GENERAL CONTRACTOR SHALL FURNISH BUILDERS RISK INSURANCE, INCLUDING THE PERILS OF FIRE EXTENDED COVERAGE, VANDALISM, AND MALICIOUS MISCHIEF IN AN AMOUNT OF NOT LESS THAN 100% OF THE INSURABLE VALUE OF ALL THE WORK, AND THE COVERAGE WRITTEN ON BUILDERS RISK COVERAGE FORM CP0020, INCLUDING CAUSES OF LOSS BASIC FORM CP1010 OR CAUSES OF LOSS - SPECIAL FORM CPI030 OR AN ACCEPTABLE INLAND MARINE "ALL RISK" INSTALLATION FLOATER FORM, WITH A COMPANY AUTHORIZED TO DO BUSINESS IN THE STATE IN WHICH THE PROJECT IS LOCATED.
10. ARTICLE 12, ADD PARAGRAPH 12.2.2.1(A):
    12.2.2.1(A) IF DURING THE CONTRACTS ONE (1) YEAR WARRANT AFTER COMPLETION THE OWNER REQUEST THAT TEST BE PERFORMED TO DETERMINE IF CORRECTIONS IN THE WORK NEED TO BE MADE, THE EXPENSE OF SUCH TESTS SHALL BE BORNE BY:
    (A) THE OWNER, IF THE RESULTS OF THE TESTS INDICATE THAT NO CORRECTIONS ARE NECESSARY
    (B) THE CONTRACTOR, IF THE RESULTS OF THE TEST INDICATE THAT CORRECTIONS ARE NECESSARY.
11. ARTICLE 13, PARAGRAPH 13.6.1:
    13.6.1 INTEREST RATE SHALL BE TEN PERCENT (10%)

## DIVISION 1 - GENERAL REQUIREMENTS

### SECTION 01100 - SUMMARY OF WORK

1. PROJECT
   (A) PROJECT NAME: HAT CREEK BURGER COMPANY RESTAURANT - LAKEWAY, TX
   (B) OWNER'S NAME: HAT CREEK BURGER COMPANY
   4407 BEE CAVE ROAD, SUITE 212
   AUSTIN, TEXAS 78746
2. CONTRACT DESCRIPTION
   A. CONTRACT TYPE: A SINGLE PRIME CONTRACT BASED ON A STIPULATED PRICE AS PROVIDED BY OWNER IN BID PACKAGE.
   B. WORK RESPONSIBILITY LIST BELOW IS NOT INCLUSIVE. REFER TO OWNER PROVIDED CHART ON COVER SHEET OF THE DRAWINGS FOR ADDITIONAL INFORMATION.
3. WORK RESPONSABILITY
   A. NOT IN CONTRACT (NIC): ITEMS SHOWN OR NOTED "NIC" ON THE DRAWINGS AND/OR IN THE SPECIFICATIONS SHALL BE FURNISHED AND INSTALLED BY OWNER UNDER SEPARATE CONTRACT, EXCEPTS AS DESCRIBED HEREINAFTER. THE CONTRACTOR SHALL RECEIVE, UNLOAD AS REQUIRED, STORE, COORDINATE AND ACCOMMODATE THE OWNER'S CONTRACTORS DURING THE OWRK AND BE RESPONSIBLE TO THE EXTENT OF CARRYING NECESSARY INSURANCE TO COVER ITEMS IN CASE OF THEFT, FIRE, LOSS, MALICIOUS, DAMAGE AND OTHER MISCELLANEOUS DAMAGE. CONTRACTOR SHALL PROVIDE ALL CONDUITS, BOXES, CHASES, ETC. AS INDICATED ON THE DRAWINGS FOR A COMPLETE INSTALLATION. INCLUDED, BUT NOT INCLUSIVE, IN THIS CATEGORY ARE:
   1. ALL CUSTOM FABRICATED STAINLESS STEEL ITEMS
   2. KITCHEN EQUIPMENT
   3. BAR EQUIPMENT
   4. WALK-IN COOLERS AND FREEZERS
   5. STAINLESS STEEL TABLES AND SHELVES
   6. BEER SYSTEM: CONTRACTOR IS RESPONSIBLE FOR PIPE CHASES, PLUMBING AND ELECTRICAL SERVICES PER PLAN
   7. CO2 DISPENSING UNIT.
   8. ALL REFFRIGERATION UNIT LINES AND CALIBRATION.
   9. ILLUMINATED SIGN PACKAGE: CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING INDIVIDUAL ELECTRICAL STUB-UPS AT EACH SITE SIGN AND/OR EACH WALL SIGN AS REQUIRED PER PLANS AND MAKE FINAL CONNECTION.
   10. PYLON AND/OR MONUMENT SIGN: CONTRACTOR SHALL BE RESPONSIBLE FOR SUPPLYING INDIVIDUAL ELECTRICAL STUB-UPS AT EACH SITE SIGN AND/OR EACH WALL SIGN AS REQUIRED PER PLANS AND MAKE FINAL CONNECTION. GC SHALL CONSTRUCT FOUNDATION AND BASE FOR MONUMENTS SIGNS, AS NOTED AND DETAILED ON CONSTRUCTION DOCUMENTS.
   11. MUSIC/INTERCOM SYSTEM: CONTRACTOR SHALL SUPPLY ELECTRICAL SERVICE AND WIRE CHASES WITH PULL STRINGS PER PLANS AND COORDINATE INSTALLATION WITH OWNER'S CONSTRUCTION MANAGER. CONTRACTOR TO PROVIDE ADEQUATE WOOD BACKING TO INSTALL ALL NECESSARY EQUIPMENT.
   12. FIRE ALARM, SECURITY AND BURGLAR ALARM SYSTEMS: CONTRACTOR SHALL SUPPLY ELECTRICAL SERVICE AND WIRE CHASES WITH PULL STRINGS PER PLANS AND COORDINATE INSTALLATION WITH OWNER'S CONSTRUCTION MANAGER. CONTRACTOR TO PROVIDE ADEQUATE WOOD BACKING TO INSTALL ALL NECESSARY EQUIPMENT.
   13. POINT OF SALE AND BACK OFFICE SYSTEMS: ALL SYSTEM EQUIPMENT SHALL BE PROVIDED BY OWNER, INCLUDING COMPUTER CABLE. ALL EQUIPMENT SHALL BE INSTALLED BY OWNER'S CONSTRUCTION MANAGER. ALL CABLE AND WIRING SHALL BE INSTALLED IN CONDUIT INSTALLED BY GENERAL CONTRACTOR AS PER PLANS.
   14. WATER SOFTENER: CONTRACTOR SHALL INSTALL AND PLUMB ALL SOFT WATER LINES AND STUB-OUT FOR UNIT HOOK-UP.
   15. SODA SYSTEM: CONTRACTOR IS RESPONSIBLE FOR PIPE CHASES, PLUMBING AND ELECTRICAL SERVICES PER PLAN AND COORDINATION INSTALLATION.
   16. TELEPHONES: OWNER'S CONSTRUCTION MANAGER WILL SUPPLY AND INSTALL PERMANENT TELEPHONE AND JACKS. CONTRACTOR SHALL SUPPLY AND INSTALL JUNCTION BOXES WITH PULL STRINGS PER PLANS FOR SAID INSTALLATION AND COORDINATE WITH OWNER'S CONSTRUCTION MANAGER.
   17. WINDOW BLINDS

   B. BY OWNER: ITEMS SHOWN ON NOTED "BY OWNER" ON THE DRAWINGS AND/OR IN THE SPECIFICATIONS SHALL BE FURNISHED BY OWNER TO CONTRACTOR/SUBCONTRACTOR FOR INSTALLATION BY CONTRACTOR/SUBCONTRACTOR AS PART OF THE CONSTRUCTION CONTRACT. CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, AND TOOLS REQUIRED TO RECEIVE, UNLOAD, STORE, PROTECT, MOVE FROM STORAGE, UNCRATE, ASSEMBLE, INSTALL, AND LEVEL THESE ITEMS AND SHALL CARRY NECESSARY INSURANCE TO COVER ITEMS IN CASE OF THEFT, FIRE, LOSS, MALICIOUS DAMAGE AND OTHER MISCELLANEOUS DAMAGE. INCLUDED, BUT NOT INCLUSIVE, IN THIS CATEGORY ARE:
   1. OWNER SHALL FURNISH EXHAUST HOODS WITH INTEGRAL FIRE SUPPRESION, ASSOCIATED EXHAUST FANS, CURBS, AND MUA UNITS.
      (I) ALL DUCTWORK (TYPE 1 AND TYPE 2 HOODS), FLUE CAPS AND DUCT WRAP SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR.
   2. GREASE RECYCLING UNIT.
   3. FURNISHINGS SHOWN ON ARCHITECTURAL DRAWINGS AS BY OWNERINCLUDING CHAIRS AND TABLES - UNPACKED AND SET UP BY GC.
   4. PLASMA TELEVISIONS
   5. CABLE TV: CONTRACTOR TO PROVIDE CONDUIT TO TV LOCATIONS AS SHOWN ON THE PLANS AND PROVIDE PULL STRINGS. CONTRACTOR SHALL ALSO COORDINATE INSTALLATION WITH OWNER'S CONSTRUCTION MANAGER.
   6. DÉCOR SHOWN IN ARCHITECTURAL DRAWINGS AS BY OWNER. NOTE: ALL MILLWORK ITEMS SHOWN ON ARCHITECTURAL DRAWINGS INCLUDING, BUT NOT LIMITED TO, CABINETS, SHELVING AND VANITIES SHALL BE THE RESPONSABILITY OF THE CONTRACTOR. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF SAME FOR APPROVAL.
   7. OFFICE FURNITURE
   8. SAFE: CONTRACTOR TO INSTALL.
4. OWNER FURNISHED ITEMS
   A. RECEIVING AND UNLOADING OR OWNER FURNISHED ITEMS:
   (A). PRIOR TO DELIVERY AND INSTALLATION OF THE OWNER'S KITCHEN EQUIPMENT, THE FOLLOWING MUST BE COMPLETED:
   1) TILE MUST BE SET AND CLEAN; FIBERGLASS REINFORCED PANELS (FRP) AND/OR TILE SHALL BE HUNG AND TRIMMED; ACOUSTICAL CEILING GRID COMPLETE WITH ALL LIGHT FIXTURES, DUCTWORK AND DIFFUSERS INSTALLED; ACOUSTICAL CEILING TILE SHALL BE INSTALLED; AND ALL GYPSUM WALL BOARD CEILING SHALL BE FINISHED.
   2) CONTRACTOR SHALL PROVIDE MOTORIZED, HYDRAULIC FORKLIFT AT SITE TO ASSIST IN THE OFFLOADING OF OWNER PROVIDED KITCHEN EQUIPMENT.
   3) CONTRACTOR TO PROVIDE COPIES OF ALL DELIVERY TICKETS, BILLS OF LADING, ETC. CERTIFYING RECEIPT OF THE OWNER FURNISHED ITEMS.
   4) INSPECTION OF ALL OWNER FURNISHED ITEMS UPON DELIVERY FOR EVIDENCE OF DAMAGE IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL REPAIR OR REPLACE, AT NO COST TO THE OWNER, ANY DAMAGED EQUIPMENT RECEIVED AT THE JOB SITE AND NOT NOTED ON THE BILL OF LADING.
   5) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR CARE OF THE OWNER FURNISHED ITEMS ONCE RECEIVED UNTIL COMPLETION OF THE CONTRACT. ANY LOST OR DAMAGE DURING HIS POSSESION WILL BE REPAIRED OR REPLACED AT NO COST TO THE OWNER.

   B. FOODSERVICE EQUIPMENT INSTALLATION:
   (A). THE KITCHEN EQUIPMENT SUPPLIER (KES) SHALL OFF LOAD, UNCRATE AND STORE ALL FOOD SERVICE EQUIPMENT, SET IN PLACE, LEVEL AND SCRIBE TO WALLS, FLOOR AND BASE AS REQUIRED. PULL EQUIPMENT TIGHT AND SECURE FIELD JOINTS AND PROPERLY DISPOSE OF ALL PACKING MATERIAL.
   (B). PROPERLY ANCHOR OR FASTEN TO WALLS, FLOOR, CEILING, AND BASE AS PER INSTALLATION RECOMMENDATIONS OF THE FOOD SERVICE EQUIPMENT MANUFACTURE.
   (C). PROVIDE SILICONE BEAD WHERE EQUIPMENT JOINS TOGETHER OR ABUTS WALL SURFACES. COLOR OF SILICONE TO BE CLEAR.
   (D). ASSEMBLE AND SECURE IN PLACE ALL LOOSE COMPONENTS SUCH AS, BUT NOT LIMITED TO, THE FOLLOWING EXAMPLES: TOPS OF BASE UNITS, SHELVES, LEGS, DISPENSERS, ETC.
   (E). INSTALLATION OF ALL FOOD SERVICE EQUIPMENT SHALL COMPLY WITH ALL APPLICABLE CODES AND STANDARDS REQUIRED BY THE LOCAL HEALTH DEPARTMENT.
   (F). THE CONTRACTOR SHALL PROVIDE ROUGH IN WATER, DRAINAGE AND OTHER SERVICE PIPING ADJACENT TO FOOD SERVICE EQUIPMENT REQUIRING SAME, CAPPING DRAIN OUTLETS WITH SUITABLE PLUGS AND TERMINATING WATER AND OTHER SERVICE WITH SHUT-OFF VALVES AND COCKS. AFTER INSTALLATION OF FOOD SERVICE EQUIPMENT, CONTRACTOR SHALL MAKE ALL FINAL CONNECTIONS.
   (G). THE CONTRACTOR SHALL REMOVE ALL PLASTIC INDIRECT DRAIN HOSES FROM ALL FOOD SERVICE EQUIPMENT AND REPLACE WITH HARD COPPER PIPING.
   (H). THE CONTRACTOR SHALL PROVIDE ROUGH-IN ELECTRICAL WIRING TERMINATED IN OUTLET BOXED ADJACENT TO FOOD SERVICE EQUIPMENT AND, AFTER INSTALLATION OF EQUIPMENT, SHALL MAKE ALL FINAL CONNECTIONS. THIS INCLUDES SUPPLYING DEVICES, CORD AND PLUGS, ETC., AS REQUIRED TO COMPLETE INSTALLATION.
   (I). SEALING OF PENETRATIONS:
   1). CONTRACTOR SHALL ADEQUATELY SEAL WITH ESCUTCHEONS ALL UTILITY AND SERVICE PIPING AND OTHER REQUIRED OPENINGS THROUGH WALLS AND FLOORS.
   2). CONTRACTOR SHALL SEAL CONDUIT/OUTLET PENETRATIONS WITH APPROVED FOAM INSULATION AND SILICONE CAULKING AS REQUIRED.
   (J). WORKMANSHIP:
   1). GRAINING: WHERE TWO METAL SURFACES ARE BUTT WELDED, GRAN SHALL RUN IN THE SAME DIRECTION.
   2). COVE ALL INTERSECTIONS OF VERTICAL AND HORIZONTAL SHEET METAL ON A 5/8" RADIOUS UNLESS OTHERWISE INDICATED.
   (K). WELDING: ALL WELDING SHALL BE PER AWS STANDARDS BY ELECTRIC ARC METHOD WITH ROD OF SAME COMPOSITION AS PARTS WELDED. MAKE WELDS COMPLETE, STRONG, AND DUCTILE WITH RUBBLE GROUND OFF AND JOINTS FINISHED SMOOTH, POLISHED, AND RE-GRAINED. WELDS SHALL NOT BE VISIBLE ON CONTINUOUS APPERANCE. ALL WELDING SHALL BE OF A NON-TOXIC NATURE WHEN USED ON SURFACES EXPOSED TO UNPACKAGED FOOD.
   (I). GRINDING, POLISHING, AND FINISHING: ANY MATERIAL SUNKEN OR DEPRESSED BY WELDING OPERATION SHALL BE HAMMERED AND PEENED FLUSH WITH ADJACENT SURFACES AND, IF NECESSARY, GROUND AGAIN TO ELIMINATE LOS SPOTS. SURFACES SHOWING EVIDENCE OF WARPAGE AND/OR BURN DISCOLORATION WILL NOT BE ACCEPTED. IN ALL CASES, TEXTURES FROM ROUGH GRINDING SHALL BE REMOVED BY SUCCESSIVE FINER POLISHING OPERATIONS UNTIL THE GRAIN OF THE ENTIRE SURFACE IS HOMOGENEOUS.
   (M). COMPLETION:
   1). CONTRACTOR SHALL REMOVE ALL PROTECTIVE COVERINGS, TAGS, LABELS, AND TAPE FROM EQUIPMENT.
   2). CONTRACTOR SHALL THOROUGHLY CLEAN AND POLISH OWNER FURNISHED ITEMS.
5. OWNER OCCUPANCY
   (A). OWNER INTENDS TO OCCUPY THE PROJECT UPON SUBSTANTIAL COMPLETION. CONTRACTOR SHALL COOPERATE WITH OWNER TO MINIMIZE CONFLICT AND TO FACILITATE OWNER'S OPERATIONS AND SCHEDULE THE WORK TO ACCOMMODATE OWNER OCCUPANCY.
   (B). OWNER RESERVES RIGHT TO OCCUPY AND TO PLACE AND INSTALL EQUIPMENT AS NECESSARY IN COMPLETED AREAS OF BUILDING BEFORE SUBSTANTIAL COMPLETION, PROVIDED SUCH OCCUPANCY DOES NOT INTERFERE WITH COMPLETION OF WORK. SUCH PLACING OF EQUIPMENT AND PARTIAL OCCUPANCY SHALL NOT CONSTITUTE ACCEPTANCE OF TOTAL WORK.
   (C). CONTRACTOR SHALL OBTAIN CERTIFICATE OF OCCUPANCY FROM LOCAL BUILDING OFFICIALS BEFORE OWNER OCCUPANCY
   (D). MECHANICAL AND ELECTRICAL SYSTEMS:
   1). BEFORE PARTIAL OWNER OCCUPANCY, MECHANICAL AND ELECTRICAL SYSTEMS SHALL BE FULLY OPERATIONAL.
   2). REQUIRED INSPECTIONS AND TESTS SHALL HAVE BEEN SUCCESSFULLY COMPLETED.
   3). ON OCCUPANCY, OWNER WILL PROVIDE OPARTION AND MAINTENANCE OF MECHANICAL AND ELECTRICAL SYSTEMS IN OCCUPIED PORTIONS OF BUILDING.
6. MISCELLANEOUS PROVISIONS
   (A). ACCESSIBILITY COMPLIANCE:
   1). FULL COMPLIANCE WITH UNIFORM FEDERAL ACCESSIBILITY STANDARDS (UFAS), AND AMERICANS WITH DISABILITIES ACT (ADA), PROHIBITING DISCRIMINATION ON BASIS OF DISABILITY BY PUBLIC ACCOMMODATIONS, IS REQUIRED FOR WORK OF THIS PROJECT.
   2). THIS PROJECT HAS BEEN DESIGNED TO AND REQUIRED FULL COMPLIANCE WITH ADA REGULATIONS, WHETER OR NOT SPECIFIC REFERENCES OR NOTES TO REGULATIONS ARE MADE ON DRAWINGS OR IN SPECIFICATIONS.
7. PROJECT GENERAL NOTES
   (A). UNLESS NOTED OTHERWISE, ALL WORK IN THESE DRAWINGS AND SPECIFICATIONS SHALL BE PERFORMED BY THE CONTRACTOR.
   (B). THE CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS AND DIMENSIONS PRIOR TO ANY WORK AND SHALL BE RESPONSIBLE FOR ALL WORK AND MATERIALS INCLUDING THOSE FURNISHED BY SUBCONTRACTORS.
   CONTRACTOR SHALL ACCEPT PREMISES AS FOUND, OWNER ASSUMES NO RESPONSIBILITY FOR THE CONDITION OF THE EXISTING SITE OR EXISTING STRUCTURES AT THE TIME OF BIDDING OR THEREAFTER.
   (C). THE CONTRACTOR IS RESPONSIBLE FOR CORRECTING ANY ERRORS AFTER THE START OF CONSTRUCTION WHICH HAS NOT BEEN BROUGHT TO THE ATTENTION OF THE ARCHITECT. THE MEANS OF CORRECTING AY ERROR SHALL FIRST BE APPROVED BY THE ARCHITECT AND OWNER.
   (D). DIMENSIONS TAKE PRECEDENCE OVER DRAWINGS. **DO NOT SCALE DRAWINGS TO DETERMINE ANY LOCATIONS.** THE ARCHITECT SHALL BE NOTIFIED IF ANY DISCREPANCY OCCURS PRIOR TO CONTINUING WITH WORK.
   (E). ALL PLAN DIMENSIONS ARE FROM FACE OF STUD OR FACE OF MANSONRY UNLESS NOTED OTHERWISE.
   (F). THE CONTRACTOR SHALL REPORT TO THE OWNER AND ARCHITECT ANY ERRORS, INCONSISTENCIES, OR OMISSIONS DISCOVERED.
   (G). ALL CONSTRUCTION SHALL COMPLY WITH THE APPLICABLE BUILDING CODES AND LOCAL RESTRICTIONS. THE CONTRACTOR MUST COMPLY WITH THE CONTRACTOR REGISTRATION OF ALL GOVERNING AUTHORITIES.
   (H). THE GENERAL BUILDING PERMITS SHALL BE PAID FOR BY THE OWNER. ALL OTHER PERMITS SHALL BE SECURED AND PAID FOR BY THE SUBCONTRACTOR DIRECTLY RESPONSIBLE. ALL REQUIRED CITY, COUNTY, AND/OR STATE LICENSES SHALL BE ACQUIRED AND PAID FOR BY THE INDIVIDUAL SUBCONTRACTOR.
   (I). IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE ALL EXISTING UTILITIES WHETHER SHOWN HEREIN OR NOT AND TO PROTECT THEM FROM DAMAGE. THE CONTRACTOR SHALL BEAR ALL EXPENSE OR REPAIR OR REPLACEMENT OF UTILITIES OR OTHER PROPERTY DAMAGED BY OPERATIONS IN CONJUNCTION WITH THE PROSECUTION OF THE WORK.
   (J). THE CONTRACTOR SHALL BE RESPONSIBLE FOR AND SHALL REPLACE OR REMEDY ANY FAULTY, IMPROPER, OR INFERIOR MATERIALS OR WORKMANSHIP WHICH SHALL APPEAR WITHIN ONE YEAR OR AS OTHERWISE SPECIFIED FOR A SPECIFIC COMPONENT AFTER THE COMPLETION AND ACCEPTANCE OF THE WORK UNDER THIS CONTRACT.
   (K). THE CONTRACTOR IS TO PROVIDE BLOCKING AS REQUIRED FOR MOUNTING OF BOOTH TABLES, WALL MOUNTED SHELVES, CABINETS, HC GRABS BARS AND PARTITION BRACES, IN ADDITION TO OTHER REQUIREMENTS SPECIFIED HEREIN.
8. CONTRACTOR USE OF SITE AND PREMISES
   (A). PROVIDE ACCESS TO AND FROM SITE AS REQUIRED BY LAW AND BY OWNER.
   1). EMERGENCY BUILDING EXITS DURING CONSTRUCTION: KEEP ALL EXITS REQUIRED BY CODE OPEN DURING CONSTRUCTION PERIOD.
   2). DO NOT OBSTRUCT ROADWAYS, SIDEWALKS, OR OTHER PUBLIC WAYS WITHOUT PERMIT.
   (B). UTILITY OUTAGES AND SHUTDOWN:
   1). PREVENT ACCIDENTAL DISRUPTION OF UTILITY SERVICES TO OTHER FACILITIES.

### SECTION 01110 - WORK COVERED BY CONTRACT DOCUMENTS

1. INTENT OF DRAWINGS AND SPECIFICATIONS
   (A). THE CONTRACTOR SHALL COMPLETE ALL WORK AS PROVIDED FOR IN CONTRACT DOCUMENTS INCLUDING DRAWINGS AND SPECIFICATIONS. ANYTHING MENTIONED IN THE SPECIFICATIONS AND NOT SHOWN ON THE DRAWINGS, OR SHOWN ON THE DRAWINGS AND NOT MENTIONED IN THE PROJECT MANUAL, SHALL BE FURNISHED AND INSTALLED AS IF SHOWN AND MENTIONED IN BOTH. THE CONTRACTOR SHALL FURNISH ALL MATERIALS OR LABOR REQUIRED TO COMPLETE WORK SHOWN ON THE DRAWINGS AND CALLED OUT IN THE PROJECT MANUAL, TO INCLUDE LABOR AND MATERIAL REQUIREMENTS REASONABLY INFERABLE THEREFROM AS BEING NECESSARY TO COMPLETE TO WORK, WHETHER EACH AND EVERY SINGLE ITEM NECESSARY TO COMPLETION IS SPECIFIED OR DETAILED OR NOT.
2. CONTRACTOR RESPONSIBILITY FOR WORK REQUIRED.
   (A). THE ORGANIZATION OF THE SPECIFICATIONS INTO DIVISIONS, SECTIONS AND PARAGRAPHS AND THE ARRANGEMENT OF THE DRAWINGS ARE NOT INTENDED TO CONTROL THE CONTRACTOR IN DIVING THE WORK AMONG SUBCONTRACTORS OR TO ESTABLISH THE LIMITS AND EXTENT OF WORK TO BE PERFORMED BY A PARTICULAR TRADE. THE CONTRACTOR ALONE IS RESPONSIBLE FOR THE COMPLETION OF THE ENTIRE WORK AS DRAWN AND SPECIFIED, COMPLETE IN PLACE AND IN FUCTIONAL OR OPERATING CONDITIONS.
   THE DIVISION OF THE PROJECT MANUAL INTO SECTIONS AND PARAGRAPHS IS FOR CONVENIENCE ONLY AND NOT FOR THE PURPOSE OF LIMITING OR RESTRICTING THE PERFORMANCE OF ANY PORTION OF THE WORK TO ANY PARTICULAR TRADE

### SECTION 01300 - ADMINISTRATIVE REQUIREMENTS

1. PROJECT COORDINATION
   (A). COOPERATE WITH THE OWNER'S CONSTRUCTION MANAGER REGARDING ALLOCATION OF MOBILIZATION AREAS ON SITE; FOR FIELD OFFICES AND SHEDS, FOR WORKER ACCESS, TRAFFIC, PARKING FACILITIES AND USE OF TEMPORARY UTILITIES AND CONSTRUCTION FACILITIES.
   (B). COMPLY WITH OWNER'S PROCEDURES FOR INTRO-PROJECT COMMUNICATIONS; SUBMITTALS, REPORTS AND RECORDS, SCHEDULES, COORDINATION DRAWINGS, AND RECOMMENDATIONS; AND RESOLUTION OF AMBIGUITIES AND CONFLICTS.
   (C). COORDINATE FIELD ENGINEERING AND LAYOUT WORK WITH OWNER'S CONSTRUCTION MANAGER.
   (D). MAKE THE FOLLOWING TYPES OF SUBMITTALS TO OWNER'S CONSTRUCTION MANAGER:
   1). REQUESTS OF INTERPRETATION.
   2). REQUESTS OF SUBSTITUTION.
   3). SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
   (E). MAKE THE FOLLOWING TYPES OF SUBMITTALS TO OWNER'S CONSTRUCTION MANAGER:
   1). TEST AND INSPECTION REPORTS.
   2). MANUFACTURER'S INSTRUCTIONS AND FIELD REPORTS.
   3). APPLICATIONS FOR PAYMENT AND CHANGE ORDER REQUESTS.
   4). PROGRESS SCHEDULES.
   5). COORDINATION DRAWINGS.
   6). CLOSEOUT SUBMITTALS.
2. PROGRESS MEETINGS
   (A). MAKE ARRANGEMENTS FOR MEETINGS, PREPARE AGENDA WITH COPIES FOR PARTICIPANTS AND PRESIDE AT MEETINGS.
   (B). ATTENDANCE REQUIRED: JOB SUPERINTENDENT, MAJOR SUBCONTRACTORS AND SUPPLIERS, OWNER, AS APPROPRIATE TO AGENDA TOPICS FOR EACH MEETING.
   (C). AGENDA
   1). REVIEW MINUTES OF PREVIOUS MEETINGS.
   2). REVIEW OF WORK PROGRESS.
   3). FIELD OBSERVATIONS, PROBLEMS, AND DECISIONS.
   4). IDENTIFICATION OF PROBLEMS WHICH IMPEDE PLANNED PROGRESS.
   5). REVIEW OF SUBMITTALS SCHEDULE AND STATUS OF SUBMITTALS.
   6). MAINTENANCE OF PROGRESS SCHEDULE.
   7). CORRECTIVE MEASURES TO REGAIN PROJECTED SCHEDULES.
   8). PLANNED PROGRESS DURING SUCCEEDING WORK PERIOD.
   9). MAINTENANCE OF QUALITY AND WORK STANDARDS.
   10). EFFECT OF PROPOSED CHANGES ON PROGRESS SCHEDULE AND COORDINATION.
   11). OTHER BUSINESS RELATING TO WORK.
   (D). RECORD MINUTES AND DISTRIBUTE COPIES WITHIN TWO DAYS AFTER MEETING TO PARTICIPANTS, WITH TWO COPIES TO OWNER, PARTICIPANTS, AND THOSE AFFECTED BY DECISIONS MADE.
3. SITE MOBILIZATION MEETING
   (A). OWNER MAY SCHEDULE A MEETING AT THE PROJECT SITE PRIOR TO, OR SHORTLY AFTER, CONTRACTOR OCCUPANCY.
   (B). ATTENDANCE REQUIRED:
   1). CONTRACTOR AND SUPERINTENDENT.
   2). OWNER.
   3). MAJOR SUBCONTRACTORS.
   (C). AGENDA:
   1). USE OF PREMISES BY OWNER AND CONTRACTOR.
   2). OWNER'S REQUIREMENTS AND PARTIAL OCCUPANCY PRIOR TO COMPLETION.
   3). CONSTRUCTION FACILITIES AND CONTROLS PROVIDED BY OWNER.
   4). SURVEY AND BUILDING LAYOUT.
   5). SECURITY AND HOUSEKEEPING PROCEDURES.
   6). SCHEDULES.
   7). APPLICATION FOR PAYMENTS PROCEDURES.
   8). PROCEDURES FOR TESTING.
   9). PROCEDURES FOR MAINTAINING RECORD DOCUMENTS.
   10). REQUIREMENTS FOR START-UP OF EQUIPMENT.
   11). INSPECTION AND ACCEPTANCE OF EQUIPMENT PUT INTO SERVICE DURING CONSTRUCTION.
4. PROGRESS MEETINGS
   (A). MAKE ARRANGEMENTS FOR MEETINGS, PREPARE AGENDA WITH COPIES FOR PARTICIPANTS AND PRESIDE AT MEETINGS.
   (B). ATTENDANCE REQUIRED: JOB SUPERINTENDENT, MAJOR SUBCONTRACTORS AND SUPPLIERS AS REQUIRED, OWNER, AS APPROPRIATE TO AGENDA TOPICS FOR EACH MEETING.
   (C). AGENDA:
   1). REVIEW OF WORK PROGRESS.
   2). FIELD OBSERVATIONS, PROBLEMS, AND DECISIONS.
   3). IDENTIFICATION OF PROBLEMS WHICH IMPEDE PLANNES PROGRESS.
   4). REVIEW OF SUBMITTALS SCHEDULE AND STATUS OF SUBMITTALS.
   5). MAINTENANCE OF PROGRES SCHEDULE.
   6). CORRECTIVE MEASURES TO REGAIN PROJECTED SCHEDULES.
   7). PLANNED PROGRESS DURING SUCEEDING WORK PERIOD.
   8). MAINTENANCE OF QUALITY AND WORK STANDARDS.
   9). EFFECT OF PROPOSED CHANGES ON PROGRESS SCHEDULE AND COORDINATION.
   10). OTHER BUSINES RELATING TO WORK.
5. CONSTRUCTION PROGRESS SCHEDULE
   (A). WITHIN 5 DAYS AFTER PROJECT AWARD SUBMIT COMPLETE SCHEDULE, THEN WITHIN 10 DAYS AFTER JOINT REVIEW, SUBMIT FINAL SCHEDULE.
   (B). SUBMIT UPDATED SCHEDULE WITH EACH APPLICATION FOR PAYMENT.
6. PROGRESS PHOTOGRAPHS
   (A). SUBMIT DIGITAL, ELECTRONIC PHOTOGRAPH FILES WEEKLY WITH EACH PROJECT REPORT TO OWNER'S CONSTRUCTION MANANER AND DIRECTOR OF DEVELOPMENT.
   (B). MAINTAIN ONE SET OF ALL PHOTOGRAPHS AT PROJECT SITE FOR REFERENCE; SAME COPIES AS SUBMITTED, IDENTIFIED AS SUCH.
   (C). PROVIDE PHOTOGRAPHS OF SITE AND CONSTRUCTION THROUGHOUT PROGRESS OF WORK.
   (D). IN ADDITION TO PERIODIC, RECURRING VIEWS, TAKE PHOTOGRAPHS OF EACH OF THE FOLLOWING EVENTS:
   1). COMPLETION OF SITE CLEARING.
   2). EXCAVATIONS IN PROGRESS.
   3). FOUNDATIONS IN PROGRESS AND UPON COMPLETION.
   4). STRUCTURAL FRAMING IN PROGRESS AND UPON COMPLETION.
   5). ENCLOSURE OF BUILDING, UPON COMPLETION.
   6). PHOTOS OF ALL TOWER THRU-WALL FLASHING PRIOR TO COVER UP
   7). FINAL COMPLETION, MINIMUM OF TEN (10) PHOTOS.
   (E). VIEWS:
   1). PROVIDE NON-AERIAL PHOTOGRAPHS FROM FOUR CARDINAL VIEWS AT EACH SPECIFIED TIME, UNTIL DATE OF SUBSTANTIAL COMPLETION.
   2). PHOTOGRAPHS OF BUILDING EXTERIOR TO BE OVERALL SHOTS TAKEN DIRECTLY IN FRONT OF EACH ELEVATION.
   3). PROVIDE FACTUAL PRESENTATION.
   (F). DIGITAL PHOTOGRAPHS: MINIMUM RESOLUTION OF 1024 BY 768, IN JPG FORMAT; PROVIDE FILES UNALTERED BY PHOTO EDITING SOFTWARE.
   1). DELIVERY MEDIUM: VIA EMAIL AND POSTING TO OWNER'S WEBSITE.
7. SUBMITTALS FOR REVIEW
   (A). WHEN THE FOLLOWING ARE SPECIFIED IN INDIVIDUAL SECTIONS, SUBMIT THEM FOR REVIEW:
   1). PRODUCT DATA.
   2). SHOP DRAWINGS.
   3). SAMPLES FOR SELECTION.
   (B). ANY ITEM SUBMITTED THAT DEVIATES FOR PLANS AND SPECIFICATIONS SHALL BE NOTED AS SUCH IN LARGE BLUE WRITING.
   (C). SUBMIT TO OWNER'S CONSTRUCTION MANAGER FOR REVIEW FOR THE LIMITED PURPOSE OF CHECKING FOR CONFORMANCE WITH INFORMATION GIVEN AND THE DESIGN CONCEPT EXPRESSED IN THE CONTRACT DOCUMENTS.
   (D). SAMPLES WILL BE REVIEWED ONLY FOR AESTHETIC, COLOR, OR FINISH SELECTION.
   (E). AFTER REVIEW PROVIDE COPIES AND DISTRIBUTE IN ACCORDANCE WITH SUBMITTAL PROCEDURES AND FOR RECORD DOCUMENTS PURPOSES DESCRIBED IN SECTION 01780 - CLOSEOUT SUBMITTALS.
8. SUBMITTALS FOR INFORMATION
   (A). WHEN THE FOLLOWING ARE SPECIFIED IN INDIVIDUALS SECTIONS, SUBMIT THEM FOR INFORMATION:
   1). DESIGN DATA.
   2). CERTIFICATES.
   3). TEST REPORTS.
   4). INSPECTION REPORTS.
   5). MANUFACTURER'S INSTRUCTIONS.
   6). MANUFACTURER'S FIELD REPORTS.
   7). OTHER TYPES INDICATED.
9. SUBMITTALS FOR PROJECT CLOSEOUT
   (A). WHEN THE FOLLOWING ARE SPECIFIED IN INDIVIDUAL SECTIONS, SUBMIT THEM AT PROJECT CLOSEOUT:
   1). PROJECT RECORD DOCUMENTS
   2). OPERATION AND MAINTENANCE DATA.
   3). WARRANTIES
   4). BONDS.
   5). OTHER TYPES AS INDICATED.
10. NUMBER OF COPIES OF SUBMITTALS
    (A). DOCUMENTS FOR REVIEW.
    1). SMALL SIZE SHEETS. NOT LARGER THAN 8-1/2 x 11 INCHES: SUBMIT THE NUMBER OF COPIES WHICH THE CONTRACTOR REQUIRES, PLUS ONE COPY WHICH WILL BE RETAINED BY THE OWNER.
    2). LARGER SHEETS, NOT LARGER THAN 30 x 42 INCHES: SUBMIT THE NUMBER OF REPRODUCTIONS WHICH CONTRACTOR REQUIRES, PLUS ONE COPY WHICH WILL BE RETAINED BY OWNER.
    3). ALL SUBMITTALS SHALL ALSO BE ISSUED IN ELECTRONIC (PDF) FORMAT.
    (B). DOCUMENTS FOR INFORMATION: SUBMIT IN ELECTRONIC (PDF) FORMAT.
    (C). DOCUMENTS FOR PROJECT CLOSEOUT: SUBMIT IN ELECTRONIC (PDF) FORMAT.
    (D). SAMPLES: SUBMIT THE NUMBER SPECIFIED IN INDIVIDUAL SPECIFICATION SECTIONS; ONE OF WHICH WILL BE RETAINED BY OWNER.
    1). AFTER REVIEW, PRODUCE DUPLICATES.
    2). RETAINED SAMPLES WILL NOT BE RETURNED TO CONTRACTOR UNLESS SPECIFICALLY SO STATED.
11. SUBMITTAL PROCEDURES.
    (A). SEQUENTIALLY NUMBER THE TRANSMITTAL FORM. REVISE SUBMITTALS WITH ORIGINAL NUMBER AND A SEQUENTIAL ALPHABETIC SUFFIX.
    (B). IDENTIFY PROJECT, CONTRACTOR, SUBCONTRACTOR OR SUPPLIER; PERTINENT DRAWING AND DETAIL NUMBER, AND SPECIFICATION SECTION NUMBER, AS APPROPRIATE ON EACH COPY.
    (C). APPLY CONTRACTOR'S STAMP, SIGNED OR INITIALED CERTIFYING THAT REVIEW, APPROVAL, VERIFICATION OF PRODUCTS REQUIRED, FIELD DIMENSIONS, ADJACENT CONSTRUCTION WORK, AND COORDINATION OF INFORMATION IS IN ACCORDANCE WITH THE REQUIREMENTS OF THE WORK AND CONTRACT DOCUMENTS.
    CONTRACTOR REVIEW AND APPROVAL IS REQUIRED BEFORE SUBMISSION TO OWNER/ARCHITECT.
    (D). FOR EACH SUBMITTAL FOR REVIEW, ALLOW 7 DAYS EXCLUDING DELIVERY TIME TO AND FROM THE CONTRACTOR.
    (E). IDENTIFY VARIATIONS FROM CONTRACT DOCUMENTS AND PRODUCT OR SYSTEM LIMITATIONS WHICH MAY BE DETRIMENTAL TO SUCCESSFUL PERFORMANCE OF THE COMPLETED WORK.
    (F). WHEN REVISED FOR RESUBMISSION, IDENTIFY ALL CHANGES MADE SINCE PREVIOUS SUBMISSION.
    (G). DO NOT MAKE REQUEST FOR DEVIATIONS FROM CONTRACT DOCUMENTS VIA SHOP DRAWINGS, PRODUCT DATA, OR SAMPLES. DEVIATIONS WILL NOT BE VALID UNLESS SPECIFICALLY APPROVED.

### SECTION 01320 - CHANGE ORDER PROCEDURES

1. GENERAL
   (A). GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, AIA DOCUMENT A201, ARTICLE 7, GOVERNS THE WORK OF THIS SECTION.
2. CHANGE ORDER FROM
   (A). CHANGE ORDERS WILL BE ISSUED ON ARCHITECT'S STANDARD FORMS.
3. PRELIMINARY PROCEDURES
   (A). PROPOSAL REQUEST: IF A CHANGE TO THE WORK IS CONSIDERED BY THE OWNER, THE ARCHITECT WILL ISSUE A FORMAL REQUEST FOR CONTRACTOR'S PROPOSAL FOR CHANGES TO THE CONTRACT. REQUEST INCLUDES: DETAILED DESCRIPTION OF CHANGE WITH SUPPLEMENTARY OR REVISED DRAWINGS AND SPECIFICATIONS, PROJECTED TIME FOR EXECUTING CHANGE, WITH A STIPULATION OF ANY OVERTIME WORK REQUIRED, AND PERIOD OF TIME DURING REQUESTED PRICE WILL BE CONSIDERED VALID.
   (B). CONTRACTOR RESPONSE: RESPOND WITH FORMAL WRITTEN PROPOSAL REFERENCING ARCHITECT'S REQUEST NUMBER, JOB NAME, DATE, SPECIFIC ITEMS REQUESTED AND INDICATE TOTAL AMOUNT OF CHANGE IMPOSED COSTS AND CONSTRUCTION TIME CONSIDERATION FOR EACH REQUEST. GIVEN EACH NUMBERED REQUEST INDIVIDUAL RESPONSE. DO NOT LUMP TWO OR MORE PROPOSALS ON ONE RESPONSE.
4. CONTRACT CHANGE METHODS
   (A). WORK DIRECTIVE CHANGE: ARCHITECT MAY ISSUE A DIRECTIVE, SIGNED BY OWNER, INSTRUCTING CONTRACTOR TO PROCEED WITH A CHANGE IN THE WORK, FOR SUBSEQUENT INCLUSION IN A CHANGE ORDER. DIRECTIVE WILL DESCRIBE CHANGES IN THE WORK, AND WILL DESIGNATE METHOD OF DETERMINING ANY CHANGE IN CONTRACT SUM OR CONTRACT TIME. PROMPTLY EXECUTE THE CHANGE IN WORK.
   (B). LUMP SUM CHANGE ORDER: WILL BE BASED ON PROPOSAL REQUEST AND CONTRACTOR'S LUMP SUM QUOTATION.
   (C). UNIT PRICE CHANGE ORDER
5. FOR PRE-DETERMINED UNIT PRICES AND QUANTITIES, CHANGE ORDER WILL BE EXECUTED ON LUMP SUM BASIS.
6. FOR UNIT COSTS OR QUANTITIES OF UNITS OF WORK WHICH ARE NOT PREDETERMINED, EXECUTE WORK UNDER A WORK DIRECTIVE CHANGE. CHANGES IN CONTRACT SUM OR CONTRACT TIME WILL BE COMPUTED AS SPECIFIED FOR TIME AND MATERIAL CHANGE ORDER.
   (A). TIME AND MATERIAL CHANGE ORDER: SUBMIT ITEMIZED ACCOUNT AND SUPPORTING DATA WITH 10 WORKING DAYS AFTER COMPLETION OF CHANGE; ARCHITECT WILL DETERMINE CHANGE ALLOWABLE IN CONTRACT SUM AND CONTRACT TIME AS PROVIDED IN GENERAL CONDITIONS.
7. DOCUMENTATION OF CHANGE IN CONTRACT SUM AND TIME
   (A). GENERAL: DOCUMENT EACH QUOTATION FOR A CHANGE IN COST OR TIME WITH SUFFICIENT DATA TO ALLOW EVALUATION OF QUOTATION.
   (B). TIME AND MATERIAL CHANGES: MAINTAIN DETAILED RECORDS OF WORK DONE. PROVIDE FULL INFORMATION REQUIRED FOR EVALUATION OF PROPOSED CHANGES, AND TO SUBSTANTIATE COSTS OF CHANGES IN THE WORK.
   (C). ADDITIONAL DATA: ON REQUEST, PROVIDE ADDITIONAL DATA TO SUPPORT COMPUTATIONS:
   1). QUANTITIES OF PRODUCTS, LABOR, AND EQUIPMENT. TAXES, INSURANCE AND BONDS.
   2). OVERHEAD AND PROFIT.
   3). JUSTIFICATION FOR ANY CHANGE IN CONTRACT TIME.
   4). CREDIT FOR DELETIONS FOR CONTRACT, SIMILARLY DOCUMENTED.
   5). ADDITIONAL COSTS CLAIMS: SUPPORT EACH CLAIM FOR ADDITONAL COSTS, AND FOR WORK DONE ON A TIME AND MATERIAL BASIS, WITH ADDITIONAL INFORMATION:
   6). ORIGIN AND DATE OF CLAIM.
   7). DATES AND TIMES WORK WA PERFORMED, AND BY WHOM.
   8). TIME RECORDS AND WAGE RATES PAID.
   9). INVOICES AND RECEIPTS FOR PRODUCTS, EQUIPMENT, AND SUBCONTRACTORS, SIMILARLY DOCUMENTED.
8. EXECUTION OF CHANGE ORDERS
   (A). ARCHITECT WILL ISSUE CHANGE ORDERS FOR SIGNATURES OF PARTIES AS PROVIDED IN GENERAL CONDITIONS.
9. CORRELATION OF CONTRACTOR SUBMITTALS.
   (A). SCHEDULE OF VALUES: PROMPTLY REVISE SCHEDULE OF VALUES AND APPLICATION FOR PAYMENT FORMS TO RECORD EACH AUTHORIZED CHANGE ORDER AS SEPARATE LINE ITEM ADJUST CONTRACT SUM AS SHOWN ON CHANGE ORDER.
   (B). PROGRESS SUCHEDULE: PROMPTLY REVISE PROGRESS SCHEDULES TO REFLECT ANY CHANGE IN CONTRACT TIME, REVISE SUB-SCHEDULES TO ADJUST TIMES FOR THE OTHER ITEMS OF WORK AFFECTED BY CHANGE, AND RESUBMIT.
   (C). PROJECT RECORD DOCUMENTS: PROMPT;Y ENTER CHANGES IN PROJECT RECORD DOCUMENTS.

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF WARE MALCOMB AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH WARE MALCOMB. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF WARE MALCOMB PRIOR TO THE COMMENCEMENT OF ANY WORK

WARE MALCOMB
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ARCHITECTURE PLANNING INTERIORS
CIVIL ENGINEERING BRANDING BUILDING MEASUREMENT

REGISTERED ARCHITECT CHRISTOPHER ROSTER 20198 STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

SPECIFICATIONS

| DATE | REMARKS |
|---|---|
| 03/03/2022 | ISSUE FOR PERMIT |

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|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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# HAT CREEK BURGER - PROTOTYPE 1.1 TABLE OF CONTENTS

## DIVISION 01 - GENERAL REQUIREMENTS - CONTINUE

### SECTION 01400 - QUALITY REQUIREMENTS

1. SUBMITTALS
(A). TEST AND REPORTS: AFTER EACH TEST/INSPECTION, PROMPTLY SUBMIT ELECTRONIC COPY OR REPORT TO OWNER'S CONSTRUCTION MANAGER AND TO CONTRACTOR.
1). INCLUDE
A). DATE ISSUED.
B). PROJECT TITLE AND NUMBER
C). NAME OF INSPECTOR.
D). DATE AND TIME OF SAMPLING OR INSPECTION.
E). IDENTIFICATION OF PRODUCT AND SPECIFICATIONS SECTION.
F). LOCATION IN THE PROJECT.
G). TYPE AND DATE OF TEST/INSPECTION.
H). RESULTS OF TEST/INSPECTION.
I). CONFORMANCE WITH CONTRACT DOCUMENTS.
J). PROVIDE INTERPRETATION OF RESULTS.
2). TEST REPORTS ARE SUBMITTED FOR THE LIMITED PURPOSE OF ASSESSING CONFORMANCE WITH INFORMATION GIVEN AND THE DESIGN CONCEPT EXPRESSED IN THE CONTRACT DOCUMENTS.
(B). CERTIFICATES: WHEN SPECIFIED IN INDIVIDUAL SPECIFICATION SECTIONS, SUBMITCERTIFICATION BY THE MANUFACTIRER AND CONTRACTOR OR SUBCONTRACTOR, IN QUANTITIES SPECIFIED FOR PRODUCT DATA.
1). INDICATE MATERIAL OR PRODUCT CONFIRMS TO OR EXCEEDS SPECIFIED REQUIREMENTS. SUBMIT SUPPORTING REFERENCE DATA, AFFIDAVITS, AND CERTIFICATIONS AS APPROPRIATE.

2. REFERENCES AND STANDARDS
(A). FOR PRODUCTS AND WORKMANSHIP SPECIFIED BY REFERENCE TO A DOCUMENT OF DOCUMENTS NOT INCLUDED IN THE SPECIFICATIONS, ALSO REFERRED TO AS REFERENCE STANDARDS, COMPLY WITH REQUIREMENTS OF THE CURRENT STANDARD, EXCEPT WHEN MORE RIGID REQUIREMENTS ARE SPECIFIED OR ARE REQUIRED BY APPLICABLE CODES.
(B). SHOULD SPECIFIED REFERENCE STANDARDS CONFLICT WITH CONTRACT DOCUMENTS, REQUEST CLARIFICATION FROM OWNER'S CONSTRUCTION MANAGER BEFORE PROCEEDING.

3. TESTING AND INSPECTION AGENCIES
(A). OWNER WILL EMPLOY SERVICES OF AN INDEPENDENT TESTING AGENCY TO PERFORM SPECIFIED TESTING. EMPLOYMENT OF AGENCY IN NO WAY RELIEVES CONTRACTOR OF OBLIGATION TO PERFORM WORK IN ACCORDANCE WITH REQUIREMENTS OF CONTRACT DOCUMENTS.

4. CONTROL OF INSTALLATION
(A). MONITOR QUALITY CONTROL OVER SUPPLIERS, MANUFACTURERS, PRODUCTS, SERVICES, SITE CONDITIONS, AND WORKMANSHIP, TO PRODICE WORK OF SPECIFIED QUALITY.
(B). COMPLY WITH MANUFACTURERS' INSTRUCTIONS, INCLUDING EACH STEP IN SEQUENCE.
(C). COMPLY WITH SPECIFIED STANDARDS AS MINIMUM QUALITY FOR THE WORK EXCEPT WHERE MORE STRINGENT TOLERANCES, CODES, OR SPECIFIED REQUIREMENTS INDICATE HIGHER STANDARDS OR MORE PRECISE WORKMANSHIP.
(D). VERIFY THAT FIELD MEASUREMENTS ARE AS INDICATED ON SHOP DRAWINGS OR AS INSTRUCTED BY THE MANUFACTURER.

5. TOLERANCES
(A). MONITOR FABRICATION AND INSTALLATION TOLERANCE CONTROL OF PRODUCTS TO PRODUCE ACCEPTABLE WORK. DO NOT PERMIT TOLERANCES TO ACCUMULATE.
(B). COMPLY WITH MANUFACTURERS' TOLERANCES. SHOULD MANUFACTURERS' TOLERANCES CONFLICT WITH CONTRACT DOCUMENTS, REQUEST CLARIFICATION FROM OWNER'S CONTRUCTION MANAGER BEFORE PROCEEDING. OWNER STANDARDS WILL TAKE PRECEDENCE AND IN MOST CASES WILL BE SIGNIFICANTLY HIGHER THAN INDUSTRY STANDARDS.

6. TESTING AND INSPECTION
(A). TESTING AGENCY DUTIES:
1). PROVIDE QUALIFIED PERSONNEL AT SITE. COOPERATE WITH OWNER'S CONSTRUCTION MANAGER AND CONTRACTOR IN PERFORMANCE OF SERVICES.
2). PERFORM SPECIFIED SAMPLING AND TESTING OF PRODUCTS IN ACCORDANCE WITH SPECIFIED STANDARDS.
3). ASCERTAIN COMPLIANCE OF MATERIALS AND MIXES WITH REQUIREMENTS OF CONTRACT DOCUMENTS.
4). PROMPTLY NOTIFY OWNER'S CONSTRUCTION MANAGER AND CONTRACTOR OF OBSERVED IRREGULARITIES OR NON-CONFORMANCE OF WORK OR PRODUCTS.
5). PERFORM ADDITIONAL TESTS AND INSPECTIONS REQUIRED BY OWNER'S CONSTRUCTION MANAGER.
6). SUBMIT REPORTS OF ALL TESTS/INSPECTIONS SPECIFIED IN ELECTRONIC (PDF) FORMAT.
(B). LIMITS ON TESTING/INSPECTION AGENCY AUTHORITY:
1). AGENCY MAY NOT RELEASE, REVOKE, ALTER, OR ENLARGE ON REQUIREMENTS OF CONTRACT DOCUMENTS.
2). AGENCY MAY NOT APPROVE OR ACCEPT ANY PORTION OF THE WORK, MAY NOT ASSUME ANY DUTIES OF CONTRACTOR AND HAS NO AUTHORITY TO STOP THE WORK.
(C). CONTRACTOR RESPONSIBILITIES:
1). DELIVER TO AGENCY AT DESIGNATED LOCATION, ADEQUATE SAMPLES OF MATERIALS PROPOSED TO BE USED WHICH REQUIRE TESTING, ALONG WITH PROPOSED MIX DESIGNS.
2). COOPERATE WITH LABORATORY PERSONNEL, AND PROVIDE ACCESS TO THE WORK AND TO MANUFACTURERS' FACILITIES.
3). PROVIDE INCIDENTAL LABOR AND FACILITIES:
A). TO OBTAIN AND HANDLE SAMPLES AT THE SITE OR AT SOURCE OF PRODUCTS TO BE TESTED/INSPECTED.
B). TO FACILITATE TESTS/INSPECTIONS.
C). TO PROVIDE STORAGE AND CURING OR TEST SAMPLES.
4). NOTIFY OWNER'S CONSTRUCTION MANAGER AND LABORATORY 24 HOURS PRIOR TO EXPECTED TIME FOR OPERATIONS REQUIRING TESTING/INSPECTION SERVICES.
5). EMPLOY SERVICES OF AN INDEPENDENT QUALIFIED TESTING LABORATORY AND PAY FOR ADDITIONAL SAMPLES, TEST, AND INSPECTIONS REQUIRED BY CONTRACTOR BEYOND SPECIFIED REQUIREMENTS.
6). ARRANGE WITH OWNER'S AGENCY AND PAY FOR ADDITIONAL SAMPLES, TESTS, AND INSPECTIONS REQUIRED BY CONTRACTOR BEYOND SPECIFIED REQUIREMENTS.
(D). RE-TESTING REQUIRED BECAUSE OF NON-CONFORMANCE TO SPECIFIED REQUIREMENTS SHALL BE PERFORMED BY THE SAME AGENCY ON INSTRUCTIONS BY OWNER'S CONSTRUCTION MANAGER. PAYMENT FOR TE-TESTING WILL BE CHARGED TO THE CONTRACTOR BY DEDUCTING TESTING CHARGES FROM THE CONTRACT PRICE.

7. DEFECT ASSESSMENT
(A). REPLACE WORK OF PORTIONS OF THE WORK NOT CONFORMING TO SPECIFIED REQUIREMENTS.
(B). IF, IN THE OPINION OF OWNER'S CONSTRUCTION MANAGER, IT IS NOT PRACTICAL TO REMOVE AND REPLACE THE WORK, OWNER WILL DIRECT AND APPROPIATE REMEDY OR ADJUST PAYMENT.

### SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

1. TEMPORARY UTILITIES
(A). PROVIDE AND PAY FOR ALL TEMPORARY ELECTRICAL POWER, LIGHTING, WATER, HEATING AND COOLING, AND VENTILATION REQUIRED FOR CONSTRUCTION PURPOSES.

2. TELEPHONE SERVICE
(A). PROVIDE, MAINTAIN, AND PAY FOR TELEPHONE AND FACSIMILE SERVICES TO FIELD OFFICE AT TIME OF PROJECT MOBILIZATION.

3. TEMPORARY SANITARY FACILITIES
(A). PROVIDE AND MAINTAIN REQUIRED FACILITIES AND ENCLOSURES. PROVIDE AT TIME OF PROJECT MOBILIZATION. MAINTAIN DAILY IN CLEAN AND SANITARY CONDITION.

4. BARRIERS
(A). PROVIDE BARRIERS TO PREVENT UNAUTHORIZED ENTRY TO CONSTRUCTION AREAS, TO ALLOW FOR OWNER'S USE OF SITE AND TO PROTECT EXISTING FACILITIES AND ADJACENT PROPERTIES FROM DAMAGE FROM CONSTRUCTION OPERATIONS AND DEMOLITION.
(B). PROVIDE BARRICADES AND COVERED WALKWAYS REQUIRED BY GOVERNING AUTHORITIES FOR PUBLIC RIGHTS-OF-WAY AND FOR PUBLIC ACCESS TO EXISTING BUILDING.
(C). PROTECT NON-OWNED VEHICULAR TRAFFIC, STORED MATERIALS, SITE, AND STRUCTURES FROM DAMAGE.

5. FENCING
(A). PROVIDE 6 FOOT HIGH FENCE AROUND CONSTRUCTION SITE; EQUIP WITH VEHICULAR AND PEDESTRIAN GATES WITH LOCKS.

6. SECURITY
(A). PROVIDE SECURITY AND FACILITIES TO PROTECT WORK, EXISTING FACILITIES, AND OWNER'S OPERATIONS FROM UNAUTHORIZED ENTRY, VANDALISM, OR THEFT.

7. VEHICULAR ACCESS AND PARKING
(A). COORDINATE ACCESS AND HAUL ROUTES WITH GOVERNING AUTHORITIES AND OWNER.
(B). PROVIDE AND MAINTAIN ACCESS TO FIRE HYDRANTS, FREE OF OBSTRUCTIONS.
(C). PROVIDE TEMPORARY PARKING AREAS TO ACCOMMODATE CONSTRUCTION PERSONNEL. WHEN SITE SPACE IS NOT ADEQUATE, PROVIDE ADDITIONAL OFF-SITE PARKING.

8. WASTE REMOVAL
(A). PROVIDE WASTE REMOVAL FACILITIES AND SERVICES AS REQUIRED TO MAINTAIN THE SITE IN CLEAN AND ORDERLY CONDITION. PROVIDE CONTAINERS WITH LIDS AND REMOVE TRASH FROM SITE
(B). IF MATERIALS TO BE RECYCLED OR RE-USED ON THE PROJECT MUST BE STORED ON-SITE, PROVIDE SUITABLE NON-COMBUSTIBLE CONTAINERS; LOCATE CONTAINERS HOLDING FLAMMABLE MATERIAL OUTSIDE THE STRUCTURE UNLESS OTHERWISE APPROVED BY THE AUTHORITIES HAVING JURISDICTION.
(C). OPEN FREE-ALL CHUTES AND NOT PERMITTED. TERMINATE CLOSED CHUTES INTO APPROPIATE CONTAINERS WITH LIDS.
(D). WASTE REMOVAL FACILITY, DUMPSTER, TO REMAIN ON SITE WITH PICKUP SERVICE, THROUGH BUILDING TURNOVER PLUS ONE (1) WEEK FOR OWNER'S VENDOR USE.

9. PROJECT IDENTIFICATION SIGN
(A). WITHIN SEVEN DAYS OF DATE OF NOTICE TO PROCEED, PROVIDE AND ERECT ONE (1) PROJECT IDENTIFICATION SIGNS, IN A LOCATION DIRECTED BY THE OWNER, MINIMUM 4 FEET x 8 FEET.
1). SIGN SHALL CONSIST OF 4x4 INCH POSTS SUPPORTING A 4'-0" HIGH BY 8'-0" WIDE SHEET OF 3/4 INCH THICK EXTERIOR A/C PLYWOOD. LOCATE POST 1'-0" FROM ENDS OF PLYWOOD; 6'-0" CENTERS. BOTTOM OF PLYWOOD SHALL BE AT 4'-0" ABOVE GRADE.
2). FRAMEWORK SHALL RECEIVE A FABRIC SIGN TO BE FURNISHED BY OWNER AND INSTALLED BY GENERAL CONTRACTOR. INSTALLATION OF SIGN WILL BE BY WRAP AND STAPLE METHOD; LONG STAPLES, CLOSELY SPACED ON BACK SIDE.
3). IF A PERMIT IS REQUIRED, THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THE PERMIT.

10. CONTRACTOR SIGNS AND ADVERTISING
(A). CONTRACTOR AND PRINCIPAL SUBCONTRACTORS MAY HAVE COMPANY SIGNS ON FIELD OFFICE, AT CONTRACTOR'S EXPENSE, IF SO DESIRED. NO OTHER FREE-STANDING SGNS OF ADVERTISING OF ANY KIND OTHER THAN "WARNING" SIGNS AND NOTICES. REQUIRED BY LAW WILL BE PERMITTED ON HE SITE OR ABOUT THE PREMISES WITHOUT OWNER PERMISSION.

11. FIELD OFFICES
(A). OFFICE: WEATHER TIGHT, WITH LIGHTING, ELECTRICAL OUTLETS, HEATING, COOLING EQUIPMENT, AND EQUIPPED WITH STURDY FURNITURE, DRAWING RACK AND DRAWING DISPLAY TABLE.
(B). PROVIDE SPACE FOR PROJECT MEETINGS, WITH TABLE AND CHAIRS TO ACCOMMODATE 6 PERSONS.

12. REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS
(A). REMOVE TEMPORARY UTILITIES, EQUIPMENT, FACILITIES, MATERIALS, PRIOR TO SUBSTANTIAL COMPLETION INSPECTION.
(B). REMOVE UNDERGROUND INSTALLATIONS TO A MINIMUM DEPTH OF 2 FEET. GRADE SITE AS SHOWN.
(C). CLEAN AND REPAIR DAMAGE CAUSED BY INSTALLATION OR USE OF TEMPORARY WORK.
(D). RESTORE EXISTING FACILITIES USED DURING CONSTRUCTION RO ORIGINAL CONDITION.

### SECTION 01600 - PRODUCT REQUIREMENTS

1. SUBMITTALS
(A). PRODUCT DATA SUBMITTALS: SUBMIT MANUFACTURER'S STANDARD PUBLISHED DATA. MARK EACH COPY, TO IDENTIFY APPLICABLE PRODUCTS, MODELS, OPTIONS, AND OTHER DATA. SUPPLEMENT MANUFACTURER'S STANDARD DATA TO PROVIDE INFORMATION SPECIFIC TO THIS PROJECT
(B). SHOP DRAWING SUBMOTTALS: PREPARED SPECIFICALLY FOR THIS PROJECT; INDICATE UTILITY AND ELECTRICAL CHARACTERISTICS, UTILITY CONNECTION REQUIREMENTS, AND LOCATION OF UTILITY OUTLETS FOR SERVICE FOR FUNCTIONAL EQUIPMENT AND APPLIANCES.
(C). SAMPLE SUBMITTALS: ILLUSTRATE FUNCTIONAL AND AESTHETIC CHARACTERISTICS OF THE PRODUCT, WITH INTEGRAL PARTS AND ATTACHMENT DEVICES. COORDINATE SAMPLE SUBMITTALS FOR INTERFACING WORK.
1). FOR SELECTION FROM STANDARDS FINISHES, SUBMIT SAMPLES OF THE FULL RANGE OF THE MANUFACTURE'S STANDARDS COLORS, TEXTURES, AND PATTERNS.
(D). ALL SUBMITTALS SHALL BE IN ELECTRONIC (PDF) FORMAT.

2. NEW PRODUCTS
(A). PROVIDE NEW PRODUCTS UNLESS SPECIFICALLY REQUIRED OR PERMITTED BY THE CONTRACT DOCUMENTS.

3. PRODUCT OPTIONS
(A). PRODUCTS SPECIFIED BY REFERENCE STANDARDS OR BY DESCRIPTION ONLY: USE ANY PRODUCT MEETING THOSE STANDARDS OR DESCRIPTION.
(B). PRODUCTS SPECIFIED BY NAMING ONE OR MORE MANUFACTURERS: USE A PRODUCT OF ONE OF THE MANUFACTURERS NAMES AND MEETING SPECIFICATIONS, NO OPTIONS OR SUBSTITUTIONS ALLOWED.
(C). PRODUCTS SPECIFIED BY NAMINING ONE OR MORE MANUFACTURERS WITH A PROVISION FOR SUBSTITUTIONS: SUBMIT A REQUEST FOR SUBSTITUTION FOR ANY MANUFACTURER NOT NAMED, CLEARLY DESIGNATED AS A "REQUEST FOR SUBSTITUTION".

4. SUBSTITUTION PROCEDURES
(A). INSTRUCTIONS TO BIDDERS SPECIFY TIME RESTRICTIONS FOR SUBMITTING REQUEST FOR SUBSTITUTIONS DURING THE BIDDING PERIOD. COMPLY WITH REQUIREMENTS SPECIFIED IN THIS SECTION.
(B). SUBSTITUTIONS MAYBE CONSIDERED WHEN A PRODUCT BECOMES UNAVAILABLE THROUGH NO FAULT OF THE CONTRACTOR. NO OTHER SUBSTITUTIONS WILL BE ALLOWED.
(C). DOCUMENT EACH REQUEST WITH COMPLETE DATA SUBSTABTIATING COMPLIANCE OF PROPOSED SUBSTITUTION WITH CONTRACT DOCUMENTS.
(D). A REQUEST OF SUBSTITUTION CONSTITUTES A REPRESENTATION THAT THE SUBMITTER:
1). HAS INVESTIGATED PROPOSED PRODUCT AND DETERMINED THAT IT MEETS OR EXCEEDS THE QUALITY LEVEL OF THE SPECIFIED PRODUCT.
2). WILL PROVIDE THE SAME WARRANTY FOR THE SUBSTITUTION AS FOR THE SPECIFIED PRODUCT.
3). WILL COORDINATE INSTALLATION AND MAKE CHANGES TO THE OTHER WORK WHICH MAY SUBSENQUENTLY BECOME APPARENT.
4). WAIVES CLAIMS FOR ADDITIONAL COSTS OR TIME EXTENSION WHICH MAY SUBSEQUENTLY BECOME APPARENT.
(E). SUBSTITUTIONS WILL NOT BE CONSIDERED WHEN THEY ARE INDICATED OR IMPLIED ON SHOP DRAWING OR PRODUCT DATA SUBMITTALS, WITHOUT SEPARATE WRITTEN REQUEST, OR WHEN ACCEPTANCE WILL REQUIRE REVISION TO THE CONTRACT DOCUMENTS.

5. OWNER-SUPPLIED PRODUCTS
(A). CONTRACTOR'S RESPONSABILITIES
1). REVIEW OWNER REVIEWED SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
2). RECEIVE AND UNLOAD PRODUCTS AT SITE; INSPECT FOR COMPLETENESS OR DAMAGE.
3). HANDLE, STORE, INSTALL AND FINISH PRODUCTS
4). REPAIR OR REPLACE ITEMS DAMAGE AFTER RECEIPT.

6. TRANSPORTATION AND HANDLING
(A). COORDINATE SCHEDULE OR PRODUCT DELIVERY TO DESIGNATED PREPARED AREAS IN ORDER TO MINIMIZE SITE STORAGE TIME AND POTENTIAL DAMAGE TO STORED MATERIALS.
(B). TRANSPORT AND HANDLE PRODUCTS IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS.
(C). PROVIDE EQUIPMENT AND PERSONNEL TO HANDLE PRODUCTS BY METHODS TO PREVENT SOILING, DISFIGUREMENT, OR DAMAGE.

7. STORAGE AND PROTECTION
(A). DESIGNATE RECEIVING/STORAGE AREAS FOR INCOMING PRODUCTS SO THAT THEY ARE DELIVERED ACCORDING TO INSTALLATION SCHEDULE AND PLACED CONVENIENT TO WORK AREA IN ORDER TO MINIMIZE WASTE DUE TO EXCESSIVE MATERIALS HANDLING AND MISAPPLICATION.
(B). STORE AND PROTECT PRODUCTS IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS WITH LABELS INTACT AND LEGIBLE.
(C). STORE SENSITIVE PRODUCTS IN WEATHER TIGHT, CLIMATE CONTROLLED, ENCLOSURES IN AN ENVIROMENT FAVORABLE PRODUCT.
(D). FOR EXTERIOR STORAGE OF FABRICATED PRODUCTS, PLACE ON SLOPED SUPPORTS ABOVE GROUND.
(E). COVER PRODUCTS SUBJECT TO DETERIORATION WITH IMPERVIOUS SHEET COVERING. PROVIDE VENTILATION TO PREVENT CONDENSATION AND DEGRADATION OF PRODUCTS.
(F). ARRANGE ATORAGE OF PRODUCTS TO PERMIT ACCESS FOR INSPECTION. PERIODICALLY INSPECT TO VERIFY PRODUCTS ARE UNDAMAGED AND ARE MAINTAINED IN ACCEPTABLE CONDITION.

### SECTION 01700 - EXECUTION REQUIREMENTS

1. EXAMINATION
(A). VERIFY WHAT EXISTING SITE CONDITIONS AND SUBSTRATE SURFACES ARE ACCEPTABLE FOR SUBSEQUENT WORK. START OF WORK MEANS ACCEPTANCE OF EXISTING CONDITIONS.
(B). VERIFY THAT EXISTING SUBSTRATE IS CAPABLE OF STRUCTURAL SUPPORT OR ATTACHMENT OF NEW WORK BEING APPLIED OR ATTACHED.
(C). VERIFY THAT UTILITY SERVICES ARE AVAILABLE, OF THE CORRECT CHARACTERISTICSM AND IN THE CORRECT LOCATIONS.
(D). PRIOR TO CUTTING: EXAMINE EXISTING CONDITIONS PRIOR TO COMMENCING WORK, INCLUDING ELEMENTS SUBJECT TO DAMAGE OR MOVEMENT DURING CUTTING PATCHING. AFTER UNCOVERING EXISTING WORK, ASSESS CONDITIONS AFFECTING PERFORMANCE OF WORK. BEGINNING OF CUTTING OR PATCHING MEANS ACCEPTANCE OF EXISTING CONDITIONS.

2. PREPARATION
(A). CLEAN SUBSTRATE PRIOR TO APPLYING NEXT MAERIAL OR SUBSTANCE.
(B). SEAL CRACKS OR OPENINGS OF SUBSTRATE PRIOR TO APPLYING NEXT MATERIAL OR SUBSTANCE.
(C). APPLY ANUFACTURER REQUIRED OR RECOMMENDED SUBSTRATE PRIMER, SEALER, OR CONDITIONER PRIOR TO APPLYING ANY NEW MATERIAL OR SUBSTANCE IN CONTACT OR BOND.

3. LAYING OUT THE WORK
(A). VERIFY LOCATIONS OF SURVEY CONTROL POINTS PRIOR TO START WORK. PROTECT SURVEY CONTROL POINTS PRIOR TO STARTING SITE WORK; PRESERVE PERMANENT REFERENCES POINTS DURING CONSTRUCTION
(B). PROMPTLY REPORT TO ARCHITECT/ENGINEER THE LOSS OF DESTRUCTION OF ANY REFERENCE POINT OR RELOCATION REQUIRED BECAUSE OF CHANGES IN GRADES OR OTHER REASONS.
(C). ESTABLISH ELEVATIONS, LINES AND LEVELS. LOCATE AND LAY OUT BY INSTRUMENTATION AND SIMILAR APPROPRIATE MEANS:
1). SITE IMPROVEMENTS INCLUDING PAVEMENTS; STAKES FOR GRADING, FILL AND TOPSOIL PLACEMENT UTILITY LOCATIONS, SLOPES, AND INVERT ELEVATIONS.
2). GRID OR AXIS FOR STRUCTURES.
3). BUILDING FOUNDATION, COLUMN LOCATIONS, GROUND FLOOR ELEVATIONS, AND PLUMBING.
(D). MAINTAIN A COMPLETE AND ACCURATE LOG OF CONTROL AND SURVEY WORK AS IT PROGRESSES.

4. CUTTING AND PATCHING
(A). EXECUTE CUTTING AND PATCHING INCLUDING EXCAVATION AND FILL TO COMPLETE THE WORK, TO UNCOVER WORK IN ORDER TO INSTALL IMPROPERLY SEQUENCED WORK, TO REMOVE AND REPLACE DEFECTIVE OR NON-CONFORMING WORK, TO REMOVE SAMPLES OF INSTALLED WORK FOR TESTING WHEN REQUESTED, TO PROVIDE OPENINGS IN THE WORK FOR PENETRATION OF MECHANICAL AND ELECTRICAL WORK, TO EXECUTE PATCHING TO COMPLEMENT ADJACENT WORK, AND TO FIT PRODUCTS TOGETHER TO INTEGRATE WITH OTHER WORK.
(B). EXECUTE WORK BY METHODS TO AVOID DAMAGE TO OTHER WORK, AND WHICH WILL PROVIDE APPROPRIATE SURFACES TO RECEIVE PATCHING AND FINISHING.
(C). EMPLOY SKILLED AND EXPERIENCED INSTALLER TO PERFORM CUTTING FOR WEATHER EXPOSED AND MOISTURE RESISTANT ELEMENTS, AND SIGHT EXPOSED SURFACES.
(D). CUR RIGID MATERIALS USING APPROPRIATE SAWS OR DRILLS. PNEUMATIC TOOLS NOT ALLOWED WITHOUT PRIOR APPROVAL.
(E). RESTORE WORK WITH NEW PRODUCTS IN ACCORDANCE WITH REQUIREMENTS OF CONTRACTR DOCUMENTS.
(F). FIT WORK AIR TIGHT TO PIPES, SLEEVES, DUCTS, CONDUIT, AND OTHER PENETRATIONS THROUGH SURFACES.
(G). AT PENETRATIONS OF FIRE RATED WALLS, PARTITIONS, CEILING, OR FLOOR CONSTRUCTION, COMPLETELY SEAL VOIDS WITH FIRE RATED MATERIAL TO FULL THICKNESS OF THE PENETRATED ELEMENT.
(H). REFINISH SURFACES TO MATCH ADJACENT FINISH. FOR CONTINUOUS SURFACES, REFINISH TO NEAREST INTERSECTION OR NATURAL BREAK. FOR AN ASSEMBLY, REFINISH ENTIRE UNIT.

5. PROTECTION OF INSTALLED WORK
(A). PROTECT INSTALLED WORK FROM DAMAGE BY CONSTRUCTION OPERATIONS.
(B). PROTECT FINISHED FLOORS, STAIRS, AND OTHER SURFACES FROM TRAFFIC, DIRT, WEAR, DAMAGE, OR MOVEMENT OF HEAVY OBJECTS, BY PROTECTING WITH DURABLE SHEET MATERIALS.
(C). PROHIBIT TRAFFIC OR STORAGE UPON WATERPROOFED OR ROOFED SURFACES. IF TRAFFIC OR ACTIVITY IS NECESSARY, OBTAIN RECOMMENDATIONS FOR PROTECTION FROM WATERPROOFING OR ROOFING MATERIAL MANUFACTURER.

6. SYSTEMS STARUP
(A). COORDINATE SCHEDULE FOR START-UP OF VARIOUS EQUIPMENT AND SYSTEMS.
(B). VERIFY THAT EACH PIECE OF EQUIPMENT OR SYSTEM HAS BEEN CHECKED FOR PROPER LUBRICATION, DRIVE ROTATION, BELT TENSION, CONTROL SEQUENCE, AND FOR CONDITIONS WHICH MAY CAUSE DAMAGE.
(C). VERIFY TESTS, METER READINGS, AND SPECIFIED ELECTRICAL CHARACTERISTICS AGREE WITH THOSE REQUIRED BY THE EQUIPMENT OR SYSTEM MANUFACTURER.
(D). VERIFY THAT WIRING AND SUPPORT COMPONENTS FOR EQUIPMENT ARE COMPLETE AND TESTED.
(E). EXECUTE START-UP UNDER SUPERVISION OF APPLICABLE CONTRACTOR PERSONNEL AND/OR MANUFACTURER'S REPRESENTATIVE IN ACCORDANCE WITH MANUFACFTURER'S INSTRUCTIONS.
(F). USE MANUFACTURER'S START-UP PROCEDURES AS APPLICABLE AND SUBMIT SIGNED COPY TO OWNER'S CONSTRUCTION MANAGER.
(G). SUBMIT A WRITTEN REPORT THAT EQUIPMENT OR SYSTEM HAS BEEN PROPERLY INSTALLED AND IS FUNCTIONING CORRECTLY.

7. DEMOSTRATION AND INSTRUCTION
(A). DEMONSTRATE START-UP, OPERATION, CONTROL, ADJUSTMENT, TROUBLE-SHOOTING, SERVIVING, MAINTENANCE, AND SHUTDOWN OF EACH ITEM OF EQUIPMENT AT SCHEDULED TIME, AT EQUIPMENT LOCATION.
(B). FOR EQUIPMENT OR SYSTEMS REQUIRING SEASONAL OPERATION, PERFORM DEMONSTRATION FOR OTHER SEASON WITHIN SIX MONTHS.

8. CLEANING
(A). PROGRESS CLEANING:
1). MAINTAIN AREAS FREE OF WASTE MATERIALS, DEBRIS, AND RUBBISH. MAINTAIN SITE IN A CLEAN AND ORDERLY CONDITION.
2). REMOVE DEBRIS AND RUBBISH FROM PIPE CHASES, PLENUMS, ATTICS, CRAWL SPACES AND OTHER CLOSED OR REMOTE SPACES, PRIOR TO ENCLOSING THE SPACE.
3). BROOM AND VACUUM CLEAN INTERIOR AREAS PRIOR TO START OF SURFACE FINISHING, AND CONTINUE CLEANING TO ELIMINATE DUST.
4). COLLECT AND REMOVE WASTE MATERIALS, DEBRIS, AND TRASH/RUBBISH FROM SITE WEEKLY AND DISPOSE OFF-SITE; DO NOT BURN OR BURY.
(B). FINAL CLEANING:
1). USE CLEANING MATERIALS THAT ARE NON-HAZARDOUS.
2). CLEAN INTERIOR AND EXTERIOR GLASS, SURFACES EXPOSED TO VIEW; REMOVE LABELS, STAINS AND FOREIGN SUBSTANCES, POLISH TRANSPARENT AND GLOSSY SURFACES, VACUUM CARPETED AND SOFT SURFACES.
3). CLEAN EQUIPMENT AND FIXTURES TO A SANITARY CONDITION WITH CLEANING MATERIALS APPROPRIATE TO THE SURFACE AND MATERIAL BEING CLEANED.
4). CLEAN FILTERS OF OPERATING EQUIPMENT.
5). CLEAN DEBRIS FROM ROOFS, GUTTERS, DOWNSPOUTS, AND DRAINAGE SYSTEMS.
6). CLEAN SITE; SWEEP PAVED AREAS, RAKE CLEAN
7). REMOVE WASTE, SURPLUS MATERIALS, TRASH/RUBBISH. AND CONSTRUCTION FACILITIES FROM THE SITE; DISPOSE OF IN LEGAL MANNER; DO NOT BURN OR BURY.
(C). CLEANING SCHEDULE:
1). IN ADDITION TO THE DAILY BUILDING AND SITE CLEANING NOTED ABOVE, THE GENERAL CONTRACTOR IS TO INCLUDE THREE COMPLETE CLEANINGS ARE TO BE SCHEDULED AS POSSIBLE:
A). 1ST COMPLETE CLEANING OF BUILDING AND SITE AT TIME OF PUNCH LIST.
B). 2ND CLEANING SHALL BE A RE-CLEAN OF THE BUILDING AND SITE PRIOR TO COMPLETION OF PUNCH LIST AND TURNOVER. RE-CLEANING WILL BE REQUIRED UNTIL OWNER'S CONSTRUCTION MANAGER DETERMINES THAT THE BUILDING HAS BEEN PROPERLY CLEANED.
C). 3RD CLEANING SHALL CONSIST OF A COMPLETE TOP TO BOTTOM, INSIDE AND OUT, FINAL CLEANING, AT NIGHT DURING TRAINING AT A DATE SET BY OWNER'S CONSTRUCTION MANAGER.
2). THE SCHEDULE CLEANINGS SHALL CONSIST OF, BUT NOT BE LIMITED TO, THE FOLLOWING:
D). SITE:
1). LANDSCAPING: NO LABELS OR TAGS TO REMAIN ON PLANTS, SHRUBS, TREES, ETC.AND ALL DEBRIS REMOVED.
2). PAVING: POWER WASHED, CLEAN, NO TIRE OR WHEEL MARKS, NO STAINS OR DISCOLORATIONS AND NO CAULKING RUNS.
3). SIDEWALKS: NO POWER WASH ALLOWED FOR SIDEWALKS; DECK BRUSH WITH CLEANER ONLY.
4). ALL TRAFFIC CONTROL SIGNS AND POST HAVE ALL LABELS REMOVED.
E). EXTERIOR
1). NO LABELS VISIBLE ON THE WINDOW BLINDS FROM THE EXTERIOR.
2). GLASS CLEANED SPOTLESS.
3). BRICK, STONE, AND EIFS/STUCCO WASHED DOWN.
4). AWNINGS CLEAN, DUST FREE AND SPOT FREE
5). WINDOW SILLS AND FLASHINGS CLEANED OF ALL MORTAR, ETC.
F). ROOF:
1). NO FIRE RATING TAGS OR SUPPLY TAGS IN ROOF SHINGLES.
2). METAL AMD TPO ROOFING MATERIALS WASHED WITH SOFT DECK BRUSH AND TIDE WITH BLEACH SOLUTION OR EQUIVALENT.
3). ROOF TOP EQUIPMENT WASHED AND DUST FREE.
G). INTERIOR:
1). CLEANING COMPLETED SO THAT ALL SURFACES, REGARDLESS IF VISIBLE OR NOT, ARE CLEAN AND DUST FREE AND THE INTERIOR OF THE BUILDING IS WILL REMAIN CLEAN AND DUST FREE FOR TWO DAYS MINIMUM.
2). RESTROOM FIXTURES SANITAZED.
3). WINDOWS, MIRRORS AND ALL GLASS SPOTLESS.
4). ALL STICKERS REMOVED FROM PLANT POTS, LIGHT FIXTURES, WINDOW BLINDS, TV'S EQUIPMENT OF ANY KIND AND ALL PROTECTIVE WRAP REMOVED OF ANY KIND.
5). CLEAN OUTS, FLOOR DRAINS AND FLOOR SINKS POLISHED.
6). INTERIORS OF ALL CABINETS, BEHIND GRILLS, UNDERSIDES OF SHELVING, TOP OF ICE MACHINES, ETC., CLEAN AND DUST FREE
7). UNDERSIDES OF ALL TABLE BRACKETS DUST FREE.

9. CLOSEOUT PROCEDURES
(A). ACCOMPANY OWNER ON PRELIMINARY INSPECTION TO DETERMINE ITEMS TO BE LISTED FOR COMPLETION OR CORRECTION IN CONTRACTOR'S NOTICE OF SUBSTANTIAL COMPLETION.
(B). NOTIFY OWNER WHEN WORK IS CONSIDERED READY FOR SUBSTANTIAL COMPLETION.
(C). CORRECT ITEMS OF WORK LISTEN IN EXECUTED CERTIFICATES OF SUBSTANTIAL COMPLETION AND COMPLY WITH REQUIREMENTS FOR ACCESS TO OWNER-OCCUPIED AREAS.
(D). NOTIFY OWNER WHEN WORK IS CONSIDERED FINALLY COMPLETE.

10. PROJECT SUPERVISION AFTER SUBSTANTIAL COMPLETION
(A). PROJECT SUPERINTENDENT SHALL REMAIN ON SITE THROUGH COMPLETION OF PUNCH LIST.

### SECTION 01720 - CONSTRUCTION LAYOUT

1. SUMMARY
(A). SECTION INCLUDES:
1). LAYOUT OF WORK.
2). LAND-SURVEY WORK.

2. SUBMITTALS
(A). CERTIFICATES: SUBMIT A CERTIFICATE SIGNED BY THE LAND SURVEYOR CERTIFYING THE LOCATION AND ELEVATION OF IMPROVEMENTS.
(B). FINAL PROPERTY SURVEY: SUBMIT 5 COPIES OF THE FINAL PROPERTY SURVEY ALONG WITH ELECTRONIC FILES; BOTH AUTOCAD AND PDF FORMATS.
(C). PROJECT RECORD DRAWINGS: SUBMIT A RECORD OF WORK PERFORMED AND RECORD SURVEY DATA AS REQUIRED UNDER PROVISIONS OF SECTIONS 01300 AND 01780.

3. QUALITY ASSURANCE
(A). SURVEYOR QUALIFICATIONS: ENGAGE A LAND SURVEYOR REGISTERED IN THE STATE WHERE THE PROJECT IS LOCATED TO PERFORM REQUIRE LAND-SURVEYING SERVICES.
(B). DO NOT BEGIN CONSTRUCTION UNTIL LAYOUT OF WORK IS REVIEWED BY THE LAND SURVEYOR.

4. EXAMINATION
(A). IDENTIFY EXISTING CONTROL POINTS AND PROPERTY LINE CORNER STAKES.
(B). VERIFY LAYOUT INFORMATION SHOWN ON THE DRAWINGS, IN RELATION TO THE PROPERTY SURVEY AND EXISTING BENCHMARKS, BEFORE PROCEEDING TO LAY OUT THE WORK. LOCATE AND PROTECT EXISTING BRNCHMARKS AND CONTROL POINTS. PRESERVE PERMANENT REFERENCE POINTS DURING CONSTRUCTION.
1). DO NOT CHANGE OR RELOCATE BRNCHMARKS OR CONTROL POINTS WITHOUT PRIOR WRITTEN APPROVAL. PROMPTLY REPORT LOST OR DESTROYED REFERENCE POINTS OR REQUIREMENTS TO RELOCATE REFERENCE POINTS BECAUSE OF NECESSARY CHANGES IN GRADES OR LOCATIONS.
2). PROMPTLY REPLACE LOST OR DESTROYED PROJECT CONTROL POINTS. BASE REPLACEMENTS ON THE ORIGINAL SURVEY CONTROL POINTS.
(C). ESTABLISH AND MAINTAIN A MINIMUM OF 2 PERMANENT BENCHMARKS ON THE SITE, REFERENCED TO DATA ESTABLISHED BY SURVEY CONTROL POINTS.
1). RECORD BENCHMARK LOCATIONS, WITH HORIZONTAL AND VERTICAL DATA, ON PROJECT RECORD DOCUMENTS.
(D). EXISTING UTILITIES AND EQUIPMENT: BEFORE BEGINNING SITE CONSTRUCTION, INVESTIGATE AND VERIFY THE EXISTENCE AND LOCATION OF UNDERGROUND UTILITIES AND OTHER CONSTRUCTION. VERIFY THE LOCATION AND INVERT ELEVATION AT POINTS OF CONNECTION OF SANITARY SEWER, STORM SEWER, AND WATER-SERVICE PIPING.

5. PERFORMANCE
(A). WORK FROM LINES AND LEVELS ESTABLISHED BY THE PROPERTY SURVEY. ESTABLISH BENCHMARKS AND MARKERS TO SET LINES AND LEVELS AS NEEDED TO LOCATE EACH ELEMENT OF THE PROJECT. DO NOT SCALE DRAWINGS TO DETERMINE DIMENSIONS.
1). ADVISE SUB-CONTRACTORS OF MARKED LINES AND LEVELS PROVIDED FOR THEIR USE.
2). AS CONSTRUCTION PROCEEDS, CHECK EACH MAJOR ELEMENT FOR LINE, LEVEL, AND PLUMB.
(B). SURVEYOR'S LOG: MAINTAIN A SURVEYOR'S LOG OF CONTROL AND THE OTHER SURVEY WORK. MAKE THIS LOG AVAILABLE FOR REFERENCE.
1). RECORD DEVIATIONS FROM REQUIRED LINES AND LEVELS, AND ADVISE THE OWNER WHEN DEVIATIONS THAT EXCEED INDICATED OF RECOGNIZED TOLERANCES ARE DETECTED. ON PROJECT RECORD DRAWINGS, RECORD DEVIATIONS THAT ARE ACCEPTED AND NOT CORRECTED.
(C). BUILDING LINES AND LEVELS: LOCATE AND LAY-OUT BATTER BOARDS FOR STRUCTURES, BUILDING FOUNDATIONS, COLUM GRIDS AND LOCATIONS, FLOOR LEVELS, AND CONTROL LINES AND LEVELS REQUIRED FOR MECHANICAL AND ELECTRICAL WORK.
(D). SITE IMPROVEMENTS: LOCATE AND LAY-OUT SITE IMPROVEMENTS, INCLUDING PAVEMENTS, STAKES FOR GRADING, FILL AND TOPSOIL PLACEMENT, UTILITY SLOPES, AND INVERT ELEVATIONS.
(E). EXISTING UTILITIES: FURNISH INFORMATION NECESSARY TO ADJUST, MOVE, OR RELOCATE EXISTING STRUCTURES, UTILITY POLES, LINES, SERVICES, OR OTHER APPURTENANCES LOCATED IN OR AFFECTED BY CONSTRUCTION. COORDINATE WITH LOCAL AUTHORITIES HAVING JURISDICTION.
(F). FINAL PROPERTY SURVEY: PREPARE A FINAL PROPERTY SURVEY SHOWING SIGNIFICANT FEATURES (REAL PROPERTY) FOR THE PROJECT: INCLUDE ON THE SURVEY A CERTIFICATION, SIGNED BY THE SURVEYOR, THAT PRINCIPAL METES, BOUNDS, LINES AND LEVELS OF THE PROJECT ARE ACCURATELY POSITIONED AS SHOWN ON THE SURVEY.

### SECTION 01780 - CLOSEOUT SUBMITTALS

1. SUBMITTALS
(A). PROJECT RECORD DOCUMENTS: SUBMIT DOCUMENTS TO OWNER WITH CLAIM FOR FINAL APPLICATION FOR PAYMENT.
(B). OPERATION AND MAINTENANCE DATA:
1). SUBMIT TWO COPIES OF PRELIMINARY DRAFT OR PROPOSED FORMATS AND OUTLINES OF CONTENTS BEFORE START OF WORK. OWNER'S CONSTRUCTION MANAGER WILL REVIEW DRAFT AND RETURN ONE COPY WITH DOCUMENTS
2). FOR EQUIPMENT, OR COMPONENT PARTS OF EQUIPMENT PUT INTO SERVICE DURING CONSTRUCTION AND OPERATED BY OWNER, SUBMIT COMPLETED DOCUMENTS WITHIN TEN DAYS AFTER ACCEPTANCE.
3). SEBMIT TWO SETS OF REVISED FINAL DOCUMENTS IN FINAL FORM, BOTH HARD AND ELECTRONIC FORMATS, WITHIN 10 DAYS AFTER FINAL INSPECTION.
(C). WARRANTIES AND BONDS:
1). FOR EQUIPMENT OR COMPONENT PARTS OF EQUIPMENT PUT INTO SERVICE DURING CONSTRUCTION WITH OWNER'S PERMISSION, SUBMIT DOCUMENTS WITHIN TEN DAYS AFTER ACCEPTANCE.
2). MAKE OTHER SUBMITTALS WITHIN TEN DAYS AFTER DATE OF SUBSTANTIAL COMPLETION, PRIOR TO FINAL APPLICATION FOR PAYMENT.
3). FOR ITEMS OF WORK FOR WHICH ACCEPTANCE IS DELAYED BEYOND DATE OF SUBSTANTIAL COMPLETION, PRIOR TO FINAL APPLICATION FOR PAYMENT.
4). ALL WARRANTIES SHALL START AS OF RESTAURANT "OPENING DAY"

2. PROJECT RECORD DOCUMENTS
(A). MAINTAIN ON SITE ONE SET OF THE FOLLOWING RECORD DOCUMENTS; RECORD ACTUAL REVISIONS TO THE WORK:
1). DRAWINGS
2). SPECIFICATIONS
3). ADDENDA
4). CHANGE ORDERS AND OTHER MODIFICATIONS TO THE CONTRACT.
5). REVIEWED SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
6). MANUFACTURER'S INSTRUCTION FOR ASSEMBLY, INSTALLATION, AND ADJUSTING.
(B). ENSURE ENTRIES ARE COMPLETE AND ACCURATE, ENABLING FUTURE REFERENCE BY OWNER.
(C). STORE RECORD DOCUMENTS SEPARATE FROM DOCUMENTS USED TO CONSTRUCTION.
(D). RECORD INFORMATION CONCURRENT WITH CONSTRUCTION PROGRESS.
(E). SPECIFICATIONS: LEGIBLE MARK AND RECORD AT EACH PRODUCT SECTION DESCRIPTION OF ACTUAL PRODUCTS INSTALLED, INCLUDING THE FOLLOWING:
1). MANUFACTURER'S NAME AND PRODUCT MODEL AND NUMBER.
2). PRODUCT SUBSTITUTIONS OR ALTERNATES UTILIZED.
3). CHANGES MADE BY ADDENDA AND MODIFICATIONS.
(F). RECORD DRAWINGS AND SHOP DRAWINGS: LEGIBLY MARK EACH ITEM TO RECORD ACTUAL CONSTRUCTION INCLUDING:
1). MEASURED DEPTHS OF FOUNDATIONS IN RELATION TO FINISH FIRST FLOOR DATUM.
2). MEASURED HORIZONTAL AND VERTICAL LOCATIONS OF UNDERGROUND UTILITIES AND APPURTENANCES, REFERENCED TO PERMANENT SURFACE IMPROVEMENTS.
3). MEASURED LOCATIONS OF INTERNAL UTILITIES AND APPURTENANCES CONCEALED IN CONSTRUCTION, REFERENCED TO VISIBLE AND ACCESSIBLE FEATURES OF THE WORK.
4). FIELD CHANGES OF DIMENSION AND DETAIL.
5). DETAILS NOT ON ORIGINAL CONTRACT DRAWINGS.

3. OPERATION AND MAINTENANCE DATA
(A). FOR EACH PRODUCT OR SYSTEM ON FORMS PROVIDED BY OWNER: LIST NAMES, ADDRESSES AND TELEPHONE NUMBERS OF SUBCONTRACTORS AND SUPPLIERS, INCLUDING LOCAL SOURCE OF SUPPLIES AND REPLACEMENT PARTS
(B). PRODUCT DATA: MARK EACH SHEET TO CLEARLY IDENTIFY SPECIFIC PRODUCTS AND COMPONENT PARTS, AND DATA APPLICABLE TO INSTALLATION. DELETE INAPPLICABLE INFORMATION.
(C). DRAWINGS: SUPPLEMENT PRODUCT DATA TO ILLUSTRATE RELATIONS OF COMPONENT PARTS OF EQUIPMENT AND SYSTEMS, TO SHOW CONTROL AND FLOW DIAGRAMS. DO NOT USE PROJECT RECORD DOCUMENTS AS MAINTENANCE DRAWINGS.
(D). TYPED TEXT: AS REQUIRED TO SUPPLEMENT PRODUCT DATA. PROVIDE LOGICAL SEQUENCE OF INSTRUCTIONS FOR EACH PROCEDURE, INCORPORATING MANUFACTURER'S INSTRUCTIONS.

4. OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES
(A). INSTRUCTIONS FOR CARE AND MAINTENANCE: MANUFACTURER'S RECOMMENDATIONS FOR CLEANING AGENTS AND METHODS, PRECAUTIONS AGAINST DETRIMETAL CLEANING AGENTS AND METHODS, AND RECOMMENDED SCHEDULE FOR CLEANING AND MAINTENANCE.

5. OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS
(A). FOR EACH ITEM OF EQUIPMENT AND EACH SYSTEM.
1). DESCRIPTION OF UNIT OR SYSTEM, AND COMPONENT PARTS.
2). IDENTIFY FUNCTION, NORMAL OPERATING CHARACTERISTICS, AND LIMITING CONDITIONS.
3). COMPLETE NOMENCLATURE AND MODEL NUMBER OF REPLACEABLE PARTS.
(B). PANEL BOARD CIRCUIT DIRECTORIES: PROVIDE ELECTRICAL SERVICE CHARACTERISTICS, CONTROLS, AND COMMUNICATIONS; TYPED.
(C). OPERATING PROCEDURES: INCLUDE START-UP, BREAK-IN, AND ROUTINE NORMAL OPERATING INSTRUCTIONS AND SEQUENCES. INCLUDE REGULATION, CONTROL, STOPPING, SHUT-DOWN, AND EMERGENCY INSTRUCTIONS. INCLUDE SUMMER, WINTER, AND ANY SPECIAL OPERATING INSTRUCTIONS.
(D). MAINTENANCE REQUIREMENTS: INCLUDE ROUTINE PROCEDURES AND GUIDE FOR PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING; DIASSEMBLY, REPAIR, AND REASSEMBLY INSTRUCTIONS; AND ALIGMENT, ADJUSTING, BALANCING, AND CHECKING INSTRUCTIONS.
(E). INCLUDE MANUFACTURER'S PRINTED OPERATION AND MAINTENANCE INSTRUCTIONS.
(F). INCLUDE SEQUENCE OF OPERATION BY CONTROLS MANUFACTURER.
(G). PROVIDE ORIGINAL MANUFACTURER'S PARTS LIST, ILLUSTRATIONS, ASSEMBLY DRAWINGS, AND DIAGRAMS REQUIRED FOR MAINTENANCE.
(H). PROVIDE FRAMED INFORMATION AS FOLLOWS. ALL INFORMATION SHALL BE FRAMED IN BLACK METAL FRAMES.
1). SUBCONTRACTOR LIST AND SERVICE COMPANY CONTACT INFORMATION (TO BE LOCATED IN OFFICE).
2). WARRANTY PROCEDUCE INFORMATION (LOCATED IN OFFICE).
3). LEGEND AND LOCATIONS OF LABELS ON VALVES AND KNOBS IN MECHANICAL ROOM (LOCATED IN MACHANICAL ROOM).
4). MAP OF ZONES FOR IRRIGATION SYSTEM LOCATED WITH IRRIGATION CONTROLS.

6. OPERATION AND MAINTENANCE MANUALS
(A). PREPARE INSTRUCTIONS AND DATA BY PERSONNEL EXPERIENCED IN MAINTENANCE AND OPERATION OF DESCRIBED PRODUCTS IN THE FORM OF AN INSTRUCTIONAL MANUAL.
(B). BINDERS: COMMERCIAL QUALITY, 8-1/2 x 11 INCH THREE D SIDE RING BINDERS WITH DURABLE PLASTIC COVERS; 2 INCH MAXIMUM RING SIZE. WHEN MULTIPLE BINDERS ARE USED, CORRELATE DATA INTO RELATED CONSISTENT GROUPINGS.
(C). COVER: IDENTIFY EACH BINDER WITH TYPED OR PRINTED TITLE **OPERATION AND MAINTENANCE INSTRUCTIONS:** IDENTIFY TITLE OF PROJECT, IDENTIFY SUBJECT MATTER OF CONTENTS.
(D). PROVIDE TABBED DIVIDERS FOR EACH SEPARATE PRODUCT AND SYSTEM, WITH TYPED DESCRIPTION OF PRODUCT AND MAJOR COMPONENT PARTS OF EQUIPMENT.
(E). ARRANGE CONTENT BY SYSTEMS UNDER SECTION NUMBERS AND SEQUENCE OF TABLE OF CONTENTS OF THIS PROJECT MANUAL.
(F). CONTENTS: PREPARE A TABLE OF CONTENTS FOR EACH VOLUMEN, WITH EACH PRODUCT OF SYSTEM DESCRIPTION IDENTIFIED WITH TABBED DIVIDERS, IN THREE PARTS AS FOLLOWS:
1). PART 1: DIRECTORY, LISTING NAMES, ADDRESSES, AND TELEPHONE NUMBERS OF OWNER'S CONSTRUCTION MANAGER, CONTRACTOR, SUBCONTRACTORS, AND MAJOR EQUIPMENT SUPPLIERS.
2). PART 2: OPERATION AND MAINTENANCE INSTRUCTIONS, ARRANGED BY SYSTEM AND SUBDIVIDED BY SPECIFICATION SECTION. FOR EACH CATEGORY, IDENTIFY NAMES, ADDRESSES, AND TELEPHONE NUMBERS OF SUBCONTRACTORS AND SUPPLIERS. IDENTIFY THE FOLLOWING:
A). SIGNIFICANT DESIGN CRITERIA.
B). LIST OF EQUIPMENT.
C). PARTS LIST FOR EACH COMPONENT.
D). OPERATING INSTRUCTIONS.
E). MAINTENANCE INSTRUCTIONS FOR EQUIPMENT AND SYSTEMS.
F). MAINTENANCE INSTRUCTIONS FOR SPECIAL FINISHES, INCLUDING RECOMMENDED CLEANING METHODS AND MATERIALS, AND SPECIAL PRECAUTIONS IDENTIFYING DETRIMENTAL AGENTS.
3). PART 3: PROJECT DOCUMENTS AND CERTIFICATES, INCLUDING THE FOLLOWING:
A). SHOP DRAWINGS AND PRODUCT DATA.
B). CERTIFICATES

7. WARRANTIES AND BONDS
A). OBTAIN WARRANTIES AND BONDS, EXECUTED IN DUPLICATE BY RESPONSIBLE SUBCONTRACTORS, SUPPLIERS, AND MANUFACTURER'S WITHIN TEN DAYS AFTYER COMPLETION OF THE APPLICABLE ITEM OF WORK.
B). VERIFY THAT DOCUMENTS ARE IN PROPER FORM, CONTAIN FULL INFORMATION, AND ARE NOTARIZED.
C). CO-EXECUTE SUBMITTALS WHEN REQUIRED.
D). MANUAL: BIND IN COMMERCIAL QUALITY 8-1/2 x 11 INCH THREE D SIDE RING BINDERS WITH DURABLE PLASTIC COVERS.
E). COVER: IDENTIFY EACH BINDER WITH TYPED OR PRINTED TITLE WARRANTIES AND BONDS, WITH TITLE OF PROJECT; NAME, ADDRESS AND TELEPHONE NUMBER OF CONTRACTOR AND EQUIPMENT SUPPLIER, AND NAME OF RESPONSIBLE COMPANY PRINCIPAL.
F). TABLE OF CONTENTS: NEATLY TYPED, IN THE SEQUENCE OF THE TABLE OF CONTENTS OF THE PROJECT MANUAL, WITH EACH ITEM IDENTIFIED WITH THE NUMBER AND TITLE OF THE SPECIFICATION SECTION IN WHICH SPECIFIED, AND THE NAME OF PRODUCT OF WORK ITEM.
G). SEPARATE EACH WARRANTY OR BOND WITH INDEX TAB SHEETS KEYED TO THE TABLE OF CONTENTS LISTING. PROVIDE FULL INFORMATION, USING SEPARATE TYPED SHEETS AS NECESSARY. LIST SUBCONTRACTOR, SUPPLIER, AND MANUFACTURER, WITH NAME, ADDRESS, AND TELEPHONE NUMBER OF RESPONSIBLE PRINCIPAL.
H). AT CONTRACTOR'S OPTION, WARRANTY AND BOND INFORMATION CAN BE PROVIDED ELECTRONICALLY IN PDF FORMAT ON A COMPACT DISK.

## DIVISION 02 - SITEWORK

### SECTION 02010 - SUBSURFACE INVESTIGATION

1. SUBSURFACE INVESTIGATION
(A). GEOTECHNICAL INVESTIGATION (SUBSURFACE SOIL TESTS) FOR THE PROJECT SITE HAS BEEN PERFORMED AND A REPORT OF THAT IVESTIGATION HAS BEEN COMPLETED. THE CONSULTANT'S REPORT PRESENTS HIS CONCLUSIONS ON SUBSURFACE CONDITIONS, BASED ON HIS INTERPRETATIONS OF THE DATA OBTAINED IN THE INVESTIGATION. THE CONTRACTOR ACKNOWLEDGES THAT HE HAS REVIEWED THE CONSULTANT'S REPORT AND ANY ADDENDA THERETO, AND THAT HIS BID FOR EXCAVATION OPERATIONS, INCLUDING ALL NECESSARY ROCK REMOVAL, IS BASED ON SUBSURFACE CONDITION AS DESCRIBED IN THAT REPORT. IT IS RECOGNIZED THAT A SUBSURFACE INVESTIGATION MAY NOT DISCLOSE ALL CONDITIONS, AS THEY ACTUALLY EXIST BETWEEN THE TIME OF A SUBSURFACE INVESTIGATION AND THE TIME OF EXCAVATION 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.
(B). REQUIREMENTS:
1). CONTRACTOR SHALL REFER TO ALL RECOMMENDATION AND FINDINGS AS SET FORTH IN SOILS GEOTECHNICAL REPORT. THE OWNER AND/OR ARCHITECT ACCEPT NO RESPONSIBILITY FOR THE ACCURACY OF THE FINDINGS OR FOR THE FINAL RECOMMENDATIONS. EXISTING ELEVATIONS AND LOCATIONS TO BE JOINED SHALL BE VERIFIED BY THE CONTRACTOR BEFORE CONSTRUCTION. CONTRACTOR SHALL NOTIFY THE OWNER SO THAT MODIFICATIONS CAN BE MADE BEFORE PROCEEDING WITH THE WORK.
2). AT ANY POINT IN TIME DURING EXCAVATION OPERATIONS THAT THE CONTRACTOR ENCOUNTERS CONDITIONS THAT ARE DIFFERENT THAN THOSE ANTICIPATED BY THE FOUNDATION CONSULTANT'S REPORT, HE SHALL IMMEDIATELY (WITHIN 24 HOURS) BRING THIS FACT TO THE OWNERS ATTENTION. ONCE A FACT OF UNANTICIPATED CONDITIONS HAS BEEN BROUGHT TO THE ATTENTION OF THE OWNER, AND THE CONSULTANT HAS OCURRED, IMMEDIATE NEGOTIATIONS WILL BE UNDERTAKEN BETWEEN THE OWNER AND THE CONTRACTOR TO ARRIVE AT A CHANGE IN CONTRACT PRICE FOR ADDITIONAL WORK OF REDUCTION IN WORK BECAUSE OF THE UNANTICIPATED CONDITIONS. THE CONTRACTOR AGREES THAT HIS STATED UNIT PRICE WOULD APPLY FOR ADDITIONAL OR REDUCED WORK UNDER THE CONTRACT.

### SECTION 02100 - SITE CLEARING

1. GENERAL
(A). REMOVE AND LEGALLY DISPOSE OF ABOVE AND BELOW GRADE IMPROVEMENTS AND STRUCTURES IF ANY AND/OR NOT INDICATED TO REMAIN, WITHIN THE PROJECT LIMITS.
(B). REMOVE TREES, VEGETATION, ETC., WITHIN PROJECT LIMITS.
(C). STRIP TOPSOIL WITHIN BUILDING AND PAVEMENT AREA AND STOCKPILE FOR RE-USE IN LANDSCAPE AND GREEN AREAS; EXCELL SHALL BE REMOVED FROM SITE.
(D). PROVIDE PROTECTION TO IMPROVEMENTS TO REMAIN.

### SECTION 02200 - EXCAVATION, BACKFILLING, COMPACTION, AND GRADING

THE FOLLOWING ARE GENERAL GUIDELINES FOR EXCAVATION, BACKFILLING, COMPACTION AND GRADING. WHEN NOT SPECIFICALLY ADDRESSED IN THE CIVIL CONSTRUCTION DOCUMENTS, CONTRACTOR SHALL COMPLY WITH THE PROVISIONS HEREIN.

1. EXCAVATE FOR FOOTINGS; FOUNDATIONS STRUCTURES, UTILITIES, ETC., TO INDICATED DEPTH. ALL EXCAVATION SHALL BE ASSUMED AS EARTH.
(A). TRIM BOTTOMS TO LEAVE SOLID, UNDISTURBED BASE FOR CONCRETE PLACEMENT. SEE SOILS REPORT FOR BEARING CAPACITY.
(B). ALL FOUNDATION EXCAVATION SHALL BE KEPT DRY, AND PROTECTED FROM FREEZING.
(C). CORRECT UNAUTHORIZED EXCAVATION IN A MANNER ACCEPTABLE TO OWNER.

2. EXCESS EARTH NOT REQUIRED FOR BACKFILL SHALL BE REMOVED FROM SITE. GENERAL CONTRACTOR RESPONSIBLE FOR TOPSOIL PLACEMENT AND RAKING TO GRADE.

3. COMPACT BACKFILL TO DENSITY OF ADJACENT SOIL, AS FOLLOWS, WHICHEVER IS GREATER. (REFER TO SOILD REPORT FOR OTHER RECOMMENDATIONS).
(A). COMPACT SOIL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DENSITY FOR SOILS, WHICH EXHIBIT A WELL-DEFINED MOISTURE DENSITY RELATIONSHIP (COHESIVE SOILS) DETERMINED IN ACCORDANCE WITH ASTM D1557: AND NOT LESS THAN THE FOLLOWING PERCENTAGES OF RELATIVE DENSITY, DETERMINED IN ACCORDANCE WITH ASTM D2049, FOR SOILD WHICH WILL NOT EXHIBIT A WELL-DEFINED MOISTURE-DENSITY RELATIONSHIIP (COHESIONLESS SOILS).
(B). UNDER BUILDINGS AND PAVED AREAS: COMPACT TOP 8 INCHES OF EXISTING SURFACE AND EACH LAYER OF BACKFILL OF FILL MATERIAL TO 95 PERCENT MAXIMUM DENSITY (STANDARD PROCTOR) FOR COHESIVE SOIL OR 98 PERCENT RELATIVE DENSITY (STANDARD PROCTOR) FOR COHESIONLESS SOILS.
(C). OTHER AREAS: COMPACT 8 INCHES OF EXISTING GROUND SURFACE AND EACH LAYER OF BACKFILL OF FILL MATERIAL TO 90 PERCENT MAXIMUM DENSITY (STANDARD PROCTOR) FOR COHESIVE SOILS OR 85 PERCENT RELATIVE DENSITY (STANDARD PROCTOR) FOR COHESIONLESS SOILS.
(D). WHERE SOIL MATERIALS MUST BE MOISTURE CONDITIONED BEFORE COMPACTION, UNIFORMLY APPLY WATER TO SURFACE, PREVENT FREE WATER FROM APPERING ON SURFACE OF SOIL MATERIALS DURING OR SUBSEQUENT TO COMPACTION OPERATION.
(E). REMOVE AND REPLACE, OR SCARIFY AND AIR DRY SOIL MATERIAL THAT IS TOO WET TO PERMIT COMPACTION TO SPECIFIED DENSITY.

4. BACKFILL AND FILL MATERIALS
1). SAND OR SAND ON GRAVEL AT ENGINEERED (CLEAN) EARTH FILL SHALL BE USED UNDER FLOOR SLABS ON-GRADE, TO UNDERSIDE OF CRUSHED STONE UNDERLAYMENT.
(F). EARTH MATERIALS TAKEN FROM THE EXCAVATION OPERATIONS AND STOCKPILED ON SITE AS ACCEPTABLE FILL MATERIAL, CAPABLE OF MEETING THE SPECIFIED COMPACTION REQUIREMENTS, SHALL (BE USED AS FILL MATERIAL IN AREAS OUTSIDE THE BUILDING).
1). ONLY 1-INCH WASHED GRAVEL, PEA GRAVEL OR SAND SHALL BE USED IN UTILITY TRENCHES IN PAVED AREAS, TO TOP OF SUBGRADE.
(G). EXISTING PAVING, ORGANIC MATERIAL OR EXISTING SOILS SHALL NOT BE USED FOR FILLING UNDER BUILDING SLABS OR FOR FILLING UNDER PAVEMENT.
(H). GRANULAR FILL UNDER SLABS ON GRADE SHALL BE NO.57, 6 OR 67 CRUSHED STONE PER ASTM D448.
(I). RMOVE ROCK OR GRAVEL LARGER THAN 2 INCHES IN ANY DIMENSION, DEBRIS, WASTE, OBSTRUCTIONS, AND DELETERIOUS MATTER FROM GROUND SURFACE PRIOR TO PLACEMENT OF FILLS.

### SECTION 02361 - TERMITE CONTROL

1. SUMMARY
(A). THIS SECTION INCLUDES THE FOLLOWING.
1). SOIL TREATMENT WITH TERMITICIDE.

2. REFERENCES
(A). TITLE 7. UNITED STATES CODE, 136 THROUGH 136Y - FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT; UNITED STATES CODE; 1947 (REVISED 20001).

3. REGULATORY REQUIREMENTS
(A). CONFORM TO APPLICABLE CODE FOR REQUIREMENTS FOR APPLICATION, AND COMPLY WITH EPA REGULATIONS.
(B). PROVIDE CERTIFICATE OF COMPLIANCE FROM AUTHORITY HAVING JURISDICTION INDICATING APPROVAL OF TOXICANTS.

4. SEQUENCING AND REPORTING
(A). APPLY TOXICANT IMMEDIATELY PRIOR TO INSTALLATION OF VAPOR BARRIER UNDER SLABS-ON-GRADE.
(B). SOIL TREATMENT APPLICATION REPORT: INCLUDE THE FOLLOWING:
1). DATE AND TIME OF APPLICATION
2). MOISTURE CONTENT OF SOIL BEFORE APPLICATION
3). BRAND NAME AND MANUFACTURER OR TERMITICIDE.
4). QUANTITY OF UNDILUTED TERMITICIDE USED.
5). DILUTIONS, METHODS, VOLUMES, AND RATES OF APPLICATION USED.
6). AREAS OF APPLICATION.
7). WATER SOURCE FOR APPLICATION.

5. WARRANTY
(A). PROVIDE FIVE YEAR INTALLER'S WARRANTY AGAINST DAMAGE TO BUILDING CAUSED BY TERMITES.
1). INCLUDE COVERAGE FOR REPAIRS TO BUILDING AND TO CONTENTS DAMAGED DUE TO BUILDING DAMAGE. REPAIR DAMAGE AND, IF REQUIRED, RE-TREAT.
2). INSPECT ANNUALLY AND REPORT IN WRITING TO OWNER. PROVIDE INSPECTION SERVICE FOR THREE (3) YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

6. MANUFACTURERS
(A). SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
(B). TERMITICIDES:
A). AVENTIS ENVIRONMENTAL SCIENCE USA LP; TERMIDOR.
B). BAYER CORPORATION; PREMISE 75.
C). DOW AGROSCIENCES LLC; DURSBAN TC OR EQUITY.
D). FMC CORPORATION, AGRICULTURAL PRODUCTS GROUP; TALSTAR, PREVAIL FT, OR TORPEDO.
E). SYNGENTA; DEMON TC

7. MIXES
(A). TOXICANT CHEMICALS: EPA APPROVED; SYNTHETICALLY COLOR DYED TO PERMIT VISUAL IDENTIFICATION OF SOIL TREATMENT.
(B). DILUENT: RECOMMENDED BY TOXICANT MANUFACTURER.
(C). MIX TOXICANT TO MANUFACTURER'S INSTRUCTIONS.

8. EXAMINATION
(A). VERIFY THAT SOIL SURFACES ARE UNFROZEN, SUFFICIENTLY DRY TO ABSORB TOXICANT, AND READY TO RECEIVE TREATMENT.
(B). VERIFY FINAL GRADING IS COMPLETE.

9. SOIL TREATMENT
(A). TERMITICIDE: PROVIDE AN EPA-REGISTERED TERMITICIDE COMPLYING WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION, IN AN AQUEOUS SOLUTION FORMULATED TO PREVENT TERMITE INFESTATION. PROVIDE QUANTITY REQUIRED FOR APPLICATION AT THE LABEL VOLUME AND RATE FOR THE MAXIMUM TERMITICIDE CONCENTRATION ALLOWED FOR EACH SPECIFIC USE, ACCORDING TO PRODUCT'S EPA-REGISTERED LABEL.
(B). PREPARATION:
7). GENERAL: REMOVE ALL EXTRANEOUS SOURCES OF WOOD CELLULOSE AND OTHER EDIBLE MATERIALS SUCH AS WOOD DEBRIS, TREE STUMPS AND ROOTS, STAKES, FORMWORK, AND CONSTRUCTION WASTE WOOD FROM SOIL WITHIN AND AROUND FOUNDATIONS.
8). SOIL TREATMENT PREPARATION: LOOSEN, RAKE, AND LEVEL SOIL TO BE TREATED EXCEPT PREVIOUSLY COMPACTED AREAS UNDER SLABS AND FOOTINGS. TERMITICIDES MAY BE APPLIED BEFORE PLACING COMPACTED FILL UNDER SLABS IF RECOMMENDED IN WRITING BY TERMITICIDE MANUFACTURER.
(C). APPLICATION: MIX SOIL TREATMENT TERMITICIDE SOLUTION TO A UNIFORM CONSISTENCY. PROVIDE QUANTITY REQUIRED FOR APPLICATION AT THE LABEL VOLUMEN AND RATE FOR THE MAXIMUM SPECIFIED CONCENTRATION OF TERMITICIDE, ACCORDING TO MANUFACTURER'S EPA-REGISTERED LABEL, TO THE FOLLOWING DO THAT CONTINUOUS HORIZONTAL AND VERTICAL TERMITICIDAL BARRIER OR TREATED ZONE IS ESTABLISHED AROUND AND UNDER BUILDING CONSTRUCTION. DISTRIBUTE TREATMENT EVENLY.
1). SLABS-ON-GRADE: UNDERGROUND-SUPPORTED SLAB CONSTRUCTION, INCLUDING FOOTINGS, BUILDING SLABS, AND ATTACHED SLABS AS AN OVERALL TREATMENT. TREAT SOIL MATERIALS BEFORE CONCRETE FOOTINGS AND SLABS ARE PLACED.
2). FOUNDATIONS: ADJACENT SOIL INCLUDING SOIL ALONG THE ENTIRE INSIDE PERIMETER OF SOUNDATION WALLS, ALONG BOTH SIDES OF INTERIOR PARTITION WALLS, AROUND PLUMBING PIPES ANS ELECTRIC CONDUIT PENETRATING THE SLAB, AND SROUND INTERIOR COLUMN FOOTERS, PIERS, AND CHIMMEY BASES; ALSO ALONG THE ENTIRE OUTSIDE PERIMETER, FROM GRADE TO BOTTOM OF FOOTING. AVOID SOIL WASHOUT AROUND FOOTINGS.
3). MASONTY: TREAT VOIDS.
4). PENETRATIONS: AT EXPANSION JOINTS, CONTROL JOINTS, AND AREAS WHERE SLABS WILL BE PENETRATED.
(D). AVOID DISTURVABCE OF TREATED SOIL AFTER APPLICATION. KEEP OFF TREATED AREAS UNTIL COMPLETELY DRY.
(E). PROTECT TERMITICIDE SOLUTION, DISPERSED IN TREATED SOILS AND FILLS, FROM BEING DILUTED UNTIL GROUND-SUPPORTED SLABS ARE INSTALLED. USE WATERPROOF BARRIER ACCORDING TO EPA-REGISTERED LABEL INSTRUCTIONS.
(F). POST WARNING SIGNS IN AREAS OF APPLICATION.
(G). REAPPLY SOIL TREATMENT SOLUTION TO AREAS DISTURBED BY SUBSEQUENT EXCAVATION, GRADING, LANDSCAPING, OR OTHER CONSTRUCTION ACTIVITIES FOLLOWING APPLICATION.
(H). APPLY EXTRA TREATMENT TO STRUCTURE PENETRATION SURFACES SUCH AS PIPE OR DUCTS, AND SOIL PENETRATIONS SUCH AS GROUNDING RODS OR POSTS.
(I). DO NOT PERMIT SOIL GRADING OVER TREATED WORK.

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF WARE MALCOMB AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH WARE MALCOMB. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF WARE MALCOMB PRIOR TO THE COMMENCEMENT OF ANY WORK

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REGISTERED ARCHITECT CHRISTOPHER ROY STEP 20198 STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

SPECIFICATIONS

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# DIVISION 02 - SITEWORK- CONTINUED

## SECTION 02505- CONCRETE PAVING, WALKS, CURBS, GUTTERS, AND APPROACHES

1. SECTION INCLUDES
   A. CONCRETE PEDESTRIAN TRAFFIC SURFACES (WALKS, RAMPS, ETC.)
   B. CONCRETE VEHICULAR TRAFFIC SURFACES
   C. CONCRETE CURBS AND GUTTERS
   D. CONCRETE TRAFFIC APPROACHES

2. REFERENCE PUBLICATIONS AND STANDARDS
   A. GOVERNING AUTHORITY: APPLICABLE STANDARDS AND REGULATIONS OF STATE AND MUNICIPAL AGENCIES HAVING GOVERNING AUTHORITY OVER THE WORK SPECIFIED IN THIS SECTION SHALL TAKE PRIORITY OVER ITEMS SPECIFIED HEREIN AND SHOWN ON THE DRAWINGS UNLESS THE REQUIREMENTS SET FORTH HEREIN REQUIRE A SUPERIOR QUALITY WORK.
   B. MATERIAL STANDARDS: AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)
   C. CONCRETE STANDARDS: AMERICAN CONCRETE INSTITUTE (ACI): ACI_617 "STANDARD SPECIFICATIONS FOR CONCRETE PAVEMENT AND BASES" ACI 395 "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE"

3. SUBMITTALS
   A. TESTING LABORATORY REPORTS: FURNISH ELECTRONIC COPIES OF THE TEST REPORTS TO THE OWNER INDICATING RESULTS OF THE CYLINDER TEST.

4. BASIC MATERIALS
   A. CONCRETE AND REINFORCING STEEL: AS SPECIFIED IN CAST-IN-PLACE CONCRETE.

5. MISCELLANEOUS MATERIALS
   A. AIR ENTRAINING AGENT: ASTM C0260, MASTER BUILDERS OR EQUAL.
   B. DISPERSING ADMIXTURE: ASTM C_494, MASTER BUILDERS OR EQUAL.
   C. CURING COMPOUND: ASTM C_309, NO. 40W BY A. C. HORN COMPANY OR EQUAL.
   D. JOINT FILLER: ASTM D1751, PRE-MOLDED FIBER FILLER, UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
   E. JOINT SEALER: ASTM D_1190, CODE 2351.

6. CONCRETE MIX DESIGN
   A. CONTRACTOR SHALL EMPLOY AND PAY FOR, AS A PART OF THE CONTRACT PRICE, THE SERVICES OF AN OWNER APPROVED INDEPENDENT TESTING LABORATORY TO DETERMINE ACTUAL DESIGN MIX TO BE USED, BASED ON THE FOLLOWING: ALL CONCRETE: MINIMUM 3000 PSI AT 28 DAYS. REFER TO STRUCTURAL AND CIVIL DOCUMENTS FOR MORE RESTRICTIVE REQUIREMENTS.

7. INSPECTION OF SUBGRADE
   A. INSPECT SUBGRADES PREPARED AS SPECIFIED ELSEWHERE IN THESE SPECIFICATIONS AND REPORT ANY DEFICIENCIES TO THE OWNER BEFORE BEGINNING WORK. COMMENCEMENT OF WORK SHALL INDICATE ACCEPTANCE OF SUBGRADES BY THIS CONTRACTOR.

8. CONSTRUCTION
   A. GENERAL: DELIVER AND PLACE CONCRETE AS SPECIFIED IN CAST IN PLACE CONCRETE.
   B. CURBS AND GUTTERS:
      1. CONFIGURATIONS: CONSTRUCT TO CROSS_SECTIONAL DETAILS SHOWN ON DRAWINGS AND AT INDICATED LOCATIONS. CURBS MAY BE FULLY FORMED OR PULLED AND TROWELED TO CONFIGURATIONS SHOWN ON THE DRAWINGS.
      2. REINFORCEMENT: REINFORCE AS INDICATED ON THE DRAWINGS WITH CONTINUOUS REINFORCING BARS LAPPED 30 BAR DIAMETERS AND SECURELY TIED AT ALL SPLICES. METAL CHAIRS SHALL BE USED TO HOLD THE REINFORCING STEEL IN THE PROPER PLANE.
      3. EXPANSION JOINTS: CONSTRUCT 1/2" WIDE EXPANSION JOINTS WITH JOINT FILLER ACROSS LENGTHS OF CURB AT ALL TANGENT POINTS AND AT NOT MORE THAN TWENTY FOOT INTERVALS. CONSTRUCT ONE INCH WIDE EXPANSION JOINTS WITH JOINT FILLER BETWEEN CURBS AND CONCRETE PAVING. ALL FIXED OBJECTS, SUCH AS BUILDINGS, POLES, PIPES, CATCH BASINS, ETC., WITHIN OR ABUTTING THE CONCRETE SHALL BE SEPARATED FROM THE CONCRETE BY EXPANSION JOINTS.
      4. FINISHING: FINISH SURFACES WITH DENSE UNIFORM TEXTURE EQUAL TO BURLAP DRAG AND CROSS_SCORE WITH 1/4" DEEP CROSS JOINTS AT TEN FOOT INTERVALS WITH EDGES SMOOTHED 1/8".
      5. JOINTS: FILL EXPANSION JOINTS WITH JOINT FILLER EXCEPT FOR SPACE 3/4" DEEP AT SURFACE. AFTER CONCRETE HAS SET, CLEAN THE OPEN JOINT ABOVE FILLER AND FILL WITH JOINT SEALER IN ACCORDANCE WITH INSTRUCTIONS OF SEALER MANUFACTURER.
   C. TRAFFIC APPROACHES AND VEHICULAR TRAFFIC SURFACES:
      1. CONFIGURATION: CONSTRUCT TO CROSS-SECTIONAL DETAILS SHOWN ON DRAWINGS AND AT INDICATED LOCATIONS.
      2. REINFORCEMENT: REINFORCE WITH #3 MINIMUM SIZE REINFORCING BARS 18 INCHES ON CENTER BOTH WAYS, UNLESS OTHERWISE INDICATED OR NOTED ON THE DRAWINGS.
      3. EXPANSION AND CONSTRUCTION JOINTS: AT INTENTIONAL POINTS FOR STOPPAGE OF CONCRETE PLACING. USE EXPANSION JOINTS. AT UNINTENTIONAL POINTS OF STOPPAGE OF CONCRETE PLACING, USE CONTINUATION OF REINFORCING THROUGH JOINTS. CONSTRUCT 1/2 INCH WIDE EXPANSION JOINTS WITH JOINT FILLER AT LOCATIONS SHOWN ON THE DRAWINGS OR AT NOT MORE THAN TWENTY FOOT INTERVALS EACH WAY IF NOT SHOWN. CONSTRUCT 1/2 INCH WIDE EXPANSION JOINTS WITH JOINT FILLER BETWEEN CURBS AND CONCRETE PAVING. ALL FIXED OBJECTS, SUCH AS BUILDINGS, POLES, PIPES, CATCH BASINS, ETC., WITHIN OR ABUTTING THE CONCRETE SHALL BE SEPARATED FROM THE CONCRETE BY EXPANSION JOINTS.
      4. JOINT FILLING AND SEALING: FILL EXPANSION JOINTS WITH JOINT FILLER EXCEPT FOR SPACE 3/4" DEEP AT SURFACE. AFTER CONCRETE HAS SET, CLEAN THE OPEN JOINT ABOVE FILLER AND FILL WITH JOINT SEALER IN ACCORDANCE WITH INSTRUCTIONS OF SEALER MANUFACTURER.
      5. FINISHING: VIBRATE, SCREED AND FLOAT CONCRETE TO LEVEL AND TEST THE SURFACE, WHICH SHALL NOT VARY OVER 1/4" IN TEN FEET WHEN TESTED WITH TEN FOOT STRAIGHT EDGE. FINISH SURFACE TO GRITTY TEXTURE WITH BURLAP DRAG OR STRAIGHT CONTINUOUS STROKES WITH A STIFF BRISTLE PUSH BROOM. FINISH ALL EDGES SMOOTH WITH 1/8" OR 1/4" RADIUS.
   D. WALKS:
      1. CONFIGURATIONS: CONSTRUCT TO CROSS-SECTIONAL DETAILS SHOWN ON DRAWINGS AND AT INDICATED LOCATIONS.
      2. SAND CUSHION: CONCRETE SHALL BE PLACED OVER A SAND CUSHION PLACED ON THE STABILIZED SUBGRADE AS SHOWN ON THE DRAWINGS OR A MINIMUM OF 4" THICK IF NOT SHOWN ON THE DRAWINGS.
      3. REINFORCING: REINFORCE WITH 6 X 6 X W1.4, WWF, MINIMUM REINFORCING UNLESS OTHERWISE INDICATED OR NOTED ON THE DRAWINGS.
      4. EXPANSION JOINTS: CONSTRUCT EXPANSION JOINTS AS DETAILED IN LOCATIONS SHOWN ON THE DRAWINGS.
      5. FINISHING: FINISH SURFACES NOT NOTED ON THE DRAWINGS TO BE FINISHED OTHERWISE TO A "LIGHT BROOM" OR "BURLAP DRAG" GRITTY SURFACE. TOOL ALL JOINTS AND ALL EDGES TO PROVIDE A SMOOTH BORDER TO EACH SECTION OR DIVISION OF THE WALK. FINISH ALL VERTICAL SURFACES IN A MANNER THAT LEAVES THE EXPOSED SURFACES FREE OF "HONEYCOMBING" AND FORM MARKS. ANY DAMAGED SURFACES SHALL BE REPAIRED AND STONE-RUBBED TO MATCH ADJACENT FINISHED SURFACES OR REPLACED AT OWNER'S CONSTRUCTION MANAGER'S DISCRETION.

9. CURING CONCRETE
   A. APPLY A WHITE PIGMENTED TYPE CURING COMPOUND AT A UNIFORM RATE OF APPROXIMATELY 200 SQ. FT./ GALLON, OR AS RECOMMENDED BY CURING COMPOUND MANUFACTURER AS SOON AS THE FINISHING OPERATION HAS BEEN COMPLETED AND THE CONCRETE HAS LOST ITS WATER SHEEN. THE CURING PROCEDURE MUST PROTECT THE CONCRETE, INCLUDING ALL EXPOSED SURFACES AGAINST LOSS OF MOISTURE AND RAPID TEMPERATURE CHANGE FOR A PERIOD OF NOT LESS THAN FOUR DAYS FROM THE BEGINNING OF THE CURING OPERATION AND WITHOUT DAMAGE TO, OR MARKING OF THE FINISHED CONCRETE SURFACE. TRAFFIC SHALL NOT BE ALLOWED ON FINISHED CONCRETE FOR A MINIMUM PERIOD OF SEVEN DAYS.

10. TESTING
   A. INDEPENDENT TESTING LABORATORY: OWNER SHALL EMPLOY AND PAY FOR THE SERVICES OF AN INDEPENDENT TESTING LABORATORY TO PERFORM CONCRETE CYLINDER TESTING. TEST CYLINDERS SHALL BE TAKEN AND CURED BY THE CONTRACTOR AND TESTED BY THE TESTING LABORATORY FOR EACH DIFFERENT CLASS OF CONCRETE POURED IN ANY ONE DAY. CYLINDERS SHALL BE TAKEN IN ACCORDANCE WITH ASTM C31, AND CURED AND TESTED IN ACCORDANCE WITH ASTM C39. ONE SET OF THREE CYLINDERS IS REQUIRED FOR EACH 50 CUBIC YARDS OF CONCRETE OR LESS, PLACED IN ANY ONE DAY. ONE CYLINDER SHALL BE TESTED AT 7 DAYS, ONE CYLINDER SHALL BE TESTED AT 28 DAYS AND ONE CYLINDER SHALL BE HELD AS A SPARE FROM EACH SET OF THREE CYLINDERS AS SPECIFIED ABOVE.
   B. LABORATORY TESTS:
      1. SLUMP TESTS: SLUMP TESTS SHALL BE TAKEN BY THE CONTRACTOR WHEN CYLINDERS ARE TAKEN, AND SHALL SHOW MAXIMUM SLUMP 5" AND MINIMUM SLUMP 3".
      2. AIR ENTRAINMENT: AIR CONTENT BY VOLUME: 5% TO 7% BASED ON MEASUREMENTS MADE IN CONCRETE MIXTURES AT POINT OF DISCHARGE AT JOB SITE AT TIME SLUMP TESTS ARE MADE. AIR CONTENT BY VOLUME SHALL BE DETERMINED IN ACCORD WITH ASTM C231.

11. CLEANING CONCRETE
   A. CONCRETE APPROACHES, SIDEWALKS AND RELATED WORK SHALL BE HOSED DOWN WITH WATER, SCRUBBED WITH FIBER BRUSHES AND APPROPRIATE CLEANER, ALLOWED TO DRY AND BE LEFT BROOM CLEAN AND IN CONDITION ACCEPTABLE TO THE OWNER. DO NOT POWER WASH SIDEWALKS.

## SECTION 02511 - "ASPHALTIC" CONCRETE PAVING

1. SECTION INCLUDES
   A. PAVING BASE
   B. BASE COURSE AND SURFACE COURSE
2. REFERENCE STANDARDS
   A. AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS (AASHO)
   B. AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)
   C. GOVERNING AUTHORITY: APPLICABLE PUBLICATIONS OF GOVERNING BODIES HAVING JURISDICTION OVER THE WORK
3. SUBMITTALS
   A. SUBMIT DESIGN MIX TEST REPORTS TO OWNER PER SUBMITTAL REQUIREMENTS.
4. MATERIALS
   A. SUB-BASE: IF REQUIRED; AS SHOWN ON THE SITE PLAN (SP) DRAWINGS AND SPECIFIED IN OTHER SECTIONS OF THESE SPECIFICATIONS
   B. BASE COURSE (BINDER): UNLESS OTHERWISE SHOWN ON THE DRAWINGS; UNIFORM MIX OF COARSE AGGREGATE AND ASPHALT AS DETERMINED BY "DESIGN MIX"
   C. SURFACE COURSE: UNLESS OTHERWISE SHOWN ON THE DRAWINGS; UNIFORM MIX OF COARSE AGGREGATE AND FINE AGGREGATE (PEA GRAVEL WILL NOT BE ACCEPTABLE), MINERAL FILLER AND ASPHALT AS DETERMINED BY "DESIGN MIX".
   D. DESIGN MIXES: CONTRACTOR EMPLOY AND PAY FOR THE SERVICES OF AN OWNER-APPROVED INDEPENDENT TESTING LABORATORY TO DETERMINE DESIGN MIXES FOR BASE AND SURFACE COURSES; INCLUDING ASPHALT BITUMEN CONTENT; ASTM D2172, LATEST EDITION, ENTITLED, "QUANTITATIVE EXTRACTION OF BITUMEN FROM BITUMINOUS PAVING MIXTURES"

5. GRADE CONTROL
   A. ESTABLISH AND MAINTAIN LINES AND GRADES SHOWN ON DRAWINGS BY MEANS OF LINE AND GRADE STAKES.

6. TRANSPORTATION
   A. TRANSPORT PAVING MIXES FROM APPROVED MIXING PLANT TO SITE IN TIGHT VEHICLES WITH METAL BOTTOMS PREVIOUSLY CLEANED OF FOREIGN MATERIALS. VEHICLES SHALL BE SUITABLY INSULATED TO AVOID HEAT LOSSES. COVER EACH LOAD TO PREVENT COOLING AND LOSS OF INGREDIENTS.

7. PLACING
   A. GENERAL: THICKNESS SHOWN ON CIVIL DRAWINGS. UNLESS OTHERWISE SHOWN ON THE DRAWINGS, PLACE ASPHALTIC CONCRETE IN TWO COURSES; FIRST A COARSE GRADED BASE COURSE, AND SECOND A FINE GRADED SURFACE COURSE. APPLY BASE COURSE TO PREPARED SUB-BASE (WHEN APPLICABLE) WHICH HAS BEEN PRIMED WITH ASPHALT MC-1, APPLICATION TEMPERATURE 50 TO 120 DEGREES F, AT A RATE OF 0.15 TO 0.40 GAL/SQ YD. APPLY SURFACE COURSE TO BASE COURSE TO WHICH HAS BEEN APPLIED A TACK COAT OF ASPHALT RC-2, APPLICATION TEMPERATURE 100 TO 175 DEGREES F, AT RATE OF 0.05 TO 0.25 GAL/SQ YD. PLACE EACH COURSE UNDER TEMPERATURE CONDITIONS OF 40 TO 90 DEGREES F.
   B. MEANS: DUMP AND SPREAD MIXTURE ON PRIMED BASE WITH SPREADING AND FINISHING MACHINE, SO THAT AFTER COMPACTION, SURFACE WILL BE SMOOTH, OF UNIFORM DENSITY AND MEETS REQUIREMENTS FOR TYPICAL CROSS-SECTION SHOWN. OTHER PLACING MEANS MAY BE PROPOSED.
   C. TIME AND TEMPERATURE: PLACE AND INITIALLY ROLL DURING DAYLIGHT HOURS. MIXTURE PLACING TEMPERATURE; BETWEEN 225 AND 325 DEGREES F.
   D. PROTECTION OF CURBS AND GUTTERS: PREVENT SPLATTERING OF ADJACENT CURBS, GUTTER, CONCRETE PAVING AND STRUCTURES. HAND SPREADING MAY BE EMPLOYED WHERE MACHINE IS IMPRACTICAL.
   E. FINISH GRADES: APPROXIMATELY 6 INCHES BELOW ADJACENT CONCRETE SIDEWALKS, AND/OR CURBS, EXCEPT AS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS; TRUE TO GRADES SHOWN AND STRAIGHT WITHIN 1/4 INCH IN 10 FEET WHEN CHECKED WITH A STRAIGHT EDGE. NO "BIRD BATHS" WILL BE ALLOWED.

8. ROLLING
   A. GENERAL: AFTER ROLLING WITH MEDIUM WEIGHT STEEL-WHEELED ROLLER, ROLL WITH PNEUMATIC, THREE WHEEL, OR TANDEM ROLLERS LONGITUDINALLY AT SIDES AND PROCEED TOWARD CENTER OF PAVEMENT, OVERLAPPING ON SUCCESSIVE TRIPS BY AT LEAST HALF WIDTH OF REAR WHEELS. ALTERNATE TRIPS OF ROLLER SHALL BE SLIGHTLY DIFFERENT IN LENGTH.
   B. COMPRESSION AND ROLLER MARKS: ROLL UNTIL NO FURTHER COMPRESSION CAN BE OBTAINED AND ROLLER MARKS ARE ELIMINATED. IF REQUIRED, ROLL DIAGONALLY IN EACH DIRECTION WITH TANDEM ROLLER WITH SECOND DIAGONAL ROLLING CROSSING LINE OF FIRST ROLLING.
   C. PREVENTION OF MIXTURE ADHESION TO ROLLER: KEEP WHEELS MOISTENED WITH WATER; EXCESSIVE USE OF WATER WILL NOT BE PERMITTED. DO NOT PERMIT ROLLERS TO STAND ON PAVEMENT WHICH HAS NOT BEEN FULLY COMPACTED AND WHICH HAS NOT COOLED TO ATMOSPHERIC TEMPERATURE.
   D. DISPLACEMENT: KEEP MOVEMENT OF ROLLER SLOW ENOUGH TO AVOID DISPLACEMENT OF MIXTURE. CORRECT ANY DISPLACEMENT AT ONCE BY USE OF RAKES AND ADDITION OF FRESH MIXTURE. E. PRECAUTIONS: PREVENT DROPPING OF OIL, GASOLINE AND GREASE ON PAVEMENT.
   E. HAND OPERATIONS: THOROUGHLY COMPACT EDGES OF PAVEMENT ALONG CURBS, HEADERS, APRONS, MANHOLES, VALVE BOXES AND SIMILAR PLACES NOT ACCESSIBLE TO ROLLER WITH LIGHTLY OILED HAND-OPERATED VIBRATING ROLLERS OR MECHANICAL TAMPERS.

9. SPECIAL TESTING
   A. EXTRACTION AND GRADATION TEST: ASTM D2172 FOR EACH TYPE.
   B. FIELD-IN-PLACE DENSITY TEST: ASTM D1188 FOR EACH TYPE.
   C. THICKNESS TEST: DETERMINE BY TEST BORINGS. MAKE ONE TEST FOR EACH 5,000 SQ FT OF PAVING SURFACE. IF AVERAGE THICKNESS IS DEFICIENT BY NO MORE THAN 1/4 INCH, AND NO INDIVIDUAL THICKNESS IS DEFICIENT BY MORE THAN 5/8 INCH, INSTALLATION WILL BE HELD TO MEET REQUIREMENTS. IF AVERAGE THICKNESS IS DEFICIENT BY MORE THAN 1/4 INCH, OR IF ANY INDIVIDUAL THICKNESS DETERMINATION IS DEFICIENT BY MORE THAN 5/8 INCH, PAVEMENT THICKNESS WILL BE HELD TO NOT MEET REQUIREMENTS. DEFICIENT AREAS SHALL BE DEFINED, REMOVED AND REPLACED, OR ADJUSTED TO DESIGN THICKNESS BY METHODS ACCEPTABLE TO THE OWNER.

## SECTION 02580 - PAVEMENT MARKING

1. GENERAL
   A. MARKING PAINT SHALL CONFORM TO AASHTO M248 (CHLORINATED RUBBER-ALKYD), TYPE II. APPLY AS 4" WIDE STRIPES (OR SYMBOLS AS INDICATED) IN ONE COAT OF 125 SQ. FT. PER GALLON. COLOR SHALL BE WHITE. HANDICAPPED DETAILS SHALL COMPLY WITH THE LATEST PROVISIONS OF THE AMERICANS WITH DISABILITIES ACT AND LOCAL ACCESSIBILITY STANDARDS.
   B. DUST, CLAY, SILT, AND EXCESS SAND SHALL BE REMOVED BY SWEEPING FROM PAVEMENT TO BE MARKED PRIOR TO APPLICATION OF PAINT.

## SECTION 02830 - ORNAMENTAL FENCES AND GATES

1. MATERIALS
   A. WOOD RAIL FENCE:
   B. FASTENERS: ALL FASTENERS SHALL BE STAINLESS STEEL WITH A ZINC DICHROMATE COATING FOR ENHANCED CORROSION RESISTANCE. PHILLIPS HEAD SCREWS SHALL BE USED TO ATTACH THE RAILS TO THE POSTS.
   C. ACCESSORIES: ALL CASTINGS USED FOR POST CAPS, RAIL/BASE ATTACHMENTS AND LATCHES SHALL BE MADE FORM EITHER ZINC OR ALUMINUM. ONLY STAINLESS STEEL FASTENERS MAY BE USED WITH THESE ACCESSORIES. ALL ACCESSORIES SHALL BE PAINTED TO MATCH TO MATCH THE FENCE.

2. PRODUCTS
   A. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY AVAILABLE MANUFACTURERS OFFERING PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK WHICH MEET THE FOLLOWING MINIMUM REQUIREMENTS.
   B. COMPONENTS:
      1. END, CORNER, LINE AND GATE POSTS: 4 BY 4 INCHES NOMINAL CEDAR
      2. HORIZONTAL RAILS: 1 BY 4 INCHES NOMINAL CEDAR (5 RAILS)
      3. POST SPACING: 4 FEET 0 INCHES ON CENTER.
      4. POST DEPTH: 18" DEEP BY 12" DIAMETER CONCRETE ENCASED

3. CONSTRUCTION
   A. FENCE: FENCING SHALL BE MANUFACTURED ACCORDING TO THE INDUSTRY STANDARD METHODS COMPLYING WITH FENCING DETAILS INCLUDED IN THE DRAWINGS.
   B. GATES: GATES SHALL BE MANUFACTURED ACCORDING TO HEAVY DUTY USE METHODS. GATES SHALL BE SELF-CLOSING WITH BUMPER PLATE AND CHILD RESISTANT LATCH. INSTALL GATES, LEVEL, PLUMB, AND SECURE FOR FULL OPENING WITHOUT INTERFERENCE. ATTACH HARDWARE USING TAMPER-RESISTANT OR CONCEALED MEANS. INSTALL GROUND-SET ITEMS IN CONCRETE FOR ANCHORAGE. ADJUST HARDWARE FOR SMOOTH OPERATION AND LUBRICATE WHERE NECESSARY.
   C. STRENGTH: ASSEMBLED SECTIONS MUST BE ABLE TO SUPPORT A MINIMUM LOAD OF 400 POUNDS AT THE MID-POINT OF ANY HORIZONTAL RAIL WITHOUT PERMANENT DEFORMATION.

5. WARRANTY
   A. THE ENTIRE FENCE SYSTEM SHALL HAVE A 5 YEAR WARRANTY AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP.

## SECTION 02854 - PARKING BUMPERS (WHEEL STOPS)

1. SECTION INCLUDES
   A. PARKING BUMPER (WHEEL STOP)

2. WHEEL STOPS
   A. . PRECAST CONCRETE, SEMI_CIRCULAR OR BEVELED SQUARE IN CROSS SECTION, 8' 0" LONG X 6" HIGH X 8" WIDE, WITH HOLES FOR THREE DOWELS CAST THROUGH EACH UNIT, AND TWO 6 INCH X 3/4 INCH DRAINAGE SLOTS.

3. DOWELS
   A. NOT LESS THAN 2 - 3/4" ROUND X 12" LONG (MINIMUM) STEEL DOWELS AS RECOMMENDED BY WHEEL STOP MANUFACTURER.

4. GENERAL
   A. INSTALL WHEEL STOPS IN LOCATIONS AND IN ACCORD WITH DETAILS SHOWN ON THE DRAWINGS.

5. INSTALLATION
   A. COUNTERSINK STEEL DOWELS TO A POINT 1/2" TO 3/4" BELOW THE TOP SURFACE OF THE WHEEL STOP AND SET IN SUCH A MANNER AS TO AVOID CHIPPING OR CRACKING THE CONCRETE DURING INSTALLATION, AND SEAL REVEAL WITH SILICONE CAULKING FLUSH.

6. CLEAN UP
   A. UPON COMPLETION OF WORK OF THIS SECTION, REMOVE RELATED DEBRIS FROM PREMISES.

# DIVISION 03 - CONCRETE

## SECTION 03300 CAST-IN-PLACE CONCRETE

1. SCOPE
   A. THE CONTRACTOR SHALL FURNISH LABOR, MATERIALS AND EQUIPMENT NECESSARY TO INSTALL ALL ITEMS OF CAST-IN-PLACE CONCRETE, AND ALL NECESSARY ITEMS AS SHOWN ON THE DRAWINGS, INCLUDING ANCHOR BOLTS FOR COLUMNS, ITEMS SPECIFIED HEREIN, AND ITEMS REQUIRED FOR A COMPLETE INSTALLATION.

2. REFERENCES:
   A. THE ACI "MANUAL OF CONCRETE PRACTICE" AND THE CRSI "MANUAL OF STANDARD PRACTICE" SHALL APPLY UNLESS MODIFIED HEREIN.

3. MATERIALS
   A. CEMENT: THE CEMENT USED SHALL BE PORTLAND CEMENT, CONFORMING TO ASTM C 150, TYPE I. ONE BRAND SHALL BE USED FOR THE COMPLETE PROJECT.
   B. HIGH EARLY STRENGTH CONCRETE MAY BE USED AT GENERAL CONTRACTOR'S DISCRETION.
   C. AGGREGATES:
      1. COARSE AGGREGATE SHALL CONFORM TO ASTM C-33 SPECIFICATIONS WITH MAXIMUM SIZE NO. 57. THE MATERIAL SHALL CONSIST OF CRUSHED STONE, GRAVEL, OR OTHER HARD, STRONG, DURABLE, UNCOATED PIECES.
      2. FINE AGGREGATE SHALL CONFORM TO ASTM C-33, AND MAY BE NATURAL SAND OR MANUFACTURED SAND.
   D. ADMIXTURES:
      1. AIR ENTRAINMENT AGENTS CONFORMING TO ASTM C-260 SHALL BE USED IN CONCRETE EXPOSED TO WEATHER, AND MAY BE USED IN ALL CONCRETE ON THIS PROJECT. AIR ENTRAINING ADMIXTURES SHALL BE USED TO PRODUCE 3% TO 6% AIR BY VOLUME IN THE CONCRETE.
      2. HIGH-RANGE WATER REDUCING ADMIXTURE (SUPER PLASTICIZER) MEETING REQUIREMENTS OF ASTM C 494 MAY BE USED AT THE DISCRETION OF THE CONTRACTOR.
   E. CONCRETE SEALERS:
      1. MATERIALS:
         a. BASE SEALER: MICRO GUARD CONCRETE CLEAR WATERPROOFING SEALER, # AD702.
         b. SURFACE SEALER: MICRO GUARD HARD TILE CLEAR MATTE FINISH TREATMENT, #AD708.
         c. ADMIXTURE: MICRO GRIP ANTI-SKID FLOOR MEDIA ADDITIVE, # AD5-050.
   F. WATER: WATER USED FOR MIXING OF CONCRETE SHALL BE POTABLE.
   G. REINFORCING BARS: ALL REINFORCING BARS SHALL CONFORM TO ASTM A615 - GRADE 60. ALL BARS SHALL BE FREE OF LOOSE AND/OR EXCESSIVE RUST OR OTHER MATERIALS WHICH WILL PREVENT BOND.
   H. EXPANSION JOINT MATERIAL: EXPANSION JOINT MATERIAL SHALL CONFORM TO ASTM D1751.
   I. MILL TESTS: REPORTS MAY BE REQUIRED ON ANY AND ALL MATERIAL AT THE ENGINEER'S DISCRETION AND DIRECTION. COSTS OF THESE REPORTS SHALL BE BORNE BY THE CONTRACTOR.
   J. NO FLY ASH OR CALCIUM CHLORIDE SHALL BE USED ON THIS PROJECT.

4. CONCRETE QUALITY
   A. STRENGTH: ALL CAST-IN-PLACE CONCRETE SHALL HAVE A MAXIMUM WEIGHT OF 150 POUNDS CUBIC FOOT AND MINIMUM STRENGTH AT 28 DAYS (ULTIMATE STRENGTH OF 3000 PSI).
   B. PROPORTIONING OF THE CONCRETE MIXTURE:
      1. THE PROPORTION OF THE AGGREGATE TO CEMENT FOR ANY CONCRETE SHALL BE SUCH AS TO PRODUCE A MIXTURE WHICH WILL WORK READILY INTO THE CORNERS AND ANGLES OF THE FORMS AND AROUND REINFORCEMENT WITH THE METHOD OF PLACING EMPLOYED ON THE WORK, BUT WITHOUT PERMITTING THE MATERIALS TO SEGREGATE OR EXCESS FREE WATER TO COLLECT ON THE SURFACE.
      2. THE MATERIALS USED FOR THE CONCRETE SHALL BE MEASURED BY WEIGHT. MAXIMUM SLUMP SHALL BE 4".
      3. MEASURE, BATCH, MIX AND DELIVER CONCRETE WITH PIGMENTS, WHERE NOTED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.
   C. TESTS:
      1. THE CONTRACTOR SHALL ASSIST OWNER'S TESTING LABORATORY TO RECEIVE, MARK, CURE, AND TEST CYLINDERS IN ACCORDANCE WITH ASTM C-39. THE TEST REPORT BY THE LABORATORY SHALL IDENTIFY THE LOCATION OF THE CONCRETE SAMPLED, DATE, SLUMP, AIR CONTENT AND OTHER NECESSARY INFORMATION. THE LABORATORY SHALL SEND ELECTRONIC COPIES OF THE REPORTS TO THE OWNER.
      2. THE OWNER SHALL BE RESPONSIBLE AND PAY FOR ALL TESTS. EQUIPMENT NEEDED AT THE SITE SHALL BE FURNISHED BY THE CONTRACTOR.
      3. ROUTINE TESTS OF CONCRETE SHALL CONSIST OF:
         a. SLUMP TEST FOR EACH LOAD OF READY-MIXED CONCRETE.
         b. COMPRESSIVE STRENGTH TEST FOR EACH DAY'S POUR AND/OR EACH 50 CUBIC YARDS OF CONCRETE POURED. THIS TEST SHALL CONFORM TO ASTM C-31, AND CONSIST OF 4 CYLINDERS.

5. INSPECTIONS
   A. OWNER'S APPROVAL: THE CONTRACTOR SHALL NOTIFY THE OWNER 48 HOURS PRIOR TO SCHEDULE PLACEMENT OF CONCRETE. THE FORMS, STEEL AND OTHER CONDITIONS MUST BE APPROVED PRIOR TO PLACEMENT OF CONCRETE.

6. MIXING AND PLACING CONCRETE
   A. ALL CONCRETE FOR THIS PROJECT SHALL BE FROM AN APPROVED CENTRAL MIXING PLANT. MIXING AND DELIVERY SHALL CONFORM TO ASTM C-94.
   B. CONCRETE SHALL BE CONVEYED FROM THE MIXER TO THE PLACE OF FINAL DEPOSIT BY METHODS WHICH WILL PREVENT THE SEPARATION OR LOSS OF MATERIALS
   C. CONCRETE SHALL BE DEPOSITED AS NEARLY AS PRACTICABLE IN ITS FINAL POSITION TO AVOID SEGREGATION DUE TO RE-HANDLING OR FLOWING. WHEN CONCRETING IS ONCE STARTED, IT SHALL BE CARRIED ON AS A CONTINUOUS OPERATION UNTIL THE PLACING OF THE PANEL OR SECTION IS COMPLETED.
   D. CONCRETE SHALL BE MAINTAINED IN A MOIST CONDITION FOR SEVEN (7) DAYS AFTER PLACING BY ONE OF THE FOLLOWING METHODS:
      a. WET COVERINGS
      b. SPRAYING
      c. CURING COMPOUND
      1. CURING METHOD SHALL BE COMPATIBLE WITH FLOOR COATINGS OR COVERINGS.
      2. ASHFORD FORMULA MAY BE USED IN LIEU OF CURING COMPOUND (PART 3). THIS MATERIAL SHALL BE APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
   E. ADEQUATE PRECAUTIONS SHALL BE TAKEN FOR COLD WEATHER OR HOT WEATHER CONCRETING. (ACI 306 OR ACI 305).

7. FORM WORK AND CONSTRUCTION DETAILS
   A. FORMS
      1. FORMS SHALL CONFORM TO SHAPES, LINES AND DIMENSIONS OF THE MEMBERS AS CALLED FOR ON THE PLANS, AND SHALL BE SUFFICIENTLY TIGHT TO PREVENT THE LEAKAGE OF MORTAR. THEY SHALL BE PROPERLY BRACED OR TIED TOGETHER SO AS TO MAINTAIN POSITION AND SHAPE.
      2. FORM MATERIAL SHALL BE OF:
         a. PLYWOOD: APA PLYFORM CONFORMING TO PS 174
         b. METAL FORMS
      3. BEFORE PLACING THE CONCRETE AND REINFORCING STEEL, THE CONTACT SURFACES OF ALL FORMS SHALL BE THOROUGHLY WETTED WITH WATER OR COATED WITH APPROVED FORM OIL. THE FORM OIL SHALL BE APPLIED WITH A BRUSH OR SPRAY SO AS TO COVER THE FORM EVENLY WITHOUT EXCESS DRIP. FORM COATING MATERIAL USED TO COAT FORMWORK TO FACILITATE THE REMOVAL THEREOF SHALL NOT CAUSE SOFTENING OR PERMANENT STAINING OF THE CONCRETE SURFACE.
   B. REMOVAL OF FORMS: FORMS NOT REQUIRED FOR STRUCTURAL SUPPORT MAY BE REMOVED AS SOON AS CONCRETE HAS HARDENED SUFFICIENTLY TO RESIST DAMAGE DURING REMOVAL OF FORMS.

8. FINISHES
   A. STEEL TROWEL FINISH SHALL BE APPLIED TO ALL FLOOR SLABS IN THE BUILDING, UNLESS OTHERWISE NOTED.
   B. LIGHT BROOM FINISH PERPENDICULAR TO TRAFFIC SHALL BE APPLIED TO ALL EXTERIOR WALKWAYS. A 3/4" TRANSVERSE CONTRACTION JOINT SHALL BE FORMED WITH A TOOL DESIGNED FOR THAT PURPOSE AT EQUAL INTERVALS NOT EXCEEDING THE WIDTH OF THE WALKWAY. ALL EDGES ADJOINING THE FINAL GROUND LINE SHALL BE ROUNDED WITH A 1/4" EDGER. EXPANSION JOINTS SHALL NOT EXCEED 20'.
   C. CONCRETE SEALER:
      1. STEP ONE, CONCRETE CLEAR SEALER:
         a. CONCRETE TO BE SEALED MUST HAVE AGED A MINIMUM OF 28 DAYS PRIOR TO SEALER INSTALLATION.
         b. IMMEDIATELY PRIOR TO APPLYING CONCRETE SEALER, THE CONCRETE MUST BE THOROUGHLY CLEANED. THE SURFACE SHOULD BE SWEPT THEN SCRUBBED USING ROTARY FLOOR MACHINE. THE SURFACE MUST BE RINSED AFTER CLEANING UNTIL THE RINSE WATER IS COMPLETELY CLEAN. AFTER DRYING, IT SHOULD BE INSPECTED CLOSELY, AND ADDITIONAL OR SPOT CLEANING SHOULD BE PERFORMED IF NECESSARY.
         c. SURFACES MUST BE PROPERLY PREPARED AS PRESCRIBED IN MANUFACTURER'S INSTRUCTIONS. SURROUNDING AREAS AND ADJACENT SURFACES MUST BE MASKED OR PROTECTED FROM OVERSPRAY, SPILLS, TRACKING, AND EQUIPMENT CONTACT. THE WORK AREA SHOULD BE ROPED OFF AND CLOSED TO TRAFFIC.
         d. IMMEDIATELY PRIOR TO USE, THE LIQUID MATERIAL MUST BE THOROUGHLY POWER-MIXED AS DESCRIBED IN MANUFACTURER'S INSTRUCTIONS. APPLICATION MUST BE MADE FULL STRENGTH (UN-THINNED) AT THE COVERAGE RATE RECOMMENDED AND WITH EQUIPMENT RECOMMENDED BY MANUFACTURER'S INSTRUCTIONS.
         e. BASE SEALER MUST BE APPLIED THINLY AND UNIFORMLY. A WET EDGE SHOULD BE MAINTAINED, AND OVERLAP CONTROLLED. MATERIAL SHOULD NOT BE OVER-APPLIED OR ALLOWED TO PUDDLE OR COLLECT IN JOINT INDENTATIONS.
         f. BASE SEALER MUST BE ALLOWED TO DRY COMPLETELY, NORMALLY A MINIMUM OF 12 TO 48 HOURS, BEFORE IT IS SUBJECTED TO TEMPERATURES BELOW 42 DEGREES FAHRENHEIT OR TO WATER FROM ANY SOURCE.
      2. FINAL STEP, CLEAR SEALER:
         a. IMMEDIATELY PRIOR TO USE, THE LIQUID MATERIAL MUST BE THOROUGHLY POWER-MIXED AS DESCRIBED IN MANUFACTURER'S INSTRUCTIONS. APPLICATION MUST BE MADE FULL STRENGTH (UN-THINNED) AT THE COVERAGE RATE RECOMMENDED AND WITH EQUIPMENT RECOMMENDED BY MANUFACTURER'S INSTRUCTIONS.
         b. HARD TILE SEALER SHALL BE APPLIED THINLY AND UNIFORMLY UTILIZING A CONVENTIONAL FINE MIST SPRAYER PER MANUFACTURERS WRITTEN INSTRUCTIONS.
         c. WHILE SPRAYING CLEAR SEALER, BROADCAST ANTI-SKID FLOOR MEDIA ADDITIVE USING MANUFACTURER'S SPECIAL APPLICATION GUN, WITH COVER LAYER OF HARD TILE SEALER TO COAT SURFACE.
         d. THE FINAL COAT MAY BE WALKED ON THE NEXT DAY, BUT FIVE DAYS SHOULD ELAPSE BEFORE THE SURFACE IS SUBJECTED TO HEAVY USE OR ROUGH TREATMENT.

   (D). VARIATION IN CONCRETE SLABS SHALL NOT EXCEED 1/8" IN TEN FEET FROM TRUE GRADE.
   (E). ALL EXPOSED CONCRETE, EXCEPT PATIO, WALKWAYS AND FLOOR SLABS, SHALL HAVE A RUBBED FINISH, SATISFACTORY TO THE OWNER'S CONSTRUCTION MANAGER. "WHITE WASHING" BY USE OF SEPARATELY MIXED GROUT WILL NOT BE PERMITTED.

9. SHOP DRAWINGS
   (A). THE CONTRACTOR SHALL PREPARE AND SUBMIT FOR REVIEW SHOP DRAWINGS ACCORDING TO THE REQUIREMENTS OF THE GENERAL CONDITIONS.

10. REINFORCEMENT
   (A). REINFORCEMENT SHALL BE ACCURATELY PLACED AND SECURELY SUPPORTED ON METAL OR PLASTIC CHAIRS.

# DIVISION 04 - MASONRY

## SECTION 04210 - BRICK MASONRY

1. SECTION INCLUDES
   (A). BRICK MASONRY
   (B). JOINT REINFORCING
   (C). BUILT IN ITEMS FURNISHED AND LOCATED BY OTHER TRADES.

2. REFERENCE STANDARDS
   (A). AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)
   (B). BRICK INSTITUTE OF AMERICA (BIA): "TECHNICAL NOTES ON BRICK CONSTRUCTION"

3. MOCK-UP
   (A). CONSTRUCT BRICK MASONRY MOCK—UP, 4 FEET LONG BY 4 FEET WIDE, WHICH INCLUDES MASONRY ANCHOR ACCESSORIES, SILL FLASHINGS, AND CORNER CONDITION.
   (B). LOCATE WHERE DIRECTED BY OWNER.
   (C). MOCK-UP MAY REMAIN AS PART OF THE WORK.

4. BRICK MASONRY UNITS
   (A). FACE BRICK USED FOR THE PROJECT SHALL BE AS NOTED ON THE FINISH SCHEDULE IN THE DRAWINGS, NORMAN SIZE, OF A CONSISTENT COLOR RANGE APPROVED BY OWNER'S CONSTRUCTION MANAGER.
   (B). COMMON BRICK: CONTRACTOR MAY, AT HIS OPTION, SUPPLY AND INSTALL A COMMON, MODULAR SIZE FACE BRICK WHERE BRICK WILL BE CONCEALED UPON PROJECT COMPLETION. ALL BRICK EXPOSED TO VIEW MUST BE AS SELECTED BY OWNER AS NOTED ABOVE.

5. ACCESSORIES
   (A). JOINT REINFORCING: HOHMANN DE BERNARD PRODUCTS, VENEER ANCHORS DW-10 WITH GALVANIZED MASONRY WIRE TIES, VEE—TIES", LENGTHS AS REQUIRED FOR 2%" MINIMUM EMBEDDED TIE.
   (B). CELLULAR PLASTIC WEEP/VENT: HOHMANN AND BERNARD PRODUCTS — QUADRO VENT
   (C). CAVITY DAMAGE MATERIAL: MORTAR NET USA, LTD — MORTAR NET
   (D). MISCELLANEOUS: AS SHOWN ON THE DRAWINGS OR AS REQUIRED TO PROVIDE MASONRY INSTALLATIONS WHICH ARE WELL TIED.

6. MORTAR
   (A). TYPE: MINIMUM COMPRESSIVE STRENGTH OF 1800 PSI; ASTM C476, TYPE M OR S. MASONRY CEMENT WILL NOT BE ALLOWED.
   (B). MATERIALS:
      1). PORTLAND CEMENT: ASTM C150, TYPE 1, ONE BRAND ONLY.
      2). HYDRATED LIME: ASTM C207, TYPE S
      3). SAND: WELL SCREENED, CLEAN, HARD, SILICEOUS PARTICLES FREE FROM LOAM, ALKALI, SALT, ORGANIC MATTER AND OTHER IMPURITIES; COMPOSED OF GRAINS OF VARYING SIZE WHICH PASS AN 8—MESH SCREEN, UNIFORMLY GRADED FROM COARSE TO FINE.
      4). WATER: CITY TAP WATER.
   (C). COLOR: AS NOTED OTHERWISE ON FINISH SCHEDULE ON DRAWINGS.

7. GROUT
   (A). TYPE: MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI; ASTM C476, TYPE M OR S.

8. PRODUCT DELIVERY, STORAGE AND HANDLING
   (A). STORE MORTAR MATERIALS ON DUNNAGE IN A DRY PLACE. MASONRY UNITS STORES ABOVE GROUND ON LEVEL PLATFORMS. COVER AND PROTECT UNITS AND ACCESSORIES AS NECESSARY FROM ELEMENTS.

9. CONDITIONS
   (A). HOT WEATHER INSTALLATION: PROTECT MASONRY, ERECTED WHEN AMBIENT AIR TEMPERATURE IS MORE THAN 90 F, IN SHADE, AND RELATIVE HUMIDITY IS LESS THAN 50%, FROM DIRECT EXPOSURE TO WIND AND SUN FOR 48 HR AFTER INSTALLATION, AND RAIN FOR 12 HOURS AFTER INSTALLATION. ALL WORK SHALL COMPLY WITH ACI 530.11 ASCE 6/TMS 602.
   (B). COLD WEATHER INSTALLATION: DO NOT BUILD UPON FROZEN WORK. BEFORE ERECTING MASONRY DURING TEMPERATURES BELOW 40 F., SUBMIT A WRITTEN STATEMENT AND RECEIVE ACCEPTANCE OF METHODS PROPOSED TO HEAT MASONRY MATERIALS AND PROTECT MASONRY FROM FREEZING. DO NOT LAY MASONRY AT TEMPERATURES BELOW 35 F. UNLESS AUTHORIZED IN WRITING. ALL WORK SHALL COMPLY WITH ACI 530.01/ASCE 6/TMS 602.

10. PREPARATION (MORTAR)
   (A). ACCURATELY MEASURE AND MIX MORTAR MATERIALS WITH WATER TO PRODUCE WETTEST WORKABLE CONSISTENCY POSSIBLE. PLACE MORTAR IN FINAL POSITION WITHIN 2-1/2 HR AFTER MIXING; DISCARD MORTAR NOT USED OR THAT HAS STARTED TO SET WITHIN THIS TIME.

11. SCAFFOLDING
   (A). PROVIDE SCAFFOLDING NECESSARY FOR MASONRY WORK AND MAKE SAME AVAILABLE TO OTHER TRADES REQUIRED TO EXECUTE WORK IN CONJUNCTION WITH MASONRY WORK.
   (B). DESIGN AND ENGINEERING OF FORMWORK AND SCAFFOLDING AS WELL AS ¡ITS CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ADEQUATELY SHORE BLOCK BEAMS, AND SIMILAR MEMBERS TO SAFELY SUPPORT ALL LOADS AND LATERAL PRESSURES LIABLE TO COME ON THE CONSTRUCTION. PROVIDE CLEAN—OUT OPENINGS AT EACH VERTICAL BAR AT BOTTOM COURSE OR IN FOUNDATION WALL WHEN WALL IS ERECTED IN MORE THAN 5—FOOT LIFTS.

12. MASONRY CONSTRUCTION
   (A). GENERAL: DO NOT LAY UNITS HAVING WATER OR FROST FILM ON SURFACES. LAY PLUMB, TRUE TO LINE, WITH LEVEL COURSES ACCURATELY SPACED. KEEP BOND PATTERN PLUMB THROUGHOUT. CORNERS AND REVEALS PLUMB AND TRUE. SHOVE VERTICAL JOINTS TIGHT. ADJUST EACH UNIT TO FINAL POSITION WHILE MORTAR IS SOFT AND PLASTIC. REMOVE ANY UNIT DISTURBED AFTER MORTAR HAS STIFFENED AND RELAY WITH FRESH MORTAR.
   (B). LAYING UNITS: WET IN SUCH MANNER THAT EACH UNIT IS NEARLY SATURATED, SURFACE DRY WHEN LAID. DO NOT USE BRICK THAT IS CORED, RECESSED, OR HAS OTHER MAJOR DEFORMATIONS WHERE DEFORMATIONS WILL BE EXPOSED TO VIEW. FILL HEAD AND BED JOINTS COMPLETELY WITH MORTAR FOR FULL DEPTH OF THE JOINT. LAY WITH BETTER FACE OF BRICK EXPOSED. LAY IN STACKED BOND AND SPECIAL RELIEF AND PATTERNS SHOWN ON THE DRAWINGS. JOINTS NOT TO EXCEED 3/8 INCHES. INSTALL WEEP HOLES IN HEAD JOINTS; BUT NOT MORE THAN 2'-0" O.C,
   (C). CUTTING AND FITTING: USE, WHEREVER POSSIBLE, FULL UNITS OF PROPER SIZE IN LIEU OF CUT UNITS.CUT EDGES CLEAN, TRUE, AND SHARP. CAREFULLY CUT, FORM, OR OTHERWISE NEATLY MAKE OPENINGS FOR RECESSED ITEMS AND FOR ELECTRICAL, PLUMBING, OR OTHER MECHANICAL INSTALLATIONS SO THAT WALL PLATES, COVER PLATES, OR ESCUTCHEONS WILL COMPLETELY CONCEAL OPENINGS AND WILL HAVE BOTTOMS IN ALIGNMENT WITH LOWER EDGE OF MASONRY JOINTS.
   (D). EMBEDDED ITEMS: POINT OPENINGS AROUND FLUSH_MOUNTED ELECTRICAL OUTLET BOXES IN WET LOCATIONS FLUSH WITH MORTAR INCLUDING FLUSH JOINT ABOVE BOX. BUILD IN ANCHORS, TIES, WALL PLUGS, ACCESSORIES, FLASHINGS, PIPE SLEEVES, AND OTHER ITEMS AS THE MASONRY WORK PROGRESSES. ANCHORS AND TIES FULLY EMBEDDED IN MORTAR.
   (E). UNFINISHED WORK: STEP BACK FOR JOINING WITH CONTINUING NEW WORK. RESORT TO TOOTHING ONLY WHEN SPECIFICALLY ACCEPTED. BEFORE LAYING NEW WORK, REMOVE LOOSE MORTAR, AND CLEAN EXPOSED JOINTS; DAMPEN SURFACES OF BRICK AFTER CLEANING.
   (F). JOINTING:
      1). TYPE: UNLESS NOTED OTHERWISE ON DRAWING FINISH SCHEDULE: CLIPPED JOINTS; MORTAR THOROUGHLY COMPACTED AND PRESSED AGAINST EDGES OF UNITS. TOOL WHEN MORTAR IS THUMBPRINT HARD.
      2). WIDTH: EQUAL TO DIFFERENCE BETWEEN ACTUAL AND NOMINAL DIMENSIONS OF UNITS IN EITHER HEIGHT OR LENGTH; AVERAGE WIDTH OF ANY THREE ADJACENT JOINTS NOT LESS THAN 1/4 INCH NOR MORE THAN 1/2 INCH. VERTICAL JOINTS; SAME WIDTH EXCEPT FOR INCONSPICUOUS VARIATIONS REQUIRED TO MAINTAIN BOND.

13. POINTING AND CLEANING
   (A). COMPLETELY REMOVE MORTAR DAUBS OR SPLASHINGS FROM EXPOSED MASONRY SURFACES BEFORE SETTING. CLEAN MASONRY SURFACES, OTHER THAN REMOVING EXCESS SURFACE MORTAR, ONLY AFTER MORTAR HAS HARDENED. LEAVE SURFACES FREE OF MORTAR DAUBS, DIRT, STAINS AND DISCOLORATION, INCLUDING SCUM FROM CLEANING OPERATIONS. DO NOT USE METAL TOOLS AND METAL BRUSHES FOR CLEANING. BEFORE CLEANING PERMANENT CONSTRUCTION, CLEAN SAMPLE PANEL AND EXAMINE FOR DISCOLORATION OR STAIN. !F THE SAMPLE PANEL IS DISCOLORED OR STAINED, CHANGE METHOD OF CLEANING TO ASSURE PERMANENT MASONRY SURFACES WILL NOT BE ADVERSELY AFFECTED. WATER_SOAK EXPOSED SURFACES AND CLEAN WITH *DEOX" OR " SHURCLEAN," (PROPRIETARY MASONRY CLEANING AGENTS). USE CLEANING AGENTS IN A ACCORD WITH MANUFACTURER'S INSTRUCTIONS.

14. PROTECTION OF WORK
   (A). PROTECT SURFACES OF MASONRY NOT BEING WORKED. WHEN RAIN OR SNOW IS IMMINENT, COVER TOPS OF EXPOSED MASONRY WITH STRONG NONX_STAINING WATERPROOF MEMBRANE, WELL SECURED IN PLACE, IN A MANNER TO PREVENT MOISTURE FROM ACCUMULATING WITHIN UNFINISHED WALL. MAKE PROVISIONS TO PREVENT DAMAGE BY WIND.

## SECTION 04220 - CONCRETE UNIT MASONRY

1. SECTION INCLUDES
   (A). CONCRETE UNIT MASONRY
   (B). HORIZONTAL MASONRY WALL REINFORCEMENT.
   (C). BUILDING IN BOLTS, ANCHORS, NAILERS, ANGLES, INSERTS, CONDUITS, PIPING, FLASHINGS, ETC. FURNISHED AND LOCATED BY OTHER TRADES.

2.FERENCE STANDARDS
   (A). AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)
   (B). INTERNATIONAL MASONRY INDUSTRY ALL-WEATHER COUNCIL (IMIAC)

3. MOCK-UP
   (A). CONSTRUCT MASONRY MOCK-UP, 4 FEET LONG BY 4 FEET WIDE, WHICH INCLUDES MASONRY ANCHOR ACCESSORIES, SILL FLASHINGS, AND CORNER CONDITION.
   (B). LOCATE WHERE DIRECTED BY OWNER.
   (C). MOCK-UP MAY REMAIN AS PART OF THE WORK.

4. MATERIALS
   (A). MASONRY UNITS: HIGH PRESSURE STEAM CURED (AIR DRIED UNITS WILL NOT BE ACCEPTABLE), LOAD BEARING, HOLLOW UNITS CONFORMING TO ASTM C90, TYPE L, MEDIUM WEIGHT; LOAD BEARING SOLID UNITS CONFORMING TO ASTM C90, TYPE 1, MEDIUM WEIGHT. TESTING OF LIGHTWEIGHT AGGREGATES FOR DRYING SHRINKAGE SHALL BE AS STIPULATED IN ASTM C331. UNITS SHALL BE OF DIMENSIONS THAT WILL LAY UP TO 8 INCH MODULES. UNITS SHALL INCLUDE SPECIAL SHAPES AND SIZES SHOWN ON THE DRAWINGS AND/OR REQUIRED TO COMPLETE THE WORK.
   (B). MASONRY UNIT SIZES: STANDARD 8 X 8 X 16 INCH AND 4 X 8 X 16 INCH UNITS,
   (C). DECORATIVE MASONRY UNITS: MANUFACTURER, SIZE, COLOR AND TEXTURE AS NOTED ON FINISH SCHEDULE.

5. ACCESSORIES
   (A). JOINT REINFORCEMENT: HOHMANN É BERNARD, INC., FORT WORTH, TEXAS, "LOX=ALL TRUSS MESH', 3/16" SIDE RODS AND GALVANIZED NO. 9 CROSS RODS. PROVIDE SPECIAL SHAPES AS REQUIRED FOR INTERSECTIONS. WIDTHS SHALL BE 2" LESS THAN TOTAL MASONRY THICKNESS.
   (B). CELLULAR PLASTIC WEEP/VENT: HOHMANN AND BERNARD PRODUCTS — QUADRO—VENT.
   (C). MISCELLANEOUS: AS SHOWN ON THE DRAWINGS OR AS REQUIRED TO PROVIDE MASONRY INSTALLATIONS WHICH ARE WELL TIED (ANCHORED) TO BUILDING FRAME. CONSULT WITH ARCHITECT PRIOR TO BIDDING IF CLARIFICATION OF THIS REQUIREMENT IS NEEDED.

6. MORTAR
   (A), TYPE: ASTM C270 WITH MINIMUM COMPRESSIVE STRENGTH OF 1800 PSI., TYPE M OR S; COLOR STANDARD GRAY TO MATCH BLOCK. MASONRY CEMENT WILL NOT BE ALLOWED.
   (B). MATERIALS:
      1). PORTLAND CEMENT: ASTM C150, TYPE 1, ONE BRAND ONLY.
      2). HYDRATED LIME: ASTM C207, TYPE S
      3). SAND: WELL SCREENED, CLEAN, HARD, SILICEOUS PARTICLES FREE FROM LOAM, ALKALI, SALT, ORGANIC MATTER AND OTHER IMPURITIES AND SHALL BE COMPOSED OF GRAINS OF VARYING SIZES, ALL OF WHICH SHALL PASS AN EIGHT MESH SCREEN, AND SHALL BE UNIFORMLY GRADED FROM COARSE TO FINE.
      4). WATER: CITY TAP WATER.

7. GROUT (IF SHOWN ON THE DRAWINGS)
   (A). GROUT MIX FOR REINFORCED MASONRY: ASTM C476 WITH MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. PROVIDE COARSE AGGREGATE CONFORMING TO ASTM C404 (MAX. SIZE 3/8") FOR COARSE GROUT MIX. GROUT SHALL HAVE SLUMP OF 10-1/2 TO 11 INCHES AT THE TIME OF PLACEMENT,

8. PRODUCT DELIVERY, STORAGE AND HANDLING
   (A). STORE MORTAR MATERIALS ON DUNNAGE IN A DRY PLACE. MASONRY UNITS STORES ABOVE GROUND ON LEVEL PLATFORMS. COVER AND PROTECT UNITS AND ACCESSORIES AS NECESSARY FROM ELEMENTS.

9. CONDITIONS
   (A). HOT_WEATHER INSTALLATION: MASONRY ERECTED WHEN THE AMBIENT AIR HAS A TEMPERATURE OF MORE THAN 90 F., IN THE SHADE, AND HAS A RELATIVE HUMIDITY OF LESS THAN 50 PERCENT SHALL BE PROTECTED FROM DIRECT EXPOSURE TO WIND AND SUN FOR 48 HOURS AFTER INSTALLATION, AND RAIN FOR 12 HOURS AFTER INSTALLATION. MASONRY SURFACES SHALL BE KEPT MOIST WITH WATER GENTLY SPRAYING THE SURFACE, COVERING WORK WITH BURLAP WHICH IS KEPT WET, OR BY OTHER APPROVED MEANS. SUCH PROTECTION SHALL BE CONTINUED UNTIL MORTAR HAS SET FOR 3 DAYS OR UNTIL LOWERING TEMPERATURES OR INCREASED HUMIDITY IN THE AIR MAKE SUCH PROTECTION UNNECESSARY. ALL WORK SHALL COMPLY WITH ACI 530.1/ASCE 6/TMS 602.
   (B). COLD WEATHER INSTALLATION: NO FROZEN WORK SHALL BE BUILT UPON. BEFORE ERECTING MASONRY DURING TEMPERATURES BELOW 40 F., A WRITTEN STATEMENT SHALL BE SUBMITTED AND APPROVAL RECEIVED OF THE METHODS PROPOSED TO HEAT THE MASONRY MATERIALS AND PROTECT THE MASONRY FROM FREEZING AS REQUIRED BELOW. NO MASONRY SHALL BE LAID AT TEMPERATURES BELOW 35 F. UNLESS AUTHORIZED IN WRITING. COLD—WEATHER INSTALLATION SHALL BE IN ACCORDANCE WITH IMIAC RECOMMENDED PRACTICES AND GUIDE SPECIFICATIONS FOR MASONRY CONSTRUCTION. ALL WORK SHALL COMPLY WITH ACI 530.1/ASCE 6/TMS 602.

10. PREPARATION (MORTAR)
   (A). MORTAR MATERIALS SHALL BE ACCURATELY MEASURED AND MIXED WITH AS MUCH WATER AS MAY BE NECESSARY TO PRODUCE THE WETTEST WORKABLE CONSISTENCY POSSIBLE. MORTAR SHALL BE PLACED IN FINAL POSITION WITHIN 2_1/2 HOURS AFTER MIXING. MORTAR NOT USED OR THAT HAS STARTED TO SET WITHIN THIS TIME INTERVAL SHALL BE DISCARDED. MORTAR THAT HAS STIFFENED WITHIN THE ABOVE TIME INTERVAL, BECAUSE OF EVAPORATION OF MOISTURE FROM THE MORTAR, SHALL BE RE—TEMPERED TO RESTORE ITS WORKABILITY.

11. SCAFFOLDING
   (A). PROVIDE SCAFFOLDING NECESSARY FOR MASONRY WORK AND MAKE SAME AVAILABLE TO OTHER TRADES REQUIRED TO EXECUTE WORK IN CONJUNCTION WITH MASONRY WORK,
   (B). DESIGN AND ENGINEERING OF FORMWORK AND SCAFFOLDING AS WELL AS ITS CONSTRUCTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. ADEQUATELY SHORE BLOCK BEAMS, AND SIMILAR MEMBERS TO SAFELY SUPPORT ALL LOADS AND LATERAL PRESSURES LIABLE TO COME ON THE CONSTRUCTION. PROVIDE CLEAN-OUT OPENINGS AT EACH VERTICAL BAR AT BOTTOM COURSE OR IN FOUNDATION WALL WHEN WALL IS ERECTED IN MORE THAN 5 FOOT LIFTS.

12. MASONRY CONSTRUCTION
   (A). GENERAL: NO UNIT HAVING FILM OF WATER OR FROST ON ITS SURFACES SHALL BE LAID. MASONRY SHALL BE LAID PLUMB, TRUE TO LINE, WITH LEVEL COURSES ACCURATELY SPACED. BOND PATTERN SHALL BE KEPT PLUMB THROUGHOUT. CORNERS AND REVEALS SHALL BE PLUMB AND TRUE. VERTICAL JOINTS SHALL BE SHOVED TIGHT. EACH UNIT SHALL BE ADJUSTED TO FINAL POSITION WHILE MORTAR ¡IS STILL SOFT AND PLASTIC, ANY UNIT THAT IS DISTURBED AFTER MORTAR HAS STIFFENED SHALL BE REMOVED AND RE—LAID WITH FRESH MORTAR.
   (B). LAYING UNITS: DO NOT WET BEFORE LAYING. CUT UNITS WITH POWER MASONRY SAWS, EITHER DRY OR WET CUT. LAY UNITS IN A % RUNNING BOND SO THAT VERTICAL JOINTS BETWEEN UNITS WILL BE LOCATED OVER THE CENTER OF THE UNITS IN THE NEXT COURSE BELOW AND IN ALIGNMENT FROM BOTTOM TO TOP OF WALL. UNITS SHALL BE FULL BEDDED IN MORTAR UNDER BOTH FACE SHELLS. FILL ALL HEAD—JOINTS SOLIDLY WITH MORTAR FOR A DISTANCE IN FROM THE FRONT AND BACK FACES OF THE UNIT OR WALL NOT LESS THAN THE THICKNESS OF THE LONGITUDINAL FACE SHELL. NO CELLS SHALL BE LEFT OPEN IN THE FACE SURFACES.
   (C). GROUTING (IF SHOWN ON THE DRAWINGS): WHERE SHOWN ON THE DRAWINGS, POUR INTERIOR GROUT SPACES, EXCEPT THOSE BLOCKED OUT WITH WOOD IN ORDER TO PROVIDE THE OPENINGS THROUGH WALL, FULL OF GROUT. GROUT LIFTS SHALL NOT EXCEED 4'0". SLUSHING WITH MORTAR IS NOT PERMITTED. GROUT SHALL BE CAUSED TO FLOW INTO ALL VOIDS AND SURROUND REBAR. PUDDLE WITH STICKS _ NOT TROWEL BLADES. EXCEPT AT FINISHING COURSE, STOP ALL GROUT POURS APPROXIMATELY 1" BELOW TOP OF THE LAST COURSE. WHERE IT IS NECESSARY, FOR CONSTRUCTION PURPOSES TO STOP A LONGITUDINAL RUN OF MASONRY, STOP BY RACKING BACK ACCORDING TO BOND. PROVIDE A SUITABLE DAM TO RETAIN GROUT. AFTER GROUT HAS SET, REMOVE WOOD BLOCKING AT OPENINGS.
   (D). CUTTING AND FITTING: WHEREVER POSSIBLE, FULL UNITS OF THE PROPER SIZE SHALL BE USED IN LIEU OF CUT UNITS. CUT EDGES SHALL BE CLEAN, TRUE, AND SHARP. OPENINGS SHALL BE CAREFULLY CUT, FORMED, OR OTHERWISE NEATLY MADE BY MASONRY MECHANIC FOR RECESSED ITEMS AND FOR ELECTRICAL, PLUMBING, OR OTHER MECHANICAL INSTALLATIONS SO THAT WALL PLATES, COVER PLATES, OR ESCUTCHEONS REQUIRED BY THE INSTALLATION WILL COMPLETELY CONCEAL THE OPENINGS AND WILL HAVE BOTTOMS IN ALIGNMENT WITH LOWER EDGE OF MASONRY JOINTS.
   (E). REINFORCEMENT:
      1). AL CMU WALLS SHALL BE REINFORCED HORIZONTALLY WITH REINFORCING SPACED 16" O.C. VERTICALLY, MAXIMUM. LAY REINFORCING ON WALL AND COVER WITH MORTAR, THEN BED UNIT AS HEREIN SPECIFIED. AT CORNERS, REINFORCING IS TO BE PROVIDED IN EVERY HORIZONTAL COURSE, WITH INSIDE ROD CUT AND BENT TO FORM CORNER. PROVIDE REINFORCING ONE COURSE ABOVE AND BELOW ALL OPENINGS. REINFORCEMENT PLACED AS TO ASSURE A 5/8" MORTAR COVER MEASURED FROM THE OUTSIDE FACE OF THE JOINT. SIDE RODS SHALL BE LAPPED AT LEAST 6" AT SPLICES.
      2). INTERSECTING AND BUTTING WALLS SHALL BE BONDED TOGETHER BY METAL ANCHORS SPACED 2'-0" O.C. VERTICALLY. INTERLOCKING OF UNITS NOT PERMITTED.
   (F). CONTROL JOINTS: MAKE ADEQUATE PROVISIONS THROUGHOUT THE MASONRY WORK FOR EXPANSION AND CONTRACTION. INSTALL CONTROL JOINT FILLER AS REQUIRED, EXTENDING FROM TOP OF BEARING SURFACE TO TOP OF WALL, REINFORCING SHALL NOT RUN THROUGH. CONTROL JOINTS SHALL BE WATERTIGHT AT EXTERIOR JOINTS. EXPANSION JOINTS AT CONTROL JOINTS THE REINFORCING SHALL BE CONTINUOUS.
   (G).EMBEDDED ITEMS: OPENINGS AROUND FLUSH_MOUNTED ELECTRICAL OUTLET BOXES IN WET LOCATIONS SHALL BE POINTED FLUSH WITH MORTAR INCLUDING FLUSH JOINT ABOVE THE BOX. ANCHORS, TIES, WALL PLUGS, ACCESSORIES, FLASHINGS, PIPE SLEEVES, AND OTHER ITEMS REQUIRED TO BE BUILT IN SHALL BE BUILT IN AS THE MASONRY WORK PROGRESSES. ANCHORS, TIES AND JOINT REINFORCEMENT SHALL BE FULLY EMBEDDED IN MORTAR.
   (H). STOPPING AND RESUMING WORK: STEP BACK % MASONRY UNIT LENGTH IN EACH COURSE; DO NOT TOOTH. CLEAN EXPOSED SURFACES OF SET MASONRY, AND REMOVE LOOSE MASONRY UNITS AND MORTAR PRIOR TO LAYING FRESH MASONRY.
   (L). JOINTING:
      1). TYPE: TOOL SLIGHTLY CONCAVE; MORTAR THOROUGHLY COMPACTED AND PRESSED AGAINST EDGES OF UNITS. TOOL WHEN MORTAR IS THUMBPRINT HARD. FINISH TOOLED JOINTS TO UNIFORMLY STRAIGHT AND TRUE LÍNES AND SURFACES, SMOOTH AND FREE OF TOOL MARKS.
      2). WIDTH: EQUAL TO THE DIFFERENCE BETWEEN THE ACTUAL AND NOMINAL DIMENSIONS OF THE UNITS IN EITHER HEIGHT OR LENGTH, BUT IN NO CASE SHALL THE AVERAGE WIDTH OF ANY THREE ADJACENT JOINTS BE LESS THAN 1/4 NOR MORE THAN % INCH. VERTICAL JOINTS SHALL BE OF THE SAME WIDTH EXCEPT FOR INCONSPICUOUS VARIATIONS REQUIRED TO MAINTAIN BOND.

13. POINTING AND CLEANING
   (A). COMPLETELY REMOVE MORTAR DAUBS OR SPLASHINGS FROM MASONRY SURFACES THAT WILL BE EXPOSED BEFORE SETTING OR HARDENING. ALL DEFECTS IN JOINTS OF MASONRY TO BE EXPOSED SHALL BE RAKED OUT AS NECESSARY, FILLED WITH MORTAR, AND TOOLED CONCAVE. MASONRY SURFACES SHALL NOT BE CLEANED, OTHER THAN REMOVING EXCESS SURFACE MORTAR, UNTIL MORTAR IN JOINTS HAS HARDENED. LEAVE MASONRY SURFACES CLEAN, FREE OF MORTAR DAUBS AND DIRT, AND WITH TIGHT MORTAR JOINTS THROUGHOUT.

14. PROTECTION OF WORK
   (A). PROTECT SURFACES OF MASONRY NOT BEING WORKED ON AT ALL TIMES. WHEN RAIN OR SNOW IS IMMINENT, COVER THE TOPS OF EXPOSED MASONRY WITH A STRONG NON_STAINING WATERPROOF MEMBRANE WELL SECURED IN PLACE AND IN A MANNER THAT WILL PREVENT MOISTURE FROM ACCUMULATING WITHIN THE UNFINISHED WALL. MAKE ADEQUATE PROVISIONS DURING CONSTRUCTION TO PREVENT DAMAGE BY WIND.

## SECTION 04220 - CONCRETE UNIT MASONRY

1. SECTION INCLUDES
   (A). THIN SET BRICK FACING TILE AND INSTALLATION.
   (B). FIX ADHESIVE MORTAR.

2.REFERENCES
   (A). ASTM C 1088: THIN BRICK UNITS MADE FROM CLAY OR SHALE.
   (B). ASTM C 216: STANDARD SPECIFICATION FOR MODULAR FACE BRICK.

3. SUBMITTALS
   (A). SUBMIT PRODUCT DATA SAMPLES AND MANUFACTURER'S INSTALLTION INSTRUCTIONS UNDER PROVISIONS OF SUBMITTALS SECTION.

4. QUALITY ASSURANCE
   (A). APPLICATOR: COMPANY EXPERIENCED IN INSTALLTION OF SIMULATED MANSONRY UNITS OF TYPE SPECIFIED WITH THREE YEARS MINIMUM EXPERIENCE.

5. DELIVERY, STORAGE AND HANDLING
   (A). DELIVER PRODUCTS TO SITE UNDER PROVISIONS OF THESE SPECIFICATIONS.
      1). STORE AND PROTECT PRODUCTS ON SITE.
      2). STORE MORTAR AND OTHER MOISTURE-SENSITIVE MATERIALS IN PROTECTED ENCLOSURES; HANDLE BY METHODS WITH AVOID EXPOSURE TO MOISTURE.

6. WARRANTY
   (A). PROVIDE MANUFACTURER'S WRITTEN WARRANTY FOR A PERIOD OF FIFTEEN YEARS FROM THE DATE OF OWNER ACCEPTANCE OF THE PROJECT AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP.

7. PROJECT CONDITIONS
   (A). CONFORM TO MANUFACTURER'S PRINTED SPECIFICATIONS AND INSTRUCTIONS FOR EACH CONDITION ENCOUNTERED ON THE JOB. IN GENERAL, STANDARD PRACTICE WILL BE EXPECTED AND ACCEPTED AND POOR OR SLOPPY WORKMANSHIP WILL BE REJECTED.
   (B). PROTECT MATERIALS FROM RAIN, WIND, MOISTURE, AND FREEZING TEMPERATURES PRIOR TO, DURING, AND FOR 72 HOURS AFTER COMPLETION OF WORK.

8. MANUFACTURER
   (A). THE DRAWINGS WERE PREPARED AND PORTIONS OF THIS SPECIFICATION WRITTEN ON THE BASIS OF USING THE PRODUCTS OR SPECIFIC MANUFACTURERS PRODUCING THE FULL WIDTH BRICK AND THE THIN BRICK.

9. MATERIALS
   (A). BRICK FACING TILES: ASTM C1088 GRADE EXTERIOR, SPECIFIC MANUFACTURER, PLANT, PRODUCT AND BLEND AS NOTED IN FINISH SCHEDULE ON THE DRAWINGS. PROVIDE MANUFACTURER'S STANDARD CORNER UNITS AT ALL EXTERIOR CORNERS.
   (B). MORTAR COMPONENTS: TYPE AND COLOR AS NOTED IN FINISH SCHEDULE ON THE DRAWINGS
   (C). SETTING ADHESIVES: MANUFACTURER RECOMMENDED INTERIOR, SOLVENT BASE, NON-FLAMMABLE ADHESIVE.

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF WARE MALCOMB AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH WARE MALCOMB. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF WARE MALCOMB PRIOR TO THE COMMENCEMENT OF ANY WORK

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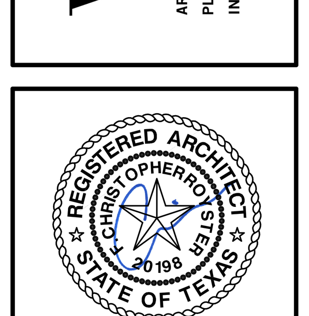

04/05/2022

HAT CREEK Burger Company

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

SPECIFICATIONS

| DATE | REMARKS |
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| 03/03/2022 | ISSUE FOR PERMIT |

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| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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# HAT CREEK BURGER - PROTOTYPE 1.1 TABLE OF CONTENTS

## DIVISION 05 - METALS

### SECTION 05120 -STRUCTURAL STEEL

1. SUBMITTALS

A. SHOP DRAWINGS: SUBMIT TO ARCHITECT, INDICATE SIZES, SPACING, AND LOCATIONS OF STRUCTURAL MEMBERS, OPENINGS, CONNECTIONS, CAMBERS, LOADS, AND WELDED CONNECTIONS.

B. PROVIDE SETTING DRAWINGS, TEMPLATES, AND DIRECTIONS FOR INSTALLATION OF ANCHOR BOLTS AND OTHER ANCHORAGES TO BE INSTALLED AS WORK OF OTHER SECTIONS.

2. REFERENCE STANDARDS

A. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES".

B. AISC "SPECIFICATIONS FOR STRUCTURAL STELL BUILDINGS, "INCLUDING "COMMENTARY."

C. "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A 325 OR A 490 BOLTS" APPROVED BY RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS.

D. AMERICAN WELDING SOCIETY (AWS) D1.1 "STRUCTURAL WELDING CODE - STEEL."

3. QUALITY ASSURANCE

A. PERFORM DESIGN UNDER DIRECT SUPERVISION OF A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE OF THE PROJECT.

4. DELIVERY, STORAGE, AND HANDLING

A. STORE MATERIALS TO PERMIT EASY ACCESS FOR INSPECTION AND IDENTIFICATION. KEEP STEEL MEMBERS OFF GROUND BY USING PALLETS, PLATFORMS, OR OTHER SUPPORTS. PROTECT STEEL MEMBERS AND PACKAGES MATERIALS FROM EROSION AND DETERIORATION. IF BOLTS AND NUTS BECOME DRY OR RUSTY, CLEAN AND RE-LUBRICATE BEFORE USE.

5. MATERIALS

A. STRUCTURAL STEEL SHAPES, PLATES, AND BARS: ASTM A 36.
B. STRUCTURAL STEEL TUBING: ASTM A500, GRADE B.
C. ANCHOR BOLTS: ASTM A36, NON-HEADED TYPE UNLESS OTHERWISE INDICATED.
D. QUENCHED AND TEMPERED MEDIUM-CARBON STEEL BOLTS, NUTS, AND WASHERS, COMPLYING WITH ASTM A 325.
E. ELECTRODES FOR WELDING: E70XX, COMPLY WITH AWS CODE.
F. STRUCTURAL STEEL PRIMER PAINT: TNEMEC 10-99 (OR EQUAL).
G. NONMETALLIC SHRINKAGE-RESISTANT GROUT: PREMIXED, NONMETALLIC, NON-CORROSIVE, NON-STAINING PRODUCT COCTAINING SELECTED SILICA SANDS, PORTLAND CEMENT, SHRINKAGE COMPENSATING AGENTS, PLASTICS AND WATER-REDUCING AGENTS, COMPLYING WITH CE-CRD-C621.

6. FABRICATION

A. SHOP FABRICATION AND ASSEMBLY: FABRICATE AND ASSEMBLE STRUCTURAL ASSEMBLIES IN SHOP TO GREATEST EXTENT POSSIBLE.
B. PROPERLY MARK AND MATCH-MARK MATERIALS FOR FIELD ASSEMBLY.
C. CONNECTIONS: WELD OR BOLT SHOP CONNECTIONS, AS INDICATED. BOLT FIELD CONNECTIONS, EXCEPT WHERE WELDED CONNECTIONS OR OTHER CONNECTIONS ARE INDICATED.
D. HIGH-STRENGTH BOLTED CONSTRUCTION: INSTALL HIGH-STRENGTH THREADED FASTENERS IN ACCORDANCE WITH AISC "SPECIFICATIONS FOR STRUCTURAL JOINTS USING ASTM A 325 OR A 490 BOLTS."
E. CUT, DRILL, OR PUNCH HOLES PERPENDICULAR TO METAL SURFACE. DO NOT FLAME-CUT HOLES OR ENLARGE HOLES BY BURNING.
F. SHOP PAINTING: SHOP-PAINT ALL STRUCTURAL STEEL.
G. IMMESIATELY AFTER SURFACE PREPARATION, APPLY STRUCTURAL STEEL PRIMER PAINT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND AT A RATE TO PROVIDE DRY FILM THICKNESS OF NOT LESS THAN 1.5 MILS. USE PAINTING METHODS THAT RESULT IN FULL COVERAGE OF JOINTS, CORNERS, EDGES, AND EXPOSED SURFACES.

8. ERECTION

A. TEMPORARY SHORING AND BRACING: PROVIDE TEMPORARY SHORING AND BRACING MEMBERS WITH CONNECTIONS OF SUFFICIENT STRENGTH TO BEAR IMPOSED LOADS AND AS REQUIRED BY APPLICABLE LAWS AND REGULATIONS.

B. FIELD ASSEMBLY: SET STRUCTURAL STEEL ACCURATELY TO LINES AND ELEVATIONS INDICATED. ALIGN AND ADJUST VARIOUS MEMBERS FORMING PART OF COMPLETE FRAME OR STRUCTURE BEFORE PERMANENTLY FASTENING. CLEAN BEARING SURFACES AND OTHER SURFACES THAT WILL BE IN PERMANENT CONTACT BEFORE ASSEMBLY. PERFORM NECESSARY ADJUSTMENTS TO COMPENSATE FOR DISCREPANCIES IN ELEVATIONS AND ALIGNMENT. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF STRUCTURE WITHIN SPECIFIED AISC TOLERANCES. SPLICE MEMBERS ONLY WHERE INDICATED AND ACCEPTED ON SHOP DRAWINGS.

### SECTION 05500 METAL FABRICATIONS

1. SUMMARY

A. WORK OF THIS SECTION CONSISTS OF INSTALLING ALL MATERIALS FURNISHED UNDER THIS SECTION, INCLUSING ALL EQUIPMENT, LABOR, SERVICES, AND INCIDENTAL ITEMS REQUIRED TO COMPLETE WORK AS SHOWN O DRAWINGS AND SPECIFIED IN THIS SECTION.
1. MISCELLANEOUS FRAMING AND SUPPORTS FOR WORK IN OTHER SECTIONS TO INCLUDE APPLICATIONS WHERE FRAMING AND SUPPORTS ARE NOT SPECIFIED IN OHER SECTIONS.
2. STEEL LINTELS, CLIP ANGLES, ETC.
3. STEEL PIPE BOLLARDS.
4. STEEL PLATE WINDOW COWLINGS
5. STEEL PLATE CANOPY
6. GATES AT DUMPSTER AREA.
7. STEEL TUBE FRAMEWORK FOR NO CLIMB NETTING.
8. STEEL LADDERS.
9. TENSION ROD TURNBUCKLE MEDALLION

2. SUBMITTALS

A. WELDER CERTIFICATES SIGNED BY CONTRACTOR CERTIFYING WELDERS COMPLY WITH REQUIREMENTS OF THIS SECTION.

B. FABRICATOR SHALL BE RESPONSIBLE FOR DESIGN OF CONNECTIONS NOT SPECIFICALLY SHOWN ON THE DRAWINGS AND FOR MEMBER DIMENSIONS AND FIT.

3. QUALITY ASSURANCE

A. QUALIFICATIONS:
1. WELDING AND WELDERS:
a. QUALIFY WELDING PROCESSES AND WELDING OPERATORS IN ACCORDANCE WITH AWS DI.1, STRUCTURAL WELDING CODE - STEEL; DI.3, STRUCTURAL WELDING CODE SHEET STEEL; AND DI.2, STRUCTURAL WELDING CODE-ALUMINUM.
b. CERTIFY EACH WELDER HAS SATISFACTORILY PASSED AWS QUALIFICATION TEST FOR WELDING PROCESSES INVOLVED AND IF PERTINENT, HAS UNDERGONE RECERTIFICATION.

4. MATERIALS

A. FERROUS METALS:
1. METAL SURFACES - GENERAL: FOR FABRICATION OF MISCELLANEOUS METAL WORK WHICH WILL BE EXPOSED TO VIEW, USE ONLY MATERIALS WHICH ARE SMOOTH AND FREE OF SURFACE BLEMISHES INCLUDING PITTING, SEAM MARKS, ROLLED TRADE NAMES, AND ROUGHNESS.
2. STEEL PLATES, SHAPES AND BARS: ASTM A36.
3. STEEL TUBING: COLD-FORMED, ASTM A500: GRADE A, UNLESS OTHERWISE INDICATED OR REQUIRED FOR DESIGN LOADING.
4. STEEL TUBING: HOT-FORMED, ASTM A501 FOR EXTERIOR INSTALLATIONS AND WHERE INDICATED PROVIDED WITH HOT-DIP GALVANIZED COATING PER ASTM A53.
5. BRACKETS, FLANGES AND ANCHORS: CAST OR FORMED METAL OF SAME TYPE MATERIAL AND FINISH AS SUPPORTED RAILS, UNLESS OTHERWISE INDICATED.
6. STEEL DECK PANELS AT SERVICE YARD GATES: ASTM A446 WITH G90 GALVANIZED COATING, STEEL ASTM A611, GRADE C, SHOP PRIMED.
7. CONCRETE INSERTS:
a. THREADED OR WEDGE - TYPE; GALVANIZED FERROUS CASTINGS, EITHER MALLEABLE IRON, ASTM A47, OR CAST STEEL, ASTM-7.
b. PROVIDE BOLTS, WASHERS AND SHIMS AS REQUIRED, HOT-DIP GALVANIZED, ASTM AI 53.

B. DECORATIVE PLATE STEEL, WALL INSTALLATION:
1. 14 GAUGE STEEL PLATE, NO PRIMER.
2. SEALER: JONES BLAIR "ACRYLITHANE 2.8 CLEAR COAT".

C. GROUT:
1. NONSHRINK NONMETALLIC GROUT:
a. PREMIXED, FACTORY PACKAGED, NON-STAINING, NON-CORROSIVE, NON-GASEOUS GROUT COMPLYING WITH CE CRD-C6221.
b. PROVIDE GROUT SPECIFICALLY RECOMMENDED BY MANUFACTURER OR INTERIOR AND EXTERIOR APPLICATIONS OF TYPE SPECIFIED IN THIS SECTION.

D. FASTENERS:

1. GENERAL:
a. PROVIDE HOT-DIPPED GALVANIZED FASTENERS FOR EXTERIOR USE OR WHERE BUILT INTO EXTERIOR WALLS.
b. SELECT FASTENERS FOR TYPE, GRADE, AND CLASS REQUIRED.
2. BOLTS AND NUTS: REGULAR HEXAGON-HEAD-TYPE, ASTM A307, GRADE A.
3. LAG BOLTS: SQUARE-HEAD-TYPE, FS FF-B-561.
4. MACHINE SCREWS: CADMIUM PLATED STEEL, FS FF-S-92.
5. WOOD SCREWS: FLAT HEAD CARBON STEEL, FS FF-S-I 11.
6. PLAIN WASHERS: ROUND, CARBON STEEL, FS FF-W-92.
7. DRILLED-IN EXPANSION ANCHORS: COMPLY WITH FS FF-S-325, GROUP III (ANCHORS, EXPANSION, NON-DRILLING), TYPE I (INTERNALLY THREADED TUBULAR EXPANSION ANCHOR); AND MACHINE BOLTS COMPLYING WITH FS FF-B-575, GRADE 5.
8. TOGGLE BOLTS: TUMBLE - WING - TYPE, FS FF-B-588, TYPE, CLASS, AND STYLE AS REQUIRED.
9. LOCK WASHERS: HELICAL - SPRING - TYPE CARBON STEEL, FS FF-W-84.

5. FABRICATION

1. GENERAL:
1. FORM METAL FABRICATIONS FROM MATERIALS OF SIZE, THICKNESS, AND SHAPES INDICATED, BUT NOT LESS THAN THAT NEEDED TO COMPLY WITH PERFORMANCE REQUIREMENTS INDICATED.
2. WORK TO DIMENSIONS INDICATED OR ACCEPTED ON SHOP DRAWINGS, USING PROVEN DETAILS OF FABRICATION AND SUPPORT.
3. USE TYPE OF MATERIALS INDICATED OR SPECIFIED FOR VARIOUS COMPONENTS OF EACH METAL FABRICATION.
4. FORM EXPOSED WORK TRUE TO LINE AND LEVEL WITH ACCURATE ANGLES AND SURFACES AND STRAIGHT SHARP EDGES.
5. SHEAR AND PUNCH METALS CLEANLY AND ACCURATELY; REMOVE BURRS.
6. EASE EXPOSED EDGES TO RADIUS OF APPROXIMATELY 1/32 IN.
7. FORM BENT-METAL COMERS TO SMALLEST RADIUS POSSIBLE WITHOUT CAUSING GRAIN SEPARATION OR OTHERWISE IMPAIRING WORK.
8. REMOVE SHARP OR ROUGH AREAS ON EXPOSED TRAFFIC SURFACES.
9. WELDING:
a. WELD CORNERS AND SEAMS CONTINUOUSLY, COMPLYING AWS RECOMMENDATIONS.
b. EXPOSED CONNECTIONS: GRIND EXPOSED WELDS SMOOTH AND FLUSH TO MATCH AND BLEND WITH ADJOINING SURFACES.
10. ANCHORAGE:
a. PROVIDE FOR ANCHORAGE OF TYPE INDICATED, COORDINATED WITH SUPPORTING STRUCTURE.
b. FABRICATE AND SPACE ANCHORING DEVICES TO PROVIDE ADEQUATE SUPPORT FOR INTENDED USE.

2. MISCELLANEOUS FRAMING AND SUPPORTS:
1. PROVIDE MISCELLANEOUS STEEL FRAMING AND SUPPORTS WHICH ARE NOT PART OF STRUCTURAL STEEL FRAMEWORK, AS REQUIRED TO COMPLETE WORK.
2. FABRICATE MISCELLANEOUS UNITS TO SIZES, SHAPES, AND PROFILES INDICATED OR, IF NOT INDICATED, OF REQUIRED DIMENSIONS TO RECEIVE ADJACENT OTHER WORK TO BE RETAINED BY FRAMING.
3. EXCEPT AS OTHERWISE INDICATED, FABRICATE FROM STRUCTURAL STEEL SHAPES. PLATES, AND STEEL BARS OF WELDED CONSTRUCTION USING MITERED JOINTS FOR FIELD CONNECTION.
4. CUT, DRILL AND TAP UNITS TO RECEIVE HARDWARE AND SIMILAR ITEMS.
5. PROVIDE 3X3X 1/4 ANGLE FRAME FOR OPENINGS THROUGH ROOF LARGER THAN 6 INCHES, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

3. PIPE BOLLARDS AND GATE POSTS: FABRICATE PIPE BOLLARDS AND GATE POSTS FROM SCHEDULE 80 STEEL PIPE.

4. EXTERIOR STEEL PLATES AND STEEL STRAP ASSEMBLIES:
1. FORM WITH 14 GAUGE PLATE STEEL.
2. ALL WELDS TO BE GROUND, FILED AND SANDED SMOOTH; NO EXPOSED FILLET WELDS WILL BE ACCEPTED. MITER ALL EXPOSED CORNERS.
3. PLATES AND STRAPS TO PRE-RUSTED AND SEALED.

5. LADDERS:
A. FABRICATE LADDERS FOR THE LOCATIONS SHOWN, WITH DIMENSIONS; SPACING, DETAILS AND ANCHORAGE AS INDICATED. COMPLY WITH THE REQUIREMENTS OF ANSI A 14.3, EXCEPT AS OTHERWISE INDICATED.
B. UNLESS OTHERWISE SHOWN, PROVIDE 1/2'X 2-1/2" CONTINUOUS STRUCTURAL STEEL FLAT BAR SIDE RAILS WITH EASED EDGES, SPACED 24" APART.
C. PROVIDE 1" DIAMETER SOLID STRUCTURAL STEEL BAR RANGE, SPACED 12" O.C.
a. FIT RUNGS IN CENTERLINE OF SIDE RAILS, PLUG WELD AND GRIND SMOOTH ON OUTER RAIL FACES.
b. SUPPORT EACH LADDER AT TOP AND BOTTOM AND AT INTERMEDIATE POINTS, SPACED NOT MORE THAN 5'-0" O.C. USE WELDED OR BOLTED STEEL BRACKETS, DESIGNED FOR ADEQUATE SUPPORT AND ANCHORAGE, AND TO HOLD LADDER CLEAR OF THE WALL SURFACE WITH A MINIMUM OF 7" CLEARANCE WALL TO CENTERLINE OF RUNGS. RETURN RAILS TO WALL OR STRUCTURE UNLESS OTHER SECURE HANDHOLDS ARE PROVIDED.
c. PROVIDED NON-SLIP SURFACE ON TOP OF EACH RUNG, EITHER BY COATING THE RUNG WITH ALUMINUM OXIDE GRANULES SET IN APOXY RESIN ADHESIVE, OR BY USING A TYPE OF MANUFACTURED RUNG WHICH IS FILLED WITH ALUMINUM OXIDE GROUT.

6. STEEL ANGLES AND CHANNELS
1. PROVIDE UNFINISHED MEMBERS AT INTERIOR GALVANIZED AT EXTERIOR.
2. PROVIDE HEX HEAD BOLT FASTENERS AT SPACING AS SHOWN IN THE DRAWINGS.
3. SIZE AND SHAPES AS INDICATED IN THE DRAWINGS.

6. INSTALLATION

A. GENERAL:
1. FASTENING TO IN - PLACE CONSTRUCTION:
a. PROVIDE ANCHORAGE DEVICES AND FASTENERS WHERE NECESSARY FOR SECURING MISCELLANEOUS METAL FABRICATIONS TO IN-PLACE CONSTRUCTION.
b. INCLUDE THREADED FASTENERS FOR CONCRETE AND MASONRY INSERTS, TOGGLE BOLTS, THROUGH BOLTS, LAG BOLTS, WOOD SCREWS, AND OTHER CONNECTORS AS REQUIRED.
2. CUTTING, FITTING, AND PLACEMENT:
a. PERFORM AS REQUIRED FOR INSTALLATION OF MISCELLANEOUS METAL FABRICATIONS.
b. SET WORK ACCURATELY IN LOCATION, ALIGNMENT, AND ELEVATION, LEVEL TRUE AND FREE OF RACK MEASURED FROM ESTABLISHED LINES AND LEVELS.
c. PROVIDE TEMPORARY BRACING OR ANCHORS IN FORMWORK FOR ITEMS WHICH ARE TO BE BUILT INTO CONCRETE, MASONRY, OR SIMILAR CONSTRUCTION.
d. FIT EXPOSED CONNECTIONS ACCURATELY TOGETHER TO FORM TIGHT HAIRLINE JOINTS.
e. WELD CONNECTIONS WHICH ARE NOT TO BE LEFT AS EXPOSED JOINTS, BUT CANNOT BE SHOP WELDED BECAUSE OF SHIPPING SIZE LIMITATIONS.
f. GRIND EXPOSED JOINTS SMOOTH AND TOUCHUP SHOP PAINT COAT.
g. DO NOT WELD, CUT, OR ABRADE SURFACES OF EXTERIOR UNITS WHICH HAVE BEEN HOT-DIP GALVANIZED AFTER FABRICATION AND ARE INTENDED FOR BOLTED OR SCREWED FIELD CONNECTIONS.
3. CORROSION PROTECTION: COAT CONCEALED SURFACES OF ALUMINUM THAT WILL COME INTO CONTACT WITH GROUT, CONCRETE, MASONRY, WOOD, OR DISSIMILAR METALS WITH HEAVY COAT OF BITUMINOUS PAINT OR ZINC CHROMATE PRIMER.

7. ADJUSTING AND CLEANING

A. TOUCH-UP PAINTING
1. IMMEDIATELY AFTER ERECTION, CLEAN FIELD WELDS, BOLTED CONNECTIONS, AND ABRADED AREAS OF SHOP PAINT, AND PAINT EXPOSED AREAS WITH SAME MATERIAL AS USED FOR SHOP PAINTING.
2.

## DIVISION 06 - WOOD AND PLASTICS

### SECTION 06100 - ROUGH CARPENTRY

1. SECTION INCLUDES

A. STRUCTURAL WALL, AND ROOF FRAMING AND SHEATHING.
B. RESERVATIVE AND FIRE RETARDANT TREATMENT OF WOOD.
C. MISCELLANEOUS FRAMING AND CONCEALED WOOD BLOCKING FOR SUPPORT OF TOILET AND BATH ACCESSORIES, WALL CABINETS, WOOD TRIM, AND TABLES.

2. REFERENCES

A. AWPA C20 - STRUCTURAL LUMBER -- FIRE RETARDANT TREATMENT BY PRESSURE PROCESSES; AMERICAN WOOD-PRESERVERS' ASSOCIATION; 2002

B. AWPA U1 - USE CATEGORY SUSTEM: USER SPECIFICATION FOR TREATED WOOD; AMERICAN WOOD - PRESERVERS' ASSOCIATION;2005.

C. PS 1 - CONSTRUCTION AND INDUSTRIAL PLYWOOD; NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (DEPARTMENT OF COMMERCE); 1995.

D. PS 20 - AMERICAN SOFTWOOD LUMBER STANDARD; NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (DEPARTMENT OF COMMERCE); 2005.
E. SPIB (GR) - GRADING RULES; SOUTHERN PINE INSPECTION BUREAU, INC.; 2002.
F. WCLB (GR) - STANDARD GRADING RULES FOR WEST COAST LUMBER NO. 17; WEST COAST LUMBER INSPECTION BUREAU; 2004.
G. WWPA G-5 - WESTERN LUMBER GRADING RULES; WESTERN WOOD PRODUCTS ASSOCIATION; 2005.

3. QUALITY ASSURANCE

A. LUMBER: COMPLY WITH PS 20 AND APPROVED GRADING RULES AND INSPECTION AGENCIES.
B. EXPOSED-TO-VIEW ROUGH CARPENTRY: SUBMIT MANUFACTURER'S CERTIFICATE THAT PRODUCTS MEET OR EXCEED SPECIFIED REQUIREMENTS, IN LIEU OF GRADE STAMPING.
C. PRESERVATIVE-TREATED WOOD: PROVIDE LUMBER AND PLYWOOD MARKED OR STAMPED BY AN ALSC - ACCREDITED TESTING AGENCY, CERTIFYING LEVEL AND TYPE OF TREATMENT IN ACCORDANCE WITH AWPA STANDARDS.

5. DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. SIZES: NOMINAL SIZES AS INDICATED ON DRAWINGS, S4S UNLESS ROUGH LUMBER IS SPECIFICALLY INDICATED OTHERWISE.
B. MOISTURE CONTENT: S-DRY OR MC19.
C. STUD FRAMING (2X2 THROUGH 2X6):
1. SPECIES: DOUGLAS FIR, SOUTHERN, WESTERN CEDARS, OR SITKA SPRUCE.
2. GRADE: NO. 2
D. JOIST, RAFTER, AND SMALL BEAM FRAMING (2X6 THROUGH 4X16):
1. SPECIES: DOUGLAS FIR, SOUTHERN PINE, SPRUCE-PINE-FIR (SOUTH), WESTERN CEDARS, OR WESTERN WOODS.
2. GRADE: NO.2
E. MISCELLANEOUS BLOCKING, FURRING, AND NAILERS:
1. LUMBER: S4S, NO. 2 OR STANDARD GRADE.

6. EXPOSED DIMENSION LUMBER

A. SIZES: NOMINAL SIZES AS INDICATED ON DRAWINGS, S4S.
B. MOISTURE CONTENT: S-DRY OR MC19.
C. POST, LEDGER, JOIST, RAFTER, AND SMALL BEAM FRAMING (2X6 THROUGH 4X16),;
1. SPECIES: SOUTHERN PINE.
2. GRADE: NO. 1

7. CONSTRUCTION PANELS

A. CONCEALED PERFORMANCE - RATED STRUCTURAL USE PANELS:
1. GENERAL: WHERE STRUCTURAL USE PANELS ARE INDICATED FOR THE FOLLOWING CONCEALED TYPES OF APPLICATIONS, PROVIDE APA PERFORMANCE-RATED PANELS COMPLYING WITH REQUIREMENTS DESIGNATED UNDER EACH APPLICATION FOR GRADE, SPAN RATING, EXPOSURE - DURABILITY CLASSIFICATIONS, EDGE DETAIL, WHERE APPLICABLE.
2. WALL SHEATHING: APA RATED SHEATHING, EXTERIOR WITH SPAN RATING TO SUIT STUD SPACING.
3. ROOF SHEATTHING: APA RATED STRUCTURAL 1 RATED SHEATHING, EXTERIOR WITH SPAN RATING TO SUIT RAFTER SPACING.

B. OTHER APPLICATIONS:
1. CONCEALED PLYWOOD: PS 1, C-C PLUGGED, EXTERIOR GRADE.
2. EXPOSED PLYWOOD: PS 1, A-D, INTERIOR GRADE.
3. ELECTRICAL COMPONENT MOUNTING: APA RATED SHEATHING, FIRE RETARDANT TREATED.

8. ACCESSORIES

A. FASTENERS AND ANCHORS:
1. METAL AND FINISH: HOT-DIPPED GALVANIZED STEEL PER ASTM A 153/A 153M FOR HIGH HUMIDITY AND PERSERVATIVE - TREATED WOOD LOCATIONS, UNFINISHED STEEL ELSEWHERE.
2. NAILS, WIRE, BRADS, AND STAPLES: FS FF-N-105.
3. POWER DRIVEN FASTENERS: NATIONAL EVALLUATION REPORT NER-272
4. WOOD SCREWS: ANSI B18.6.1
5. LAS BOLTS: ANSI B18.2.1
6. BOLTS: STEEL BOLTS COMPLYING WITH ASTM A307, GRADE A; WITH ASTM A563 HEX NUTS AND, WHERE INDICATED, FLAT WASHERS.
B. JOIST HANGERS: HOT DIPPED GALVANIZED STEEL, SIZED TO SUIT FRAMING CONDITIONS.

9. FACTORY WOOD TREATMENT
A. TREATED LUMBER AND PLYWOOD: COMPLY WITH REQUIREMENTS OF AWPA U1 - USE CATEGORY SYSTEM FOR WOOD TREATMENTS DETERMINED BY USE CATEGORIES, EXPECTED SERVICE CONDITIONS, AND SPECIFIC APPLICATIONS.
B. FIRE RETARDANT TREATMENT: AWPA TREATMENT C20, EXTERIOR TYPE, CHEMICAL TREATMENT PRESSURE IMPREGNATED; CAPABLE OF PROVIDING A MAXIMUM FLAME SPREAD/SMOKE DEVELOPMENT RATING OF 25/30 MINUTE DURATION.
C. PRESERVATIVE PRESSURE TREATMENT OF LUMBER ABOVE GRADE: AWPA USE CATEGORY UC3B, COMMODITY SPECIFICATION A ( TREATMENT C2) USING WATERBORNE PRESERVATIVE TO 0.25 LB/CU FT RETENTION.
1. KLIN DRY LUMBER AFTER TREATMENT TO MAXIMUM MOISTURE CONTENT OF 19 PERCENT.
2. TREAT LUMBER N CONTACT WITH ROOFING, FLASHING OR WATERPROOFING.
3. TREAT LUMBER IN CONTACT WITH MASONRY OR CONCRETE.
D. PRESSURE TREATMENT OF LUMBER IN CONTACT WITH SOIL AND CONCRETE: AWPA TREATMENT C2 USING PRESERVATIVE TO 0.4 LB/CU FT RETENTION.
1. PRESERVATIVE FOR FIELD APPLICATION TO CUT SURFACES: AS RECOMMENDED BY MANUFACTURER OF FACTORY TREATMENT CHEMICALS FOR BRUSH-APPLICATION IN THE FIELD.

10. FRAMING INSTALLATION
A. SET STRUCTURAL MEMBERS LEVEL, PLUMB, AND TRUE TO LINE. DISCARD PIECES WITH DEFECTS THAT WOULD LOWER REQUIRED STRENGTH OR RESULT IN UNACCEPTABLE APPEARANCE OF EXPOSED MEMBERS.
B. MAKE PROVISIONS FOR TEMPORARY CONSTRUCTION LOADS, AND PROVIDE TEMPORARY BRACING SUFFICIENT TO MAINTAIN STRUCTURE IN TRUE ALIGNMENT AND SAFE CONDITION UNTIL COMPLETION OF ERECTION AND INSTALLATION OF PERMANENT BRACING.
C. INSTALL STRUCTURAL MEMBERS FULL LENGTH WITHOUT SPLICES UNLESS OTHERWISE SPECIFICALLY DETAILED.
D. COMPLY WITH MEMBER SIZES, SPACING, AND CONFIGURATIONS INDICATED, AND FASTENER SIZE AND SPACING INDICATED, BUT NOT LESS THAN REQUIRED BY APPLICABLE CODES AND AFPA WOOD FRAME CONSTRUCTION MANUAL.
E. CONSTRUCT DOUBLE JOIST HEADERS AT FLOOR AND CEILING OPENINGS AND UNDER WALL STUD PARTITIONS THAT ARE PARALLEL TO FLOOR JOISTS; USE METAL JOIST HANGERS UNLESS OTHERWISE DETAILED.
F. FRAME OPENINGS WITH TWO OR MORE STUDS AT EACH JAMB; SUPPORT HEADERS ON CRIPPLE STUDS.

### SECTION 06160 - SHEATHING (ZIP SYSTEM SHEATHING)

1. SUMMARY
A. SECTION INCLUDES
1. WALL SHEATHING WITH INTEGRAL WATER—RESISTIVE BARRIER AND AIR BARRIER.

2. REFERENCES
A. ASTM INTERNATIONAL (ASTM):
1. ASTM A153/A153M — STANDARD SPECIFICATION FOR ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE
2. ASTM E96/E96M — STANDARD TEST METHODS FOR WATER VAPOR TRANSMISSION OF MATERIALS
3. ASTM E119 — STANDARD TEST METHODS FOR FIRE TESTS OF BUILDING CONSTRUCTION AND MATERIALS
4. ASTM E2357 — STANDARD TEST METHOD FOR DETERMINING AIR LEAKAGE OF AIR BARRIER ASSEMBLIES
B. INTERNATIONAL CODE COUNCIL (ICC):
1. ICC IBC — INTERNATIONAL BUILDING CODE
C. ICC EVALUATION SERVICE, INC. (ICC—ES):
1. AC38 — ACCEPTANCE CRITERIA FOR WEATHER RESISTIVE BARRIERS
2. ICC-ES AC116 — ACCEPTANCE CRITERIA FOR NAILS AND SPIKES
3. ICC—ES AC148 — ACCEPTANCE CRITERIA FOR FLEXIBLE FLASHING MATERIALS
4. ICC-ES AC310 — ACCEPTANCE CRITERIA FOR WATER—RESISTIVE MEMBRANES FACTORY—BONDED TO WOOD—BASED STRUCTURAL SHEATHING, USED AS WATER—RESISTIVE BARRIERS
5. ICC—-ES ESR-1539 — POWER DRIVEN STAPLES AND NAILS FOR USE IN ENGINEERED AND NON—ENGINEERED CONNECTIONS
6. ICC-ES NER-272 — POWER DRIVEN STAPLES AND NAILS FOR USE IN ALL TYPES OF BUILDING CONSTRUCTION

3. SUBMITTALS
A. PRODUCT DATA: FOR EACH TYPE OF SHEATHING PRODUCT SPECIFIED.
B. EVALUATION REPORTS: FROM ICC=ES, FOR WOOD SHEATHING AND SEAM TAPE.
C. PRODUCT CERTIFICATIONS: FROM MANUFACTURER, INDICATING THAT SHEATHING PRODUCTS COMPLY WITH ICC—ES AC310.
D. FLORIDA BUILDING CODE SUPPLEMENT: SUBMIT DOCUMENTATION INDICATING THAT PRODUCTS COMPLY WITH REQUIREMENTS OF FLORIDA BUILDING CODE FOR PROJECTS IN THAT STATE.
E. WARRANTY: EXECUTED COPY OF MANUFACTURER SPECIAL WARRANTIES.

4. QUALITY ASSURANCE
A. PROVIDE WALL SHEATHING PRODUCTS MEETING REQUIREMENTS FOR WATER—RESISTIVE BARRIER IN ACCORDANCE WITH ICC—ES AC310.
B. FLORIDA BUILDING CODE COMPLIANCE: PROVIDE SHEATHING COMPLYING WITH FLORIDA BUILDING CODE PRODUCT AND INSTALLATION REQUIREMENTS FOR LOCATIONS IN FLORIDA AND OUTSIDE OF HIGH VELOCITY WIND ZONE.

5. DELIVERY, STORAGE, AND HANDLING
A. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR PROTECTION OF SHEATHING PRODUCTS FROM WEATHER PRIOR TO INSTALLATION.

6. WARRANTY
A. SPECIAL MANUFACTURER'S WARRANTY: MANUFACTURER'S STANDARD 30 YEAR WARRANTY FOLLOWING DATE OF SUBSTANTIAL COMPLETION.

7. MANUFACTURERS
A. BASIS—OF—DESIGN PRODUCT: PROVIDE SHEATHING PRODUCTS MANUFACTURED BY HUBER ENGINEERED WOODS LLC, CHARLOTTE NC; PHONE: (800) 933-9220; WEBSITE: WWW.ZIPSYSTEM.COM.

8. PERFORMANCE REQUIREMENTS
A. FIRE—TEST-RESPONSE CHARACTERISTICS:
1. EXTERIOR FIRE—-TEST EXPOSURE: ASTM E108, CLASS A, WHEN COVERED WITH APPROVED CLASS ACOVERINGS.
2. FIRE—RESISTANCE RATINGS: WHERE INDICATED, PROVIDE ASSEMBLIES TESTED FOR FIRE RESISTANCE PERASTM E119.
3. AIR—BARRIER ASSEMBLY AIR LEOKAGE: LESS THAN 0.04 CFM/SQ. FT. AT 1.57 IBF/SQ. FT. PER ASTM E2375.
B. WATER—VAPOR PERMEANCE, FACER: MINIMUM 12 PERMS, ASTM E96/E96M.
C. WEATHER EXPOSURE: MANUFACTURER WARRANTY APPLIES FOR MAXIMUM ALLOWABLE EXPOSURE PERIOD OF 180 DAYS.

9. WOOD PANEL PRODUCTS
A. SINGLE SOURCE LIMITATIONS: PROVIDE WALL SHEATHING BY A SINGLE MANUFACTURER.
B. ORIENTED STRAND BOARD: DOC PS 2, MADE WITH BINDER CONTAINING NO ADDED UREA FORMALDEHYDE.

10. WALL SHEATHING WITH INTEGRAL WATER—RESISTIVE BARRIER AND AIR BARRIER
A. ORIENTED-STRAND—BOARD WALL SHEATHING: EXPOSURE 1 SHEATHING WITH FACTORY-LAMINATED WATER—RESISTIVE BARRIER FACER WITH PRINTED FASTENER LOCATION SYMBOLS.
1. BASIS—OF—DESIGN PRODUCT: PROVIDE HUBER ENGINEERED WOODS LLC; ZIP SYSTEM SHEATHING.
2. SPAN RATING, PANEL GRADE AND PERFORMANCE CATEGORY: NOT LESS THAN 32/16; STRUCTURAL 1; 1/2 PERFORMANCE CATEGORY.
3. EDGE PROFILE: SQUARE EDGE.
4. FACER: MEDIUM—DENSITY, PHENOLIC-IMPREGNATED SHEET MATERIAL QUALIFYING «AS «A GRADE D WEATHER—RESISTIVE BARRIER IN ACCORDANCE WITH ICC AC38.
a. PROVIDE FASTENER SPACING SYMBOLS ON FACER FOR 16—INCH AND 24-INCH ON CENTER SPACING.

5. DELIVERY, STORAGE, AND HANDLING
A. COMPLY WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR PROTECTION OF SHEATHING PRODUCTS FROM WEATHER PRIOR TO INSTALLATION.

6. WARRANTY
A. SPECIAL MANUFACTURER'S WARRANTY: MANUFACTURER'S STANDARD 30 YEAR WARRANTY FOLLOWING DATE OF SUBSTANTIAL COMPLETION.

7. MANUFACTURERS
A. BASIS—OF—DESIGN PRODUCT: PROVIDE SHEATHING PRODUCTS MANUFACTURED BY HUBER ENGINEERED WOODS LLC, CHARLOTTE NC; PHONE: (800) 933-9220; WEBSITE: WWW.ZIPSYSTEM.COM.

8. PERFORMANCE REQUIREMENTS
A. FIRE—TEST-RESPONSE CHARACTERISTICS:
1. EXTERIOR FIRE—-TEST EXPOSURE: ASTM E108, CLASS A, WHEN COVERED WITH APPROVED CLASS ACOVERINGS.
2. FIRE—RESISTANCE RATINGS: WHERE INDICATED, PROVIDE ASSEMBLIES TESTED FOR FIRE RESISTANCE PERASTM E119.
3. AIR—BARRIER ASSEMBLY AIR LEOKAGE: LESS THAN 0.04 CFM/SQ. FT. AT 1.57 IBF/SQ. FT. PER ASTM E2375.
B. WATER—VAPOR PERMEANCE, FACER: MINIMUM 12 PERMS, ASTM E96/E96M.
C. WEATHER EXPOSURE: MANUFACTURER WARRANTY APPLIES FOR MAXIMUM ALLOWABLE EXPOSURE PERIOD OF 180 DAYS.

9. WOOD PANEL PRODUCTS
A. SINGLE SOURCE LIMITATIONS: PROVIDE WALL SHEATHING BY A SINGLE MANUFACTURER.
B. ORIENTED STRAND BOARD: DOC PS 2, MADE WITH BINDER CONTAINING NO ADDED UREA FORMALDEHYDE.

10. WALL SHEATHING WITH INTEGRAL WATER—RESISTIVE BARRIER AND AIR BARRIER
A. ORIENTED-STRAND—BOARD WALL SHEATHING: EXPOSURE 1 SHEATHING WITH FACTORY-LAMINATED WATER—RESISTIVE BARRIER FACER WITH PRINTED FASTENER LOCATION SYMBOLS.
1. BASIS—OF—DESIGN PRODUCT: PROVIDE HUBER ENGINEERED WOODS LLC; ZIP SYSTEM SHEATHING.
2. SPAN RATING, PANEL GRADE AND PERFORMANCE CATEGORY: NOT LESS THAN 32/16; STRUCTURAL 1; 1/2 PERFORMANCE CATEGORY.
3. EDGE PROFILE: SQUARE EDGE.
4. FACER: MEDIUM—DENSITY, PHENOLIC-IMPREGNATED SHEET MATERIAL QUALIFYING «AS «A GRADE D WEATHER—RESISTIVE BARRIER IN ACCORDANCE WITH ICC AC38.
a. PROVIDE FASTENER SPACING SYMBOLS ON FACER FOR 16—INCH AND 24-INCH ON CENTER SPACING.

11. FASTENERS
A. FASTENERS, GENERAL: SIZE AND TYPE COMPLYING WITH MANUFACTURER'S WRITTEN INSTRUCTIONS FOR PROJECT CONDITIONS AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
1. CORROSION RESISTANCE: HOT—DIP ZINC COATING, ASTM A153/A153M.
B. NAILS, BRADS, AND STAPLES: ICC AC116 AND ICC AC201.
C. POWER—DRIVEN FASTENERS: ICC—ES-1539 OR NER—272,
D. WOOD SCREWS: ASME B18.6.1.

12. SHEATHING JOINT—AND—PENETRATION TREATMENT MATERIAL
A. SELF—ADHERING SEAM AND FLASHING TAPE: PRESSURE—SENSITIVE, SELF—ADHERING, COLD—APPLIED, SEAM TAPE CONSISTING OF POLYOLEFIN FILM WITH ACRYLIC ADHESIVE, MEETING ICC—ES AC148, AND TESTED AS PART OF AN ASSEMBLY MEETING PERFORMANCE REQUIREMENTS.
1. BASIS—OF—DESIGN PRODUCT: PROVIDE HUBER ENGINEERED WOODS; ZIP SYSTEM TAPE.
2. THICKNESS: 0.012 INCH.
B. LIQUID—APPLIED FLASHING MEMBRANE: GUN—GRADE, COLD—APPLIED, SILYI—TERMINATED POLYETHER (STPE) LIQUID FLASHING MEMBRANE COMPATIBLE WITH SHEATHING/WEATHER BARRIER AND SELF—ADHERING SEAM AND FLASHING TAPE, AND TESTED AS PART OF AN ASSEMBLY MEETING PERFORMANCE REQUIREMENTS. FOLLOW MANUFACTURER'S RECOMMENDATION FOR INTEGRATION WITH ZIP SYSTEM TAPE.
1. BASIS—OF—DESIGN PRODUCT: PROVIDE HUBER ENGINEERED WOODS; ZIP SYSTEM LIQUID FLASH.
2. HARDNESS, SHORE A, ASTM C 661: 40 TO 45.

13. EXAMINATION
A. EXAMINE FRAMING SPACING AND ALIGNMENT TO DETERMINE IF WORK IS READY TO RECEIVE SHEATHING. PROCEED WITH SHEATHING WORK ONCE CONDITIONS MEET REQUIREMENTS.

14. SHEATHING INSTALLATION
A. INSTALL SHEATHING PANELS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, REQUIREMENTS OF APPLICABLE EVALUATION REPORTS, AND REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
B. AIR AND MOISTURE BARRIER. COORDINATE SHEATHING INSTALLATION WITH FLASHING AND JOINT SEALANT SEQUENCING AND INSTALLATION AND WITH ADJACENT BUILDING AIR AND MOISTURE BARRIER COMPONENTS TO PROVIDE COMPLETE, CONTINUOUS AIR— AND MOISTURE— BARRIER.
C. DO NOT BRIDGE EXPANSION JOINTS; ALLOW JOINT SPACING EQUAL TO SPACING OF STRUCTURAL SUPPORTS.
D. INSTALL PANELS WITH LAMINATED FACER TO EXTERIOR. STAGGER END JOINTS OF ADJACENT PANEL RUNS. ALL PANEL EDGES. SPACE SQUARE—EDGED PANELS 0,125 INCH (3 MM).
E. ATTACH SHEATHING PANELS SECURELY TO SUBSTRATE WITH MANUFACTURER—APPROVED FASTENERS IN COMPLIANCE WITH THE FOLLOWING:
1. ICC—ES ESR-1539 OR ICC—NES NER—272 FOR POWER—DRIVEN FASTENERS.
2. IBC: TABLE 2304.9.1 FASTENING SCHEDULE.
3. STRUCTURAL GENERAL NOTES AND WOOD SHEAR WALL SCHEDULE.
F. APPLY ZIP SYSTEM TAPE AT ALL PANEL SEAMS, PENETRATIONS, AND FACER DEFECTS OR CRACKS TO FORM CONTINUOUS WEATHERTIGHT SURFACE. APPLY TAPE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS AND REQUIREMENTS OF ICC—ES APPLICABLE TO TAPE APPLICATION.
G. APPLY LIQUID—APPLIED FLASHING MEMBRANE AT PENETRATIONS, GAPS, AND CRACKS TO FORM CONTINUOUS WEATHER TIGHT SURFACE. APPLY LIQUID MEMBRANE ACCORDING TO MANUFACTURER'S WRITTEN INSTRUCTIONS. FOLLOW MANUFACTURER'S RECOMMENDATION FOR INTEGRATION WITH ZIP SYSTEM TAPE.

### SECTION 06170 - LAMINATED VENEER STRUCTURAL TIMBER

1. SECTION INCLUDES
A. LAMINATED VENEER LUMBER (LVL) FRAMING MEMBERS.
B. HARDWARE AND CONNECTORS

2. QUALITY ASSURANCE
A. MANUFACTURER QUALIFICATIONS: MANUFACTURER EXPERIENCED IN LAMINATED VENEER STRUCTURAL TIMBER PRODUCTION, AND CAPABLE OF PROVIDING FIELD SERVICE REPRESENTATION DURING CONSTRUCTION.

3. REFERENCE STANDARDS
A. ASTM D2559 STANDARD SPECIFICATION FOR ADHESIVES FOR STRUCTURAL LAMINATED WOOD PRODUCTS FOR USE UNDER EXTERIOR (WET USE) EXPOSURE CONDITIONS.
B. ASTM D5456 SPECIFICATION FOR EVALUATION OF STRUCTURAL COMPOSITE LUMBER PRODUCTS.
C. NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS).
D. MATERIALS SHALL COMPLY WITH ESR REPORT ESR-2993.

4. SUBMITTALS
A. SUBMIT TO ARCHITECT PER SUBMITTALS SECTION FOR ACCEPTANCE PRIOR TO START OF FABRICATION.SHOW LUMBER COMBINATIONS (AITC AND AWPA COMBINATION SYMBOLS FOR IDENTIFICATION), DETAILS, METHODS AND SEQUENCES OF ASSEMBLY, ERECTION DIAGRAMS AND INSTRUCTIONS FOR USE IN FIELD.
B. MANUFACTURER'S PRODUCT AND MATERIAL SAFETY DATA SHEETS, FOR ALL SPECIFIED PRODUCTS.
C. SHOP DRAWINGS: SUBMIT DATA SHOWING PRODUCT COMPONENTS, INCLUDING FINISH.

5. MATERIALS
A. BASIS FOR DESIGN: REDBUILD REDLAM TIMBER.
B. DOUGLAS FIR, LARCH OR HEMLOCK, TOUCH SANDED, E = 2.0E6 PSI, FB = 2900 PSI; SIZES, SHAPES AND PROFILES AS INDICATED IN CONTRACT DOCUMENTS.
C. GRADE STAMPS: ALL REDLAM LVL MATERIALS SHALL COMPLY WITH NES REPORT NO. NER-481 OR CCMC REPORT NO. 11161-R.
D. HARDWARE: FURNISH CONNECTIONS FOR JOINING MEMBERS TO EACH OTHER AND/OR SUPPORTS.

6. FABRICATION
A. LVL SHALL BE MANUFACTURED IN A PLANT LISTED IN THE ABOVE REFERENCED REPORTS UNDER THE SUPERVISION OF AN APPROVED THIRD—PARTY INSPECTION AGENCY. IT SHALL BE MANUFACTURED IN A CONTINUOUS PROCESS WITH ALL GRAIN PARALLEL WITH THE LENGTH OF THE MEMBERS.
B. LVL SHALL BE MANUFACTURED IN A CONTINUOUS PROCESS FROM WOOD FIBER WITH ALL STRANDS ORIENTED TO THE LENGTH OF THE MEMBER AND THEN FED INTO A PRESS. ALL MEMBERS ARE TO BE FREE OF FINGER OR SCARF JOINTS.
C. ADHESIVES SHALL BE OF WATERPROOF TYPE CONFORMING TO THE REQUIREMENTS OF ASTM D2559.
D. PRESERVATIVE TREATMENT: PRESSURE TREAT MEMBERS OR PORTIONS OF MEMBERS IN CONTACT WITH CONCRETE OR EXTERIOR TO CONFORM TO AWPA STANDARD C-28; RETENTION O .3 LB/CU FT. OF WOOD.
E. PROTECTION: INDIVIDUALLY WRAP EACH MEMBER

7. STORAGE AND PROTECTION OF MATERIALS
A. CONTRACTOR RECEIVE, UNLOAD AND STORE MATERIALS. STORE MATERIALS PROTECTED FROM EXPOSURE TO HARMFUL WEATHER CONDITIONS AND AT TEMPERATURE AND HUMIDITY CONDITIONS RECOMMENDED BY MANUFACTURER.

8. ERECTION
A. COMPLIANCE: COMPLY WITH MANUFACTURER'S PRODUCT DATA, INCLUDING PRODUCT TECHNICAL BULLETINS, PRODUCT CATALOG INSTALLATION INSTRUCTIONS AND PRODUCT CARTON INSTRUCTIONS FOR INSTALLATION.
B. GENERAL: HANDLE WITH NON—MARKING SLINGS. ERECT IN ACCORD WITH ACCEPTED SHOP DRAWINGS.
1. MINOR MISFITS: CORRECTION OF MINOR MISFITS BY MODERATE USE OF DRIFT PINS, AND MODERATE AMOUNT OF REAMING, CHIPPING OR CUTTING IS CONSIDERED PART OF ERECTION. IMMEDIATELY REPORT ERRORS WHICH PREVENT PROPER ASSEMBLY OF PARTS BY THESE MEASURES TO ARCHITECT FOR AUTHORIZATION OF CORRECTIVE MEASURES PRIOR TO ASSEMBLY.
C. INSTALL PER THE CONTRACT DOCUMENTS AND MANUFACTURER'S RECOMMENDATIONS. HOLES, CUTS OR NOTCHES NOT SHOWN ON THE CONTRACT DOCUMENTS SHALL NOT BE PERMITTED.

9. PROTECTION OF COMPLETED WORK
A. KEEP PROTECTIVE WRAPPINGS IN PLACE UNTIL MEMBERS ARE ENCLOSED WITHIN BUILDING. GRADUALLY BRING INITIAL BUILDING HEAT OR COOLING TO DESIRED LEVEL. TO MINIMIZE CHECKING, DO NOT REDUCE RELATIVE HUMIDITY OF BUILDING RAPIDLY.

### SECTION 06192 - WOOD CHORD METAL TRUSSES

1. SECTION INCLUDES
A. WOOD CHORD METAL TRUSSES
B. BRIDGING, BRACING AND ANCHORAGE
C. FRAMING FOR OPENINGS

2. QUALITY ASSURANCE
A. MANUFACTURER: COMPANY SPECIALIZING IN MANUFACTURE OF PLYWOOD WEB JOISTS WITH 3 YEARS MINIMUM EXPERIENCE.
B. DESIGN: UNDER DIRECT SUPERVISION OF PROFESSIONAL ENGINEER EXPERIENCED IN STRUCTURAL FRAMING DESIGN. VERIFICATION OF DESIGN OF JOISTS BY COMPLETE CALCULATIONS TO BE SUBMITTED AS REQUIRED HEREIN.
C. THESE PRODUCTS SHALL BE DESIGNED AND MANUFACTURED TO THE STANDARDS SET FORTH IN THE ICC ES REPORT NO. ESR-1774,

3. SUBMITTALS:
A. PRODUCT DATA: SUBMIT FABRICATOR'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS FOR REQUIRED WORK, COVERING LUMBER, METAL PLATES, HARDWARE, FOBRICATION PROCESS, TREATMENT (IF ANY), HANDLING AND ERECTION.
i. SUBMIT CERTIFICATION, SIGNED BY AN OFFICER OF FABRICATING FIRM, INDICATING THAT TRUSSES TO BE UPPLIED FOR PROJECT COMPLY WITH INDICATED REQUIREMENTS.
B. SHOP DRAWINGS: SUBMIT SHOP DRAWINGS SHOWING: SPECIES, SIZES AND STRESS GRADES OF LUMBER TO BE USED; SPAN, CAMBER CONFIGURATION AND SPACING FOR EACH TYPE OF TRUSS REQUIRED; TYPE, SIZE, MATERIAL, FINISH, DESIGN VALUE AND LOCATION OF METAL CONNECTOR PLATES; AND BEARING AND ANCHORAGE DETAILS.
i. FABRICATOR SHALL SUBMIT DESIGN ANALYSIS INDICATING LOADING, SECTION MODULUS, ASSUMED ALLOWABLE STRESS CALCULATIONS, AND SIMILAR INFORMATION NEEDED FOR ANALYSIS AND TO ENSURE THAT TRUSSES COMPLY WITH DESIGN REQUIREMENTS.
ii. SHOP DRAWINGS SHALL BE SIGNED AND STAMPED BY A STRUCTURAL ENGINEER LICENSED TO PRACTICE IN THE STATE WHERE TRUSSES ARE TO BE ERECTED.
C. THE STANDARDS OF THE MANUFACTURER FOR QUALITY, ENGINEERING AND FABRICATION SHALL GOVERN THE WORK OF THIS SECTION.

4. MANUFACTURER
A. THE DRAWINGS WERE PREPARED AND THIS SPECIFICATION WRITTEN ON THE BASIS OF USING THE PRODUCTS OF THE REDBUILT LLC, BOISE, IDAHO.

5. TRUSSES
A. TRUSSES SHALL BE FACTORY MANUFACTURED WITH STEEL WEBS, TRUE PIN CONNECTIONS AND STRUCTURAL WOOD CHORDS.
B. TOP AND BOTTOM CHORDS: STRUCTURAL WOOD CHORD MEMBERS SHALL BE OF MACHINE STRESS RATED LUMBER OF APPROVED GRADE AND KILN DRIED TO A MAXIMUM MOISTURE CONTENT OF 192.
C. WEB MEMBERS: ACCURATELY DIE STAMPED FROM ELECTRICALLY WELDED, COLD ROLLED STEEL TUBING HAVING A MINIMUM YIELD STRENGTH OF 45,000 PSI.
D. CONNECTING PINS AND BEARING MEMBERS: MATERIAL AND SIZE AS REQUIRED BY DESIGN.
E. REFER TO STRUCTURAL DRAWINGS FOR ADDITIONAL DESIGN REQUIREMENTS GOVERNING OPEN WEB WOOD TRUSSES.

6. HANDLING AND STORAGE
A. PROTECT TRUSSES AND ACCESSORIES FROM DAMAGE WHEN STORED AT THE JOB SITE. FINISHED MEMBERS SHALL BE FREE OF BENDS, TWISTS OR OPEN JOÍNTS. REPLACE WARPED, BOWED OR DAMAGED TRUSSES AT NO ADDITIONAL COST TO THE OWNER.
B. HANDLE AND INSTALL IN A MANNER TO PREVENT BENDING, WARPING, TWISTING OR OTHER DAMAGE.
C. STORE TRUSSES IN A VERTICAL POSITION AND PROTECT FROM WEATHER.

7. INSTALLATION
A. INSTALL JOISTS IN ACCORD WITH MANUFACTURER'S INSTRUCTIONS; TRUE TO LINE AND LEVEL. PROVIDE TEMPORARY BRACING TO POSITION JOISTS IN PLACE UNTIL PERMANENTLY SECURED. PLACE PERMANENT BRIDGING, BRACING AND ANCHORS TO MAINTAIN JOISTS STRAIGHT AND IN CORRECT POSITION BEFORE INSTALLATION OF DECKING.
B. ANY PRODUCT SPECIFIED ELSEWHERE IN THESE SPECIFICATIONS DESIGNED TO BE SUSPENDED BY ANY MEANS FROM PLYWOOD WEB JOÍST SHALL BE SUSPENDED FROM TOP FLANGE OF JOIST ONLY, EXCEPT THOSE SPECIFICALLY DESIGNATED AND DETAILED IN STRUCTURAL DRAWINGS TO BE APPLIED TO BOTTOM FLANGE OF JOIST.

8. PROTECTION OF WORK IN PROGRESS
A. TEMPORARY CONSTRUCTION LOADS WHICH CAUSE MEMBER STRESSES BEYOND DESIGN LIMITS ARE NOT PERMITTED.

### SECTION 06196 - PLYWOOD WEB JOISTS

1. SECTION INCLUDES
A. PLYWOOD WEB JOISTS
B. BRIDGING, BRACING AND ANCHORAGE
C. FRAMING FOR OPENINGS

2. QUALITY ASSURANCE
A. MANUFACTURER: COMPANY SPECIALIZING IN MANUFACTURE OF PLYWOOD WEB JOISTS WITH 3 YEARS MINIMUN EXPERIENCE.
B. DESIGN: UNDER DIRECT SUPERVISION OF PROFESSIONAL ENGINEER EXPERIENCED IN STRUCTURAL FRAMING DESIGN. VERIFICATION OF DESIGN OF JOISTS BY COMPLETE CALCULATIONS TO BE SUBMITTED AS REQUIRED HEREIN.

3. ERENCE STANDARDS
A. AMERICAN LUMBER STANDARDS COMMITTEE (ALSC)
B. AMERICAN PLYWOOD ASSOCIATION (APA)
C. DOUGLAS FIR PLYWOOD ASSOCIATION (DFPA)

4. MITTALS
A. SUBMIT SHOP DRAWINGS PER SUBMITTALS SECTION TO THE ARCHITECT FOR ACCEPTANCE. —INDICATE FRAMING SYSTEM, SIZES AND SPACING OF JOISTS, LOADS AND JOIST CAMBERS, BEARING AND ANCHOR DETAILS, BRIDGING AND BRACING, AND FRAMED OPENINGS.
B. INSTRUCTIONS: SUBMIT MANUFACTURER'S INSTALLATION INSTRUCTIONS.

5. MANUFACTURER
A. THE DRAWINGS WERE PREPARED AND THIS SPECIFICATION WRITTEN ON THE BASIS OF USING THE PRODUCTS OF THE REDBUILT LLC, BOISE, IDAHO. LT IS NOT THE INTENT TO LIMIT COMPETITIVE BIDDING. PRODUCTS WITH EQUAL CHARACTERISTICS BY OTHER MANUFACTURERS ARE ACCEPTABLE UNDER THE CONDITIONS OF THESE SPECIFICATIONS.

6. BASIC MATERIALS
A. “RED—I PLYWOOD WEB JOIST:
1. FLANGES: MACHINE STRESS RATED LUMBER ONLY, NO SUBSTITUTIONS ALLOWED. NOTE THAT TOP AND BOTTOM FLANGES SHALL BE OF CONSISTENT SIZE THROUGHOUT PROJECT, REGARDLESS OF SPAN.
2. WEBS: DFPA STRUCTURAL 1 GRADE PLYWOOD.
3. GLUE: WATERPROOF.
B. BRIDGING: TYPE, SIZE AND SPACING REQUIRED BY JOIST MANUFACTURER.

7. ANCHORS AND CONNECTORS
A. GALVANIZED STEEL; TYPE TO SUIT APPLICATION.

8. FABRICATION
A. INSTALL WEBS IN FLANGES WITH GRAIN RUNNING IN VERTICAL DIRECTION OF JOIST AND BUTT JOINTED TO FORM CONTINUOUS WEB. PRESSURE FORM WEB AND FIT INTO A GROOVE IN CENTER OF WIDE FACE OF FLANGE MEMBERS SO AS TO FORM A PRESSURED GLUE JOINT AT THAT JUNCTION.

9. DELIVERY AND STORAGE
A. TRANSPORT AND STORE JOISTS IN VERTICAL POSITION RESTING ON BEARING ENDS. PROTECT JOISTS FROM MOISTURE, WARPAGE, AND DISTORTION DURING TRANSIT AND WHEN SITE STORED.

10. INSTALLATION
A. INSTALL JOISTS IN ACCORD WITH MANUFACTURER'S INSTRUCTIONS; TRUE TO LINE AND LEVEL. PROVIDE TEMPORARY BRACING TO POSITION JOISTS IN PLACE UNTIL PERMANENTLY SECURED. PLACE PERMANENT BRIDGING, BRACING AND ANCHORS TO MAINTAIN JOISTS STRAIGHT AND IN CORRECT POSITION BEFORE INSTALLATION OF DECKING.
B. ANY PRODUCT SPECIFIED ELSEWHERE IN THESE SPECIFICATIONS DESIGNED TO BE SUSPENDED BY ANY MEANS FROM PLYWOOD WEB JOIST SHALL BE SUSPENDED FROM TOP FLANGE OF JOIST ONLY. NO LOADS MAY BE APPLIED TO BOTTOM FLANGE OF JOIST.

11. PROTECTION OF WORK IN PROGRESS
A. TEMPORARY CONSTRUCTION LOADS WHICH CAUSE MEMBER STRESSES BEYOND DESIGN LIMITS ARE NOT PERMITTED.

### SECTION 06200 - FINISH CARPENTRY

1. SECTION INCLUDES
A. FINISH CARPENTRY ITEMS.

2. REFERENCES
A. AWI/AWMAC (QSI) — ARCHITECTURAL WOODWORK QUALITY STANDARDS ILLUSTRATED; ARCHITECTURAL WOODWORK INSTITUTE AND ARCHITECTURAL WOODWORK MANUFACTURERS ASSOCIATION OF CANADA; 2006, 8TH ED., VERSION 2.0.
B. AWPA C2 — LUMBER, TIMBER, BRIDGE TIES AND MINE TIES —— PRESERVATIVE TREATMENT BY PRESSURE PROCESSES; AMERICAN WOOD—PRESERVERS' ASSOCIATION; 2002.

3. QUALITY ASSURANCE
A. PERFORM WORK IN ACCORDANCE WITH AWI ARCHITECTURAL WOODWORK QUALITY STANDARDS LLLUSTRATED, CUSTOM GRADE.

4. DELIVERY, STORAGE, AND HANDLING
A. PROTECT WORK FROM MOISTURE DAMAGE.

5. LUMBER MATERIALS
A. SOFTWOOD LUMBER:
1. SOUTHERN YELLOW PINE #2, C&BTR
2. TEXTURE: SURFACED SMOOTH, BOTH SIDES.
B. HARDWOOD LUMBER:
1. POPLAR, DOUGLAS FIR OR RED CEDAR AS INDICATED ON THE DRAWINGS
2. TEXTURE: SURFACED SMOOTH, BOTH SIDES; DISTRESSED WHERE NOTED.
C. RECLAIMED LUMBER:
1. EXTERIOR: RECLAIMED BARN WOOD SIDING, RANDOM LENGTHS AND WIDTHS.
2. INTERIOR: RECLAIMED RE—MILLED PINE.

6. ADHESIVE
A. ADHESIVE: TYPE RECOMMENDED BY LAMINATE MANUFACTURER TO SUIT APPLICATION.

7. FASTENERS
A. HOT DIPPED GALVANIZED FOR EXTERIOR AND HIGH HUMIDITY LOCATIONS, UNTREATED STEEL ELSEWHERE.
B. CONCEALED JOINT FASTENERS: THREADED STEEL.

8. WOOD TREATMENT
A. WOOD PRESERVATIVE BY PRESSURE TREATMENT (PT TYPE): AWPA TREATMENT C2 USING WATER BORNE PRESERVATIVE WITH 0.25 PERCENT RETAINAGE.

9. FABRICATION
A. SHOP ASSEMBLE WORK FOR DELIVERY TO SITE, PERMITTING PASSAGE THROUGH BUILDING OPENINGS.
B. WHEN NECESSARY TO CUT AND FIT ON SITE, PROVIDE MATERIALS WITH AMPLE ALLOWANCE FOR CUTTING. PROVIDE TRIM FOR SCRIBING AND SITE CUTTING.

10. INSTALLATION
A. SET AND SECURE MATERIALS AND COMPONENTS IN PLACE, PLUMB AND LEVEL.
B. CAREFULLY SCRIBE WORK ABUTTING OTHER COMPONENTS, WITH MAXIMUM GAPS OF 1/32 INCH. DO NOT USE ADDITIONAL OVERLAY TRIM TO CONCEAL LARGER GAPS.

11. ERECTION TOLERANCES
A. MAXIMUM VARIATION FROM TRUE POSITION: 1/16 INCH.
B. MAXIMUM OFFSET FROM TRUE ALIGNMENT WITH ABUTTING MATERIALS: 1/32 INCH.

12. SCHEDULE
A. EXTERIOR:
1. WOOD SIDING:
a. SPECIES AND GRADE: 1X6 SHIP LAP WESTERN RED CEDAR, WWPA OR WCLIB, B & E BETTER — 1 DE 2 CLEAR VERTICAL GRAIN (PROVIDE RECLAIMED WOOD WHERE NOTED).
b. TEXTURE: S4S
c. FURNISH SURFACED LUMBER FOR SIDING AND TRIM INDICATED TO RECEIVE STAINED FINISH.
2. WOOD SCREENING:
a. SPECIES AND GRADE: 1X6 WESTERN RED CEDAR, WWPA OR WCLIB, B DE BETTER - 1 & 2 CLEAR VERTICAL GRAIN.
b. TEXTURE: S4S
c. FURNISH SURFACED LUMBER FOR SCREENING AND FENCING INDICATED TO RECEIVE STAINED FINISH.
B. INTERIOR:
1. STANDING AND RUNNING TRIM — TRANSPARENT FINISH:
a. QUALITY STANDARD: COMPLY WITH AWI 300 CUSTOM GRADE
b. BACKS: BACK OUT OR GROOVE BACKS OF FLAT TRIM MEMBERS, KERF BACKS OF OTHER WIDE FLAT MEMBERS EXCEPT FOR MEMBERS WITH ENDS EXPOSED IN FINISHED WORK.
c. CASINGS: ASSEMBLE IN PLANT EXCEPT WHERE LIMITATION OF ACCESS TO PLACE OF INSTALLATION REQUIRES FIELD ASSEMBLY.
d. VENEER WOOD SPECIES: BIRCH

### SECTION 06410 - CUSTOM CABINETS

1. SECTION INCLUDES
A. SPECIALLY FABRICATED CABINET UNITS AND HARDWARE.
B. COUNTERTOPS.

2. REFERENCES
A. ANSI A135.4 — AMERICAN NATIONAL STANDARD FOR BASIC HARDBOARD; 2004,
B. AWI/AWMAC (QSI) — ARCHITECTURAL WOODWORK QUALITY STANDARDS ILLUSTRATED; ARCHITECTURAL WOODWORK INSTITUTE AND ARCHITECTURAL WOODWORK MANUFACTURERS ASSOCIATION OF CANADA; 2006, 8TH ED., VERSION 2.0.
C. NEMA LD 3 — HIGH—PRESSURE DECORATIVE LAMINATES; NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION; 2005.

3. QUALITY ASSURANCE
A. PERFORM WORK IN ACCORDANCE WITH AWI/AWMAC ARCHITECTURAL WOODWORK QUALITY STANDARDS ILLUSTRATED, CUSTOM QUALITY, UNLESS OTHER QUALITY IS INDICATED FOR SPECIFIC ITEMS.

4. LUMBER MATERIALS
A. HARDWOOD LUMBER: NHLA; GRADED IN ACCORDANCE WITH AWI/AWMAC ARCHITECTURAL WOODWORK QUALITY STANDARDS ILLUSTRATED, GRADE |/PREMIUM; AVERAGE MOISTURE CONTENT OF 5-10 PERCENT; SPECIES AS FOLLOWS:
1. EXPOSED SURFACES: SPECIES — AS NOTED ON DRAWINGS.
2. SEMI-EXPOSED SURFACES: SPECIES — AS NOTED ON DRAWINGS.
3. CONCEALED SURFACES: SPECIES POPLAR.

5. PANEL MATERIALS
A. EXPOSED SURFACES: NIST PS 1; APA A—A GRADE, PLAIN—SLICED WOOD FACE VENEER, SPECIES AS NOTED ON DRAWINGS, INTERIOR RATED ADHESIVES, CORE OF PARTICLEBOARD, MEDIUM DENSITY FIBERBOARD, OR ENGINEERED COMBINATION, THICKNESS AS INDICATED.
B. HARDBOARD: AHA A135.4; PRESSED WOOD FIBER WITH RESIN BINDER, CLASS 1 — TEMPERED, 1/4 INCH THICK, SMOOTH TWO SIDES (S2S); USE FOR DRAWER BOTTOMS, DUST PANELS, AND OTHER COMPONENTS INDICATED ON DRAWINGS.

6. LAMINATE MATERIALS
A. HIGH PRESSURE DECORATIVE LAMINATE (HPDL): NEMA LD 3, TYPES AS RECOMMENDED FOR SPECIFIC APPLICATIONS AND AS INDICATED. MELAMINE IS NOT AN ACCEPTABLE FINISH.

7. ACCESSORIES
A. ADHESIVE: TYPE RECOMMENDED BY FABRICATOR TO SUIT APPLICATION.
B. FASTENERS: SIZE AND TYPE TO SUIT APPLICATION.
C. BOLTS, NUTS, WASHERS, LAGS, PINS, AND SCREWS: OF SIZE AND TYPE TO SUIT APPLICATION; GALVANIZED OR CHROME-—PLATED FINISH IN CONCEALED LOCATIONS AND STAINLESS STEEL, OR CHROME—PLATED FINISH IN EXPOSED LOCATIONS.
D. CONCEALED JOINT FASTENERS: THREADED STEEL.
E. GROMMETS: STANDARD PLASTIC, PAINTED METAL, OR RUBBER GROMMETS FOR CUT—OUTS, IN COLOR TO MATCH ADJACENT SURFACE.

8. HARDWARE
A. ADJUSTABLE SHELF SUPPORTS: STANDARD SIDE—MOUNTED SYSTEM USING SURFACE MOUNTED METAL SHELF CLIPS AND SHELF BRACKETS, OIL RUBBED FINISH, WITH NOMINAL 1 INCH SPACING ADJUSTMENTS.
B. DOOR PULLS: DOUG MOCKETT & COMPANY, MODEL DP57B, 4 INCH STAINLESS STEEL, WIRE PULL .
C. CABINET LOCKS: FIRST WATCH 1385—VB, KEYED CYLINDER, MASTER KEYED, STEEL WITH OIL RUBBED BRONZE FINISH.
D. CATCHES: L—EP592—P, 15 LB DOUBLE MAGNETIC CATCH, BRONZE.
E. HINGES: WURTH FE12-STB 1 1/2" PIANO HINGE, STATUARY BRONZE.

9. FABRICATION
A. CABINET STYLE: FLUSH OVERLAY.
B. ASSEMBLY: SHOP ASSEMBLE CABINETS FOR DELIVERY TO SITE IN UNITS EASILY HANDLED AND TO PERMIT PASSAGE THROUGH BUILDING OPENINGS.
C. EDGING: FIT SHELVES, DOORS, AND EXPOSED EDGES WITH SPECIFIED EDGING. DO NOT USE MORE THAN ONE PIECE FOR ANY SINGLE LENGTH. PROVIDE HARDWOOD EDGING AT EDGE OF COUNTERTOP.
D. FITTING: WHEN NECESSARY TO CUT AND FIT ON SITE, PROVIDE MATERIALS WITH AMPLE ALLOWANCE FOR CUTTING. PROVIDE MATCHING TRIM FOR SCRIBING AND SITE CUTTING.
E. PLASTIC LAMINATE: APPLY PLASTIC LAMINATE FINISH IN FULL UNINTERRUPTED SHEETS CONSISTENT WITH MANUFACTURED SIZES. FIT CORNERS AND JOINTS HAIRLINE; SECURE WITH CONCEALED FASTENERS. SLIGHTLY BEVEL ARISES. LOCATE COUNTER BUTT JOINTS MINIMUM 2 FEET FROM SINK CUT—OUTS.
1. APPLY LAMINATE BACKING SHEET TO REVERSE SIDE OF PLASTIC LAMINATE FINISHED SURFACES.
2. CAP EXPOSED PLASTIC LAMINATE FINISH EDGES WITH MATERIAL OF SAME FINISH AND PATTERN.
F. MATCHING WOOD GRAIN: COMPLY WITH REQUIREMENTS OF QUALITY STANDARD FOR SPECIFIED GRADE AND AS FOLLOWS:
1. PROVIDE CENTER MATCHED PANELS AT EACH ELEVATION.
2. PROVIDE SEQUENCE MATCHING ACROSS EACH ELEVATION.
3. CARRY FIGURE OF CABINET FRONTS TO TOE KICKS.
G. MECHANICALLY FASTEN BACK SPLASH TO COUNTERTOPS WITH STEEL BRACKETS AT 16 INCHES ON CENTER.

10. INSTALLATION
A. SET AND SECURE CUSTOM CABINETS IN PLACE, ASSURING THAT THEY ARE RIGID, PLUMB, AND LEVEL.
B. USE FIXTURE ATTACHMENTS IN CONCEALED LOCATIONS FOR WALL MOUNTED COMPONENTS.
C. USE CONCEALED JOINT FASTENERS TO ALIGN AND SECURE ADJOINING CABINET UNITS AND COUNTERTOPS.
D. CAREFULLY SCRIBE CASEWORK ABUTTING OTHER COMPONENTS, WITH MAXIMUM GAPS OF 1/32 INCH. DO NOT USE ADDITIONAL OVERLAY TRIM FOR THIS PURPOSE.
E. SECURE CABINETS TO FLOOR USING APPROPRIATE ANGLES AND ANCHORAGES.
F. COUNTERSINK ANCHORAGE DEVICES AT EXPOSED LOCATIONS. CONCEAL WITH SOLID WOOD PLUGS OF SPECIES TO MATCH SURROUNDING WOOD; FINISH FLUSH WITH SURROUNDING SURFACES.

11. ADJUSTING
A. ADJUST INSTALLED WORK.
B. ADJUST MOVING OR OPERATING PARTS TO FUNCTION SMOOTHLY AND CORRECTLY.

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REGISTERED ARCHITECT CHRISTOPHER ROSTER 20198 STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

SPECIFICATIONS

| DATE | REMARKS |
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# HAT CREEK BURGER - PROTOTYPE 1.1 TABLE OF CONTENTS

# DIVISION 07 - THERMAL AND MOISTURE PROTECTION

**SECTION 07212 - BOARD AND BATT INSULATION**

1. SECTION INCLUDES
   A. BATT INSULATION IN EXTERIOR WALL AND CEILING CONSTRUCTION.

   B. BATT INSULATION FOR FILING PERIMETER WINDOW AND DOOR SHIM SPACES AND CREVICES IN EXTERIOR WALL AND ROOF.

   C. NAIL-LINE ROOF INSULATION BOARD AT SLOPED METAL ROOFING.

2. REFERENCES
   A. ASTM C 578 - STANDARD SPECIFICATION FOR RIGID, CELLULAR POLYSTYRENE THERMAL INSULATION; 2005A.

   B. ASTM C 665 - STANDARD SPECIFICATION FOR MINERAL-FIBER BLANKET THERMAL INSULATION FOR LIGHT FRAME CONSTRUCTION AND MANUFACTURED HOUSING; 2001.

   C. ASTM C 1289 - STANDARD SPECIFICATION FOR FACED RIGID CELLULAR POLYISOCYANURATE THERMAL INSULATION BOARD; 2006.

   D. ASTM D 2842 - STANDARD TEST METHOD FOR WATER ABSORPTION OF RIGID CELLULAR PLASTIC; 2001.

   E. ASTM E 84 - STANDARD TEST METHOD FOR SURFACE BURNING CHARACTERISTICS OF BUILDING MATERIALS; 2005.

   F. ASTM E 136 - STANDARD TEST METHOD FOR BEHAVIOR OF MATERIALS IN A VERTICAL TUBE FURNACE AT 750 DEGRESS C; 2004.

3. BATT INSULATION MATERIALS
   A. BATT INSULATION: ASTM C 665; PREFORMED BATT; FRICTION FIR, CONFIRMING TO THE FOLLOWING:

   1. COMBUSTIBILITY: NON-COMBUSTIBLE, WHEN TESTED IN ACCORDANCE WITH ASTM E 136, EXCEPT FOR FACING, IF ANY.

   2. THERMAL RESISTANCE: R OF 21 IN WALLS, 30 IN ROOF.

   3. FACING: ALUMINUM FOIL OR KRAFT PAPER FACED, ONE SIDE.

   4. APPROVED MANUFACTURERS:

   A. CERTAINTEED CORPORATION: WWW.CERTAINTEED.COM.

   B. JOHNS MANVILLE CORPORATION: WWW.JM.COM.

   C. OWENS CORNING CORP: WWW.OWENSCORNING.COM.

5. NAILABLE ROOF INSULATION
   A. NAIL-BASE BOARD INSULATION: 2.5 INCH THICK NAIL-BASE ROOF INSULATION, POLYISOCYANURATE FOAM CORE BONDED TO 7/16 INCH ORIENTED STRUCTURAL BOARD OVER 1 INCH POLYISOCYANURATE RIGID INSULATION BOARD.

   1. FLAME SPREAD INDEX: 50 OR LESS, WHEN TESTED IN ACCORDANCE WITH ASTM E 84.

   2. SMOKE DEVELOPED INDEX: 450 OR LESS, WHEN TESTED IN ACCORDANCE WITH ASTM E 84.

   3. COMPRESSIVE STRENGTH: 20 PSI

   4. BOARD SIZE: 48 X 96 INCH.

   5. THERMAL RESISTANCE: R-VALUE OF 12 FOR COMPOSITE BOARD R-VALUE OF 18 FOR INSULATION BOARD FOR TOTAL OF R-30.

   6. APPROVED MANUFACTURERS:
   A. JOHNS MANVILLE, "NAILBOARD": WWW.SPECJM.COM

   B. R-MAX, "NAILABLE BASE 3": WWW.RMAX.COM

   C. ATLAS ROOFING CORP., "ACFOAM NAILBASE": WWW.ATLASROOFING.COM

   D. HOMASOTE COMPANY, "THERMASOTE NAILBASE": WWW.HOMASOTE.COM

6. ACCESSORIES
   A. TAPE: BRIGHT ALUMINUM SELF- ADHERING TYPE, MESH REINFORCED, 2 INCH WIDE.

   B. INSULATION FASTENERS: IMPALING CLIP OF UNFINISHED STEEL WITH WASHER RETAINER AND CLIPS, TO BE ADHERED TO SURFACE TO RECEIVE INSULATION, LENGTH TO SUIT INSULATION THICKNESS AND SUBSTRATE, CAPABLE OF SECURELY AND RIGIDLY FASTENING INSULATION IN PLACE.

   C.ADHESIVE: TYPE RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATION.

7. BATT INSULATION
   A. INSTALL INSULATION IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

   B. INSTALL IN EXTERIOR WALL AND ROOF SPACES WITHOUT GAPS OR VOIDS. DO NOT COMPRESS INSULATION.

   C. TRIM INSULATION NEATLY TO FIT SPACES. INSULATE MISCELLANEOUS GAPS AND VOIDS.

   D. FIT INSULATION TIGHTLY IN CAVITIES AND TIGHTLY TO EXTERIOR SIDE OF MECHANICAL AND ELECTRICAL SERVICES WITHIN THE PLANE OF THE INSULATION.

   E. INSTALL INSULATION IN WALLS WITH FACED SIDE FACING THE BUILDING INTERIOR.

   F. TAPE INSULATION BATTS IN PLACE.

   G. TAPE SEAL BUTT ENDS, LAPPED FLANGES, AND TEARS OR CUTS IN MEMBRANE.

8. BOARD INSTALLATION AT SLOPED ROOFING
   A. INSTALL RIGID ROOF INSULATION OVER ENTIRE SLOPING ROOF AREA WITH VENT STRIPS PARALLEL TO ROOF IN ACCORD WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.

   B.OVERLAY NAIL BASE INSULATION ON TOP OF RIGID INSULATION BOARD WITH STAGGERED SEAMS IN PERPENDICULAR DIRECTION.

   C. ALLOW 1/8" SPACING BETWEEN UNITS. USE MANUFACTURER'S RECOMMENDED FASTENERS, INSULATION FASTENERS OF SUFFICIENT LENGTH TO PENETRATE INSULATION BOARD BELOW AND A MINIMUM 1" INTO ROOF DECK SUBSTRATE, BUT NOT THROUGH THE DECK, AT APPLICABLE INTERVALS TO ACHIEVE FM-I-90 RATING OR AS REQUIRED BY LOCAL CODE.

**SECTION 07250 - SILL SEALER GASKET**

1. SECTION INCLUDES
   A. SILL SEALER GASKET AT EXTERIOR WALLS.

2. DELIVERY, STORAGE AND HANDLING
   A. STORE SILL SELAER IN A DRY AREA ABOVE 60" BEFORE USE.

3. SILL SEALER
   A. SILL SEALER "PROTECTO TRIPLE GUARD ENERGY SILL SELAER BY PROTECTO WRAP (1-800-759-9727). PROTECTO TRIPLE GUARD ENERGY SILL SEALER IS AVAILABLE IN 3 1/2" AND 5 1/2" WIDTHS AND IS 1/4" THICK.

4. ACCESSORIES
   A. PRIMER: #100 PRMER BY PROTECTO WRAP.

5. PREPARATION
   A. AREAS TO BE SEALED MUST BE CLEAN AND DRY. KNOCK OFF AND REMOVE ANY ROUGH OR JAGGED EDGES.

6. INSTALLATION
   A. ROLL OUT PROTECTO ENERGY PLATE LINER AND ALIGN WITH PERIMETER OF SLAB. PEEL OFF THE RELEASE LINER FROM THE BOTTOM OF THE ENERGY PLATE LINER AND PLACE THE EXPOSED ADHESIVE SIDE DOWN ON TOP OF THE FOUNDATION.

   B. PRESSING THE ADHESIVE BOTTOM OF THE PROTECTO ENERGY PLATE LINER IN PLACE IS ESSENTIAL TO PROPERLY ADHERE THE PRODUCT TO THE FOUNDATION.

   C. FOR RE-BAR OR ANCHOR BOLTS COMING OUT OF THE FOUNDATION, MAKE AN "X" CUT IN THE BACK OF THE PROPERTY LINER AND SLIDE OVER THE PROTRUSIONÌ PRESSING FIRMLY IN PLACE.

7. COLD WEATHER REQUIREMENTS
   A. FOR INSTALLATIONS BELOW 40" F:

   1. KEEP PROTECTO ENERGY PLATE LINER SILL SELAER IN A WARM HEATED SPACE ABOVE 60" F BEFORE USE.

   2. PRIME THE TOP OF THE FOUNDATION WITH #100 PRIMER AND ALLOW PRIMER TO TACK UP. DO NOT APPLY ENERGY PLATE LINER TO WET PRIMER.

   3. PEEL AND STICK THE PROTECTO ENERGY PLATE LINER SILL SEALER IN PLACE.

   4. PROTECTO WRAP PROTECTO-TAK 16.25 OZ. SPRAY ADHESIVE MAY BE USED IN PLACE OF # 100 PRIMER.

**SECTION 07260 - WEATHER BARRIERS**

1. SECTION INCLUEDS

   A. VAPOR BARRIER MUST HAVE ALL OF THE FOLLOWING QUAILITES:

   1. PERMANCE OF LESS THAN 0.01 PERMS (GRAINS/(FT2 *HR* IN.HG)) PER ASTM F 1249 OR ASTM E 96.

   2. ASTM E 1745 CLASS A

   B. AIR BARRIERS: MATERIALS TO STOP PASSAGE OF AIR THROUGH EXTERIOR WALLS, JOINTS BETWEEN EXTERIOR WALLS AND ROOF, AND JOINTS AROUND FRAMES OF OPENINGS IN EXTERIOR WALLS TO COMPLY WITH ICC-ES ACCEPTANCE CRITERIA AC-38.

2. SHEET SEAL MATERIALS

   A. VAPOR RETARDER: STEGO WRAP VAPOR BARRIER (10-MIL) BY STEGO INDUSTRIES LLC FOR UNDERSLAB APPLICATIONS.

   B. MOISTURE BARRIER: 30 IB FELT FOR HORIZONTAL APPLICATIONS.

3. ACCESSORIES

   A. VAPOR RETARDER SEAM TAPE:

   1. PERMEANCE LESS THAN 0.3 PERMS PER ASTM F 1249 OR ASTM E 96

   2. STEGO TAPE BY STEGO INDUSTRIES LLC

   B. AIR BARRIER SEAM TAPE:

   1. PERMEANCE LESS THAN 0.3 PERMS PER ASTM F 1249 OR ASTM E 96

   2. TYVEK SEAM TAPE

   C. PIPE BOOTS

   1. CONSTRUCT PIPE BOOTS FROM VAPOR BARRIER MATERIAL, PRESSURE SENSITIVE TAPE AND/OR MASTIC PER MANUFACTURER'S INSTRUCTIONS.

4. INSTALLATION

   A. INSTALL MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

**SECTION 07411 - PREFORMED METAL ROOFING ( STANDING SEAM)**

1. SECTION INCLUDES

   A. STANDING SEAM ROOF PANELS
   B. MATCHING METAL TRIM AND FLASHING
   C. CONCEALED FASTENERS
   D. SHOP DRAWINGS
   E. SAMPLES

2. REFERENCES

   A. SMACNA (ASMM) - ARCHITECTURAL SHEET METAL MANUAL; SHEET METAL AND AIR CONDITIONING CONSTRACTOR'S NATIONAL ASSOCIATION.

   B. ASTM A792-89: STANDARD SPECIFICATION FOR STEEL SHEET, ALUMINUM-ZINC ALLOY COATED BY THE HOT DIP PROCESS, GENERAL REQUIREMENTS

3. SUBMITTALS

   A. SUBMIT SHOP DRAWINGS PER SUBMITTALS SECTION PRIOR TO FABRICATION, FOR OWNER'S ACCEPTANCE. SHOW GAUGES, PROFILES, FASTENER TYPES AND LOCATIONS, AND FLASHING DETAILS.

   B. SUBMIT SAMPLES OF PANEL PROPOSED WITH COLOR SAMPLES ON ACTUAL MATERIAL, FOR OWNER'S ACCEPTANCE AND COLOR SELECTION.

4. QUALITY ASSURANCE

   A. WIND UPLIFT: PROVIDE ROOF PANEL SYSTEM INCLUDING SUPPORTS MEETING REQUIREMENTS OF UNDERWRITERS LABORATORIES, INC. FOR CLASS 90 WIND UPLIFT RESISTANCE.

5. WARRANTY

   A. METAL PANEL MANUFACTURER, UPON FINAL ACCEPTANCE FOR PROJECT, FURNISH A WARRANTY COVERING BARE METAL AGAINST RUPTURE, STRUCTURAL FAILURE, AND PERFORATION DUE TO NORMAL ATMOSPHERIC CORROSION EXPOSURE FOR A PERIOD OF 25 YEARS.

   B. METAL PANEL MANUFACTURER, UPON FINAL ACCEPTANCE FOR PROJECT, FURNISH A WARRANTY COVERING PANEL FINISH AGAINST CRACKING, CHECHKING, BLISTERING, PEELING, FLAKING, CHIPPING, CHALKING, AND FADING FOR A PERIOD OF 25 YEARS.

6. SHEETMETAL PANELS

   A. MCELROY METAL, BOSSIER CITY, LA.
   1. SHEET ROOF PANELS: FLAT PANS WITH 1 1/2 INCH HIGH RIBS AT 16 INCHES ON CENTER; 24 GAUGE (UL-90 RATED); PRE-COATED GALVALUME STEEL SHEET SUBSTRATE, 0.5 OUNCES/SQUARE FOOT COMPLYING WITH ASTM A 446 WITH G90 COATING COMPLYING WITH ASTM A 525.

   B. FINISH : MANUFACTURER'S STANDARD KYNAR 500 COATING, COLOR AS NOTED ON DRAWINGS.

7. METAL TRIM AND FLASHINGS

   A. FABRICATE FROM SAME THICKNESS AND FINISH MATERIAL AS ROOFING PANELS.

8. FASTENERS

   A. CONCEALED, CORROSION RESISTANT, WEATHER TIGHT, TYPE AND SIZE REQUIRED BY MANUFACTURER'S SPECIFICATIONS. STAINLESS STEEL FASTENING SHALL BE USED FOR CONNECTING DISSIMILAR METALS.

9. CLOSURES

   A. MANUFACTURER'S STANDARD, MATCH PANELS, TO FIT CONFIGURATION OF THE PANEL SPECIFIED.

10. UNDERLAYMENT

   A. W.R. GRACE COMPANY, ICE AND WATER SHIELD

11. JOINT SEALANTS

   A. AS SPECIFIED IN SEALANTS AND CAULKING.

12. HANDLING

   A. PERFORM IN A MANNER TO PREVENT BENDING, WARPING, TWIST_ OR OTHER DAMAGE. DO NOT USE DAMAGED OR BENT MATERIALS.

13. STORAGE

   A. STORE UNITS ON RAISED SUPPORT AND PROTECT FROM WEATHER.

14. WORKMANSHIP

   A. USE ONLY SKILLED AND EXPERIENCED PERSONNEL. WORKMANSHIP SHALL BE EQUAL TO THE BEST PRACTICE OF MODERN METAL ROOFING INSTALLATION.

15. INSTALLATION

   A. GENERAL REQUIREMENTS:
   1. ROOFING SHEETS: PROVIDE THE FINISHED DIMENSIONS, SEAM TO SEAM. FURNISH CONTINUOUS SHEETS. SINGLE PIECES LESS THAN EIGHT (8) FEET LONG MAY BE USED TO CONNECT TO SHOP FABRICATED INSIDE AND OUTSIDE CORNERS.

   2. INSTALLATION: INSTALL PANELS WEATHER TIGHT, WITHOUT WAVES, WARPS, BUCKLES, FASTENING STRESSES OR DISTORTION, ALLOWING FOR EXPANSION AND CONTRACTION. INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND APPROVED SHOP DRAWINGS.

   3. DISSIMILAR MATERIALS CONTACT: WHERE SHEET METAL IS SHOWN CONTACTING CONCRETE, MASONARY MATERIALS, STEEL, OTHER DISSIMILAR METAL, OR IS CONTACTING WOOD, KEEP SHEET METAL FROM DIRECT CONTACT WITH THE DISSIMILAR MATERIALS BY A COAT OF BITUMINOUS OAINT APPLIED TO A THICKNESS OF 12 TO 14 MILS.

   B. ROOFING:

   1. UNDERLAYMENT: COVER ROOF DECKS TO RECEIVE SHEET METAL ROOFING WITH ONE LAYER OF UNDERLAYMENT. TURN UNDERLAYMENT UP 8 INCHES ON ABUTTING VERTICAL SURFACES. DOUBLE UNDERLAYMENT IN VALLEYS, OVER HIPS AND AT RIDGES. FASTEN TO ROOF DECKS AND SHEATHING PER MANUFACTURER'S WRITTEN STANDARDS.

   2. SHEET METAL: LAY SHEETS WITH LONG DIMENSION AS INDICATED ON THE DRAWINGS. PANELS SHALL BE CONTINUOUS FROM RIDGE TO EAVE. SECURE METAL TO DECKING WITH APPROVED FASTANERS.

   A. SEAMS: MAKE FINISHED SEAMS STRAIGHT, UNIFORM AND ACCURATELY SPACES.
   B. GABLE AND RAKE EDGES: HOOK EDGES OF ROOFING SHEETS OVER PREVIOUSLY INSTALLED CONTINUOUS EDGE STRIP, UNLESS DETAILED OTHERWISE ONT HE DRAWINGS.
   C. EAVES: SAME AS FOR GABLE AND RAKE EDGES.
   D. ABUTTING WALLS: FORM A LOOSE-LOCKED JOINT NEAR THE WALL LINE WITH A CLEATED BASE FLASHINGS. EXTEND METAL BASE FLASHINGS UP ON VERTICAL SURFACES AT LEAST SIX (6) INCHES AND TERMINATE AS INDICATED.
   E. CUTTING AND FITTING: CUTTING, FITTING, DRILLING, AND OTHER OPERATIONS IN CONNECTION WITH SHEET METAL REQUIRED TO ACCOMMODATE THE WORK OF OTHER TRADES SHALL BE PERFORMED BY SHEET METAL MECHANICS.
   F. FLASHING: INSTALL AT INTERSECTIONS OF ROOF WITH VERTICAL SURFACES AND AT PROJECTIONS THROUGH ROOF. WHERE SHEET METAL ABUTS OR EXTENDS INTO ADJACENT MATERIALS, THE JUNCTURE SHALL BE EXECUTED IN A MANNER TO ASSURE WEATHER-TIGHT CONSTRUCTION.

**SECTION 07460 - FIBER-CEMENT SIDING AND TRIM**

1. SECTION INCLUDES
   A. FIBER CEMENT SIDING TRIM, FASCIA, SOFFIT AND ACCESSORIES.

2. ENGINEERING DESIGN
   A. SUBCONTRACTOR FOR THE WORK OF THIS SECTION SHALL BE RESPONSIBLE FOR FINAL DESIGN OF INSTALLATION SYSTEMS AND SHALL INSURE PROPER DESIGN FOR SPACING OF SUB-FRAMING AND ALL ATTACHMENTS. SUBCONTRACTOR MUST HAVE NOT LESS THAN THREE (3) YEARS SUCCESSFUL EXPERIENCE IN INSTALLATION OF SIMILAR CLADDING SYSTEMS.

3. REFERENCE STANDARDS
   A. AMERICAN SOCIETY FOR TESTING MATERIALS (ASTM)

4.SUBMITTALS
   A. SUBMIT SHOP DRAWINGS PER SUBMITTALS SECTION PRIOR TO FABRICATION, FOR ARCHITECT'S APPROVAL. DRAWINGS SHALL SHOW FINISH, PROFILES, FASTENER TYPES AND LOCATIONS, AND FLASHING DETAILS.

   B. SUBMIT SAMPLE PANEL OF PROPOSED CONSTRUCTION ALONG WITH COLOR SAMPLES ON ACTUAL MATERIAL FOR APPROVAL.

5. WARRANTY
   A. PRODUCT WARRANTY: LIMITED PRODUCT WARRANTY AGAINST MANUFACTURING DEFECTS.
   1. HARDISOFFIT PANELS FOR 50 YEARS.
   2. HARDIETRIM AND HARDIE FASCIA FOR 10 YEARS.

   B. WORKMANSHIP WARRANTY: APPLICATION WARRANTY FOR 2 YEARS.

6. COORDINATION
   A. CONTRACTOR SHALL BE RESPONSIBLE FOR DIMENSIONS, DETAILING, FABRICATION, FITING AND ALIGNMENT OF THE WORK OF THIS SECTION.

7. MANUFACTURER
   A. THE DRAWINGS WERE PREPARED AND THIS SPECIFICATION WRITTEN ON THE BASIS OF USING THE PRODUCTS OF JAMES HARDIE BUILDING PRODUCTS, INC., MISSION VIEJO, CA. WWW.JAMESHARDIECOMMERCIAL.COM. PRODUCTS WITH EQUAL CHARACTERISTICS BY OTHER MANUFACTURERS ARE ACCEPTABLE UNDER THE CONDITIONS OF THESE SPECIFICATIONS.

8. PRODUCTS
   A. FIBER CEMENT TRIM, FASCIA, VENTED SOFFIT AND ACCESSORIES SHALL BE COMPOSED OF AUTOCLAVED, NON-ASBESTOS, FIBER-CEMENT COMPLYING WITH THE PROVISIONS OF ASTM C1186. PRODUCT SHALL PROVIDE THE FOLLOWING MINIMUM PROPERTIES: MODULUS OF RUPTURE (EQUILIBRIUM) >1450 PSI, ASTM C1185; DENSITY 80 PCF ASTM C1185; FLAME SPREAD/SMOKE DEVELOPMENT 0/0 ASTM E84.

   B. REFER TO FINISH SCHEDULE ON DRAWINGS FOR SPECIFIC PRODUCTS, FINISH, SIZES, ETC... FOR ALL FIBER CEMENT TRIM, FASCIA AND VENTED SOFFIT PRODUCTS USED ON PROJECT.

   C. FACTORY PRIMER: PROVIDE FACTORY APPLIED UNIVERSAL PRIMER.

   D. TEXTURE: SMOOTH

9. FASTENERS
   A. CONCEALED, GALVANIZED, CORROSION RESISTANT, TYPE AND SIZE REQUIRED BY DESIGN.

10. JOINT SEALANTS
   A. AS SPECIFIED IN SEALANTS AND CAULKING

11. HANDLING
   A. PERFORM IN A MANNER TO PREVENT BENDING, WARPING, TWISTING OR OTHER DAMAGE. ALL MATERIAL SHALL BE CLEAN AND STRAIGHT. DAMAGED OR BENT MATERIALS SHALL NOT BE USED.

12. STORAGE
   A. STORE UNITS ON RAISED SUPPORT AND PROTECT FROM THE WEATHER.

13. WORKMANSHIP
   A. USE ONLY SKILLED AND EXPERIENCED PERSONNEL. ALL WORKMANSHIP SHALL BE EQUAL TO THE BEST PRACTICE OF MODERN SIDING INSTALLATION.

14. ERECTION
   A. ERECT IN COMPLETE ACCORD WITH APPROVED SHOP DRAWINGS AND MANUFACTURER'S WRITTEN INSTRUCTIONS. USE FULL LENGTH PANELS WHENEVER POSSIBLE TO MINIMIZE END JOINTS.

**SECTION 07530 - ELASTOMERIC MEMBRANE ROOFING**

1. SECTION INCLUDES
   A. ELASTOMERIC ROOFING MEMBRANE, MECHANICALLY FASTANED CONVENTIONAL APPLICATION.
   B. INSULATION, FLAT AND TAPERED.

2. REFERENCES
   A. ASTM C 1289-STANDARD SPECIFICATION FOR FACED RIGID CELLULAR POLYISOCYANURATE THERMAL INSULATION BOARD; 2006.
   B. BRCS ML104-THE NRCA ROOFING AND WATERPROOFING MANUAL: NATIONAL ROOFING CONTRACTORS ASSOCIATION; FIFTH EDITION, WITH INTERIM UPDATES.
   C. UL (RMSD)-ROOFING MATERIALS AND SYSTEMS DIRECTORY; UNDERWRITERS LABORATORIES INC.; CURRENT EDITION.

3. QUALITY ASSURANCE
   A. PERFORM WORK IN ACCORDANCE WITH NRCA ROOFING AND WATERPOOFING MANUAL AND MANUFACTURER'S INSTRUCTIONS.

4. ENVIRONMENTAL REQUIREMENTS
   A. DO NOT APPLY ROOFING MEMBRANE DURING UNSIITABLE WEATHER.
   B. DO NOT APPLY ROOFING MEMBRANE WHEN AMBIENT TEMPERATURE IS BELOW 40 DEGREES F OR ABOVE 110 DEGREES F.
   C. DO NOT APPLY ROOFING MEMBRANE TO DAMP OR FROZEN DECK SURFACE OR WHEN PRECIPITATION IS EXPECTED OR OCCURING.
   D. DO NOT EXPOSE MATERIALS VULNERABLE TO WATER OR SUN DAMAGE IN QUANTITIES GREATER THAN CAN BE WEATHERPROOFED THE SAME DAY.

5. WARRANTY
   A. PROVIDE MANUFACTURER'S STANDARD WRITTEN FULL ROOFING SYSTEM REPAIR AND/OR REPLACEMENT 15-YEAR NDL WARRANTY AT NO ADDITIONAL COST, COVERING MATERIALS AND LABOR. WARRANTY SHALL INCLUDE LOSS OF CONSEQUENTIAL DAMAGES DUE TO FAILURE OF THE ROOF SYSTEM AND CONTAIN NO EXCLUSIONS FOR PONDING WATER OR BIOLOGICAL GROWTH. UPON WARRANTY INSPECTION AND ACCEPTANCE OF THE ROOF, THE WARRANTY SHALL BE TURNED OVER TO TE CONTRACTOR ON BEHALF ON OWNER BY A MANUFACTURER'S QUALITY ASSURANCA SPECIALIST.

6. APPROVED MANUFACTURERS
   A. IB ROOFING SYSTEMS, WWW.IBROOF.COM
   B. DURO-LAST ROOFING, WWW.DURO-LAST.COM

7. ROOFING
   A. APPROVED ELASTOMETRIC MEMBRANE ROOFING SYSTEMS:

   1. IB ROOFING SYSTEMS, 40 MIL PVC ROOFING SYSTEMS, TO INCLUDE MANUFACTURER'S DECKING AND INSULATION PREPARATION, BASE FLASHINGS, FASTENERS AND FLASHING ACCOSSORIES.
   2. DURO-LAST, 40 MIL PVC SINGLE PLY, PVC ROOFING SYSTEM , TO INCLUDE MANUFACTURER'S DECKING AND INSULATION PREPARATION, BASE FLASHINGS, FASTENERS AND FLASHING ACCESSORIES.

   B. ROOFING ASSEMBLY REQUIREMENTS:

   1. ROOF COVERING EXTERNAL FIRE-RESISTANCE CLASSIFICATION: UL CLASS A.
   2. INSULATION THERMAL VALUE (R), MINIMUM: R-30; PROVIDE INSULATION OF THICKNESS REQUIRED.

   C. ACCEPTABLE INSULATION TYPES:

   1. 2 LAYERS OF 2-1/2 INCH POLYISOCYANURATE BOARD RUN PERPENDICULAR TO MINIMIZE JOINT ALIGNMET.

8. ACCESSORIES
   A. ALL ROOFING COMPONENTS USED AT ROOF PENETRATIONS SHALL BE PROVIDED BY APPROVED MANUFACTURER PER THEIR STANDARDS, WRITTEN INSTALLATION REQUIREMENTS AND WARRANTY REQUIREMENTS.

   B. INSULATION FASTENERS: APPROPRIATE FOR PURPOSE INTEDED AND APPROVED BY ROOFING MANUFACTURER.

   C. WALKWAY PADS: MANUFACTURER'S STANDARD 30 X 60 INCH. MEMBRANE PADS.

9. EXAMINATION
   A. VERIFY THAT SURFACES AND SITE CODITIONS ARE READY TO RECEIVE WORK.

   B. VERIFY DECK IS CLEAN AND SMOOTH, FLAT, FREE OF DEPRESSIONS, WAVES, OR PROJECTIONS, PROPERLY SLOPED AND SUITABLE FOR INSTALLATION OF ROOF SYSTEM.

   C. VERIFY DECK SURFACES ARE DRY AND FREE OF SNOW OR ICE.

   D. VERIFY THAT ROOF OPENINGS, CURBS, AND PENETRATIONS THROUGH ROOF ARE SOLIDLY SET.

10. INSULATION - UNDER MEMBRANE
   A. ROOF INSULATION SHALL BE INSTALLED WITH APPROVED FASTENERS AND DISTRIBUTION PLATES PLACED ACCORDING TO THE MANUFACTURER'S MOST RECENT PUBLISHED SPECIFICATIONS FOR THE USE UNDER THE MANUFACTURER'S SYSTEM AND FOR ISSUANCE OF THE WARRANTY.

   B. ATTACHMENT OF INSULATION:
   1. MECHANICALLY FASTEN INSULATION TO DECK IN ACCORDANCE WITH ROOFING MANUFACTURER'S INSTRUCTIONS.

   C. STAGGER INSULATION BOARDS 50% FROM ROW TO ROW.

   D. LAY BOARDS WITH EDGES IN MODERATE CONTACT WITHOUT FORCING. CUT INSULATION TO FIT NEATLY TO PERIMETER BLOCKING AND AROUND PENETRATIONS THROUGH ROOF.

   E. DO NOT APPLY MORE INSULATION THAN CAN BE COVERED WITH MEMBRANE IN SAME DAY.

11. MEMBRANE APPLICATION
   A. INSTALL THE ROOFING SYSTEM TO COMPLY WITH MANUFACTURER'S MOST RECENT PUBLISHED SPECIFICATIONS.

   B. ROLL OUT MEMBRANE, FREE FROM WRINKLES OR TEARS. PLACE SHEET INTO PLACE WITHOUT STRETCHING.

   C. MECHANICAL ATTACHMENT: APPLY MEMBRANE AND MECHANICAL ATTACHMENT DEVICES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

   D. ON ALL PARAPET LOCATIONS, WRAP PARAPET WITH NEW PRE-MANUFACTURED PARAPET FLASHINGS BY MANUFACTURER AND TERMINATE ON EXTERIOR OF WALL.

   E. AROUND ROOF PENETRATIONS, SEAL FLANGES AND FLASHINGS WITH FLEXIBLE FLASHING.

   F. AT ALL ROOF MOUNTED EXHAUST FANS ABOVE TYPE 1 HOODS SHALL RECEIVE SECOND LAYER OF ROOFING 10'X10' SQUARE CENTERED ON EXHAUST FAN.

12. PROTECTION
   A. PROTECT INSTALLED ROOFING AND FLASHINGS FROM CONSTRUCTION OPERATIONS.

   B. WHERE TRAFFIC MUST CONTINUE OVER FINISHED ROOF MEMBRANE, PROTECT SURFACE USING DURABLE MATERIALS.

**SECTION 07620 - SHEET METAL FLASHING AND TRIM**

1. SECTION INCLUDES
   A. FABRICATED SHEET METAL ITEMS, INCLUDING FLASHINGS, COUNTER FLASHINGS, GUTTERS, CONDUCTOR HEAD AND DOWNSPOUTS.

2. REFERENCES
   A. AAMA 611 - VOLUNTARY SPECIFICATION FOR ANODIZED ARCHITECTURAL ALUMINUM: AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION; 1998.

   B. ASTM A 653/A 653M - STANDARD SPECIFICATION FOR STEEL SHEET, ZINC-COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED ( GALVANNEALED) BY THE HOT-DIP PROCESS; 2005A.

   C. ASTM B 209 - STANDARD SPECIFICATION FOR ALUMINUM AND ALUMINUM-ALLOY SHEET AND PLATE; 2004.

   D. ASTM B 209M - STANDARD SPECIFICATION FOR ALUMINUM AND ALUMINUM-ALLOY SHEET AND PLATE (METRIC); 2004.

   E. ASTM D 226 - STANDARD SPECIFICATION FOR ASPHALT-SATURATED ORGANIC FELT USED IS ROOFING AND WATERPROOFING; 2005.

   F. ASTM D 4586 - STANDARD SPECIFICATION FOR ASPHALT ROOF CEMENT, ASBESTOS-FREE; 2000.

   G. SMACNA (ASMM) - ARCHITECTURAL SHEET METAL MANUAL; SHEET METAL AND AIR CONDITIONING CONTRACTORS MATIONAL ASSOCIATION; 2003.

3. SHEET MATERIALS
   A. GALVANIZED STEEL: ASTM A 653/A 653M, WITH G90/Z275 ZINC COATING; MINIMUM 0.02 INCH THICK BASE METAL.

4. ACCESSORIES
   A. FASTENERS: SAME MATERIAL AND FINISH AS FLASHING METAL, WITH SOFT NEOPRENE WASHERS.

   B. PRIMER: ZINC CHROMATE TYPE.

   C. PLASTIC CEMENT: ASTM D 4856, TYPE I.

5. FABRICATION
   A. FORM SECTIONS TRUE TO SHAPE, ACCURATE IN SIZE, SQUARE, AND FREE FROM DISTORTION OR DEFECTS.

   B. FABRICATE CLEATS OF SAME MATERIAL AS SHEET, MINIMUM 4 INCHES WIDE, INTERLOCKING WITH SHEET.

   C. FORM PIECES IN LONGEST POSSIBLE LENGTHS.

   D. HEM EXPOSED EDGES ON UNDERSIDE 1/2" INCH; MITER AND SEAM CORNERS.

   E. FORM MATERIAL WITH FLAT LOCK SEAMS, EXCEPT WHERE OTHERWISE INDICATED. AT MOVING JOINTS, USE SEALED LAPPED, BAYONET-TYPE OR INTERLOCKING HOOKED SEAMS.

   F. FABRICATE CORNERS FROM ONE PIECE WITH MINIMUM 18 INCH LONG LEGS; SEAM FOR RIGIDITY, SEAL WITH SEALANT.

   G. FABRICATE VERTICAL FACES WITH BOTTOM EDGE FORMED OUTWARD 1/4" INCH (6 MM) AND HEMMED TO FORM DRIP.

6. GUTTER AND DOWNSPOUT FABRICATION
   A. GUTTERS: SQUARE PROFILE AS INDICATED.

   B. DOWNSPOUTS: SQUARE PROFILE AS INDICATED.

   C. GUTTERS AND DOWNSPOUTS: SIZE FOR RAINFALL INTENSITY DETERMINED BY A STORM OCCURRENCE OF 1 IN 5 YEARS IN ACCORDANCE WITH SMACNA ARHICTECTURAL SHEET METAL MANUAL. ALL GUTTERS AND DOWNSPOUTS SHALL BE SEAMLESS.

   D. TWENTY (20) GAUGE

   E. ACCESSORIES: PROFILED TO SUIT GUTTERS AND DOWNSPOUTS.
   1. ANCHORAGE DEVICES: IN ACCORDANCE WITH SMACNA REQUIREMENTS.
   2. GUTTER SUPPORTS: BRACKETS.
   3. DOWNSPOUT SUPPORTS: BRACKETS.

   F. FINISH: POWDER COATED, PRE-FINISHED, GALVALUME TO MATCH ROOFING.
   G. SEAL METAL JOINTS.

7. THROUGH WALL SCUPPERS AND CONDUCTOR HEAD FABRICATION
   A. SCUPPERS: RECTANGULAR PROFILE AS INDICATED.

   B. SIZE SCUPPER OPENING AND CONDUCTOR HEADS FOR RAINFALL INTENSITY DETERMINED BY A STORM OCCURENCE OF 1 IN 5 YEARS IN ACCORDANCE WITH SMACNA ARHITECTURAL SHEET METAL MANUAL. ALL SCUPPERS SHALL BE AEAMLESS WITH MINIMUM 2 INCH FLANGES. SCUPPERS SHALL EXTEND THE ENTIRE DEPTH OF WALL AND OVERLAPPED BY ROOFING MEMBRANCE MINIMUM 4 INCHES.

   C. TWENTY (20) GAUGE

   D. CONDUCTOR HEADS SHALL HAVE PREFABRICATED OVERFLOW OPENING LOCATED 1" ABOVE SCUPPER OPENING WITH HEMMED EDGES.

   E. ACCESSORIES: PROFILED TO SUIT SCUPPERS AND CONDUCTOR HEADS.
   1. ANCHORAGE DEVICES: IN ACCORDANCE WITH SMACNA REQUIREMENTS.

   F. FINISH: POWDER COATED, PRE-FINISHED, GALVALUME TO MATCH ROOFING.

   G. SEAL METAL JOINTS.

8. FASCIA TRIM
   A. TRIM: RECTANGULAR PROFILE AS INDICATED TO COVER FASCIA BOARD AND RETURN TO BACK FACE.

   B. TWENTY FOUR (24) GAUGE.

   C. ACCESSORIES: PROFILED TO SUIT TRIM.
   1. ANCHORAGE DEVICES: IN ACCORDANCE WITH SMACNA REQUIREMENTS.

   E. FINISH: POWDER COATED, PRE-FINISHED, GALVALUME TO MATCH ROOFING.

   F. SEAL METAL JOINTS.

9. INSTALLATION
   A.SECURE FLASHINGS IN PLACE USING CONCEALED FASTENERS. USE EXPOSED FASTENERS ONLY WHERE PERMITTED.

   B. APPLY PLASTIC CEMENT COMPOUND BETWEEN METAL FLASHINGS AND FELT FLASHINGS.

   C. FIT FLASHINGS TIGHT IN PLACE. MAKE CORNERS SQUARE, SURFACES TRUE AND STRAIGHT IN PLANES, AND LINED ACCURATE TO PROFILES.

   D. SECURE GUTTERS AND DOWNSPOUTS IN PLACE USING CONCEALED FASTENERS.

   E. SLOPE GUTTERS 1/4" INCH PER FOOT MINIMUM.

   F. CONNECT CONDUCTOR HEADS TO THROUGH WALL SCUPPER WITH HEMMED FLANGES AND ATTACH TO WALL WITH CONCEALED FASNERS.

**SECTION 07700 - MANUFACTURED ROOF SPECIALTIES**

1. SECTION INCLUDES
   A. COPINGS AND GRAVEL GUARDS
   B. ROOF HATCH
   C. ROOF LADDER SAFETY POST

2. MANUFACTURERS
   A. COPINGS AND GRAVEL GUARDS:

   1. ARCHITECTURAL PRODUCTS CO; PRODUCT TYPE AP STANDARD COPING: WWW.ARCHPROD.COM.
   2. W.P. HICKMAN CO; PRODUCT PERMANSNAP COPING: WWW.WPH.COM.
   3. MM SYSTEMS CORP; PRODUCT SNAP-LOK COPING: WWW.MMSYSTEMSCORP.COM.
   4. SUBSTTITUTIONS: SEE SECTION 01600 - PRODUCT REQUIREMENTS.

   B. ROOF HATCH: BILCO CO; WWW.BILCO.COM.

   C. ROOF LADDER SAFETY POST: BILCO CO; WWW.BILCO.COM.

3. COMPONENTS
   A. COPINGS: FORMED ALUMINUM, 0.050 THICK WITH 6" WIDE CONCEALED JOINT COVERS AND CONTINUOUS HOLD DOWN CLIPS. PAINT GRIP FINISH.

   1. COLOR TO MATCH ROOFING.

   B. ROOF HATCHES: FACTORY-ASSEMBLED STEEL FRAME AND COVER, COMPLETE WITH OPERATING AND RELEASE HARDWARE; FOR LADDER ACCESS: SINGLE LEAF; 30 BY 36 INCHES. WITH LU-1 SAFETY POST.

   1. FRAMES/CURBS: ONE-PIECE CURB AND FRAME WITH INTEGRAL CAP FLASHING TO RECEIVE ROOF FLASHINGS; EXTENDED BOTTOM FLANGE TO SUIT MOUNTING.
   A. MATERIAL: GALVANIZED STEEL, 14 GAGE, 0.0747 INCH THICK.
   B. FINISH: FACTORY PRIME PAINT.
   C. INSULATION: 1 INCH RIGID GLASS FIBER, LOCATED ON OUTSIDE FACE OF CURB.

   2. METAL COVERS: FLUSH, INSULATED, HOLLOW METAL CONSTRUCTION.
   A. CAPABLE OF SUPPORTING 40 PSF LIVE LOAD.
   B. MATERIAL: GALVANIZED STEEL; OUTER COVER 14 GAGE, 0.0747 INCH THICK, LINER 22 GAGE, 0.03 INCH THICK.
   C. FINISH: FACTORY PRIME PAINT.
   D. INSULATION: 1 INCH RIGID GLASS FIBER.
   E. GASKET : NEOPRENE, CONTINUOUS AROUND COVER PERIMETER.

   3. HARDWARE: STEEL, ZINC COATED AND CHROMATE SEALED, UNLESS OTHERWISE INDICATED OR REQUIRED BY MANUFACTURER.
   A. LIFTING MECHANISMS: COMPRESSION SPRING OPERATOR WITH SHOCK ABSORBERS THAT AUTOMATICALLY OPENS UPON RELEASE OF LATCH; CAPABLE OF LIFTING COVERS DESPITE 10 PSF LOAD.
   B. HINGES: HEAVY DUTY PINTLE TYPE.
   C. HOLD OPEN ARM WITH VINYL-COATED HANDLE FOR MANUAL RELEASE.
   D. LATCH: UPON CLOSING, ENGAGE LATCH AUTOMATICALLY AND RESET MANUAL RELEASE.
   E. MANUAL RELEASE: PULL HANDLE ON INTERIOR.
   F. LOCKING: PADLOCK HASP ON INTERIOR.

   4. SAFETY POST: BILCO LADDERUP SAFETY POST, MODEL LU-1; TELESCOPING TUBULAR SECTION THAT LOCKS AUTOMATICALLY WHEN FULLY EXTENDED.

4. INSTALLATION
   A. INSTALL COMPONENTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
   B. PROVIDE BLOCKING IN WALLS AS REQUIRED. ADJUST BRACKET LENGTHS TO ACCOMMODATE DIFFERENT WALL ELEVATIONS AS REQUIRED.

**SECTION 07900 - JOINT SEALERS**

1. SECTION INCLUDES
   A. SEALANTS AND JOINT BACKING.

2. ENVIRONMENTAL REQUIREMENTS
   A. MAINTAIN TEMPERATURE AND HUMIDITY RECOMMENDED BY THE SEALANT MANUFACTURER DURING AND AFTER INSTALLATION.

3. SEALANTS
   A. SEALANTS AND PRIMERS - GENERAL: PROVIDE ONLY PRODUCTS HAVING LOWER VOLATILE ORGANIC COMPOUND (VOC) CONTECT THAN REQUIRED BY THE MORE STRINGENT OF THE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE NO.1168.

   B. GENERAL PURPOSE EXTERIOR SEALANT: POLYURETHANE; ASTM C 920, GRADE NS, CLASS 25, USES M, G, AND A; SINGLE COMPONENT.
   1. COLOR: STANDARD COLORS MATCHING FINISHED SURFACES.
   2. APPLICATIONS: USE FOR:
   A. CONTROL; EXPANSION, AND SOFT JOINTS IN MASONARY.
   B. JOINTS BETWEEN CONCRETE AND OTHER MATERIALS.
   C. JOINTS BETWEEN METAL FRAMES AND OTHER MATERIALS.
   D. UNDER EXTERIOR DOOR SILLS.
   E. OTHER EXTERIOR JOINTS FOR WHICH NO OTHER SEALANT IS INDICATED.

   C. GENERAL PURPOSE INTERIOR SEALANT: ACRYLIC EMULSION LATEX; ASTM C 834, TYPE OP, GRADE NF SINGLE COMPONENT, PAINTABLE.
   1. COLOR: STANDARD COLORS MATCHING FINISHED SURFACES.
   2. APPLICATIONS: USE FOR:
   A. INTERIOR WALL AND CEILING CONTROL JOINTS.
   B. JOINTS BETWEEN DOOR AND WINDOW FRAMES AND WALL SURFACES.
   C. OTHER INTERIOR JOINTS FOW WHICH NO OTHER TYPE OF SEALANT IS INDICATED.

   D. RESTROOM/TILE SEALANT: WHITE SILICONE; ASTM C 920, USES I, M AND A; SINGLE COMPONENT, MILDEW RESISTANT.
   1. APPLICATIONS: USE FOR:
   A. JOINTS BETWEEN PLUMBING FIXTURES AND FLOOR AND WALL SURFACES.

   E. INTERIOR FLOOR JOINT SEALANT: POLYURETHANE, SELF-LEVELING; ASTM C 920, GRADE P, CLASS 25, USES T, M AND A; SINGLE COMPONENT.
   1. COLOR: STANDARD COLORS MATCHING FINISHED SURFACES.
   2. APPLICATIONS : USE FOR:
   A. EXPANSION JOINTS IN FLOORS.

   F. SILICONE SEALANT: ASTM C 920, GRADE NS, CLASS 25, USES NT, A, G, M, O; SINGLE COMPONENT, SOLVENT CURING, NON-SAGGING, NON-STAINING, FUNGUS RESISTANT, NON-BLEEDING.
   1. COLOR: CLEAR.
   2. APPLICATIONS: USE FOR:
   A. EQUIPMENT SEALANT IN FOOD SERVICE AREAS.

4. ACCESSORIES
   A. PRIMER: NON-STAINING TYPE, RECOMMENDED BY SEALANT MANUFACTURER TO SUIT APPLICATION.
   B. JOINT CLEANER: NON-CORROSIVE AND NON-STAINING TYPE, RECOMMENDED BY SEALANT MANUFACTURER; COMPATIBLE WITH JOINT FORMING MATERIALS.
   C. JOINT BACKING: ROUND FOAM ROD COMPATIBLE WITH SEALANT; ASTM D 1667, CLOSED CELL PVC; OVERSIZED 30 TO 50 PERCENT LARGER THAN JOINT WIDTH.
   D. BOND BREAKER: PRESSURE SENSITIVE TAPE RECOMMENDED BY SEALANT MANUFACTURER TO SUIT APPLICATION.

5. PREPARATION
   A. REMOVE LOOSE MATERIALS AND FOREIGN MATTER WHICH MIGHT IMPAIR ADHESION OF SEALANT.
   B. CLEAN AND PRIME JOINTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
   C. PERFORM PREPARATION IN ACCORDANCE WITH MANUFACTURER' INSTRUCTIONS AND ASTM C 1193.
   D. PROTECT ELEMENTS SURROUNDING THE WORK OF THIS SECTION FROM DAMAGE OR DISFIGUREMENT.

6. INSTALLATION
   A. PERFORM WORK IN ACCORDANCE WITH SEALANT MANUFACTURER'S REQUIREMENTS FOR PREPARTION OF SURFACES AND MATERIAL INSTALLATION INSTRUCTIONS.
   B. PERFORM INSTALLATION IN ACCORDANCE WITH ASTM C 1193.
   C. MEASURE JOINT DIMENSIONS AND SIZE JOINT BACKERS TO ACHIEVE WIDTH-TO-DEPTH RATIO, NECK DIMENSION, AND SURFACE BON AREA AS RECOMMENDED BY MANUFACTURER.
   D. INSTALL BOND BREAKER WHERE JOINT BACKING IS NOT USED.
   E. INSTALL SEALANT FREE OF AIR POCKETS, FOREIGN EMBEDDED MATTER, RIDGES, AND SAGS.
   F. APPLY SEALANT WITHIN RECOMMENDED APPLICATION TEMPERATURE RANGES. CONSULT MANUFACTURER WHEN SEALANT CANNOT BE APPLIED WITHIN THESE TEMPEREATURE RANGES.

# DIVISION 08 - DOORS AND WINDOWS

**SECTION 08110 - STEEL DOORS AND FRAMES**

1. SECTION INCLUDES
   A. STEEL DOORS AND FRAMES.
   B. STEEL FRAMES FOR WOOD DOORS.
   C. THERMALLY INSULATED STEEL DOORS.

2. REFERENCES
   A. ANSI/ICC A117.1-AMERICAN NATIONAL STANDARD FOR ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES; INTERNATIONAL CODE COUNCIL; 2003.
   B. ANSI A250.3-TEST PROCEDURE AND ACCEPTANCE CRITERIA FOR FACTORY-APPLIED FINISH PAINTED STEEL SURFACES FOR STEEL DOORS AND FRAMES; 1999.
   C. ANSI A250.8-SDI-100 RECOMMENDED SPECIFICATIONS FOR STANDARD STEEL DOORS AND FRAMES; 2003.
   D. ASTM A 653/A 653M-STANDARD SPECIFICATION FOR STEEL SHEET, ZINC-COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS; 2005A.
   E. DHI A115 SERIES-SPECIFICATIONS FOR STEEL DOORS AND FRAME PREPARATION FOR HARDWARE; DOOR AND HARDWARE INSTITUTE; 2000 (ANSI/DHI A115 SERIES).

3. SUBMITTALS
   A. SHOP DRAWINGS: DETAILS OF EACH OPENING, SHOWING ELEVATIONS, GLAZING, FRAME PROFILES, AND IDENTIFYING LOCATION OF DIFFERENT FINISHES, IF ANY.

4. MANUFACTURERS
   A. STEEL DOORS AND FRAMES:
   1. ASSA ABLOY CECO: WWW.ASSAABLOYDSS.COM
   2. STEELCRAFT: WWW.STEELCRAFT.COM.

5. DOORS AND FRAMES
   A. REQUIREMENTS FOR ALL DOORS AND FRAMES:
   1. ACCESSIBILITY: COMPLY WITH ANSI/ICC A117.1.
   2. DOOR TOP CLOSURES: FLUSH WITH TOP OF FACES AND EDGES.
   3. DOOR EDGE PROFILE: BEVELED ON BOTH EDGES.
   4. DOOR TEXTURE: SMOOTH FACES.
   5. GLAZED LIGHTS: NON-REMOVABLE STOPS ON NON-SECURE SIDE; SIZES AND CONFIGURATIONS AS INDICATED ON DRAWINGS.
   6. HARDWARE PREPARATION: IN ACCORDANCE WITH DHI A115 SERIES, WITH REINFORCEMENT WELDED IN PLACE IN ADDITION TO OTHER REQUIREMENTS SPECIFIED IN DOOR GRADE STANDARD.
   7. FINISH: FACTORY PRIMED, FOR FIELD FINISHING.

6. STEEL DOORS
   A. EXTERIOR DOORS
   1. GRADE: ANSI A250.8 LEVEL 3, PHYSICAL PERFORMENCE LEVEL A, MODEL 2, SEAMLESS.
   2. CORE: POLYSTYRENE FOAM.
   3. GALVANIZING: ALL COMPONENTS HOT-DIPPED ZINC-IRON ALLOY-COATED (GALVANNEALED) IN ACCORDANCE WITH ASTM A 653/A 653M, WITHIN MANUFACTURER'S STANDARD COATING THICKNESS.

   B. INTERIOR DOORS, NON-FIRE-RATED:
   1.GRADE: ANSI A250.8 LEVEL 2, PHYSICAL PERFORMANCE LEVEL B, MODEL 1, FULL FLUSH.
   2. THICKNESS: 1-3/4 INCHES.

7. STEEL FRAMES
   A.GENERAL:
   1. COMPLY WITH THE REQUIREMENTS OF GRADE SPECIFIED FOR CORRESPONDING DOOR.
   A. FRAMES FOR WOOD DOORS: COMPLY WITH FRAME REQUIREMENTS SPECIFIED IN ANSI A250.8 FOR LEVEL 1, 16 GAGE.
   2. FINISH: SAME AS FOR DOOR.

   B. EXTERIOR AND INTERIOR DOOR FRAMES: FULLY WELDED.

8. FINISH MATERIALS
   A. PRIMER: RUST-INHIBITING, DOOR MANUFACTURER'S STANDARD.

9. INSTALLATION
   A. INSTALL IN ACCORDANCE WITH THE REQUIREMENTS OF THE SPECIFIED DOOR GRADE STANDARD AND NAAMM HMMA 840.
   B. COORDINATE FRAME ANCHOR PLACEMENT WITH WALL CONSTRUCTION.
   C. COORDIN

**SECTION 08211 - FLUSH WOOD DOORS**

1. SECTION INCLUDES
   A. FLUSH WOOD DOORS; FLUSH CONFIGURATION; NON-RATED AND ACOUSTICAL.

2. REFERENCES
   A. AWI/AWMAC (QSI) - ARCHITECTURAL WOODWORK QUALITY STANDARDS ILLUSTRATED; ARCHITECTURAL WOODWORK INSTUTE AND ATCHITECTURAL WOODWORK MANUFACTURERS ASSOCIATION OF CANADA; 2006, 8TH ED., VERSION 2.0.

3. DELIVERY, STORAGE, AND HANDLING
   A. PACKAGE, DELIVER AND STORE DOORS IN ACCORDANCE WITH SPECIFIED QUALITY STANDARD.
   B. ACCEPT DOORS ON SITE IN MANUFACTURER'S PACKAGING. INSPECT FOR DAMAGE.
   C. PROTECT DOORS WITH RESILIENT PACKAGING. DO NOT STORE IN DAMP OR WET AREA; OR IN AREAS WHERE SUNLIGHT MIGHT BLEACH VENEER. SEAL TOP AND BOTTOM EDGES WITH TINTED SEALER IF STORED MORE THAN ONE WEEK. BREAK SEAL ON SITE TO PERMIT VENTILATION.

4. WARRANTY
   A. INTERIOR DOORS: PROVIDE MANUFACTURER'S WARRANTY FOR LIFE OF THE INSTALLATION.
   B. INCLUDE COVERAGE FOR DELAMINATION OF VENEER, WARPING BEYOND SPECIFIED INSTALLATION TOLERANCES, DEFECTIVE MATERIALS , AND TELEGRAPHING CORE CONSTRUCTION.

5. MANUFACTURERS
   A. WOOD VENEER FACED DOORS:
   1. ASSA ABLOY GRAHAM: WWW.GRAHAMDOORS.COM.
   2. EGGERS INDUSTRIES: WWW.EGGERSINDUSTRIES.COM.
   3. SUBSTITUTIONS: SEE SECTION 01600-PRODUCT REQUIREMENTS.

6. DOORS AND PANELS
   A. ALL DOORS: SEE DRAWINGS FOR LOCATIONS AND ADDITIONAL REQUIREMENTS.
   1. QUALITY LEVEL: PREMIUM GRADE, IN ACCORDANCE WITH AWI/AWMAC ARCHITECTURAL WOODWORK QUALITY STANDARDS ILLUSTRATED, SECTION 1300.
   2.. WOOD VENEER FACED DOORS: SPEVIES AS NOTED ON THE DRAWINGS, PLAIN-SLICED., 5-PLY UNLESS INDICATED.

   B. INTERIOR DOORS: 1-3/4 INSHES THICK UNLESS OTHERWISE INDICATED; FLUSH CONSTRUCTION.
   1. PROVIDE SOLID CORE DOORS AT ALL LOCATIONS.

7. DOOR FACINGS
   A. WOOD VENEER FACING FOR TRANSPARENT FINISH: SPECIES AS NOTED ON THE DRAWING, VENEER GRADE AS SPECIFIED BY QUALITY STANDARD, PLAIN SLICED, BOOK VENEER MATCH, RUNNING ASSEMBLY MATCH: UNLESS OTHERWISE INDICATED.
   1. VERTICAL EDGES: ANY OPTION ALLOWED BY QUALITY STANDARD FOR GRADE.

8. DOOR CONSTRUCTION
   A. FABRICATE DOORS IN ACCORDANCE WITH DOOR QUALITY STANDARD SPECIFIED.
   B. FIT DOOR EDGE TRIM TO EDGE OF STILES AFTER APPLYING VENEER FACING.
   C. FACTORY MACHINE DOORS FOR HARDWARE OTHER THAN SURFACE-MOUNTED HARDWARE, IN ACCORDANCE WITH HARDWARE REQUIREMENTS AND DIMENSIONS.
   D. FACTORY FIT DOORS FOR FRAME OPENING DIMENSIONS IDENTIFIED ON SHOP DRAWINGS, WITH EDGE CLEARANCES IN ACCORDANCE WITH SPECIFIED QUALITY STANDARD.
   1. EXCEPTION: DOORS TO BE FIELD FINISHED.
   E. PROVIDE EDGE CLEARANCES TO COMPLY WITH AWI QUALITY STANDARDS ILLUSTRATED SECTION 1700.

9. INSTALLATION
   A. INSTALL DOORS TO COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND SPECIFIED QUALITY STANDARD.
   B. USE MACHINE TOOLS TO CUT OR DRILL FOR HARDWARE.
   C. COORDINATE INSTALLATION OF DOORS WITH INSTALLATION OF FRAMES, HARDWARE AND GLAZING.

10. INSTALLATION TOLERANCES
   A. CONFORM TO SPECIFIED QUALITY STANDARD FOR FIT AND CLEARANCE TOLERANCES.
   B. CONFORM TO SPECIFIED QUALITY STANDARD FOR MAXIMUM DIAGONAL DISTORTION.

**SECTION 08410 - ALUMINUM ENTRANCES AND STOREFRONTS**

1. ENGINEERING DESIGN
   A. STRUCTURAL PROPERTES: FABRICATE AND INSTALL WORK OF THIS SECTION TO WITHSTAND WIND LOADS REQUIRED BY GOVERNING LAWS, ORDINANCES, REULATIONS AND CODES AND WITH A MAXIMUM DEFLECTION OF L/175.
   B. THERMAL MOVEMENTç FABRICATE AND INSTALL SYSTEMS TO PROVIDE FOR EXPANSION AND/OR CONTRACTION OF COMPONENT MATERIALS AS WILL BE CAUSED BY TEMPERATURE RANGE OF 150 DEGRESS F WITHOUT CAUSING HARMFUL BUCKLING, OPENING OF JOINTS, UNDUE STRESSES ON FASTENERS, OR OTHER DETRIMENTAL EFFECTS.
   C. WATER LEAKAGE: FABRICATE AND INSTALL SYSTEMS TO DENY WATER LEAKAGE; DEFINED AS APPEARANCE OF WATER, OTHER THAN CONDENSATION, ON ROOM SIDE FACE OF ANY PART OF SYSTEMS.

2. SUBMITTALS
   A. SUBMIT SHOP DRAWINGS OF SYSTEM PROPOSED. BASE ON DETAILS SHOWN ON DRAWINGS, AND DEVELOP TO SERVE AS INSTALLATION DRAWINGS. OWNER'S ACCEPTANCE IS REQUIRED PRIOR TO START OF FABRICATION.

3. MANUFACTURER
   A. THE DRAWINGS WERE PREPARED AND THIS SPECIFICATION WRITTEN ON THE BASIS OF USING THE PRODUCTS OF KAWNEER COMPANY, INC., NORCROSS, GEORGIA. IT IS NOT THE INTENT TO LIMIT COMPETITIVE BIDDING. PRODUCTS OF EQUAL CHARACTERISTICS BY OTHER MANUFACTURERS ARE ACCEPTABLE UNDER THE CONDITIONS OF THESE SPECIFICATIONS.

4. STOREFRONT FRAMING.
   A. SYSTEM: TRIFAB 451T FOR INSULATING GLASS, EXTERIOR INSULATIN, FLUSH GLAZED, EXTRUDED ALUMINUM HAVING PROPERTIES OF 6063_T5 ALLOY.
   B. INTERIOR REINFORCING: IF REQUIRED BY ENGINEERING DESIGN; ROLLED STEEL, 16 GUAGE OR HEAVIER IF REQUIRED.
   C. FASTENERS: MANUFACTURER'S STANDARD; EITHER STAINLESS STEEL OR CARBON STEEL PLATED AGAINST ELECTROLYTIC ACTION.
   D. FINISH: ANPDIZED ALUMINUM FINIHS; FINISH AS NOTED ON CONSTRUCTION DRAWINGS, CONFORMING TO AA-M12C22A31 AND AAMA 607.1.
   E. ACCESSORIES: ALUMINUM END DAMS, EXTRUDED ALUMINUM SUBSILLS AND BACKER PLATES, MANUFACTURERS STANDARD.

5. DOORS AND HARDWARE
   A. DOORS: KAWNEER "SERIES 350", MEDIUM STILE, EXTRUDED ALUMINUM HAVING PROPERTIES OF 6063_T5 ALLOY.
   B. FASTEMERS: MANUFACTURER'S STANDARD; EITHER STAINLESS STEEL OR CARBON STEEL PLATED AGAINST ELECTROLYTIC ACTION.
   C. HARDWARE: REFER TO HARDWARE SCHEDULE.
   D. WEATHER STRIPPING AND SILL SWEEPS: MANUFACTURER'S STANDARD TYPE TO SUIT APPLICATION.
   E. FINISH: ANODIZED ALUMINUM FINIHS; FINISH AS NOTED ON CONSTRUCTION DRAWINGS, CONFORMING TO AA-M12C22A31 AND AAMA 607.1.1.

6. FABRICATION
   A. STOREFRONT FRAMING: FABRICATE AND ASSEMBLE IN SHOP TO GREATEST EXTENT POSSIBLE. CUT CAREFULLY AND ACCURATELY. USE COMPRESSION JOINTS BETWEEN VERTICAL AND HORIZONTAL MULLIONS, WIITH GASKET OF NON-HARDENING BUTYL COMPOUND. PLACE STANDARD WATER DAM, IN ACCORD WITH MANUFACTURER'S RECOMMENDATION, BETWEEN VERTICAL AND HORIZONTAL MEMBERS AND SEAL WITH LIQUID BUTYL COMPOUND. PROVIDE VISION AND SOANDREL AREAS WITH WITH DRAINAGE TO OUTDOORS IN HORIZONTAL MEMBER. SIZES OF COMPONENTS AND NECESSARY FIELD CONNECTIONS AND FASTENINGS REQUIRED FOR INSTALLATION; PERMIT EASY ASSEMBLY BY MEANS OF STANDARD CONSTRUCTION QUIPMENT AND TOOLS WITHOUT USE OF SPECIAL APPARATUS OR APPLIANCES.

   B. DOORS: FABRICATE DOORS WITH TIGHT, HAIRLANE JOINTS WHERE RAILS ARE FITTED AGAINST STILES, AND FASTEN BY MEANS OF TENSIONED STEEL TIE-RODS IN TOP AND BOTTOM RAILS. PROVIDE ADJUSTING MECHANISM IN TOP RAIL TO PROVIDE FOR MINOR CLEARANCE ADJUSTMENTS. GLASS STOPS; SNAP-IN TYPE WITH BULB TYPE GLAZING STRIPS. WEATHER STRIPPING; PILE. PROVIDE ADJUSTABLE PILE WEATHER-STRIP ON ONE STILE AT MEETING STILES OF PAIRS OF DOORS.

7. PREPARATION
   A. WHERE ALUMINUM SURFACES CONTACT STEEL, OTHER INCOMPATIBLE METALS OR CONCRETE, PROTECT ALUMINUM BY ONE OF THE FOLLOWING:
   1) PAINT INCOMPATIBLE METAL OR CONCRETE WITH COATING OF HEAVY-BODIED BITUMINOUS PAINT.
   2) PAINT INCOMPATIBLE METAL WITH PRIME COAT OF ZINC CHROMATE PRIMER FOLLOWED BY TWO COATS OF ALUMINUM METAL PAINT OR OTHER SUITABLE PROTACTIVE COATING; EXCLUDE THOSE CONTAINING LEAD PIGMENTATION.
   3) NON-ABSORPTIVE GASKETS.
   4) CAULKING BETWEEN ALUMINUM AND INCOMPATIBLE METALS.
   5) IF DRAINAGE FROM INCOMPATIBLE METAL PASSES OVER ALUMINUM, PAINT INCOMPATIBLE METAL BY METHOD NO. 2 ABOVE.

8. INSTALLATION
   A. GENERAL : INSTALL TRUE TO LINE, PLUMB, LEVEL, SQUARE, AND IN PROPER PLANES WITH OTHER WORK. INSTALL FREE FROM SAGS, WAVES, BUCKLES, OR OTHER OBJECTIONABLE DEFECTS. ANCHOR TO RESIST STRESSES TO WHICH THE WORK SHALL NORMALLY BE SUBJECTED.

   B. HARDWARE: FIT IN ACCORD WITH MANUFACTURER'S INSTRUCTIONS. INSTALL DOORS TO OPERATE SMOOTHLY AND QUIETLY AFTER ADJUSTMENT. ADJUST DOOR-CLOSING DEVICES IMMEDIATELY PRIOR TO FINAL INSPECTION. INSTALL THRESHOLDS IN FULL BED OF MASTIC COMPOUND AND FASTEN WITH COLOR MATCHING MACHINE SCREWS AND EXPANSION SHIELDS. ONE ANCHOR WILL BE REQUIRED FOR EACH 24 INCHES OF THRESHOLD LENGTH.

   C. GLASS AND GLAZING: SPECIFIED IN OTHER SECTIONS.

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04/05/2022

HAT CREEK Burger Company

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

SPECIFICATIONS

| DATE | ISSUE FOR PERMIT | REMARKS |
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| 03/03/2022 | ISSUE FOR PERMIT | |

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| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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# HAT CREEK BURGER - PROTOTYPE 1.1 TABLE OF CONTENTS

# DIVISION 07 - THERMAL AND MOISTURE PROTECTION

## SECTION 07212 - BOARD AND BATT INSULATION

1. SECTION INCLUDES
A. FLUSH-MOUNT PASS THROUGH WINDOWS.

2. RELATED SECTIONS
A. SECTION 07620 (07 62 00) - SHEET METAL FLASHING AND TRIM.
B. SECTION 07920 (07 92 00) - JOINT SEALANTS.

3. REFERENCES
A. ASTM A 240 - HEAT-RESISTING CHROMIUM AND CHROMIUM-NICKEL STAINLESS STEEL PLATE, SHEET, AND STRIP FOR PRESSURE VESSELS.
B. ASTM A 653 - STEEL SHEET, ZINC-COATED (GALVENIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS.
C. ASTM B 209 - ALUMINUM AND ALUMINUM-ALLOY SHEET AND PLATE.
D. ASTM B 221 - ALUMINUM AND ALUMINUM-ALLOY EXTRUDED BARS, RADS, WIRE, PROFILES, AND TUBES.
E. ASTM C 1048 - HEAT-TREATED FLAT GLASS--KIND HS, KIND FT COATED AND UNCOATED GLASS.

4. SUBMITTALS
A. COMPLY WITH SECTION 01300 - ADMINISTRATIVE REQUIREMENTS.
B. PRODUCT DATA: SUBMIT MANUFACTURER'S PRODUCT DATA, INCLUDING MATERIALS, COMPONENTS, FABRICATION, FINISH, AND INSTALLATION INSTRUCTIONS.
C. SHOP DRAWINGS: SUBMIT MANUFACTURER'S SHOP DRAWINGS, INCLUDING PLANS, ELEVATIONS, SECTIONS, AND DETAILS, INDICATING DIMENSIONS, TOLERANCES, MATERIALS, FABRICATION, GLAZING, FASTENERS, HARDWARE, FINISH, ELECTRICAL WIRING DIAGRAMS, OPTIONS, AND ACCESSORIES.

5. DELIVERY, STORAGE, AND HANDLING

A. DELIVERY: DELIVER MATERIALS TO SITE IN MANUFACTURER'S ORIGINAL, UNOPENED CONTAINERS AND PACKAGING, WITH LABELS CLEARLY IDENTIFYING PRODUCT NAME AND MANUFACTURER.
B. STORAGE: STORE MATERIALS IN CLEAN, DRY AREA INDOORS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
C. HANDLING: PROTECT MATERIALS AND FINISH FROM DAMAGE DURING HANDLING AND INSTALLATION.

6. MANUFACTURER
A. READY ACCESS, INC., 1815 ARTHUR DRIVE, WEST CHICAGO, ILLINOIS 60185. TOLL FREE (800) 621-5045. PHONE (630) 876-7766. FAX (630) 876-7767.
WEB SITE WWW.READY-ACCESS.COM. E-MAIL READY@READ-ACCESS.COM.

7. FLUSH-MOUNT PASS-THRU WINDOWS

A. FLUSH-MOUNT PASS-THRU WINDOWS: 275 SINGLE PANEL MANUAL OPEN/SELF-CLOSING SLIDER WINDOW.

1. SERVICE OPENING: AS NOTED ON CONSTRUCTION DOCUMENTS.

2. DOOR OPERATION:
a. OPEN: MANUAL.
b. CLOSE: MANUAL OR SELF-CLOSING.

3. DOOR TYPE: SLIDING, 1 DOOR PANEL.

4. OPENING DIRECTION: AS NOTED ON CONSTRUCTION DOCUMENTS.

5. FRAME: EXTRUDED ALUMINUM, ASTM B 221, ALLOY 6063-T6 AND 6063-T52.

6. ALUMINUM SHEET: ASTM B 209, ALLOY 5005-AQ-H34.

7. GALVANIZED STEEL SHEET: ASTM A 653, G90.

8. BOTTOM STILL: ANGLED DOWNWARD, TRACK-FREE.

9. SECURITY LOCK: ALUMINUM BAR EXTRUSION WITH SLIDING SPRING-LOADED LOCKING CLIP.

10. FASTENERS: STAINLESS STEEL RIVETS AND HEX-HEAD ZINC-PLATED SELF-THREADING MACHINE SCREWS.

11. HANDLE: BLACK DELRIN HANDLE WITH PRESSED-IN STAINLESS STEEL SPRING PINS. STAINLESS STEEL HANDLE MOUNTING BRACKET. STAINLESS STEEL SPRING-LOADED MOUNTING BASE

12. GLAZING: 1/4-INCH TEMPERED GLASS, ASTM C 1048, CLEAR.

13. SILICONE GLAZING SEALANT: DOW CORNING 999A.

8. FABRICATION
A. ASSEMBLY: FACTORY ASSEMBLED, FACTORY GLAZED.

9. ALUMINUM FINISH
A. ANODIZED:
1. FINISH TO MATCH EXISTING ALUMINUM STOREFRONT SYSTEM.

10. EXAMINATION
A. EXAMINE AREAS TO RECEIVE PASS-THRU WINDOWS. NOTIFY ARCHITECT OF CONDITIONS THAT WOULD ADVERSELY AFFECT INSTALLATION OR SUBSEQUENT USE. DO NOT PROCEED WITH INSTALLATION UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.

11. PREPARATION
A. ENSURE OPENINGS TO RECEIVE PASS-THRU WINDOWS ARE PLUMB, LEVEL, SQUARE, ACCURATELY ALIGNED, CORRECTLY LOCATED, AND IN TOLERANCE.

12. INSTALLATION
A. INSTALL PASS-THRU WINDOWS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. INSTALL PASS-THRU WINDOWS PLUMB, LEVEL, SQUARE, TRUE TO LINE, AND WITHOUT WARP OR RACK.
C. INSTALL PASS-THRU WINDOW COMPENENTS WEATHERLIGHT.
D. ANCHOR PASS-THRU WINDOWS SECURELY IN PLACE TO SUPPORTS. USE ATTACHMENT METHODS PERMITTING ADJUSTMENT FOR CONSTRUCTION TOLERANCES, IRREGULARITIES, ALIGNMENT, AND EXPANSION AND CONTRACTION.
E. SEPARATE ALUMINUM FROM OTHER METAL SURFACES WITH BITUMINOUS COATINGS OR OTHER MEANS APPROVED BY ARCHITECT.
F. SHEET METAL FLASHING: INSTALL SHEET METAL FLASHING AS SPECIFIED IN SECTION 07620.
G. JOINT SEALANTS: INSTALL JOINT SEALANTS AS SPECIFIED IN SECTION 07900.

13. ADJUSTING
A. ADJUST DOORS TO BE WEATHER TIGHT IN CLOSED POSITION.
B. ADJUST DOORS AND OPERATING HARDWARE TO FUNCTION PROPERLY AND FOR SMOOTH OPERATION WITHOUT BINDING.

14. CLEANING
A. CLEAN PASS-THRU WINDOWS PROMPTLY AFTER INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. REMOVE EXCESS JOINT SEALANT IN ACCORDANCE WITH SEALANT MANUFACTURER'S INSTRUCTIONS.
C. DO NOT USE HARSH CLEANING MATERIALS OR METHODS THAT WOULD DAMAGE GLAZING OR FINISH.

15. PROTECTION
A. PROTECT INSTALLED PASS-THRU WINDOWS TO ENSURE THAT, EXCEPT FOR NORMAL WEATHERING, PASS-THRU WINDOWS WILL BE WITHOUT DAMAGE OR DETERIORATION AT TIME OF SUBSTANTIAL COMPLETION.

**SECTION 08710-DOOR HARDWARE**

1. SECTION INCLUDES
A. HARDWARE FOR WOOD AND HOLLOW STEEL DOORS.

2. REFERENCES
A. ANSI/ICC A117.1 - AMERICAN NATIONAL STANDARD FOR ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES; INTERNATIONAL CODE COUNCIL; 2003.
B. BHMA A156.1 THRU 156.1 - BUILDERS HARDWARE MANUFACTURERS ASSOCIATION, INC.; 2006.
C. DHI A115 SERIES - SPECIFICATIONS FOR STEEL DOORS AND FRAME PREPARATION FOR HARDWARE; DOOR AND HARDWARE INSTITUTE; 2000
D. DHI (LOCS) - RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR STANDARD STEEL DOORS AND FRAMES; DOOR AND HARDWARE INSTITUTE; 2004.
E. DHI WDHS.3 - RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR FLUSH WOOD DOORS; DOOR AND HARDWARE INSTITUTE; 1996.

3. SUBMTTALS
A. SHOP DRAWINGS:
1. INDICATE LOCATIONS AND MOUNTING HEIGHTS OF EACH TYPE OF HARDWARE, SCHEDULES, CATALOG CUTS, ELECTRICAL CHARACTERISTCS AND CONNECTION REQUIREMENTS.
2. SUBMIT MANUFACTURER'S PARTS LISTS AND TEMPLATES.
B. MAINTENANCE DATA: INCLUDE DAT ON OPERATING HARDWARE, LUBRICATION REQUIREMENTS, AND INSPECTION PROCEDURES RELATED TO OREVENTATIVE MAINTENANCE.
C. KEYS: DELİVER WITH IDENTIFYING TAGS TO OWNER BY SECURITY SHIPMENT DIRECT FROM HARDWARE SUPPLIER.
D. WARRANTY: SUBMIT MANUFACTURER'S WARRANTY AND ENSURE THAT FORMS HAVE BEEN COMPLETED IN OWNER'S NAME AND REGISTERED WITH MANUFACTURER.

4. COORDINATION
A. COORDINATE THE WORK WITH OTHER DIRECTLY AFFECTED SECTIONS INVOLVING MANUFACTURE OR FABRICATION OF INTERNAL REINFORCEMENT FOR DOOR HARDWARE.

5. GENERAL REQUIREMENTS FOR DOOR HARDWARE PRODUCTS
A. PROVIDE PRODUCTS THAT COMPLY WITH THE FOLLOWING:
1. APPLICABLE PROVISIONS OF FEDERAL, STATE, AND LOCAL CODES.
2. PROVIDE PRODUCTS FROM THE MANUFACTURERS AND FINISH LISTED IN THE SCHEDULE LOCATED IN THE CONSTRUCTION DOCUMENTS. NOT SUBSTITUTION ALLOWED WITHOUT WRITTEN APPROVAL.
B. FINISHES: IDENTIFIED IN SCHEDULE LOCATED IN THE CONSTRUCTION DOCUMENTS.

6. KEYING
A. DOOR LOCKS: MASTER KEYED.
1. INCLUDE CONSTRUCTIONS KEYING AND CONTROL WITH REMOVABLE CORE CYLINDERS.
B. SUPPLY KEYS IN THE FOLLOWING QUANTITIES:
1. 4 MASTER KEYS
a. STAMP ALL PERMANENT MASTER KEYS WITH A SET NUMBER AND "DO NOT DUP"
2. 4 CONSTRUCTION KEYS.
3. 4 CONTROL KEYS AND 4 EXTRA CYLINDER CORES.
4. 2 CHANGE KEYS FOR EACH LOCK.
5. INDENTIFY PERMANENT KEYS IN ENVELOPES AND DELIVER TO THE OWNER.
6. RE-KEY ENTIRE BUILDING AT BUILDING TURNOVER.

7. EXAMINATION
A. VERIFY THAT DOORS AND FRAMES ARE READY TO RECEIVE WORK AND DIMENSIONS ARE AS INDICATED ON SHOP DRAWINGS.

8. INSTALLATION
A. INSTALL HARDWARE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND APPLICABLE CODES.
B. USE TEMPLATES PROVIDED BY HARDWARE ITEM MANUFACTURER.
C. MOUNTING HEIGHTS FOR HARDWARE FROM FINISHED FLOOR TO CENTER LINE OF HARDWARE ITEM:
1. FOR STEEL DOORS AND FRAMES: COMPLY WITH DHI "RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR STEEL DOORS AND FRAMES."
2. FOR WOOD DOORS: COMPLY WITH DHI "RECOMMENDED LOCATIONS FOR ARCHITECTURAL HARDWARE FOR WOOD FLUSH DOORS."
D. ADJUCT HARDWARE FOR SMOOTH OPERATION.

**SECTION 08800 - GLAZING**

1. SECTION INCLUDES
A. GLASS.
B. GLAZING COMPOUNDS AND ACCESSORIES.

2. REFERENCES
A. 16 CFR 1201 - SAFETY STANDARD FOR ARCHITECTURAL GLAZING MATERIALS; CURRENT EDITION.
B. ASTM C 864 - STANDARD SPECIFICATION FOR DENSE ELASTOMERIC COMPRESSION SEAL GASKETS, SETTING BLOCK, AND SPACERS; 2005.
C. ASTM C 920 - STANDARD SPECIFICATION FOR ELASTOMERIC JOINT SEALANTS; 2005.
D. ASTM C 1036 - STANDARD SPECIFICATION FOR FLAT GLASS; 2001.
E. ASTM C 1048 - STANDARD SPECIFICATION FOR HEAT-TREATED FLAT GLASS--KIND HS, KIND FT COATED AND UNCOATED GLASS; 2004.
F. ASTM C 1193 - STANDARD GUIDE FOR USE OF JOINT SEALANTS; 2005a.
G. ASTM E 2190 - STANDARD SPECIFICATION FOR INSULATING GLASS UNIT PERFORMANCE AND EVALUATION; 2002.

3. PERFORMANCE REQUIREMENTS
A. PROVIDE GLASS AND GLAZING MATERIALS FOR CONTINUITY OF BUILDING ENCLOSURE VAPOR RETARDER AND AIR BARRIER:
1. IN CONJUNCTION WITH VAPOR RETARDER AND JOINT SEALER MATERIALS DESCRIBED IN OTHER SECTIONS.
2. TO MAINTAIN A CONTINUOUS AIR BARRIER AND VAPOR RETARDER THROUGHOUT THE GLAZED ASSEMBLY FROM GLASS PANE TO HEEL BEAD OF GLAZING SEALANT.

4. SUBMITTALS
A. PRODUCT DATA ON GLASS TYPES: PROVIDE STRUCTURAL, PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS, SIZE LIMITATIONS, SPECIAL HANDLING OR INSTALLATION REQUIREMENTS.
B. PRODUCT DATA ON GLAZING COMPOUNDS: PROVIDE CHEMICAL, FUNCTIONAL, AND ENVIRONMENTAL CHARACTERISTICS, LIMITATIONS, SPECIAL APPLICATION REQUIREMENTS. IDENTIFY AVAILABLE COLORS.
C. CERTIFICATES: CERTIFY THAT PRODUCTS MEET OR EXCEED SPECIFIED REQUIREMENTS.

5. QUALITY ASSURANCE
A. PERFORM WORK IN ACCORDANCE WITH GANA GLAZING MANUAL AND FGMA SEALANT MANUAL FOR GLAZING INSTALLATION METHODS.

6. FLAT GLASS MATERIALS
A. CLEAR FLOAT GLASS: CLEAR, FULLY TEMPERED.
1. COMPLY WITH ASTM C 1036, TYPE I, TRANSPARENT FLAT, CLASS 1 CLEAR, QUALITY Q3 (GLAZING SELECT).
2. COMPLY WITH ASTM C 1048.
3. 6 MM MINIMUM THICK.
B. SAFETY GLASS: CLEAR; FULLY TEMPERED WITH HORIZONTAL TEMPERING.
1. COMPLY WITH ASTM C 1036, TYPE I, TRANSPARENT FLAT, CLASS 1 CLEAR, QUALITY Q3 (GLAZING SELECT) AND ASTM C 1048.
2. COMPLY WITH 16 CFR 1201 TEST REQUIREMENTS FOR CATEGORY II.
C. WALL MIRROR:
1. PLATE GLASS, ELECTROPLATED AND BAKED FOR CORROSION RESISTANCE.
2. THICKNESS: 1/4"
3. COLOR: CLEAR
4. DO NOT ALLOW FIELD CUTTING OF MIRROR

7. SEALED INSULATING GLASS MATERIALS
A. INSULATED GLASS UNITS: DOUBLE PANE WITH LOW-E GLASS TO ELASTOMER EDGE SEAL.
1. DURABILITY: CERTIFIED BY AN INDEPENDENT TESTING AGENCY TO COMPLY WITH ASTM E 2190.
2. PURGE INTERPANE SPACE WITH DRY HERMETIC AIR.
3. TOTAL UNIT THICKNESS OF 1 INCH MINIMUM.

8. GLAZING COMPOUNDS
A. BUTYL SEALANT: SINGLE COMPONENT; ASTM C 920, GRADE NS, CLASS 12-1/2, USES M AND A; SHORE A HARDNESS OF 10 TO 20; BLACK COLOR; NON-SKINNING.
B. SILICONE SEALANT: SINGLE COMPONENT; NEUTRAL CURING; CAPABLE OF WATER IMMERSION WITHOUT LOSS OF PROPERTIES; NON-BLEEDING, NON-STAINING; ASTM C 920, TYPE S, GRADE NS, CLASS 25, USES M, A, AND G; CURED SHORE A HARDNESS OF 15 TO 25; COLOR AS NOTED IN FINISH SCHEDULE ON DRAWINGS.

9. GLAZING ACCESSORIES
A. SETTING BLOCKS: NEOPRENE, 80 TO 90 SHORE A DUROMETER HARDNESS, ASTM C 864 OPTION I. LENGHT OF 0.1 INCH FOR EACH SQUARE FOOT OF GLAZING OR MINIMUM 4 INCH X WIDTH OF GLAZING RABBET SPACE MINUS 1/16 INCH X HEIGHT TO SUIT GLAZING METHOD AND PANE WEIGHT AND AREA.
B. SPACER SHIMS: NEOPRENE, 50 TO 60 SHORE A DUROMETER HARDNESS, ASTM C 864 OPTION I. APPLICATION, SELF ADHESIVE ON ONE FACE.
C. GLAZING TAPE: PREFORMED BUTYL COMPOUND WITH INTEGRAL RESILIENT TUBE SPACING DEVICE; 10 TO 15 SHORE A DUROMETER HARDNESS; COILED ON RELEASE PAPER; SIZE AS RECOMMENDED BY GLASS MANUFACTURER; BLACK COLOR.
1. MANUFACTURERS:
a. PECORA CORPORATION: WWW.PECORA.COM.
b. TREMCO, INC: WWW.TREMCOSEALANTS.COM
c. SUBSTITUTIONS: REFER TO SECTION 01600 - PRODUCT REQUIREMENTS.
D. GLAZING GASKETS: RESILIENT SILICONE EXTRUDED SHAPE TO SUIT GLAZING CHANNEL RETAINING SLOT; ASTM C 864 OPTION I; BLACK COLOR.
E. GLAZING CLIPS: MANUFACTURER'S STANDARD TYPE.
F. GLAZING FILM: NEUTRAL ANTI-GLARE WINDOW FILM. SOFT HORIZONS V33B SR CDF BY VISTA WINDOW FILM: WWW.VISTA-FILMS.COM OR APPROVED SUBSTITUTION.

10. PREPARATION
A. PRIME SURFACES SCHEDULED TO RECEIVE SEALANT.
B. INSTALL SEALANTS IN ACCORDANCE WITH ASTM C 1193 AND FGMA SEALANT MANUAL.
C. INSTALL SEALANT IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

11. INSTALLATION - EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)
A. CUT GLAZING TAPE TO LENGHT AND SET AGAINST PERMONENT STOPS, 3/16 INCH BELOW SIGHT LINE. SEAL CORNERS BY BUTTING TAPE AND DABBING WITH BUTYL SEALANT.
B. APPLY HEEL BEAD OF BUTYL SEALANT ALONG INTERSECTION OF PERMANENT STOP WITH FRAME ENSURING FULL PERIMETER SEAL BETWEEN GLASS AND FRAME TO COMPLETE THE CONTINUITY OF THE AIR AND VAPOR SEAL.,
C. PLACE SETTING BLOCKS AT 1/4 POINTS WITH EDGE BLOCK NO MORE THAN 6 INCHES FROM CORNERS.
D. REST GLAZING ON SETTING BLOCKS AND PUSH AGAINST TAPE AND HEEL BEAD OF SEALANT WITH SUFFICIENT PRESSURE TO ATTAIN FULL CONTACT AT PERIMETER OF PANE OR GLASS UNIT.
E. INSTALL REMOVABLE STOPS, WITH SPACER STRIPS INSERTED BETWEEN GLAZING AND APPLIED STOPS, 1/4 INCH BELOW SIGHT LINE. PLACE GLAZING TAPE ON GLAZING PANE OR UNIT WITH TAPE FLUSH WITH SIGHT LINE.
F. FILL GAP BETWEEN GLAZING AND STOP WITH SEALANT TO DEPTH EQUAL TO BITE OF FRAME ON GLAZING, BUT NOT MORE THAN 3/8 INCH BELOW SIGHT LINE.
G. APPLY CAP BEAD OF SEALANT ALONG VOID BETWEEN THE STOP AND THE GLAZING, TO UNIFORM LINE, FLUSH WITH SIGHT LINE. TOOL OR WIPE SEALANT SURFACE SMOOTH.

12. INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)
A. CUT GLAZING TAPE TO LENGHT AND SET AGAINST PERMANENT STOPS, PROJECTING 1/16 INCH (1.6MM) ABOVE SIGHT LINE.
B. PLACE SETTING BLOCKS AT 1/4 POINTS WITH EDGE BLOCK NO MORE THAN 6 INCHES FROM CORNERS.
C. REST GLAZING ON SETTING BLOCKS AND PUSH AGAINST TAPE FOR FULL CONTACT AT PERIMETER OF PANE OR UNIT.
D. PLACE GLAZING TAPE ON FREE PERIMETER OF GLAZING IN SAME MANNER DESCRIBED ABOVE.
E. INSTALL REMOVABLE STOP WITHOUT DISPLACEMENT OF TAPE. EXERT PRESSURE ON TAPE FOR FULL CONTINUOUS CONTACT.
F. KNIFE TRIM PROTRUDING TAPE.

13. INSTALLATION - GLAZING FILM
A. INSTALL FILM PER MANUFACTURER'S RECOMMENDATIONS.
B. PROVIDE NEW FILM AT ALL EXTERIOR CLEAR GLAZING.

14. INSTALLATION - WALL MIRRORS
A. SET IN 2"X2" STEEL ANGEL GLAZING TAPE.
B. PROVIDE BOTTOMSUPPORT FOR MIRRORS FOR 3 DAYS UNTIL ADHESIVE HAS SET.
C. TOLERANCES:
1. OFFSET IN ALIGNMENT OF ADJOINING EDGES: MAX 1/16 INCH.
2. OFFSET IN FACE ALIGNMENT OVER WALL SURFACE: MAX 1/8 INCH.
3. NO GAP BETWEEN ADJACENT MEMBERS.

15. CLEANING
A. REMOVE GLAZING MATERIALS FROM FINISH SURFACES.
B. REMOVE LABELS AFTER WORK IS COMPLETE.
C. CLEAN GLASS AND ADJACENT SURFACES.

16. PROTECTION
A. AFTER INSTALLATION, MARK PANE WITH AN 'X' BY USING REMOVABLE PLASTIC TAPE OR PASTE; DO NOT MARK HEAT ABSORBING OR REFLECTIVE GLASS UNITS.

# DIVISION 09 - FINISHES

**SECTION 09260 - GYPSUM BOARD ASSEMBLIES**

1. SECTION INCLUDES
A. FIRE RATED WALLS.
B. ACOUSTIC INSULATION.
C. GYPSUM TILE BACKER BOARD.
D. GYPSUM WALLBOARD.
E. JOINT TREATMENT AND ACCESSORIES.
F. METAL FRAMING.

2. REFERENCES
A. ANSI A108.11-AMERICAN NATIONAL STANDARD FOR INTERIOR INSTALLATION OF CEMENTITIOUS BACKER UNITS; 1999 (R2005).

B. ANSI A118.9-AMERICAN NATIONAL STANDARD SPECIFICATIONS FOR TEST METHODS AND SPECIFICATIONS FOR CEMENTITIOUS BACKER UNITS; 1999 (R2005).

C. ASTM C 475/C 475M-STANDARD SPECIFICATION FOR JOINT COMPOUND AND JOINT TAPE FOR FINISHING GYPSUM BOARD; 2002.

D. ASTM C 840-STANDARD SPECIFICATION FOR APPLICATION AND FINISHING OF GYPSUM BOARD; 2005.

E. ASTM C 1396/C 1396M-STANDARD SPECIFICATION FOR GYPSUM BOARD; 2004.

F. ASTM E 72-STANDARD TEST METHODS OF CONDUCTING STRENGTH TESTS OF PANELS FOR BUILDING CONSTRUCTION; 2005.

3. GYPSUM BOARD MATERIALS
A. MANUFACTURERS:
1. BPB AMERICA INC: WWW.BPB-NA.COM.
2. G-P GYPSUM CORPORATION: WWW.GP.COM/GYPSUM.
3. NATIONAL GYPSUM COMPANY: WWW.NATIONALGYPSUM.COM
4. USG: WWW.USG.COM.

B. GYPSUM WALLBOARD: ASTM C 1396/C 1396M. SIZES TO MINIMIZE JOINTS IN PLACE; ENDS SQUARE CUT.
1. REGULAR TYPE:
A. APPLICATION: USE FOR VERTICAL SURFACES, UNLESS OTHERWISE INDICATED.
B. EDGES: TAPARED.
2. FIRE RESISTANT TYPE: COMPLYING WITH TYPE X REQUIREMENTS; UL OR WH RATED.
A. AT ASSEMBLIES INDICATED WITH FIRE-RATING: USE TYPE REQUIRED BY INDICATED TESTED ASSEMBLY.
B. THICKNESS: 5/8 INCH.
C. EDGES: TAPARED.
3. CEILING BOARD: SPECIAL SAG-RESISTANT TYPE.
A. APPLICATION: CEILINGS, UNLESS OTHERWISE INDICATED.
B. THICKNESS: 5/8 INCH.
C. EDGED: TAPARED.

C. WATER-RESISTANT GYPSUM BACKING BOARD: ASTM C 1396/C 1396M; ENDS SQUARE CUT.
1. APPLICATION: VERTICAL SURFACES BEHIND THINSET TILE, EXCEPT IN WET AREAS.
2. CORE TYPE: REGULAR AND TYPE X, AS INDICATED.
3. THICKNESS: 5/8 INCH.
4. EDGES: TAPERED.

4. FIBERGLASS REINFORCED BOARD MATERIALS
A. GYPSUM TILE BACKER BOARD: ASTM C1178 STANDARD SPECIFICATION FOR GLASS MAT WATER-RESISTANT GYPSUM BACKING PANEL, 5/8 INCH THICK.

5. ACCESSORIES
A. ACOUSTIC INSULATION: ASTM C 665; PREFORMED GLASS FIBER, FRICTION FIT TYPE, UNFACED.

B. FINISHING ACCESSORIES: ASTM C 1047, GALVANIZED STEEL, UNLESS OTHERWISE INDICATED.
1. TYPES: AS DETAILED OR REQUIRED FOR FINISHED APPEARANCE.

C. JOINT MATERIALS: ASTM C 475 AND AS RECOMMENDED BY GYPSUM BOARD MANUFACTURER FOR PROJECT CONDITIONS.
1. TAPE: 2 INCH WIDE, COATED GLASS FIBER TAPE FOR JOINTS AND CORNERS, EXCEPT AS OTHERWISE INDICATED.
2. TAPE: 2 INCH WIDE, CREASED PAPER TAPE FOR JOINTS AND CORNERS, EXCEPT AS OTHERWISE INDICATED.
3. READY-MIXED VINYL-BASED JOINT COMPOUND.

D. FASTENERS: SCREWS, PER ASTM 1002; 1-1/4' TYPE 'W' BUGLE HEAD INTO WOOD FRAMING 1-1/8" TYPE 'S' BUGLE HEAD INTO STEEL FRAMING, AND 3/8" TYPE "S-12" PAN (OR LOW PROFILE) HEAD FOR STEEL TO STEEL FRAMING CONNECTIONS.

6. EXAMINATION

A. VERIFY THAT PROJECT CONDITIONS ARE APPROPRIATE FOR WORK OF THIS SECTION TO COMMENCE.

7. ACOUSTIC ACCESSORIES INSTALLATION

A. ACOUSTIC INSULATION: PLACE TIGHTLY WITHIN SPACES, AROUND CUT OPENINGS, BEHING AND AROUND ELECTRICAL AND MECHANICAL ITEMS WITHIN PARTITIONS, AND TIGHT TO ITEMS PASSING THROUGH PARTITIONS.
B. ACOUSTIC SEALANT: INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

9. FRAMING

A. WOOD FRAMING, BOARD APPLICATION AND FINISH STANDARDS: SUDDING SHALL BE 16" O.C. UNLESS OTHERWISE NOTED.
B.INSTALL CEILING BOARDS IN THE DIRECTION AND MANNER WHICH WILL MINIMIZE THE NUMBER OF END-BUTT JOINTS, AND WHICH WILL AVOID END JOINTS IN THE CENTRAL AREA OF EACH CEILINGİ STAGGER END JOINTS AT LEAST 4'-0".
C. INSTALL WALL/ PARTITION BOARDS VERTICALLY TO AVOID END-BUTT JOINTS WHEREVER POSSIBLE.
D. LOCATE EITHER EDGE OR END JOINTS OVER SUPPORTS. STAGGER JOINTS OVER DIFFERENT STUDS ON OPPOSITE SIDES OF PARTITIONS.
E. SPACE FASTANERS IN GYPSUM BOARD IN ACCORDANCE WITH REFERENCED STANDARS AND MANUFACTURER'S RECOMMENDATIONS, EXCEPT AS OTHERWISE INDICATED.
1. PARALLED APPLICATIONS: 12" O.C. IN FIELD; 8" O.C. ALONG EDGES.
2. PERPENDICULAR APPLICATION: 12" O.C. IN FIELD; 12" O.C. ALONG EDGES.

10. GYPSUM BOARD INSTALLATION

A. COMPLY WITH ASTM C 840 AND MANUFACTURER'S INSTRUCTIONS. INSTALL TO MINIMIZE BUTT END JOINTS, ESPECIALLY IN HIGHLY VISIBLE LOCATIONS.
B. SINGLE-LAYER NON-RATED: INSTALL GYPSUM BOARD IN MOST ECONOMICAL DIRECTION, WITH ENDS AND EDGED OCCURING OVER FIRM BEARING.
C. FIRE-RATED CONSTRUCTION: INSTALL GYPSUM BOARD IN STRICT COMPLIANCE WITH REQUIREMENTS OF LISTING AUTHORITY.
D. TILE BACKING BOARD: INSTALL OVER FRAMING MEMBERS WHERE INDICATED, IN ACCORDANCE WITH ANSI A108.11 AND MANUFACTURER'S INSTRUCTIONS.
E. INSTALLATION ON FRAMING: USE SCREWS FOR ATTACHMENT OF ALL GYPSUM BOARD.
F. MOISTURE PROTECTION: TREAT CUT EDGES AND HOLES IN MOISTURE RESISTANT GYPSUM BOARD WITH SEALANT.
G. ALL GYPSUM BOARD CEILING INSTALLATIONS TO HAVE A LEVEL 3 FINISH IN ALL PUBLIC AREAS. NO LESSER FINISH WILL BE ALLOWED.

11. INSTALLATION OF TRIM AND ACCESSORIES

A. CORNER BEADS: INSTALL AT EXTERNAL CORNERS, USING LONGEST PRACTICAL LENGHTS.

12. JOINT TREATMENT

A. FINISH ALL GYPSUM BOARD IN ACCORDANCE WITH ASTM C 840 LEVEL 4.
B. TAPE, FILL, AND SAND EXPOSED JOINTS, EDGES, AND CORNERS TO PRODUCE SMOOTH SURFACE READY TO RECEIVE FINISHES.
1. FEATHER COATS OF JOINT COMPOUND SO THAT CAMBER IS MAXIMUM 1/32 INCH.
2. TAPING, FILLING, AND SANDING IS NOT REQUIRED AT SURFACES BEHIND ADHESIVE APPLIED CERAMIC TILE AND FIXED CABINETRY.

13. TOLERANCES

A. MAXIMUM VARIATION OF FINISHED GYPSUM BOARD SURFACE FROM TRUE FLATNESS: 1/8 INCH IN 10 FEET IN ANY DIRECTION.

## SECTION 09300 - TILE

1. SECTION INCLUDES

A. TILE FOR FLOOR APPLICATIONS.
B. TILE FOR WALL APPLICATIONS.
C. FIBERGLASS REINFORCED GYPSUM BOARD AS TILE SUBSRATE.
D. ALUMINUM TRIM.
E. WATERPROOFING SHEET MEMBRANE.

2. REFERENCES

A. ANSI A108 SERIES/ A118 SERIES/A136.1 - AMERICAN NATIONAL STANDARD SPECIFICATIONS FOR THE INSTALLATION OF CERAMIC TILE ( COMPENDIUM); 2005.
B. TCNA (HB) - HANDBOOK FOR CERAMIC TILE INSTALLATION; TILE COUNCIL OF NORTH AMERICA; INC.; 2014.

3. QUALITY ASSURANCE

A. MAINTAIN ONE COPY OF TCA HANDBOOK AND ANSI A108 SERIES/A118 SERIES ON SITE.

4. DELIVERY, STORAGE AND HANDLING

A. PROTECT ADHESIVES FROM FREEZING OR OVERHEATING IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

5. EXTRA MATERIALS

A. PROVIDE 10 SQ. FT OF EACH SIZE, COLOR, AND SURFACE FINISH OF TILE SPECIFIED.

6. TILE

A. REFER TO FINISH SCHEDULE ON THE CONSTRUCTION DOCUMENTS FOR MATERIAL SELECTIONS.

7. TRIM AND ACCESSORIES

A. TRIM: MATCHING BULLNOSE, SURFACE BULLNOSE, COVE BASE, AND COVE CERAMIC SHAPES AS SCHEDULED IN SIZES COORDINATED WITH FIELD TILE.
1. APPLICATIONS: USE IN THE FOLLOWING LOCATIONS.
A. OPEN EDGES: SCHLUTER EDGE AS NOTED ON DRAWINGS AT ALL CONDITIONS.
B. INSIDE CORNERS: SCHLUTER INSIDE EDGE AS NOTED ON DRAWINGS IN RESTROOMS.
C. FLOOR TO WALL JOINTS: SCHLUTER COVE BASS AS NOTED ON DRAWINGS IN RESTROOMS.
2. MANUFACTURER: SCHLUTER.

B. WATERPROOFING SHEET MEMBRANE: NOBLESEAL TS AS MANUFACTURED BY NOBLE COMPANY, GRAND HAVEN, MI.
1. COMPOSITE SHEET MEMBRANE OF NON-PLASTICIZED CHLORINATED POLYETHYLENE, 30 MILS THICK.

8. ADHESIVE MATERIALS

A. ORGANIC AADHESIVE: ANSI A136.1, THINSET BOND TYPE; USE TYPE I IN AREAS SUBJECT TO PROLONGED MOISTURE EXPOSURE.
B. EPOXY ADHESIVE: ANSI A118.3, THINSET BOND TYPE.

9. GROUT MATERIALS

A. STANDARD GROUT: ANY TYPE SPECIFIED AIN ANSI A118.6 OR A118.7.
B.EPOXY GROUT: CUSTOM BUILDING PRODUCTS, CEG-IG, ANSI A118.8, MODIFIED EPOXY EMULSION GROUT.

10. EXAMINATION

A. VERIFY THAT SUB-FLOOR SURFACES ARE SMOOTH AND FLAT WITHIN THE TOLERANCES SPECIFIES FOR THAT TYPE OF WORK AND ARE READY TO RECEIVE TILE.
B. VERIFY THAT WALL SURFACES ARE SMOOTH AND FLAT WITHIN THE TOLERANCES SPECIFIED FOR THAT TYPE OF WORK , ARE DUST-FREE, AND ARE READY TO RECEIVE TILE.
C. VERIFY THAT SUB-FLOOR SURFACES ARE DUST-FREE AND FREE OF SUBSTANCES WHICH WOULD IMPAIR BONDING OF SETTING MATERIALS TO SUB-FLOOR SURFACES.
D. VERIFY THAT CONCRETE SUB-FLOOR SURFACES ARE READY FOR TILE INSTALLATION BY TESTING FOR MOISTURE EMISSION RATE AND ALKALINITY; OBTAIN INSTRUCTIONS IF TEST RESULTS ARE NOT WITHIN LIMITS RECOMMENDED BY TILE MANUFACTURER AND SETTING MATERIALS MANUFACTURER.

11. PREPARATION

A. PROTECT SURROUNDING WORK FROM DAMAGE.
B. VACUUM CLEAN SURFACES AND DAMP CLEAN.
C. SEAL SUBSTRATE SURFACE CRACKS WITH FILLER. LEVEL EXISTING SUBSRATE SURFACES TO ACCEPTABLE FLATNESS TOLERANCES.
D. INSTALL CEMENTITIOUS BACKER BOARD IN ACCORDANCE WITH ANSI A108.11 AND BOARD MANUFACTURER'S INSTRUCTIONS. TAPE JOINTS AND CORNERS, COVER WITH SKIM COAT OF DRY-SET MORTAR TO A FEATHER EDGE.
E. PREPARE SUBSTRATE SURFACES FOR ADHESIVE INSTALLATION IN ACCORDANCE WITH ADHESIVE MANUFACTURER'S INSTRUCTIONS.

12. INSTALLATION - GENERAL

A. INSTALL WATERPROOFING MEMBRANE ALONG WALL BASE AND UP WALL SURFACE MINIMUM 1 FOOT ON BOTH SURFACES.
B. INSTALL WATERPROOFING MEMBRANE, TILE AND GROUT IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF ANSI A108.1 THROUGH A108.13, MANUFACTURER'S INSTRUCTIONS, AND TCA HANDBOOK RECOMMENDATIONS.
C. LAY TILE TO PATTERN INDICATED. DO NOT INTERRUPT TILE PATTERN THROUGH OPENINGS.D. CUT AND FIT TILE TO PENETRATIONS THROUGH TILE, LEAVING SEALANT JOINT SPACE. FORM CORNERS AND BASES NEATLY. ALIGN FLOOR JOINTS.
E. PLACE TILE JOINTS UNIFORM IN WIDTH, SUBJECT TO VARIANCE IN TOLERANCE ALLOWED IN TILE SIZE. MAKE JOINTS WATERTIGHT, WITHOUT VOIDS, CRACKS, EXCESS MORTAR, OR EXCESS GROUT.
F. FORM INTERNAL ANGLES SQUARE AND EXTERNAL EDGE TRIMS AS SCHEDULED.
G. SOUND TILE AFTER SEATING. REPLACE HOLLOW SOUNDING UNITS.
H. KEEP EXPANSION JOINTS FREE OF ADHESIVE OR GROUT. APPLY SEALANT TO JOINTS.
I. ALLOW TILE TO SET FOR A MINIMUM OF 48 HOURS PRIOR TO GROUTING.
J. GROUT TILE JOINTS. USE STANDARD GROUT UNLESS OTHERWISE INDICATED.
K. APPLY SEALANT TO JUNVTION OF TILE AND DISSIMILAR MATERIALS AND JUNCTION OF DISSIMILAR PLANES SEALANT SHALL BE COLOR MATCHED TO GROUT COLOR.

13. INSTALLATION - FLOORS - THIN-SET METHODS

A. OVER INTERIOR CONCRETE SUBSRATES, INSTALL IN ACCORDANCE WITH TCNA HANDBOOK METHOD F113, DRY-SET OR LATEX- PORTLAND CEMENT BOND COAT, WITH STANDARD GROUT, UNLESS OTHERWISE INDICATED.
1. WHERE EPOXY BOND AND GROUT ARE INDICATED, INSTALL IN ACCORDANCE WITH TCNA HANDBOOK METHOD F131.

14. INSTALLATION - WALL TILE

A. OVER FIBERLASS REINFORVED BACKER BOARD, INSTALL IN ACCORDANCE WITH TCNA HANDBOOK METHOD W223, ORGANIC ADHESIVE.

15. CLEANING

A. CLEAN TILE AND GROUT SURFACES.

## SECTION 09511 - SUSPENDED ACOUSTICAL CEILINGS

1. SECTION INCLUDES

A. SUSPENDED METAL GRID CEILING SYSTEM.
B. SUSPENSION ACCESSORIES.

2. REFERENCES

A. ASTM C 635 - STANDARD SPECIFICATION FOR THE MANUFACTURE, PERFORMANCE, AND TESTING OF METAL SUSPENSION SYSTEM FOR ACOUSTICAL TILE AND LAY-IN PANEL CEILINGS; 2004.
B. ASTM C 636 - STANDARD PRACTISE FOR INSTALLATION OF METAL CEILING SUSPENSION SYSTEM FOR ACOUSTICAL TILE AND LAY-IN PANELS; 2004.
C. ASTM E 580 - STANDARD PRACTISE FOR APPLICATION OF CEILING SUSPENSION SYSTEM FOR ACOUSTICAL TILE AND LAY-IN PANELS IN AREAS REQUIRING SEISMIC RESTRAINT: 2002.
D. ASTM E 1264 - STANDARD CLASSIFICATION FOR ACOUSTICAL CEILING PRODUCTS; 1998 ( REAPPROVED 2005).

3. EXTRA MATERIALS

A. SEE SECTION 01600 - PRODUCT REQUIREMENTS, FOR ADDITIONAL PROVISIONS.
B. PROVIDE FIVE PERCENT OF TOTAL ACOUSTICAL UNIT AREA OF EACH TYPE OF ACOUSTICAL UNIT FOR OWNER'S USE IN MAINTENANCE OF PROJECT.

4. ACOUSTICAL UNITS

A. UNITED STATES GYPSUM, USG

1. MANUFACTURERS:
A. USG: WWW.USG.COM.

2. ACOUSTICAL UNITS - GENERAL: ASTM E 1264, CLASS A.
A. PRODUCT, MODEL NUMBER AND FINISH AS SCHEDULED IN THE CONSTRUCTION DOCUMENTS.

5. SUSPENSION SYSTEM(S)

A. MANUFACTURERS:
1. USG; "DONN AX", 16/16" EXPOSED TEE

B. SUSPENSION SYSTEM - GENERAL: ASTM C 635; ALUMINUM, DIE CUT AND INTERLOCKING COMPONENTS, WITH STABILIZER BARS, CLIPS, SPLICES, PERIMETER MOLDINGS, AND HOLD DOWN CLIPS AS REQUIRED. PRE-FINISHED TO MATCH CEILING TILE COLOR OR AS NOTED ABOVE.

6. ACCESSORIES

A. SUPPORT CHANNELS AND HANGERS: GALVANIZED STEEL; SIZE AND TYPE TO SUIT APPLICATION, SEISMIC REQUIREMENTS SPECIFIED.
B. RERIMETER MOLDINGS: SAME MATERIAL AND FINISH AS GRID.
1. AT EXPOSED GRID: PROVIDE L-SHAPED MOLDING FOR MOUNTING AT SAME ELEVATION AS FACE OF GRID.

7. INSTALLATION - SUSPENSION SYSTEM

A. INSTALL SUSPENSION SYSTEM IN ACCORDANCE WITH ASTM C 636, ASTM E 580, AND MANUFACTURER'S INSTRUCTIONS AND AS SUPPLEMENTED IN THIS SECTION.
B. RIGIDLY SECURE SYSTEM, INCLUDING INTEGRAL MECHANICAL AND ELECTRICAL COMPONENTS, FOR MAXIMUM DEFLECTION OF 1:360.
C. INSTALL AFTER MAJOR ABOVE-CEILING WORK IS COMPLETE. COORDINATE THE LOCATION OF HANGERS WITH OTHER WORK.
D. HANG SUSPENSION SYSTEM INDEPENDENT OF WALLS, COLUMNS, DUCTS, PIPES AND CONDUIT. WHERE CARRYING MEMBERS ARE SPLICED, AVOID VISIBLE DISPLACEMENT OF FACE PLANE OF ADJACENT MEMBERS.
E. WHERE DUCTS OR OTHER EQUIPMENT PREVENT THE REGULAR SPACING OF HANGERS, REINFORCE THE NEAREST AFFECTED HANGERS AND RELATED CARRYING CHANNELS TO SPAN THE EXTRA DISTANCE.
F. DO NOT SUPPORT COMPONENTS ON MAIN RUNNERS OR CROSS RUNNERS IF WEIGHT CAUSES TOTAL DEAD LOAD EXCEED DEFLECTION CAPABILITY.
G. SUPPORT FIXTURE LOADS USING SUPPLEMENTARY HANGERS LOCATED WITHIN 6 INCHES OF EACH CORNER, OR SUPPORT COMPONENTS INDEPENDENTLY.
H. DO NOT ECCENTRICALLY LOAD SYSTEM OR INDUCE RORATION OF RUNNERS.
I. PERIMETER MOLDING: INSTALL AT INTERSECTION OF CEILING AND VERTICAL SURFACES AND AT JUNCTIONS WITH OTHER INTERRUPTIONS.
1. USE LONGEST PRACTICAL LENGTHS.
2. OVERLAP AND RIVET CORNERS.

8. INSTALLATION - ACOUSTICAL UNITS

A. INSTALL ACOUSTICAL UNITS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. FIT ACOUSTICAL UNITS IN PLACE, FREE FROM DAMAGED EDGES OR OTHER DEFECTS DETRIMENTAL TO APPEARANCE AND FUNCTION.
C. FIT BORDER TRIM NEATLY AGAINTS ABUTTING SURFACES.
D. INSTALL UNITS AFTER ABOVE-CEILING WORK IS COMPLETE.
E. INSTALL ACOUSTICAL UNITS LEVEL, IN UNIFORM PLANE, AND FREE FROM TWIST, WARP AND DENTS.
F. CUTTING ACOUSTICAL UNITS:
1. MAKE FIELD CUT EDGES OF SAME PROFILE AS FACTORY EDGES.

## SECTION 09771 - PREFINISHED PANELS

1. SECTION INCLUDES

A. PREFINISHED PANEL SYSTEM FOR ADHESIVE MOUNTING.

2. APPROVED MANUFACTURERS

A. KEMLITE
B. MARLITE

3. FIBERGLASS REINFORCED PANEL (FRP)

A. THICKNESS: 3/32"
B. PEBBLE
C. COLOR: AS SCHEDULED ON CONSTRUCTION DOCUMENTS.
D. MOLDINGS: SOLID VINYL, WIDE PROFILE AND MATCH THE COLOR OF THE PANELS.
E. CLOSURES: SOLID VINYL, WIDE PROFILE TO MATCH THE COLOR OF THE PANELS.

4. SEALANT

A. ONE PART OF SILICONE RUBBER, ASTM C920 AND FS TT-S-001543A, FDA APPROVED, OR AS RECOMMENDED BY FRP MANUFACTURER.
B. COLOR: CLEAR TO TRANSLUCENT

5. INSTALLATION

A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. USE THE ADHESIVES RECOMMENDED BY THE PANEL MANUFACTURER UNLESS PROHIBITED BY LOCAL REGULATIONS; OBTAIN MANUFACTURER'S APPROVAL OF ALTERNATIVE ADHESIVES.
C. AVOID CONTAMINATION OF PANEL FACES; CLEAN AS NECESSARY AND REPLACE IF NOT POSSIBLE TO REPAIR TO ORIGINAL CONDITION.
D. INSTALL PANELS OVER WATER RESISTANT DRYWALL IN STRICT ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS, USING NON-FLAMMABLE ADHESIVE (100% COVERAGE).
1. DRYWALL MUST BE INSTALLED ( AND ALL JOINTS TAPED) FLOOR TO CEILING TO PROVIDE A GOOD BONDABLE SURFACE TO ACCEPT INSTALLATION OF FRP PANELS.
E. DISCARD UNITS OF MATERIAL WHICH ARE UNSOUND, WARPED, BOWED, TWISTED, IMPROPERLY TREATED, OR TOO SMALL TO FABRICATED, WORK WITH MINIMUM OF JOINTS OR OPTIMUM JOINTING ARRANGEMENTS, OR WHICH ARE OF DEFECTIVE MANUFACTURE WITH RESPECT TO SURFACES, SIZES, OR PATTERNS.
F. SCRIBE AND CUT WORK TO FIT ADJOINING WORK.
G. CAULK ALL JOINTS AND ALL RNOULDING WITH SILICONE SEALANT.

## SECTION 09900 - PAINTS AND COATINGS

1. SECTION INCLUDES

A. SURFACE PREPATION.

B. FIELD APPLICATION OF PAINTS, STAINS, VARNISHES, AND OTHER COATINGS.

2. DELIVERY, STORAGE, AND HANDLING

A.DELIVER PRODUCTS TO SITE IN SEALED AND LABELED CONTAINERS; INSPECT TO VERIFY ACCEPTABILITY.
B. CONTAINER LABEL: INCLUDE MANUFACTURER'S NAEM, TYPE OF PAINT, BRAND NAME, LOT NUMBER, BRAND CODE, COVERAGE, SURFACE PREPARATION, DRYING TIME, CLEANUP REQUIREMENTS, COLOR DESIGNATION, AND INSTRUCTIONS FOR MIXING AND REDUCING.
C. PAINT MATERIALS: STORE AT MINIMUM AMBIENT TEMPERATURE OF 45 DEGREES F AND A MAXIMUM OF 90 DEGREES F, IN VENTILATED AREA, AND AS REQUIRED BY MANUFACTURER'S INSTRUCTIONS.

3. ENVIROMENTAL REQUIREMENTS

A. DO NOT APPLY MATERIALS WHEN SURFACE AND AMBIENT TEMPERATURES ARE OUTSIDE THE TEMPERATURE RANGES REQUIRED BY THE PAINT PRODUCT MANUFACTURER.
B. PROVIDE LIGHTING LEVEL OF 80 FT CANDLES MEASURED MID-HEIGHT AT SUBSTRATE SURFACE.

4. SUBMITTALS

A. PREPARE TWO (2) COLOR/ TEXTURE SAMPLES FOR EACH COLOR FOR EACH TYPE OF SUBSTRATE TO BE PAINTED OR STAINED PER SUBMITTALS.
B. MAKE SAMPLES NOT LESS THAN TWELVE INCHES (12") SQUARE.
C. SUBMIT MANUFACTURER'S PRINTED LITERATURE ON EACH COATING SYSTEM TO BE USED.

5. EXTRA MATERIALS

A.SUPPLY 1 GALLON OF EACH COLOR; STORE WHERE DIRECTED.
B. LABEL EACH CONTAINER WITH COLOR IN ADDITION TO THE MANUFACTURER'S LABEL.

6.MANUFACTURERS

A. PAINT AND COATING MANUFACTURERS SHALL BE AS SCHEDULED HEREIN AND ON THE DRAWINGS.

7. PAINTS AND COATING - GENERAL

A. PAINTS AND COATINGS: READY MIXED, EXCEPT FIELD -CATALYZED COATINGS. PREPARE PIGMENTS TO A SOFT PASTE CONSISTENCY, CAPABLE OF BEING READILY AND UNIFORMLY DISPERSED TO A HOMOGENEOUS COATING.
B. VOLATILE ORGANIC COMPOUND (VOC) CONTENT:
1. PROVIDE COATINGS THAT COMPLY WITH THE MOST STRINGENT REQUIREMENTS SPECIFIED IN 40 CFR 59, SUBPART D-- NATIONAL VOLATILE ORGANIC COMPOUND EMISSION STANDARDS FOR ARCHITECTURAL COATINGS.

8. EXAMINATION

A. EXAMINE SURFACES SCHEDULED TO BE FINISHED PRIOR TO COMMENCEMENT OF WORK. REPORT ANY CONDITION THAT MAY POTENTIALLY AFFECT PROPER APPLICATION.

B. MEASURE MOISTURE CONTENT OF SURFACES USING ANT ELECTRONIC MOISTURE METER. DO NOT APPLY FINISHES UNLESS MOISTURE CONTENT OF SURFACES ARE BELOW THE FOLLOWING MAXIMUMS:

1. WOOD: 15 PERCENT, MEASURED IN ACCORDANCE WITH ASTM D 4442

9. PREPARATION

A. SURFACES: CORRECT DEFECTS AND CLEAN SURFACES WHICH AFFECT WORK OF THIS SECTION.

B. MARKS: SEAL WITH SHELLAC THOSE WHICH MAY BLEED THROUGH SURFACE FINISHES.

C. IMPERVIOUS SURFACES: REMOVE MILDEW BY SCRUBBING WITH SOLUTION OF TETRA-SODIUM PHOSPHATE AND BLEACH. RINSE WITH CLEAN WATER AND ALLOW SURFACE TO DRY.

D. GYPSUM BOARD SURFACES TO BE PAINTED: FILL MINOR DEFECTS WITH FILLER COMPOUND. SPOT PRIME DEFECTS AFTER REPAIR. GYPSUM CEILING SURFACES IN ALL PUBLIC AREAS ARE REQUIRED TO HAVE A LEVEL 5 FINISH SURFACES; DO NOT START PAINTING UNTIL SURFACES FINISH LEVEL IS VERIFIED. BEGINNING OF PAINTING GYPSUM INDICATES OF SURFACE.

E. ALUMINUM SURFACES TO BE PAINTED: REMOVE SURFACE CONTAMINATION BY STEAM OR HIGH PRESSURE WATER. REMOVE OXIDATION WITH ACID ETCH AND SOLVENT WASHING. APPLY ETCHING PRIMER IMMEDIATELY FOLLOWING CLEANING.

F. GALVANIZED SURFACES TO BE PAINTED: REMOVE SURFACE CONTAMINATION AND OILS AND WASH SOLVENT. APPLY COAT OF ETCHING PRIMER.

G. UNCOATED STEEL AND IRON SURFACES TO BE PAINTED: REMOVE GREASE, MILL SCALE, WELD SPLATTER, DIRT AND RUST. PRIME PAINT ENTIRE SURFACE; SPOT PRIME AFTER REPAIRS.

H. INTERIOR WOOD ITEMS TO RECEIVE OPAQUE FINISH: WIPE OFF DUST AND GRIT PRIOR TO PRIMING. SEAL KNOTS, PITCH STREAKS, AND SAPPY SECTIONS WITH SEALER. FILL NAIL HOLES AND CRACKS AFTER PRIMER HAS DRIED; SAND BETWEEN COATS. BACK PRIME CONCEALED SURFACES BEFORE INSTALLATION.

I. INTERIOR WOOD ITEMS TO RECEIVE TRANSPARENT FINISH: WIPE OFF DUST AND GRIT PRIOR TO SEALING, SEAL KNOTS, PITCH STREAKS, AND SAPPY SECTIONS WITH SEALER. FILL NAIL HOLES AND CRACKS AFTER SEALER HAS DRIED; SAND LIGHTLY BETWEEN COATS. PRIME CONCEALED SURFACES WITH GLOSS VARNISH REDUCED 25 PERCENT WITH THINNER.

J. WOOD DOORS TO BE FIELD-FINISHED: SEAL WOOD DOOR TOP AND BOTTOM EDGE SURFACES WITH CLEAR SEALER.

K. METAL DOORS TO BE PAINTED: PRIME METAL DOOR TOP AND BOTTOM EDGE SURFACES.

10. APPLICATION

A. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. DO NOT APLLY FINISHES TO SURFACES THAT ARE NOT DRY. ALLOW APPLIED COATS TO DRY BEFORE NEXT COAT IS APPLIED.

C. APPLY EACH COAT TO UNIFORM APPEARANCE. APPLY EACH COAT OF PAINT SLIGHTLY DARKER THAN PRECEDING COAT UNLESS OTHERWISE APPROVED.

D. SAND WOOD AND METAL SURFACES LIGHTLY BETWEEN COATS TO ACHIEVE REQUIRED FINISH.

E. WHERE CLEAR FINISHES ARE REQUIRED, TINT FILLERS TO MATCH WOOD. WORK FILLERS INTO THE GRAIN BEFORE SET. WIPE EXCESS FROM SURFACE.

F. COVERAGE COATS NOTED HEREIN ARE MINIMUM REQUIREMENTS. CONTRACTOR SHALL PROVIDE ADDITIONAL COATS AS NEEDED FOR COMPLETE COVERAGE.

11. FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. PAINTING MECHANICAL AND ELECTRICAL WORK IS LIMITED TO ITEMS EXPOSED IN OCCUPIED SPACES UNLESS NOTES OTHERWISE.

B. REMOVE UNFINISHED LOUVERS, GRILLES, COVERS, AND ACCESS PANELS ON MECHANICAL AND ELECTRICAL COMPONENTS AND PAINT SEPARATELY.

12. SCHEDULE - SURFACES TO BE FINISHED

A. DO NOT PAINT OR FINISH THE FOLLOWING ITEMS:
1. ITEMS FULLY FACTORY-FINISHED UNLESS SPECIFICALLY NOTED.
2. FIRE RATING LABELS, EQUIPMENT SERIAL NUMBER AND CAPACITY LABELS.

B. MECHANICAL AND ELECTRICAL: USE PAINT SYSTEMS DEFINED FOR THE SUBSTRATES TO BE FINISHED.
1. PAINT ALL INSULATED AND EXPOSED PIPES, CONDUIT, BOXES, HANGERS, BRACKETS, COLLARS AND SUPPORTS, MECHANICAL EQUIPMENT, AND ELECTRICAL EQUIPMENT OCCURING IN FINISHED AREAS, UNLESS OTHERWISE INDICATED.
2. PAINT SHOP-PRIMED ITEMS OCCURING IN FINISHED AREAS.
3. PAINT INTERIOR SURFACES OF AIR DUTCHS AND CONVECTOR AND BASEBOARD HEATING CABINETS THAT ARE VISIBLE THROUGH GRILLES AND LOUVERS WITH ONE COAT OF FLAT BLACK PAINT TO VISIBLE SURFACES.
4. PAINT DAMPERS EXPOSED BEHIND LOUVERS, GRILLES AND CONVECTOR AND BASEBOARD CABINETS TO MATCH FACE PANELS.

C. PAINT BOTH SIDES AND EDGES OF PLYWOOD BACKBOARDS FOR ELECTRICAL AND TELEPHONE EQUIPMENT BEFORE INSTALLING EQUIPMENT.

13. TENTATIVE PAINT LIST: WHERE ANY PARTICULAR APPLICATION IS NOT MENTIONED IN THIS LIST, CONTRACTOR SHALL FIGURE ON APPLICATION OF MANUFACTURER'S SPECIFICATION FOR APPLICATION WHICH IS CONSISTENT WITH TYPES AND QUALITIES LISTED HEREIN. COLORS ARE INDICATED ON DRAWINGS.

EXTERIOR SURFACES

1. NATURAL WOOD SIDING AND SCREENING - "STAINED"

SHERWIN WILLIAMS:
1ST COAT: S-W WOODSCAPES HOUSE STAIN EXTERIOR POLYURETHANE SEMITRANSPARENT STAIN, A15T5
2ND COAT: SAME AS FIRST COAT.
3RD COAT: MARINE VARNISH, SATIN FINISH,

GLIDDEN PROFESSIONAL:
1ST COAT: GLIDDEN PROFESSIONAL 2710 WOODPRIDE EXTERIOR OIL/ ALKYD SEMI-TRANSPARENT DECK & SIDING STAIN
2ND COAT: SAME AS FIRST COAT
3RD COAT: GLIDDEN PROFESSIONAL 1907 WOODPRIDE SPAR URETHANE

2. FERROUS METALS AND EXPOSED GAS LINES

SHERWIN WILLIAMS:
1ST COAT: S-W 0 VOC ACRYLIC SATIN, B66-660 SERIES
2ND COAT: SAME AS FIRST COAT

GLIDDEN PROFESSIONAL:
1ST COAT: DEVOE COATINGS 4212 DEVFLEX HP EGGSHELL.
2ND COAT: SAME AS FIRST COAT.

3. UNIT MASONRY:

SHERWIN WILLIAMS:
1ST COAT: S-W LOXON CONCRETE & MASONRY INTERIOR/ EXTERIOR LATEX PRIMER, A24W8300
2ND COAT: S-W DTM ACRYLIC SEMI-GLOSS, B66-200 SERIES
3RD COAT: SAME AS SECOND COAT

GLIDDEN PROFESSIONAL:
1ST COAT: FILL WITH GLIDDEN PROFESSIONAL CONCRETE COATINGS BLOCK FILLER 3010-1200 TO DFT OF 9.0 TO 13.6 MILS. ENSURE COVERAGE IS CONSISTENT.
2ND COAT: FINISH WITH GLIDDEN PROFESSIONAL FORTIS 450 EXTERIOR 100% ACRYLIC SATIN 6403
3RD COAT: SAME AS SECOND COAT.

4. PREPAINTED EQUIPMENT (ROOFTOP EQUIPPMENT, TRANSFORMERS, ETC.)

SHERWIN WILLIAMS:
1ST COAT: S-W DTM ACRYLIC SEMI-GLOSS, B66-200 SERIES
2ND COAT: SAME AS FIRST COAT.

GLIDDEN PROFESSIONAL:
1ST COAT: DEVOE COATINGS 4216.DEVFLEX HP SEMI-GLOSS
2ND COAT: SAME AS FIRST COAT.

5. PRE-PRIMED METAL DOORS AND FRAMES

SHERWIN WILLIAMS:
1ST COAT: S-W DTM ACRYLIC SEMI-GLOSS, B66-200 SERIES
2ND COAT: SAME AS FIRST COAT.

GLIDDEN PROFESSIONAL:
1ST COAT: DEVOE COATINGS 4216 DEVFLEX HP SEMI-GLOSS
2RD COAT: SAME AS SECOND COAT

6. STUCCO & EIFS

SHERWIN WILLIAMS
1ST COAT: S-W LOXON CONCRETE & MASONRY INTERIOR/ EXTERIOR LATEX PRIMER A244W8300
2ND COAT: S-W CONFLEX HING BUILD COATING, A5-400 SERIES
3RD COAT: SAME AS THE SECOND.

GLIDDEN PROFESSIONAL:
1ST COAT: GLIDDEN PROFESSIONAL HYDROSEALER 6001 PRIMECOAT
2ND COAT: GLIDDEN PROFESSIONAL FORTIS 450 EXTERIOR 100% ACRYLIC SATIN 6403
3RD COAT: SAME AS SECOND

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REGISTERED ARCHITECT CHRISTOPHER ROSTER 20198 STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

SPECIFICATIONS

| DATE | ISSUE FOR PERMIT | REMARKS |
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| 03/03/2022 | ISSUE FOR PERMIT | |

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# HAT CREEK BURGER - PROTOTYPE 1.1 TABLE OF CONTENTS

# DIVISION 09 - FINISHES - CONTINUE

## SECTION 09900 - PAINTS AND COATINGS

INTERIOR SURFACES

1. WOOD BEAMS, JOIST OR TRUSSES "STAINED"
SHERWIN WILLIAMS:
1ST COAT: MINWAX RPRE-STAIN WOOD CONDITIONER, 154-8866
2ND COAT: S-W WOODCLASSICS OIL STAIN, A49 SERIES

GLIDDEN PROFESSIONAL
1ST COAT: MINWAX PRE-STAIN WOOD CONDITIONER, 154-8866
2ND COAT: GLIDDEN PROFESSIONAL 1700 WOODPRIDE INTERIOR WOOD FINISHING STAIN.

2. WOOD DOORS - "STAINED"
SHERWIN WILLIAMS:
1ST COAT: MINWAX PRE-STAIN WOOD CONDITIONER, 154-8866
2ND COAT: S-W WOODCLASSICS OIL STAIN, A49 SERIES
3RD COAT: S-W WOODCLASSICS WATERBORNE POLYURETHANE VARNISH, A68F90 SERIES, SATIN

GLIDDEN PROFESSIONAL
1ST COAT: MINWAX PRE-STAIN WOOD CONDITIONER, 154-8866
2ND COAT: GLIDDEN PROFESSIONAL 1700 WOODPRIDE INTERIOR WOOD FINISHING STAIN.
3RD COAT: GLIDDEN PROFESSIONAL 1902 WOODPRIDE INTERIOR POLYERUTHANE SATIN VARNISH.

3. GYPSUM WALLBOARD
SHERWIN WILLIAMS:
1ST COAT: S-W PROMAR 200 INTERIOR LATEX PRIMER, B28W8200
2ND COAT: S-W PROMAR 200 LATEX SEMI-GLOSS, B31W2200 SERIES
3RD COAT: SAME AS SECOND COAT

GLIDDEN PROFESSIONAL
1ST COAT: 1000 HI-HIDE WATER - BASED PRIMER-SEALER.
2ND COAT: GLIDDEN PROFESSIONAL ULTRA HIDE 150 LATEX EGGSHELL 1412.
3RD COAT: SAME AS SECOND COAT.

4. FERROUS METAL AND EXPOSED GAS LINES, DOORS, DOOR FRAMES
SHERWIN WILLIAMS:
1ST COAT: S-W DTM ACRYLIC SEMI-GLOSS, B66-200 SERIES
2ND COAT: S-W DTM ACRYLIC SEMI-GLOSS, B66-200 SERIES

GLIDDEN PROFESSIONAL
1ST COAT: DEVOE COATINGS DEVFLEX 4216 HP SEMI-GLOSS.
2ND COAT: SAME AS SECOND COAT.

5. WOOD TRIM AND PANELING "STAINED"
SHERWIN WILLIAMS:
1ST COAT: MINWAX PRE-STAIN WOOD CONDITIONER, 154-8866
2ND COAT: S-W WOODCLASSICS OIL STAIN, A49 SERIES
3RD COAT: S-W WOODCLASSICS WATERBORNE POLYURETHANE VARNISH, A68F90 SERIES, SATIN
4TH COAT: SAME AS THIRD COAT.

GLIDDEN PROFESSIONAL
1ST COAT: MINWAX PRE-STAIN WOOD CONDITIONER, 154-8866
2ND COAT: ICI 1700 WOODPRIDE INTERIOR OIL WOOD FINISHING STAIN.
3RD COAT: ICI 1802 WOODPRIDE INTERIOR AQUACRYLIC SATIN VARNISH.
4TH COAT: SAME AS THIRD COAT.

6. AT DISSIMILAR METALS
SHERWIN WILLIAMS:
1ST COAT: SW HI-MIL SHER-TAR EPOXY, B60B40 / B60V40

GLIDDEN PROFESSIONAL
1ST COAT: DEVOE COATINGS TRU-GLAZE 4508 CHEMICAL RESISTANT EPOXY COATINGS, 4508-XXXXH / 4508-9999H

# DIVISION 10 - SPECIALTIES

## SECTION 10167 - STAINLESS STEEL TOILET COMPARTMENTS

1. SECTION INCLUDES

A. STAINLESS STEEL TOILET COMPARTMENTS AND URINAL SCREENS.

2. MANUFACTURERS

A. TOILET COMPARTMENTS:
1. AMERICAN SANITARY PARTITION CORP: WWW.AM-SANITARY-PARTITION.COM.
2. GLOBAL PARTITIONS: WWW.GLOBALPARTITIONS.COM.
3. FRY SPECIALTY COMPANY, SANTEE, CA. - 619-562-8446
4. ACCURATE PARTITIONS, LYNOS, IL. - 708-442-6800
5. GLOBAL PARTITIONS, EASTANOLLEE, GA. - 706-827-2700
6. SUBSTITUTIONS: SECTION 01600 - PRODUCT REQUIREMENTS.

3. COMPONENTS

A. TOILET COMPARTMENTS: EQUAL TO TYPE SS-FF, FULL FLUSH, AMERICAN SANITARY PARTITION CORP, OCOEE, FL. (407) 656-06111. FLOOR ANCHORED OVERHEAD BRACED

B. DOOR AND PANEL DIMENSIONS:
1.STAINLESS STEEL TYPE #304 - #4 FINISH.
2. STILES, PANELS AND DOORS SHALL BE STAINLESS STEEL CONSTRUCTION, LAMINATED TO A HONEYCOMB CORE.
3. EDGES SHALL BE FORMED TO INTERLOCK WITH FACE PANELS, ALL CORNERS WELDED AND GROUND SMOOTH.
4. ALL FITINGS SHALL BE STAINLESS STEEL #4 FINISH AND PROVIDE MEANS FOR ADJUSTMENT.

C. URINAL SCREENS: WALL MOUNTED WITH TWO PANEL BRACKETS, AND FLOOR-TO-CEILING VERTICAL UPRIGHT CONSISTING OF PILASTER ANCHORED TO FLOOR AND CEILING.
1. SIZE: 18 X 42
2. TO MATCH TOILET COMPARTMENT AS SPECIFIED.

4. ACCESSORIES

A. ALL FITTINGS SHALL BE STAINLESS STEEL WITH A #4 FINISH AND ADJUSTABLE TO KEEP STILES AND PANELS CLEAR FROM WALLS. STILE COVER BASES SHALL BE 3" HIGH, OF NO. 304 STAINLESS STEEL.
B. PILASTER BRACKETS: POLISHED STAINLESS STEEL.
C. WALL BRACKETS: CONTINUOUS TYPE, POLISHED STAINLESS STEEL.

D. ATTACHMENTS, SCREWS AND BOLTS: STAINLESS STEEL, TAPMER PROOF TYPE.
1. FOR ATTACHING PANEL AND PILSTERS TO BRACKETS: THROUGH-BOLTS AND NUTS; TAMPER PROOF.

E. HARDWARE: POLISHED STAINLESS STEEL:
1. PIVOT HINGES, GRAVITY TYPE, ADJUSTABLE FOR DOOR CLOSE POSITIONING; TWO PER DOOR.
2. DOOR LATCH: SLIDE TYPE WITH EXTERIOR EMERGENCY ACCESS FEATURE.
3. DOOR STRIKE AND KEEPER WITH RUBBER BUMPER; MOUNTED ON PILASTER IN ALIGNMENT WITH DOOR LATCH.
4. COAT HOOK WITH RUBBER BUMPER; ONE PER COMPARTMENT, MOUNTED ON DOOR.
5. PROVIDE DOOR PULL FOR OUTSWINGING DOORS.

5. EXAMINATION

A. VERIFY THAT FIELD MEASUREMENTS ARE AS INDICATED.
B. VERIFY CORRECT SPACING OF AND BETWEEN PLUMBING FIXTURES.
C. VERIFY CORRECT LOCATION OF BUIL-IN FRAMING, ANCHORAGE, AND BRACING.

6. INSTALLATION

A. INSTALL PARTITIONS SECURE, RIGID, PLUMB, AND LEVEL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. MAINTAIN 3/8 TO 1/2 INCH SPACE BETWEEN WALL AND PANELS AND BETWEEN WALL AND END PILASTERS.
C. ATTACH PANEL BRACKETS SECURELY TO WALLS USING ANCHOR DEVICES.
D. ATTACH PANELS AND PILASTERS TO BRACKETS. LOCATE HEAD RAIL JOINTS AT PILASTER CENTER LINES.
E. FIELD TOUCH-UP OF SCRATCHES OR DAMAGED FINISH WILL NOT BE PERMITTED. REPLACE DAMAGED OR SCRATCHED MATERIALS WITH NEW MATERIALS.

7. ERECTION TOLERANCES

A. MAXIMUM VARIATION FROM TRUE POSITION: 1/4 INCH.
B. MAXIMUM VARIATION FROM PLUMB: 1/8 INCH.

8. ADJUSTING

A. ADJUST AND ALIGN HARDWARE TO UNIFORM CLEARANCE AT VERTICAL EDGE OF DOORS, NOT EXCEEDING 3/16 INCH.
B. ADJUST HINGES TO POSITION DOORS IN PARTIAL OPENING POSITION WHEN UNLATCHED. RETURN OUT-SWINGING DOORS TO CLOSED POSITION.
C. ADJUST ADJACENT COMPONENTS FOR CONSISTENCT OF LINE OR PLANE.

## SECTION 10442 - ARCHITECTURAL SIGNAGE

1. DESIGN AND FABRICATION
A. ALL PATTERNS FOR FABRICATION, REGARDLESS OF PRODUCTION TECHNIQUE, METHOD, OR PROCESS SPECIFIED, SHALL BE APPROVED BY THE OWNER PRIOR TO PRODUCTION IN ORDER TO ENSURE CONFORMITY TO DESIGN WITH REGARD TO LETTER FORM AND HEIGHT, WORDING, SPELLING, CAPITALIZATION, PUNCTUATION, LETTER SPACING, LEADING AND LAYOUT OR COMPOSITION.

2. MANUFACTURER
A. INTERIOR SIGNAGE: THE DRAWINGS WERE PREPARED AND THIS SPECIFICATION WRITTEN ON THE BASIS OF USING THE PRODUCTS OF KROY SIGN SYSTEMS, SCOTTSDALE, ARIZONA.
B. STREET ADDRESS SIGNAGE: THE DRAWINGS WERE PREPARED AND THIS SPECIFICATION WRITTEN ON THE BASIS OF USING THE PRODUCTS OF WESTON LETTERS, NORTH HOLLYWOOD, CA.
C. IT IS NOT THE INTENT TO LIMIT COMPETITIVE BIDDING. PRODUCTS WITH EQUAL CHARACTERISTICS BY OTHER MANUFACTURERS ARE ACCEPTABLE UNDER THE CONDITIONS OF THESE SPECIFICATIONS.

3. GENERAL
A. REGULATORY SIGNAGE SERIES OPAQUE ACRYLIC, MATTE FINISH PLAQUES, WITH FRONT SURFACE HOT STAMP GRAPHICS, IN LOW PROFILE FRAME. CONFIGURATION SHOWN ON DRAWINGS TO CONFORM WITH AMERICANS WITH DISABILITIES ACT REQUIREMENTS.
B. PROVIDE ONE SIGN (UNIT) FOR EACH RESTROOM DOOR OPENING FOR PUBLIC FACILITIES.
C. STREET ADDRESS SIGNAGE: LETTERING TO BE 6" TALL, TWENTIETH CENTURY BOLD, COLOR: NATURAL ANODIZED AMULINUM, 3/4 INCH STANDOFFS. LETTERING TO BE ORDERED FROM: http://www.westonletters.com/index_23.php?catID=23&file=HN=-Styles.htm

4. INSTALLATION
A. INSTALLATION SHALL BE STARTED AT THE TIME ESTABLISHED BY THE GENERAL CONTRACTOR. HOWEVER, NO SIGN WORK SHALL BE PERMITTED IN THE BUILDING BEFORE THE BUILDING IS COMPLETELY ENCLOSED AND ALL PAINTING AND WORK OF OTHER TRADES IS FINISHED.
B. INSTALL SIGNS IN ACCORD WITH APPROVED SHOP DRAWINGS. INSTALL TRUE TO LINE, PLUMB, LEVEL, SQUARE, IN PROPER PLANES WITH OTHER WORK AND FREE FROM OBJECTIONABLE DEFECTS. ANCHOR TO ADEQUATELY RESIST ALL NORMALLY SUBJECTED STRESSES.

## SECTION 10523 - FIRE EXTINGUISHER AND ACCESSORIES

1. SECTION INCLUDES
A. FIRE EXTINGUISHERS
B. ACCESSORIES.

2. REFERENCES
A. NFPA 10-STANDARD FOR PORTABLE FIRE EXTINGUISHERS; NATIONAL FIRE PROTECTION ASSOCIATION; 2007.
B. UL (FPED)-FIRE PROTECTION EQUIPMENT DIRECTORY; UNDERWRITERS LABORATORIES INC.; CURRENT EDITION.

3. MANUFACTURERS
A. FIRE EXTINGUISHERS AND ACCESSORIES:
1. LARSEN'S MANUFACTURING CO: WWW.LARSENSMFG.COM.

4. FIRE EXTINGUISHERS
A. FIRE EXTINGUISHERS - GENERAL: COMPLY WITH PRODUCT REQUIREMENTS OF NFPA 10 AND APPLICABLE CODES, WHICHEVER IS MORE STRINGENT.
1. PROVIDE EXTINGUISHERS LABELED BY UNDERWRITERS LABORATORIES INC. FOR THE PURPOSE SPECIFIED AND INDICATED.
B. DRY CHEMICAL TYPE FIRE EXTINGUISHERS: STAINLESS STEEL TANK, WITH PRESSURE GAGE.
1. CLASS: B:C.
2. SIZE: 10.
3. SIZE AND CLASSIFICATION AS SCHEDULED.
4. MODEL: MP10
5. BRACKET: B2
6. QUANTITY: 1, LOCATE FIRST ONE (1) WHERE NOTED ON DRAWINGS, WITH ONE (1) ADDITIONAL EXTINGUISHERS LOCATED PER LOCAL FIRE OFFICIAL DIRECTION IF NEEDED.
C. WET CHEMICAL TYPE
1. CLASS: K
2. SIZE: 2.5 GALLON
3. MODEL: WC 2 1/2
4. BRACKET: 864
5. QUANTITY: 1, LOCATE FIRST ONE (1) WHERE NOTED ON DRAWINGS, WITH ONE (1) ADDITIONAL EXTINGUISHERS LOCATED PER LOCAL FIRE OFFICIAL DIRECTION IF NEEDED.

5. ACCESSORIES
A. EXTINGUISHER BRACKETS: FORMED STEEL, CHROME-PLATED.

6. INSTALLATION
A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
B. SECURE RIGIDLY IN PLACE.

## SECTION 10800 - TOILET ACCESSORIES

1. SECTION INCLUDES
A. TOILET ACCESSORIES TO BE FURNISHED AND INSTALLED BY CONTRACTOR UNLESS NOTED OTHERWISE.
B. COORDINATE ROUGH-IN, OPENINGS AND WOOD BLOCKING.

2. PRODUCTS
A. SEE SCHEDULE ON DRAWINGS FOR ACCESSORIES.

3. INSTALLATION
A. INSTALL FIXTURES, ACCESSORIES AND ITEMS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, AND WHERE AFFECTED, AT HEIGHTS OR LOCATIONS FOR THE HANDICAPPED AS INDICATED OR SPECIFIED HEREIN.
B. INSTALL TRUE, PLUMB ANG LEVEL, SECURELY AND RIGIDLY ANCHORED TO SUBSTRATE.

# DIVISION 11 - EQUIPMENT

## SECTION 11400 - FOOD SERVICE EQUIPMENT

1. SECTION INCLUDES

A. INSTALLATION OF OWNER PROVIDED FOOD SERVICE QUIPMENT.
B. QUIPMENT SHALL BE FURNISHED, ASSEMBLED, AND SET IN PLACE UNDER SEPARATE CONTRACT, WITH FINAL UTILITY CONNECTION BY GENERAL CONTRACTOR.

2. RELATED SECTIONS

A. MECHANICAL AND ELECTRICAL SERVICES AND FINAL CONNECTIONS TO EQUIPMENT.

3. OWNER / CONTRACTOR RESPONSIBILITIES

A. OWNER WILL PROVIDE EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS AND OPERATION/MAINTENANCE DATA FOR CONTRACTOR'S USE.
B. COORDINATE SIZE OF ACCESS AND ROUTE TO PLACE INSTALLATION.

C. FOOD SERVICE EQUIPMENT (NIC):
1. EQUIPMENT SCHEDULED ON THE DRAWINGS AS (NIC).
2. WALK-IN COOLERS AND FREEZERS WITH THERMOSTATS.
3. MOTOR STARTERS.

D. FOOD SERVICE EQUIPMENT (BY OWNER):
1. EQUIPMENT SCHEDULED ON THE DRAWINGS AS (B.O.).
2. MECHANICAL REFRUGERATION SYSTEMS, INCLUDING COMPRESSOR UNITS, ONDENSERS, EVAPORATOR COILS, AND CONTROL VALVES.
3. STAINLESS STEEL TRIM STRIPS, SUPPORTS AND CONNECTIONS, ATTACHMENT DEVICES, AND ACCESSORIES.
4. EXHAUST HOOD AND ANSUL SYSTEM.

E. REFRIGERANT SYSTEM INSTALLATION (BY KES):
1. REFRIGERANT SYSTEM INSTALLATION (BY KES):
2. FITTINGS: WROUGHT COPPER OR BRASS DESIGNED FOR USE WITH HIGH TEMPERATURE SOLDER.
3. PIPING JOINTS: MADE WITH SILVER SOLDER (SIL-FOS).
4. PIPING: PROPERLY SUSPENDED FROM AN ANCHOR TO THE STRUCTURE WITH ADJUSTABLE HANGERS 6' O.C. MAXIMUM.
5. SUCTION LINES: SIZE TO HAVE MAXIMUM PRESSURE DROP OF TWO POUNDS IN MEDIUM TEMPERATURE SYSTEMS, ONE POUND IN LOW TEMPERATURE SYSTEM.
6. LIQUID LINES: SIZED TO GIVE MAXIMUM PRESSURE TO PREVENT TRAPPING OF OIL. RIGID INSTALLATION ON ALL SUCTION LINES TO BE ARMAFLEX INSULATION BY ARMSTRONG-1" THICK AT MEDIUM TEMP., 1-1/2" THICK AT LOW TEMP. REFRIGERANT LINES IN PVC OR EMT CONDUIT TO BE SEALED AT BOTH ENDS WITH DOW CORNING 3-6548 SILICONE RTV FOAM.
7. EVACUATION AND CHARGING: AFTER COMPLETION OF THE PRESSURE TEST, THE SYSTEM SHALL BE EVACUATED USING AN APPROVED AUXILIARY VACUUM PUMP. CONNECTIONS FOR EVACUATIONS TO BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.

4. DELIVERY, HANDLING AND STORAGE

A. DELIVERY: UPON RECEIVING EQUIPMENT BY KITCHEN EQUIPMENT SUPPLY VENDOR, CHECK CRATES/CARTONS IDENTIFICATION LABELS WITH RECEIVING P.O.; ASSURE CORRECT ITEM HAS BEEN RECEIVED.
B. HANDLING: UNCRATE EQUIPMENT IN ORGANIZED MANNER. TAKE CARE NOT TO MISPLACE LOOSE PARTS, ACCESSORIES, ASSEMBLY AND OPERATING INSTRUCTIONS. AND WARRANTY CARS. KEEP UTILITY HOOKUP NOTES AND TAGS ON EQUIPMENT UNTIL AFTER CONNECTIONS ARE MADE. ASSEMBLE IN WORKMANSHIP MANNER IN ACCORD WITH MANUFACTURER'S DIRECTIONS, TAKING CARE TO MAKE SURE FASTENERS ARE TIGHT AND COMPONENTS ARE ALIGNED AND SQUARE.
C. STORAGE: STORE EQUIPMENT CLEAR OF FLOOR IN MANNER TO PREVENT WARPING, TWISTING, OR SAGGING.

5. INSTALLATION

A. INSTALL ITEMS IN ACCORD WITH MANUFACTURER'S INSTRUCTIONS AND FABRICATOR'S SHOP DRAWINGS. INSTALL IN ACCORD WITH LOCAL GOVERNING HEALTH, BUILDING, AND SAFETY , AND FIRE PROTECTION CODES AND REGULATIONS AND NEMA, UL, AGA, ASME AND NFPA.
B. ELECTROLYSIS: INSULATE TO PREVENT ELECTROLYSIS BETWEEN DISSIMILAR METALS. PROVIDE SEALANT TO ACHIEVE CLEAN JOINT WITHOUT CREVICES.

C. EQUIPMENT
1. GENERAL: SET IN PLACE AND POSITION PER KITCHEN EQUIPMENT PLAN; READY FOR UTILITY HOOK UP. AFTER UTILITY HOOKUPS ARE MADE, LEVEL AND SECURE DISHTABLES TO SLOPE TOWARD DISHWASHER. COMPLETELY CLOSE AND SEAL GAPS, JOINTS AND SEAMS BETWEEN FIXTURES/EQUIPMENT AND WALLS, CEILING AND FLOORS WITH STAINLESS STEEL TRIM STRIPS AND/OR CLEAR SILICONE SEALANT. DO NOT USE SEALANT IN JOINTS OR SEAMS OVER 3/16 INCH WIDE.

2. REFRIGERANT PIPING: INSTALL COPPER TUBING AND FITTINGS. CUT WITH PIPE CUTTERS AND RESHAPE WITH SIZING TOOL. EXPOSE PIPING TO VIEW AS REQUIRED BY AMERICAN STANDARD SAFETY CODE FOR MECHANICAL REFRIGERATION. FOR EXPOSED AREAS OR ACCESSIBLE FURRED CEILING SPACES, USE HARD COPPER TUBING. RUN EXPOSED TUBING IN SUCH MANNER AS TO PREVENT DAMAGE FROM ACTIVITIES IN AREAS; OTHERWISE RUN TUBING IN PIPE OR CONDUIT.
A. SUCTION LINES: SIZE TO GIVE MAX PRESSURE DROP FROM EVAPORATOR TO MACHINE OF 2 IB. FOR HIGH TEMP SYSTEM AND I IN. FOR FREEZER SYSTEM, ALLOWING GAS VELOCITIES OF NOT LESS THAN 750 RPM IN HORIZONTAL RUNS AND 1500 RPM IN VERTICAL RISERS. SIZE LIQUID LINES TO GIVE MAX PRESSURE DROP OF 3 IBS. FROM RECEIVER TO EVAPORATOR.
B. TUBING RUNS: GRADE TO PREVENT TRAPPING OF OIL.
C. TIES: SECURE SUCTION AND LIQUID LINES FOR EACH SYSTEM TOGETHER, EXCEPT WHEN RUN THROUGH CONDUIT; 24 INCH INTERVALS WITH BLACK PLASTIC ELECTRICAL TAPE.
D. INSULATION: INSULATE REFRIGERANT SUCTION LINES OUTSIDE OF REFRIGERATED COMPARTMENTS BACK TO COMPRESSORS.
E. HANGERS AND SUPPORTS: PROVIDE ADJUSTABLE HANGERS, ANCHORS OR STRAPS REQUIRED FOR PROPER SUPPORT OF PIPING NOT RUN IN CONDUIT. SPACE HANGERS NOT TO EXCEED 10 FEET O.C. AND CLOSER WHERE REQUIRED FOR PROPER SUPPORT OF SMALL PIPING. PROVIDE INSULATED REFRIGERANT PIPING WITH APPROVED TYPE SLEEVES AT HANGER POINTS.

3. WALK-IN COOLER FREEZER BOXES: TRANSIT LEVEL FLOOR SCREENS PRIOR TO WALL AND CEILING PANEL ERECTION. SEAL WALL AND/OR CEILING PENETRATIONS FOR ELECTRICAL CONDUITS AND REFRIGERATION LINES, ETC., TO PREVENT FROST AND CONDENSATE BUILD-UP. ELECTRICAL CONDUITS; ON EXTERIOR OF BOX.
4. OIL SEPARATOR: PROVIDE LOW TEMPERATURE OPERATIONS OF SYSTEM, RETURN LINE CONNECTED TO TOP OF CRANKCASE ABOVE OIL LEVEL. PROVIDE EXPOSED OIL RETURN LINES WITH SHUT-OFF VALVES OF PACKLESS STEM TYPE.
5. EVAPORATOR COILS: SUPPORT BY HANGERS UTILIZING FISH PLATES ON TOP OF WALK-IN UNIT A FULL 4 INCHES CLEAR FROM UNDERSIDE OF CEILING PANELS.

# DIVISION 15 - MECHANICAL AND PLUMBING SYSTEMS

## SECTION 15010 - MECHANICAL REQUIREMENTS

1. RELATED DOCUMENTS
A. WORK HEREIN SHALL CONFORM TO ALL APPLICABLE LAWS, ORDINANCES, AND TO REGULATIONS OF THE LOCAL UTILITY COMPANIES. THE GENERAL CONDITIONS AND ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS SHALL APPLY TO ALL WORK OF THIS SECTION. WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE APPLICABLE BUILDING CODES NOTED ON THE TITLESHEER OF THE DRAWINGS.
B. COOPERATE WITH ALL OTHER TRADES AND INSTALL WORK AS FAST AS THE PROGRESS OF THE JOB WILL PERMIT.
C. USE ONLY MECHANIC SKILLED IN THE WORK THEY ARE TO PERFORM AND HAVE A COMPETENT RESRESENTATIVE ON THE JOB WHEN ANY WORK IS BEING DONE.
D. NO WORK SHALL BE DONE UNLESS THE SUPERINTENDENT OF THE CONTRACTOR IS ON THE JOB SITE. WORK SHALL BE PROPERLY PROTECTED, ALL RUBISH REMOVED PROMPTLY, AND EXPOSED WORK SHALL BE CAREFULLY CLEANED PRIOR TO FINAL ACCEPTANCE.
E. THE TERM "PROVIDE" SHALL INCLUDE LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO FURNISH AND INSTALL, COMPLETE AND OPERABLE, THE ITEM OR SYSTEM INDICATED.
F. IN DECISIONS ARISING FROM DISCREPANCIES, INTERPRETATION OF DRAWINGS AND SPECIFICATIONS, SUBSTITUTES, AND OTHER PERTINEN MATTERS, THE DECISION OF THE OWNER'S REPRESENTATIVE'S APPROVAL SHALL BE FINAL.

2. SPECIFICATIONS AND DRAWINGS
A. PLANS SHOW LOCATION OF FIXTURES AND EQUIPMENT AND ARE INTENDED TO DEPICT THE GENERAL INTENT OF THE WORK IN SCOPE, LAYOUT AND QUALITY OF WORKMANSHIP. THEY ARE NOT INTENDED TO SHOW IN MINUTE DETAIL EVERY OR ALL ACCESSORIES INTENDED FOR THE PURPOSE OF EXECUTING THE WORK, BUT IT IS UNDERSTOOD THAT SUCH DETAILS ARE A PART OF THIS WORK.
B. WHERE DRAWINGS AND SPECIFICATIONS CONFLICT, IT SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO BRING SUCH CONFLIT TO THE ATTENTION OF THE ARCHITECT/ENGINEER FOR CLARIFICATION. IN GENERAL, THE ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE MECHANICAL DRAWINGS WITH REFERENCE TO BUILDING CONSTRUCTION. ALL CHANGES FROM THE DRAWINGS NECESSARY TO MAKE THE WORK CONFORM WITH THE BUILDING AS CONSTRUCTED AND TO FIT THE WORK OF OTHER TRADES OR TO CONFORM TO THE RULES OF AUTHORITIES HAVING JURISDICTION, SHALL BE MADE BY THE CONTRACTOR AT HIS OWN EXPENSE.
C. WHERE EQUIPMENT IS USED OTHER THAN MANUFACTURERS SPECIFIED, THE SUB-CONTRACTOR SHALL REQUEST APPROVAL TO SUBSTITUTE MATERIALS AND/OR PRODUCTS AS INDICATED AND DEFINED HEREIN.

3. PERMITS, FEES AND INSPECTIONS:
A. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES, OBTAIN ALL PERMITS PAY ALL GOVERNMENT FEES, SALES TAXES AND OTHER COSTS, INCLUDING UTILITY CONNECTIONS OR EXTENSIONS IN CONNECTION WITH THIS WORK; FILE ALL PERMIT APPLICATIONS REQUIRED BY ALL GOVERNMENTAL DEPARTMENTS HAVING JURISDICTION.
B. OBTAIN ALL REQUIRED CERTIFICATES OF INSPECTION FOR WORK AND DELIVER THEM TO THE OWNER BEFORE REQUESTING ACCEPTANCE AND FINAL PAYMENY FOR THE WORK.
C. THE CONTRACTOR SHALL INCLUDE IN THE WORK, WITHOUT EXTRA COST TO THE OWNER, ANY LABOR, MATERIALS, SEVICES, APPARATUS AND DRAWINGS REQUIRED TO COMPLY WITH ALL APPLICABLE LAWS, ORDINANCES, RULES AND REGULATIONS.
D. THE CONTRACTOR SHALL INFORM THE OWNER OF ANY WORK OR MATERIALS WHICH CONFLICT WITH ANY OF THE APPLICABLE CODES, STANDARDS, LAWS AND REGULATIONS BEFORE SUBMITTING HIS BID.

4. GENERAL
A. MATERIALS OR PRODUCTS SPECIFIED HEREIN AND/OR INDICATED ON DRAWINGS BY TRADE NAME, MANUFACTURER'S NAME AND/OR CATALOG NUMBER SHALL BE PROVIDED AS SPECIFIED. SUBSTITUTIONS WILL NOT BE PERMITTED EXCEPT AS DESCRIBED HEREIN AND IN THE SUPPLEMENTARY AND GENERAL CONDITIONS.
B. SINCE MANUFACTURERS RESERVE THE RIGHT TO CHANGE THEIR PRODUCTS AT ANY TIME, CONTRACTORS SHALL VERIFY ALL DIMENSIONS, PERFORMANCE DATA, ETC. FOR EACH PIECE OF EQUIPMENT SUBMITTED TO ASSURE COMPLIANCE WITH THE INTENT OF THE DRAWINGS AND SPECIFICATIONS.
C. ALL MATERIALS SHALL BE NEW AND OF QUALITY AS SPECIFIED, AND WHEN REQUIRED, BE CLEARLY LABELED AND/OR STAMPED AS MANUFACTURED IN THE UNITED STATE.
D. FOR ACCEPTANCE OF PRODUCTS OR MANUFACTURERS OTHER THAN THOSE SPECIFIED, BIDDERS SHALL SUBMIT TO THE ARCHITECT/ENGINEER A REQUEST IN WRITING AT LEAS TEN (10) DAYS PRIOR TO BID DATE AND HOUR. REQUESTS SHALL BE ACCOMPANIED BY MANUFACTURER'S LITERATURE, SPECIFICATIONS, DRAWINGS, CUTS, PERFORMANCE DATA LIST OF REFERENCES OR OTHER INFORMATION NECESSARY TO COMPLETELY DESCRIBE THE ITEM.
E. A LIST OF ALL MATERIALS AND EQUIPMENT WHICH THE CONTRACTOR PROPOSES TO FURNISH SHALL BE SUBMITTED FOR APPROVAL WITHIN TEN (10) DAYS AFTER THE CONTRACT HAS BEEN AWARDED.
F. WHERE AN ACCEPTED SUBSTITUTION OR DEVIATION REQUIRES DIFFERENT QUANTITY OR ARRANGEMENT OF FOUNDATIONS, SUPPORTS, DUCTWORK, PIPING, WIRING, CONDUIT, AND ANY OTHER EQIPMENT OR ACCESSORIES NORMAL TO THIS EQUIPMENT, CONTRACTOR SHALL FURNISH SAID CHANGES AND ADDITIONS AND PAY ALL COSTS FOR ALL CHANGES AND ADDITIONS TO HIS WORK AND THE WORK OF OTHERS AFFECTED BY THIS SUBSTITUTION OR DEVIATION.

5. SHOP AND ERECTION DRAWINGS AND SAMPLES
A. THE OWNER'S APPROVAL SHALL BE OBTAINED FOR ALL EQUIPMENT AND MATERIAL BEFORE DELIVERY TO THE JOB SITE. DELIVERY, STORAGE OR INSTALLATION OF EQUIPMENT OR MATERIAL WHICH HAS NOT HAD PRIOR APPROVAL WILL NOT BE PERMITTED AT THE JOB SITE. SUBMITTALS SHALL BE MADE FOR ALL EQUIPMENT AND SYSTEMS AS INDICATED IN THE RESPECTIVE SPECIFICATION SECTION.
B. ALL SUBMITTALS SHALL INCLUDE ADEQUATE DESCRIPTIVE LITERATURE, CATALOG CUTS, SHOP DRAWINGS AND OTHER DATA NECESSARY FOR THE OWNER TO ASCERTAIN THAT THE PROPOSED EQUIIPMENT AND MATERIALS COMPLY WITH SPECIFICATION AND DRAWING REQUIREMENTS. CATALOG CUTS SUBMITTED FOR APPROVAL SHALL BE LEGIBLE AND CLEARLY IDENTIFY EQUIPMENT BEING SUBMITTED.
C. SHOP AND ERECTION DRAWING SUBMITTALS SHALL CONFORM TO THE REQUIREMENTS OF THE GENERAL CONDITIONS AND DIVISION-1 SPECIFICATIONS EXCEPT AS MODIFIED HEREIN.
D. SUBMIT REQUIRED AND/OR REQUESTED SHOP AND ERECTION DRAWINGS, FOR REVIEW BY THE OWNER BEFORE ORDERING OR INSTALLING ANY EQUIPMENT OR MATERIAL.
E. SHOP DRAWINGS SHALL CONSIST OF MANUFACTURER'S SCALE DRAWINGS, CUTS OR CATALOGS, INCLUDING DESCRIPTIVE LITERATURE WHICH SHALL CLEARLY INDICATE THE CONSTRUCTION, MATERIAL, PHYSICAL DIMENSIOINS, WIRING DIAGRAMS AND COMPLETE OPERATING DATA CLEARLY MARKED FOR EACH ITEM.

F. MAKE SUBMITTALS FOR THE EQUIPMENT AND MATERIALS IN ACCORDANCE WITH THE FOLLOWING:
1. SUBMITTALS SHALL BE MARKED TO SHOW SPECIFICATION REFERENCE INCLUDING THE SECTION AND PARAGRAPH NUMBERS.
2. THE SUBMITTALS SHALL INCLUDE THE FOLLOWING:
A. INFORMATION THAT CONFIRMS COMPLIANCE WITH CONTRACTOR REQUIREMENTS. INCLUDE THE MANUFACTURER'S NAME, MODEL OR CATALOG NUMBERS, CATALOG INFORMATION, TECHINCAL DATA SHEETS, SHOP DRAWINGS, PICTURES, NAMEPLATE DATA AND TEST REPORTS AS REQUIRED. PROVIDE ANY ADDITIONAL INFORMATION SPECIFICALLY REQUESTED IN THE INDIVIDUAL SPECIFICATION SECTION OR ON THE DRAWINGS.
G. THE GENERAL CONTRACTOR WILL CERTIFY THAT ALL SHOP DRAWINGS ARE IN CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. DEVIATIONS FROM THE PLANS AND SPECIFICATIONS SHALL BE NOTED, AND THE SPECIFIC AREA OF THE DEVIATION CLOUDED AND IN CONTRASTING COLOR WITH A COMPLETE EXPLANATION FOR THE REASONS FOR THE DEVIATION. ANY REDESIGN OF THE SYSTEM SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE.
H. THE ENGINEER'S REVIEW SHALL NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY FOR DEVIATIONS FROM DRAWINGS AND SPECIFICATIONS. THE ENGINEER'S REVIEW SHALL BE CONSTRUED TO APPLY ONLY TO GENERAL ARRANGEMENT AND SHALL NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY FOR THE CORRECTNESS OF DETAILS AND DIMENSIONS AND PROVISION OF THE CORRECT EQUIPMENT.

6. COORDINATION WITH OTHER TRADES
A. CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER TRADES TO AVOID INTERFERENCES AND DELAYS. HE SHALL ASSIST IN WORKING OUT SPACE REQUIREMENTS TO MAKE A SATISFACTORY INSTALLATION.
B. IF THE CONTRACTOR INSTALLS HIS WORK BEFORE COORDINATING WITH OTHER TRADES, OR SO AS TO CAUSE ANY INTERFERENCE WITH THE WORK OF OTHER TRADES, HE SHALL MAKE THE NECESSARY CHANGES IN HIS WORK TO CORRECT THEN CONDITION WITHUT EXTRA CHARGE.
C. THE CONTRACTOR SHALL FURNISH TO OTHER TRADES, AS REQUIRED, ALL NECESSARY TEMPLATES, PATTERNS, SETTING PLANS, AND SHOP DETAILS FOR THE PROPER INSTALLATION OF WORK AND FOR THE PURPOSE OF COORDINATING ADJACENT WORK.

7. EQUIPMENT IDENTIFICATION
A. EACH UNIT SHALL BE IDENTIFIED BY ITS SYSTEM NUMBER AND OTHER APPROPRIATE DESIGNATION BY STENCILING IN LETTERS OF APPROVED SIZE AND WORDING. EQUIPMENT REQUIRING IDENTIFICATION SHALL INCLUDE: SUPPLY AND EXHAUST FANS, AIR CONDITIONING AND HEATIN MACHINERY AND APPARATUS, CONTROL CABINETS, AND OTHER EQUIPMENT UNITS AS MAY BE DIRECTED BY THE OWNER.

8. CUTTING, PATCHING, EXCAVATION, BACKFILL, AND LAYOUT
A. PROVIDE OPENINGS AND EXCAVATION REQUIRED FOR THE INSTALLATION OF THE WORK. PATCH WORK AND BACKFILL AS REQUIRED. FINISHED WORK SHALL MATCH THE EXISTING ADJOINING WORK.
B. VERIFY ALL CONDITIONS AFFECTING THE WORK TO BE PERFORMED UNDER THIS CONTRACTOR.
C. CAREFULLY VERIFY MEASUREMENTS AT THE SITE, DETERMINE THE EXACT LOCATION OF CHASES AND OPENINGS REQUIRED. PROVIDE SLEEVES, INSERTS, AND HANGERS AS REQUIRED. NO COLUMNS, BEAMS, JOISTS, BUILDING FOUNDATIONS NOR ANY OTHER STRUCTURAL BUILDING COMPONENT SHALL BE CUT, DRILLED OR DISTURBED IN ANY WAY. CONFLICTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE OWNER'S CONSTRUCTION MANAGER.
D. ALL EXCAVATION ON SITES CONTAINING EXISTING BUILDINGS AND EXISTING SERVICES, SHALL BE DONE WITH HAND SHOVEL TO AVOID DAMAGE TO EXISTING SERVICES. ANY DAMAGE INCURRED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR IN A MANNER APPROVED BY THE OWNER AT NO COST AND WITH NO EXTENSION OF TIME LIMITATION.

9. EXPERIENCE

A. THE CONTRACTOR PERFORMING THIS WORK SHALL BE A LICENSED, REPUTABLE FIRM, REGULARLY PERFORMING THE TYPE OF WORK INCORPORATED IN THIS PROJECT AND WHO ALSO MAINTAINS, AS PART OF THE FIRM, A SERVICE DEPARTMENT WITH QUALIFIED PERSONNEL WHO REGULARLY PERFORM THIS TYPE OF WORK.

10. ELECTRICAL WORK FOR MECHANICAL SYSTEMS

A. CONTROLLERS, AND CONTROL EQUIPMENT NECESSARY FOR MECHANICAL EQUIPMENT OPERATION SHALL BE PROVIDED UNDER DIVISION 15 MECHANICAL. STARTERS NOT INTEGRAL WITH MECHANICAL EQUIPMENT AND STARTERS MOUNTED IIN MOTOR CONTROL CENTERS SHALL BE PROVIDED UNDER DIVISION 16 ELECTRICAL.
B. POWER WIRING FOR MOTORS AND INSTALLATION OF STARTERS SHALL BE PROVIDED UNDER DIVISION 16 ELECTRICAL.
C. TEMPERATURE, HUMIDITY, PRESSURE AND SIMILAR CONTROLS ESSENTIAL TO THE OPERATION OF MECHANICAL SYSTEMS, AND WIRING AND CONDUIT THEREOF, INCLUDING INTERLOCK WIRING, SHALL BE PROVIDED UNDER DIVISION 15 OF SPECIFICATIONS, INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF DIVISION 16.
D. MOTORS SHALL BE PROVIDED UNDER DIVISION 15 MECHANICAL OF CAPACITY REQUIRED TO OPERATE EQUIPMENT SPECIFIED, BUT SHALL NOT BE LESS THAN THAT SPECIFIED.
E. ALL LOW VOLTAGE (120V AND UNDER) TEMPERATURE CONTROL WIRING FOR EQUIPMENT SHALL BE PROVIDED UNDER THIS DIVISION.
F. CONDUIT WHEN REQUIRED FOR CONTROL WIRING SHALL BE PROVIDED UNDER THIS DIVISION.

11. MOTORS

A. ALL MOTORS SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 15 MECHANICAL AND SHALL BE WIRED UNDER DIVISION 16 ELECTRICAL.
B. ALL MOTORS SHALL BE BUILT IN ACCORDANCE WITH THE CURRENT APPLICABLE IEEE, ASA, AND NEMA STANDARDS. ALL GENERAL PURPOSE MOTORS SHALL BE OPEN DRIP-PROOF MACHINES FOR INSTALLATION INDOORS AND/OR IN PROTECTED LOCATIONS. TOTALLY ENCLOSED FAN COOLED (TEFC) MOTORS SHALL BE USED IN ALL AREAS OF EXPOSURE TO WEATHER OR OTHER ENVIRONMENTAL CONTAMINATION. MOTORS SHALL BE RATED EXPLOSION PROOF WHEN LOCATED IN HAZARDOUS ATMOSPHERES. TYPE II WEATHER PROTECTED MOTORS MAY BE USED IN LIEU OF TEFC MOTORS ON ROOF MOUNTED FAN UNITS AND SIMILAR EQUIPMENT.
C. IF THE CONTRACTOR PROPOSES TO FURNISH MOTORS VARYING IN HORSEPOWER AND/OR CHARACTERISTIC FROM THOSE SPECIFIED, HE SHALL FIRST INFORM THE OWNER OF THE CHANGE AND CHALL THEN COORDINATE THE CHANGE AND SHALL PAY ALL ADDITIONAL CHARGES IN CONNECTION WITH THE CHANGE.

12. REMOVAL OF RUBBISH

A. CONTRACTOR SHALL KEEP PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIAL OR RUBBISH CAUSED BY HIS EMPLOYEES OR WORK. AT COMPLETION OF WORK, HE SHALL REMOVE ALL HIS TOOLS, SCAFFOLDING, SURPLUS MATERIALS, AND RUBBISH FROM BUILDING AND SITE. HE SHALL LEAVE PREMISES AND HIS WORK IN A CLEAN ORDERLY CONDITION ACCEPTABLE TO THE OWNER.

13. QUIET OPERATION AND VIBRATION

A. ALL EQUIPMENT PROVIDED UNDER THIS SECTION SHALL OPERATE UNDER ALL CONDITIONS OF LOAD FREE OF OBJECTIONABLE SOUND AND VIBRATION. SOUND AND VIBRATION CONDITIONS CONSIDERED OBJECTIONABLE SHALL BE CORRECTED IN AN APPROVED MANNER.

14. EXAMINATION OF EXISTING CONDITIONS

A. VISIT AND CAREFULLY EXAMINE THOSE PORTIONS OF THE SITE AND/OR PRESENT BUILDINGS AFFECTED BY THIS WORK SO AS TO BECOME FAMILIAR WITH EXISTING CONDITIONS AND DIFFICULTIES THAT WILL AFFECT THE EXECUTION OF THE WORK BEFORE SUBMITTING PROPOSALS
B. SUBMISSION OF A PROPOSSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH EXAMINATION HAS BEEN MADE AND LATER CLAIMS FOR LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED, WHICH COULD HAVE BEEN FORESEEN HAD SUCH EXAMINATION BEEN MADE, WILL NOT BE RECOGNIZED.

15. CLEANING AND ADJUSTMENTS

A. UPON COMPLETION OF WORK, CONTRACTOR SHALL CLEAN AND LUBIRACTE FANS, MOTORS, AND OTHER RUNNING EQUIPMENT AND APPARATUS WHICH HE HAS INSTALLED AND MAKE CERTAIN SUCH APPARATUS AND MECHANISMS ARE IN PROPER WORKING ORDER AND READY TO TEST.
B. SCRATCHED OR DAMAGED PAINTING SHALL BE TOUCHED UP AS NECESSARY TO RETURN THE PAINTING TO "NEW" CONDITION AND APPEARANCE.
C. ALL PIPING AND EQUIPMENT SHALL BE THOROUGHLY BLOWN OUT UNDER PRESSURE AND CLEARED OF ALL NECESSARY TO THOROUGHLY CLEAN SYSTEM BEFORE SYSTEM IS PLACED IN OPERATION. USE EVERY PRECAUTION TO PREVENT PIPE COMPOUND, SCALE, DIRT, WELDING AND OTHER OBJECTIONABLE MATTER FROM GETTING INTO THE PIPING SYSTEM AND EQUIPMENT.
D. DURING BLOW OUT PERIOD, BASKETS FROM STRAINERS SHALL BE REMOVED, TRAPS AND CONTROL VALVES, ETC., SHALL BE BY-PASSED.
E. ALL CLEANING SHALL BE DONE PRIOR TO ANT STERILIZATION, PRESSURE TESTING, FLOW BALANCING OR EQUIPMENT ADJUSTMENT PROCEDURES.

16. DEMOLITION (WHERE REQUIRED)

A. DEMOLITION SHALL BE AS SHOWN ON DRAWINGS OR SPECIFIED.
B. SCHEDULE ALL DEMOLITION WORK WITH OWNER TO CAUSE MINIMUM DOWNTIME OF ANY BUILDING SERVICE OR FUNCTION. NO EXTRA COST TO THE CONTRACTOR WILL BE ALLOWED FOR OVERTIME WORK UNLESS SPECIFICALLY AUTHORIZED IN ADVANCE BY REPRESENTATIVE OF OWNER IN WRITING.
C. REMOVE WITH CATE AND DELIVER TO A LOCATION DESIGNATED BY REPRESENTATIVE OF THE OWNER ALL ITEMS DESIGNATED TO REMAIN THE PROPERTY OF THE OWNER.
D. DRAWINGS ARE DIAGRAMMATIC AND SHOWN ONLY MAJOR OBSTRUCTIONS; COORDINATE WITH OTHER TRADES FOR REMOVAL OR RELOCATION OF PIPES; CONDUITS, HANGERS, ETC. IN PATH OF WORK.
E. NO COLUMNS, BEAMS, JOISTS, BUILDING FOUNDATIONS NOR ANY OTHER STRUCTURAL BUILDING COMPONENT SHALL BE CUT, DRILLED OR DISTURBED IN ANY WAY. CONFLICTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER. CONTRACTOR SHALL NOT PROCEED UNITL INSTRUCTED IN WIRITING BY THE ARCHITECT/ENGINEER IF CONFLICTS BETWEEN MECHANICAL MECHANICAL WORK AND STRUCTURAL ELEMENTS OCCUR.

17. CLEANING AND PROTECTING

A. DURING CONSTRUCTION PROTECT ALL PIPING AND EQUIPMENT FROM DAMAGE AND DIRT. CAP THE OPEN ENDS OF ALL PIPING AND QUIPMENT.
B. AFTER COMPLETION OF PROJECT CLEAN THE EXTERIOR SURFACE OF EQUIPMENT INCLUDED IN THIS SECTION, REMOVE ALL CONCRETE RESIDUES AND AS DIRECTED TOUCH UP PAINT OR COMPLETELY REPAINT ALL DAMAGED SURFACES.

18. STORAGE OF MATERIALS

A. ALL MATERIALS STORED ON SITE SHALL BE PROPERLY PROTECTED FROM INJURY OR DETERIORATION. MATERIALS SHALL NOT BE STORED IN CONTACT WITH GROUND OR FLOOR.
B. DO NOT REMOVE MANUFACTURER'S PACKING MATERIALS UNTIL READY TO INSTALL. MATERIALS SHOWING SIGNS OF CORROSION, IMPROPER HANDLING OR STORAGE SHALL BE REPLACED AT NO COST TO THE OWNER.
C. PROVIDE CONTINUOUS PROTECTION FOR ALL EQUIPMENT ALREADY INSTALLED.

19. WATERPROOFING

A. WHERE ANY WORK PIERCES WATERPROOFING INCLUDING WATERPROOF CONCRETE, THE METHOD OF INSTALLATION SHALL BE AS APPROVED BY THE OWNER BEFORE THE WORK IS DONE.
B. PROVIDE ALL NECESSARY SLEEVES, CAULKING AND FLASHING REQUIRED TO MAKE OPENINGS ABSOLUTELY WATERTIGHT. WATERPROOF FLASHING MATERIALS SHALL BE COMPATIBLE WITH BASE MATERIALS.

20. TESTS

A. CONTRACTOR SHALL MAKE ALL TESTS REQUIRED TO ESTABLISH THE ADEQUACY, QUALITY, SAFETY, COMPLETED STATUS AND SATISFACTORY OPERATION OF ALL SYSTEMS TO THE SATISFACTION OF THE OWNER. PROVIDE ALL INSTRUMENTS, LABOR AND SERVICES NECESSARY TO CONDUCT TESTS.

21. GUARANTEE

A. EQUIPMENT SHALL BE STARTED, TESTED, ADJUSTED, AND PLACED IN SATISFACTORY OPERATING CONDITION. FURNISH A LETTER ADDRESSED TO THE OWNER'S CONSTRUCTION MANAGER ADVISING THAT THE COMPLETED SYSTEMS HAVE BEEN INSTALLED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND THAT THET ARE IN PROPER OPERATIN CONDITION. THE OWNER SHALL RECEIVE A WRITTEN GUARANTEE COVERING ALL DEFECTS IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. ANY DEFECTS APPEARING WITHIN THIS YEAR PERIOD SHALL BE REPAIRED WITHOUT ADDITIONAL COST TO THE OWNER.

22. ACCEPTANCE
A. BEFORE REQUESTING FINAL INSPECTION:
1. COMPLETE ALL WORK REQUIRED. IF ANY ITEMS ARE HELD IN ABEYANCE AS INCOMPLETE FOR FINAL INSPECTION, LIST SUCH ITEMS TOGETHER WITH EXPLANATION FOR DELAY.
2. SUBMIT STATEMENT THAT EQUIPMENT IS PROPERLY INSTALLED, ADJUSTED, FULLY LUBRICATED AND OPERATION IS SATISFACTORY.
3. CERTIFY IN WRITING TO THE ARCHITECT/ENGINEER THAT THE OWNER'S REPRESENTATIVE HAS BEEN INSTRUCTED AS TO THE CARE AND OPERATION OF THE SYSTEM AND THAT CATALOG SERVICE AND MAINTENANCE INFORMATION HAS BEEN TURNED OVER THE OWNER.
4. SUBMIT COPY OF WRITTEN GUARANTEE.
5. SUBMIT COPY OF OTHER DATA AS MAY BE OUTLINE IN THESE SPECIFICATIONS.

B. COPIES OF THE ABOVE DATA SHALL BE SUBMITTED TO THE OWNER'S CONSTRUCTION MANAGER PRIOR TO REQUESTING FINAL INSPECTION.

## SECTION 15060 - PIPES AND PIPE FITTINGS

1. RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
B. THIS SECTION IS A DIVISION 15 BASIC MECHANICAL MATERIALS AND METHODS SECTION, AND IS PART OF EACH DIVISION 15 SECTION MAKING REFERENCE TO PIPES AND PIPE FITTINGS SPECIFIED HEREIN

2. DESCRIPTION OF WORK
A. EXTENT OF PIPES AND PIPE FITTINGS REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS AND/OR SPECIFIED IN OTHER DIVISION 15 SECTIONS.
B. TYPE OF PIPES AND PIPE FITTINGS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
1. STEEL PIPES.
2.COPPER TUBE.
3. BRASS PIPES .
4. CAST- IRON SOIL PIPES.
5. PLASTIC PIPES.
C. PIPES AND PIPE FITTINGS FURNISHED AS PART OF FACTORY-FABRICATED EQUIPMENT, ARE SPECIFIED AS PART OF EQUIPMENT ASSEMBLY IN OTHER DIVISION 15 SECTIONS.

3. SUBMITTALS
A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA, INSTALLATION INSTRUCTIONS, AND DIMENSIONED DRAWINGS FOREACH TYPE OF PIPE AND PIPE FITTING. SUBMIT PIPING SCHEDULE SHOWING MANUFACTURER, PIPE OR TUBE WEIGHT, FITTING TYPE FOR EACH PIPING SYSTEM.

4. GENERAL
A. PIPING MATERIALS: PROVIDE PIPE AND TUBE OF TYPE, JOINT TYPE, GRADE, SIZE AND WEIGHT (WALL THICKNESS OR CLASS) INDICATED FOR EACH SERVICE. WHERE TYPE, GRADE OR CLASS IS NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER FOR INSTALLATION REQUIREMENTS, AND COMPLY WITH GOVERNING REGULATIONS AND INDUSTRY STANDARDS.
B. PIPE/TUBE FITTINGS: PROVIDE FACTORY-FABRICATED FITTINGS OF TYPE, MATERIALS, GRADE, CLASS AND PRESSURE RATING INDICATED FOR EACH SERVICE AND PIPE SIZE. PROVIDE SIZES AND TYPES MATCHING PIPE, TUBE, VALVE OR EQUIPMENT CONNECTION IN EACH CASE. WHERE NOT OTHERWISE INDICATED, COMPLY WITH GOVERNING REGULATIONS AND INDUSTRY STANDARDS FOR SELECTIONS, AND WITH PIPE MANUFACTURER'S RECOMMENDATIONS WHERE APPLICABLE.

5. STEEL PIPES AND PIPE FITTINGS
A. BLACK STEEL PIPE: ASTM A53, A106 OR A120; EXCEPT COMPLY WITH ASTM A53 OR A106 WHERE CLOSE COILING OR BENDING IS REQUIRED.
B.GALVANIZED STEEL PIPE: ASTM A53 OR A120; EXCEPT COMPLY WITH ASTM A53 WHERE CLOSE COILING OR BENDING IS REQUIRED.
C. PIPE NIPPLES: FABRICATED FROM SAME PIPE AS USED FOR CONNECTED PIPE; EXCEPT DO NOT USE LESS THAN SCHEDULE 80 PIPE WHERE LENGTH REMAINING UNTHREADED IS LESS THAN 1-1/2", AND WHERE PIPE SIZE IS LESS THAN 1-1/2", AND DO NOT THREAD NIPPLES FULL LENGTH (NO CLOSE-NIPPLES).

6. COPPER TUBE AND FITTINGS
A. COPPER TUBE: ASTM B88; TYPE (WALL THICKNESS) AS INDICATED FOR EACH SERVICE; HARD-DRAWN TEMPER, EXCEPT AS OTHERWISE INDICATED.
B. CAST-COPPER SOLDER-JOINT FITTINGS: ANSI B16.18.
C. WROUGHT-COPPER SOLDER-JOINT FITTINGS: ANSI B16.22.
D. COPPER-TUBE UNIONS: PROVIDE STANDARD PRODUCTS RECOMMENDED BY MANUFACTURER FOR USE IN SERVICE INDICATED.

7. PLASTIC PIPES AND PIPE FITTINGS
A. POLYVINYL CHLORIDE PIPE (PVC): ASTM D1785.
B. POLYVINLY CHLORIDE DRAIN, WASTE, AND VENT PIPE (PVC): ASTM D2665.
C. SOLVENT CEMENT: ASTM D2560.
D. PVC FITTINGS:
1. SCHEDULE 40 SOCKET: ASTM D2466.
2. DWV SOCKET: ASTM D2665.
3. SOLVENT CEMENT: ASTM D2564.

8. MISCELLANEOUS PIPING MATERIALS/PRODUCTS
A. SOLDERING MATERIALS: EXCEPT AS OTHERWISE INDICATED, PROVIDE SOLDERING MATERIALS AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS.
B. TIN-LEAD SOLDER: ASTM B32, GRADE 50A.
C. TIN-ANTIMONY SOLDER: ASTM B32, GRADE 95TA.
D. SILVER-LEAD SOLDER: ASTM B32, GRADE 96TS.
E. PIPING CONNECTORS FOR DISSIMILAR NO-PRESSURE PIPE: ELASTOMERIC ANNULAR RING INSERT, OR ELASTOMERIC FLEXIBLE COUPLING SECURED AT EACH END WITH STAINLESS STEEL CLAMPS, SIZED FOR EXACT FIT TO PIPE ENDS AND SUBJECT TO APPROVAL BY PLUMBING CODE.

9. INSTALLATION:
A. GENERAL: INSTALL PIPES AND PIPE FITTINGS IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE PERMANENTLY-LEAKPROOF PIPING SYSTEMS, CAPABLE OF PERFORMING EACH INDICATED SERVICE WITHOUT PIPING FAILURE. INSTALL EACH RUN WITH MINUMUM JOINTS AND COUPLINGS, BUT WITH ADEQUATE AND ACCESSIBLE UNIONS FOR DISASSEMBLY AND MAINTENANCE/REPLACEMENT OF VALVES AND EQUIPMENT. REDUCE SIZES (WHERE INDICATED) BY USE OF REDUCING FITTINGS. ALIGN PIPING ACCURATELY AT CONNECTIONS, WITHIN 1/16" MISALIGNMENT TOLERANCE.
B.COMPLY WITH ANSI B31 CODE FOR PRESSURE PIPING.
C. LOCATE PIPING RUNS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY (PITCHED TO DRAIN) AND AVOID DIAGONAL RUNS WHEREVER POSSIBLE. ORIENT HORIZONTAL RUNS PARALLEL WITH WALLS AND COLUMN LINES. LOCATE RUNS AS SHOWN OR DESCRIBED BY DIAGRAMS, DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN PIPING IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT USABLE SPACE OR BLOCK ACESS FOR SERVICING BUILDING AND ITS EQUIPMENT. HOLD PIPING CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS AND OTHER STRUCTURAL AND PERMANENT-ENCLOSURE ELEMENTS OF BUILDING; LIMIT CLEARANCE TO 1/2" WHERE FURRING IS SHOWN FOR ENCLOSURE OR CONCEALMENT OF PIPING, BUT ALLOW FOR INSULATION THICKNESS, IF ANY. WHERE POSSIBLE, LOCATE INSULATED PIPING FOR 1" CLEARANCE OUTSIDE INSULATION. WHEREVER POSSIBLE IN FINISHED AND OCCUPIED SPACES, CONCEAL PIPING FROM VIEW, BY LOCATING IN COLUMN ENCLOSURES, IN HOLLOW WALL CONSTRUCTIONOR ABOVE SUSPENDED CEILINGS; DO NOT ENCASE HORIZONTAL RUNS IN SOLID PARTITIONS , EXCEPT AS INDICATED.
D. ELECTRICAL EQUIPMENT SPACES: DO NOT RUN PIPING THROUGH TRANSFORMER VAULTS AND OTHER ELECTRICAL OR ELEKTRONIC EQUIPMENT SPACES AND ENCLOSURES.

10. PIPING SYSTEM JOINTS:
A. GENERAL: PROVIDE JOINTS OF TYPE INDICATED IN EACH PIPING SYSTEM.
B. THREAD PIPE IN ACCORDANCE WITH ANSI B2.1.
C. SOLDER COPPER TUBE-AND FITTING JOINTS WHERE INDICADET, IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICE.

11. CLEANING, FLUSHING, INSPECTING:
A. GENERAL: CLEAN EXTERIOR SURFACES OF INSTALLED PIPING SYSTEMS OF SUPERFLUOUS MATERIALS, AND PREPARE FOR APPLICATION OF SPECIFIED COATINGS (IF ANY). FLUSH OUT PIPING SYSTEMS WITH CLEAN WATER BEFORE PROCEEDING WITH REQUIRED TESTS. INSPECT EACH RUN OF EACH SYSTEM FOR COMPLETION OF JOINTS, SUPPORTS AND ACCESSORY ITEMS.
B. DISINFECT WATER MAINS AND WATER SERVICE PIPING IN ACCORDANCE WITH AWWA C601.

12. PIPING TESTS:
A. GENERAL: PROVIDE TEMPORARY EQUIPMENT FOR TESTING, INCLUDING PUMP AND GAGES. TEST PIPING SYSTEM BEFORE INSULATION IS INSTALLED WHEREVER FEASIBLE, AND REMOVE CONTROL DEVICES BEFORE TESTING. TEST EACH NATURAL SECTION OF EACH PIPING SYSTEM INDEPENDENTLY BUT DO NOT USE PIPING SYSTEM VALVES TO ISOLATE SECTIONS WHERE TEST PRESSURE EXCEEDS VALVE PRESSURE RATING. FILL EACH SECTION WITH WATER AND PRESSURIZE FOR INDICATED PRESSURE AND TIME.
B. REQUIRED TEST PERIOD IS 2 HOURS.
C. TEST EACH PIPING SYSTEM AT 150% OF OPERATING PRESSURE INDICATED, BUT NOT LESS THAN 25 PSI TEST PRESSURE.
D. OBSERVE EACH TEST SECTION FOR LEAKAGE AT END OF TEST PERIOD. TEST FAILS LEAKAGE IS OBSERVED OR IF PRESSURE DROP EXCEEDS 5% OF TEST PRESSURE.
E. REPAIR PIPING SYSTEMS SECTIONS WITH FAIL REQUIRED PIPING TEST, BY DISASSEMBLY AND RE-INSTALLATION, USING NEW MATERIALS TO EXTENT REQUIRED TO OVERCOME LEAKAGE. DO NOT USE CHEMICALS, STOP-LEAK COMPOUNDS, MASTICS, OR OTHER TEMPORARY REPAIR METHODS.
F. DRAIN TEST WATER FROM PIPING SYSTEMS AFTER TESTING AND REPAIR WORK HAS BEEN COMPLETED.

## SECTION 15100 - VALVES

1. RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
B. THIS SECTION IS A DIVISION 15 BASIC MACHANICAL MATERIALS AND METHODS SECTION, AND IS PART OF EACH DIVISION 15 SECTION MAKING REFERENCE TO VALVES SPECIFIED HEREIN.

2. DESCRIPTION OF WORK
A. EXTENT OF VALVES REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS AND/OR SPECIFIED IN OTHER DIVISION 15 SECTIONS.
B. TYPES OF VALVES SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
1. GATE VALVES.
2. GLOBE VALVES.
3. DRAIN VALVES.
4. BALL VALVES.
5. PLUG VALVES.
6. CHECK VALVES.
7. SWING CHECK.
C. VALVES FURNISHED AS PART OF FACTORY-FABRICATED EQUIPMENT, ARE SPECIFIED AS PART OF EQUIPMENT IN OTHER DIVISION 15 SECTIONS.

3. QUALITY ASSURANCCE
A. VALVE TYPES: PROVIDE VALVES OF SAME TYPE BY SAME MANUFACTURER.
B. VALVE IDENTIFICATION: PROVIDE VALVES WITH MANUFACTURER'S NAME (OR TRADEMARK) AND PRESSURE RATING CLEARLY MARKED ON VALVE BODY.

4. CODES AND STANDARDS
A. ANSI COMPLIANCE: FOR FACE- TO - FACE AND END - TO- END DIMENSIONS OF FLANGED - OR WELDED - END VALVE BODIES, COMPLY WİTH ANSI B16.10 "FACE - TO - FACE AND END - TO -END DIMENSIONS OF FERROUS VALVES".

5. VALVES
A. GENERAL: PROVIDE FACTORY - FABRICATED VALVES RECOMMENDED BY MANUFACTURER FOR USE IN SERVICE INDICADET. PROVIDE VALVES OF TYPES AND PRESSURE RATINGS INDICATED; PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WİTH INSTALLATION REQUIREMENTS. PROVIDE END CONNECTIONS WHICH PROPERLY MATE WITH PIPE, TUBE, AND EQUIPMENT CONNECTIONS. WHERE MORE THAN ONE TYPE IS INDICATED, SELECTION IS INSTALLER'S OPTION.
B. SIZES: UNLESS OTHERWISE INDICATED, PROVIDE VALVES OF SAME SIZE AS UPSTREAM PIPE SIZE.
C. OPERATORS: PROVIDE HANDWHEELS, FASTENED TO VALVE STEM, FOR VALVES OTHER THAN QUARTER - TURN. PROVIDE LEVER HANDLE FOR QUARTER - TURN VALVES, 6" AND SMALLER, OTHER THAN PLUG VALVES.
PROVIDE ONE WRENCH FOR EVERY 10 PLUG VALVES.

6. GATE VALVES
A. COMPLY WITH THE FOLLOWING STANDARDS:
1. CAST - IRON VALVES: MSS SP-70.
2. BRONZE VALVES: MSS SP-80.
3. STEEL VALVES: ANSI B16.34.
7. GLOBE VALVES
A. COMPLY WITH THE FOLLOWING STANDARS:
1. CAST - IRON VALVES: MSS SP-85
2. BRONZE VALVES: MSS SP-80
3.STEEL VALVES: ANSI B16.34.
8. DRAIN VALVES
A. COMPLY WITH THE FOLLOWING STANDARDS:
1. WATER HEATER DRAIN VALVES: ASSE 1005.
9. PLUG VALVES
A. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS.

10. BALL VALVES
A. COMPLY WITH THE FOLLOWING STANDARDS:
1. CAST - IRON VALVES: MSS SP-72.
2.STEEL VALVES: ANSI B16.34.
11. SWING CHECK VALVES
A. COMPLY WITH THE FOLLOWING STANDARDS:
1. CAST - IRON VALVES: MSS SP-71
2. BRONZE VALVES: MSS SP-80
3. STEEL VALVES: ANSI B16.34.
12. VALVE FEATURES
A. GENERAL: PROVIDE VALVES WITH FEATURES INDICATED AND, WHERE NOT OTHER INDICATED, PROVIDE PROPER VALVE FEATURES AS DETERMINEND BY INSTALLATION REQUIREMENTS. COMPLY WITH ASME B31.9 FOR BUILDING SERVICES PIPING, AND ASME B31.1 FOR POWER PIPING.
B. BYPASS: COMPLY WITH MSS SP-45, AND EXCEPT AS OTHERWISE INDICATED, PROVIDE MANUFACTURER'S STANDARD BYPASS PIPING AND VALVING.
C. DRAIN: COMPLY WITH MSS SP-45, AND PROVIDE THREADED PIPE PLUGS.
D. FLANGED: VALVE FLANGES COMPLYING WITH ANSI B16.1 (CAST IRON), ANSI B16.5, (STEEL), OR ANSI B16.24 (BRONZE).
E. THREADED: VALVE ENDS COMPLYING WITH ANSI B2.1.
F. SOLDER-JOINT: VALVE ENDS COMPLY WITH ANSI B16.18.

13. INSTALLATION
A. GENERAL: EXCEPT AS OTHERWISE INDICATED, COMPLY WITH THE FOLLOWING REQUIREMENTS:
1. INSTALL VALVE WHERE REQUIRED FOR PROPER OPERATION OF PIPING AND EQUIPMENT, INCLUDING VALVES IN BRANCH LINES WHERE NECESSARY TO ISOLATE SECTIONS OF PIPING. LOCATE VALVES SO AS TO BE ACCESSIBLE AND SO THAT SEPARATE SUPPORT CAN BE PROVIDED WHEN NECESSARY.
2. INSTALL VALVES WITH STEMS POINTED UP, IN VERTICAL POSITION WHERE POSSIBLE, BUT IN NO CASE WITH STEMS POINTED DOWNWARD FROM HORIZONTAL PLANE UNLESS UNAVOIDABLE. INSTALL VALVE DRAINS WITH HOSE-END ADAPTER FOR EACH VALVE THAT MUST BE INSTALLED WITH STEM BELOW HORIZONTAL PLANE.
B. INSULATION: WHERE INSULATION IS INDICATED, INSTALL EXTENDED-STEM VALVES, ARRANGED IN PROPER MANNER TO RECEIVE INSULATION.
C. MECHANICAL ACTUATORS: INSTALL MECHANICAL ACTUATORS WITH CHAIN OPERATORS WHERE INDICATED. EXTEND CHAINS TO ABOUT 5' ABOVE FLOOR AND HOOK TO CLIPS TO CLEAR AISLE PASSAGE.
D. SELECTION OF VALVE ENDS (PIPE CONNECTIONS): EXCEPT AS OTHERWISE INDICATED, SELECT AND INSTALL VALVES WITH THE FOLLOWING ENDS OR TYPES OF PIPE/TUBE CONNECTIONS:
EDIT FROM FOLLOWING AS DESIRED. SEE EVALUATIONS.

1. TUBE SIZE 2" AND SMALLER: SOLDERED-JOINT VALVES.
NORMALLY RETAIN ALL FOLLOWING TYPES UNLESS CERTAIN TYPES ARE NOT DESIRED OR NOT PERMITTED.
2. PIPE SIZE 2" AND SMALLER: ONE OF THE FOLLOWING, AT INSTALLER'S OPTION:
a. THREADED VALVES.
b. GROOVED-END VALVES.
c. BUTT-WELDING VALVES/
d. SOCKET-WELDING VALVES.
e. FLANGED VALVES.
f. FLANGELESS VALVES.
g. SINGLE FLANGED VALVES.
3. PIPE SIZE 2 1/2" AND LARGER: ONE OF THE FOLLOWING, AT INSTALLER'S OPTION:
a. GROOVED-END VALVES.
b. BUTT-WELDING VALVES.
c. SOCKET-WELDING VALVES.
d. FLANGED VALVES.
e. WAFER VALVES.
f. SINGLE FLANGE VALVES.
g. HUB-AND-SPIGOT VALVES.
h. MECHANICAL JOINT END VALVES.
E. VALVE SYSTEM: SELECT AND INSTALL VALVES WITH OUTSIDE SCREW AND YOKE STEMS, EXCEPT PROVIDE INSIDE SCREW NON-RISING STEM VALVES WHERE HEADROOM PREVENTS FULL OPENING OF OS&Y VALVES.
F. NON-METALLIC DICS: LIMIT SELECTION AND INSTALLATION OF VALVES WITH NON-METALLIC DISCS TO LOCATIONS INDICATED AND WHERE FOREIGN MATERIAL IN PIPING SYSTEM CAN BE EXPECTED TO PREVENT TIGHT SHUTOFF OF METAL SEATED VALVES.
G. RENEWABLE SEATS: SELECT AND INSTALL VALVES WITH RENEWABLE SEATS, EXCEPT WHERE OTHERWISE INDICATED.
H. FLUID CONTROL: EXCEPT AS OTHERWISE INDICATED, INSTALL GATE, BALL, GLOBE, AND BUTTERFLY VALVES TO COMPLY WITH ANSI B31.9. WHERE THROTTLING IS INDICATED OR RECOGNIZED AS PRINCIPAL REASON FOR VALVE, INSTALL GLOBE OR BUTTERFLY VALVES.

14. INSTALLATION OF CHECK VALVES
A. SWING CHECK VALVES: INSTALL IN HORIZONTAL POSITION WITH HINGE PIN HORIZONTALLY PERPENDICULAR TO CENTER LINE OF PIPE. INSTALL FOR PROPER DIRECTION OF FLOW.
15. ADJUSTING AND CLEANING
A. VALVE ADJUSTMENT: AFTER PIPING SYSTEMS HAVE BEEN TESTED AND PUT INTO SERVICE, BUT BEFORE FINAL TESTING, ADJUSTING, AND BALANCING, INSPECT EACH VALVE FOR POSSIBLE LEAKS. ADJUST OR REPLACE PACKING TO STOP LEAKS, REPLACE VALVE IF LEAK PERSISTS.
B. VALVE IDENTIFICATION: TAG EACH VALVE IN ACCORDANCE WITH DIVISION 15 SECTION "MECHANICAL IDENTIFICATION".
C. CLEANING: CLEAN FACTORY-FINISHED SURFACES. REPAIR ANY MARRED OR SCRATCHED SURFACES WITH MANUFACTURER'S TOUCH-UP PAINT.

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SPECIFICATIONS

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A. RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—=1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
B. THIS SECTION IS A DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION, AND IS PART OF EACH DIVISION—15 SECTION MAKING REFERENCE TO PIPING SPECIALTIES SPECIFIED HEREIN.

2. DESCRIPTION OF WORK
A. EXTENT OF PIPING SPECIALTIES WORK REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS AND SCHEDULES AND BY REQUIREMENTS OF THIS SECTION.
B. TYPES OF PIPING SPECIALTIES SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
1. PIPE ESCUTCHEONS
2. PIPELINE STRAINERS
3. DIELECTRIC UNIONS
4. MECHANICAL SLEEVE SEALS
5. FIRE BARRIER PENETRATION SEALS
6. WATER HAMMER ARRESTERS
7. DRIP PANS
8. PIPE SLEEVES
9. SLEEVE SEALS
A. PIPING SPECIALTIES FURNISHED AS PART OF FACTORY—FABRICATED EQUIPMENT, ARE SPECIFIED AS PART OF EQUIPMENT ASSEMBLY IN OTHER DIVISION—15 SECTIONS.

3. CODES AND SUBMITTALS
A. FCI COMPLIANCE: TEST AND RATE "Y" TYPE STRAINERS IN ACCORDANCE WITH FCI 73-1 "PRESSURE RATING STANDARD FOR *Y" TYPE STRAINERS". TEST AND RATE OTHER TYPE STRAINERS IN ACCORDANCE WITH FCI 78-1 "PRESSURE RATING STANDARD FOR PIPELINE STRAINERS OTHER THAN *Y" TYPE".

4. SUBMITTALS
A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA, INCLUDING INSTALLATION INSTRUCTIONS, AND DIMENSIONED DRAWINGS FOR EACH TYPE OF MANUFACTURED PIPING SPECIALTY. INCLUDE PRESSURE DROP CURVE OR CHART FOR EACH TYPE AND SIZE OF PIPELINE STRAINER. SUBMIT SCHEDULE SHOWING MANUFACTURER'S FIGURE NUMBER, SIZE, LOCATION, AND FEATURES FOR EACH REQUIRED PIPING SPECIALTY.

5. PIPING SPECIALTIES
A. GENERAL: PROVIDE FACTORY—FABRICATED PIPING SPECIALTIES RECOMMENDED BY MANUFACTURER FOR USE IN SERVICE INDICATED. PROVIDE PIPING SPECIALTIES OF TYPES AND PRESSURE RATINGS INDICATED FOR EACH SERVICE, OR IF NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS. PROVIDE SIZES AS INDICATED, AND CONNECTIONS, WHICH PROPERLY MATE WITH PIPE, TUBE, AND EQUIPMENT CONNECTIONS. WHERE MORE THAN ONE TYPE IS INDICATED, SELECTION IS INSTALLER'S OPTION.

6. FABRICATED PIPING SPECIALTIES
A. DRIP PANS: PROVIDE DRIP PANS FABRICATED FROM CORROSION—RESISTANT SHEET METAL WITH WATERTIGHT JOINTS, AND WITH EDGES TURNED UP 2-1/2". REINFORCE TOP, EITHER BY STRUCTURAL ANGLES OR BY ROLLING TOP OVER 1/4" STEEL ROD. PROVIDE HOLE, GASKET, AND FLANGE AT LOW POINT FOR WATERTIGHT JOINT AND 1" DRAIN LINE CONNECTION.
B. PIPE SLEEVES: PROVIDE PIPE SLEEVES OF ONE OF THE FOLLOWING:
1. SHEET METAL: FABRICATE FROM GALVANIZED SHEET METAL; ROUND TUBE CLOSED WITH SNAPLOCK JOINT, WELDED SPIRAL SEAMS, OR WELDED LONGITUDINAL JOINT. FABRICATED FROM THE FOLLOWING GAGES: 3" AND SMALLER, 20 GAGE; 4" TO 6" 16 GAGE; OVER 6", 14 GAGE.
2. STEEL—PIPE: FABRICATE FROM SCHEDULE 40 GALVANIZED STEEL PIPE; REMOVE BURRS.
3. LRON—PIPE: FABRICATE FROM CAST-IRON OR DUCTILE-IRON PIPE; REMOVE BURRS.
4. PLASTIC—PIPE: FABRICATE FROM SCHEDULE 80 PVC PLASTIC PIPE; REMOVE BURRS.
C. SLEEVE SEALS: PROVIDE SLEEVE SEALS FOR SLEEVES LOCATED IN FOUNDATION WALLS BELOW GRADE, OR IN EXTERIOR WALLS, OF ONE OF THE FOLLOWING:
1. LEAD AND OAKUM: CAULKED BETWEEN SLEEVE AND PIPE.
2. MECHANICAL SLEEVE SEALS: INSTALLED BETWEEN SLEEVE AND PIPE.

7. INSTALLATION OF PIPING SPECIALTIES
A. PIPE ESCUTCHEONS: INSTALL PIPE ESCUTCHEONS ON EACH PIPE PENETRATION THRU FLOORS, WALLS, PARTITIONS, AND CEILINGS WHERE PENETRATION IS EXPOSED TO VIEW; AND ON EXTERIOR OF BUILDING. SECURE ESCUTCHEON TO PIPE OR INSULATION SO ESCUTCHEON COVERS PENETRATION HOLE, AND IS FLUSH WITH ADJOINING SURFACE.
B. Y-TYPE STRAINERS: INSTALL Y—TYPE STRAINERS FULL SIZE OF PIPELINE, IN ACCORDANCE WITH MANUFACTURERS INSTALLATION INSTRUCTIONS. INSTALL PIPE NIPPLE AND SHUTOFF VALVE IN STRAINER BLOW DOWN CONNECTION, FULL SIZE OF CONNECTION, EXCEPT FOR STRAINERS 2" AND SMALLER INSTALLED AHEAD OF CONTROL VALVES FEEDING INDIVIDUAL TERMINALS. WHERE INDICATED, PROVIDE DRAIN LINE FROM SHUTOFF VALVE TO PLUMBING DRAIN, FULL SIZE OF BLOW DOWN CONNECTION.
C. LOCATE Y—TYPE STRAINERS IN SUPPLY LINE AHEAD OF THE FOLLOWING EQUIPMENT, AND ELSEWHERE AS INDICATED, IF INTEGRAL STRAINER IS NOT INCLUDED IN EQUIPMENT:
1. PUMPS
2. STEAM TRAPS SERVING STEAM MAIN DRIPS
3. TEMPERATURE CONTROL VALVES
4. PRESSURE REDUCING VALVES
5. TEMPERATURE OR PRESSURE REGULATING VALVES
D. DIELECTRIC UNIONS: INSTALL AT EACH PIPING JOINT BETWEEN FERROUS AND NON—FERROUS PIPING. COMPLY WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
E. MECHANICAL SLEEVE SEALS: LOOSELY ASSEMBLE RUBBER LINKS AROUND PIPE WITH BOLTS AND PRESSURE PLATES LOCATED UNDER EACH BOLT HEAD AND NUT. PUSH INTO SLEEVE AND CENTER. TIGHTEN BOLTS UNTIL LINKS HAVE EXPANDED TO FORM WATERTIGHT SEAL.
F. FIRE BARRIER PENETRATION SEALS: FILL ENTIRE OPENING WITH SEALING COMPOUND. ADHERE TO MANUFACTURER'S INSTALLATION INSTRUCTIONS.
G. WATER HAMMER ARRESTERS: INSTALL IN UPRIGHT POSITION, IN LOCATIONS AND OF SIZES IN ACCORDANCE WITH PDI STANDARD WH—201, AND ELSEWHERE AS INDICATED.

8. INSTALLATION OF FABRICATED PIPING SPECIALTIES
A. DRIP PANS: HANG FROM STRUCTURE WITH RODS AND BUILDING ATTACHMENTS, WELD RODS TO SIDES OF DRIP PAN. BRACE TO PREVENT SAGGING OR SWAYING. CONNECT 1" DRAIN LINE TO DRAIN CONNECTION, AND RUN TO NEAREST PLUMBING DRAIN OR ELSEWHERE AS INDICATED.
B. PIPE SLEEVES: INSTALL PIPE SLEEVES OF TYPES INDICATED WHERE PIPING PASSES THROUGH WALLS, FLOORS, CEILINGS, AND ROOFS. DO NOT INSTALL SLEEVES THROUGH STRUCTURAL MEMBERS OF WORK, EXCEPT AS DETAILED ON DRAWINGS, OR AS REVIEWED BY ARCHITECT/ENGINEER. INSTALL SLEEVES ACCURATELY CENTERED ON PIPE RUNS. SIZE SLEEVES SO THAT PIPING AND INSULATION (IF ANY) WILL HAVE FREE MOVEMENT IN SLEEVE, INCLUDING ALLOWANCE FOR THERMAL EXPANSION; BUT NOT LESS THAN 2 PIPE SIZES LARGER THAN PIPING RUN. WHERE INSULATION INCLUDES VAPOR—BARRIER JACKET, PROVIDE SLEEVE WITH SUFFICIENT CLEARANCE FOR INSTALLATION. INSTALL LENGTH OF SLEEVE EQUAL TO THICKNESS OF CONSTRUCTION PENETRATED, AND FINISH FLUSH TO SURFACE; EXCEPT FLOOR SLEEVES. EXTEND FLOOR SLEEVES 1/4" ABOVE LEVEL FLOOR FINISH, AND 3/4" ABOVE FLOOR FINISH SLOPED TO DRAIN. PROVIDE TEMPORARY SUPPORT OF SLEEVES DURING PLACEMENT OF CONCRETE AND OTHER WORK AROUND SLEEVES, AND PROVIDE TEMPORARY CLOSURE TO PREVENT CONCRETE AND OTHER MATERIALS FROM ENTERING SLEEVES:
1. INSTALL SHEET—METAL SLEEVES AT INTERIOR PARTITIONS AND CEILINGS OTHER THAN SUSPENDED CEILINGS.
2. INSTALL IRON—PIPE SLEEVES AT EXTERIOR PENETRATIONS; BOTH ABOVE AND BELOW GRADE.
3. INSTALL STEEL—PIPE OR PLASTIC—PIPE SLEEVES EXCEPT AS OTHERWISE INDICATED.
C. SLEEVE SEALS: INSTALL IN ACCORDANCE WITH THE FOLLOWING:
1. LEAD AND OAKUM: FILL AND PACK ANNULAR SPACE BETWEEN SLEEVE AND PIPE WITH OAKUM, CAULK WITH LEAD, ON BOTH SIDES.

## SECTION 15140 - SUPPORTS AND ANCHORS

1. RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
B. THIS SECTION IS DIVISION—-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION, AND IS PART OF EACH DIVISION—15 SECTION MAKING REFERENCE TO SUPPORTS AND ANCHORS SPECIFIED HEREIN.

2. DESCRIPTION OF WORK
A. EXTENT OF SUPPORTS AND ANCHORS REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS AND/OR SPECIFIED IN OTHER DIVISION—15 SECTIONS.
B. TYPES OF SUPPORTS AND ANCHORS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
1. HORIZONTAL—PIPING HANGERS AND SUPPORTS.
2. VERTICAL—PIPING CLAMPS.
3. HANGER—ROD ATTACHMENTS.
4. BUILDING ATTACHMENTS.
5. SADDLES AND SHIELDS.
6. MISCELLANEOUS MATERIALS.
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9. EQUIPMENT SUPPORTS.
C. SUPPORTS AND ANCHORS FURNISHED AS PART OF FACTORY—FABRICATED EQUIPMENT, ARE SPECIFIED AS PART OF EQUIPMENT ASSEMBLY IN OTHER DIVISION—-15 SECTIONS.

3. QUALITY ASSURANCE
A. CODES AND STANDARDS:
1. CODE COMPLIANCE: COMPLY WITH APPLICABLE PLUMBING CODES PERTAINING TO PRODUCT MATERIALS AND INSTALLATION OF SUPPORTS AND ANCHORS.
2. UL AND FM COMPLIANCE: PROVIDE PRODUCTS WHICH ARE UL—LISTED AND FM APPROVED.
B. MSS STANDARD COMPLIANCE:
1. PROVIDE PIPE HANGERS AND SUPPORTS OF WHICH MATERIALS, DESIGN, COMPLY WITH MSS SP-58.
2. SELECT AND APPLY PIPE HANGERS AND SUPPORTS, COMPLYING WITH MSS SP-—69.
3. FABRICATE AND INSTALL PIPE HANGERS AND SUPPORTS, COMPLYING WITH MSS SP-89.
4. TERMINOLOGY USED IN THIS SECTION IS DEFINED IN MSS SP-—90.

4. SUBMITTALS
A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA, INCLUDING INSTALLATION INSTRUCTIONS FOR EACH TYPE OF SUPPORT AND ANCHOR. SUBMIT PIPE HANGER AND SUPPORT SCHEDULE SHOWING MANUFACTURER'S FIGURE NUMBER, SIZE, LOCATION, AND FEATURES FOR EACH REQUIRED PIPE HANGER AND SUPPORT.

5. HORIZONTAL—PIPING HANGERS AND SUPPORTS
A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY—FABRICATED HORIZONTAL—PIPING HANGERS AND SUPPORTS COMPLYING WITH MSS SP—58, OF ONE OF THE FOLLOWING MSS TYPES LISTED, SELECTED BY INSTALLER TO SUIT HORIZONTAL—PIPING SYSTEMS, IN ACCORDANCE WITH MSS SP-69 AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. USE ONLY ONE TYPE BY ONE MANUFACTURER FOR EACH PIPING SERVICE. SELECT SIZE OF HANGERS AND SUPPORTS TO EXACTLY FIT PIPE SIZE FOR BARE PIPING, AND TO EXACTLY FIT AROUND PIPING INSULATION WITH SADDLE OR SHIELD FOR INSULATED PIPING. PROVIDE COPPER—PLATED HANGERS AND SUPPORTS FOR COPPER—PIPING SYSTEMS:

6. VERTICAL—PIPING CLAMPS
A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY—FABRICATED VERTICAL—PIPING CLAMPS COMPLYING WITH MSS SP-58, OF ONE OF THE FOLLOWING TYPES LISTED, SELECTED BY INSTALLER TO SUIT VERTICAL PIPING SYSTEMS, IN ACCORDANCE WITH MSS SP-69 AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. SELECT SIZE OF VERTICAL PIPING CLAMPS TO EXACTLY FIT PIPE SIZE OF BARE PIPE. PROVIDE COPPER—PLATED CLAMPS FOR COPPER—PIPING SYSTEMS.

7. HANGER—ROD ATTACHMENTS
A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY—FABRICATED HANGER—ROD ATTACHMENTS COMPLYING WITH MSS SP-—58, OF ONE OF THE FOLLOWING MSS TYPES LISTED, SELECTED BY INSTALLER TO SUIT HORIZONTAL—PIPING HANGERS AND BUILDING ATTACHMENTS, IN ACCORDANCE WITH MSS SP-69 AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. USE ONLY ONE TYPE BY ONE MANUFACTURER FOR EACH PIPING SERVICE. SELECT SIZE OF HANGER—ROD ATTACHMENTS TO SUIT HANGER RODS. PROVIDE COPPER—PLATED HANGER—ROD ATTACHMENTS FOR COPPER—PIPING SYSTEMS.

8. BUILDING ATTACHMENTS
A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE FACTORY—FABRICATED BUILDING ATTACHMENTS COMPLYING WITH MSS SP-58, OF ONE OF THE FOLLOWING MSS TYPES LISTED, SELECTED BY INSTALLER TO SUIT BUILDING SUBSTRATE CONDITIONS, IN ACCORDANCE WITH MSS SP—-69 AND MANUFACTURER'S PUBLISHED PRODUCT INFORMATION. SELECT SIZE OF BUILDING ATTACHMENTS TO SUIT HANGER RODS. PROVIDE COPPER—PLATED BUILDING ATTACHMENTS FOR COPPER—PIPING SYSTEMS.

9. SADDLES AND SHIELDS
A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE SADDLES OR SHIELDS UNDER PIPING HANGERS AND SUPPORTS, FACTORY—FABRICATED, FOR ALL INSULATED PIPING. SIZE SADDLES AND SHIELDS FOR EXACT FIT TO MATE WITH PIPE INSULATION.

10 MISCELLANEOUS MATERIALS
A. METAL FRAMING: PROVIDE PRODUCTS COMPLYING WITH NEMA STD ML 1.
B. STEEL PLATES, SHAPES, AND BARS: PROVIDE PRODUCTS COMPLYING WITH ASTM A36.
C. CEMENT GROUT: PORTLAND CEMENT (ASTM C 150, TYPE | OR TYPE IL) AND CLEAN UNIFORMLY GRADED, NATURAL SAND (ASTM C 404, SIZE NO. 2). MIX AT A RATIO OF 1.0 PART CEMENT TO 3.0 PARTS SAND, BY VOLUME, WITH MINIMUM AMOUNT OF WATER REQUIRED FOR PLACEMENT AND HYDRATION.

11. ROOF EQUIPMENT SUPPORTS
A. GENERAL: WHERE NOT INDICATED TO BE PROVIDED BY THE EQUIPMENT MANUFACTURER, CONSTRUCT ROOF EQUIPMENT SUPPORTS AS DETAILED ON CONSTRUCTION DOCUMENTS.
B. CONSTRUCT OF SIZES US INDICATED, COMPENSATE FOR SLOPE IN ROOF SO TOP OF SUPPORT IS DEAD LEVEL.

12. INSPECTION
A. EXAMINE AREAS AND CONDITIONS UNDER WHICH SUPPORTS AND ANCHORS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

13. INSTALLATION OF BUILDING ATTACHMENTS:
A. INSTALL BUILDING ATTACHMENTS AT REQUIRED LOCATIONS WITHIN CONCRETE OR ON STRUCTURAL STEEL FOR PROPER PIPING SUPPORT. SPACE ATTACHMENTS WITHIN MAXIMUM PÍPING SPAN LENGTH INDICATED IN MSS SP—69. INSTALL ADDITIONAL CONCENTRATED LOADS, INCLUDING VALVES, FLANGES, GUIDES, STRAINERS, EXPANSION JOINTS, AND AT CHANGES IN DIRECTION OF PIPING. INSTALL CONCRETE INSERTS. BEFORE CONCRETE IS PLACED; FASTEN INSERT SECURELY TO FORMS. WHERE CONCRETE WITH COMPRESSIVE STRENGTH LESS THAN 2,500 PSI IS INDICATED, INSTALL REINFORCING BARS THROUGH OPENINGS AT TOP OF INSERTS.

14. INSTALLATION OF HANGERS AND SUPPORTS:
A. GENERAL: — INSTALL HANGERS, SUPPORTS, CLAMPS, AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURE; COMPLY WITH MSS SP—69. ARRANGE FOR GROUPING OF PARALLEL RUNS OF HORIZONTAL PIPING TO BE SUPPORTED TOGETHER ON TRAPEZE TYPE HANGERS WHERE POSSIBLE. INSTALL SUPPORTS WITH MAXIMUM SPACINGS COMPLYING WITH MSS SP—69. WHERE PIPING OF VARIOUS SIZES IS TO BE SUPPORTED TOGETHER BY TRAPEZE HANGERS, SPACE HANGERS FOR SMALLEST PIPE SIZE OR INSTALL INTERMEDIATE SUPPORTS FOR SMALLER DIAMETER PIPE. DO NOT USE WIRE OR PERFORATED METAL TO SUPPORT PIPING, AND DO NOT SUPPORT PIPING FROM OTHER PIPING.
B. INSTALL HANGERS AND SUPPORTS COMPLETE WITH NECESSARY INSERTS, BOLTS, RODS, NUTS, WASHERS, AND OTHER ACCESSORIES. EXCEPT AS OTHERWISE INDICATED FOR EXPOSED CONTINUOUS PIPE RUNS, INSTALL HANGERS AND SUPPORTS OF SAME TYPE AND STYLE AS INSTALLED FOR ADJACENT SIMILAR PIPING.
C. SUPPORT FIRE—WATER PIPING INDEPENDENTLY OF OTHER PIPING.
D. PROVISIONS FOR MOVEMENT:
1. INSTALL HANGERS AND SUPPORTS TO ALLOW CONTROLLED MOVEMENT OF PIPING SYSTEMS AND TO PERMIT FREEDOM OF MOVEMENT BETWEEN PIPE ANCHORS, AND TO FACILITATE ACTION OF EXPANSION JOINTS, EXPANSION LOOPS, EXPANSION BENDS, AND SIMILAR UNITS.
2. LOAD DISTRIBUTION: INSTALL HANGERS AND SUPPORTS SO THAT PIPING LIVE AND DEAD LOADING AND STRESSES FROM MOVEMENT WILL NOT BE TRANSMITTED TO CONNECTED EQUIPMENT.
3. PIPE SLOPES: INSTALL HANGERS AND SUPPORTS TO PROVIDE INDICATED PIPE SLOPES, AND SO THAT MAXIMUM PIPE DEFLECTIONS ALLOWED BY ANSI B31 PRESSURE PIPING CODES ARE NOT EXCEEDED.
E. INSULATED PIPING: COMPLY WITH THE FOLLOWING INSTALLATION REQUIREMENTS.
1. CLAMPS: ATTACH CLAMPS, INCLUDING SPACERS (IF ANY), TO PIPING WITH CLAMPS PROJECTING THROUGH INSULATION; DO NOT EXCEED PIPE STRESSES ALLOWED BY ANSI B31.
2. SHIELDS: WHERE LOW-—COMPRESSIVE—STRENGTH INSULATION OR VAPOR BARRIERS ARE INDICATED ON COLD OR CHILLED WATER PIPING, INSTALL COATED PROTECTIVE SHIELDS. FOR PIPE 8" AND OVER, INSTALL WOOD INSULATION SADDLES.
3. SADDLES: WHERE INSULATION WITHOUT VAPOR BARRIER IS INDICATED, INSTALL PROTECTION SADDLES.

15. INSTALLATION OF ANCHORS:
A. INSTALL ANCHORS AT PROPER LOCATIONS TO PREVENT STRESSES FROM EXCEEDING THOSE PERMITTED BY ANSI B31, AND TO PREVENT TRANSFER OF LOADING AND STRESSES TO CONNECTED EQUIPMENT.
B. FABRICATE AND INSTALL ANCHOR BY WELDING STEEL SHAPES, PLATES AND BARS TO PIPING AND TO STRUCTURE. COMPLY WITH ANSI B31 AND WITH AWS STANDARDS.
C. WHERE EXPANSION COMPENSATORS ARE INDICATED, INSTALL ANCHORS IN ACCORDANCE WITH EXPANSION UNIT MANUFACTURER'S WRITTEN INSTRUCTIONS, TO LIMIT MOVEMENT OF PIPING AND FORCES TO MAXIMUMS RECOMMENDED BY MANUFACTURER FOR EACH UNIT.
D. ANCHOR SPACINGS: WHERE NOT OTHERWISE INDICATED, INSTALL ANCHORS AT ENDS OF PRINCIPAL PIPE—RUNS, AT INTERMEDIATE POINTS IN PIPE—RUNS BETWEEN EXPANSION LOOPS AND BENDS. PROVISIONS FOR PRESET OF ANCHORS AS REQUIRED TO ACCOMMODATE BOTH EXPANSION AND CONTRACTION OF PIPING.

16. EQUIPMENT SUPPORTS:
A. PROVIDE STRUCTURAL STEEL STANDS TO SUPPORT EQUIPMENT NOT FLOOR MOUNTED OR HUNG FROM STRUCTURE. CONSTRUCT OF STRUCTURAL STEEL MEMBERS OR STEEL PIPE AND FITTINGS. PROVIDE FACTORY—FABRICATED TANK SADDLES FOR TANKS MOUNTED ON STEEL STANDS.
a. FURNISH ROOF EQUIPMENT SUPPORTS TO CONTRACTOR FOR INSTALLATION AS PART OF WORK OF DIVISION 7; NOT WORK OF THIS SECTION.

## SECTION 15250 - MECHANICAL INSULATION

1. RELATED DOCUMENTS
A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
B. DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK
A. EXTENT OF MECHANICAL INSULATION REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
B. TYPES OF MECHANICAL INSULATION SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
1. PIPING SYSTEM INSULATION:
a. FLEXIBLE UNICELLULAR, 1/2" THICKNESS.
2. DUCT WORK SYSTEM INSULATION:
a. FIBERGLASS, 2" THICKNESS.
C. REFER TO DIVISION-15 SECTION "SUPPORTS AND ANCHORS" FOR PROTECTION SADDLES, PROTECTION SHIELDS, AND THERMAL HANGER SHIELDS; NOT WORK OF THIS SECTION.
D. REFER TO DIVISION-15 SECTION "MECHANICAL IDENTIFICATION" FOR INSTALLATION OF IDENTIFICATION DEVICES FOR PIPING, DUCTWORK, AND EQUIPMENT; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE
A. FLAME/SMOKE RATINGS: PROVIDE COMPOSITE MECHANICAL INSULATION (INSULATION, JACKETS, COVERINGS, SEALERS, MASTICS AND ADHESIVES) WITH FLAME—SPREAD INDEX OF 25 OR LESS, AND SMOKE—DEVELOPED INDEX OF 50 OR LESS, AS TESTED BY ASTM E 84 (NFPA 255) METHOD.
EXCEPTION: OUTDOOR MECHANICAL INSULATION MAY HAVE FLAME SPREAD INDEX OF 75 AND SMOKE DEVELOPED INDEX OF 150.

4. PIPING INSULATION MATERIALS
A. FLEXIBLE UNICELLULAR PIPING INSULATION: ASTM C 534, TYPE I.
B. JACKETS FOR PIPING INSULATION: ASTM C 921, TYPE | FOR PIPING WITH TEMPERATURES BELOW AMBIENT, TYPE IL FOR PIPING WITH TEMPERATURES ABOVE AMBIENT. TYPE | MAY BE USED FOR ALL PIPING AT INSTALLERS OPTION.
C. ENCASE PIPE FITTINGS INSULATION WITH ONE—PIECE PREMOLDED PVC FITTING COVERS, FASTENED AS PER MANUFACTURER'S RECOMMENDATIONS.
D. ENCASE EXTERIOR PIPING INSULATION WITH ALUMINUM JACKET WITH WEATHERPROOF CONSTRUCTION.
E. STAPLES, BANDS, WIRES, AND CEMENT: AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.
F. ADHESIVES, SEALERS, AND PROTECTIVE FINISHES: AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.

5. DUCTWORK INSULATION MATERIALS
A. JACKETS FOR DUCTWORK INSULATION: ASTM C 921, TYPE | FOR DUCTWORK WITH TEMPERATURES BELOW AMBIENT; TYPE IL FOR DUCTWORK WITH TEMPERATURES ABOVE AMBIENT.
B. DUCTWORK INSULATION ACCESSORIES: PROVIDE STAPLES, BANDS, WIRES, TAPE, ANCHORS, CORNER ANGLES AND SIMILAR ACCESSORIES AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.
C. DUCTWORK INSULATION COMPOUNDS: PROVIDE CEMENTS, ADHESIVES, COATINGS, SEALERS, PROTECTIVE FINISHES AND SIMILAR COMPOUNDS AS RECOMMENDED BY INSULATION MANUFACTURER FOR APPLICATIONS INDICATED.

6. INSPECTION
A. EXAMINE AREAS AND CONDITIONS UNDER WHICH MECHANICAL INSULATION IS TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

7. PLUMBING PIPING SYSTEM INSULATION
A. INSULATION OMITTED: OMIT INSULATION ON CHROME—PLATED EXPOSED PIPING (EXCEPT FOR HANDICAPPED FIXTURES), AIR CHAMBERS, UNIONS, STRAINERS, CHECK VALVES, BALANCE COCKS, FLOW REGULATORS, DRAIN LINES FROM WATER COOLERS, DRAINAGE PIPING LOCATED IN CRAWL SPACES OR TUNNELS, BURIED PIPING, FIRE PROTECTION PIPING, AND PRE—INSULATED EQUIPMENT.
A. COLD PIPING:
1. APPLICATION REQUIREMENTS: INSULATE THE FOLLOWING COLD PLUMBING PIPING SYSTEMS:
a. POTABLE COLD WATER PIPING.
b. INTERIOR ABOVE—GROUND SANITARY DRAIN PIPES WHICH CONDUCT CONDENSATE.
c. INTERIOR ABOVE—GROUND STORM WATER PIPING.
d. PLUMBING VENTS WITHIN 6 LINEAL FEET OF ROOF OUTLET.
e. ROOF DRAIN BODIES.
B. HOT PIPING:
1. APPLICATION REQUIREMENTS: INSULATE THE FOLLOWING HOT PLUMBING PIPING SYSTEMS:
a. POTABLE HOT WATER PIPING.
b. POTABLE HOT WATER RECIRCULATING PIPING.

8. HVAC PIPING SYSTEM INSULATION
A. INSULATION OMITTED: OMIT INSULATION ON HOT PIPING WITHIN RADIATION ENCLOSURES OR UNIT CABINETS; ON COLD PIPING WITHIN UNIT CABINETS PROVIDED PIPING IS LOCATED OVER DRAIN PAN; ON HEATING PIPING BEYOND CONTROL VALVE, LOCATED WITHIN HEATED SPACE; ON CONDENSATE PIPING BETWEEN STEAM TRAP AND UNION; AND ON UNIONS, FLANGES, STRAINERS, FLEXIBLE CONNECTIONS, AND EXPANSION JOINTS.
B. SUB—ZERO PIPING (BELOW OOF (-180C)):
1. APPLICATION REQUIREMENTS: INSULATE THE FOLLOWING SUB—ZERO HVAC PIPING SYSTEMS:
a. LOW TEMPERATURE REFRIGERANT PIPING.

9. DUCTWORK SYSTEM INSULATION
A. DUAL TEMPERATURE DUCTWORK:
1. APPLICATION REQUIREMENTS: INSULATE THE FOLLOWING DUAL TEMPERATURE DUCTWORK:
a. HOT/COLD SUPPLY AND RETURN DUCTWORK BETWEEN FAN DISCHARGE OR HVAC UNIT DISCHARGE AND ROOM TERMINAL OUTLETS, APPLICATION LIMITED TO CONCEALED LOCATIONS.

10. INSTALLATION OF PIPING INSULATION
A. GENERAL: INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT INSULATION SERVES ITS INTENDED PURPOSE.
B. INSTALL INSULATION ON PIPE SYSTEMS SUBSEQUENT TO INSTALLATION OF HEAT TRACING, PAINTING, TESTING, AND ACCEPTANCE OF TESTS.
C. INSTALL INSULATION MATERIALS WITH SMOOTH AND EVEN SURFACES. INSULATE EACH CONTINUOUS RUN OF PIPING WITH FULL-LENGTH UNITS OF INSULATION, WITH SINGLE CUT PIECE TO COMPLETE RUN. DO NOT USE CUT PIECES OR SCRAPS ABUTTING EACH OTHER.
D. CLEAN AND DRY PIPE SURFACES PRIOR TO INSULATING. BUTT INSULATION JOINTS FIRMLY TOGETHER TO ENSURE COMPLETE AND TIGHT FIT OVER SURFACES TO BE COVERED.
E. MAINTAIN INTEGRITY OF VAPOR—BARRIER JACKETS ON PIPE INSULATION, AND PROTECT TO PREVENT PUNCTURE OR OTHER DAMAGE.
F. COVER VALVES, FITTINGS, AND SIMILAR ITEMS IN EACH PIPING SYSTEM WITH EQUIVALENT THICKNESS AND COMPOSITION OF INSULATION AS APPLIED TO ADJOINING PIPE RUN. INSTALL FACTORY MOLDED, PRECUT OR JOB FABRICATED UNITS (AT INSTALLER'S OPTION) EXCEPT WHERE SPECIFIC FORM OR TYPE IS INDICATED.
G. EXTEND PIPING INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR PIPING PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.
H. BUTT PIPE INSULATION AGAINST PIPE HANGER INSULATION INSERTS. FOR HOT PIPES, APPLY 3" WIDE VAPOR BARRIER TAPE OR BAND OVER THE BUTT JOINTS. FOR COLD PIPING APPLY WET COAT OF VAPOR BARRIER LAP CEMENT ON BUTT JOINTS AND SEAL JOINTS WITH 3" WIDE VAPOR BARRIER TAPE OR BAND.

11. INSTALLATION OF DUCTWORK INSULATION
A. GENERAL: INSTALL INSULATION PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT INSULATION SERVES ITS INTENDED PURPOSE.
B. INSTALL INSULATION MATERIALS WITH SMOOTH AND EVEN SURFACES.
C. CLEAN AND DRY DUCTWORK PRIOR TO INSULATING. BUTT INSULATION JOINTS FIRMLY TOGETHER TO ENSURE COMPLETE AND TIGHT FIT OVER SURFACES TO BE COVERED.
D. MAINTAIN INTEGRITY OF VAPOR—BARRIER ON DUCTWORK INSULATION, AND PROTECT IT TO PREVENT PUNCTURE AND OTHER DAMAGE.
E. EXTEND DUCTWORK INSULATION WITHOUT INTERRUPTION THROUGH WALLS, FLOORS, AND SIMILAR DUCTWORK PENETRATIONS, EXCEPT WHERE OTHERWISE INDICATED.
F. DUCTWORK EXPOSED TO WEATHER: PROTECT OUTDOOR INSULATION FROM WEATHER BY INSTALLING OUTDOOR PROTECTIVE FINISH OR JACKETING AS RECOMMENDED BY MANUFACTURER.
G. CORNER ANGLES: EXCEPT FOR OVEN AND HOOD EXHAUST DUCT INSULATION, INSTALL CORNER ANGLES ON EXTERNAL CORNERS OF INSULATION ON DUCTWORK IN EXPOSED FINISHED SPACES BEFORE COVERING WITH JACKETING.

12. PROTECTION AND REPLACEMENT
A. REPLACE DAMAGED INSULATION WHICH CANNOT BE SATISFACTORILY REPAIRED, INCLUDING UNITS WITH VAPOR BARRIER DAMAGE AND MOISTURE SATURATED UNITS.
B. PROTECTION: INSULATION INSTALLER SHALL ADVISE CONTRACTOR OF REQUIRED PROTECTION FOR INSULATION WORK DURING REMAINDER OF CONSTRUCTION PERIOD, TO AVOID DAMAGE AND DETERIORATION.

## SECTION 15300 - FIRE PROTECTION

1. RELATED DOCUMENTS:
A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
B. DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
A. EXTENT OF FIRE PROTECTION WORK IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
B. REFER TO DIVISION—2 SECTIONS FOR FIRE PROTECTION PIPING AND APPURTENANCES EXTERIOR TO BUILDING; NOT WORK OF THIS SECTION.
C. REFER TO DIVISION—10 SECTIONS FOR FIRE EXTINGUISHERS, AND FIRE EXTINGUISHER CABINETS AND ACCESSORIES; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE:
A. CODES AND STANDARDS:
1. CABO—ANSI COMPLIANCE: INSTALL FIRE PROTECTION SYSTEMS IN ACCORDANCE WITH CABO-—ANSI *FIRE ALARM/FIRE SPRINKLER".
2. NFPA COMPLIANCE: INSTALL FIRE PROTECTION SYSTEMS IN ACCORDANCE WITH NFPA 13 "STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS".
3. UL COMPLIANCE: PROVIDE FIRE PROTECTION PRODUCTS IN ACCORDANCE WITH UL STANDARDS; PROVIDE UL LABEL ON EACH PRODUCT.
4. FM COMPLIANCE: PROVIDE FIRE PROTECTION PRODUCTS AND INSTALLATIONS IN ACCORDANCE WITH FM STANDARDS; PROVIDE FM LABEL ON EACH PRODUCT.
5. FIRE DEPARTMENT/MARSHAL COMPLIANCE: INSTALL FIRE PROTECTION SYSTEMS IN ACCORDANCE WITH LOCAL REGULATIONS OF FIRE DEPARTMENT OR FIRE MARSHAL.
6. SCREW THREAD CONNECTIONS: COMPLY WITH LOCAL FIRE DEPARTMENT/ MARSHAL REGULATIONS FOR SIZES, THREADING AND ARRANGEMENT OF CONNECTIONS FOR FIRE DEPARTMENT EQUIPMENT TO SPRINKLER SYSTEMS.

4. SUBMITTALS:
A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR FIRE PROTECTION MATERIALS AND PRODUCTS.
B. SHOP DRAWINGS: SUBMIT SCALED LAYOUT DRAWINGS FOR FIRE PROTECTION PIPE AND FITTINGS INCLUDING, BUT NOT NECESSARILY LIMITED TO, PIPE AND TUBE SIZES, LOCATIONS, ELEVATIONS, AND SLOPES OF HORIZONTAL RUNS, WALL AND FLOOR PENETRATIONS, AND CONNECTIONS. INDICATE INTERFACE AND SPATIAL RELATIONSHIP BETWEEN PIPING AND PROXIMATE EQUIPMENT.
C. APPROVAL DRAWINGS: PREPARE APPROVAL DRAWINGS OF FIRE PROTECTION SYSTEMS INDICATING PIPE SIZES, PIPE LOCATIONS, FITTINGS, SHUTOFFS, EQUIPMENT, ETC. SUBMIT TO AGENCY HAVING JURISDICTION FOR APPROVAL. SUBMIT ONE APPROVED COPY, BEARING STAMP AND/OR SIGNATURE OF AGENCY HAVING JURISDICTION, BEFORE PROCEEDING WITH INSTALLATION.
D. APPROVAL CALCULATIONS: PREPARE HYDRAULIC CALCULATIONS OF FIRE PROTECTION SYSTEMS. SUBMIT TO AGENCY HAVING JURISDICTION FOR APPROVAL. SUBMIT ONE APPROVED COPY, BEARING STAMP AND/OR SIGNATURE OF AGENCY HAVING JURISDICTION, BEFORE PROCEEDING WITH INSTALLATION.
E. CERTIFICATE OF INSTALLATION: SUBMIT CERTIFICATE UPON COMPLETION OF FIRE PROTECTION PIPING WORK WHICH INDICATES THAT WORK HAS BEEN TESTED IN ACCORDANCE WITH NFPA 13, AND ALSO THAT SYSTEM IS OPERATIONAL, COMPLETE, AND HAS NO DEFECTS.
F. RECORD DRAWINGS: AT PROJECT CLOSEOUT, SUBMIT RECORD DRAWINGS OF INSTALLED FIRE PROTECTION PIPING AND PRODUCTS; IN ACCORDANCE WITH REQUIREMENTS OF DIVISION 1.
G. MAINTENANCE DATA: SUBMIT MAINTENANCE DATA AND PARTS LISTS FOR FIRE PROTECTION MATERIALS AND PRODUCTS, INCLUDE THIS DATA, PRODUCT DATA, SHOP DRAWINGS, APPROVAL DRAWINGS, APPROVAL CALCULATIONS, CERTIFICATE OF INSTALLATION, AND RECORD DRAWINGS IN MAINTENANCE MANUAL; IN ACCORDANCE WITH REQUIREMENTS OF DIVISION 1.

5. MATERIALS AND PRODUCTS:
A. GENERAL: PROVIDE PIPING MATERIALS AND FACTORY—FABRICATED PIPING PRODUCTS OF SIZES, TYPES, PRESSURE RATINGS, TEMPERATURE RATINGS, AND CAPACITIES AS INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS. PROVIDE SIZES AND TYPES MATCHING PIPING AND EQUIPMENT CONNECTIONS; PROVIDE FITTINGS OF MATERIALS WHICH MATCH PIPE MATERIALS USED IN FIRE PROTECTION SYSTEMS. WHERE MORE THAN ONE TYPE OF MATERIALS OR PRODUCTS ARE INDICATED, SELECTION IS INSTALLER'S OPTION.

6. BASIC IDENTIFICATION:
A. GENERAL: PROVIDE IDENTIFICATION COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "MECHANICAL IDENTIFICATION", IN ACCORDANCE WITH THE FOLLOWING LISTING:
FIRE PROTECTION PIPING: PLASTIC PIPE MARKERS.
FIRE PROTECTION VALVES: PLASTIC VALVE TAGS.
FIRE PROTECTION SIGNS: PROVIDE THE FOLLOWING SIGNS:
a. AT EACH SPRINKLER VALVE, SIGN INDICATING WHAT PORTION OF SYSTEM VALVE CONTROLS.
b. AT EACH OUTSIDE ALARM DEVICE, SIGN INDICATING WHAT AUTHORITY TO CALL IF DEVICE IS ACTIVATED.

7. BASIC PIPES AND PIPE FITTINGS:
A. GENERAL: PROVIDE PIPES AND PIPE FITTINGS COMPLYING WITH DIVISION—-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS", IN ACCORDANCE WITH THE FOLLOWING LISTING:
B. PIPING 2-1/2" AND LARGER SHALL BE SCHEDULE 10 LIGHTWALL. PIPING 2" AND SMALLER SHALL BE ALLIED XL UNLESS OTHERWISE NOTED.

8. BASIC PIPING SPECIALTIES:
A. GENERAL: PROVIDE PIPING SPECIALTIES COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPING SPECIALTIES", IN ACCORDANCE WITH THE FOLLOWING LISTING:
1. PIPE ESCUTCHEONS.
2. DIELECTRIC UNIONS.
3. DRIP PANS.
4. PIPE SLEEVES.
5. SLEEVE SEALS.
6. FIRE BARRIER PENETRATION SEALS.

9. BASIC SUPPORTS AND ANCHORS:
A. GENERAL: PROVIDE SUPPORTS AND ANCHORS COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "SUPPORTS AND ANCHORS", IN ACCORDANCE WITH THE FOLLOWINGLISTING:
1. ADJUSTABLE STEEL CLEVIS HANGERS, ADJUSTABLE STEEL BAND HANGERS, OR ADJUSTABLE BAND HANGERS, FOR HORIZONTAL—PIPING HANGERS AND SUPPORTS.
2. TWO—BOLT RISER CLAMPS FOR VERTICAL PIPING SUPPORTS.
3. STEEL TUMBUCKLES AND MALLEABLE IRON SOCKETS FOR HANGER—ROD ATTACHMENTS.
4. TOP-BEAM C—CLAMPS, SIDE BEAM OR CHANNEL CLAMPS OR CENTER BEAM CLAMPS FOR BUILDING ATTACHMENTS.

10. BASIC VALVES:
A. GENERAL: PROVIDE VALVES COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION *VALVES", IN ACCORDANCE WITH THE FOLLOWING LISTING:
1. INTERIOR VALVES:
SECTIONAL: GATE VALVES OR BUTTERFLY VALVES; UL LISTED.
CHECK: SWING CHECK VALVES; UL LISTED.

11. SPECIAL VALVES:
A. GENERAL: PROVIDE VALVES, UL LISTED, IN ACCORDANCE WITH THE FOLLOWING LISTING. PROVIDE SIZES AND TYPES WHICH MATE AND MATCH PIPING AND EQUIPMENT CONNECTIONS.
B. DRY—PIPE VALVES: PROVIDE CAST—IRON DRY—PIPE VALVES, DIFFERENTIAL TYPE, 175 PSI WORKING PRESSURE.
C. ALARM CHECK VALVE: PROVIDE CAST—IRON WATER FLOW ALARM CHECK VALVE, 175 PSI WORKING PRESSURE.
D. HOSE OUTLET VALVES: PROVIDE ANGLE HOSE VALVES, 2-1/2" SIZE WHERE NOT OTHERWISE INDICATED.
E. FIRE DEPARTMENT CONNECTION VALVE: PROVIDE FIRE DEPARTMENT CONNECTION IRON SWING CHECK VALVE, 175 PSI RATED WORKING PRESSURE, OF SIZE AND END TYPE INDICATED.
F. COMBINATION PRESSURE RESTRICTING AND ANGLE HOSE VALVE: PROVIDE COMBINATION PRESSURE RESTRICTING AND ANGLE HOSE VALVE, WITH CAST BRASS BODY AND SOLID CAST ALUMINUM RED WHEEL HANDLE, UL LISTED AND FM APPROVED.
FINISH: ROUGH BRASS.
OUTLET: NATIONAL STANDARD THREAD.
G. DETECTOR CHECK VALVES: PROVIDE CAST—IRON BODY DETECTOR CHECK VALVE, BRONZE FITTED, WITH TAPPED BOSSES ON EACH SIDE FOR BY-PASS METER, AIR VENT, AND COVER—MOUNTED EYEBOLT.

12. BASIC METERS AND GAGES:
A. GENERAL: PROVIDE METERS AND GAGES COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "METERS AND GAGES", IN ACCORDANCE WITH THE FOLLOWING LISTING: PRESSURE GAGES, 0-250 PSI RANGE.

13. FIRE PROTECTION SPECIALTIES:
A. GENERAL: PROVIDE FIRE PROTECTION SPECIALTIES, UL LISTED, IN ACCORDANCE WITH THE FOLLOWING LISTING. PROVIDE SIZES AND TYPES WHICH MATE AND MATCH PIPING AND EQUIPMENT CONNECTIONS.
B. WATER FLOW INDICATORS: PROVIDE VANE TYPE WATER FLOW DETECTORS.
C. WATER—MOTOR GONGS: PROVIDE 10" WEATHERPROOF, RED ENAMELED FINISH, WATER—MOTOR GONGS.
D. LOW AIR PRESSURE HORN: PROVIDE LOW AIR PRESSURE HORN AS INDICATED.
E. SUPERVISORY SWITCHES: PROVIDE PRODUCTS RECOMMENDED BY MANUFACTURER FOR USE IN SERVICE INDICATED.

14. AUTOMATIC SPRINKLERS:
A. GENERAL: PROVIDE AUTOMATIC SPRINKLERS OF TYPE INDICATED ON DRAWINGS, AND IN ACCORDANCE WITH THE FOLLOWING LISTING. PROVIDE FUSIBLE LINKS FOR 165F (74C) UNLESS OTHERWISE INDICATED.
UPRIGHT.
SEMI—RECESSED PENDENT.
FLUSH PENDENT.
STANDARD DRY—TYPE PENDENT.
STANDARD DRY—TYPE UPRIGHT.
HORIZONTAL SIDEWALL.
STANDARD DRY—TYPE HORIZONTAL SIDEWALL.
B. FINISH: PROVIDE SPRINKLER FIXTURES IN THE FOLLOWING ARRANGEMENT.
FRONT OF HOUSE (GUEST AREAS — FINISHED CEILINGS) — SEMI—RECESSED PENDENTS WITH CHROME ESCUTCHEON TRIM PLATE.

FRONT OF HOUSE (GUEST AREAS — EXPOSED CEILINGS) — CAST BRASS UPRIGHT HEADS.

BACK OF HOUSE (EMPLOYEE AREAS) — SEMI—RECESSED PENDENTS WITH CHROME ESCUTCHEON TRIM PLATE.
C. SPRINKLER CABINET AND WRENCH: FURNISH STEEL, BAKED RED ENAMELED, SPRINKLER BOX WITH CAPACITY TO STORE 10 SPRINKLERS AND WRENCH SIZED TO SPRINKLERS. THE CABINET SHALL BE INSTALLED ADJACENT TO THE FIRE RISER ASSEMBLY IN THE MECHANICAL ROOM.

15. SIAMESE CONNECTIONS:
A. WALL TYPE SIAMESE CONNECTIONS: PROVIDE WALL TYPE CAST BRASS SIAMESE CONNECTIONS AND ESCUTCHEON PLATE ASSEMBLY, WITH 2, 2-1/2" FIRE DEPARTMENT INLETS WITH FEMALE HOSE CONNECTIONS IN CONFORMANCE WITH LOCAL FIRE DEPARTMENT REQUIREMENTS, FIRE HOSE CONNECTION SCREW THREAD, EQUIPPED WITH INDIVIDUAL DROP CLAPPER VALVES, EQUIPPED WITH PLUGS AND CHAINS, CONSTRUCTION FEATURES AS INDICATED, AND CONSTRUCTED WITH THE FOLLOWING ADDITIONAL CONSTRUCTION FEATURES:
FINISH: POLISHED BRASS OR CHROME PLATE.
INLET PIPE: 4" PIPE (PIPE SIZE).
CAST LETTERING: "AUTO. SPKR.".
ESCUTCHEON: 12" DIAMETER.

16. INSPECTION:
A. GENERAL: EXAMINE AREAS AND CONDITIONS UNDER WHICH FIRE PROTECTION MATERIALS AND PRODUCTS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN A MANNER ACCEPTABLE TO INSTALLER.

17. INSTALLATION OF BASIC IDENTIFICATION:
A. GENERAL: INSTALL MECHANICAL IDENTIFICATION IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "MECHANICAL IDENTIFICATION".
B. INSTALL FIRE PROTECTION SIGNS ON PIPING IN ACCORDANCE WITH NFPA 13 REQUIREMENTS.

18. INSTALLATION OF PIPES AND PIPE FITTINGS:
A. GENERAL: INSTALL PIPES AND PIPE FITTINGS IN ACCORDANCE WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS".
B. COMPLY WITH REQUIREMENTS OF NFPA 13 FOR INSTALLATION OF FIRE PROTECTION PIPING MATERIALS. INSTALL PIPING PRODUCTS WHERE INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PIPING SYSTEMS COMPLY WITH REQUIREMENTS AND SERVE INTENDED PURPOSES.
C. COORDINATE WITH OTHER WORK, INCLUDING PLUMBING PIPING, AS NECESSARY TO INTERFACE COMPONENTS OF FIRE PROTECTION PIPING PROPERLY WITH OTHER WORK.
D. INSTALL DRAIN PIPING AT LOW POINTS OF PIPING SYSTEMS. PROVIDE DRY DRUM DRIPS WHERE INDICATED.
E. INSTALL HOSE OUTLET VALVES IN PIPING WHERE HOSE OUTLETS ARE INDICATED.
F. INSTALL SECTIONAL VALVES IN INLET PIPING, AT BOTTOM OF EACH RISER, AND IN LOOPS AS INDICATED.
G. INSTALL FIRE DEPARTMENT CONNECTION VALVES IN PIPING WHERE FIRE DEPARTMENT CONNECTIONS ARE INDICATED.
H. INSTALL WATER FLOW INDICATORS WHERE INDICATED.
I. MOUNT SUPERVISORY SWITCHES ON EACH SECTIONAL VALVE.
J. INSTALL MANUAL SHUTOFF AT EACH AUDIBLE ALARM STATION.
K. INSTALL VALVED HOSE CONNECTIONS OF SIZES INDICATED, OR 3/4" SIZE IF NOT OTHERWISE INDICATED, ON SPRINKLER AT ENDS OF BRANCH LINES AND CROSS MAINS AT LOCATIONS WHERE INDICATED.
L. INSTALL INSPECTOR'S TEST CONNECTION WHERE INDICATED, OR AT MOST REMOTE POINT FROM RISER. INSTALLATION OF PIPING SPECIALTIES:

19. INSTALLATION OF PIPING SPECIALTIES
A. INSTALL PIPING SPECIALTIES IN ACCORDANCE WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPING SPECIALTIES".

20. INSTALLATION OF SUPPORTS AND ANCHORS:
A. INSTALL SUPPORTS AND ANCHORS, IN ACCORDANCE WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "SUPPORTS AND ANCHORS".

21. INSTALLATION OF VALVES:
A. INSTALL VALVES IN ACCORDANCE WITH DIVISION—15 BASIC MATERIALS AND METHODS SECTION "VALVES".
B. DETECTOR CHECK VALVES: INSTALL IN HORIZONTAL POSITION AS INDICATED, ORIENTATED FOR PROPER FLOW DIRECTION. INSTALL BY-PASS METER WITH GLOBE VALVE AND CHECK VALVE, IN ACCORDANCE WITH MANUFACTURERS INSTALLATION DIRECTIONS.

22. INSTALLATION OF METERS AND GAGES:
A. INSTALL METERS AND GAGES IN ACCORDANCE WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "METERS AND GAGES".

23. INSTALLATION OF FIRE PROTECTION SPECIALTIES:
A. GENERAL: INSTALL FIRE PROTECTION SPECIALTIES AS INDICATED, AND IN ACCORDANCE WITH NFPA 13 AND 14.
B. FURNISH WIRING REQUIREMENTS TO ELECTRICAL INSTALLER FOR ELECTRICAL WIRING OF SUPERVISORY SWITCHES.

24. FIELD QUALITY CONTROL:
A. SPRINKLER PIPING FLUSHING: PRIOR TO CONNECTING SPRINKLER RISERS FOR FLUSHING, FLUSH WATER FEED MAINS, LEAD—-IN CONNECTIONS AND CONTROL PORTIONS OF SPRINKLER PIPING. AFTER FIRE SPRINKLER PIPING INSTALLATION HAS BEEN COMPLETED AND BEFORE PIPING IS PLACED IN SERVICE, FLUSH ENTIRE SPRINKLER SYSTEM, AS REQUIRED TO REMOVE FOREIGN SUBSTANCES, UNDER PRESSURE AS SPECIFIED IN NFPA 13. CONTINUE FLUSHING UNTIL WATER IS CLEAR, AND CHECK TO ENSURE THAT DEBRIS HAS NOT CLOGGED SPRINKLERS.
B. HYDROSTATIC TESTING: AFTER FLUSHING SYSTEM, TEST FIRE SPRINKLER PIPING HYDROSTATICALLY, FOR PERIOD OF 2 HOURS, AT NOT LESS THAN 200 PSI OR AT 50 PSI IN EXCESS OF MAXIMUM STATIC PRESSURE WHEN MAXIMUM STATIC PRESSURE IS IN EXCESS OF 150 PSI. CHECK SYSTEM FOR LEAKAGE OF JOINTS. MEASURE HYDROSTATIC PRESSURE AT LOW POINT OF EACH SYSTEM OR ZONE BEING TESTED.

25. EXTRA STOCK:
A. HEADS: FOR EACH STYLE AND TEMPERATURE RANGE REQUIRED, FURNISH ADDITIONAL SPRINKLER HEADS, AMOUNTING TO ONE UNIT FOR EVERY 100 INSTALLED UNITS, BUT NOT LESS THAN 5 UNITS OF EACH. EXTRA STOCK SHALL BE STORED IN THE SPRINKLER BOX IN THE MECHANICAL ROOM.

## SECTION 15411 - POTABLE WATER SYSTEMS

1. RELATED DOCUMENTS:
A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
B. DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
A. EXTENT OF POTABLE WATER SYSTEMS WORK, IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
B. INSULATION FOR POTABLE WATER PIPING IS SPECIFIED IN OTHER DIVISION-15 SECTIONS, AND IS INCLUDED WAS WORK OF THIS SECTION.
C. REFER TO OTHER DIVISION—15 SECTIONS FOR PLUMBING EQUIPMENT; NOT WORK OF THIS SECTION.
D. REFER TO OTHER DIVISION—15 SECTIONS FOR PLUMBING FIXTURES; NOT WORK OF THIS SECTION.
E. REFER TO DIVISION-2 SECTIONS FOR TRENCHING AND BACKFILL REQUIRED IN CONJUNCTION WITH EXTERIOR WATER PIPING; NOT WORK OF THIS SECTION.
F. TRENCHING AND BACKFILL REQUIRED IN CONJUNCTION WITH POTABLE WATER PIPING INSIDE OF BUILDING FOUNDATIONS IS SPECIFIED IN DIVISION—2 SECTIONS, AND IS INCLUDED AS WORK OF THIS SECTION.

3. CODES AND STANDARDS:
A. PLUMBING CODE COMPLIANCE: COMPLY WITH APPLICABLE PORTIONS OF THE ADOPTED CODE OF THE AUTHORITY HAVING JURISDICTION PERTAINING TO SELECTION AND INSTALLATION OF PLUMBING MATERIALS AND PRODUCTS.

4. MATERIALS AND PRODUCTS:
A. GENERAL: PROVIDE PIPING MATERIALS AND FACTORY—FABRICATED PIPING PRODUCTS OF SIZES, TYPES, PRESSURE RATINGS, TEMPERATURE RATINGS, AND CAPACITIES AS INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS. PROVIDE MATERIALS AND PRODUCTS COMPLYING WITH THE LOCAL CODE AUTHORITY HAVING JURISDICTION WHERE APPLICABLE. PROVIDE SIZES AND TYPES MATCHING PIPING AND EQUIPMENT CONNECTIONS; PROVIDE FITTINGS OF MATERIALS WHICH MATCH PIPE MATERIALS USED IN POTABLE WATER SYSTEMS. WHERE MORE THAN ONE TYPE OF MATERIALS OR PRODUCTS ARE INDICATED, SELECTION IS INSTALLER'S OPTION.

5. BASIC IDENTIFICATION:
A. GENERAL: PROVIDE IDENTIFICATION COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "MECHANICAL IDENTIFICATION", IN ACCORDANCE WITH THE FOLLOWING LISTING:
1. POTABLE WATER PIPING: PLASTIC PIPE MARKERS.
2. WATER SERVICE: UNDERGROUND—TYPE PLASTIC LINE MARKERS.
3. POTABLE WATER VALVES: PLASTIC VALVE TAGS.

6. BASIC PIPES AND PIPE FITTINGS:
A. GENERAL: PROVIDE PIPES AND PIPE FITTINGS COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS", IN ACCORDANCE WITH THE FOLLOWING LISTING:

7. INTERIOR WATER PIPING:
A. PIPE SIZE 2" AND SMALLER: SEE PLANS FOR SPECIFICATION.
B. PIPE SIZE 2-1/2" AND LARGER: SEE PLANS FOR SPECIFICATION.

8. EXTERIOR WATER PIPING:
A. TUBE SIZE 3/4" AND SMALLER: SEE PLANS FOR SPECIFICATION.
B. TUBE SIZE 1" THROUGH 2-1/2":. SEE PLANS FOR SPECIFICATION.

9. BASIC PIPING SPECIALTIES:
A. GENERAL: PROVIDE PIPING SPECIALTIES COMPLYING WITH DIVISION—-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPING SPECIALTIES", IN ACCORDANCE WITH THE FOLLOWING LISTING:
1. PIPE ESCUTCHEONS.
2. LOW-PRESSURE Y—TYPE PIPELINE STRAINERS.
3. DIELECTRIC UNIONS.
4. MECHANICAL SLEEVE SEALS.
5. FIRE BARRIER PENETRATION SEALS.
6. WATER HAMMER ARRESTERS.
7. DRIP PANS.,
8. PIPE SLEEVES.
9. SLEEVE SEALS.

10. BASIC SUPPORTS AND ANCHORS.
A. GENERAL: PROVIDE SUPPORTS AND ANCHORS COMPLYING WITH DIVISION-15 BASIC MECHANICAL MATERIAL AND METHODS SECTION "SUPPORTS AND ANCHORS", IN ACCORDANCE WITH THE FOLLOWING LISTING:
B. ADJUSTABLE STEEL CLEVISES AND ADJUSTABLE PIPE SADDLE SUPPORTS FOR HORIZONTAL PIPING HANGERS AND SUPPORTS.
C. TWO—BOLT RISER CLAMPS FOR VERTICAL PIPING SUPPORTS.
D. PROTECTION SHIELDS FOR INSULATED PIPING SUPPORT IN HANGERS.

11. BASIC VALVES:
A. GENERAL: PROVIDE VALVES COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "VALVES", IN ACCORDANCE WITH THE FOLLOWING LISTING:
B. SECTIONAL VALVES:
1. 2" AND SMALLER: GATE VALVES OR BALL VALVES.
2.2-1/2" AND LARGER: GATE VALVES OR BUTTERFLY VALVES.
C. SHUTOFF VALVES:
1.2" AND SMALLER: GATE VALVES OR BALL VALVES.
2.2-1/2" AND LARGER: GATE VALVES.
D. DRAIN VALVES:
1.2" AND SMALLER: GATE VALVES OR BALL VALVES.
2. 2-1/2* AND LARGER: GATE VALVES.
E. CHECK VALVES:
1. ALL SIZES: SWING CHECK VALVES

12. BALANCE COCKS:
A. THREADED ENDS 2" AND SMALLER: CLASS 125, BRONZE BODY, BRONZE PLUG, SCREW DRIVER OPERATED, STRAIGHT, OR ANGLE PATTERN.
B. SOLDERED ENDS 2" AND SMALLER: CLASS 125, BRONZE BODY, BRONZE PLUG, SCREW DRIVER OPERATED, STRAIGHT OR ANGLE PATTERN.

13. BIBBS AND FAUCETS:
A. HOSE BIBBS:
1. THREADED END: BRONZE BODY, RENEWABLE COMPOSITION DISC, TEE HANDLE, 3/4" NPT INLET, 3/4" HOSE OUTLET.
B. SILL FAUCETS:
1. THREADED END: BRONZE BODY, RENEWABLE COMPOSITION DISC, WHEEL HANDLE, 3/4" NPT INLET, 3/4" HOSE OUTLET.
2. SOLDERED END: BRONZE BODY, RENEWABLE COMPOSITION DISC, WHEEL HANDLE, 3/4" SOLDER INLET, 3/4" HOSE OUTLET.

14. HYDRANTS:
A. RECESSED NON—FREEZE WALL HYDRANTS: CAST-BRONZE BOX HYDRANT, CHROME PLATED FACE, TEE HANDLE KEY, BRONZE CASING, LENGTH TO SUIT WALL THICKNESS, VACUUM BREAKER, HINGED LOCKING COVER, 3/4" INLET, HOSE OUTLET.
B. PROJECTING NON—FREEZE WALL HYDRANTS: CAST—BRONZE HYDRANT, CHROME PLATED FACE, TEE HANDLE KEY, BRONZE CASING, LENGTH TO SUIT WALL THICKNESS, VACUUM BREAKER, 3/4" INLET, HOSE OUTLET,
C. FLOOR LEVEL NON—FREEZE HYDRANTS: BRONZE HYDRANT, ROUGH BRONZE BOX, TEE HANDLE KEY, BRONZE CASING, LENGTH TO SUIT DEPTH OF BURY, DRAIN HOLE, VACUUM BREAKER, HINGED LOCKING COVER, 3/4" INLET, HOSE OUTLET.
D. NON-FREEZE POST HYDRANTS: BRONZE HYDRANT, TEE HANDLE KEY, BRONZE CASING WITH CAST-IRON CASING GUARD, LENGTH TO SUIT DEPTH OF BURY, DRAIN HOLE, VACUUM BREAKER, 3/4" INLET, HOSE OUTLET.

15. BACKFLOW PREVENTERS:
A. GENERAL: PROVIDE BACKFLOW PREVENTERS AS SCHEDULED IN THE PLUMBING DRAWINGS. IN ACCORDANCE WITH ASSE STANDARD 1013.

16. PRESSURE REGULATING VALVES:
A. GENERAL: PROVIDE PRESSURE REGULATING VALVES, SINGLE SEATED, DIRECT OPERATED TYPE, BRONZE BODY, INTEGRAL STROINER, COMPLYING WITH REQUIREMENTS OF ASSE STANDARD 1003. SIZE FOR MAXIMUM FLOW RATE AND INLET AND OUTLET PRESSURES INDICATED ON DRAWINGS.

17. BASIC EXPANSION COMPENSATION:
A. GENERAL: PROVIDE EXPANSION COMPENSATION PRODUCTS COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "EXPANSION COMPENSATION", IN ACCORDANCE WITH THE FOLLOWING LISTING:
1. EXPANSION COMPENSATORS.
2. PIPE ALIGNMENT GUIDES.

18. C METERS AND GAGES:
A. GENERAL: PROVIDE METERS AND GAGES COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "METERS AND GAGES", IN ACCORDANCE WITH THE FOLLOWING LISTING:
1. GLASS THERMOMETERS.
2. PRESSURE GAGES.

19. WATER METER
A. GENERAL: PROVIDE WATER METER AND RELATED PIPING CONFORMING TO APPLICABLE LOCAL UTILITY COMPANY REGULATIONS AND AWWA STANDARDS.
B. WATER METER: PROVIDED BY LOCAL UTILITY COMPANY. PROVIDE ROUGHING-IN AND BYPASS FOR METER IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS,

20. RELIEF VALVES:
A. GENERAL: PROVIDE RELIEF VALVES AS INDICATED, OF SIZE AND CAPACITY AS SELECTED BY INSTALLER FOR PROPER RELIEVING CAPACITY, IN ACCORDANCE WITH ASME BOILER AND PRESSURE VESSEL CODE.
B. COMBINED PRESSURE—TEMPERATURE RELIEF VALVES: BRONZE BODY, TEST LEVER, THERMOSTAT, COMPLYING WITH ANSI Z21.22 LISTING REQUIREMENTS FOR TEMPERATURE DISCHARGE CAPACITY. PROVIDE TEMPERATURE RELIEF AT 2100F (990C), AND PRESSURE RELIEF AT 150 PSI.
21. INSPECTION:
A. GENERAL: EXAMINE AREAS AND CONDITIONS UNDER WHICH POTABLE WATER SYSTEMS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

22. INSTALLATION OF BASIC IDENTIFICATION:
A. GENERAL: INSTALL MECHANICAL IDENTIFICATION IN ACCORDANCE WITH DIVISION=15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "MECHANICAL IDENTIFICATION".

23. INSTALLATION OF POTABLE WATER DISTRIBUTION PIPING:
A. GENERAL: INSTALL WATER DISTRIBUTION PIPING IN ACCORDANCE WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS".
B. INSTALL PIPING WITH 1/32" PER FOOT (1/4%) DOWNWARD SLOPE TOWARDS DRAIN POINT WERE LINES ARE EXPOSED TO FREEZING.
C. INSTALL PIPING LEVEL WITH NO PITCH.
D. LOCATE GROUPS OF PIPES PARALLEL TO EACH OTHER, SPACED TO PERMIT APPLYING FULL INSULATION AND SERVICING OF VALVES.

24. INSTALLATION OF EXTERIOR WATER PIPING:
A. GENERAL: INSTALL EXTERIOR WATER SERVICE PIPING SYSTEM IN COMPLIANCE WITH LOCAL GOVERNING REGULATIONS.
B. STREET MAIN CONNECTION: ARRANGE AND PAY FOR TAP IN WATER MAIN, OF SIZE AND IN LOCATION INDICATED, BY LOCAL WATER UTILITY COMPANY.
C. WATER SERVICE PIPING: EXTEND WATER SERVICE PIPING OF SIZE AND IN LOCATION INDICATED TO WATER SERVICE ENTRANCE AT BUILDING. PROVIDE SLEEVE IN FOUNDATION WALL FOR WATER SERVICE ENTRY; MAKE ENTRY WATERTIGHT. PROVIDE SHUTOFF VALVE AT WATER SERVICE ENTRY INSIDE BUILDING; STRAINER, PRESSURE GAGE, TEST TEE WITH VALVE.
D. COPPER TUBE: INSTALL IN ACCORDANCE WITH RECOMMENDED PROCEDURES OF THE COPPER DEVELOPMENT ASSOCIATION.
E. DUCTILE—IRON PIPE: INSTALL IN ACCORDANCE WITH AWWA C-60.

25. INSTALLATION OF PIPING SPECIALTIES:
A. INSTALL PIPING SPECIALTIES IN ACCORDANCE WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPING SPECIALTIES".

26. INSTALLATION OF SUPPORTS AND ANCHORS:
A. INSTALL SUPPORTS AND ANCHORS IN ACCORDANCE WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "SUPPORTS AND ANCHORS".

27. INSTALLATION OF VALVES:
A. INSTALL VALVES IN ACCORDANCE WITH DIVISION—-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION VALVES".
B. SECTIONAL VALVES: INSTALL ON EACH BRANCH AND RISER, CLOSE TO MAIN, WHERE BRANCH OR RISER SERVES 2 OR MORE PLUMBING FIXTURES OR EQUIPMENT CONNECTIONS, AND ELSEWHERE AS INDICATED.
C. SHUTOFF VALVES: INSTALL ON INLET OF EACH PLUMBING EQUIPMENT ITEM, AND ON INLET OF EACH PLUMBING FIXTURE, AND ELSEWHERE AS INDICATED.
D. DRAIN VALVES: INSTALL ON EACH PLUMBING EQUIPMENT ITEM LOCATED TO COMPLETELY DRAIN EQUIPMENT FOR SERVICE OR REPAIR. INSTALL AT BASE OF EACH RISER, AT BASE OF EACH RISE OR DROP IN PIPING SYSTEM, AND ELSEWHERE WHERE INDICATED OR REQUIRED TO COMPLETELY DRAIN POTABLE WATER SYSTEM.
E. CHECK VALVES: INSTALL ON DISCHARGE SIDE OF EACH PUMP, AND ELSEWHERE AS INDICATED.
F. BALANCE COCKS: INSTALL IN EACH HOT WATER RECIRCULATING LOOP, AND ELSEWHERE AS INDICATED.
G. HOSE BIBBS: INSTALL ON EXPOSED PIPING WHERE INDICATED, WITH VACUUM BREAKER.
H. SILL FAUCETS: INSTALL ON CONCEALED PIPING WHERE INDICATED WITH VACUUM BREAKER
I. HYDRANTS: — INSTALL WHERE INDICATED, IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.

28. INSTALLATION OF BACKFLOW PREVENTERS:
A. INSTALL BACKFLOW PREVENTERS WHERE INDICATED, AND WHERE REQUIRED BY LOCAL CODE REQUIREMENTS.

29. INSTALLATION OF PRESSURE REGULATING VALVES:
A. INSTALL PRESSURE REGULATING VALVES WHERE INDICATED. PROVIDE INLET AND OUTLET SHUTOFF VALVES, AND THROTTLING VALVE BYPASS. PROVIDE PRESSURE GAGE ON VALVE OUTLET.

30. INSTALLATION OF EXPANSION COMPENSATION PRODUCTS:
A. INSTALL EXPANSION COMPENSATION PRODUCTS ON HOT WATER AND HOT WATER RECIRCULATING PIPING IN ACCORDANCE WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "EXPANSION COMPENSATION".

31. INSTALLATION OF METERS AND GAGES:
A. INSTALL METERS AND GAGES IN ACCORDANCE WITH DIVISION—-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "METERS AND GAGES".

32. EQUIPMENT CONNECTIONS:
A. PIPING RUNOUTS TO FIXTURES: PROVIDE HOT AND COLD WATER PIPING RUNOUTS TO FIXTURES OF SIZES INDICATED, BUT IN NO CASE SMALLER THAN REQUIRED BY UNIFORM PLUMBING CODE.
B. MECHANICAL EQUIPMENT CONNECTIONS: CONNECT HOT AND COLD WATER PIPING SYSTEM TO MECHANICAL EQUIPMENT AS INDICATED, AND COMPLY WITH EQUIPMENT MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE SHUTOFF VALVE AND UNION FOR EACH CONNECTION, PROVIDE DRAIN VALVE ON DRAIN CONNECTION.

33. FIELD QUALITY CONTROL:
A. PIPING TESTS: TEST POTABLE WATER PIPING IN ACCORDANCE WITH TESTING REQUIREMENTS OF DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS".

34. ADJUSTING AND CLEANING:
A. CLEANING, FLUSHING, AND INSPECTING: CLEAN, FLUSH, AND INSPECT POTABLE WATER SYSTEMS IN ACCORDANCE WITH REQUIREMENTS OF DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS".
B. DISINFECTION: DISINFECT WATER SERVICE LINE IN ACCORDANCE WITH AWWA C601. DISINFECT POTABLE WATER SYSTEM IN ACCORDANCE WITH THE CODE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.

## SECTION 15412 - SOIL AND WASTE SYSTEMS

1. RELATED DOCUMENTS:
A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
B. DIVISION 15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
A. EXTENT OF SOIL AND WASTE SYSTEMS WORK, IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
B. EXTERIOR SANITARY SEWER SYSTEM IS SPECIFIED IN APPLICABLE DIVISION—2 AND DIVISION—15 SECTIONS, AND IS INCLUDED AS WORK OF THIS SECTION.
C. TRENCHING AND BACKFILLING REQUIRED IN CONJUNCTION WITH UNDERGROUND BUILDING DRAIN PIPING IS SPECIFIED IN APPLICABLE DIVISION—-2 AND DIVISION-15 SECTIONS, AND IS INCLUDED AS WORK OF THIS SECTION.
D. REFER TO DIVISION—7 SECTION "FLASHING AND SHEET METAL" FOR FLASHINGS REQUIRED IN CONJUNCTION WITH SOIL AND WASTE SYSTEMS; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE:
A. CODES AND STANDARDS:
1. PLUMBING CODE COMPLIANCE: COMPLY WITH APPLICABLE PORTIONS OF THE LOCAL ADOPTED CODE OF THE AUTHORITY HAVING JURISDICTION PERTAINING TO PLUMBING MATERIALS CONSTRUCTION AND INSTALLATION OF PRODUCTS.
2. ANSI COMPLIANCE: COMPLY WITH APPLICABLE ANSI STANDARDS PERTAINING TO MATERIALS, PRODUCTS, AND INSTALLATION OF GRAVITY SEWER SYSTEMS.
3. ASSE COMPLIANCE: COMPLY WITH APPLICABLE ASSE STANDARDS PERTAINING TO MATERIALS, PRODUCTS, AND INSTALLATION OF GRAVITY SEWER SYSTEMS.
4. PDI COMPLIANCE: COMPLY WITH APPLICABLE PDI STANDARDS PERTAINING TO PRODUCTS AND INSTALLATION OF SOIL AND WASTE SYSTEMS.

4. MATERIALS AND PRODUCTS:
A. GENERAL: PROVIDE PIPING MATERIALS AND FACTORY—FABRICATED PIPING PRODUCTS OF SIZES, TYPES, PRESSURE RATINGS, AND CAPACITIES AS INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS. PROVIDE SIZES AND TYPES MATCHING PIPING AND EQUIPMENT CONNECTIONS; PROVIDE FITTINGS OF MATERIALS WHICH MATCH PIPE MATERIALS USED IN SOIL AND WASTE SYSTEMS. WHERE MORE THAN ONE TYPE OF MATERIALS OR PRODUCTS ARE INDICATED, SELECTION IS INSTALLER'S OPTION.

5. BASIC IDENTIFICATION:
A. GENERAL: PROVIDE IDENTIFICATION COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "MECHANICAL IDENTIFICATION", IN ACCORDANCE WITH THE FOLLOWING LISTING:
1. ABOVE GROUND SOIL, WASTE, AND VENT PIPING: PLASTIC PIPE MARKERS,
2. UNDERGROUND BUILDING DRAIN PIPING: UNDERGROUND—TYPE PLASTIC LINE MARKERS.

6. BASIC PIPES AND PIPE FITTINGS:
A. GENERAL: PROVIDE PIPES AND PIPE FITTINGS COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS", IN ACCORDANCE WITH THE FOLLOWING LISTING:
B. ALL DRAIN, WASTE AND VENT PIPING:
1. PIPE SIZE 8" AND SMALLER: SEE PLANS FOR SPECIFICATION.

7. BASIC PIPING SPECIALTIES:
A. GENERAL: PROVIDE PIPING SPECIALTIES COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPING SPECIALTIES", IN ACCORDANCE WITH THE FOLLOWING LISTING:
1. PIPE ESCUTCHEONS.
2. MECHANICAL SLEEVE SEALS.
3. PIPE SLEEVES.
4. SLEEVE SEALS.

8. BASIC SUPPORTS AND ANCHORS:
A. GENERAL: PROVIDE SUPPORTS AND ANCHORS COMPLYING WITH DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "SUPPORTS AND ANCHORS" IN ACCORDANCE WITH THE FOLLOWING LISTING:
1. ADJUSTABLE STEEL CLEVIS HANGERS, STEEL PIPE CLAMPS, AND PIPE SADDLE SUPPORTS FOR HORIZONTAL PIPING HANGERS AND SUPPORTS.
2. TWO—BOLT RISER CLAMPS FOR VERTICAL PIPING SUPPORTS.
3. CONCRETE INSERTS, C—CLAMPS, AND STEEL BRACKETS FOR BUILDING ATTACHMENTS.

9. DRAINAGE PIPING PRODUCTS:
A. GENERAL: PROVIDE FACTORY—FABRICATED DRAINAGE PIPING PRODUCTS OF SIZE AND TYPE INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS AND GOVERNING REGULATIONS.
B. CLEANOUT PLUGS: COST—-BRONZE OR BRASS, THREADS COMPLYING WITH ANSI B2.1, COUNTERSUNK HEAD.
C. FLOOR CLEANOUTS: CAST—IRON BODY AND FRAME; CLEANOUT PLUG; ADJUSTABLE ROUND TOP AS FOLLOWS:
1. NICKEL-BRONZE TOP: MANUFACTURES STANDARD CAST UNIT OF THE PATTERN INDICATED.
a. PATTEM: EXPOSED RIM TYPE, WITH RECESS TO RECEIVE 1/8" THICK RESILIENT FLOOR FINISH.
D. WALL CLEANOUTS: CAST-IRON BODY ADAPTABLE TO PIPE WITH CAST-BRONZE OR BRASS CLEANOUT PLUG; STAINLESS STEEL COVER INCLUDING SCREWS.
E. FLASHING FLANGES: CAST—IRON WATERTIGHT STACK OR WALL SLEEVE WITH MEMBRANE FLASHING RING. PROVIDE UNDERDECK CLAMP AND SLEEVE LENGTH AS REQUIRED.
F. VENT FLASHING SLEEVES: CAOST-IRON CAULKING TYPE ROOF COUPLING FOR CAST—IRON STACKS, CAST—IRON THREADED TYPE ROOF COUPLING FOR STEEL STACKS, AND CAST—BRONZE STACK FLASHING SLEEVE FOR COPPER TUBING.

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REGISTERED ARCHITECT CHRISTOPHER ROYSTER 20198 STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
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SPECIFICATIONS

| DATE | ISSUE FOR PERMIT | REMARKS |
|---|---|---|
| 03/03/2022 | ISSUE FOR PERMIT | |

| | |
|---|---|
| PA/PM: | STEVEN COX |
| DRAWN BY.: | C.B. |
| JOB NO.: | DAL21-0063-00 |

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# HAT CREEK BURGER - PROTOTYPE 1.1 TABLE OF CONTENTS

10. FLOOR DRAINS:
   A. GENERAL: PROVIDE FLOOR DRAINS OF SIZES AND TYPES AS INDICATED ON DRAWINGS

11. TRAP PRIMERS:
   A. GENERAL: PROVIDE BRONZE TRAP PRIMER VALVE WITH AUTOMATIC VACUUM BREAKER, COMPLYING WITH ASSE 1018, WITH 1/2" CONNECTIONS MATCHING MATING PIPING SYSTEM. TRAP PRIMERS SHALL BE CONCEALED WITHIN THE WALL FRAMING, AND FINISHED WITH A WALL MOUNTED ACCESSIBLE COVER PLATE.

12. INSPECTION:
   A. EXAMINE SUBSTRATES AND CONDITIONS UNDER WHICH SOIL AND WASTE SYSTEMS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

13. INSTALLATION OF BASIC IDENTIFICATION:
   A. GENERAL: INSTALL MECHANICAL IDENTIFICATION IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "MECHANICAL IDENTIFICATION".

14. INSTALLATION OF ABOVE GROUND PIPING:
   A. GENERAL: INSTALL SOIL AND WASTE PIPING IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS", AND WITH CODE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

15. INSTALLATION OF BUILDING DRAIN PIPING:
   A. GENERAL: INSTALL UNDERGROUND BUILDING DRAINS AS INDICATED AND IN ACCORDANCE WITH THE CODE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION. LAY UNDERGROUND BUILDING DRAINS BEGINNING AT LOW POINT OF SYSTEMS, TRUE TO GRADES AND ALIGNMENT INDICATED WITH UNBROKEN CONTINUITY OF INVERT. PLACE BELL ENDS OF PIPING FACING UPSTREAM. INSTALL REQUIRED GASKETS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS FOR USE OF LUBRICANTS, CEMENTS, AND OTHER SPECIAL INSTALLATION REQUIREMENTS. CLEAN INTERIOR OF PIPING OF DIRT AND OTHER SUPERFLUOUS MATERIAL AS WORK PROGRESSES. MAINTAIN SWAB OR DRAG IN LINE AND PULL PAST EACH JOINT AS IT IS COMPLETED. PLACE PLUGS IN ENDS OF UNCOMPLETED PIPING AT END OF DAY OR WHENEVER WORK STOPS.
   B. INSTALL SOIL AND VENT PIPING PITCHED TO DRAIN AT MINIMUM SLOPE OF 1/4" PER FOOT (2%) FOR PIPING 3" AND SMALLER, AND 1/8" PER FOOT (1%) FOR PIPING 4" AND LARGER.

16. INSTALLATION OF PIPING SPECIALTIES:
   A. INSTALL PIPING SPECIALTIES IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPING SPECIALTIES".

17. INSTALLATION OF SUPPORTS AND ANCHORS:
   A. INSTALL SUPPORTS AND ANCHORS IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "SUPPORTS AND ANCHORS".

18. INSTALLATION OF DRAINAGE PIPING PRODUCTS:
   A. CLEANOUTS: INSTALL IN ABOVE GROUND PIPING AND BUILDING DRAIN PIPING OS INDICATED, AS REQUIRED BY CODE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION; AND AT EACH CHANGE IN DIRECTION OF PIPING GREATER THAN 45°; AT MINIMUM INTERVALS OF 50' FOR PIPING 4" AND SMALLER AND 100' FOR LARGER PIPING; AND AT BASE OF EACH VERTICAL SOIL OR WASTE STACK. INSTALL FLOOR AND WALL CLEANOUT COVERS FOR CONCEALED PIPING, SELECT TYPE TO MATCH ADJACENT BUILDING FINISH.
   B. FLASHING FLANGES: INSTALL FLASHING FLANGE AND CLAMPING DEVICE WITH EACH STACK AND CLEANOUT PASSING THROUGH WATERPROOF MEMBRANES.
   C. VENT FLASHING SLEEVES: INSTALL ON STACKS PASSING THROUGH ROOF, SECURE OVER STACK FLASHING IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

19. INSTALLATION OF FLOOR DRAINS:
   A. GENERAL: INSTALL FLOOR DRAINS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND IN LOCATIONS INDICATED.
   B. COORDINATE FLASHING WORK WITH WORK OF WATERPROOFING AND ADJOINING SUBSTRATE WORK.
   C. COORDINATE WITH SOIL AND WASTE PIPING AS NECESSARY TO INTERFACE FLOOR DRAINS WITH DRAINAGE PIPING SYSTEMS.
   D. INSTALL FLOOR DRAINS AT LOW POINTS OF SURFACE AREAS TO BE DRAINED, OR AS INDICATED. SET TOPS OF DRAINS FLUSH WITH FINISHED FLOOR.
   E. INSTALL DRAIN FLASHING COLLAR OR FLANGE SO THAT NO LEAKAGE OCCURS BETWEEN DRAIN AND ADJOINING FLOORING. MAINTAIN INTEGRITY OF WATERPROOF MEMBRANES, WHERE PENETRATED.
   F. POSITION DRAINS SO THAT THEY ARE ACCESSIBLE AND EASY TO MAINTAIN.

20. INSTALLATION OF TRAP PRIMERS:
   A. GENERAL: INSTALL TRAP PRIMERS AS INDICATED, AND IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. PITCH PIPING TOWARD DRAIN TRAP, MINIMUM OF 1/8" PER FOOT (1%). ADJUST TRAP PRIMER FOR PROPER FLOW.

21. EQUIPMENT CONNECTIONS:
   A. PIPING RUNOUTS TO FIXTURES: PROVIDE SOIL AND WASTE PIPING RUNOUTS TO PLUMBING FIXTURES AND DRAINS, WITH APPROVED TRAP, OF SIZES INDICATED; BUT IN NO CASE SMALLER THAN REQUIRED BY CODE REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.
   B. LOCATE PIPING RUNOUTS AS CLOSE AS POSSIBLE TO BOTTOM OF FLOOR SLAB SUPPORTING FIXTURES OR DRAINS.

22. FIELD QUALITY CONTROL:
   A. PIPING TESTS: TEST SOIL AND WASTE SYSTEMS IN ACCORDANCE WITH REQUIREMENTS OF THE LOCAL AUTHORITY HAVING JURISDICTION.

23. ADJUSTING AND CLEANING:
   A. CLEAN, FLUSH, AND INSPECT SOIL AND WASTE PIPING IN ACCORDANCE WITH REQUIREMENTS OF DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS".

24. PROTECTION:
   A. PROTECT DRAINS DURING REMAINDER OF CONSTRUCTION PERIOD, TO AVOID CLOGGING WITH CONSTRUCTION MATERIALS AND DEBRIS, AND TO PREVENT DAMAGE FROM TRAFFIC AND CONSTRUCTION WORK.

## SECTION 15420 - PLUMBING EQUIPMENT

1. RELATED DOCUMENTS:
   A. DRAWINGS AND GENERAL PROVISIONS AND CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATIONS SECTIONS, APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
   A. EXTENT OF PLUMBING EQUIPMENT WORK IS INDICATED ON DRAWINGS AND PROVISIONS OF THIS SECTION, INCLUDING SCHEDULES AND EQUIPMENT LISTS ASSOCIATED WITH EITHER DRAWINGS OR THIS SECTION.
   B. TYPES OF PLUMBING EQUIPMENT REQUIRED FOR PROJECT INCLUDE THE FOLLOWING:
      1. DOMESTIC WATER HEATERS.
         a. COMMERCIAL GAS-FIRED WATER HEATERS.
      2. INTERCEPTORS.
         a. GREASE INTERCEPTORS

3. QUALITY ASSURANCE:
   A. UL AND NEMA COMPLIANCE: PROVIDE ELECTRIC MOTORS AND ELECTRICAL COMPONENTS REQUIRED AS PART OF PLUMBING EQUIPMENT, WHICH HAVE BEEN LISTED AND LABELED BY UNDERWRITERS LABORATORIES AND COMPLY WITH NEMA STANDARDS.
   B. NEC COMPLIANCE: COMPLY WITH NATIONAL ELECTRICAL CODE (ANSI/NFPA 70) AS APPLICABLE TO INSTALLATION AND ELECTRICAL CONNECTIONS OF ANCILLARY ELECTRICAL COMPONENTS OF PLUMBING EQUIPMENT.
   C. ANSI COMPLIANCE: COMPLY WITH ANS] 2223.1 (NFPA 54) "NATIONAL FUEL GAS CODE", AS APPLICABLE TO INSTALLATION OF GAS-FIRED WATER HEATERS.
   D. AGA AND NSF LABELS: PROVIDE WATER HEATERS WHICH HAVE BEEN LISTED AND LABELED BY AMERICAN GAS ASSOCIATION AND NATIONAL SANITATION FOUNDATION.
   E. ASME CODE SYMBOL STAMPS: FOR THE FOLLOWING EQUIPMENT, COMPLY WITH ASME BOILER AND PRESSURE VESSEL CODE FOR CONSTRUCTION, AND STAMP WITH ASME CODE SYMBOL:
      1. COMMERCIAL WATER HEATERS.
   F. ASME RELIEF VALVE STAMPS: PROVIDE WATER HEATERS WITH SAFETY RELIEF VALES BEARING ASME VALVE MARKINGS.
   G. PDI COMPLIANCE: COMPLY WITH APPLICABLE PLUMBING AND DRAINAGE INSTITUTE STANDARDS PERTAINING TO GREASE INTERCEPTORS.

4. SUBMITTALS:
   A. PRODUCT DATA: SUBMIT TO THE ARCHITECT THE MANUFACTURER'S PLUMBING EQUIPMENT SPECIFICATIONS, INSTALLATION AND START-UP INSTRUCTIONS, AND CAPACITY AND RATINGS, WITH SELECTION POINTS CLEARLY INDICATED.

5. COMMERCIAL GAS-FIRED WATER HEATERS:
   A. GENERAL: PROVIDE COMMERCIAL GAS-FIRED WATER HEATERS OF SIZE AND CAPACITY AS INDICATED ON SCHEDULE. COMPLY WITH ANSI/ASHRAE/IES 90A FOR ENERGY EFFICIENCY. PROVIDE CERTIFICATION OF DESIGN BY AGA UNDER VOLUME ILL TESTS FOR COMMERCIAL WATER HEATERS FOR DELIVERY OF 140°F (82°C) WATER.
   B. HEATER: WORKING PRESSURE OF 150 PSI; BOILER-TYPE HAND HOLE CLEANOUT; MAGNESIUM ANODE ROD; 3/4" TAPPING FOR RELIEF VALVE; GLASS LINING ON INTERNAL SURFACES EXPOSED TO WATER.
   C. SAFETY CONTROLS: EQUIP WITH AUTOMATIC GAS SHUTOFF DEVICE TO SHUT OFF ENTIRE GAS SUPPLY IN EVENT OF EXCESSIVE TEMPERATURE IN TANK; AND PILOT SAFETY SHUTOFF.
   D. DRAFT HOOD: EQUIP WITH AGA CERTIFIED DRAFT HOOD.
   E. JACKET: INSULATE TANK WITH VERMIN-PROOF GLASS FIBER INSULATION. WITH BAKED ENAMEL FINISH OVER BONDERIZED UNDERCOATING.
   F. WARRANTY: FURNISH 3 YEAR LIMITED WARRANTY FOR TANK LEAKAGE.
   G. ACCESSORIES: PROVIDE BRASS DRAIN VALVE; 3/4" PRESSURE AND TEMPERATURE RELIEF VALVE; RADIANT FLOOR SHIELD.
   H. CONTROLS: PROVIDE GAS PRESSURE REGULATOR; PILOT GAS REGULATOR; THERMOSTAT.

6. GREASE INTERCEPTORS:
   A. GENERAL: PROVIDE CAST CONCRETE GREASE INTERCEPTORS AS DETAILED ON THE DRAWINGS.

7. INSTALLATION OF GAS-FIRED WATER HEATERS:
   A. GENERAL: INSTALL GAS-FIRED WATER HEATERS AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS, AND IN COMPLIANCE WITH APPLICABLE CODES.
   B. SUPPORT: SET UNITS ON CONTRACTOR PROVIDED CONCRETE BLOCKS, ORIENT SO CONTROLS AND DEVICES NEEDING SERVICE AND MAINTENANCE HAVE ADEQUATE ACCESS. WATER HEATER SHALL BE SET LEVEL AND PLUMB.
   C. GAS SUPPLY: CONNECT TO GAS LINE WITH DRIP LEG, TEE, GAS COCK, AND UNION; FULL SIZE OF UNIT INLET CONNECTION. LOCATE PIPING SO AS NOT TO INTERFERE WITH SERVICE OR REPLACEMENT OF THE UNIT.
   D. PIPING: CONNECT HOT AND COLD WATER PIPING TO UNITS WITH SHUTOFF VALVES AND UNIONS. CONNECT RECIRCULATING WATER LINE TO UNIT WITH SHUTOFF VALVE, CHECK VALVE, AND UNION.
   E. FLUE: CONNECT COMBUSTION AIR INTAKE AND EXHAUST DUCT AIR TIGHT.
   F. START-UP: START-UP, TEST, AND ADJUST GAS-FIRED WATER HEATERS IN ACCORDANCE WITH MANUFACTURER'S START-UP INSTRUCTIONS, AND UTILITY COMPANY'S REQUIREMENTS. CHECK AND CALIBRATE CONTROLS, ADJUST BUMMER FOR MAXIMUM EFFICIENCY.

8. INSTALLATION OF INTERCEPTORS:
   A. GENERAL: INSTALL INTERCEPTORS AS INDICATED, IN ACCORDANCE WITH THE DETAIL ON THE DRAWINGS, AND LOCAL CODES AND ORDINANCES.

## SECTION 15440 - PLUMBING FIXTURES

1. RELATED DOCUMENTS:
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
   A. EXTENT OF PLUMBING FIXTURES WORK REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
   B. TYPES OF PLUMBING FIXTURES SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. WATER CLOSETS.
      2. URINALS.
      3. LAVATORIES.
      4. SERVICE SINKS.
   C. REFER TO DIVISION-15 SECTIONS FOR POTABLE WATER SYSTEMS USED IN CONJUNCTION WITH PLUMBING FIXTURES; NOT WORK OF THIS SECTION.
   D. REFER TO DIVISION-15 SECTIONS FOR SOIL AND WASTE SYSTEMS USED IN CONJUNCTION WITH PLUMBING FIXTURES; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE:
   A. MANUFACTURER'S QUALIFICATIONS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF PLUMBING FIXTURES OF TYPE, STYLE AND CONFIGURATION REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 3 YEARS.
   B. CODES AND STANDARDS:
      1. PLUMBING FIXTURE STANDARDS: COMPLY WITH APPLICABLE PORTIONS OF THE ADOPTED CODE OF THE AUTHORITY HAVING JURISDICTION PERTAINING TO MATERIALS AND INSTALLATION OF PLUMBING FIXTURES.
      2. ANSI STANDARDS: COMPLY WITH APPLICABLE ANSI STANDARDS PERTAINING TO PLUMBING FIXTURES AND SYSTEMS.
      3. PDI COMPLIANCE: COMPLY WITH STANDARDS ESTABLISHED BY PDI PERTAINING TO PLUMBING FIXTURE SUPPORTS.
      4. FEDERAL STANDARDS: COMPLY WITH APPLICABLE FS WW-P-541/-SERIES SECTIONS PERTAINING TO PLUMBING FIXTURES.
      5. ANSI COMPLIANCE: CONSTRUCT AND INSTALL BARRIER-FREE PLUMBING FIXTURES IN ACCORDANCE WITH AMERICANS WITH DISABILITIES ACT.

4. SUBMITTALS:
   A. PRODUCT DATA: SUBMIT TO THE ARCHITECT THE MANUFACTURER'S TECHNICAL PRODUCT DATA, INCLUDING RATED CAPACITIES OF SELECTED MODEL CLEARLY INDICATED, FURNISHED SPECIALTIES AND ACCESSORIES; AND INSTALLATION INSTRUCTIONS.

5. PLUMBING FIXTURES:
   A. GENERAL: PROVIDE FACTORY-FABRICATED FIXTURES OF TYPE, STYLE, AND MATERIAL INDICATED. FOR EACH TYPE FIXTURE, PROVIDE FIXTURE MANUFACTURER'S STANDARD TRIM, CARRIER, SEATS, AND VALVES AS INDICATED BY THEIR PUBLISHED PRODUCT INFORMATION; EITHER AS DESIGNED AND CONSTRUCTED, OR AS RECOMMENDED BY MANUFACTURER, AND AS REQUIRED FOR COMPLETE INSTALLATION. WHERE MORE THAN ONE TYPE IS INDICATED, SELECTION IS INSTALLER'S OPTION; BUT, ALL FIXTURES OF SAME TYPE MUST BE FUMISHED BY SINGLE MANUFACTURER. WHERE TYPE IS NOT OTHERWISE INDICATED, PROVIDE FIXTURES COMPLYING WITH GOVERNING REGULATIONS.

6. MATERIALS:
   A. GENERAL: UNLESS OTHERWISE SPECIFIED, COMPLY WITH APPLICABLE FEDERAL SPECIFICATION WW-P-541/-SERIES SECTIONS PERTAINING TO PLUMBING FIXTURES, FITTINGS, TRIM, METALS, AND FINISHES. COMPLY WITH REQUIREMENTS OF WW-P-541/-SPECIFICATION RELATIVE TO QUALITY OF WARE, GLAZING, ENAMEL, COMPOSITION AND FINISH OF METALS, AIR GAPS, AND VACUUM BREAKERS, EVEN THOUGH SOME PLUMBING FIXTURES SPECIFIED IN THIS SECTION ARE NOT DESCRIBED IN WW-P-541 /-SPECIFICATION.
   B. PROVIDE MATERIALS WHICH HAVE BEEN SELECTED FOR THEIR SURFACE FLATNESS AND SMOOTHNESS. EXPOSED SURFACES WHICH EXHIBIT PITTING, SEAM MARKS, ROLLER MARKS, FOUNDRY SAND HOLES, STAINS, DECOLORATION, OR OTHER SURFACE IMPERFECTIONS ON FINISHED UNITS ARE NOT ACCEPTABLE.
   C. WHERE FITTINGS, TRIM AND ACCESSORIES ARE EXPOSED OR SEMI-EXPOSED PROVIDE BRIGHT CHROME-PLATED OR POLISHED STAINLESS STEEL UNITS. PROVIDE COPPER OR BRASS WHERE NOT EXPOSED.
   D. STAINLESS STEEL SHEETS: ASTM A 167, TYPE 302/304, HARDEST WORKABLE TEMPER.
   E. FINISH: NO. 4, BRIGHT, DIRECTIONAL POLISH ON EXPOSED SURFACES.
   F. VITREOUS CHINA: HIGH QUALITY, FREE FROM FIRE CRACKS, SPOTS, BLISTERS, PINHOLES AND SPECKS; GLAZE EXPOSED SURFACES, AND TEST FOR CRAZING RESISTANCE IN ACCORDANCE WITH ASTM C 554.
   G. SYNTHETIC STONE: HIGH QUALITY, FREE FROM DEFECTS, GLAZE ON EXPOSED SURFACES, STAIN RESISTANT.

7. PLUMBING FITTINGS, TRIM, AND ACCESSORIES:
   A. WATER OUTLETS: AT LOCATIONS WHERE WATER IS SUPPLIED (BY MANUAL, AUTOMATIC OR REMOTE CONTROL), PROVIDE COMMERCIAL QUALITY FAUCETS, VALVES, OR DISPENSING DEVICES, OF TYPE AND SIZE INDICATED, AND AS REQUIRED TO OPERATE AS INDICATED. INCLUDE MANUAL SHUTOFF VALVES AND CONNECTING STEM PIPES TO PERMIT OUTLET SERVICING WITHOUT SHUT-DOWN OF WATER SUPPLY PIPING SYSTEMS.
   B. VACUUM BREAKERS: PROVIDE WITH FLUSH VALVES WHERE REQUIRED BY GOVERNING REGULATIONS, INCLUDING LOCATIONS WHERE WATER OUTLETS ARE EQUIPPED FOR HOSE ATTACHMENT.
   C. P-TRAPS: INCLUDE REMOVABLE P-TRAPS WHERE DRAINS ARE INDICATED FOR DIRECT CONNECTION TO DRAINAGE SYSTEM.
   D. CARRIERS: PROVIDE CAST-IRON SUPPORTS FOR FIXTURES OF EITHER GRAPHITIC GRAY IRON, DUCTILE IRON, OR MALLEABLE IRON AS INDICATED.
   E. FIXTURE BOLT CAPS: PROVIDE MANUFACTURER'S STANDARD EXPOSED FIXTURE BOLT CAPS FINISHED TO MATCH FIXTURE FINISH.
   F. ESCUTCHEONS: WHERE FIXTURE SUPPLIES AND DRAINS PENETRATE WALLS IN EXPOSED LOCATIONS, PROVIDE CHROME-PLATED CAST-BRASS ESCUTCHEONS WITH SET SCREW.
   G. AERATORS: PROVIDE AERATORS OF TYPES SPECIFIED IN THE CONSTRUCTION DRAWINGS.
   H. COMPLY WITH ADDITIONAL FIXTURE REQUIREMENTS CONTAINED IN FIXTURE SCHEDULE ATTACHED TO THIS SECTION.

8. INSTALLATION OF PLUMBING FIXTURES:
   A. GENERAL: INSTALL PLUMBING FIXTURES OF TYPES INDICATED WHERE SHOWN AND AT INDICATED HEIGHTS; IN ACCORDANCE WITH FIXTURE MANUFACTURER'S WRITTEN INSTRUCTIONS, ROUGHING-IN DRAWINGS, AND WITH RECOGNIZED INDUSTRY PRACTICES. ENSURE THAT PLUMBING FIXTURES COMPLY WITH REQUIREMENTS AND SERVE INTENDED PURPOSES. COMPLY WITH APPLICABLE REQUIREMENTS OF THE ADOPTED CODE OF THE AUTHORITY HAVING JURISDICTION PERTAINING TO INSTALLATION OF PLUMBING FIXTURES.
   B. FASTEN PLUMBING FIXTURES SECURELY TO INDICATED SUPPORTS OR BUILDING STRUCTURE; AND ENSURE THAT FIXTURES ARE LEVEL AND PLUMB. SECURE PLUMBING SUPPLIES BEHIND OR WITHIN WALL CONSTRUCTION SO AS TO BE RIGID, AND NOT SUBJECT TO PULL OR PUSH MOVEMENT.

9. ADJUSTING AND CLEANING:
   A. CLEAN PLUMBING FIXTURES, TRIM, AND STRAINERS OF DIRT AND DEBRIS UPON COMPLETION OF INSTALLATION.
   B. ADJUST WATER PRESSURE AT FAUCETS AND FLUSH VALVES TO PROVIDE PROPER FLOW STREAM AND SPECIFIED GPM.

## SECTION 15488 - NATURAL GAS SYSTEMS

1. RELATED DOCUMENTS:
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATIONS SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
   A. EXTENT OF NATURAL GAS SYSTEMS WORK, IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
   B. TRENCHING AND BACKFILL REQUIRED IN CONJUNCTION WITH GAS SERVICE PIPING IS SPECIFIED IN APPLICABLE DIVISION-2 SECTIONS, AND IS INCLUDED AS WORK OF THIS SECTION.
   C. REFER TO DIVISION-2 SECTIONS FOR TRENCHING AND BACKFILL REQUIRED IN CONJUNCTION WITH GAS SERVICE PIPING; NOT WORK OF THIS SECTION.

3. CODES AND STANDARDS:
   A. ANSI COMPLIANCE: FABRICATE AND INSTALL NATURAL GAS PIPING IN ACCORDANCE WITH ANSI B31.2 "FUEL GAS PIPING".
   B. NFPA COMPLIANCE: FABRICATE AND INSTALL NATURAL GAS SYSTEMS IN ACCORDANCE WITH NFPA 54 "NATURAL FUEL GAS CODE".
   C. UTILITY COMPLIANCE: FABRICATE AND INSTALL NATURAL GAS SYSTEMS IN ACCORDANCE WITH LOCAL GAS UTILITY COMPANY.

4. SUBMITTALS:
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA AND INSTALLATION INSTRUCTIONS FOR NATURAL GAS SYSTEMS MATERIALS AND PRODUCTS.

5. MATERIALS AND PRODUCTS:
   A. GENERAL: PROVIDE PIPING MATERIALS AND FACTORY-FABRICATED PIPING PRODUCTS OF SIZES, TYPES, PRESSURE RATINGS, AND CAPACITIES AS INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS. PROVIDE MATERIALS AND PRODUCTS COMPLYING WITH NFPA 54 WHERE APPLICABLE, BASE PRESSURE RATING ON NATURAL GAS PIPING SYSTEM MAXIMUM DESIGN PRESSURES. PROVIDE SIZES AND TYPES MATCHING PIPING AND EQUIPMENT CONNECTIONS; PROVIDE FITTINGS OF MATERIALS WHICH MATCH PIPE MATERIALS USED IN NATURAL GAS SYSTEMS. WHERE MORE THAN ONE TYPE OF MATERIALS OR PRODUCTS ARE INDICATED, SELECTION IS INSTALLER'S OPTION.

6. BASIC IDENTIFICATION:
   A. GENERAL: PROVIDE IDENTIFICATION COMPLYING WITH DIVISION-15 BASIC MECHANICAL AND METHODS SECTION "MECHANICAL IDENTIFICATION", IN ACCORDANCE WITH THE FOLLOWING LISTING:
      1. BUILDING DISTRIBUTION PIPING: PLASTIC PIPE MARKERS.
      2. GAS SERVICE: UNDERGROUND-TYPE PLASTIC LINE MARKERS.
      3. GAS VALVES: PLASTIC VALVE TAGS.

7. BASIC PIPES AND PIPE FITTINGS:
   A. GENERAL: PROVIDE PIPES AND PIPE FITTINGS COMPLYING WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS", IN ACCORDANCE WITH THE FOLLOWING LISTING:
   B. BUILDING DISTRIBUTION PIPING:
      1. PIPE SIZE 2" AND SMALLER: BLACK STEEL PIPE; SCHEDULE 40, MALLEABLE-IRON THREADED FITTINGS.
      2. RIPE SIZE 2-1/2" AND LARGER: BLACK STEEL PIPE; SCHEDULE 40; WROUGHT-STEEL BUTTWELDING FITTINGS.

8. BASIC PIPING SPECIALTIES:
   A. GENERAL: PROVIDE PIPING SPECIALTIES COMPLYING WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPING SPECIALTIES", IN ACCORDANCE WITH THE FOLLOWING LISTING:
      1. PIPE ESCUTCHEONS.
      2. DIELECTRIC UNIONS.
      3. PIPE SLEEVES.
      4. SLEEVE SEALS.

9. BASIC SUPPORTS AND ANCHORS:
   A. GENERAL: PROVIDE SUPPORTS AND ANCHORS COMPLYING WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "SUPPORTS AND ANCHORS", IN ACCORDANCE WITH THE FOLLOWING LISTING:
      1. ADJUSTABLE SWIVEL PIPE RINGS FOR HORIZONTAL-PIPING HANGERS AND SUPPORTS.
      2. TWO-BOLT RISER CLAMPS FOR VERTICAL PIPING SUPPORTS.
      3. CONCRETE INSERTS, C-CLAMPS, AND STEEL BRACKETS FOR BUILDING ATTACHMENTS.
      4. SIDE BEAM CLAMPS.

10. SPECIAL VALVES:
   A. GENERAL: SPECIAL VALVES REQUIRED FOR NATURAL GAS SYSTEMS INCLUDE THE FOLLOWING TYPES:
   B. GAS COCKS:
      1. GAS COCKS 2" AND SMALLER: 150 PSI NON-SHOCK WOG, BRONZE STRAIGHTWAY COCK, FLAT OR SQUARE HEAD, THREADED ENDS.
      2. GAS COCKS 2-1/2" AND LARGER: 125 PSI NON-SHOCK WOG, IRON BODY BRONZE MOUNTED, STRAIGHTWAY COCK, SQUARE HEAD, FLANGED ENDS.
   C. CONTROL VALVES:
      1. MASTER GAS CONTROL VALVE: BRONZE BODY, PACKLESS, SINGLE SEAT, MANUALLY OPERATED, NORMALLY CLOSED, UL-APPROVED.
   D. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE CONTROL VALVES OF ONE OF THE FOLLOWING:
      1. AUTOMATIC SWITCH CO.
         ADD OTHER MANUFACTURER'S NAMES AS DESIRED.

11. PRESSURE REGULATING VALVES:
   A. GENERAL: PROVIDE SINGLE STAGE, STEEL JACKETED, CORROSION-RESISTANT GAS PRESSURE REGULATORS; WITH ATMOSPHERIC VENT, ELEVATION COMPENSATORS; WITH THREADED ENDS FOR 2" AND SMALLER, FLANGED ENDS FOR 2-1/2" AND LARGER; FOR INLET AND OUTLET GAS PRESSURES, SPECIFIC GRAVITY, AND VOLUME FLOW INDICATED.

12. GAS METER:
   A. GENERAL: PROVIDE DIAPHRAGM-TYPE, POSITIVE DISPLACEMENT GAS METERS WITH ALUMINUM CASES, TEMPERATURE COMPENSATED, WITH INTEMAL CORROSION-RESISTANT COMPONENTS; THREADED ENDS FOR 2° AND SMALLER, FLANGED ENDS FOR 2-1/2" AND LARGER; FOR GAS WORKING PRESSURES, SPECIFIC GRAVITY, AND VOLUME FLOW INDICATED.

13. INSPECTION:
   A. GENERAL: EXAMINE AREAS AND CONDITIONS UNDER WHICH NATURAL GAS SYSTEMS MATERIALS AND PRODUCTS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

14. INSTALLATION OF BASIC IDENTIFICATION:
   A. GENERAL: INSTALL MECHANICAL IDENTIFICATION IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "MECHANICAL IDENTIFICATION".

15. INSTALLATION OF NATURAL GAS PIPING:
   A. GENERAL: INSTALL NATURAL GAS PIPING IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS".
   B. USE SEALANTS ON METAL GAS PIPING THREADS WHICH ARE CHEMICALLY RESISTANT TO NATURAL GAS. USE SEALANTS SPARINGLY, AND APPLY TO ONLY MALE THREADS OF METAL JOINTS.
   C. REMOVE CUTTING AND THREADING BURRS BEFORE ASSEMBLING PIPING.
   D. DO NOT INSTALL DEFECTIVE PIPING OR FITTINGS. DO NOT USE PIPE WITH THREADS WHICH ARE CHIPPED, STRIPPED, OR DAMAGED.
   E. PLUG EACH GAS OUTLET, INCLUDING VALVES, WITH THREADED PLUG OR CAP IMMEDIATELY AFTER INSTALLATION AND RETAIN UNTIL CONTINUING PIPING, OR EQUIPMENT CONNECTIONS ARE COMPLETED.
   F. GROUND GAS PIPING ELECTRICALLY AND CONTINUOUSLY WITHIN PROJECT, AND BOND TIGHTLY TO GROUNDING CONNECTION.
   G. INSTALL DRIP-LEGS IN GAS PIPING WHERE INDICATED, AND WHERE REQUIRED BY CODE OR REGULATION.
   H. INSTALL "TEE" FITTING WITH BOTTOM OUTLET PLUGGED OR CAPPED, AT BOTTOM OF PIPE RISERS.
   I. USE DIELECTRIC UNIONS WHERE DISSIMILAR METALS ARE JOINED TOGETHER.
   J. INSTALL PIPING WITH 1/64" PER FOOT (1/8%) DOWNWARD SLOPE IN DIRECTION OF FLOW.
   K. INSTALL PIPING PARALLEL TO OTHER PIPING, BUT MAINTAIN MINIMUM OF 12" CLEARANCE BETEEEN GAS PIPING AND STEAM OR HYDRONIC PIPING ABOVE 200°F (93°C).
   L. INSULATE GAS PIPING EXPOSED TO FREEZING TEMPERATURES.
   M. FOR PIPING UNDERGROUND BENEATH BUILDINGS, INSTALL IN WELDED CONDUIT. EXTEND CONDUIT INSIDE AND TERMINATE IN ACCESSIBLE PORTION OF BUILDING AND SEAL. EXTEND CONDUIT OUTSIDE MINIMUM OF 4" FROM BUILDING, AND VENT ABOVE GRADE.
   N. FOR RISERS RUNNING THROUGH CONCRETE OR ASPHALT, INSTALL THROUGH MINIMUM 6" PIPE SLEEVE. FILL ANNULAR SPACE WITH GRAVEL.
   O. INSTALL MAGNESIUM ANODES FOR UNDERGROUND STEEL PIPE, ONE-5 LB. ANODE FOR UP TO 100' IN LENGTH AND ONE-5 LB. ANODE FOR EACH ADDITIONAL 100'.
   P. INSTALL MAGNESIUM ANODES FOR EACH UNDERGROUND STEEL OR MALLEABLE IRON FITTING, ISOLATED BETWEEN 2 SECTIONS OF PLASTIC PIPE; ONE-3 LB. ANODE FOR EACH FITTING.
   Q. ALL GAS PIPING INSTALLED AT THE METER ASSEMBLY AND VISIBLE FROM THE SITE SHALL BE FIELD PAINTED FOR CORROSION PROTECTION TO MATCH THE EXTERIOR WALL.
   R. ALL GAS PIPING INSTALLED ON THE ROOF AND NOT VISIBLE FROM THE SITE SHALL BE FIELD PAINTED FOR CORROSION PROTECTION, YELLOW FOR IDENTIFICATION.
   S. ALL GAS PIPING INSTALLED ON THE ROOF AND NOT VISIBLE FROM THE SITE SHALL BE FIELD PAINTED FOR CORROSION PROTECTION, YELLOW FOR IDENTIFICATION.

16. GAS SERVICE:
   A. GENERAL: ARRANGE WITH UTILITY COMPANY TO PROVIDE GAS SERVICE TO INDICATED LOCATION WITH SHUTOFF AT TERMINUS. CONSULT WITH UTILITY AS TO EXTENT OF IT'S WORK, COSTS, FEES, AND PERMITS INVOLVED. PAY SUCH COSTS AND FEES; OBTAIN PERMITS.
   B. EXTEND SERVICE PIPING FROM UTILITY'S TERMINUS TO INSIDE BUILDING WALL, UNDER UTILITY'S DIRECTION.
   C. PROVIDE SHUTOFF OUTSIDE BUILDING WHERE INDICATED, IN ADJUSTABLE GAS SERVICE VALVE BOX, WITH COVER SET FLUSH TO FINISHED GRADE.

17. INSTALLATION OF PIPING SPECIALTIES:
   A. INSTALL PIPING SPECIALTIES IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPING SPECIALTIES".

18. INSTALLATION OF SUPPORTS AND ANCHORS:
   A. INSTALL SUPPORTS AND ANCHORS IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "SUPPORTS AND ANCHORS".

19. INSTALLATION OF VALVES:
   A. GAS COCKS: PROVIDE AT CONNECTION TO GAS TRAIN FOR EACH GAS-FIRED EQUIPMENT ITEM; AND ON RISERS AND BRANCHES WHERE INDICATED.
   B. LOCATE GAS COCKS WHERE EASILY ACCESSIBLE, AND WHERE THEY WILL BE PROTECTED FROM POSSIBLE INJURY.
   C. CONTROL VALVES: INSTALL AS INDICATED. REFER TO DIVISION 16 FOR WIRING; NOT WORK OF THIS SECTION.
   D. PRESSURE REGULATING VALVES: INSTALL AS INDICATED; COMPLY WITH UTILITY REQUIREMENTS. PIPE ATMOSPHERIC VENT TO OUTDOORS, FULL SIZE OF OUTLET. INSTALL GAS SHUTOFF VALVE UPSTREAM OF EACH PRESSURE REGULATING VALVE.

20. INSTALLATION OF GAS METER:
   A. INSTALL GAS METER IN ACCORDANCE WITH LOCAL UTILITY COMPANY'S INSTALLATION INSTRUCTIONS, AND COMPLY WITH REQUIREMENTS.
      1. HANG METER ON WALL BRACKETS IN CONFORMANCE WITH GAS UTILITY INSTRUCTIONS.

21. EQUIPMENT CONNECTIONS:
   A. GENERAL: CONNECT GAS PIPING TO EACH GAS-FIRED EQUIPMENT ITEM, WITH DRIP LEG AND SHUTOFF GAS COCK. COMPLY WITH EQUIPMENT MANUFACTURER'S INSTRUCTIONS.
   B. GENERAL: PROVIDE GAS PIPING RUNOUT WITHIN 5' OF EACH GAS-FIRED EQUIPMENT ITEM GAS CONNECTION; PROVIDE DRIP LEG AND GAS COCK. FINAL CONNECTION IS EQUIPMENT INSTALLATION WORK; NOT WORK OF THIS SECTION.

22. FIELD QUALITY CONTROL:
   A. PIPING TESTS: INSPECT, TEST, AND PURGE NATURAL GAS SYSTEMS IN ACCORDANCE WITH NFPA 54, AND LOCAL UTILITY REQUIREMENTS.

23. ADJUSTING AND CLEANING:
   A. CLEANING AND INSPECTING: CLEAN AND INSPECT NATURAL GAS SYSTEMS IN ACCORDANCE WITH DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTION "PIPES AND PIPE FITTINGS".

## SECTION 15781 - PACKAGED HEATING AND COOLING UNITS

1. RELATED DOCUMENTS:
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
   A. EXTENT OF PACKAGED HEATING AND COOLING UNITS WORK REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
   B. TYPES OF PACKAGED HEATING AND COOLING UNITS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. PACKAGED HEATING AND COOLING UNITS, 20 TONS AND SMALLER.
   C. ELECTRICAL WORK: PROVIDE THE FOLLOWING WIRING AS WORK OF THIS SECTION, IN ACCORDANCE WITH REQUIREMENTS OF DIVISION 16:
      1. PROVIDE CONTROL WIRING BETWEEN UNIT-MOUNTED CONTROL PANEL AND THERMOSTATS, REMOTE CONTROL PANELS, AND ANY OTHER CONTROL DEVICE FURNISHED AS WORK OF THIS SECTION.
      2. PROVIDE FACTORY-MOUNTED AND WIRED CONTROLS AND ELECTRICAL DEVICES AS SPECIFIED IN THIS SECTION.
   D. REFER TO DIVISION-16 SECTIONS FOR OTHER ELECTRICAL WORK INCLUDING MOTOR STARTERS, DISCONNECTS, WIRES/CABLES, RACEWAYS, AND OTHER REQUIRED ELECTRICAL DEVICES; NOT WORK OF THIS SECTION.

3. CODES AND STANDARDS:
   A. ARI COMPLIANCE: PROVIDE CAPACITY RATINGS FOR PACKAGED HEATING AND COOLING UNITS IN ACCORDANCE WITH ARI STANDARD 210 FOR UNITARY AIR CONDITIONING AND AIR SOURCE HEAT PUMP EQUIPMENT.
   B. UL COMPLIANCE: PROVIDE PACKAGED HEATING AND COOLING UNITS WHICH ARE UL-LISTED AND LABELED.

4. SUBMITTALS:
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S TO THE ARCHITECT THE TECHNICAL PRODUCT DATA, INCLUDING RATED CAPACITIES OF SELECTED MODEL CLEARLY INDICATED, WEIGHTS, FURNISHED SPECIALTIES AND ACCESSORIES; AND INSTALLATION AND START-UP INSTRUCTIONS.

5. DELIVERY, STORAGE, AND HANDLING:
   A. HANDLE PACKAGED HEATING AND COOLING UNITS AND COMPONENTS CAREFULLY TO PREVENT DAMAGE, BREAKING, DENTING, AND SCORING. DO NOT INSTALL DAMAGED PACKAGED HEATING AND COOLING UNITS OR COMPONENTS; REPLACE WITH NEW.
   B. STORE PACKAGED HEATING AND COOLING UNITS AND COMPONENTS IN CLEAN DRY PLACE. FROM WEATHER, DIRT, FUMES, WATER, CONSTRUCTION DEBRIS, AND PHYSICAL DAMAGE.
   C. COMPLY WITH MANUFACTURER'S RIGGING AND INSTALLATION INSTRUCTIONS FOR UNLOADING PACKAGED HEATING AND COOLING UNITS, AND MOVING UNITS TO FINAL LOCATION FOR INSTALLATION.

6. SPECIAL PROJECT WARRANTY:
   A. WARRANTY ON MOTOR/COMPRESSOR: PROVIDE WRITTEN WARRANTY, DIRECT FROM THE MANUFACTURER, AGREEING TO REPLACE, WITHIN WARRANTY PERIOD, MOTORS/COMPRESSORS WITH INADEQUATE AND DEFECTIVE MATERIALS AND WORKMANSHIP, INCLUDING LEAKAGE, BREAKAGE, IMPROPER ASSEMBLY, OR FAILURE TO PERFORM AS REQUIRED; PROVIDED MANUFACTURER'S INSTRUCTIONS FOR HANDLING, INSTALLING, PROTECTING, AND MAINTAINING UNITS HAVE BEEN ADHERED TO DURING WARRANTY PERIOD. REPLACEMENT IS LIMITED TO COMPONENT REPLACEMENT ONLY, AND DOES NOT INCLUDE LABOR FOR REMOVAL AND REINSTALLATION.
   B. WARRANTY PERIOD: 5 YEARS FROM DATE OF OPENING DAY FOR THE RESTAURANT.

7. PACKAGED HEATING AND COOLING UNIT
   A. GENERAL: PROVIDE FACTORY-ASSEMBLED AND TESTED PACKAGED UNITS AS INDICATED, CONSISTING OF CASING, COMPRESSOR, EVAPORATOR, FANS, FILTERS, AND UNIT CONTROLS. UNITS SHALL BE SPECIFICALLY DESIGNED FOR OUTDOOR INSTALLATION ON A CONCRETE PAD AND BE COMPLETELY FACTORY ASSEMBLED AND TESTED, PIPED, INTERNALLY WIRED, AND SHIPPED IN ONE PIECE. ALL UNITS SHALL BE FACTORY RUN TESTED. PROVIDE CAPACITIES AND ELECTRICAL CHARACTERISTICS AS SCHEDULED.
   B. CASING: PROVIDE HEAVY GAUGE, ZINC CLAD CORROSION PROTECTION COATED, CASING CONSTRUCTION, AND BAKED ENAMEL EXTERIOR FINISH. REFER TO DETAILS ON THE DRAWINGS FOR DUCTWORK CONNECTIONS. PROVIDE REMOVABLE PANELS AND/OR ACCESS DOORS FOR INSPECTION AND ACCESS TO INTERNAL PARTS. INSULATE CASING WITH 1/2" THICK MINIMUM THERMAL INSULATION, AND COMPRESSOR COMPARTMENT WITH ACOUSTICAL INSULATION. PROVIDE KNOCKOUTS FOR ELECTRICAL AND PIPING CONNECTIONS.
   C. REFRIGERATION CIRCUIT: PROVIDE REFRIGERANT THERMAL EXPANSION VALVE FOR REFRIGERANT CONTROL. SEE THE SEQUENCE OF OPERATION ON THE PLANS.
   D. COMPRESSORS: PROVIDE WELDED SHELL, HERMETIC COMPRESSORS, 3,600 RPM; OR SERVICEABLE HERMETIC COMPRESSORS, 1750 RPM. PROVIDE CRANKCASE HEATERS.
   E. EVAPORATOR COIL: CONSTRUCT OF COPPER TUBING AND ALUMINUM FINS, PRESSURE AND LEAK TESTED AT 1.5 TIMES WORKING PRESSURE.
   F. FANS: PROVIDE DOUBLE-INLET, FORWARD CURVED, CENTRIFUGAL FANS WITH ADJUSTABLE BELT DRIVE. PROVIDE PERMANENTLY LUBRICATED FAN AND MOTOR BEARINGS, AND THERMAL OVERLOADS IN MOTOR.
   G. FILTERS: PROVIDE 1" THICK THROWAWAY FILTERS DURING CONSTRUCTION, AND CHANGE TO FULL PLEATED FILTERS AT STORE TURNOVER.
   H. AIR-COOLED CONDENSERS: PROVIDE CONDENSER COIL CONSTRUCTED OF COPPER TUBES AND ALUMINUM FINS. FACTORY LEAK-TEST AT 1.5 TIMES WORKING PRESSURE, DEHYDRATE AND PROVIDE FULL CHARGE OF REFRIGERANT. PROVIDE SUBCOOLER AND ACCUMULATOR.
   I. CONDENSER FAN: PROVIDE PROPELLER TYPE CONDENSER FANS WITH VERTICAL DISCHARGE. FAN MOTOR SHALL BE TOTALLY ENCLOSED AND PERMANENTLY LUBRICATED.

8. INSPECTION:
   A. GENERAL: EXAMINE AREAS AND CONDITIONS UNDER WHICH PACKAGED HEATING AND COOLING UNITS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

9. INSTALLATION OF PACKAGED HEATING AND COOLING UNITS:
   A. GENERAL: INSTALL PACKAGED HEATING AND COOLING UNITS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. INSTALL UNITS PLUMB AND LEVEL, FIRMLY ANCHORED IN LOCATIONS INDICATED, AND MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES.
   B. ELECTRICAL WIRING: INSTALL ELECTRICAL DEVICES FURNISHED BY MANUFACTURER BUT NOT SPECIFIED TO BE FACTORY-MOUNTED. FURNISH COPY OF MANUFACTURER'S WIRING DIAGRAM SUBMITTAL TO ELECTRICAL INSTALLER.
   C. VERIFY THAT ELECTRICAL WIRING INSTALLATION IS IN ACCORDANCE WITH MANUFACTURER'S SUBMITTAL AND INSTALLATION REQUIREMENTS OF DIVISION-16 SECTIONS. DO NOT PROCEED WITH EQUIPMENT START-UP UNTIL WIRING INSTALLATION IS ACCEPTABLE TO EQUIPMENT INSTALLER.
   D. DUCTWORK: REFER TO DIVISION-15 SECTION "DUCTWORK". CONNECT SUPPLY AND RETURN DUCTS TO UNIT WITH FLEXIBLE DUCT CONNECTIONS. PROVIDE TRANSITIONS TO EXACTLY MATCH UNIT DUCT CONNECTION SIZE.
   E. DRAIN PIPING: CONNECT UNIT DRAIN AS INDICATED ON THE DRAWINGS. PAN; CONSTRUCT AS INDICATED ON THE DRAWINGS.

10. FIELD QUALITY CONTROL:
   A. GENERAL: START-UP PACKAGED HEATING AND COOLING UNITS, IN ACCORDANCE WITH MANUFACTURER'S START-UP INSTRUCTIONS. TEST CONTROLS AND DEMONSTRATE COMPLIANCE WITH REQUIREMENTS. REPLACE DAMAGED OR MALFUNCTIONING CONTROLS AND EQUIPMENT, INCLUDING COMBING OUT OF FINS THAT MAY HAVE BEEN DENTED DURING CONSTRUCTION.

11. CLOSEOUT PROCEDURES:
   A. TRAINING: PROVIDE SERVICES OF MANUFACTURER'S TECHNICAL REPRESENTATIVE FOR 1-HALF DAY TO INSTRUCT OWNER'S PERSONNEL IN OPERATION AND MAINTENANCE OF EACH TYPE OF PACKAGED HEATING AND COOLING UNIT.

## SECTION 15841 - LOW PRESSURE DUCTWORK

1. RELATED DOCUMENTS:
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
   A. EXTENT OF LOW PRESSURE DUCTWORK IS INDICATED ON DRAWINGS AND IN SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION. LOW PRESSURE DUCTWORK IS HEREBY DEFINED AS DUCTWORK SUBJECTED TO VELOCITIES OF 2500 FPM OR LESS, AND OPERATING PRESSURE OF 2" W.G. OR LESS, POSITIVE OR NEGATIVE.
   B. TYPES OF LOW PRESSURE DUCTWORK REQUIRED FOR PROJECT INCLUDE THE FOLLOWING:
      1. HEATING SUPPLY AND RETURN AIR SYSTEMS.
      2. AIR-CONDITIONING SUPPLY AND RETURN AIR SYSTEMS.
      3. FRESH AIR SUPPLY SYSTEMS.
      4. MECHANICAL EXHAUST SYSTEMS.
      5. KITCHEN EXHAUST SYSTEMS.
   C. EXTERNAL INSULATION FOR LOW PRESSURE DUCTWORK IS SPECIFIED IN DIVISION-15 INSULATION SECTIONS, AND IS INCLUDED AS WORK OF THIS SECTION.
   D. REFER TO DIVISION-15 INSULATION SECTIONS FOR EXTERNAL INSULATION REQUIRED IN CONJUNCTION WITH LOW PRESSURE DUCTWORK; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE:
   A. SMACNA STANDARDS: COMPLY WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, 2005" FOR FABRICATION AND INSTALLATION OF LOW PRESSURE DUCTWORK.
   B. NFPA COMPLIANCE: COMPLY WITH ANSI/NFPA 90A "STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS" AND ANSI/NFPA 90B "STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS". COMPLY WITH NFPA 96 FOR GREASE EXHAUST SYSTEMS.
   C. FIELD REFERENCE MANUAL: HAVE AVAILABLE AT PROJECT FIELD OFFICE, COPY OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, 2005".
   D. COMPLY WITH THE REQUIREMENTS OF THE ADOPTED CODE OF THE AUTHORITY HAVING JURISDICTION.

4. DUCTWORK MATERIALS:
   A. SHEET METAL: EXCEPT AS OTHERWISE INDICATED, FABRICATE DUCTWORK FROM GALVANIZED SHEET STEEL COMPLYING WITH ANSI/ASTM A 527, LOCKFORMING QUALITY, WITH ANSI/ASTM A 525, G90 ZINC COATING; MILL PHOSPHATIZED FOR EXPOSED LOCATIONS.

5. MISCELLANEOUS DUCTWORK MATERIALS:
   A. GENERAL: PROVIDE MISCELLANEOUS MATERIALS AND PRODUCTS OF TYPES AND SIZES INDICATED AND, WHERE NOT OTHERWISE INDICATED, PROVIDE TYPE AND SIZE REQUIRED TO COMPLY WITH DUCTWORK SYSTEM REQUIREMENTS INCLUDING PROPER CONNECTION OF DUCTWORK AND EQUIPMENT.
   B. DUCT SEALANT: NON-HARDENING, NON-MIGRATING MASTIC OR LIQUID ELASTIC SEALANT (TYPE APPLICABLE FOR FABRICATION/INSTALLATION DETAIL) AS COMPOUNDED AND RECOMMENDED BY MANUFACTURER SPECIFICALLY FOR SEALING JOINTS AND SEAMS IN DUCTWORK.
   C. DUCT CEMENT: NON-HARDENING MIGRATING MASTIC OR LIQUID NEOPRENE BASED CEMENT (TYPE APPLICABLE FOR FABRICATION/INSTALLATION DETAIL) AS COMPOUNDED AND RECOMMENDED BY MANUFACTURER SPECIFICALLY FOR CEMENTING FITTING COMPONENTS, OR LONGITUDINAL SEAMS IN DUCTWORK.
   D. DUCTWORK SUPPORT MATERIALS: EXCEPT AS OTHERWISE INDICATED, PROVIDE HOT-DIPPED GALVANIZED STEEL FASTENERS, ANCHORS, RODS, STRAPS, TRIM AND ANGLES FOR SUPPORT OF DUCTWORK.

6. FABRICATION:
   A. SHOP FABRICATE DUCTWORK IN 4, 8, 10 OR 12-FOOT LENGTHS, UNLESS OTHERWISE INDICATED OR REQUIRED TO COMPLETE RUNS. PRE-ASSEMBLE WORK IN SHOP TO GREATEST EXTENT POSSIBLE, SO AS TO MINIMIZE FIELD ASSEMBLY OF SYSTEMS. DISASSEMBLE SYSTEMS ONLY TO EXTENT NECESSARY FOR SHIPPING AND HANDLING. MATCH-MARK SECTIONS FOR RE-ASSEMBLY AND COORDINATED INSTALLATION.
   B. SHOP FABRICATE DUCTWORK OF GAGES AND REINFORCEMENT COMPLYING WITH THE LATEST EDITION OF THE SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE".
   C. FABRICATE DUCT FITTINGS TO MATCH ADJOINING DUCTS, AND TO COMPLY WITH DUCT REQUIREMENTS AS APPLICABLE TO FITTINGS. EXCEPT AS OTHERWISE INDICATED, FABRICATE ELBOWS WITH CENTER-LINE RADIUS EQUAL TO ASSOCIATED DUCT WIDTH; AND FABRICATE TO INCLUDE TURING VANES IN ELBOWS WHERE SHORTER RADIUS IS NECESSARY. LIMIT ANGULAR TAPERS TO 30° FOR CONTRACTING TAPERS AND 20° FOR EXPANDING TAPERS.
   D. FABRICATE DUCTWORK WITH ACCESSORIES INSTALLED DURING FABRICATION TO THE GREATEST EXTENT POSSIBLE. REFER TO DIVISION-15 SECTION "DUCT ACCESSORIES" FOR ACCESSORY REQUIREMENTS.

7. FACTORY-FABRICATED DUCTWORK:
   A. GENERAL: PROVIDE FACTORY-FABRICATED DUCT AND FITTINGS.
   B. MATERIAL: GALVANIZED SHEET STEEL COMPLYING WITH ASTM A 653 AND A924.
   C. GAGE: 28 GA. MINIMUM FOR ROUND AND OVAL DUCTS AND FITTINGS, 4" THROUGH 24" DIAMETER.
   D. JOINT SEALING SHALL BE RATED TO MEET SMACNA'S LEAKAGE CLASS 3.
   E. ELBOWS: ONE PIECE CONSTRUCTION FOR 90° AND 45° ELBOWS 14" AND SMALLER. PROVIDE MULTIPLE GORE CONSTRUCTION FOR LARGER DIAMETERS WITH STANDING SEAM CIRCUMFERENTIAL JOINT.
   F. DIVIDED FLOW FITTINGS: 90° TEES, CONSTRUCTED WITH SADDLE TAP SPOT WELDED AND BONDED TO DUCT FITTING BODY.

8. KITCHEN EXHAUST DUCTS:
   A. GENERAL: KITCHEN EXHAUST DUCTS AND SUPPORTS, USED FOR SMOKE AND VAPOR REMOVAL FROM COOKING EQUIPMENT, SHALL BE FACTORY FABRICATED AND FURNISHED WITH THE EXHAUST HOOD PACKAGE. FOR DUCT ASSEMBLY, REFER TO THE MANUFACTURER'S INSTRUCTIONS FOR A COMPLETE INSTALLATION.

9. INSTALLATION OF DUCTWORK:
   A. GENERAL: ASSEMBLE AND INSTALL DUCTWORK IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES WHICH WILL ACHIEVE AIR TIGHT (5% LEAKAGE) AND NOISELESS (NO OBJECTIONABLE NOISE) SYSTEMS, CAPABLE OF PERFORMING EACH INDICATED SERVICE. INSTALL EACH RUN WITH MINIMUM OF JOINTS. ALIGN DUCTWORK ACCURATELY AT CONNECTIONS, WITHIN 1/8" MISALIGNMENT TOLERANCE AND WITH INTERNAL SURFACES SMOOTH. SUPPORT DUCTS RIGIDLY WITH SUITABLE TIES, BRACES, HANGERS AND ANCHORS OF TYPE WHICH WILL HOLD DUCTS TRUE-TO-SHAPE AND TO PREVENT BUCKLING.
   B. SEAL DUCTWORK, AFTER INSTALLATION, TO SEAL CLASS RECOMMENDED, AND METHOD PRESCRIBED IN THE LATEST EDITION OF THE SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE".
   C. INSTALL CONCRETE INSERTS FOR SUPPORT OF DUCTWORK IN COORDINATION WITH FORMWORK, AS REQUIRED TO AVOID DELAYS IN WORK.
   D. COMPLETE FABRICATION OF WORK AT PROJECT AS NECESSARY TO MATCH SHOP-FABRICATED WORK AND ACCOMMODATE INSTALLATION REQUIREMENTS.
   E. LOCATE DUCTWORK RUNS, EXCEPT AS OTHERWISE INDICATED, VERTICALLY AND HORIZONTALLY AND AVOID DIAGONAL RUNS WHEREVER POSSIBLE. LOCATE RUNS AS INDICATED BY DIAGRAMS, DETAILS AND NOTATIONS OR, IF NOT OTHERWISE INDICATED, RUN DUCTWORK IN SHORTEST ROUTE WHICH DOES NOT OBSTRUCT USEABLE SPACE OR BLOCK ACCESS FOR SERVICING BUILDING AND ITS EQUIPMENT. HOLD DUCTS CLOSE TO WALLS, OVERHEAD CONSTRUCTION, COLUMNS, AND OTHER STRUCTURAL AND PERMANENT-ENCLOSURE ELEMENTS OF BUILDING. LIMIT CLEARANCE TO 1/2" WHERE FURRING IS SHOWN FOR ENCLOSURE OR CONCEALMENT OF DUCTS, BUT ALLOW FOR INSULATION THICKNESS, IF ANY. WHERE POSSIBLE, LOCATE INSULATED DUCTWORK FOR 1" CLEARANCE OUTSIDE OF INSULATION. WHEREVER POSSIBLE IN FINISHED AND OCCUPIED SPACES, CONCEAL DUCTWORK FROM VIEW, BY LOCATING IN MECHANICAL SHAFTS, HOLLOW WALL CONSTRUCTION OR ABOVE SUSPENDED CEILINGS. DO NOT ENCASE HORIZONTAL RUNS IN SOLID PARTITIONS, EXCEPT AS SPECIFICALLY SHOWN. COORDINATE LAYOUT WITH SUSPENDED CEILING AND LIGHTING LAYOUTS AND SIMILAR FINISHED WORK.
   F. ELECTRICAL EQUIPMENT SPACES: DO NOT RUN DUCTWORK THROUGH TRANSFORMER VAULTS AND THEIR ELECTRICAL EQUIPMENT SPACES AND ENCLOSURES.
   G. WHERE DUCTS PASS THROUGH INTERIOR PARTITIONS AND EXTERIOR WALLS, CONCEAL SPACE BETWEEN CONSTRUCTION OPENING AND DUCT OR DUCT-PLUS INSULATION WITH SHEET METAL FLANGES OF SAME GAGE AS DUCT. OVERLAP OPENING ON 4 SIDES BY AT LEAST 1-1/2".
   H. COORDINATE DUCT INSTALLATIONS WITH INSTALLATION OF ACCESSORIES, DAMPERS, COIL FRAMES, EQUIPMENT, CONTROLS AND OTHER ASSOCIATED WORK OF DUCTWORK SYSTEM.
   I. SUPPORT DUCTWORK IN MANNER COMPLYING WITH THE LATEST EDITION OF THE SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE" HANGERS AND SUPPORTS SECTION.

10. CLEANING AND PROTECTION:
   A. CLEAN DUCTWORK INTERNALLY, UNIT-BY-UNIT AS IT IS INSTALLED, OF DUST AND DEBRIS. CLEAN EXTERNAL SURFACES OF FOREIGN SUBSTANCES WHICH MIGHT CAUSE CORROSIVE DETERIORATION OF METAL OR, WHERE DUCTWORK IS TO BE PAINTED, MIGHT INTERFERE WITH PAINTING OR CAUSE PAINT DETERIORATION.
   B. STRIP PROTECTIVE PAPER FROM STAINLESS DUCTWORK SURFACES, AND REPAIR FINISH WHEREVER IT HAS BEEN DAMAGED.
   C. TEMPORARY CLOSURE: AT ENDS OF DUCTS WHICH ARE NOT CONNECTED TO EQUIPMENT OR AIR DISTRIBUTION DEVICES AT TIME OF DUCTWORK INSTALLATION, PROVIDE TEMPORARY CLOSURE OF POLYETHYLENE FILM OR OTHER COVERING WHICH WILL PREVENT ENTRANCE OF DUST AND DEBRIS UNTIL TIME CONNECTIONS ARE TO BE COMPLETED.

11. BALANCING:
   A. REFER TO DIVISION-15 SECTION "TESTING, ADJUSTING, AND BALANCING" FOR AIR DISTRIBUTION BALANCING OF LOW PRESSURE DUCTWORK; NOT WORK OF THIS SECTION. SEAL ANY LEAKS IN DUCTWORK THAT BECOME APPARENT IN BALANCING PROCESS.

## SECTION 15870 - POWER AND GRAVITY VENTILATORS

1. RELATED DOCUMENTS:
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
   A. EXTENT OF POWER AND GRAVITY VENTILATOR WORK REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
   B. TYPES OF POWER AND GRAVITY VENTILATORS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. POWER VENTILATORS.
         a. CENTRIFUGAL ROOFTOP VENTILATORS.
      2. PREFABRICATED ROOF CURBS.
   C. REFER TO DIVISION-15 SECTION "TESTING, ADJUSTING, AND BALANCING" FOR BALANCING OF POWER AND GRAVITY VENTILATORS; NOT WORK OF THIS SECTION.
   D. REFER TO DIVISION-15 TEMPERATURE CONTROL SYSTEMS SECTIONS FOR CONTROL WORK REQUIRED IN CONJUNCTION WITH POWER AND GRAVITY VENTILATORS; NOT WORK OF THIS SECTION.
   E. REFER TO DIVISION-16 SECTIONS FOR THE FOLLOWING WORK; NOT WORK OF THIS SECTION.
      1. POWER SUPPLY WIRING FROM POWER SOURCE TO POWER CONNECTION ON VENTILATORS. INCLUDE STARTERS, DISCONNECTS, AND REQUIRED ELECTRICAL DEVICES, EXCEPT WHERE SPECIFIED AS FURNISHED, OR FACTORY-INSTALLED, BY MANUFACTURER.
      2. INTERLOCK WIRING BETWEEN VENTILATORS; AND BETWEEN VENTILATORS AND FIELD-INSTALLED CONTROL DEVICES.
   F. PROVIDE THE FOLLOWING ELECTRICAL WORK AS WORK OF THIS SECTION, COMPLYING WITH REQUIREMENTS OF DIVISION-16 SECTIONS:
      1. CONTROL WIRING BETWEEN FIELD-INSTALLED CONTROLS, INDICATING DEVICES, AND VENTILATORS.
      2. CONTROL WIRING SPECIFIED AS WORK OF DIVISION-15 FOR AUTOMATIC TEMPERATURE CONTROLS IS WORK OF THAT SECTION.
      3. INTERLOCK WIRING SPECIFIED AS FACTORY-INSTALLED IS WORK OF THIS SECTION.

3. QUALITY ASSURANCE:
   A. CODES AND STANDARDS:
      1. AMCA COMPLIANCE: PROVIDE POWER VENTILATORS WHICH HAVE BEEN TESTED AND RATED IN ACCORDANCE WITH AMCA STANDARDS, AND BEAR AMCA CERTIFIED RATINGS SEAL.
      2. UL COMPLIANCE: PROVIDE POWER VENTILATORS WHICH ARE LISTED BY UL AND HAVE UL LABEL AFFIXED.
      3. UL COMPLIANCE: PROVIDE POWER VENTILATORS WHICH ARE DESIGNED, MANUFACTURED, AND TESTED IN ACCORDANCE WITH UL 705 "POWER VENTILATORS'.
      4. NEMA COMPLIANCE: PROVIDE MOTORS AND ELECTRICAL ACCESSORIES COMPLYING WITH NEMA STANDARDS.

4. SUBMITTALS:
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL DATA FOR POWER AND GRAVITY VENTILATORS, INCLUDING SPECIFICATIONS, CAPACITY RATINGS, DIMENSIONS, WEIGHTS, MATERIALS, ACCESSORIES FURNISHED, AND INSTALLATION INSTRUCTIONS.

5. POWER VENTILATORS:
   A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE STANDARD PREFABRICATED POWER VENTILATOR UNITS OF TYPE AND SIZE INDICATED, MODIFIED AS NECESSARY TO COMPLY WITH REQUIREMENTS, AND AS REQUIRED FOR COMPLETE INSTALLATION.
   B. CENTRIFUGAL ROOF VENTILATORS: PROVIDE CENTRIFUGAL ROOF TYPE, CURB MOUNTED, POWER VENTILATORS OF TYPE, SIZE, AND CAPACITY AS SCHEDULED, AND AS SPECIFIED HEREIN.
   C. TYPE: CENTRIFUGAL FAN, DIRECT OR BELT DRIVEN AS SCHEDULED. PROVIDE ALUMINUM, GALVANIZED STEEL, OR FIBERGLASS WEATHERPROOF HOUSINGS AS SCHEDULED. PROVIDE SQUARE BASE TO SUIT ROOF CURB. PROVIDE PERMANENT SPLIT-CAPACITOR TYPE MOTOR FOR DIRECT DRIVEN FANS; CAPACITOR-START, INDUCTION-RUN TYPE MOTOR FOR BELT DRIVEN FANS.
      1. HOUSING DESIGN: HOODED DOME TYPE.
      2. HOUSING DESIGN: HOODED LOW CONTOUR TYPE.
      3. HOUSING DESIGN: UPBLAST TYPE.
   D. ELECTRICAL: PROVIDE FACTORY-WIRED NON-FUSIBLE TYPE DISCONNECT SWITCH AT MOTOR IN FAN HOUSING. PROVIDE THERMAL OVERLOAD PROTECTION IN FAN MOTOR. PROVIDE CONDUIT CHASE WITHIN UNIT FOR ELECTRICAL CONNECTION.
   E. BIRD SCREENS: PROVIDE REMOVABLE BIRD SCREENS, 1/2" MESH, 16-GA ALUMINUM OR BRASS WIRE.
   F. DAMPERS: PROVIDE GRAVITY-ACTUATED LOUVERED DAMPERS IN CURB BASES.
   G. REFER TO DIVISION-15 AUTOMATIC TEMPERATURE CONTROL SECTIONS FOR DAMPER MOTOR AND CONTROL SEQUENCE; NOT WORK OF THIS SECTION.
   H. MANUFACTURER: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE CENTRIFUGAL ROOF VENTILATORS OF ONE OF THE FOLLOWING:
      1. CAPTIVEDAIRE
      2. COOK CO., LOREN.
      3. GREENHECK FAN CORP.

6. PREFABRICATED ROOF CURBS:
   A. GENERAL: PROVIDE MANUFACTURER'S STANDARD SHOP-FABRICATED UNITS, MODIFIED IF NECESSARY TO COMPLY WITH REQUIREMENTS.
   B. FABRICATE STRUCTURAL FRAMING FOR UNITS OF STRUCTURAL QUALITY SHEET STEEL (ASTM A 570, GRADE 40), FORMED TO PROFILES INDICATED OR, IF NOT INDICATED, TO MANUFACTURER'S STANDARD PROFILES FOR COORDINATION WITH ROOFING, INSULATION AND DECK CONSTRUCTION. INCLUDE 45° CAN'T STRIPS AND DECK FLANGES WITH OFFSETS TO ACCOMMODATE ROOF INSULATION. WELD CORNERS AND SEAMS TO FORM WATERTIGHT UNITS.
   C. CLEAN AND PAINT UNITS WITH MANUFACTURER'S STANDARD RUST-INHIBITIVE METAL PRIMER PAINT.
   D. FABRICATE UNITS FROM ZINC-COATED STEEL, ASTM A 446, GRADE C, DESIGNATION G90 HOT-DIP COATING, MILL PHOSPHATIZED. CLEAN AND PAINT WITH RUST-INHIBITIVE METAL PRIMER PAINT, OF TYPE RECOMMENDED BY MANUFACTURER, 2.0 MILS DRY FILM THICKNESS.
   E. REINFORCE CONTINUOUS RUNS OF OVER 3'-0" LENGTH, BY INSERTING WELDED STIFFENERS OF HEAVY GAGE WITH FLANGES AS REQUIRED TO PROVIDE SUFFICIENT RIGIDITY AND STRENGTH TO WITHSTAND MAXIMUM LATERAL FORCES IN ADDITION TO SUPERIMPOSED VERTICAL LOADS.
   F. SLOPING ROOF DECKS: FOR DECK SLOPES OF 1/4" PER FOOT AND MORE, FABRICATE SUPPORT UNITS TO FORM LEVEL TOP EDGE.
   G. GAGE AND HEIGHT: FABRICATE UNITS OF METAL GAGE AND AT HEIGHT ABOVE ROOF SURFACE AS INDICATED.
   H. WHERE GAGE OR HEIGHT ARE NOT INDICATED, FABRICATE UNITS OF 14-GA METAL, AND NOMINAL HEIGHT OF 14".
   I. PROVIDE TREATED WOOD NAILER, NOT LESS THAN 1-5/8" THICK AND OF WIDTH INDICATED, BUT NOT LESS THAN WIDTH OF SUPPORT WALL ASSEMBLY. ANCHOR NAILER SECURELY TO TOP OF METAL FRAME UNIT.
   J. PROVIDE LUMBER PRESSURE TREATED WITH WATER-BORNE PRESERVATIVES FOR "ABOVE GROUND" USE, COMPLYING WITH AWPB LP-2.
   K. FABRICATE EXTERIOR SUPPORT PROFILE TO RECEIVE INSULATION OF THICKNESS INDICATED OR, IF NOT INDICATED, OF 1" THICKNESS.
   L. INSULATE UNITS INSIDE STRUCTURAL SUPPORT WALL WITH RIGID GLASS FIBER INSULATION BOARD OF APPROXIMATELY 3-IB. DENSITY AND 1-1/2" MINIMUM THICKNESS, EXCEPT AS OTHERWISE INDICATED.
   M. PROVIDE SUPPORT LINERS WHERE SHOWN, FORMED OF 22-GA GALVANIZED SHEET METAL, MILL PHOSPHATIZED, FLANGED AT LOWER EDGES.
   N. EXTEND SUPPORT LINERS THROUGH DECK CONSTRUCTION TO COORDINATE WITH DUCTWORK BELOW AS INDICATED.
   O. USE PERFORATED METAL FOR SUPPORT LINERS, WITH APPROXIMATELY 1000, 3/32" DIAMETER HOLES PER SQ.FT; TO PROVIDE SOUND ABSORBING SURFACES.
   P. METAL DECK REINFORCEMENT: WHERE INDICATED AS INTEGRAL PART OF SUPPORT UNITS, PROVIDE CHANNEL-SHAPED METAL DECK CLOSURE STRIPS TO REINFORCE OPENING THROUGH METAL DECKING. FABRICATE STRIPS FROM 14-GA METAL TO MATCH METAL AND FINISH OF CURB UNITS, EXCEPT AS OTHERWISE INDICATED.

7. INSTALLATION OF POWER AND GRAVITY VENTILATORS:
   A. GENERAL: EXCEPT AS OTHERWISE INDICATED OR SPECIFIED, INSTALL VENTILATORS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND RECOGNIZED INDUSTRY PRACTICES TO INSURE THAT VENTILATORS SERVE THEIR INTENDED FUNCTION.
   B. COORDINATE VENTILATOR WORK WITH WORK OF ROOFING, WALLS, AND CEILINGS, AS NECESSARY FOR PROPER INTERFACING.
   C. DUCTWORK: REFER TO DIVISION-15 SECTION "DUCTWORK". CONNECT DUCTS TO VENTILATORS IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
      1. SOLDER BOTTOM JOINTS AND UP 2" OF SIDE JOINTS OF DUCT UNDER ROOF VENTILATOR TO RETAIN ANY MOISTURE ENTERING VENTILATOR.
   D. ELECTRICAL WIRING: INSTALL ELECTRICAL DEVICES FURNISHED BY MANUFACTURER BUT NOT SPECIFIED TO BE FACTORY-MOUNTED. FURNISH COPY OF MANUFACTURER'S WIRING DIAGRAM SUBMITTAL TO ELECTRICAL INSTALLER.
   E. VERIFY THAT ELECTRICAL WIRING INSTALLATION IS IN ACCORDANCE WITH MANUFACTURER'S SUBMITTAL AND INSTALLATION REQUIREMENTS OF DIVISION-16 SECTIONS. VERIFY PROPER ROTATION DIRECTION OF FAN WHEELS. DO NOT PROCEED WITH EQUIPMENT START-UP UNTIL WIRING INSTALLATION IS ACCEPTABLE TO EQUIPMENT INSTALLER.
   F. REMOVE SHIPPING BOLTS AND TEMPORARY SUPPORTS WITHIN VENTILATORS. ADJUST DAMPERS FOR FREE OPERATION.

8. FIELD QUALITY CONTROL:
   A. TESTING: AFTER INSTALLATION OF VENTILATORS HAS BEEN COMPLETED, TEST EACH VENTILATOR TO DEMONSTRATE PROPER OPERATION OF UNITS AT PERFORMANCE REQUIREMENTS SPECIFIED.

## SECTION 15910 - DUCTWORK ACCESSORIES

1. RELATED DOCUMENTS:
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. DIVISION-15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
   A. EXTENT OF DUCTWORK ACCESSORIES WORK IS INDICATED ON DRAWINGS AND IN SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
   B. TYPES OF DUCTWORK ACCESSORIES REQUIRED FOR PROJECT INCLUDE THE FOLLOWING:
      1. DAMPERS.
      2. LOW PRESSURE MANUAL DAMPERS.
      3. CONTROL DAMPERS.
      4. COUNTERBALANCED RELIEF DAMPERS.
      5. TURNING VANES.
      6. DUCT HARDWARE.
      7. DUCT ACCESS DOORS.
      8. FLEXIBLE CONNECTIONS.
   C. REFER TO OTHER DIVISION-15 SECTIONS FOR TESTING, ADJUSTING, AND BALANCING OF DUCTWORK ACCESSORIES; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE:
   A. CODES AND STANDARDS:
      1. SMACNA COMPLIANCE: COMPLY WITH APPLICABLE PORTIONS OF SMACNA "HVAC DUCT CONSTRUCTION STANDARDS, METAL AND FLEXIBLE, LATEST EDITION".
      2. INDUSTRY STANDARDS: COMPLY WITH ASHRAE RECOMMENDATIONS PERTAINING TO CONSTRUCTION OF DUCTWORK ACCESSORIES, EXCEPT AS OTHERWISE INDICATED.
      3. UL COMPLIANCE: CONSTRUCT, TEST, AND LABEL FIRE DAMPERS IN ACCORDANCE WITH UL STANDARD 555 "FIRE DAMPERS AND CEILING DAMPERS".
      4. NFPA COMPLIANCE: COMPLY WITH APPLICABLE PROVISIONS OF NFPA 90A "AIR CONDITIONING AND VENTILATING SYSTEMS", PERTAINING TO INSTALLATION OF DUCTWORK ACCESSORIES.
      5. COMPLY WITH THE REQUIREMENTS OF THE INTERNATIONAL MECHANICAL CODE, SITE SPECIFIC DATE.

4. SUBMITTALS:
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA TO THE ARCHITECT FOR EACH TYPE OF DUCTWORK ACCESSORY, INCLUDING DIMENSIONS, CAPACITIES, AND MATERIALS OF CONSTRUCTION; AND INSTALLATION INSTRUCTIONS.

5. DAMPERS:
   A. LOW PRESSURE MANUAL DAMPERS: PROVIDE DAMPERS OF SINGLE BLADE TYPE OR MULTIBLADE TYPE, CONSTRUCTED IN ACCORDANCE WITH SMACNA "HVAC DUCT CONSTRUCTION STANDARDS". PROVIDE REMOTE VOLUME CONTROL REGULATORS FOR VOLUME CONTROL DAMPERS WHERE ACCESS IS LIMITED.
   B. CONTROL DAMPERS: PROVIDE DAMPERS WITH PARALLEL BLADES FOR 2-POSITION CONTROL, OR OPPOSED BLADES FOR MODULATING CONTROL. CONSTRUCT BLADES OF 16-GA. STEEL, PROVIDE HEAVY-DUTY MOLDED SELF-LUBRICATING NYLON BEARINGS, 1/2° DIAMETER STEEL AXLES SPACED ON 9" CENTERS. CONSTRUCT FRAME OF 2" X 1/2" X 1/8" STEEL CHANNEL FOR FACE AREAS 25 SQ. FT. AND UNDER; 4" X 1-1/4" X 16-GA. CHANNEL FOR FACE AREAS OVER 25 SQ. FT. PROVIDE GALVANIZED STEEL FINISH WITH ALUMINUM TOUCH-UP.

6. TURNING VANES:
   A. PROVIDE TURNING VANES CONSTRUCTED OF 1-1/2" WIDE CURVED BLADES SET AT 3/4" O.C., SUPPORTED WITH BARS PERPENDICULAR TO BLADES SET AT 2" O.C., AND SET INTO SIDE STRIPS SUITABLE FOR MOUNTING IN DUCTWORK.

7. DUCT HARDWARE:
   A. GENERAL: PROVIDE DUCT HARDWARE, MANUFACTURED BY ONE MANUFACTURER FOR ALL ITEMS ON PROJECT, FOR THE FOLLOWING:
      1. TEST HOLES: PROVIDE IN DUCTWORK AT FAN INLET AND OUTLET, AND ELSEWHERE AS INDICATED, DUCT TEST HOLES, CONSISTING OF SLOT AND COVER, FOR INSTRUMENT TESTS.
      2. QUADRANT LOCKS: PROVIDE FOR EACH DAMPER, QUADRANT LOCK DEVICE ON ONE END OF SHAFT; AND END BEARING PLATE ON OTHER END FOR DAMPER LENGTHS OVER 12". PROVIDE EXTENDED QUADRANT LOCKS AND END EXTENDED BEARING PLATES FOR EXTERNALLY INSULATED DUCTWORK.

8. DUCT ACCESS DOORS:
   A. GENERAL: PROVIDE WHERE INDICATED, DUCT ACCESS DOORS OF SIZE INDICATED.
   B. CONSTRUCTION: CONSTRUCT OF SAME OR GREATER GAGE AS DUCTWORK SERVED, PROVIDE INSULATED DOORS FOR INSULATED DUCTWORK. PROVIDE FLUSH FRAMES FOR UNINSULATED DUCTWORK, EXTENDED FRAMES FOR EXTERNALLY INSULATED DUCT. PROVIDE ONE SIZE HINGED, OTHER SIDE WITH ONE HANDLE-TYPE LATCH FOR DOORS 12" HIGH AND SMALLER, 2 HANDLE-TYPE LATCHES FOR LARGER DOORS.

9. FLEXIBLE CONNECTIONS:
   A. GENERAL: PROVIDE FLEXIBLE DUCT CONNECTIONS WHEREVER DUCTWORK CONNECTS TO VIBRATION ISOLATED EQUIPMENT. CONSTRUCT FLEXIBLE CONNECTIONS OF NEOPRENE-COATED FLAMEPROOF FABRIC CRIMPED INTO DUCT FLANGES FOR ATTACHMENT TO DUCT AND EQUIPMENT. MAKE AIRTIGHT JOINT. PROVIDE ADEQUATE JOINT FLEXIBILITY TO ALLOW FOR THERMAL, AXIAL, TRANSVERSE, AND TORSIONAL MOVEMENT, AND ALSO CAPABLE OF ABSORBING VIBRATIONS OF CONNECTED EQUIPMENT.

10. INSPECTION:
   A. EXAMINE AREAS AND CONDITIONS UNDER WHICH DUCTWORK ACCESSORIES WILL BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN A MANNER ACCEPTABLE TO INSTALLER.

11. INSTALLATION OF DUCTWORK ACCESSORIES:
   A. INSTALL DUCTWORK ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS, WITH APPLICABLE PORTIONS OF DETAILS OF CONSTRUCTION AS SHOWN IN SMACNA STANDARDS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PRODUCTS SERVE INTENDED FUNCTION.
   B. INSTALL VOLUME DAMPERS WHERE INDICATED ON THE PLANS. REMOTE CONTROL VOLUME DAMPERS SHALL BE INSTALLED IN ALL VOLUME DAMPERS LOCATED ABOVE HARD CEILINGS OR SPACES WHERE ACCESS TO THE DAMPER IS RESTRICTED. THE REMOTE VOLUME CONTROL CABLE SHALL BE FREE OF KINKS OR BENDS, AND SHALL BE SECURED TO THE DAMPER IN CONFORMANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS. THE REMOTE END OF THE REGULATOR SHALL BE PLACED OUT OF SIGHT AS PRACTICAL AND SHALL BE PAINTED TO MATCH THE CEILING COLOR.
   C. INSTALL TURNING VANES IN SQUARE OR RECTANGULAR 90° ELBOWS IN SUPPLY AND EXHAUST AIR SYSTEMS, AND ELSEWHERE AS INDICATED.
   D. INSTALL ACCESS DOORS TO OPEN AGAINST SYSTEM AIR PRESSURE, WITH LATCHES OPERABLE FROM EITHER SIDE, EXCEPT OUTSIDE ONLY WHERE DUCT IS TOO SMALL FOR PERSON TO ENTER.
   E. COORDINATE WITH OTHER WORK, INCLUDING DUCTWORK, AS NECESSARY TO INTERFACE INSTALLATION OF DUCTWORK ACCESSORIES PROPERLY WITH OTHER WORK.

12. ADJUSTING AND CLEANING:
   A. ADJUSTING: ADJUST DUCTWORK ACCESSORIES FOR PROPER SETTINGS, INSTALL FUSIBLE LINKS IN FIRE DAMPERS AND ADJUST FOR PROPER ACTION.
   B. LABEL ACCESS DOORS IN ACCORDANCE WITH DIVISION-15 SECTION "MECHANICAL IDENTIFICATION".
   C. FINAL POSITIONING OF MANUAL DAMPERS IS SPECIFIED IN DIVISION-15 SECTION "TESTING, ADJUSTING, AND BALANCING".

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STATE OF TEXAS
04/05/2022

HAT CREEK Burger Company

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SPECIFICATIONS

| DATE | REMARKS |
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| 03/03/2022 | ISSUE FOR PERMIT |

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| PA/PM: | STEVEN COX |
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## SECTION 15932 - AIR OUTLETS AND INLETS

PART 1 GENERAL

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK
   A. EXTENT OF AIR OUTLETS AND INLETS WORK IS INDICATED BY DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION.
   B. TYPES OF AIR OUTLETS AND INLETS REQUIRED FOR PROJECT INCLUDE THE FOLLOWING:
      1. AIR DEVICES.
      2. LOUVERS.
   C. REFER TO OTHER DIVISION 15 SECTIONS FOR DUCTWORK AND DUCT ACCESSORIES REQUIRED IN CONJUNCTION WITH AIR OUTLETS AND INLETS; NOT WORK OF THIS SECTION.
   D. REFER TO OTHER DIVISION 15 SECTIONS FOR BALANCING OF AIR OUTLETS AND INLETS; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE
   A. CODES AND STANDARDS:
      1. ARI COMPLIANCE: TEST AND RATE AIR OUTLETS AND INLETS IN ACCORDANCE WITH ARI 650 "STANDARD FOR AIR OUTLETS AND INLETS".
      2. ASHRAE COMPLIANCE: TEST AND RATE AIR OUTLETS AND INLETS IN ACCORDANCE WITH ASHRAE 70 "METHOD OF TESTING FOR RATING THE AIR FLOW PERFORMANCE OF OUTLETS AND INLETS".
      3. NFPA COMPLIANCE: INSTALL AIR OUTLETS AND INLETS IN ACCORDANCE WITH NFPA 90A "STANDARD FOR THE INSTALLATION OF AIR CONDITIONING AND VENTILATING SYSTEMS".

4. SUBMITTALS:
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA TO THE ARCHITECT FOR AIR OUTLETS AND INLETS INCLUDING THE FOLLOWING:

5. PRODUCT DELIVERY, STORAGE AND HANDLING:
   A. DELIVER AIR OUTLETS AND INLETS WRAPPED IN FACTORY—FABRICATED FIBER—BOARD TYPE CONTAINERS, IDENTIFY ON OUTSIDE OF CONTAINER TYPE OF OUTLET OR INLET AND LOCATION TO BE INSTALLED. AVOID CRUSHING OR BENDING AND PREVENT DIRT AND DEBRIS FROM ENTERING AND SETTLING IN DEVICES.

6. CEILING AIR DIFFUSERS:
   A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE MANUFACTURER'S STANDARD CEILING AIR DIFFUSERS WHERE SHOWN; OF SIZE, SHAPE, CAPACITY, AND TYPE INDICATED; CONSTRUCTED OF MATERIALS AND COMPONENTS AS INDICATED, AND AS REQUIRED FOR COMPLETE INSTALLATION.
   B. PERFORMANCE: PROVIDE CEILING AIR DIFFUSERS THAT HAVE, AS MINIMUM, TEMPERATURE AND VELOCITY TRAVERSES, THROW AND DROP, AND NOISE CRITERIA RATINGS FOR EACH SIZE DEVICE AS LISTED IN MANUFACTURER'S CURRENT DATA.
   C. CEILING COMPATIBILITY: PROVIDE DIFFUSERS WITH BORDER STYLES THAT ARE COMPATIBLE WITH ADJACENT CEILING SYSTEMS, AND THAT ARE SPECIFICALLY MANUFACTURED TO FIT INTO CEILING MODULE WITH ACCURATE FIT AND ADEQUATE SUPPORT. REFER TO GENERAL CONSTRUCTION DRAWINGS AND SPECIFICATIONS FOR TYPES OF CEILING SYSTEMS WHICH WILL CONTAIN EACH TYPE OF CEILING AIR DIFFUSER.
   D. DIFFUSER DAMPERS: FIRE DAMPER: COMBINATION ADJUSTABLE OPPOSED BLADE DAMPER AND FUSIBLE LINK FIRE DAMPER WITH UL APPROVED LINK AND ASSEMBLY DESIGNED TO MEET REQUIREMENTS OF NFPA 904.

7. LOUVERS:
   A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE MANUFACTURER'S STANDARD LOUVERS WHERE SHOWN; OF SIZE, SHAPE, CAPACITY, AND TYPE INDICATED; CONSTRUCTED OF MATERIALS AND COMPONENTS AS INDICATED, AND AS REQUIRED FOR COMPLETE INSTALLATION.,
   B. PERFORMANCE: PROVIDE LOUVERS THAT HAVE MINIMUM FREE AREA, AND MAXIMUM PRESSURE DROP FOR EACH TYPE AS LISTED IN MANUFACTURER'S CURRENT DATA, COMPLYING WITH LOUVER SCHEDULE.
   C. SUBSTRATE COMPATIBILITY: PROVIDE LOUVERS WITH FRAME AND SILL STYLES THAT ARE COMPATIBLE WITH ADJACENT SUBSTRATE, AND THAT ARE SPECIFICALLY MANUFACTURED TO FIT INTO CONSTRUCTION OPENINGS WITH ACCURATE FIT AND ADEQUATE SUPPORT, FOR WEATHERPROOF INSTALLATION. REFER TO GENERAL CONSTRUCTION DRAWINGS AND SPECIFICATIONS FOR TYPES OF SUBSTRATE WHICH WILL CONTAIN EACH TYPE OF LOUVER.
   D. MATERIALS: CONSTRUCT OF ALUMINUM EXTRUSIONS, ASTM B 221, ALLOY 6063—T52. WELD UNITS OR USE STAINLESS STEEL FOSTENERS.
   E. LOUVER SCREENS: ON INSIDE FACE OF EXTERIOR LOUVERS, PROVIDE 1/2" SQUARE MESH ANODIZED ALUMINUM WIRE BIRD SCREENS MOUNTED IN REMOVABLE EXTRUDED ALUMINUM FRAMES.

8. INSPECTION:
   A. EXAMINE AREAS AND CONDITIONS UNDER WHICH AIR OUTLETS AND INLETS ARE TO BE INSTALLED. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

9. INSTALLATION:
   A. GENERAL: — INSTALL AIR OUTLETS AND INLETS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO INSURE THAT PRODUCTS SERVE INTENDED FUNCTIONS.
   B. COORDINATE WITH OTHER WORK, INCLUDING DUCTWORK AND DUCT ACCESSORIES, AS NECESSARY TO INTERFACE INSTALLATION OF AIR OUTLETS AND INLETS WITH OTHER WORK.

## SECTION 15990 - TESTING, ADJUSTING, AND BALANCING

1. RELATED DOCUMENTS:
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. DIVISION—15 BASIC MECHANICAL MATERIALS AND METHODS SECTIONS APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK:
   A. EXTENT OF TESTING, ADJUSTING, AND BALANCING WORK REQUIRED BY THIS SECTION IS INDICATED ON DRAWINGS AND SCHEDULES, AND BY REQUIREMENTS OF THIS SECTION; AND IS DEFINED TO INCLUDE, BUT IS NOT NECESSARILY LIMITED TO, AIR DISTRIBUTION SYSTEMS, AND ASSOCIATED EQUIPMENT AND APPARATUS OF MECHANICAL WORK. THE WORK CONSISTS OF SETTING SPEED AND VOLUME (FLOW) ADJUSTING FACILITIES PROVIDED FOR SYSTEMS, RECORDING DATA, CONDUCTING TESTS, PREPARING AND SUBMITTING REPORTS, AND RECOMMENDING MODIFICATIONS TO WORK AS REQUIRED BY CONTRACT DOCUMENTS.
   B. COMPONENT TYPES OF TESTING, ADJUSTING, AND BALANCING SPECIFIED IN THIS SECTION INCLUDES THE FOLLOWING AS APPLIED TO MECHANICAL EQUIPMENT:
      1. FANS.
      2. AIR—CONDITIONING UNITS.
      3. DUCTWORK SYSTEMS.
      4. CONDENSERS.
      5. COILS AND HEAT EXCHANGERS.
   C. REFER TO DIVISION-15 SECTIONS FOR INSTALLATION AND START-UP OF EQUIPMENT TO BE TESTED, ADJUSTED, AND BALANCED; NOT WORK OF THIS SECTION.
   D. REFER TO DIVISION—16 SECTIONS FOR ELECTRICAL HOOK—UP AND WIRING OF EQUIPMENT TO BE TESTED, ADJUSTED, AND BALANCED; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE:
   A. CODES AND STANDARDS:
      1. NEBB COMPLIANCE: COMPLY WITH NEBB'S "PROCEDURAL STANDARDS FOR TESTING, ADJUSTING,AND BALANCING OF ENVIRONMENTAL SYSTEMS" AS APPLICABLE TO MECHANICAL AIR AND HYDRONIC DISTRIBUTION SYSTEMS, AND ASSOCIATED EQUIPMENT AND APPARATUS.
      2. AABC COMPLIANCE: COMPLY WITH AABC'S MANUAL MN—1 "AABC NATIONAL STANDARDS", AS APPLICABLE TO MECHANICAL AIR AND HYDRONIC DISTRIBUTION SYSTEMS, AND ASSOCIATED EQUIPMENT AND APPARATUS.

4. SUBMITTALS:
   A. SUBMIT CERTIFIED TEST REPORTS, SIGNED BY TEST AND BALANCE SUPERVISOR WHO PERFORMED TAB WORK. IN ADDITION, HAVE REPORT CERTIFIED BY PROFESSIONAL ENGINEER WHO IS FAMILIAR WITH TAB WORK AND ALSO WITH PROJECT, AND WHO IS REGISTERED IN JURISDICTION WHERE TESTING ¡IS BEING CONDUCTED.

5. JOB CONDITIONS:
   A. DO NOT PROCEED WITH TESTING, ADJUSTING, AND BALANCING WORK UNTIL WORK HAS BEEN COMPLETED AND IS OPERABLE, ENSURE THAT THERE IS MO LATENT RESIDUAL WORK STILL TO BE COMPLETED.

6. PATCHING MATERIALS:
   A. EXCEPT AS OTHERWISE INDICATED, USE SAME PRODUCTS AS USED BY ORIGINAL INSTALLER FOR PATCHING HOLES IN INSULATION, DUCTWORK AND HOUSINGS WHICH HAVE BEEN CUT OR DRILLED FOR TEST PURPOSES, INCLUDING ACCESS FOR TEST INSTRUMENTS, ATTACHING JIGS, AND SIMILAR PURPOSES.
   B. AT TESTER'S OPTION, PLASTIC PLUGS WITH RETAINERS MAY BE USED TO PATCH DRILLED HOLES IN DUCTWORK AND HOUSINGS.
   C. REFER TO DIVISION—15 "MECHANICAL RELATED WORK" SECTION FOR PATCHING OF HOLES IN INSULATION, DUCTWORK AND HOUSINGS WHICH HAVE BEEN CUT OR DRILLED FOR TEST PURPOSES. IN EACH CASE, PATCHING IS TO BE COMPLETED BY ORIGINAL INSTALLER.

7. TEST INSTRUMENTS:
   A. UTILIZE TEST INSTRUMENTS AND EQUIPMENT FOR TAB WORK REQUIRED, OF TYPE, PRECISION, AND CAPACITY AS RECOMMENDED IN THE FOLLOWING TAB STANDARDS:
      1. NEBB'S PROCEDURAL STANDARDS FOR TESTING, ADJUSTING, AND BALANCING OF ENVIRONMENTAL SYSTEMS.
      2. AABC'S MANUAL MN—1 "AABC NATIONAL STANDARDS".
   B. EXAMINE INSTALLED WORK AND CONDITIONS UNDER WHICH TESTING IS TO BE DONE TO ENSURE THAT WORK HAS BEEN COMPLETED, CLEANED, AND IS OPERABLE. DO NOT PROCEED WITH TAB WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO TESTER.
   C. TEST, ADJUST AND BALANCE ENVIRONMENTAL SYSTEMS AND COMPONENTS, AS INDICATED, IN ACCORDANCE WITH PROCEDURES OUTLINED IN APPLICABLE STANDARDS.
   D. TEST, ADJUST AND BALANCE SYSTEM DURING SUMMER SEASON FOR AIR CONDITIONING SYSTEMS AND URING WINTER SEASON FOR HEATING SYSTEMS, INCLUDING AT LEAST PERIOD OF OPERATION AT OUTSIDE CONDITIONS WITHIN 5OF (30C) WET BULB TEMPERATURE OF MAXIMUM SUMMER DESIGN CONDITION, AND WITHIN 10OF (60C) DRY BULB TEMPERATURE OF MINIMUM WINTER DESIGN CONDITION. WHEN SEASONAL OPERATION DOES NOT PERMIT MEASURING FINAL TEMPERATURES, THEN TAKE FINAL TEMPERATURE READINGS WHEN SEASONAL OPERATION DOES PERMIT.
   E. PREPARE REPORT OF TEST RESULTS, INCLUDING INSTRUMENTATION CALIBRATION REPORTS, IN FORMAT RECOMMENDED BY APPLICABLE STANDARDS.
   F. PATCH HOLES IN INSULATION, DUCTWORK, AND HOUSINGS, WHICH HAVE BEEN CUT OR DRILLED FOR TEST PURPOSES, IN A MANNER RECOMMENDED BY ORIGINAL INSTALLER.
   G. MARK EQUIPMENT SETTINGS, INCLUDING DAMPER CONTROL POSITIONS, VALVE INDICATORS, FAN SPEED CONTROL LEVERS, AND SIMILAR CONTROLS AND DEVICES, TO SHOW FINAL SETTINGS AT COMPLETION OF TAB WORK. PROVIDE MARKINGS WITH PAINT OR OTHER SUITABLE PERMANENT IDENTIFICATION MATERIALS.
   H. PREPARE REPORT OF RECOMMENDATIONS FOR CORRECTING UNSATISFACTORY MECHANICAL PERFORMANCES WHEN SYSTEM CANNOT BE SUCCESSFULLY BALANCED; INCLUDING, WHERE NECESSARY, MODIFICATIONS WHICH EXCEED REQUIREMENTS OF CONTRACT DOCUMENTS FOR MECHANICAL WORK.
   I. RETEST, ADJUST, AND BALANCE SYSTEMS SUBSEQUENT TO SIGNIFICANT SYSTEM MODIFICATIONS, AND RESUBMIT TEST RESULTS.

# DIVISION 16 - ELECTRICAL

## SECTION 16050 - BASIC METHODS AND REQUIREMENTS

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. FURNISH AND INSTALL ALL ELECTRICAL WIRING, SYSTEMS, EQUIPMENT AND ACCESSORIES IN ACCORDANCE WITH THE SPECIFICATIONS AND DRAWINGS. CAPACITIES AND RATINGS OF MOTORS, CABLE, PANELBOARDS, ETC., AND ARRANGEMENT FOR SPECIFIED ITEMS IN GENERAL ARE SHOWN ON DRAWINGS.
   C. ALL AMPACITIES HEREIN SPECIFIED OR INDICATED ON THE DRAWINGS ARE BASED ON COPPER CONDUCTORS, WITH THE CONDUIT AND RACEWAYS ACCORDINGLY SIZED. ALUMINURN CONDUCTORS ARE NOT PERMITTED,

2. MINIMUM REQUIREMENTS
   A. REFERENCES TO THE NATIONAL ELECTRICAL CODE (NEC), UNDERWRITERS LABORATORIES, INC. (UL), AND NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) ARE A MINIMUM INSTALLATION REQUIREMENT STANDARD. DESIGN DRAWINGS AND OTHER SPECIFICATION SECTIONS SHALL GOVERN IN THOSE INSTANCES WHERE REQUIREMENTS ARE GREATER THAN THOSE SPECIFIED IN NEC.
   B. THE RULES AND REGULATIONS OF THE FEDERAL, STATE, LOCAL, CIVIL AUTHORITIES AND UTILITY COMPANIES IN FORCE AT THE TIME OF EXECUTION OF THE CONTRACT SHALL BECOME A PART OF THIS SPECIFICATION. WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF APPLICABLE BUILDING CODES NOTED ON THE TITLE SHEET OF THE DRAWING SET.
   C. NO WORK SHALL BE DONE UNLESS THE SUPERINTENDENT OF THE CONTRACTOR IS ON THE JOB SITE. WORK SHALL BE PROPERLY PROTECTED, ALL RUBBISH REMOVED PROMPTLY, AND EXPOSED WORK SHALL BE CAREFULLY CLEANED PRIOR TO FINAL ACCEPTANCE.
   D. THE TERM "PROVIDE" SHALL INCLUDE LABOR, MATERIALS, AND EQUIPMENT NECESSARY TO FUMISH AND INSTALL, COMPLETE AND OPERABLE, THE ITEM OR SYSTEM INDICATED.
   E. IN DECISIONS ARISING FROM DISCREPANCIES, INTERPRETATION OF DRAWINGS AND SPECIFICATIONS,SUBSTITUTES, AND OTHER PERTINENT MATTERS, THE DECISION OF THE OWNER'S REPRESENTATIVE'S APPROVAL SHALL BE FINAL.

3. SPECIFICATIONS AND DRAWINGS
   A. PLANS SHOW LOCATION OF FIXTURES AND EQUIPMENT AND ARE INTENDED TO DEPICT THE GENERAL INTENT OF THE WORK IN SCOPE, LAYOUT AND QUALITY OF WORKMANSHIP. THEY ARE NOT INTENDED TO SHOW IN MINUTE DETAIL EVERY OR ALL ACCESSORIES INTENDED FOR THE PURPOSE OF EXECUTING THE WORK, BUT IT IS UNDERSTOOD THAT SUCH DETAILS ARE A PART OF THIS WORK.
   B. WHERE DRAWINGS AND SPECIFICATIONS CONFLICT, ¡T SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR TO BRING SUCH CONFLICT TO THE ATTENTION OF THE ARCHITECT/ENGINEER FOR CLARIFICATION. IN GENERAL, THE ARCHITECTURAL DRAWINGS SHALL TAKE PRECEDENCE OVER THE ELECTRICAL DRAWINGS WITH REFERENCE TO BUILDING CONSTRUCTION. ALL CHANGES FROM THE DRAWINGS NECESSARY TO MAKE THE WORK CONFORM WITH THE BUILDING AS CONSTRUCTED AND TO FIT THE WORK OF OTHER TRADES OR TO CONFORM TO THE RULES OF AUTHORITIES HAVING JURISDICTION, SHALL BE MADE BY THE CONTRACTOR AT HIS OWN EXPENSE.

4. STANDARDS
   A. ALL MATERIAL AND EQUIPMENT SHALL BE LISTED, LABELED OR CERTIFIED BY UNDERWRITERS LABORATORIES, INC., WHERE SUCH STANDARDS HAVE BEEN ESTABLISHED. EQUIPMENT AND MATERIAL WHICH ARE NOT COVERED BY UL STANDARDS WILL BE ACCEPTED PROVIDED EQUIPMENT AND MATERIAL IS LISTED, LABELED, CERTIFIED OR OTHERWISE DETERMINED TO MEET SAFETY REQUIREMENTS OF A NATIONALLY RECOGNIZED TESTING LABORATORY. EQUIPMENT OF A CLASS WHICH NO NATIONALLY RECOGNIZED TESTING LABORATORY ACCEPTS, CERTIFIES, LISTS, LABELS, OR DETERMINES TO BE SAFE, WILL BE CONSIDERED IF INSPECTED OR TESTED IN ACCORDANCE WITH NATIONAL INDUSTRIAL STANDARDS, SUCH AS NEMA, OR ANSI. EVIDENCE OF COMPLIANCE SHALL INCLUDE CERTIFIED TEST REPORTS AND DEFINITIVE SHOP DRAWINGS.
   B. DEFINITIONS:
      1. LISTED: EQUIPMENT IS "LISTED" IF OF A KIND MENTIONED IN A LIST WHICH:
         a. IS PUBLISHED BY A NATIONALLY RECOGNIZED LABORATORY WHICH MAKES PERIODIC INSPECTION OF PRODUCTION OF SUCH EQUIPMENT.
         b. STATES THAT SUCH EQUIPMENT MEETS NATIONALLY RECOGNIZED STANDARDS OR HAS BEEN TESTED AND FOUND SAFE FOR USE IN A SPECIFIED MANNER.
      2. LABELED: EQUIPMENT IS LABELED IF:
         a. IT EMBODIES A VALID LABEL, SYMBOL, OR OTHER IDENTIFYING MARK OF A NATIONALLY RECOGNIZED TESTING LABORATORY SUCH AS UNDERWRITERS LABORATORIES, INC.
         b. THE LABORATORY MAKES PERIODIC INSPECTIONS OF THE PRODUCTION OF SUCH EQUIPMENT.
         c. THE LABELING INDICATES COMPLIANCE WITH NATIONALLY RECOGNIZED STANDARDS OR TESTS TO DETERMINE SAFE USE IN A SPECIFIED MANNER.
      3. CERTIFIED: EQUIPMENT IS *CERTIFIED" IF:
         a. EQUIPMENT HAS BEEN TESTED AND FOUND BY A NATIONALLY RECOGNIZED TESTING LABORATORY TO MEET NATIONALLY RECOGNIZED STANDARDS OR TO BE SAFE FOR USE IN A SPECIFIED MANNER.
         b. PRODUCTION IS PERIODICALLY INSPECTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY.
         c. LT BEARS A LABEL, TAG, OR OTHER RECORD OF CERTIFICATION.
      4. NATIONALLY RECOGNIZED TESTING LABORATORY: A TESTING LABORATORY WHICH IS APPROVED, IN ACCORDANCE WITH OSHA REGULATIONS, BY THE SECRETARY OF LABOR.

5. QUALIFICATIONS (PRODUCTS AND SERVICES)
   A. MANUFACTURERS QUALIFICATIONS: THE MANUFACTURER SHALL REGULARLY AND PRESENTLY PRODUCE, AS ONE OF THE MANUFACTURER'S PRINCIPAL PRODUCTS, THE EQUIPMENT AND MATERIAL SPECIFIED FOR THIS PROJECT, AND SHALL HAVE MANUFACTURED THE ITEM FOR AT LEAST FIVE YEARS, UNLESS OTHERWISE NOTED ELSEWHERE IN THE SPECIFICATIONS OR ON THE DRAWINGS.
   B. PRODUCT QUALIFICATION:
      1. MANUFACTURER'S PRODUCT SHALL HAVE BEEN IN SATISFACTORY OPERATION ON THREE INSTALLATIONS OF SIMILAR SIZE AND TYPE, AS THIS PROJECT, FOR APPROXIMATELY THREE YEARS.
      2. THE OWNER RESERVES THE RIGHT TO REQUIRE THE CONTRACTOR TO SUBMIT A LIST OF INSTALLATIONS WHERE THE PRODUCTS HAVE BEEN IN OPERATION BEFORE APPROVAL OF SAID PRODUCTS.
   C. SERVICE QUALIFICATIONS: THERE SHALL BE A PERMANENT SERVICE ORGANIZATION MAINTAINED OR TRAINED BY THE MANUFACTURER WHICH WILL RENDER SATISFACTORY SERVICE TO THIS INSTALLATION WITHIN FOUR HOURS OF RECEIPT OF NOTIFICATION THAT SERVICE IS NEEDED. SUBMIT NAME AND ADDRESS OF SERVICE ORGANIZATIONS.

6. MANUFACTURED PRODUCTS
   A. MATERIALS AND EQUIPMENT FURNISHED SHALL BE OF CURRENT PRODUCTION BY MANUFACTURERS REGULARLY ENGAGED IN THE MANUFACTURE OF SUCH ITEMS, FOR WHICH REPLACEMENT PARTS SHOULD BE AVAILABLE. ITEMS NOT MEETING THIS REQUIREMENT, BUT WHICH OTHERWISE MEET TECHNICAL SPECIFICATIONS, AND MERITS OF WHICH CAN BE ESTABLISHED THROUGH RELIABLE TEST REPORTS OR PHYSICAL EXAMINATION OF REPRESENTATIVE SAMPLES, WILL BE CONSIDERED.
   B. WHEN MORE THAN ONE UNIT OF THE SAME CLASS OF EQUIPMENT IS REQUIRED, SUCH UNITS SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER.
   C. EQUIPMENT ASSEMBLIES AND COMPONENTS:
      1. ALL COMPONENTS OF AN ASSEMBLED UNIT NEED NOT BE PRODUCTS OF THE SAME MANUFACTURER, HOWEVER, THE ASSEMBLED UNIT SHALL BE THE RESPONSIBILITY OF A SINGLE MANUFACTURER AND WARRANTED AS SUCH.
      2. MANUFACTURERS OF EQUIPMENT ASSEMBLIES, WHICH INCLUDE COMPONENTS MADE BY OTHERS, SHALL ASSUME COMPLETE RESPONSIBILITY FOR THE FINAL ASSEMBLED UNIT.
      3. COMPONENTS SHALL BE COMPATIBLE WITH EACH OTHER AND WITH THE TOTAL ASSEMBLY FOR THE INTENDED SERVICE.
      4. CONSTITUENT PARTS WHICH ARE SIMILAR SHALL BE THE PRODUCT OF A SINGLE MANUFACTURER.
   D. ALL FACTORY WIRING SHALL BE IDENTIFIED ON THE EQUIPMENT BEING FURNISHED AND ON ALL WIRING DIAGRAMS.

7. EQUIPMENT REQUIREMENTS
   A. EQUIPMENT VOLTAGE RATINGS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS INDICATED ON THE DRAWINGS OR AS SPECIFIED.
   B. PRIOR TO BID, WRITTEN APPROVAL SHALL BE OBTAINED BY THE CONTRACTOR FOR ANY EQUIPMENT THAT DIFFERS FROM THOSE SPECIFIED ON THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR SHALL BE PREPARED TO SUBMIT SAMPLES OF THE EQUIPMENT WHEN REQUESTED AT NO COST TO THE OWNER.
      1. THE CONTRACTOR SHALL FURNISH DRAWINGS SHOWING ALL INSTALLATION DETAILS, SHOP DRAWINGS, TECHNICAL DATA AND OTHER PERTINENT INFORMATION AS REQUIRED TO DETERMINE THAT THE EQUIPMENT ¡IS EQUIVALENT IN QUALITY AND FUNCTION TO THE EQUIPMENT SPECIFIED.
      2. APPROVAL BY THE OWNER'S CONSTRUCTION MANAGER OF THE EQUAL EQUIPMENT DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF FURNISHING AND INSTALLING THE EQUIPMENT AT NO ADDITIONAL COST TO THE OWNER.
      3. ANY OTHER ITEMS REQUIRED FOR THE SATISFACTORY INSTALLATION OF THE EQUAL EQUIPMENT SHALL BE FURNISHED AND INSTALLED AT NO ADDITIONAL COST TO THE OWNER. THIS INCLUDES BUT SHALL NOT BE LIMITED TO ADDITIONS OR CHANGES TO BRANCH CIRCUITS, CIRCUIT PROTECTIVE DEVICES, CONDUITS, WIRE, FEEDERS, CONTROLS, PANELS AND CORRELATION WITH OTHER WORK, SUBJECT TO THE JURISDICTION AND APPROVAL OF THE ARCHITECT/ENGINEER.
   C. CATALOGUE NUMBERS, WHERE GIVEN, ARE INTENDED TO GIVE A BASIS FOR DESIGN, QUALITY AND FUNCTION. ANY OTHER INCIDENTAL EQUIPMENT NEEDED FOR A COMPLETE AND FUNCTIONAL INSTALLATION SHALL BE PROVIDED AT NO ADDITIONAL COST.
   D. EQUIPMENT PROTECTION: EQUIPMENT AND MATERIAL SHALL BE PROTECTED DURING SHIPMENT AND STORAGE AGAINST PHYSICAL DAMAGE, DIRT, MOISTURE, COLD AND RAIN.
   E. DURING INSTALLATION, EQUIPMENT, CONTROLS, CONTROLLERS, CIRCUIT PROTECTIVE DEVICES, ETC., SHALL BE PROTECTED AGAINST ENTRY OF FOREIGN MATTER; AND BE VACUUM CLEANED BOTH INSIDE AND OUTSIDE BEFORE TESTING, OPERATING AND PAINTING.
   F. DAMAGED EQUIPMENT SHALL BE, AS DETERMINED BY THE OWNER'S CONSTRUCTION MANAGER, PLACED IN FIRST CLASS OPERATING CONDITION OR BE RETURNED TO THE SOURCE OF SUPPLY FOR REPAIR OR REPLACEMENT OR REPLACED AT OWNER DISCRETION.
   G. PAINTED SURFACES SHALL BE PROTECTED WITH FACTORY INSTALLED REMOVABLE HEAVY KRAFT PAPER, SHEET VINYL OR EQUAL.
   H. DAMAGED PAINT ON EQUIPMENT AND MATERIALS SHALL BE REFINISHED WITH THE SAME QUALITY OF POINT AND WORKMANSHIP AS USED BY THE MANUFACTURER SO REPAIRED AREAS ARE NOT OBVIOUS OR REPLACED AT OWNER DISCRETION.

8. WORK PERFORMANCE
   A. ARRANGE, PHASE AND PERFORM WORK TO ASSURE ELECTRICAL SERVICE FOR OTHER BUILDINGS AT ALL TIMES.
   B. NEW WORK SHALL BE INSTALLED AND CONNECTED TO EXISTING WORK NEATLY AND CAREFULLY. DISTURBED OR DAMAGED WORK SHALL BE REPLACED OR REPAIRED TO ITS PRIOR CONDITIONS.
   C. COORDINATE LOCATION OF EQUIPMENT AND CONDUIT WITH OTHER TRADES TO MINIMIZE INTERFERENCES.
   D. OBTAIN AND PAY FOR ALL REQUIRED INSTALLATION INSPECTIONS AND DELIVER CERTIFICATES APPROVING INSTALLATIONS TO THE OWNER UNLESS DIRECTED OTHERWISE.

9. EQUIPMENT INSTALLATION AND REQUIREMENTS
   A. EQUIPMENT LOCATION SHALL BE AS CLOSE AS PRACTICAL TO LOCATIONS SHOWN ON THE DRAWINGS. WHERE ARCHITECTURAL FEATURES GOVERN LOCATION OF WORK, REFER TO ARCHITECTURAL DRAWINGS.
   B. WORKING SPACES SHALL NOT BE LESS THAN SPECIFIED IN THE NATIONAL ELECTRICAL CODE FOR ALL VOLTAGES SPECIFIED.
   C. INACCESSIBLE EQUIPMENT:
      1. WHERE THE OWNER/ARCHITECT/ENGINEER DETERMINES THAT THE CONTRACTOR HAS INSTALLED EQUIPMENT NOT CONVENIENTLY ACCESSIBLE FOR OPERATION AND MAINTENANCE, EQUIPMENT SHALL BE REMOVED AND REINSTALLED AS DIRECTED AT NO ADDITIONAL COST TO THE OWNER.
      2. "CONVENIENTLY ACCESSIBILITY" IS DEFINED AS BEING CAPABLE OF BEING REACHED WITHOUT THE USE OF LADDERS, OR WITHOUT CLIMBING OR CRAWLING UNDER OR OVER OBSTACLES SUCH AS MOTORS, PUMPS, BELT GUARDS, TRANSFORMERS, PIPING, AND DUCT WORK.
   D. EQUIPMENT AND MATERIAL:
      1. NEW EQUIPMENT AND MATERIAL SHALL BE INSTALLED, UNLESS OTHERWISE SPECIFIED.
      2. EQUIPMENT AND MATERIAL SHALL BE DESIGNED TO ASSURE SATISFACTORY OPERATION AND OPERATING LIFE FOR ENVIRONMENTAL CONDITIONS WHERE BEING INSTALLED. NEC AND OTHER CODE REQUIREMENTS SHALL APPLY TO THE INSTALLATION IN AREAS REQUIRING SPECIAL PROTECTION SUCH AS EXPLOSION—PROOF, WATERTIGHT AND WEATHERPROOF CONSTRUCTION.
   E. UTILITY SERVICES:
      1. DETERMINE UTILITY CONNECTION REQUIREMENTS AND INCLUDE IN THE BASE BID ALL COSTS TO THE OWNER FOR UTILITY SERVICE.
      2. INCLUDE ALL COSTS FOR TEMPORARY SERVICE, TEMPORARY ROUTING OF SERVICE OR ANY OTHER REQUIREMENTS OF A TEMPORARY NATURE ASSOCIATED WITH THE UTILITY SERVICE,
   F. CONTINUITY OF SERVICE:
      1. NO SERVICE SHALL BE INTERRUPTED OR CHANGED WITHOUT PERMISSION FROM THE ARCHITECT AND THE OWNER. WRITTEN PERMISSION SHALL BE OBTAINED BEFORE ANY WORK IS STARTED.
      2. WHEN INTERRUPTION OF SERVICES IS REQUIRED, ALL PERSONS CONCERNED SHALL BE NOTIFIED AND A PREARRANGED TIME AGREED UPON.
   G. CONCRETE WORK:
      1. PROVIDE ALL CAST-IN—PLACE CONCRETE SHOWN ON THE DOCUMENTS UNLESS NOTED OTHERWISE. CONCRETE WORK SHALL CONFORM TO ALL APPLICABLE DIVISION 2 AND 3 SPECIFICATION SECTIONS.
      2. PROVIDE ALL ANCHOR BOLTS, METAL SHAPES AND TEMPLATES REQUIRED TO BE CAST IN CONCRETE OR USED TO FORM CONCRETE FOR SUPPORT OF ELECTRICAL EQUIPMENT.

10. EQUIPMENT IDENTIFICATION
   A. IN ADDITION TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE, INSTALL AN IDENTIFICATION NAMEPLATE WHICH WILL CLEARLY INDICATE INFORMATION REQUIRED FOR USE AND MAINTENANCE OF ITEMS SUCH AS SWITEHBOARD, PANELBOARDS, CABINETS, SAFETY SWITCHES, SEPARATELY ENCLOSED CIRCUIT BREAKERS, MOTOR STARTERS, COMMUNICATIONS SYSTEMS CABINETS, CONTROL DEVICES AND OTHER SIGNIFICANT EQUIPMENT.
   B. AMEPLATES SHALL BE LAMINATED WHITE PHENOLIC RESIN WITH A BLACK CORE WITH ENGRAVED LETTERING, A MINIMUM OF 3/16-INCH HIGH. NAMEPLATES THAT ARE FURNISHED BY MANUFACTURER AS A STANDARD CATALOG ITEM, OR WHERE OTHER METHOD OF IDENTIFICATION IS HEREIN SPECIFIED, ARE EXCEPTIONS. HAND WRITTEN MARKER IS NOT ACCEPTABLE.

11. SHOP AND ERECTION DRAWINGS AND SAMPLES
   A. THE ARCHITECT /ENGINEER'S APPROVAL SHALL BE OBTAINED FOR ALL EQUIPMENT AND MATERIAL BEFORE DELIVERY TO THE JOB SITE. DELIVERY, STORAGE OR INSTALLATION OF EQUIPMENT OR MATERIAL WHICH HAS NOT HAD PRIOR APPROVAL WILL NOT BE PERMITTED AT THE JOB SITE. SUBMITTALS SHALL BE MADE FOR ALL EQUIPMENT AND SYSTEMS AS INDICATED IN THE RESPECTIVE SPECIFICATION SECTION.
   B. ALL SUBMITTALS SHALL INCLUDE ADEQUATE DESCRIPTIVE LITERATURE, CATALOG CUTS, SHOP DRAWINGS AND OTHER DATA NECESSARY FOR THE ARCHITECT/ENGINEER TO ASCERTAIN THAT THE PROPOSED EQUIPMENT AND MATERIALS COMPLY WITH SPECIFICATION AND DRAWING REQUIREMENTS. CATALOG CUTS SUBMITTED FOR APPROVAL SHALL BE LEGIBLE AND CLEARLY IDENTIFY EQUIPMENT BEING SUBMITTED,
   C. SHOP AND ERECTION DRAWING SUBMITTALS SHALL CONFORM TO THE REQUIREMENTS OF THE GENERAL CONDITIONS AND DIVISION—1 SPECIFICATIONS EXCEPT AS MODIFIED HEREIN.
   D. SUBMIT REQUIRED AND/OR REQUESTED SHOP AND ERECTION DRAWINGS, FOR REVIEW BY ARCHITECT/ENGINEER BEFORE ORDERING OR INSTALLING ANY EQUIPMENT OR MATERIAL. EQUIPMENT OR MATERIAL ORDERED OR INSTALLED BEFORE ARCHITECT/ENGINEER REVIEW MAY NOT BE ACCEPTED AND MAY HAVE TO BE REMOVED FROM THE PROJECT IF DEEMED UNACCEPTABLE.
   E. SHOP DRAWINGS SHALL CONSIST OF MANUFACTURER'S SCALE DRAWINGS, CUTS OR CATALOGS, INCLUDING DESCRIPTIVE LITERATURE WHICH SHALL CLEARLY INDICATE THE CONSTRUCTION, MATERIAL, PHYSICAL DIMENSIONS, WIRING DIAGRAMS AND COMPLETE OPERATING DATA CLEARLY MARKED FOR EACH ITEM. DATA OF GENERAL NATURE WILL NOT BE ACCEPTED.
   F. SHOP DRAWINGS SHALL BE SUBMITTED WITH A MINIMUM OF (2) SETS. ONE SET WILL BE RETAINED BY THE ENGINEER AND ONE WILL BE RETURNED TO THE CONTRACTOR. ALL DRAWINGS ARE TO BE SUBMITTED NO LATER THAN 30 DAYS AFTER THE CONTRACT HAS BEEN AWARDED.
      1. COORDINATION DRAWINGS SHALL SHOW MAJOR ELEMENTS, COMPONENTS, AND SYSTEMS OF MECHANICAL EQUIPMENT AND MATERIALS IN RELATIONSHIP WITH OTHER BUILDING COMPONENTS. PREPARE DRAWINGS TO AN ACCURATE SCALE OF 1/4"=1'—0" OR LARGER. INDICATE THE LOCATIONS OF ALL EQUIPMENT AND MATERIALS, INCLUDING CLEARANCES FOR INSTALLING AND MAINTAINING INSULATION, SERVICING AND MAINTAINING EQUIPMENT, VALVE STEM MOVEMENT, AND SIMILAR REQUIREMENTS. INDICATE MOVEMENT AND POSITIONING OF LARGE EQUIPMENT INTO THE BUILDING DURING CONSTRUCTION.
   G. SUBMITTALS FOR INDIVIDUAL SYSTEMS AND EQUIPMENT ASSEMBLIES WHICH CONSIST OF MORE THAN ONE ITEM OR COMPONENT SHALL BE MADE FOR THE SYSTEM OR ASSEMBL AS A WHOLE. PARTIAL SUBMITTALS WILL NOT BE CONSIDERED FOR APPROVAL. SUBMITTALS SHALL BE SUBMITTED FOR ALL APPLICABLE PRODUCTS AND MATERIALS SPECIFIED IN EACH INDIVIDUAL SECTION OF THESE SPECIFICATIONS.
   H. MAKE SUBMITTALS FOR THE EQUIPMENT AND MATERIALS IN ACCORDANCE WITH THE FOLLOWING:
      1. MARK THE SUBMITTALS, "SUBMITTED UNDER SECTION_______".
      2. SUBMITTALS SHALL BE MARKED TO SHOW SPECIFICATION REFERENCE INCLUDING THE SECTION AND PARAGRAPH NUMBERS.
      3. THE SUBMITTALS SHALL INCLUDE THE FOLLOWING:
         a. INFORMATION THAT CONFIRMS COMPLIANCE WITH CONTRACT REQUIREMENTS. INCLUDE THE MANUFACTURER'S NAME, MODEL OR CATALOG NUMBERS, CATALOG INFORMATION, TECHNICAL DATA SHEETS, SHOP DRAWINGS, PICTURES, NAMEPLATE DATA AND TEST REPORTS AS REQUIRED. PROVIDE ANY ADDITIONAL INFORMATION SPECIFICALLY REQUESTED IN THE INDIVIDUAL SPECIFICATION SECTION OR ON THE DRAWINGS.
         b. ELEMENTARY AND INTERCONNECTION WIRING DIAGRAMS FOR FIRE ALARM, SOUND SYSTEM, TV SYSTEM AND OTHER COMMUNICATION SYSTEMS AND EQUIPMENT ASSEMBLIES. ALL TERMINAL POINTS AND WIRING SHALL BE IDENTIFIED ON WIRING DIAGRAMS.
         c. PARTS LIST WHICH SHALL INCLUDE THOSE REPLACEMENT PARTS RECOMMENDED BY THE EQUIPMENT MANUFACTURER, QUANTITY OF PARTS, CURRENT PRICE AND AVAILABILITY OF EACH PART.
   I. SHOP DRAWINGS ON PAPER 11*X17" OR SMALLER IN SIZE SHALL BE SUBMITTED IN TABBED AND INDEXED THREE RING BINDER. THE BINDER SHALL NOT EXCEED 11-5/8" HEIGHT. PARTIAL SUBMITTALS ARE UNACCEPTABLE. THE INDEX SHALL INDICATE THE RELATED SPECIFICATION SECTION NUMBER.
   J. A FEE WILL BE CHARGED FOR ENGINEERING REVIEW OF DRAWINGS RECEIVED AFTER THE TIME ALLOTTED AS DESCRIBED IN "D" ABOVE OR FOR PLANS THAT HAVE BEEN REJECTED TWO OR MORE TIMES DUE TO NON—COMPLIANCE OR INCOMPLETENESS. THE FEE WILL BE DETERMINED BY THE ARCHITECT/ENGINEER AND WILL ACCOMPANY THE RE—SUBMITTAL IN THE FORM OF A CASHIERS CHECK OR MONEY ORDER MADE PAYABLE TO THE ENGINEER.
   K. THE GENERAL CONTRACTOR WILL CERTIFY THAT ALL ELECTRICAL SHOP DRAWINGS ARE IN CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. DEVIATIONS FROM THE PLANS AND SPECIFICATIONS SHALL BE NOTED, AND THE SPECIFIC AREA OF THE DEVIATION CLOUDED AND IN CONTRASTING COLOR (GREEN) WITH A COMPLETE EXPLANATION FOR THE REASONS FOR THE DEVIATION. ANY REDESIGN OF THE SYSTEM SHALL BE CERTIFIED BY A PROFESSIONAL ENGINEER, AND WILL BE ACCOMPANIED BY THE EES AS DESCRIBED IN "FP" ABOVE.
   L. CAREFULLY EXAMINE ALL SHOP DRAWINGS AND MARK-UP AS NECESSARY BEFORE SUBMITTING TO THE ARCHITECT/ENGINEER FOR REVIEW. THE CONSULTANT WILL ONLY CONSIDER SHOP DRAWINGS BEARING THE CONTRACTOR'S STAMP OF APPROVAL.
   M. THE ENGINEER'S REVIEW SHALL NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY FOR DEVIATIONS FROM DRAWINGS AND SPECIFICATIONS. THE ENGINEER'S REVIEW SHALL BE CONSTRUED TO APPLY ONLY TO GENERAL ARRANGEMENT AND SHALL NOT RELIEVE THE CONTRACTOR FROM THE RESPONSIBILITY FOR THE CORRECTNESS OF DETAILS AND DIMENSIONS AND PROVISION OF THE CORRECT EQUIPMENT.
   N. THE CONTRACTOR SHALL RETAIN COPIES OF ALL REVIEWED SHOP DRAWINGS ON THE JOB SITE FOR REFERENCE.
   O. IN ADDITION TO THE REQUIREMENT OF SUBMITTALS, THE OWNER RESERVES THE RIGHT TO REQUEST THE MANUFACTURER TO ARRANGE FOR THE OWNER'S REPRESENTATIVE(S) TO SEE TYPICAL ACTIVE SYSTEMS IN OPERATION, WHEN THERE HAS BEEN NO PRIOR EXPERIENCE WITH THE MANUFACTURER OR THE TYPE OF EQUIPMENT BEING SUBMITTED.

12. CUTTING, PATCHING, EXCAVATION, BACKFILL, AND LAYOUT
   A. PROVIDE OPENINGS AND EXCAVATION REQUIRED FOR THE INSTALLATION OF THE ELECTRICAL WORK. PATCH WORK AND BACKFILL AS REQUIRED. FINISHED WORK SHALL MATCH THE EXISTING ADJOINING WORK.
   B. VERIFY ALL CONDITIONS AFFECTING THE WORK TO BE PERFORMED UNDER THIS CONTRACT.
   C. CAREFULLY VERIFY MEASUREMENTS AT THE SITE, DETERMINE THE EXACT LOCATION OF CHASES AND OPENINGS REQUIRED. PROVIDE SLEEVES, INSERTS, AND HANGERS AS REQUIRED. NO COLUMNS, BEAMS, JOISTS, BUILDING FOUNDATIONS NOR ANY OTHER STRUCTURAL BUILDING COMPONENT SHALL BE CUT, DRILLED OR DISTURBED IN ANY WAY. CONFLICTS SHALL IMMEDIATELY BE BROUGHT TO THE ATTENTION OF THE ARCHITECT/ENGINEER.
   D. ALL EXCAVATION ON SITES CONTAINING EXISTING BUILDINGS AND EXISTING SERVICES, SHALL BE DONE WITH HAND SHOVEL TO AVOID DAMAGE TO EXISTING SERVICES. WHERE HAND SHOVEL IS NOT PRACTICAL EXTREME CAUTION SHALL BE TAKEN WHEN PERFORMING EXCAVATION. THE CONTRACTOR WILL BE RESPOSIBLE FOR LOCATING ANY EXISTING UTILITIES. ANY DAMAGE INCURRED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR IN A MANNER APPROVED BY THE OWNER'S CONSTRUCTION MANAGER AT NO COST AND WITH NO EXTENSION OF TIME LIMITATION.

13. EXPERIENCE
   A. THE CONTRACTOR PERFORMING THIS WORK SHALL BE A LICENSED, REPUTABLE FIRM, REGULARLY PERFORMING THE TYPE OF WORK INCORPORATED IN THIS PROJECT AND WHO ALSO MAINTAINS, AS PART OF THE FIRM, A SERVICE DEPARTMENT WITH QUALIFIED PERSONNEL WHO REGULARLY PERFORM THIS TYPE OF WORK. THE CONTRACTOR SHALL, UPON REQUEST, SHOW EVIDENCE OF AT LEAST THREE JOBS OF SIMILAR CHARACTER AND SIZE INSTALLED WITHIN THE PRECEDING TWO YEARS.

14. ELECTRICAL WORK FOR MECHANICAL SYSTEMS
   A. FACTORY INSTALLED STARTERS, CONTROLLERS, AND CONTROL EQUIPMENT MOUNTED IN MANUFACTURED MECHANICAL EQUIPMENT NECESSARY FOR MECHANICAL EQUIPMENT OPERATION SHALL BE FURNISHED UNDER DIVISION 15 MECHANICAL.
   B. OWER WIRING FOR MOTORS AND INSTALLATION OF STARTERS SHALL BE UNDER DIVISION 16 ELECTRICAL.
   C. EMPERATURE, HUMIDITY, PRESSURE AND SIMILAR CONTROLS ESSENTIAL TO THE OPERATION OF MECHANICAL SYSTEMS, AND WIRING AND CONDUIT THEREOF, INCLUDING INTERLOCK WIRING, SHALL BE UNDER DIVISION 15 OF SPECIFICATIONS, INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF DIVISION 16.
   D. MOTORS SHALL BE FURNISHED UNDER DIVISION 15 MECHANICAL OF CAPACITY REQUIRED TO OPERATE EQUIPMENT SPECIFIED, BUT SHALL NOT BE LESS THAN THAT SPECIFIED.
   E. ALL LOW VOLTAGE (120Y AND UNDER) TEMPERATURE CONTROL WIRING FOR DIVISION 15 EQUIPMENT SHALL BE PROVIDED UNDER BY DIVISION 15, INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF DIVISION 16.
   F. DIVISION 15 SHALL PROVIDE CONDUIT WHEN REQUIRED FOR CONTROL WIRING, INSTALLED IN ACCORDANCE WITH DIVISION 16 REQUIREMENTS.

15. MOTORS
   A. ALL MOTORS SHALL BE FURNISHED AND INSTALLED UNDER DIVISION 15 MECHANICAL AND SHALL BE WIRED UNDER DIVISION 16 ELECTRICAL.

16. REMOVAL OF RUBBISH
   A. CONTRACTOR SHALL KEEP PREMISES FREE FROM ACCUMULATIONS OF WASTE MATERIAL OR RUBBISH CAUSED BY HIS EMPLOYEES OR WORK. AT COMPLETION OF WORK, HE SHALL REMOVE ALL HIS TOOLS, SCAFFOLDING, SURPLUS MATERIALS, AND RUBBISH FROM BUILDING AND SITE. HE SHALL LEAVE PREMISES AND HIS WORK IN A CLEAN ORDERLY CONDITION ACCEPTABLE TO THE OWNER.

17. QUIET OPERATION AND VIBRATION
   A. ALL EQUIPMENT PROVIDED UNDER THIS SECTION SHALL OPERATE UNDER ALL CONDITIONS OF LOAD FREE OF OBJECTIONABLE SOUND AND VIBRATION. SOUND AND VIBRATION CONDITIONS CONSIDERED OBJECTIONABLE SHALL BE CORRECTED IN AN APPROVED MANNER.
   B. VIBRATION AND SOUND CONTROL SHALL BE BY MEANS OF APPROVED VIBRATION ELIMINATORS OR SOUND ATTENUATORS IN A MANNER AS SPECIFIED AND AS RECOMMENDED BY THE MANUFACTURER.

18. CLEANING AND ADJUSTMENTS
   A. UPON COMPLETION OF THE WORK, CONTRACTOR SHALL CLEAN AND RE—LAMP ALL LIGHT FIXTURES, CLEAN AND IDENTIFY ALL EQUIPMENT, ADJUST AND TEST ALL EQUIPMENT AND APPARATUS WHICH HE HAS INSTALLED AND MAKE CERTAIN SUCH APPARATUS AND MECHANISMS ARE IN PROPER WORKING ORDER AND READY TO TEST.
   B. DURING CONSTRUCTION PROTECT ALL CONDUIT AND EQUIPMENT FROM DAMAGE AND DIRT. CAP THE OPEN ENDS OF ALL CONDUIT AND EQUIPMENT.

19. STORAGE OF MATERIALS
   A. ALL MATERIALS STORED ON SITE SHALL BE PROPERLY PROTECTED FROM INJURY OR DETERIORATION. MATERIALS SHALL NOT BE STORED IN CONTACT WITH GROUND OR FLOOR.
   B. DO NOT REMOVE MANUFACTURER'S PACKING MATERIALS UNTIL READY TO INSTALL. MATERIALS SHOWING SIGNS OF CORROSION, IMPROPER HANDLING OR STORAGE SHALL BE REPLACED AT NO COST TO THE OWNER.
   C. PROVIDE CONTINUOUS PROTECTION FOR ALL EQUIPMENT ALREADY INSTALLED.

20. WATERPROOFING
   A. WHERE ANY WORK PIERCES WATERPROOFING INCLUDING WATERPROOF CONCRETE, THE METHOD OF INSTALLATION SHALL BE AS APPROVED BY THE OWNER BEFORE THE WORK IS DONE.
   B. PROVIDE ALL NECESSARY SLEEVES, CAULKING AND FLASHING REQUIRED TO MAKE OPENINGS ABSOLUTELY WATERTIGHT. WATERPROOF FLASHING MATERIALS SHALL BE COMPATIBLE WITH BASE MATERIALS.

21. TESTS
   A. CONTRACTOR SHALL MAKE ALL TESTS REQUIRED TO ESTABLISH THE ADEQUACY, QUALITY, SAFETY, COMPLETED STATUS AND SATISFACTORY OPERATION OF ALL SYSTEMS TO THE SATISFACTION OF THE OWNER'S CONSTRUCTION MANAGER. PROVIDE ALL INSTRUMENTS, LABOR AND SERVICES NECESSARY TO CONDUCT TESTS.

22. INSTRUCTIONS
   A. FULLY INSTRUCT OWNER'S PERSONNEL IN THE CARE AND OPERATION OF ELECTRICAL SYSTEMS, INCLUDING ALL COMMUNICATIONS, SOUND AND FIRE ALARM SYSTEMS AND FURNISH A LETTER TO THE OWNER ADVISING THE PARTICULAR PERSON(S) WHO HAVE RECEIVED SUCH INSTRUCTION.

23. GUARANTEE
   A. EQUIPMENT SHALL BE STARTED, TESTED, ADJUSTED, AND PLACED IN SATISFACTORY OPERATING CONDITION. FURNISH A LETTER ADDRESSED TO THE OWNER ADVISING THAT THE COMPLETED SYSTEMS HAVE BEEN INSTALLED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND THAT THEY ARE IN PROPER OPERATING CONDITION. THE OWNER SHALL RECEIVE A WRITTEN GUARANTEE COVERING ALL DEFECTS IN WORKMANSHIP AND MATERIAL FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. ANY DEFECTS APPEARING WITHIN THIS YEAR PERIOD SHALL BE REPAIRED WITHOUT ADDITIONAL COST TO THE OWNER.

24. ACCEPTANCE
   A. BEFORE REQUESTING FINAL INSPECTION:
      1. COMPLETE ALL WORK REQUIRED. IF ANY ¡ITEMS ARE HELD IN ABEYANCE AS INCOMPLETE FOR FINAL INSPECTION, LIST SUCH ITEMS TOGETHER WITH EXPLANATION FOR DELAY.
      2. SUBMIT STATEMENT THAT EQUIPMENT IS PROPERLY INSTALLED, ADJUSTED, TESTED AND OPERATION IS SATISFACTORY.
      3. CERTIFY IN WRITING TO THE ARCHITECT/ENGINEER THAT THE OWNER'S REPRESENTATIVE HAS BEEN INSTRUCTED AS TO THE CARE AND OPERATION OF THE SYSTEM AND THAT CATALOG SERVICE AND MAINTENANCE INFORMATION HAS BEEN TURNED OVER TO THE ARCHITECT/ENGINEER.
      4. SUBMIT COPY OF WRITTEN GUARANTEE.
      5. SUBMIT COPY OF OTHER DATA AS MAY BE OUTLINED IN THESE SPECIFICATIONS.
   B. COPIES OF THE ABOVE DATA SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER PRIOR TO REQUESTING FINAL INSPECTION.

25. SINGULAR NUMBER
   A. WHERE ANY DEVICE OR PART OF EQUIPMENT IS REFERRED TO IN THESE SPECIFICATIONS IN THE SINGULAR NUMBER (SUCH AS "THE SWITCH"), SUCH REFERENCE SHALL BE DEEMED TO APPLY TO AS MANY SUCH DEVICES AS ARE REQUIRED TO COMPLETE THE INSTALLATION AS SHOWN ON THE DRAWINGS.

## SECTION 16110 - RACEWAYS

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. THIS SECTION IS A DIVISION-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION, AND IS PART OF EACH DIVISION—16 SECTION MAKING REFERENCE TO ELECTRICAL RACEWAYS SPECIFIED HEREIN.
2. DESCRIPTION OF WORK
   A. EXTENT OF RACEWAY WORK IS INDICATED BY DRAWINGS AND SCHEDULES. SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. ELECTRICAL METALLIC TUBING (EMT).
      2. LIQUID TIGHT FLEXIBLE METAL CONDUIT.
      3. RIGID METAL CONDUIT.
      4. FLEXIBLE METAL CONDUIT,
      5. RIGID NON—METALLIC CONDUIT.

3. QUALITY ASSURANCE
   A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF RACEWAY SYSTEMS OF TYPES AND SIZES REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.
   B. INSTALLER'S QUALIFICATIONS: FIRM WITH AT LEAST 3 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH ELECTRICAL RACEWAY WORK SIMILAR TO THAT REQUIRED FOR THIS PROJECT.
   C. CODES AND STANDARDS:
      1. NEMA COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEMA STANDARDS PUBLICATIONS PERTAINING TO RACEWAYS.
      2. UL COMPLIANCE AND LABELING: COMPLY WITH APPLICABLE REQUIREMENTS OF UL SAFETY STANDARDS PERTAINING TO ELECTRICAL RACEWAY SYSTEMS. PROVIDE RACEWAY PRODUCTS AND COMPONENTS WHICH HAVE BEEN UL—LISTED AND LABELED.
      3. NEC COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEC PERTAINING TO CONSTRUCTION AND INSTALLATION OF RACEWAY SYSTEMS.

4. SUBMITTALS
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA, INCLUDING SPECIFICATIONS AND INSTALLATION INSTRUCTIONS, FOR EACH TYPE OF RACEWAY SYSTEM REQUIRED. INCLUDE DATA SUBSTANTIATING THAT MATERIALS COMPLY WITH REQUIREMENTS.

5. METAL CONDUIT AND TUBING
   A. GENERAL: PROVIDE METAL CONDUIT, TUBING, AND FITTINGS OF TYPES, GRADES, SIZES, AND WEIGHTS (WALL THICKNESSES) FOR EACH SERVICE INDICATED.
   B. RIGID STEEL CONDUIT: PROVIDE RIGID STEEL, ZINC—COATED, THREADED TYPE CONFORMING TO FS WW-C-581, ANSI C80.1 AND UL 6.
   C. RIGID METAL CONDUIT FITTINGS: CAST MALLEABLE IRON, GALVANIZED OR CADMIUM PLATED, CONFORMING TO FS W—F—408, ANS] C80.4.
      1. USE COMPRESSION TYPE FITTINGS FOR CONNECTIONS.
      2. USE COMPRESSION TYPE FITTINGS FOR OTHER MISCELLANEOUS CONNECTIONS.
   D. ELECTRICAL METALLIC TUBING (EMT): FS WW-C-563, ANSI C80.3 AND UL 797.
   E. EMT FITTINGS: FS W—-F-408, ANSI C80.4. DIE CAST OR MALLEABLE IRON.
      1. USE COMPRESSION FITTINGS FOR RAINTIGHT CONNECTIONS.
      2. USE COMPRESSION TYPE FOR CONCRETE TYPE CONNECTIONS.
      3. USE COMPRESSION TYPE FITTINGS FOR MISCELLANEOUS CONNECTIONS.
   F. LIQUID—TIGHT FLEXIBLE METAL CONDUIT: PROVIDE LIQUID—TIGHT FLEXIBLE METAL CONDUIT; CONSTRUCT OF SINGLE STRIP, FLEXIBLE, CONTINUOUS, INTERLOCKED, AND DOUBLE—WRAPPED STEEL; GALVANIZED INSIDE AND OUTSIDE; COAT WITH LIQUID—TIGHT JACKET OF FLEXIBLE POLYVINYL CHLORIDE (PVC). SHALL BE SEALTITE OR EQUAL.
   G. LIQUID—TIGHT FLEXIBLE METAL CONDUIT FITTINGS: FS W—-F-406, TYPE 1, CLASS 3, STYLE G. PROVIDE CADMIUM PLATED, MALLEABLE IRON FITTINGS WITH COMPRESSION TYPE STEEL FERRULE AND NEOPRENE GASKET SEALING RINGS, WITH INSULATED, OR NON—INSULATED THROAT.
   H. FLEXIBLE METAL CONDUIT: FS WW—C-566 AND UL 1. FORMED FROM CONTINUOUS LENGTH OF SPIRAL WOUND, INTERLOCKED ZINC—COATED STRIP STEEL.
   I. FLEXIBLE METAL CONDUIT FITTINGS: PROVIDE CONDUIT FITTINGS FOR USE WITH FLEXIBLE STEEL CONDUIT OF THREADLESS HINGED CLAMP TYPE.
      1. STRAIGHT TERMINAL CONNECTORS: ONE PIECE BODY, FEMALE END WITH CLAMP AND DEEP SLOTTED MACHINE SCREW FOR SECURING CONDUIT, AND MALE THREADED END PROVIDED WITH LOCKNUT.
      2. 450 OR 900 TERMINAL ANGLE CONNECTORS: TWO-PIECE BODY CONSTRUCTION WITH REMOVABLE UPPER SECTION, FEMALE END WITH CLAMP AND DEEP SLOTTED MACHINE SCREW FOR SECURING CONDUIT, AND MALE THREADED END PROVIDED WITH LOCKNUT.

6. NONMETALLIC CONDUIT
   A. GENERAL: PROVIDE NONMETALLIC CONDUIT, DUCTS, AND FITTINGS OF TYPES, SIZES, AND WEIGHTS FOR EACH SERVICE INDICATED. WHERE TYPES AND GRADES ARE NOT INDICATED, PROVIDE PROPER SELECTION DETERMINED BY INSTALLER TO FULFILL WIRING REQUIREMENTS WHICH COMPLY WITH PROVISIONS OF NEC FOR RACEWAYS.
   B. ELECTRICAL PLASTIC CONDUIT:
      1. HEAVY WALL CONDUIT: SCHEDULE 40, 90 C, UL—RATED, CONSTRUCT OF POLYVINYL CHLORIDE AND CONFORMING TO NEMA TC—2, FOR DIRECT BURIAL, OR NORMAL ABOVE GROUND USE, UL—LISTED AND IN CONFORMITY WITH NEC ARTICLE 347, ANSI C33,91.
   C. PVC CONDUIT AND TUBING FITTINGS: NEMA TC 3, MATE AND MATCH TO CONDUIT OR TUBING TYPE AND MATERIAL.

7. MANUFACTURERS
   A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE CONDUIT BODIES OF ONE OF THE FOLLOWING: APPLETON ELECTRIC; DIV OF EMERSON ELECTRIC CO.
      ARROW—HART DIV; CROUSE—HINDS CO.
      BELL ELECTRIC DIV; SQUARE D CO.
      GOULD, INC.
      KILLARK ELECTRIC MFG. CO.
      0-Z/GEDNEY DIV; GENERAL SIGNAL CO.
      SPRING CITY ELECTRICAL MFG. CO., OR EQUIVALENT.

8. INSPECTION
   A. EXAMINE AREAS AND CONDITIONS UNDER WHICH RACEWAYS ARE TO BE INSTALLED, AND SUBSTRATE WHICH WILL SUPPORT RACEWAYS. NOTIFY CONTRACTOR IN WRITING OF CONDITIONS DETRIMENTAL TO PROPER COMPLETION OF THE WORK. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN MANNER ACCEPTABLE TO INSTALLER.

9. INSTALLATION OF RACEWAYS
   A. GENERAL: INSTALL RACEWAYS AS INDICATED; IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTALLATION INSTRUCTIONS, AND IN COMPLIANCE WITH NEC, AND NECA'S "STANDARDS OF INSTALLATION". — INSTALL UNITS PLUMB AND LEVEL, AND MAINTAIN MANUFACTURER'S RECOMMENDED CLEARANCES.
   B. COORDINATE WITH OTHER WORK INCLUDING WIRES/CABLES, BOXES, AND PANEL WORK, AS NECESSARY TO INTERFACE INSTALLATION OF ELECTRICAL RACEWAYS AND COMPONENTS WITH OTHER WORK.

10. INSTALLATION OF CONDUITS
   A. GENERAL: INSTALL CONCEALED CONDUITS IN NEW CONSTRUCTION WORK, EITHER IN WALLS, SLABS, OR ABOVE HUNG CEILINGS. RUN CONDUITS CONCEALED IN EXISTING WORK WHERE PRACTICAL OR SPECIFICALLY INDICATED ON THE DRAWINGS.
      1. MECHANICALLY FASTEN TOGETHER METAL CONDUITS, ENCLOSURES, AND RACEWAYS FOR CONDUCTORS TO FORM CONTINUOUS ELECTRICAL CONDUCTOR. CONNECT TO ELECTRICAL BOXES, FITTINGS, AND CABINETS TO PROVIDE ELECTRICAL CONTINUITY AND FIRM MECHANICAL ASSEMBLY.
      2. AVOID USE OF DISSIMILAR METALS THROUGHOUT SYSTEM TO ELIMINATE POSSIBILITY OF ELECTROLYSIS. WHERE DISSIMILAR METALS ARE IN CONTACT, COAT SURFACES WITH CORROSION INHIBITING COMPOUND BEFORE ASSEMBLING.
      3. INSTALL MISCELLANEOUS FITTINGS SUCH AS REDUCERS, CHASE NIPPLES, 3—PIECE UNIONS, SPLIT COUPLINGS, AND PLUGS THAT HAVE BEEN SPECIFICALLY DESIGNED AND MANUFACTURED FOR THEIR PARTICULAR APPLICATION. INSTALL EXPANSION FITTINGS IN RACEWAYS EVERY 200" LINEAR RUN OR WHEREVER STRUCTURAL EXPANSION JOINTS ARE CROSSED.
   B. CONDUIT INSTALLATION: FOLLOW MINIMUM REQUIREMENTS IN ALL AREAS AS FOLLOWS:
      1. USE RIGID STEEL GALVANIZED CONDUIT IN SERVICE SPLINES, WHERE EXPOSED TO WEATHER OR SUBJECT TO SATURATION WITH LIQUIDS, OR SUBJECT TO POSSIBLE PHYSICAL DAMAGE FROM VEHICLES OR HEAVY MACHINERY.
      2. USE STEEL EMT ABOVE HUNG CEILINGS IN OFFICES, CORRIDORS, TOILETS, AND LAB AREAS, AND IN SPACES WITH EXPOSED CEILINGS.
      3. USE RIGID STEEL CONDUIT OR PVC HEAVY WALL (SCHEDULE 40) WHEN RACEWAYS RUN BELOW GRADE, UNDER FLOORS ON GRADE OR IN CONCRETE. ALL BENDS AND ELBOWS GREATER THAN 45 DEGREES SHALL BE GALVANIZED RIGID STEEL CONDUIT OR SCHEDULE 40 PVC. ALL RISERS TO CABINETS AND BOXES WHEN CONDUIT IS TO BE EXPOSED SHALL BE RIGID STEEL CONDUIT.
      4. CONDUIT IN WALLS TO RECESSED PANELS AND BOXES SHALL BE IN ACCORDANCE WITH NEC. PVC UP TO FIRST POINT OF TERMINATION WITH 4'-0" MAXIMUM IN WALL AND EMT ABOVE 4'-0".
      5. USE FLEXIBLE CONDUIT IN MOVABLE PARTITIONS AND FROM OUTLET BOXES TO LIGHTING FIXTURES, AND FINAL 24" OF CONNECTION TO MOTORS, CONTROL ITEMS OR ANY EQUIPMENT SUBJECT TO MOVEMENT OR VIBRATION, AND IN CELLS OF PRECAST CONCRETE PANELS.
      6. USE LIQUID—TIGHT FLEXIBLE CONDUIT WHERE SUBJECTED TO ONE OR MORE OF THE FOLLOWING CONDITIONS:
         a. EXTERIOR LOCATION.
         b. MOIST OR HUMID ATMOSPHERE WHERE CONDENSATE CAN BE EXPECTED TO ACCUMULATE.
         c. CORROSIVE ATMOSPHERE.
         d. SUBJECTED TO WATER SPRAY OR DRIPPING OIL, WATER, OR GREASE, INCLUDING KITCHEN AREAS.
      7. USE HOT-DIPPED GALVANIZED CONDUIT WHERE CONDUIT IS ROUTED OUTDOORS OR IN ANYWAY EXPOSED TO WEATHER.
      8. ELECTRICAL CONTRACTOR WILL BE RESPONSIBLE FOR THE FOLLOWING FOR ALL UNDERGROUND CONDUITS:
         a. TRENCHING AND EXCAVATION
         b. BACKFILL
         c. COMPACTION
      9. MC CABLE MAY BE USED ONLY WHERE APPROVED FOR USE BY THE OWNER IN ADVANCE OF INSTALL, APPROVED BY THE LOCAL AUTHORITY HAVING JURISDICTION AND APPROVED BY THE ENGINEER. WHERE USED, MC CABLE SHALL BE CONCEALED AND SUPPORTED IN ACCORDANCE WITH NEC.
   C. CUT CONDUITS STRAIGHT, PROPERLY REAM, AND CUT THREADS FOR HEAVY WALL CONDUIT DEEP AND CLEAN.
   D. FIELD BEND CONDUIT WITH BENDERS DESIGNED FOR PURPOSE SO AS NOT TO DISTORT NOR VARYINTERNAL DIAMETER.
   E. MINIMUM CONDUIT SIZE SHALL BE 1/2" UNLESS NOTED OTHERWISE. MINIMUM 3/4".
   F. FASTEN CONDUIT TERMINATIONS IN SHEET METAL ENCLOSURES BY TWO (2) LOCKNUTS, AND TERMINATE WITH BUSHINGS. INSTALL LOCKNUTS INSIDE AND OUT SIDE ENCLOSURE.
   G. CONDUITS ARE NOT TO CROSS PIPE SHAFTS, OR VENTILATING DUCT OPENINGS.
   H. KEEP CONDUITS A MINIMUM DISTANCE OF 6" FROM PARALLEL RUNS OF FLUES, HOT WATER PIPES OR OTHER SOURCES OF HEAT. WHEREVER POSSIBLE, INSTALL HORIZONTAL RACEWAY RUNS ABOVE WATER AND STEAM PIPING.
   I. USE OF RUNNING THREADS AT CONDUIT JOINTS AND TERMINATIONS IS PROHIBITED. WHERE REQUIRED, USE 3—PIECE UNION OR SPLIT COUPLING.
   J. COMPLETE INSTALLATION OF ELECTRICAL RACEWAYS BEFORE STARTING INSTALLATION OF CABLES/WIRES WITHIN RACEWAYS.
   K. INSTALL CONDUITS SO AS NOT TO DAMAGE OR RUN THROUGH STRUCTURAL MEMBERS. AVOID HORIZONTAL OR CROSS RUNS IN BUILDING PARTITIONS OR SIDE WALLS.
   L. EXPOSED CONDUITS:
      1. IN NO CASE SHALL CONDUIT BE EXPOSED TO VIEW IN AREAS ACCESSIBLE TO THE PUBLIC NOR IN ANY KITCHEN OR OTHER FOOD SERVICES AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WRITTEN APPROVAL FOR ALL AND ANY EXPOSED CONDUIT ROUTING PRIOR TO INSTALLATION. ANY NON—APPROVED EXPOSED CONDUIT WILL BE SUBJECT TO REMOVAL AND RE—ROUTING BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL CONDUIT INSTALLATION WITH STRUCTURAL MEMBERS, FINISHES, SPRINKLER PIPING, DUCTWORK, LIGHTING, ETC.
      2. INSTALL ANY APPROVED EXPOSED CONDUITS AND EXTENSIONS FROM CONCEALED CONDUIT SYSTEMS NEATLY, PARALLEL WITH, OR AT RIGHT ANGLES TO WALLS OF BUILDING.
      3. INSTALL EXPOSED CONDUIT WORK AS NOT TO INTERFERE WITH CEILING INSERTS, LIGHTS OR VENTILATION DUCTS OR OUTLETS.
      4. SUPPORT ALL CONDUITS BY USE OF HANGERS, CLAMPS, OR CLIPS. SUPPORT CONDUITS ON EACH SIDE OF BENDS AND ON SPACING NOT TO EXCEED FOLLOWING: UP TO 1% 6'-0% 1-1/4" AND OVER: 8'-0". ALL CONDUITS SHALL BE ADEQUATELY SUPPORTED TO PREVENT ANY NOTICABLE DEFLECTION, VIBRATION OR RATTLE.
   M. CONDUIT FITTINGS:
      1. CONSTRUCT LOCKNUTS FOR SECURING CONDUIT TO METAL ENCLOSURE WITH SHARP EDGE FOR DIGGING INTO METAL, AND RIDGED OUTSIDE CIRCUMFERENCE FOR PROPER FASTENING.
      2. BUSHINGS FOR TERMINATING CONDUITS SMALLER THAN 1- 1/4" ARE TO HAVE FLARED BOTTOM AND RIBBED SIDES, WITH SMOOTH UPPER EDGES TO PREVENT INJURY TO CABLE INSULATION.
      3. INSTALL INSULATED TYPE BUSHINGS FOR TERMINATING CONDUITS 1-1/4" AND LARGER. BUSHINGS ARE TO HAVE FLARED BOTTOM AND RIBBED SIDES. UPPER EDGE TO HAVE PHENOLIC INSULATING RING MOLDED INTO BUSHING.
      4. ALL BUSHINGS OF STANDARD OR INSULATED TYPE TO HAVE SCREW TYPE GROUNDING TERMINAL.
      5. MISCELLANEOUS FITTINGS SUCH AS REDUCERS, CHASE NIPPLES, 3—PIECE UNIONS, SPLIT COUPLINGS, AND PLUGS TO BE SPECIFICALLY DESIGNED FOR THEIR PARTICULAR APPLICATION.
   N. CONCEALED CONDUITS:
      1. METALLIC RACEWAYS INSTALLED UNDERGROUND OR IN FLOORS BELOW GRADE, OR OUTSIDE ARE TO HAVE CONDUIT THREADS PAINTED WITH CORROSION INHIBITING COMPOUND BEFORE COUPLINGS ARE ASSEMBLED. DRAW UP COUPLING AND CONDUIT SUFFICIENTLY TIGHT TO ENSURE WATERTIGHTNESS.
      2. CONDUIT IN CONCRETE SLABS: SEPARATE CONDUITS BY NOT LESS THAN DIAMETER OF LARGEST CONDUIT TO ENSURE PROPER CONCRETE BOND. CONDUITS MUST HAVE A MINIMUM OF THREE—QUARTER INCH (3/4") CONCRETE COVER.
      3. EMBEDDED CONDUIT DIAMETER IS NOT TO EXCEED ONE—THIRD (1/3) OF SLAB THICKNESS. CONDUIT SHALL NOT BE RUN IN SLABS LESS THAN 3 INCHES THICK.
   O. UNDERGROUND DUCT BANKS AND UNDERGROUND CONDUITS: ALL UNDERGROUND CONDUITS SHALL BE INSTALLED PER THE NATIONAL ELECTRICAL CODE, IN ACCORDANCE WITH STANDARD INDUSTRY PRACTICES AND IN ACCORDANCE WITH OTHER SECTIONS OF THESE SPECIFICATIONS. CONDUITS IN DUCT BANKS SHALL BE NEATLY AND SECURELY INSTALLED IN STRAIGHT LINES WITH MANUFACTURED ELBOWS USED FOR ALL TURNS AND BENDS. PROVIDE ALL REQUIRED TRENCHING, EXCAVATION, BACKFILL, COMPACTION, SUPPORTS, MANHOLES, ETC. FOR A COMPLETE INSTALLATION. TRENCHING, EXCAVATION, BACKFILL AND COMPACTION SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE DIVISION 2 AND DIVISION 3 SECTIONS OF THESE SPECIFICATIONS.
   P. LOW VOLTAGE CONTROL:
      1. MECHANICAL CONTRACTOR (DIVISION 15) TO PROVIDE AND INSTALL ALL NECESSARY WIRE AND RACEWAY (EMT CONDUIT) FOR LOW VOLTAGE CONTROL SUCH AS THERMOSTATS, TIMERS ETC., UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS. RACEWAYS SHALL BE INSTALLED IN ACCORDANCE WITH DIVISION 16 SECTIONS. FINAL WIRE CONNECTIONS SHALL BE BY MECHANICAL CONTRACTOR.

11. INSTALLATION OF RACEWAYS AND WIREWAYS
   A. GENERAL: MECHANICALLY ASSEMBLE METAL ENCLOSURES, AND RACEWAYS FOR CONDUCTORS TO FORM CONTINUOUS ELECTRICAL CONDUCTOR, AND CONNECT TO ELECTRICAL BOXES, FITTINGS AND CABINETS AS TO PROVIDE EFFECTIVE ELECTRICAL CONTINUITY AND RIGID MECHANICAL ASSEMBLY.
      1. AVOID USE OF DISSIMILAR METALS THROUGHOUT SYSTEM TO ELIMINATE POSSIBILITY OF ELECTROLYSIS. WHERE DISSIMILAR METALS ARE IN CONTACT, COAT ALL SURFACES WITH CORROSION INHIBITING COMPOUND BEFORE ASSEMBLING.
      2. INSTALL EXPANSION FITTINGS IN ALL RACEWAYS WHEREVER STRUCTURAL EXPANSION JOINTS ARE CROSSED.
      3. MAKE CHANGES IN DIRECTION OF RACEWAY RUN WITH PROPER FITTINGS, SUPPLIED BY RACEWAY MANUFACTURER. NO FIELD BENDS OF RACEWAY SECTIONS WILL BE PERMITTED.
      4. PROPERLY SUPPORT AND ANCHOR RACEWAYS FOR THEIR ENTIRE LENGTH BY STRUCTURAL MATERIALS. RACEWAYS ARE NOT TO SPAN ANY SPACE UNSUPPORTED. SUPPORTING CONDUITS FROM CEILING GRID, OTHER CONDUITS, DUCTWORK OR OTHER NON—STRUCTURAL MEMBERS WILL NOT BE PERMITTED.
      5. USE BOXES AS SUPPLIED BY RACEWAY MANUFACTURER WHEREVER JUNCTION, PULL OR DEVICES BOXES ARE REQUIRED. STANDARD ELECTRICAL "HANDY" BOXES, ETC. SHALL NOT BE PERMITTED FOR USE WITH SURFACE RACEWAY INSTALLATIONS.

12. COMMUNICATIONS SYSTEMS RACEWAY
   COMMUNICATIONS SYSTEMS RACEWAYS SHALL BE PROVIDED FOR EACH TELEPHONE, DATA, SECURITY, SOUND, MV, AND FIRE ALARM OUTLET OR DEVICE INDICATED ON THE DRAWINGS. CONDUIT WITH PULL STRING SHALL BE AS INDICATED ON THE DRAWINGS AND AS REQUIRED FOR EACH SYSTEM.

## SECTION 16120 - WIRES AND CABLES

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. THIS SECTION IS A DIVISION—16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION, AND IS PART OF EACH DIVISION—15 AND —16 SECTION MAKING REFERENCE TO ELECTRICAL WIRES AND CABLES SPECIFIED HEREIN.

2. DESCRIPTION OF WORK
   A. EXTENT OF ELECTRICAL WIRE AND CABLE WORK IS INDICATED BY DRAWINGS AND SCHEDULES.
   B. TYPES OF ELECTRICAL WIRE, CABLE, AND CONNECTORS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. COPPER CONDUCTORS.
      2. FIXTURE WIRES.
      3. FLEXIBLE CORDS AND CABLES.
      4. WIRENUT CONNECTORS
   C. APPLICATIONS OF ELECTRICAL WIRE, CABLE, AND CONNECTORS REQUIRED FOR PROJECT ARE AS FOLLOWS:
      1. FOR MOTOR—BRANCH CIRCUITS.
      2. FOR POWER DISTRIBUTION CIRCUITS
      3. FOR LIGHTING CIRCUITS
      4. FOR APPLIANCE AND EQUIPMENT CIRCUITS

3. QUALITY ASSURANCE
   A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF ELECTRICAL WIRE AND CABLE PRODUCTS OF TYPES, SIZES, AND RATINGS REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.
   B. INSTALLER QUALIFICATIONS: FIRM WITH AT LEAST 3 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE WITH PROJECTS UTILIZING ELECTRICAL WIRING AND CABLING WORK SIMILAR TO THAT REQUIRED FOR THIS PROJECT.
   C. NEC COMPLIANCE: COMPLY WITH NEC REQUIREMENTS AS APPLICABLE TO CONSTRUCTION, INSTALLATION AND COLOR CODING OF ELECTRICAL WIRES AND CABLES.
   D. UL COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF UL STD 83, *THERMOPLASTIC—INSULATED WIRES AND CABLES", AND STD 4864, "WIRE CONNECTORS AND SOLDERING LUGS FOR USE WITH COPPER CONDUCTORS".
   E. UL COMPLIANCE: PROVIDE WIRING/CABLING AND CONNECTOR PRODUCTS WHICH ARE UL—LISTED AND LABELED.
   F. NEMA/ICEA COMPLIANCE: COMPLY WITH NEMA/ICEA STD PUB/ NO.'S WC 5, *THERMOPLASTIC—INSULATED WIRE AND CABLE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY", AND WC-30, "COLOR CODING OF WIRES AND CABLES", PERTAINING TO ELECTRICAL POWER TYPE WIRES AND CABLES.
   G. iEEE COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF IEEE STDS 82, "TEST PROCEDURES FOR IMPULSE VOLTAGE TESTS ON INSULATED CONDUCTORS", AND STD 241, "IEEE RECOMMENDED PRACTICE FOR ELECTRIC POWER SYSTEMS IN COMMERCIAL BUILDINGS" PERTAINING TO WIRING SYSTEMS.
   H. ASTM COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF ASTM B1, 2, 3, 8, AND D-—753. PROVIDE COPPER CONDUCTORS WITH CONDUCTIVITY OF NOT LESS THAN 98% AT 200C (680F).

4. AVAILABLE MANUFACTURERS
   A. SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. WIRE AND CABLE:
         a. AMERICAN WIRE AND CABLE CO.
         b. ANACONDA—ERICSSON INC; WIRE AND CABLE DIV.
         c. BELDEN DIV; COOPER INDUSTRIES
      2. CONNECTORS:
         a. AMP, INC.
         b. APPLETON ELECTRIC CO.
         c. BURNDY CORPORATION
         d. THOMAS AND BETTS CORP.

5. WIRES, CABLES, AND CONNECTORS
   A. PROVIDE ELECTRICAL WIRES, CABLES, AND CONNECTORS OF MANUFACTURER'S STANDARD MATERIALS, AS INDICATED BY PUBLISHED PRODUCT INFORMATION; DESIGNED AND CONSTRUCTED AS RECOMMENDED BY MANUFACTURER, FOR A COMPLETE INSTALLATION, AND FOR APPLICATION INDICATED. EXCEPT AS OTHERWISE INDICATED, PROVIDE COPPER CONDUCTORS WITH CONDUCTIVITY OF NOT LESS THAN 98% AT 200C (680F).
   B. BUILDING WIRES: PROVIDE FACTORY—FABRICATED WIRES OF SIZES, AMPACITY RATINGS, AND MATERIALS FOR APPLICATIONS AND SERVICES INDICATED. WHERE NOT INDICATED, PROVIDE PROPER WIRE SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH PROJECT'S INSTALLATION REQUIREMENTS, NEC AND NEMA STANDARDS. SELECT FROM THE FOLLOWING UL TYPES, THOSE WIRES WITH CONSTRUCTION FEATURES WHICH FULFILL PROJECT REQUIREMENTS:
      1. TYPE THW, THHN, THWN, THHW, THHN/THWN: UNLESS OTHERWISE INDICATED, ALL CONDUCTORS FOR DRY LOCATIONS REQUIRING A CONDUCTOR TEMPERATURE RATING 750€ (1670F) OR LESS. INSULATION SHALL BE FLAME RETARDANT, MOISTURE AND HEAT RESISTANT, THERMOPLASTIC. CONDUCTOR SHALL BE ANNEALED COPPER.
      2. TYPE THWN, THHW, THHN/THWN: UNLESS OTHERWISE INDICATED, ALL CONDUCTORS FOR WET OR DRY LOCATIONS REQUIRING A CONDUCTOR TEMPERATURE RATING OF 750C (1670F) OR LESS. INSULATION SHALL BE FLAME RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC. CONDUCTOR SHALL BE ANNEDLED COPPER.
      3. TYPE THHN, THHW: UNLESS OTHERWISE INDICATED, ALL CONDUCTORS FOR DRY LOCATIONS REQUIRING A CONDUCTOR TEMPERATURE RATING OF 900C (194OF) OR LESS. INSULATION SHALL BE FLAME RETARDANT, MOISTURE AND HEAT RESISTANT THERMOPLASTIC. CONDUCTOR SHALL BE ANNEALED COPPER.
      4. CONDUCTORS FOR USE AT 600 VOLTS OR BELOW SHALL BE 600 VOLT RATED. WIRE NO. 12 AND SMALLER MAY BE SOLID OR STRANDED AND WIRE NO. 10 AND LARGER SHALL BE STRANDED ONLY. STRANDED CONDUCTORS SHALL TERMINATE IN CRIMP TYPE LUGS.
      5. MOTOR CIRCUIT BRANCH WIRING AND ASSOCIATED CONTROL WIRING: PROVIDE TYPE THHN INSULATION IN DRY AND DAMP LOCATIONS. PROVIDE TYPE THHW INSULATION IN WET LOCATIONS. ALL MOTOR WIRING TO BE STRANDED COPPER.
      6. WIRING IN FLUORESCENT FIXTURE CHANNELS: RATING, TYPE THHN OR TFFN INSULATION.
   C. CABLES: PROVIDE UL—TYPE FACTORY—FABRICATED CABLES OF SIZES, AMPACITY RATINGS, AND MATERIALS AND JACKETING/SHEATHING AS INDICATED FOR SERVICES INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH INSTALLATION REQUIREMENTS, NEC AND NEMA STANDARDS.
   D. CONNECTORS:
      1. GENERAL: PROVIDE UL—TYPE FACTORY—FABRICATED, METAL CONNECTORS OF SIZES, AMPACITY RATINGS, MATERIALS, TYPES AND CLASSES FOR APPLICATIONS AND FOR SERVICES INDICATED. WHERE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO COMPLY WITH PROJECT'S INSTALLATION REQUIREMENTS, NEC AND NEMA STANDARDS. SELECT FROM THE FOLLOWING, THOSE TYPES, CLASSES, KINDS, AND STYLES OF CONNECTORS TO FULFILL PROJECT REQUIREMENTS:
         a. TYPE: PRESSURE,
         b. CLASS: INSULATED.
         c. KIND: COPPER (FOR CU TO CU CONNECTION).
         d. STYLE: BUTT CONNECTION.
         e. STYLE: ELBOW CONNECTION.
         f. STYLE: COMBINED *T" AND STRAIGHT CONNECTION.
         g. STYLE: *T" CONNECTION.
         h. STYLE: SPLIT—-BOLT PARALLEL CONNECTION.
         i. STYLE: TAP CONNECTION.
         j. STYLE: PIGTAIL CONNECTION.
         k. STYLE: WIRENUT CONNECTION.
      2. ALL CONNECTORS SHALL BE RATED 75C.

6. INSTALLATION OF WIRES AND CABLES
   A. GENERAL: INSTALL ELECTRICAL CABLES, WIRES, AND WIRING CONNECTORS AS INDICATED, IN COMPLIANCE WITH APPLICABLE REQUIREMENTS OF NEC, NEMA, UL, AND NECA'S "STANDARD OF INSTALLATION", AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES.
   B. COORDINATE WIRE/CABLE INSTALLATION WORK INCLUDING ELECTRICAL RACEWAY AND EQUIPMENT INSTALLATION WORK, AS NECESSARY TO PROPERLY INTERFACE INSTALLATION OF WIRES/CABLES WITH OTHER WORK.
   C. PULL CONDUCTORS SIMULTANEOUSLY WHERE MORE THAN ONE CONDUCTOR IS BEING INSTALLED IN THE SAME RACEWAY.
   D. USE PULLING COMPOUND OR LUBRICANT, WHERE NECESSARY; COMPOUND USED MUST NOT DETERIORATE CONDUCTOR OR INSULATION.
   E. USE PULLING MEANS INCLUDING, FISH TAPE, CABLE, ROPE AND BASKET WEAVE OR WIRE/CABLE GRIPS WHICH WILL NOT DAMAGE CABLES OR RACEWAY. ANY CABLE DAMAGED DURING INSTALLATION SHALL BE COMPLETELY REPLACED.
   F. KEEP CONDUCTOR SPLICES TO MINIMUM. NO JOINTS SHALL BE MADE IN CONDUCTOR EXCEPT AT OUTLET BOXES OR SPLICE BOXES. NEWLY INSTALLED CONDUCTORS SHALL NOT BE SPLICED UNLESS SPECIFICALLY NOTED ON THE DRAWINGS.
   G. INSTALL SPLICES AND TAPES WHICH POSSESS EQUIVALENT-OR—BETTER MECHANICAL STRENGTH AND INSULATION RATINGS THAN CONDUCTORS BEING SPLICED.
   H. USE SPLICE AND TAP CONNECTORS WHICH ARE COMPATIBLE WITH CONDUCTOR MATERIAL.
   I. TIGHTEN ELECTRICAL CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTORS AND TERMINALS TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL STD 4864 AND B.
   J. AT LEAST EIGHT INCHES (8") OF SLACK WIRE SHALL BE LEFT IN EVERY OUTLET BOX WHETHER IT BE IN USE, OR LEFT FOR FUTURE USE.
   K. COLOR CODE WIRING AS FOLLOWS:
      1. 120/208 VOLT, 3 PHASE, 4 WIRE: PHASE A—BLACK, PHASE B—RED, PHASE C—BLUE, NEUTRAL —WHITE; GROUND CONDUCTOR—GREEN.
   L. WIRE AND CABLE BOXES AND REELS SHALL BEAR THE DATE OF MANUFACTURE AND MUST NOT BEAR DATES BY MORE THAN ONE YEAR PRECEEDING CONTRACT DATE.
   M. MINIMUM CONDUCTOR SIZES, EXCEPT AS SPECIFICALLY IDENTIFIED ON THE DRAWINGS, SHALL BE AS FOLLOWS:
      1. NO. 12 — BRANCH CIRCUITS OF ANY KIND, EXCEPT AS SPECIFIED OTHERWISE BELOW.
      2. NO. 14 — SIGNAL SYSTEMS, FIRE ALARM SYSTEM, UNLESS SPECIFICALLY NOTED OTHERWISE.
      3. NO. 10 — EXIT LIGHT CIRCUITS, EMERGENCY CIRCUITS, SECURITY LIGHTING, SECURITY SYSTEMS CIRCUITS AND EXTERIOR LIGHT CIRCUITS.

7. FIELD QUALITY CONTROL
   A. PRIOR TO ENERGIZATION, TEST WIRES AND CABLES FOR ELECTRICAL CONTINUITY AND FOR SHORT-CIRCUITS.

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04/05/2022

HAT CREEK Burger Company

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WEST LAKE HILLS, TEXAS 78746

SPECIFICATIONS

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## SECTION 16135 - ELECTRICAL BOXES AND FITTINGS

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. THIS SECTION IS A DIVISION—16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION, AND IS A PART OF EACH DIVISION—16 SECTION MAKING REFERENCE TO ELECTRICAL WIRING BOXES AND FITTINGS SPECIFIED HEREIN.

2. DESCRIPTION OF WORK
   A. EXTENT OF ELECTRICAL BOX AND ASSOCIATED FITTING WORK IS INDICATED BY DRAWINGS AND SCHEDULES.
   B. TYPES OF ELECTRICAL BOXES AND FITTINGS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. OUTLET BOXES
      2. JUNCTION BOXES
      3. PULL BOXES
      4. FLOOR BOXES
      5. BUSHINGS
      6. LOCKNUTS
      7. KNOCKOUT CLOSURES
      8. MANHOLES AND HANDHOLES

3. QUALITY ASSURANCE
   A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF ELECTRICAL BOXES AND FITTINGS, OF TYPES, SIZES, AND CAPACITIES REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 3 YEARS.
   B. INSTALLER'S QUALIFICATIONS: FIRM WITH AT LEAST 3 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS UTILIZING ELECTRICAL BOXES AND FITTINGS SIMILAR TO THOSE REQUIRED FOR THIS PROJECT.
   C. NEC COMPLIANCE: COMPLY WITH NEC AS APPLICABLE TO CONSTRUCTION AND INSTALLATION OF ELECTRICAL WIRING BOXES AND FITTINGS.
   D. UL COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS UL 50, UL 514—SERIES, AND UL 886 PERTAINING TO ELECTRICAL BOXES AND FITTINGS. PROVIDE ELECTRICAL BOXES AND FITTINGS WHICH ARE UL—LISTED AND LABELED.
   E. NEMA COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEMA STDS/PUB NO.'S OS1, 0S2, AND PUB 250 PERTAINING TO OUTLET AND DEVICE BOXES, COVERS, AND BOX SUPPORTS.

4. FABRICATED MATERIALS
   A. OUTLET BOXES: PROVIDE GALVANIZED COATED FLAT ROLLED SHEET-STEEL OUTLET WIRING BOXES, OF SHAPES, CUBIC INCH CAPACITIES, AND SIZES, INCLUDING BOX DEPTHS AS INDICATED, SUITABLE FOR INSTALLATION AT RESPECTIVE LOCATIONS. CONSTRUCT OUTLET BOXES WITH MOUNTING HOLES, AND WITH CABLE AND CONDUIT—-SIZE KNOCKOUT OPENINGS IN BOTTOM AND SIDES. PROVIDE BOXES WITH THREADED SCREW HOLES, WITH CORROSION—RESISTANT COVER AND GROUNDING SCREWS FOR FASTENING SURFACE AND DEVICE TYPE BOX COVERS, AND FOR EQUIPMENT TYPE GROUNDING.
      1. OUTLET BOX ACCESSORIES: PROVIDE OUTLET BOX ACCESSORIES AS REQUIRED FOR EACH INSTALLATION, INCLUDING BOX SUPPORTS, MOUNTING EARS AND BRACKETS, WALLBOARD HANGERS, BOX EXTENSION RINGS, FIXTURE STUDS, CABLECLAMPS AND METAL STRAPS FOR SUPPORTING OUTLET BOXES, WHICH ARE COMPATIBLE WITH OUTLET BOXES BEING USED TO FULFILL INSTALLATION REQUIREMENTS FOR INDIVIDUAL WIRING SITUATIONS. CHOICE OF ACCESSORIES IS INSTALLER"S CODE—COMPLIANCE OPTION.
   B. DEVICE BOXES: PROVIDE GALVANIZED COATED FLAT ROLLED SHEET-STEEL NON—GANGABLE DEVICE BOXES, OF SHAPES, CUBIC INCH CAPACITIES, AND SIZES, INCLUDING BOX DEPTHS AS INDICATED, SUITABLE FOR INSTALLATION AT RESPECTIVE LOCATIONS. CONSTRUCT DEVICE BOXES FOR FLUSH MOUNTING WITH MOUNTING HOLES, AND WITH CABLE—SIZE KNOCKOUT OPENINGS IN BOTTOM AND ENDS, AND WITH THREADED SCREW HOLES IN END PLATES FOR FASTENING DEVICES. PROVIDE CABLE CLAMPS AND CORROSION—RESISTANT SCREWS FOR FASTENING CABLE CLAMPS, AND FOR EQUIPMENT TYPE GROUNDING.
      1. DEVICE BOX ACCESSORIES: PROVIDE DEVICE BOX ACCESSORIES AS REQUIRED FOR EACH INSTALLATION, INCLUDING MOUNTING BRACKETS, DEVICE BOX EXTENSIONS, SWITCH BOX SUPPORTS, PLASTER EARS, AND PLASTER BOARD EXPANDABLE GRIP FASTENERS, WHICH ARE COMPATIBLE WITH DEVICE BOXES BEING UTILIZED TO FULFILL INSTALLATION REQUIREMENTS FOR INDIVIDUAL WIRING SITUATIONS, CHOICE OF ACCESSORIES IS INSTALLER'S CODE—COMPLIANCE OPTION.
   C. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING OUTLET BOXES WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. APPLETON ELECTRIC;
      2. BELL ELECTRIC;
      3. EAGLE ELECTRIC MFG. CO.; INC.
      4. MIDLAND—ROSS CORP.
      5. 0Z/GEDNEY; GENERAL SIGNAL CO.
      6. PASS AND SEYMOUR, INC.
      7. RACO DIV.; HARVEY HUBBELL INC.
      8. THOMAS & BETTS CO.
   D. RAINTIGHT OUTLET BOXES: PROVIDE CORROSION—RESISTANT CAST-METAL RAINTIGHT OUTLET WIRING BOXES, OF TYPES, SHAPES AND SIZES, INCLUDING DEPTH OF BOXES, WITH THREADED CONDUIT HOLES FOR FASTENING ELECTRICAL CONDUIT, CAST-METAL FACE PLATES WITH SPRING HINGED WATERTIGHT CAPS SUITABLY CONFIGURED FOR EACH APPLICATION, INCLUDING FACE PLATE GASKETS AND CORROSION—RESISTANT PLUGS AND FASTENERS.
   E. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING RAINTIGHT OUTLET BOXES WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. APPLETON ELECTRIC;
      2. CROUSE—HINDS CO.
      3. BELL ELECTRIC;
      4. HARVEY HUBBELL, INC.
      5. 0Z/GEDNEY; GENERAL SIGNAL CO.
      6. RACO DIV.
   F. JUNCTION AND PULL BOXES: PROVIDE GALVANIZED CODE—GAGE SHEET STEEL JUNCTION AND PULL BOXES; WITH SCREW-ON COVERS; OF TYPES, SHAPES AND SIZES, TO SUIT EACH RESPECTIVE LOCATION AND INSTALLATION; WITH WELDED SEAMS AND EQUIPPED WITH STAINLESS STEEL NUTS, BOLTS, SCREWS, AND WASHERS.
   G. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING JUNCTION AND PULL BOXES WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. APPLETON ELECTRIC; EMERSON ELECTRIC CO.
      2. ARROW—HART DIV.; CROUSE—HINDS CO.
      3. BELL ELECTRIC; SQUARE D COMPANY
      4. 0Z/GEDNEY; GENERAL SIGNAL CO.
      5. SPRING CITY ELECTRICAL MFG. CO.
   H. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING FLOOR BOXES WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. ARROW—HART DIV.; CROUSE—HINDS CO.
      2. HARVEY HUBBELL, INC.
      3. MIDLAND—ROSS CORP.
      4. SPRING CITY ELECTRICAL MFG. CO.
   I. BUSHINGS, KNOCKOUT CLOSURES, AND LOCKNUTS: PROVIDE CORROSION—RESISTANT BOX KNOCKOUT CLOSURES, CONDUIT LOCKNUTS AND MALLEABLE IRON CONDUIT BUSHINGS, OFFSET CONNECTIONS, OF TYPES AND SIZES, TO SUIT RESPECTIVE INSTALLATION REQUIREMENTS AND APPLICATIONS.
   J. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING BUSHINGS, KNOCKOUT CLOSURES, LOCKNUTS, AND CONNECTORS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. ARROW—HART DIV.; CROUSE—HINDS CO.
      2. APPLETON ELECTRIC CO.; EMERSON ELECTRIC CO.
      3. BELL ELECTRIC; SQUARE D CO.
      4. MIDLAND—ROSS CORP.
      5. 0Z/GEDNEY CO.; GENERAL SIGNAL CO.
   K. MANHOLES AND HANDHOLES: MANHOLES AND HANDHOLES FOR EXTERIOR USE SHALL BE PRE—CAST CONCRETE WITH STEEL TRAFFIC RATED COVERS, AS MANUFACTURED BY BROOKS OR EQUAL. MANHOLES AND HANDHOLES SHALL BE THE SIZE NECESSARY FOR THE NUMBER OF CONDUITS AND CONDUCTORS INDICATED ON THE DRAWINGS WHICH WILL ENTER THE ENCLOSURE, PLUS THE NECESSARY CAPACITY FOR THE SPARE CONDUITS AND THE ASSOCIATED ESTIMATED CONDUCTOR FILL. PROVIDE MANHOLES WITH THE APPROPRIATE DRAINAGE AND KNOCKOUTS FOR CONDUITS AND OTHER NECESSARY ACCESS. TRAFFIC COVERS SHALL BE ENGRAVED WITH THE APPROPRIATE IDENTIFICATION, SUCH AS "ELECTRIC".

5. INSTALLATION OF ELECTRICAL BOXES AND FITTINGS
   A. GENERAL: INSTALL ELECTRICAL BOXES AND FITTINGS AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC AND NECA'S "STANDARD OF INSTALLATION", AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO FULFILL PROJECT REQUIREMENTS.
   B. COORDINATE INSTALLATION OF ELECTRICAL BOXES AND FITTINGS WITH WIRE/CABLE, WIRING DEVICES, AND RACEWAY INSTALLATION WORK.
   C. PROVIDE WEATHERTIGHT BOXES AND FITTINGS FOR INTERIOR AND EXTERIOR LOCATIONS EXPOSED TO WEATHER OR MOISTURE.
   D. PROVIDE KNOCKOUT CLOSURES TO CAP UNUSED KNOCKOUT HOLES WHERE BLANKS HAVE BEEN REMOVED.
   E. INSTALL ELECTRICAL BOXES IN THOSE LOCATIONS WHICH ENSURE READY ACCESSIBILITY TO ENCLOSED ELECTRICAL WIRING.
   F. AVOID INSTALLING BOXES BACK-TO—BACK IN WALLS. PROVIDE NOT LESS THAN 24" (600 MM) SEPARATION.
   G. POSITION RECESSED OUTLET BOXES ACCURATELY TO ALLOW FOR SURFACE FINISH THICKNESS.
   H. FASTEN ELECTRICAL BOXES FIRMLY AND RIGIDLY TO SUBSTRATES, OR STRUCTURAL SURFACES TO WHICH ATTACHED, OR SOLIDLY EMBED ELECTRICAL BOXES IN CONCRETE OR MASONRY.
   I. EACH CIRCUIT IN PULL BOX SHALL BE MARKED WITH A TAG GUIDE DENOTING PANELS WHICH THEY CONNECT TO.
   J. MANHOLES AND HANDHOLES SHALL BE INSTALLED FOR ALL UNDERGROUND CONDUIT INSTALLATIONS. THE MINIMUM NUMBER OF MANHOLES AND HANDHOLES SHALL BE AS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ANY ADDITIONAL HANDHOLES OR MANHOLES NECESSARY FOR EASE OF INSTALLATION, CODE COMPLIANCE OR DUE TO VOLUNTARY OR REQUIRED RE—ROUTING OF THE UNDERGROUND CONDUITS AT NO ADDITIONAL COST TO THE OWNER.

## SECTION 16142 - ELECTRICAL CONNECTIONS FOR EQUIPMENT

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. THIS SECTION IS A DIVISION-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION, AND IS PART OF EACH DIVISION—15 AND 16 SECTION MAKING REFERENCE TO ELECTRICAL CONNECTIONS FOR EQUIPMENT SPECIFIED HEREIN.

2. DESCRIPTION OF WORK
   A. EXTENT OF ELECTRICAL CONNECTIONS FOR EQUIPMENT IS INDICATED BY DRAWINGS AND SCHEDULES. ELECTRICAL CONNECTIONS ARE HEREBY DEFINED TO INCLUDE CONNECTIONS USED FOR PROVIDING ELECTRICAL POWER TO EQUIPMENT.
   B. APPLICATIONS OF ELECTRICAL POWER CONNECTIONS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. FROM ELECTRICAL SOURCE TO MOTOR STARTERS.
      2. FROM MOTOR STARTERS TO MOTORS.
      3. TO LIGHTING FIXTURES.
      4. TO GROUNDS INCLUDING EARTHING CONNECTIONS.
      5. TO EQUIPMENT OF COMMUNICATION, CCTV AND ALARM SYSTEMS.
   C. ELECTRICAL CONNECTIONS FOR EQUIPMENT, NOT FURNISHED AS INTEGRAL PART OF EQUIPMENT, ARE SPECIFIED IN DIVISION—-15 AND OTHER DIVISION—16 SECTIONS, AND ARE WORK OF THIS SECTION.
   D. MOTOR STARTERS AND CONTROLLERS, NOT FURNISHED AS INTEGRAL PART OF EQUIPMENT, ARE SPECIFIED IN APPLICABLE DIVISION-16 SECTIONS, AND ARE WORK OF THIS SECTION.
   E. REFER TO DIVISION—15 SPECIFICATION SECTIONS AND DRAWINGS FOR MOTOR STARTERS AND CONTROLLERS FURNISHED INTEGRALLY WITH EQUIPMENT; NOT WORK OF THIS SECTION. CONNECTIONS TO THIS EQUIPMENT ¡IS WORK OF THIS SECTION.
   F. JUNCTION BOXES AND DISCONNECT SWITCHES REQUIRED FOR CONNECTING MOTORS AND OTHER ELECTRICAL UNITS OF EQUIPMENT ARE SPECIFIED IN APPLICABLE DIVISION—16 SECTIONS, AND ARE WORK OF THIS SECTION.
   G. RACEWAYS AND WIRES/CABLES REQUIRED FOR CONNECTING MOTORS AND OTHER ELECTRICAL UNITS OF EQUIPMENT ARE SPECIFIED IN APPLICABLE DIVISION—16 SECTIONS, AND ARE WORK OF THIS SECTION.
   H. REFER TO OTHER DIVISION—16 AND DIVISION—15 SECTIONS FOR LOW VOLTAGE CONTROL SYSTEM WIRING; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE
   A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF ELECTRICAL CONNECTORS AND TERMINALS, OF TYPES AND RATINGS REQUIRED, AND ANCILLARY CONNECTION MATERIALS, INCLUDING ELECTRICAL INSULATING TAPE, SOLDERING FLUXES, AND CABLE TIES, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.
   B. INSTALLER'S QUALIFICATIONS: FIRM WITH AT LEAST 2 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE WITH PROJECTS UTILIZING ELECTRICAL CONNECTIONS FOR EQUIPMENT SIMILAR TO THAT REQUIRED FOR THIS PROJECT.
   C. NEC COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEC AS TO TYPE PRODUCTS USED AND INSTALLATION OF ELECTRICAL POWER CONNECTIONS (TERMINALS AND SPLICES), FOR JUNCTION BOXES, MOTOR STARTERS, AND DISCONNECT SWITCHES.
   D. IEEE COMPLIANCE: COMPLY WITH STD 241, "IEEE RECOMMENDED PRACTICE FOR ELECTRIC POWER SYSTEMS IN COMMERCIAL BUILDINGS" PERTAINING TO CONNECTIONS AND TERMINATIONS.
   E. ANSI COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF ANSI/NEMA AND ANSI/EIA STANDARDS PERTAINING TO PRODUCTS AND INSTALLATION OF ELECTRICAL CONNECTIONS FOR EQUIPMENT.
   F. UL COMPLIANCE: COMPLY WITH UL STD 4864, "WIRE CONNECTORS AND SOLDERING LUGS FOR USE WITH COPPER CONDUCTORS", INCLUDING, BUT NOT LIMITED TO, TIGHTENING OF ELECTRICAL CONNECTORS TO TORQUE VALUES INDICATED. PROVIDE ELECTRICAL CONNECTION PRODUCTS AND MATERIALS WHICH ARE UL—LISTED AND LABELED.
   G. ETL COMPLIANCE: PROVIDE ELECTRICAL CONNECTION PRODUCTS AND MATERIALS WHICH ARE ETL—LISTED AND LABELED.

4. ACCEPTABLE MANUFACTURERS
   A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. AMP. INCORPORATED
      2. APPLETON ELECTRIC CO.
      3. ARROW—HART DIV., CROUSE—HINDS CO.
      4. BURNDY CORPORATION
      5. GENERAL ELECTRIC CO.
      6. GOULD, INC,
      7. HARVEY HUBBELL INC.
      8. SQUARE D COMPANY
      9. THOMAS AND BETTS CORP.

5. MATERIALS AND COMPONENTS
   A. GENERAL: FOR EACH ELECTRICAL CONNECTION INDICATED, PROVIDE COMPLETE ASSEMBLY OF MATERIALS, INCLUDING BUT NOT NECESSARILY LIMITED TO, PRESSURE CONNECTORS, TERMINALS (LUGS), ELECTRICAL INSULATING TAPE, ELECTRICAL SOLDER, ELECTRICAL SOLDERING FLUX, HEAT-SHRINKABLE INSULATING TUBING, CABLE TIES, SOLDERLESS WIRENUTS, AND OTHER ITEMS AND ACCESSORIES AS NEEDED TO COMPLETE SPLICES AND TERMINATIONS OF TYPES INDICATED.
   B. METAL CONDUIT, TUBING, AND FITTINGS:
      1. GENERAL: PROVIDE METAL CONDUIT, TUBING, AND FIT TINGS OF TYPES, GRADES, SIZES, AND WEIGHTS (WALL THICKNESSES) INDICATED FOR EACH TYPE SERVICE. WHERE TYPES AND GRADES ARE NOT INDICATED, PROVIDE PROPER SELECTION AS DETERMINED BY INSTALLER TO FULFILL WIRING REQUIREMENTS AND COMPLY WITH NEC REQUIREMENTS FOR RACEWAYS. PROVIDE PRODUCTS COMPLYING WITH DIVISION—-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION "RACEWAYS", AND IN ACCORDANCE WITH THE FOLLOWING LISTING OF METAL CONDUIT, TUBING, AND FITTINGS:
         a. RIGID STEEL CONDUIT.
         b. RIGID METAL CONDUIT FITTINGS.
         c. ELECTRICAL METALLIC TUBING.
         d. EMT FITTINGS.
         e. LIQUID—TIGHT FLEXIBLE METAL CONDUIT.
         f. LIQUID—TIGHT FLEXIBLE METAL CONDUIT FITTINGS.
         g. FLEXIBLE METAL CONDUIT.
         h. FLEXIBLE METAL CONDUIT FITTINGS.
   C. WIRES, CABLES, AND CONNECTORS:
      1. GENERAL: PROVIDE WIRES, CABLES, AND CONNECTORS COMPLYING WITH DIVISION—16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION "WIRES AND CABLES".
      2. WIRES/CABLES: UNLESS OTHERWISE INDICATED, PROVIDE WIRES/CABLES (CONDUCTORS) FOR ELECTRICAL CONNECTIONS WHICH MATCH, INCLUDING SIZES AND RATINGS, OF WIRES/CABLES WHICH ARE SUPPLYING ELECTRICAL POWER. PROVIDE COPPER CONDUCTORS WITH CONDUCTIVITY OF NOT LESS THAN 98% AT 200C (680F).
      3. CONNECTORS AND TERMINALS: PROVIDE ELECTRICAL CON NECTORS AND TERMINALS WHICH MATE AND MATCH, INCLUDING SIZES AND RATINGS, WITH EQUIPMENT TERMINALS AND ARE RECOMMENDED BY EQUIPMENT MANUFACTURER FOR INTENDED APPLICATIONS.

6. INSPECTION
   A. INSPECT AREA AND CONDITIONS UNDER WHICH ELECTRICAL CONNECTIONS FOR EQUIPMENT ARE TO BE INSTALLED AND NOTIFY CONTRACTOR IN WRITING OF CONDITIONS DETRIMENTAL TO PROPER COMPLETION OF THE WORK. DO NOT PROCEED WITH THE WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN A MANNER ACCEPTABLE TO INSTALLER.

7. INSTALLATION OF ELECTRICAL CONNECTIONS
   A. INSTALL ELECTRICAL CONNECTIONS AS INDICATED; IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS AND WITH RECOGNIZED INDUSTRY PRACTICES, AND COMPLYING WITH APPLICABLE REQUIREMENTS OF UL, NEC, AND NECA'S "STANDARD OF INSTALLATION", TO ENSURE THAT PRODUCTS FULFILL REQUIREMENTS.
   B. COORDINATE WITH OTHER WORK, INCLUDING WIRES/CABLES, RACEWAY AND EQUIPMENT INSTALLATION, AS NECESSARY TO PROPERLY INTERFACE INSTALLATION OF ELECTRICAL CONNECTIONS FOR EQUIPMENT WITH OTHER WORK.
   C. CONNECT ELECTRICAL POWER SUPPLY CONDUCTORS TO EQUIPMENT CONDUCTORS IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS AND WIRING DIAGRAMS. MATE AND MATCH CONDUCTORS OF ELECTRICAL CONNECTIONS FOR PROPER INTERFACE BETWEEN ELECTRICAL POWER SUPPLIES AND INSTALLED EQUIPMENT,
   D. PROVIDE THE FOLLOWING ELECTRICAL WORK AS WORK OF THIS SECTION, COMPLYING WITH REQUIREMENTS OF DIVISION 15 SECTIONS:
      1. POWER SUPPLY WIRING FROM POWER SOURCE TO POWER CONNECTION ON CHILLER, FANS, AIR HANDLING UNITS, PUMPS, DUCT HEATERS, WATER HEATERS, AIR COMPRESSOR, AIR DRYER, AND UNIT CONTROL PANELS. INCLUDE STARTERS, DISCONNECTS, TIME CLOCKS, RECEPTACLES AND REQUIRED ELECTRICAL DEVICES, EXCEPT WHERE SPECIFIED AS FURNISHED, OR FACTORY—INSTALLED, BY MANUFACTURER. MAKE ALL FINAL ELECTRICAL CONNECTIONS.
   E. MAINTAIN EXISTING ELECTRICAL SERVICE AND FEEDERS TO OCCUPIED AREAS AND OPERATIONAL FACILITIES, UNLESS OTHERWISE INDICATED, OR WHEN AUTHORIZED OTHERWISE IN WRITING BY OWNER, OR ARCHITECT/ENGINEER. PROVIDE TEMPORARY SERVICE DURING INTERRUPTIONS TO EXISTING FACILITIES. WHEN NECESSARY, SCHEDULE MOMENTARY OUTAGES FOR REPLACING EXISTING WIRING SYSTEMS WITH NEW WIRING SYSTEMS. WHEN THAT "CUTTING—OVER" HAS BEEN SUCCESSFULLY ACCOMPLISHED, REMOVE, RELOCATE, OR ABANDON EXISTING WIRING AS INDICATED.
   F. COVER SPLICES WITH ELECTRICAL INSULATING MATERIAL EQUIVALENT TO, OR OF GREATER INSULATION RESISTIVITY RATING, THAN ELECTRICAL INSULATION RATING OF THOSE CONDUCTORS BEING SPLICED. NO NEW CONDUCTORS SHALL BE SPLICED UNLESS SPECIFICALLY NOTED ON THE DRAWINGS.
   G. PREPARE CABLES AND WIRES, BY CUTTING AND STRIPPING COVERING ARMOR, JACKET, AND INSULATION PROPERLY TO ENSURE UNIFORM AND NEAT APPEARANCE WHERE CABLES AND WIRES ARE TERMINATED. EXERCISE CARE TO AVOID CUTTING THROUGH TAPES WHICH WILL REMAIN ON CONDUCTORS. ALSO AVOID "RINGING" COPPER CONDUCTORS WHILE SKINNING WIRE.
   H. TRIM CABLES AND WIRES AS SHORT AS PRACTICABLE AND ARRANGE ROUTING TO FACILITATE INSPECTION, TESTING, AND MAINTENANCE.
   I. TIGHTEN CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH EQUIPMENT MANUFACTURERS PUBLISHED TORQUE TIGHTENING VALUES FOR EQUIPMENT CONNECTORS. ACCOMPLISH TIGHTENING BY UTILIZING PROPER TORQUING TOOLS, INCLUDING TORQUE SCREWDRIVER, BEAM-—TYPE TORQUE WRENCH, AND RATCHET WRENCH WITH ADJUSTABLE TORQUE SETTINGS. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT AVAILABLE, TIGHTEN CONNECTORS AND TERMINALS TO COMPLY WITH TORQUING VALUES CONTAINED IN UL'S 4864.
   J. PROVIDE FLEXIBLE CONDUIT FOR MOTOR CONNECTIONS, AND OTHER ELECTRICAL EQUIPMENT CONNECTIONS, WHERE SUBJECT TO MOVEMENT AND VIBRATION.
   K. PROVIDE LIQUID—TIGHT FLEXIBLE CONDUIT FOR CONNECTION OF MOTORS AND OTHER ELECTRICAL EQUIPMENT WHERE SUBJECT TO MOVEMENT AND VIBRATION, AND ALSO WHERE CONNECTIONS ARE SUBJECTED TO ONE OR MORE OF THE FOLLOWING CONDITIONS:
      1. EXTERIOR LOCATION.
      2. MOIST OR HUMID ATMOSPHERE WHERE CONDENSATE CAN BE EXPECTED TO ACCUMULATE.
      3. CORROSIVE ATMOSPHERE.
      4. WATER SPRAY.
      5. DRIPPING OIL, GREASE, OR WATER, INCLUDING KITCHEN AREAS.

8. FIELD QUALITY CONTROL
   A. UPON COMPLETION OF INSTALLATION OF ELECTRICAL CONNECTIONS, AND AFTER CIRCUITRY HAS BEEN ENERGIZED WITH RATED POWER SOURCE, TEST CONNECTIONS TO DEMONSTRATE CAPABILITY AND COMPLIANCE WITH REQUIREMENTS. ENSURE THAT DIRECTION OF ROTATION OF EACH MOTOR FULFILLS REQUIREMENT. CORRECT MALFUNCTIONING UNITS AT SITE, THEN RETEST TO DEMONSTRATE COMPLIANCE.

## SECTION 16143 - WIRING DEVICES

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. THIS SECTION IS A DIVISION-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION, AND IS PART OF EACH DIVISION-16 SECTION MAKING REFERENCE TO WIRING DEVICES SPECIFIED HEREIN.

2. DESCRIPTION OF WORK
   A. THE EXTENT OF WIRING DEVICE WORK IS INDICATED BY DRAWINGS AND SCHEDULES. WIRING DEVICES ARE DEFINED AS SINGLE DISCRETE UNITS OF ELECTRICAL DISTRIBUTION SYSTEMS WHICH ARE INTENDED TO CARRY BUT NOT UTILIZE ELECTRIC ENERGY.
   B. TYPES OF ELECTRICAL WIRING DEVICES IN THIS SECTION INCLUDE THE FOLLOWING:
      1. RECEPTACLES, INCLUDING SURGE SUPPRESSION TYPE IF APPLICABLE.
      2. GROUND-FAULT CIRCUIT INTERRUPTERS
      3. SWITCHES
      4. WALLPLATES
      5. PLUGS AND CONNECTORS
      6. TIME SWITCHES / TIME CLOCKS

3. QUALITY ASSURANCE
   A. INSTALLER'S QUALIFICATIONS: FIRM WITH AT LEAST 2 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS UTILIZING WIRING DEVICES SIMILAR TO THOSE REQUIRED FOR THIS PROJECT.
   B. NEC COMPLIANCE: COMPLY WITH NEC AS APPLICABLE TO INSTALLATION AND WIRING OF ELECTRICAL WIRING DEVICES.
   C. UL COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF UL 20, 486A, 498, AND 9435 PERTAINING TO INSTALLATION OF WIRING DEVICES. PROVIDE WIRING DEVICES WHICH ARE UL-LISTED AND LABELED.
   D. IEEE COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF IEEE STD 241, "RECOMMENDED PRACTICE FOR ELECTRIC POWER SYSTEMS IN COMERCIAL BUILDINGS", PERTAINING TO ELECTRICAL WIRING SYSTEMS.
   E. NEMA COMPLIANCE: COMPLY WITH APPLICABLE PORTIONS OF NEMA STDS PUB/NO. WD 1, "GENERAL-PURPOSE WIRING DEVICES", WD 2, "SEMICONDUCTOR DIMMERS FOR INCANDESCENT LAMPS", AND WD 5, "SPECIFIC,-PURPOSE WIRING DEVICES".
   F. FS COMPLIANCE: COMPLY FS W-C-596 (SERIES) AND FS W-S-896 (SERIES) PERTAINING TO ELECTRICAL POWER CONNECTORS AND TOGGLE SWITCHES.

4. SUBMITTALS
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S DATA ON ELECTRICAL WIRING DEVICES TO ARCHITECT.

5. ACCEPTABLE MANUFACTURERS
   A. MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE WIRING DEVICES OF ONE OF THE FOLLOWING (FOR EACH TYPE AND RATING OF WIRING DEVICE):
      1. HUBBELL
      2. ARROW - HART DIV.
      3. GENERAL ELECTRIC CO.
      4. EAGLE ELECTRIC CO.
      5. LEVITON
      6. PASS - SEYMOUR
      7. TIME SWITCHES: TORK, INTERMATIC OR PARAGON

6. FABRICATED WIRING DEVICES
   A. GENERAL: PROVIDE FACTORY - FABRICATED WIRING DEVICES, IN TYPES, COLORS, AND ELECTRICAL RATINGS FOR APPLICATIONS INDICATED AND WHICH COMPLY WITH NEMA STDS PUB/NO. WD 1. PROVIDE BONE COLOR DEVICES AND BONE COLORED NYLON, IMPACT RESISTANT COVERPLATES, EXCEPT AS OTHER WISE INDICATED; COLOR SELECTION SHALL BE VERIFIED PRIOR TO ORDERING BY CONTRACTOR WITH ARCHITECT/ENGINEER.
   B. RECEPTACLES:
      1. HEAVY-DUTY DUPLEX: PROVIDE SPECIFICATION GRADE DUPLEX RECEPTACLES, 2-POLE, 5-WIRE, GROUNDING, 20-AMPERES, 125-VOLTS, WITH METAL PLASTER EARS, DESIGN FOR SIDE AND BACK WIRING WITH SPRING LOADED, SCREW ACTIVATED PRESSURE PLATE, WITH NEMA CONFIGURATION 5-20R UNLESS OTHERWISE INDICATED. HUBBELL OR EQUAL. 15 AMP RATED RECEPTACLES MAY BE USED ON CIRCUITS WITH TWO OR MORE RECEPTACLES IN ACCORDANCE WITH NEC.
      2. GROUND-FAULT INTERRUPTERS: PROVIDE "FEED-THRU" TYPE GROUND-FAULT CIRCUIT INTERRUPTERS, WITH HEAVY-DUTY DUPLEX RECEPTACLES, CAPABLE OF PROTECTING CONNECTING DOWNSTREAM RECEPTACLES ON SINGLE CIRCUIT, AND OF BEING INSTALLED IN A 2-3/4" DEEP OUTLET BOX WITHOUT ADAPTER, GROUNDING TYPE UL-RATED CLASS A, GROUP 1, RATED 20 AMPERES, 120-VOLTS, 60 HZ; WITH SOLID-STATE GROUND-FAULT SENSING AND INDICATION; WITH 5 MILLIAMPERES GROUND-FAULT TRIP LEVEL; EQUIP WITH NEMA CONFIGURATION 5-20R. DEVICE MUST HAVE A POSITIVE TRIP IDENTIFICATION AND RESET. PROVIDE BONE COLOR DEVICE.
      3. SPECIAL RECEPTACLES: SPECIAL CONFIGURATION RECEPTACLES SHALL BE STANDARD NEMA PLUG CONFIGURATION AS SPECIFIED ON THE DRAWINGS OR AS REQUIRED. PROVIDE HEAVY DUTY, SPECIFICATION GRADE RECEPTACLES, WITH BLACK NYLON FACE AND BRUSHED SATIN STAINLESS STEEL COVER PLATE.
   C. SWITCHES:
      1. SNAP: PROVIDE GENERAL-DUTY FLUSH SINGLE-POLE, QUIET TYPE TOGGLE SWITCHES, 20-AMPERES, 120-277 VOLTS AC, WITH MOUNTING YOKE INSULATED FROM MECHANISM, EQUIP WITH PLASTER EARS, SWITCH HANDLE, AND SIDE-WIRED SCREW TERMINALS.
      2. 2-WAY: PROVIDE GENERAL-DUTY FLUSH DOUBLE-POLE AC QUIET SWITCHES, 20-AMPERES, 120-277 VOLTS AC, WITH MOUNTING YOKE INSULATED FROM MECHANISM, EQUIP WITH PLASTER EARS, SWITCH HANDLES, SIDE-WIRED SCREW TERMINALS, WITH BREAK-OFF TAB FEATURES, WHICH ALLOWS WIRING WITH SEPARATE OR COMMON FEED.
      3. THREE-WAY: PROVIDE GENERAL-DUTY FLUSH 3-WAY AC QUIET TYPE SWITCHES, 20-AMPERES, 120-277 VOLTS AC, WITH MOUNTING YOKE INSULATED FROM MECHANISM, EQUIP WITH PLASTER EARS, LOCK TYPE SWITCH HANDLES, SIDEWIRED SCREW TERMINALS, WITH BREAK-OFF TAB FEATURES, WHICH ALLOWS WIRING WITH SEPARATE OR COMMON FEED.
      4. FOUR-WAY: PROVIDE GENERAL-DUTY FLUSH 4-WAY AC QUIET SWITCHES, 20-AMPERES, 120-277 VOLTS AC, WITH MOUNTING YOKE INSULATED FROM MECHANISM, EQUIP WITH PLASTER EARS, SWITCH HANDLES, SIDE-WIRED SCREW TERMINALS, WITH BREAK-OFF TAB FEATURES, WHICH ALLOWS WIRING WITH SEPARATE OR COMMON FEED.
      5. TOUCH SNAP: PROVIDE SOFT-TOUCH SNAP SWITCHES, CAPABLE OF EFFORTLESS-FINGERTIP OPERATION; SINGLE-POLE AC QUIET, WITH LIGHTED ROCKER SWITCH HANGLES; SIDEWIRED SCREW TERMINALS FOR CONNECTING COPPER-CLAD ALUMINUM WIRE, 20-AMPERES, 120-277 VOLTS RATING. EQUIP WITH PLASTER EARS.
      6. SWITCHES TO BE BONE COLOR WITH BONE COLORED NYLON, IMPACT RESISTANT COVERPLATE, BLACK ON MILLWORK / ALL FRONT OF HOUSE.
   D. COMBINATION DEVICES: PROVIDE GENERAL-DUTY 3-WAY QUIET SWITCH, 20-AMPERES, 120-277 VOLTS AC, WITH TOGGLE SWITCH HANDLE, AND 3-WIRE GROUNDING RECEPTACLE, 20 AMPERES, 120-VOLTS, EQUIP WITH PLASTER EARS, AND WITH BREAK-OFF TAB FEATURE WHICH ALLOWS WIRING WITH SEPARATE OR COMMON FEED, WITH NEMA CONFIGURATION 5-20R.
   E. INCANDESCENT LAMP DIMMERS: PROVIDE MARLIN DIMMING SYSTEM.
   F. TIME SWITCHES, TIME CLOCKS: UNLESS OTHERWISE SPECIFICALLY NOTED ON THE DRAWINGS PROVIDE ELECTRO-MECHANICAL 24 HOUR DIAL TYPE TIME SWITCH WITH DAY OMITTING CAPABILITY AND 24 HOUR RESERVE TIMING MOTOR. PROVIDE WITH A POSITIVE MANUAL ON-OFF SWITCH, VOLTAGE AS REQUIRED OR SPECIFIED ON THE DRAWINGS, MINIMUM 40 AMPS PER POLE, MINIMUM DOUBLE POLE, DOUBLE THROW. PROVIDE ADDITIONAL POLES AS REQUIRED OR SPECIFIED ON THE DRAWINGS. TIME SWITCHES SHALL BE TORK OR EQUAL BY INTERMATIC OR PARAGON.

7. WIRING DEVICE ACCESSORIES
   A. WALLPLATES: PROVIDE WALLPLATES FOR SINGLE AND COMBINATION WIRING DEVICES, OF TYPES, SIZES, AND WITH GANGING AND CUTOUTS AS REQUIRED. SELECT PLATES WHICH MATE AND MATCH WIRING DEVICES TO WHICH ATTACHED. CONSTRUCT WITH METAL SCREWS FOR SECURING PLATES TO DEVICES; SCREW HEADS COLORED TO MATCH FINISH OF PLATES. PROVIDE PLATES POSSESSING THE FOLLOWING ADDITIONAL CONSTRUCTION FEATURES:

MATERIAL AND FINISH: BONE COLORED NYLON, IMPACT RESISTANT, BLACK ON MILLWORK / ALL FRONT OF HOUSE

   B. FLOOR SERVICE OUTLETS: PROVIDE FLUSH TYPE FLOOR SERVICE RECEPTACLE OUTLETS AND FITTINGS OF TYPES AND RATINGS INDICATED. CONSTRUCT OF DIE CAST ALUMINUM, SATIN FINISH AND OF THE SIZE NECESSARY FOR THE SLAB THICKNESS PROVIDED. PROVIDE ONE OR TWO GANG BOX AS INDICATED ON THE DRAWINGS WITH 20-AMPERE, 125-VOLT, DUPLEX RECEPTACLE, NEMA CONFIGURATION 5-20R FOR POWER, UNLESS INDICATED OTHERWISE. PROVIDE DATA OR TELEPHONE OUTLETS AS INDICATED WITH A 3/4" DIAMETER BUSHED HOLE FOR DATA AND A STANDARD TELEPHONE OUTLET FOR TELEPHONE. BOXES SHALL BE SIZED AS REQUIRED FOR THE NUMBER OF OUTLETS AND NUMBER OF CONDUCTORS TO ENTER AND LEAVE THE BOX. PROVIDE BRASS COVER PLATE WITH SNAP COVER WHICH SHALL BE A PROTECTIVE COVER WHICH WILL PREVENT BREAKAGE OF THE INSTALLED WIRING DEVICES. PROVIDE BRASS TILE OR CARPET FLANGE AS REQUIRED.

8. TELEPHONE/DATA OUTLETS
   A. PROVIDE BLANK BONE COLORED NYLON, IMPACT RESISTANT WALLPLATE FOR ALL INDICATED UNUSED TELEPHONE/DATA OUTLETS, BLACK ON MILLWORK / ALL FRONT OF HOUSE.

9. INSTALLATION OF WIRING DEVICES
   A. INSTALL WIRING DEVICES AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC AND NECA'S "STANDARD OF INSTALLATION", AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO FULFILL PROJECT REQUIREMENTS.
   B. COORDINATE WITH OTHER WORK, INCLUDING PAINTING, ELECTRICAL BOXES AND WIRING WORK, AS NECESSARY TO INTERFACE INSTALLATION OF WIRING DEVICES WITH OTHER WORK.
   C. INSTALL WIRING DEVICES ONLY IN ELECTRICAL BOXES WHICH ARE CLEAN; FREE FROM EXCESS BUILDING MATERIALS, DIRT, AND DEBRIS.
   D. INSTALL GALVANIZED STEEL WALLPLATES ON ANY EXPOSED SURFACE MOUNTED DEVICES.
   E. INSTALL WALLPLATES AFTER PAINTING WORK IS COMPLETED.
   F. TIGHTEN CONNECTORS AND TERMINALS, INCLUDING SCREWS AND BOLTS, IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S PUBLISHED TORQUE TIGHTENING VALUES FOR WIRING DEVICES. WHERE MANUFACTURER'S TORQUING REQUIREMENTS ARE NOT INDICATED, TIGHTEN CONNECTORS AND TERMINALS TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL STDS 486A AND B. USE PROPERLY SCALED TORQUE INDICATING HAND TOOL.
   G. CONTRACTOR TO PROVIDE GROUND FAULT PROTECTIVE TYPE RECEPTACLES FOR ANY LOCATION WITHIN 2'-0" OF SINKS OR OTHER SOURCE OF WATER. FEED THROUGH PROTECTION FROM ONE GROUND FAULT PROTECTED RECEPTACLE ON A CIRCUIT IS NOT ACCEPTABLE.
   H. MOUNTING HEIGHT OF BOXES FOR DEVICES AS SHOWN ON LEGEND, UNLESS OTHERWISE NOTED ON THE PLAN. REFER TO ARCHITECTURAL DRAWINGS TO AVOID INTERFERENCES WITH MILLWORK. WHERE TWO OR MORE DEVICES ARE SHOWN AT THE SAME LOCATION, USE GANG BOX AND ONE FACE PLATE. VERIFY ALL DEVICE LOCATIONS WITH OWNER PRIOR TO ROUGH-IN. EXACT DEVICE LOCATIONS MAY BE ADJUSTED BY THE OWNER TO AVOID INTERFERENCES OR FOR GENERAL CONVENIENCE AT NO ADDITIONAL COST TO THE OWNER.
   I. FLOOR BOXES SHALL BE INSTALLED FLUSH WITH THE SLAB AND SHALL STRICTLY FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS. BOXES SHALL BE INSTALLED AT RIGHT ANGLES TO THE BUILDING LINES AND MULTIPLE BOXES SHALL BE IN—LINE STRAIGHT AND EVEN. BOXES OBSERVED TO BE INSTALLED CROOKED SHALL BE REMOVED AND REINSTALLED.

10. PROTECTION OF WALLPLATES AND RECEPTACLES
   A. UPON INSTALLATION OF WALLPLATES AND RECEPTACLES, ADVISE CONTRACTOR REGARDING PROPER AND CAUTIOUS USE OF CONVENIENCE OUTLETS. AT TIME OF SUBSTANTIAL COMPLETION, REPLACE THOSE ITEMS WHICH HAVE BEEN DAMAGED, INCLUDING THOSE BURNED AND SCORED BY FAULTY PLUGS.

11. GROUNDING
   A. PROVIDE EQUIPMENT GROUNDING CONNECTIONS FOR WIRING DEVICES, UNLESS OTHERWISE INDICATED. TIGHTEN CONNECTIONS TO COMPLY WITH TIGHTENING TORQUES SPECIFIED IN UL STD 486 A TO ASSURE PERMANENT AND EFFECTIVE GROUNDS.

12. TESTING
   A. PRIOR TO CIRCUITRY, TEST WIRING FOR ELECTRICAL CONTINUITY, FOR SHORT-CIRCUITS AND FOR GROUNDING. ENSURE PROPER POLARITY OF CONNECTIONS IS MAINTAINED. SUBSEQUENT TO ENERGIZATION, TEST WIRING DEVICES TO DEMONSTRATE COMPLIANCE WITH REQUIREMENTS.

13. WARRANTY
   A. ALL WIRING DEVICES, INCLUDING ANY DIMMERS OR DIMMING SYSTEMS, SHALL HAVE A MINIMUM ONE YEAR PARTS AND LABOR WARRANTY.

## SECTION 16150 - MOTOR CONTROLLERS AND CONTACTORS

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT INCLUDING GENERAL AND DIVISION 1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.

2. SCOPE
   A. THE WORK, APPARATUS AND MATERIALS WHICH SHALL BE FURNISHED UNDER THESE SPECIFICATIONS AND ACCOMPANYING DRAWINGS SHALL INCLUDE ALL ITEMS SPECIFIED HEREINAFTER AND SHOWN ON THE DRAWINGS. ALL OTHER MATERIALS NECESSARY FOR THE COMPLETE INSTALLATION SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR TO PROVIDE COMPLETE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS AND AS SPECIFIED HEREIN.
   B. COORDINATE ALL REQUIRED INTERLOCKS WITH DIVISION 15. MOTOR STARTERS SHALL CONTAIN THE NECESSARY AUXILIARY CONTACTS AND CONTROL COIL VOLTAGE TO INTERFACE WITH THE HVAC TEMPERATURE CONTROL SYSTEM AND FIRE ALARM CONTROL SYSTEM.

3. DESCRIPTION OF WORK
   A. EXTENT OF MOTOR CONTROLLER WORK IS INDICATED BY DRAWINGS AND SCHEDULES. TYPES OF MOTOR CONTROLLERS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. MANUAL MOTOR STARTERS.
      2. COMBINATION DISCONNECT/FVNR MOTOR STARTERS.

4. QUALITY ASSURANCE
   A. MANUFACTURERS: GENERAL ELECTRIC, SQUARE D, ALLEN BRADLEY.
   B. INSTALLER'S QUALIFICATIONS: FIRM WITH AT LEAST 3 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH ELECTRICAL MOTOR CONTROLLER WORK SIMILAR TO THAT REQUIRED FOR THIS PROJECT.
   C. CODES AND STANDARDS:
      1. NEMA COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEMA STANDARDS PUBLICATIONS PERTAINING TO MOTOR CONTROLLERS.
      2. UL COMPLIANCE AND LABELING: COMPLY WITH APPLICABLE REQUIREMENTS OF UL SAFETY STANDARDS PERTAINING TO MOTOR CONTROLLERS. PROVIDE MOTOR CONTROLLERS AND COMPONENTS WHICH HAVE BEEN UL-LISTED AND LABELED.
      3. NEC COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEC PERTAINING TO CONSTRUCTION AND INSTALLATION OF MOTOR CONTROLLERS.

5. SUBMITTALS
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S TECHNICAL PRODUCT DATA, INCLUDING SPECIFICATIONS AND INSTALLATION INSTRUCTIONS, FOR EACH TYPE OF MOTOR CONTROLLER REQUIRED. INCLUDE DATA SUBSTANTIATING THAT MATERIALS COMPLY WITH REQUIREMENTS TO ARCHITECT.

6. INDIVIDUAL MOTOR CONTROLLERS
   A. MANUAL MOTOR STARTERS FOR 115 VOLTS, SINGLE PHASE MOTORS ONE HORSEPOWER AND SMALLER, SHALL BE SINGLE POLE, HORSEPOWER RATED SWITCHES WITH THERMAL OVERLOAD UNITS AND HEATERS. STARTERS SHALL BE ALLEN-BRADLEY BULLETIN 609, GENERAL ELECTRIC CR-101 OR SQUARE D CLASS 2510 WITH STAINLESS STEEL COVER PLATES.
   B. MAGNETIC FULL VOLTAGE STARTERS FOR THREE PHASE MOTORS SHALL BE THREE POLE, HORSEPOWER RATED, MAGNETICALLY OPERATED WITH THREE THERMAL OVERLOAD UNITS AND HEATERS. STARTERS SHALL BE ALLEN-BRADLEY BULLETIN 509, GENERAL ELECTRIC CR-306 OR SQUARE D CLASS 8536. PROVIDE HAND-OFF-AUTO SELECTOR SWITCH, PILOT LIGHTS TO INDICATE STARTER'S POSITION (AMBER - RED - GREEN), A MINIMUM OF TWO NORMALLY OPEN AND TWO NORMALLY CLOSED AUXILIARY CONTACTS, CONTROL POWER TRANSFORMER FUSED ON PRIMARY AND SECONDARY, CONTROL COIL, AND THREE OVERLOAD HEATERS WITH RESET BUTTON. PROVIDE CONTROL POWER AND COIL VOLTAGE AS REQUIRED FOR INTERLOCK WITH THE HVAC TEMPERATURE CONTROL SYSTEM AND FIRE ALARM SYSTEM. STARTERS SHALL BE THE NEMA SIZE INDICATED ON THE DRAWINGS BUT SHALL BE A MINIMUM SIZE ONE.
   C. COMBINATION MAGNETIC, FULL VOLTAGE STARTERS FOR THREE PHASE MOTORS SHALL BE THREE POLE HORSEPOWER RATED, MAGNETICALLY OPERATED CONTACTS, WITH THREE THERMAL OVERLOAD UNITS AND HEATERS. A THREE POLE HORSEPOWER RATED, FUSIBLE DISCONNECT SWITCH SHALL ALSO BE INCLUDED INTEGRAL WITHIN THE ENCLOSURE. PROVIDE FUSES SIZED AS RECOMMENDED BY THE MOTOR MANUFACTURER. STARTERS SHALL BE ALLEN-BRADLEY BULLETIN 512, GENERAL ELECTRIC CR-308 OR SQUARE D CLASS 8538. PROVIDE HAND-OFF-AUTO SELECTOR SWITCH, PILOT LIGHTS TO INDICATE STARTER'S POSITION (AMBER - RED - GREEN), A MINIMUM OF TWO NORMALLY OPEN AND TWO NORMALLY CLOSED AUXILIARY CONTACTS, CONTROL POWER TRANSFORMER FUSED ON PRIMARY AND SECONDARY, CONTROL COIL, AND THREE OVERLOAD HEATERS WITH RESET BUTTON. PROVIDE CONTROL POWER AND COIL VOLTAGE AS REQUIRED FOR INTERLOCK WITH THE HVAC TEMPERATURE CONTROL SYSTEM AND FIRE ALARM SYSTEM. STARTERS SHALL BE THE NEMA SIZE INDICATED ON THE DRAWINGS BUT SHALL BE A MINIMUM SIZE ONE.
   D. PROVIDE ENCLOSURE TYPE SUITABLE FOR THE ENVIRONMENT IN WHICH IT IS INSTALLED. ENCLOSURE SHALL BE INTERLOCKED SO THE DOOR CANNOT BE OPENED WITHOUT TURNING THE UNIT OFF. THIS INTERLOCK SHALL BE CAPABLE OF BEING DEFEATED BY PROPERLY TRAINED PERSONNEL.

7. MOTOR CONTROLLERS, CONTACTORS AND ASSOCIATED CONTROLS
   A. UNLESS OTHERWISE INDICATED, MOTOR CONTROLLERS SHOWN ON THE DRAWINGS SHALL BE FURNISHED AND INSTALLED UNDER THIS SECTION. THE FULL LOAD CURRENT AND STARTING CHARACTERISTICS OF EACH MOTOR SHALL BE VERIFIED FOR PROPER SELECTION OF MOTOR OVER LOAD DEVICES. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL STEEL SHAPES, ETC., NECESSARY FOR A SUPPORT OF ALL MOTOR CONTROLLERS.
   B. UNLESS OTHERWISE INDICATED, ALL CONTROL DEVICES, SUCH AS THERMOSTATS, FIRESTATS, ETC., SHALL BE INSTALLED IN PLACE AND WIRED UNDER OTHER SECTIONS OF THE SPECIFICATIONS. COORDINATE REQUIRED STARTER AUXILIARY CONTACTS AND COIL VOLTAGES FOR A PROPERLY OPERATIONAL SYSTEM.
   C. MOTOR CONTROLLERS SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE NEC INSTALLATION REQUIREMENTS.

8. IDENTIFICATION OF EQUIPMENT
   1. A. IDENTIFICATION SHALL BE PROVIDED FOR ALL MOTOR CONTROLLERS INSTALLED BY THE CONTRACTOR. IDENTIFICATION SHALL CONSIST OF WHITE LAMINATED PLASTIC PLATES WITH BLACK ENGRAVED LETTERS.

## SECTION 16170 - CIRCUIT AND MOTOR DISCONNECTS

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. DIVISION-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION, APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK
   A. EXTENT OF CIRCUIT AND MOTOR DISCONNECT SWITCH WORK IS INDICATED BY DRAWINGS AND SCHEDULES.
   B. TYPES OF CIRCUIT AND MOTOR DISCONNECT SWITCHES IN THIS SECTION INCLUDE THE FOLLOWING:
      1. EQUIPMENT DISCONNECTS.
      2. APPLIANCE DISCONNECTS.
      3. MOTOR-CIRCUIT DISCONNECTS.
   C. WIRES/CABLES, RACEWAYS, AND ELECTRICAL BOXES AND FITTINGS REQUIRED IN CONNECTION WITH CIRCUIT AND MOTOR DISCONNECT WORK ARE SPECIFIED IN OTHER DIVISION-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTIONS.

3. QUALITY ASSURANCE
   A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF CIRCUIT AND MOTOR DISCONNECT SWITCHES OF TYPES AND CAPACITIES REQUIRED WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 3 YEARS.
   B. INSTALLERS QUALIFICATIONS: FIRM WITH AT LEAST 3 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE WITH PROJECTS UTILIZING CIRCUIT AND MOTOR DISCONNECT WORK SIMILAR TO THAT REQUIRED FOR THIS PROJECT.
   C. NEC COMPLIANCE: COMPLY WITH NEC REQUIREMENTS PERTAINING TO CONSTRUCTION AND INSTALLATION OF ELECTRICAL CIRCUIT AND MOTOR DISCONNECT DEVICES.
   D. UL COMPLIANCE: COMPLY WITH REQUIREMENTS OF UL 98, "ENCLOSED AND DEAD-FRONT SWITCHES". PROVIDE CIRCUIT AND MOTOR DISCONNECT SWITCHES WHICH HAVE BEEN UL-LISTED AND LABELED. E. NEMA COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEMA STDS PUB NO. KS 1, "ENCLOSED SWITCHES" AND 250, "ENCLOSURES FOR ELECTRICAL EQUIPMENT (1000 VOLTS MAXIMUM)".

4. SUBMITTALS
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S DATA ON CIRCUIT AND MOTOR DISCONNECT SWITCHES.
   B. WIRING DIAGRAMS: SUBMIT POWER AND CONTROL WIRING DIAGRAMS FOR CIRCUIT AND MOTOR DISCONNECTS INCLUDING CONNECTIONS TO POWER AND CONTROL PANELS, AND FEEDERS.

5. ACCEPTABLE MANUFACTURERS
   A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING CIRCUIT AND MOTOR DISCONNECTS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE THE FOLLOWING:
      1. GENERAL ELECTRIC CO.
      2. SQUARE D COMPANY
      3. ITE/SIEMENS

6. FABRICATED SWITCHES
   A. HEAVY-DUTY SAFETY SWITCHES: PROVIDE SURFACE-MOUNTED, HEAVY-DUTY TYPE, SHEET-STEEL ENCLOSED SAFETY SWITCHES, OF TYPES, SIZES AND ELECTRICAL CHARACTERISTICS INDICATED; FUSIBLE OR NON-FUSIBLE TYPE AS INDICATED, AMPERES AS INDICATED, 60 HZ, 3-BLADES, 4-POLES, SOLID NEUTRAL; AND INCORPORATING QUICK-MAKE, QUICK-BREAK TYPE SWITCHES; CONSTRUCT SO THAT SWITCH BLADES ARE VISIBLE IN OFF POSITION WITH DOOR OPEN. EQUIP WITH OPERATING HANDLE WHICH IS INTEGRAL PART OF ENCLOSURE BASE AND WHOSE OPERATING POSITION IS EASILY RECOGNIZABLE, AND IS PADLOCKABLE IN OFF POSITION; CONSTRUCT CURRENT CARRYING PARTS OF HIGH-CONDUCTIVITY COPPER, WITH SILVER-TUNGSTEN TYPE SWITCH CONTACTS, AND POSITIVE PRESSURE TYPE REINFORCED FUSE CLIPS. PROVIDE NEMA TYPE 3R ENCLOSURES, WHERE APPLICABLE. PROVIDE GROUNDING KIT. PROVIDE 240 VOLT RATED SWITCHES FOR 208Y/120 VOLT SYSTEMS AND 600 VOLT RATED SWITCHES FOR 277Y/480 VOLT SYSTEMS.
      1. FUSES: PROVIDE FUSES FOR SAFETY SWITCHES, AS RECOMMENDED BY THE MANUFACTURER OF THE EQUIPMENT TO BE PROTECTED, OF CLASSES, TYPES, AND RATINGS NEEDED TO FULFILL ELECTRICAL REQUIREMENTS FOR SERVICE INDICATED. PROVIDE R-CLIPS FOR ALL FUSE HOLDERS.

7. INSTALLATION OF CIRCUIT AND MOTOR DISCONNECT SWITCHES
   A. INSTALL CIRCUIT AND MOTOR DISCONNECT SWITCHES AS INDICATED, COMPLYING WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC, NEMA, AND NECA'S "STANDARD OF INSTALLATION", AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES.
   B. COORDINATE CIRCUIT AND MOTOR DISCONNECT SWITCH INSTALLATION WORK WITH ELECTRICAL RACEWAY AND CABLE WORK, AS NECESSARY FOR PROPER INTERFACE.
   C. INSTALL DISCONNECT SWITCHES FOR USE WITH MOTOR—DRIVEN APPLIANCES, AND MOTORS AND CONTROLLERS WITHIN SIGHT OF CONTROLLER POSITION UNLESS OTHERWISE INDICATED.
   D. PROVIDE A NAMEPLATE INDICATING THE EQUIPMENT SERVED AND PROTECTED.

8. GROUNDING
   A. PROVIDE EQUIPMENT GROUNDING CONNECTIONS, SUFFICIENTLY TIGHT TO ASSURE A PERMANENT AND EFFECTIVE GROUND, FOR ELECTRICAL DISCONNECT SWITCHES WHERE INDICATED.

9. FIELD QUALITY CONTROL
   A. SUBSEQUENT TO COMPLETION OF INSTALLATION OF ELECTRICAL DISCONNECT SWITCHES, ENERGIZE CIRCUITRY AND DEMONSTRATE CAPABILITY AND COMPLIANCE WITH REQUIREMENTS. WHERE POSSIBLE, CORRECT MALFUNCTIONING UNITS AT PROJECT SITE, THEN RETEST TO DEMONSTRATE COMPLIANCE; OTHERWISE REMOVE AND REPLACE WITH NEW UNITS AND RETEST.
   B. PAINTING: REPAIR ALL SCRATCHES TO FACTORY PAINTED AND PRIMED FINISH WITH FACTORY SUPPLIED TOUCH-UP PAINT.

## SECTION 16180 - OVERCURRENT PROTECTIVE DEVICES

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. THIS SECTION IS A DIVISION-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION, AND IS PART OF EACH DIVISION-16 SECTION MAKING REFERENCE TO OVERCURRENT PROTECTIVE DEVICES SPECIFIED HEREIN.

2. DESCRIPTION OF WORK
   A. EXTENT OF OVERCURRENT PROTECTIVE DEVICE WORK IS INDICATED BY DRAWINGS AND SCHEDULES.
   B. TYPES OF OVERCURRENT PROTECTIVE DEVICES IN THIS SECTION INCLUDE THE FOLLOWING:
      1. CIRCUIT BREAKERS:
         a. AIR, MOLDED-CASE, FOR INSTALLATION IN PANELS.
         b. AIR, MOLDED-CASE, FOR INDIVIDUAL, SEPARATELY ENCLOSED MOUNTING.
         c. FOR INSTALLATION IN EXISTING PANELS.
      2. FUSES:
         a. CLASS RK5, DUAL-ELEMENT TIME-DELAY.
   C. REFER TO OTHER DIVISION-16 SECTIONS FOR CABLE/WIRE AND CONNECTOR WORK REQUIRED IN CONJUNCTION WITH OVERCURRENT PROTECTIVE DEVICES; NOT WORK OF THIS SECTION.

3. QUALITY ASSURANCE
   A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF OVERCURRENT PROTECTIVE DEVICES, OF TYPES, SIZES, AND RATINGS REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.
   B. INSTALLER: QUALIFIED WITH AT LEAST 5 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH ELECTRICAL INSTALLATION WORK SIMILAR TO THAT REQUIRED FOR PROJECT.
   C. NEC COMPLIANCE: COMPLY WITH NEC REQUIREMENTS AS APPLICABLE TO CONSTRUCTION AND INSTALLATION OF OVERCURRENT PROTECTIVE DEVICES.
   D. UL COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF UL 489, "MOLDED-CASE CIRCUIT BREAKERS AND CIRCUIT-BREAKER ENCLOSURES", AND UL 198D, "HIGH-INTERRUPTING-CAPACITY CLASS K FUSES". PROVIDE OVERCURRENT PROTECTIVE DEVICES WHICH HAVE BEEN UL-LISTED AND LABELED.
   E. NEMA COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEMA STD PUB NOS. AB 1, AB 2, AND SG 3 PERTAINING TO MOLDED-CASE AND LOW-VOLTAGE POWER TYPE CIRCUIT BREAKERS.
   F. FS COMPLIANCE: COMPLY WITH FEDERAL SPECIFICATION W-C-375B/GEN PERTAINING TO MOLDED-CASE CIRCUIT BREAKERS.

4. SUBMITTALS
   A. PRODUCT DATA: SUBMIT MANUFACTURER'S DATA ON OVERCURRENT PROTECTIVE DEVICES, INCLUDING: AMPERES, VOLTAGES AND CURRENT RATINGS, INTERRUPTING RATINGS, CURRENT LIMITATIONS, INTERNAL INDUCTIVE AND NON-INDUCTIVE LOADS, TIME-CURRENT TRIP CHARACTERISTICS CURVES, AND MOUNTING REQUIREMENTS.
   B. MAINTENANCE STOCK, FUSES: FOR TYPES AND RATINGS REQUIRED, FURNISH ADDITIONAL FUSES, AMOUNTING TO ONE UNIT FOR EVERY 5 INSTALLED UNITS, BUT NOT LESS THAN ONE UNIT OF EACH.

5. ACCEPTABLE MANUFACTURERS
   A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING PRODUCTS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. CIRCUIT BREAKERS: GENERAL ELECTRIC CO, SQUARE D CO., ITE/SEIMENS
      2. FUSES:BUSSMANN DIV.; MCGRAW-EDISON CO., GOULD, INC., CEFCO

6. CIRCUIT BREAKERS
   A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE CIRCUIT BREAKERS AND ANCILLARY COMPONENTS, OF TYPES, SIZES, RATINGS, AND ELECTRICAL CHARACTERISTICS INDICATED, WHICH COMPLY WITHMANUFACTURER'S STANDARD DESIGN, MATERIALS, COMPONENTS, AND CONSTRUCTION IN ACCORDANCE WITH PUBLISHED PRODUCT INFORMATION, AND AS REQUIRED FOR A COMPLETE INSTALLATION.
   B. MOLDED-CASE CIRCUIT BREAKERS: PROVIDE FACTORY ASSEMBLED, MOLDED-CASE CIRCUIT BREAKERS OF FRAME SIZE INDICATED; RATED 600 VOLTS OR 240 VOLTS AS REQUIRED, 60 HZ, 3-POLES WITH INTERRUPTING RATINGS AS SHOWN ON DRAWINGS. PROVIDE BREAKERS WITH PERMANENT THERMAL AND INSTANTANEOUS MAGNETIC TRIPS IN EACH POLE, AND WITH FAULT-CURRENT LIMITING PROTECTION, AMPERE RATINGS AS INDICATED. CONSTRUCT WITH OVERCENTER, TRIP-FREE, TOGGLE-TYPE OPERATING MECHANISMS WITH QUICK-MAKE, QUICK-BREAK ACTION AND POSITIVE HANDLE TRIP INDICATION. HANDLE TIES ARE NOT PERMITTED. PROVIDE PUSH-TO-TRIP BUTTON ON COVER FOR MECHANICAL TRIPPING CIRCUIT BREAKERS. CONSTRUCT BREAKERS FOR MOUNTING AND OPERATING IN ANY PHYSICAL POSITION AND OPERATING IN AN AMBIENT TEMPERATURE OF 400C. PROVIDE BREAKERS WITH MECHANICAL SCREW TYPE REMOVABLE CONNECTOR LUGS, AL/CU RATED. CIRCUIT BREAKERS SHALL HAVE THE SHORT CIRCUIT INTERRUPTING RATED INDICATED ON THE DRAWINGS OR AS REQUIRED FOR THE SHORT CIRCUIT CURRENT AVAILABLE.
   C. MOLDED-CASE CIRCUIT BREAKERS FOR INSTALLATION IN PANELBOARDS: SHALL MEET THE SAME SPECIFICATIONS AS IN PART B ABOVE. SHALL BE MANUFACTURED BY THE SAME MANUFACTURER AS THE PANELBOARD.
   D. PROVIDE ALL ACCESORIES INDICATED ON THE DRAWINGS, INCLUDING ACCESORIES INDICATED ON THE PANEL SCHEDULES, SUCH AS SHUNT TRIPS, GROUND FAULT PROTECTION, UNDERVOLTAGE TRIPS, ETC. ACCESSORIES SHALL BE MANUFACTURED BY THE SAME MANUFACTURER AS THE CIRCUIT BREAKER.
   E. ALL CIRCUIT BREAKERS USED TO PROTECT HEATING, VENTILATION OR AIR CONDITIONING CIRCUITS SHALL BE LISTED HACR TYPE.
   F. SMART CIRCUIT BREAKERS FOR INSTALLATION IN PANELBOARDS: SHALL MEET THE SAME SPECIFICATIONS AS IN PART B ABOVE. SHALL BE MANUFACTURED BY THE SAME MANUFACTURER AS THE PANELBOARD.

7. FUSES
   A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE FUSES OF TYPES, SIZES, RATINGS, AND AVERAGE TIME/CURRENT AND PEAK LET-THROUGH CURRENT CHARACTERISTICS INDICATED, WHICH COMPLY WITH MANUFACTURER'S STANDARD DESIGN, MATERIALS, AND CONSTRUCTION IN ACCORDANCE WITH PUBLISHED PRODUCT INFORMATION, AND WITH INDUSTRY STANDARDS AND CONFIGURATIONS.
   B. CLASS RKS DUAL-ELEMENT TIME-DELAY FUSES: PROVIDE UL CLASS RK-5 DUAL ELEMENT TIME-DELAY FUSES RATED 600 V, 60 HZ, AMPERES AS REQUIRED BY THE MANUFACTURER OF THE EQUIPMENT BEING PROTECTED, WITH 200,000 RMS SYMMETRICAL INTERRUPTING CURRENT RATING FOR PROTECTING MOTORS.

8. INSTALLATION OF OVERCURRENT PROTECTIVE DEVICES
   A. INSTALL OVERCURRENT PROTECTIVE DEVICES AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PROTECTIVE DEVICES COMPLY WITH REQUIREMENTS. COMPLY WITH NEC AND NEMA STANDARDS FOR INSTALLATION OF OVERCURRENT PROTECTIVE DEVICES.
   B. COORDINATE WITH OTHER WORK, INCLUDING ELECTRICAL WIRING WORK, AS NECESSARY TO INTERFACE INSTALLATION OF OVERCURRENT PROTECTIVE DEVICES WITH OTHER WORK.
   C. FASTEN CIRCUIT BREAKERS WITHOUT CAUSING MECHAINCAL STRESSES, TWISTING OR MISALIGNMENT BEING EXERTED BY CLAMPS, SUPPORTS, OR CABLING.
   D. SET FIELD-ADJUSTABLE CIRCUIT BREAKERS FOR TRIP SETTINGS AS INDICATED, SUBSEQUENT TO INSTALLATION OF UNITS.
   E. INSTALL FUSES, IF ANY, IN FUSED CIRCUIT BREAKERS.

9. ADJUST AND CLEAN
   A. INSPECT CIRCUIT-BREAKER OPERATING MECHANISMS FOR MALFUNCTIONING AND, WHERE NECESSARY, ADJUST UNITS FOR FREE MECHANICAL MOVEMENT.

10. FIELD QUALITY CONTROL
   A. PRIOR TO ENERGIZATION OF OVERCURRENT PROTECTIVE DEVICES, TEST DEVICES FOR CONTINUITY OF CIRCUITRY AND FOR SHORT-CIRCUITS. CORRECT MALFUNCTIONING UNITS, AND THEN DEMONSTRATE COMPLIANCE WITH REQUIREMENTS.

## SECTION 16190 - SUPPORTING DEVICES

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. THIS SECTION IS A DIVISION-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION, AND IS A PART OF EACH DIVISION-16 SECTION MAKING REFERENCE TO ELECTRICAL SUPPORTING DEVICES SPECIFIED HEREIN.

2. DESCRIPTION OF WORK
   A. EXTENT OF SUPPORTS, ANCHORS, SLEEVES, AND SEALS IS INDICATED BY DRAWINGS AND SCHEDULES AND/OR SPECIFIED IN OTHER DIVISION-16 SECTIONS.
   B. TYPES OF SUPPORTS, ANCHORS, SLEEVES, AND SEALS SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. CLEVIS HANGERS
      2. C-CLAMPS
      3. I-BEAM CLAMPS
      4. ONE-HOLE CONDUIT STRAPS
      5. ROUND STEEL RODS
      6. LEAD EXPANSION ANCHORS
      7. TOGGLE BOLTS
      8. WALL AND FLOOR SEALS
   C. SUPPORTS, ANCHORS, SLEEVES, AND SEALS FURNISHED AS PART OF FACTORY-FABRICATED EQUIPMENT, ARE SPECIFIED AS PART OF THAT EQUIPMENT ASSEMBLY IN OTHER DIVISION-16 SECTIONS.

3. QUALITY ASSURANCE
   A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF SUPPORTING DEVICES, OF TYPES, SIZES, AND RATINGS REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 3 YEARS.
   B. NEC COMPLIANCE: COMPLY WITH NEC REQUIREMENTS AS APPLICABLE TO CONSTRUCTION AND INSTALLATION OF ELECTRICAL SUPPORTING DEVICES.

4. MANUFACTURED SUPPORTING DEVICES
   A. GENERAL: PROVIDE SUPPORTING DEVICES WHICH COMPLY WITH MANUFACTURER'S STANDARD MATERIALS, DESIGN AND CONSTRUCTION IN ACCORDANCE WITH PUBLISHED PRODUCT INFORMATION, AND AS REQUIRED FOR COMPLETE INSTALLATION; AND AS HEREIN SPECIFIED. WHERE MORE THAN ONE TYPE OF SUPPORTING DEVICE MEETS INDICATED REQUIREMENTS, SELECTION IS INSTALLER'S OPTION.
   B. SUPPORTS: PROVIDE SUPPORTING DEVICES OF TYPES, SIZES, AND MATERIALS INDICATED; AND HAVING THE FOLLOWING CONSTRUCTION FEATURES:
      1. CLEVIS HANGERS: FOR SUPPORTING 2" RIGID METAL CON DUIT; GALVANIZED STEEL; WITH 1/2" DIA. HOLE FOR ROUND STEEL ROD; APPROXIMATELY 54 POUNDS PER 100 UNITS.
      2. REDUCING COUPLINGS: STEEL ROD REDUCING COUPLING, 1/2" X 5/8"; BLACK STEEL; APPROXIMATELY 16 POUNDS PER 100 UNITS.
      3. C-CLAMPS: BLACK MALLEABLE IRON; 1/2" ROD SIZE; APPROXIMATELY 70 POUNDS PER 100 UNITS.
      4. I-BEAM CLAMPS: BLACK STEEL, 1-1/4" X 3/16" STOCK; 3/8" CROSS BOLT; FLANGE WIDTH 2°; APPROXIMATELY 52 POUNDS PER 100 UNITS.
      5. ONE-HOLE CONDUIT STRAPS: FOR SUPPORTING 3/4" RIGID METAL CONDUIT; GALVANIZED STEEL; APPROXIMATELY 7 POUNDS PER 100 UNITS.
      6. HEXAGON NUTS: FOR 1/2" ROD SIZE; GALVANIZED STEEL; APPROXIMATELY 4 POUNDS PER 100 UNITS.
      7. ROUND STEEL ROD: BLACK STEEL; 1/2" DIA.; APPROXIMATELY 67 POUNDS PER 100 FEET.
      8. OFFSET CONDUIT CLAMPS: FOR SUPPORTING 2" RIGID METAL CONDUIT; BLACK STEEL; APPROXIMATELY 200 POUNDS PER 100 UNITS.
   C. ANCHORS: PROVIDE ANCHORS OF TYPES, SIZES, AND MATERIALS INDICATED, WITH THE FOLLOWING CONSTRUCITON FEATURES:
      1. LEAD EXPANSION ANCHORS: 1/2", APPROXIMATELY 38 POUNDS PER 100 UNITS.
      2. TOGGLE BOLTS: SPRINGHEAD; 3/16" X 4", APPROXIMATELY 5 POUNDS PER 100 UNITS.
   D. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING ANCHORS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. ABBEON CAL INC.
      2. ACKERMAN JOHNSON FASTENING SYSTEMS, INC.
      3. ELCEN METAL PRODUCTS CO.
      4. IDEAL INDUSTRIES, INC.
      5. JOSLYN MFG. AND SUPPLY CO.
      6. MCGRAW EDISON CO.
      7. RAWIPLUG CO., INC.
      8. STAR EXPANSION CO.
      9. EXPANSION BOLT CO.
   E. SLEEVES AND SEALS: PROVIDE SLEEVES AND SEALS, OF TYPES, SIZES, AND MATERIALS INDICATED, WITH THE FOLLOWING CONSTRUCTION FEATURES:
      1. WALL AND FLOOR SEALS: PROVIDE FACTORY—ASSEMBLED WATERTIGHT WALL AND FLOOR SEALS, OF TYPES AND SIZES INDICATED; SUITABLE FOR SEALING AROUND CONDUIT, PIPE, OR BUTING PASSING THROUGH CONCRETE FLOORS AND WALLS. CONSTRUCT SEALS WITH STEEL SLEEVES, MALLEABLE IRON BODY, NEOPRENE SEALING GROMMETS AND RINGS, METAL PRESSURE RINGS, PRESSURE CLAMPS, AND CAP SCREWS.
   F. U—CHANNEL STRUT SYSTEMS: PROVIDE U-CHANNEL STRUT SYSTEM FOR SUPPORTING ELECTRICAL EQUIPMENT, 12—GAGE HOT—DIP GALVANIZED STEEL, OF TYPES AND SIZES INDICATED; CONSTRUCT WITH 9/16" DIA. HOLES, 8" 0.C. ON TOP SURFACE, WITH STANDARD FINISH, AND WITH THE FOLLOWING FITTINGS WHICH MATE AND MATCH U—CHANNEL.
      1. FIXTURE HANGERS
      2. CHANNEL HANGERS
      3. THINWALL CONDUIT CLAMPS
      4. RIGID CONDUIT CLAMPS
      5. CONDUIT HANGERS
      6. U—BOLTS
   G. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING CHANNEL SYSTEMS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. GREENFIELD MFG. CO.; INC.
      2. MIDLAND—ROSS CORP.
      3. 0Z/GEDNEY DIV.; GENERAL SIGNAL CORP.
      4. POWER—STRUT DIV.; VAN HUFFEL TUBE CORP.
      5. UNISTRUT DIV.; GTE PRODUCTS CORP.
   H. PIPE SLEEVES: PROVIDE PIPE SLEEVES OF ONE OF THE FOLLOWING:
      1. SHEET METAL: FABRICATE FROM GALVANIZED SHEET METAL; ROUND TUBE CLOSED WITH SNAPLOCK JOINT, WELDED SPIRAL SEAMS, OR WELDED LONGITUDINAL JOINT. FABRICATE SLEEVES FROM THE FOLLOWING GAGE METAL: 3° AND SMALLER, 20—GAGE; 4" TO 6", 16—GAGE; OVER 6", 14—GAGE.
      2. STEEL PIPE: FABRICATE FROM SCHEDULE 40 GALVANIZED STEEL PIPE; REMOVE BURRS.
      3. LRON PIPE: FABRICATE FROM CAST-IRON OR DUCTILE—IRON PIPE; REMOVE BURRS.
      4. PLASTIC PIPE: FABRICATE FROM SCHEDULE 40 PVC PLAS TIC PIPE; REMOVE BURRS.
   I. SLEEVE SEALS: PROVIDE SLEEVES FOR PIPING WHICH PENETRATES FOUNDATION WALLS BELOW GRADE, OR EXTERIOR WALLS. CALK BETWEEN SLEEVE AND PIPE WITH NON-TOXIC, UL—CLASSIFIED CALKING MATERIAL TO ENSURE WATERTIGHT SEAL.

5. INSTALLATION OF SUPPORTING DEVICES
   A. INSTALL HANGERS, ANCHORS, SLEEVES, AND SEALS AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND WITH RECOGNIZED INDUSTRY PRACTICES TO INSURE SUPPORTING DEVICES COMPLY WITH REQUIREMENTS. COMPLY WITH REQUIREMENTS OF NECA AND NEC FOR INSTALLATION OF SUPPORTING DEVICES.
   B. COORDINATE WITH OTHER ELECTRICAL WORK, INCLUDING RACEWAY AND WIRING WORK, AS NECESSARY TO INTERFACE INSTALLATION OF SUPPORTING DEVICES WITH OTHER WORK. COORDINATE SUPPORT LOCATIONS WITH OTHER STRUCTURAL AND MECHANICAL TRADES. SUPPORTS SHALL NOT BE ATTACHED TO MECHANICAL OR ELECTRICAL PIPING, CONDUIT, DUCTWORK, CEILING GRID SYSTEM OR ANY OTHER NON-STRUCTURAL MEMBER.
   C. INSTALL HANGERS, SUPPORTS, CLAMPS, AND ATTACHMENTS TO SUPPORT PIPING PROPERLY FROM BUILDING STRUCTURE. ARRANGE FOR GROUPING OF PARALLEL RUNS OF HORIZONTAL CONDUITS TO BE SUPPORTED TOGETHER ON TRAPEZE TYPE HANGERS WHERE POSSIBLE. INSTALL SUPPORTS WITH SPACINGS INDICATED AND IN COMPLIANCE WITH NEC REQUIREMENTS.

## SECTION 16195 - ELECTRICAL IDENTIFICATION

1. RELATED DOCUMENTS
   A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
   B. DIVISION—16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION APPLY TO WORK SPECIFIED IN THIS SECTION.

2. DESCRIPTION OF WORK
   A. EXTENT OF ELECTRICAL IDENTIFICATION WORK IS INDICATED BY DRAWINGS AND SCHEDULES.
   B. TYPES OF ELECTRICAL IDENTIFICATION WORK SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
      1. ELECTRICAL POWER, CONTROL, AND COMMUNICATION CONDUCTORS.
      2. OPERATIONAL INSTRUCTIONS AND WARNINGS.
      3. EQUIPMENT/SYSTEM IDENTIFICATION SIGNS.

3. QUALITY ASSURANCE
   A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF ELECTRICAL IDENTIFICATION PRODUCTS OF TYPES REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 3 YEARS.
   B. NEC COMPLIANCE: COMPLY WITH NEC AS APPLICABLE TO INSTALLATION OF IDENTIFYING LABELS AND MARKERS FOR WIRING AND EQUIPMENT.
   C. UL COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF UL STD 969, "MARKING AND LABELING SYSTEMS", PERTAINING TO ELECTRICAL IDENTIFICATION SYSTEMS.

4. ACCEPTABLE MANUFACTURERS
   A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING ELECTRICAL IDENTIFICATION PRODUCTS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
      1. BRADY, W.H. CO.

5. ELECTRICAL IDENTIFICATION MATERIALS
   A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE MANUFACTURER'S STANDARD PRODUCTS OF CATEGORIES AND TYPES REQUIRED FOR EACH APPLICATION. WHERE MORE THAN SINGLE TYPE IS SPECIFIED FOR AN APPLICATION, SELECTION IS INSTALLER'S OPTION, BUT PROVIDE SINGLE SELECTION FOR EACH APPLICATION.

6. ENGRAVED PLASTIC—LAMINATE SIGNS
   A. GENERAL: PROVIDE ENGRAVING STOCK MELAMINE PLASTIC LAMINATE, COMPLYING WITH FS L—P—387, IN SIZES AND THICKNESSES INDICATED, ENGRAVED WITH ENGRAVER'S STANDARD LETTER STYLE OF SIZES AND WORDING INDICATED, WHITE FACE AND BLACK CORE PLIES (LETTER COLOR) EXCEPT AS OTHERWISE INDICATED, PUNCHED FOR MECHANICAL FASTENING EXCEPT WHERE ADHESIVE MOUNTING IS NECESSARY BECAUSE OF SUBSTRATE.
      1. THICKNESS: 1/8", EXCEPT AS OTHERWISE INDICATED.
      2. FASTENERS: SELF—TAPPING STAINLESS STEEL SCREWS, EXCEPT CONTACT—TYPE PERMANENT ADHESIVE WHERE SCREWS CANNOT OR SHOULD NOT PENETRATE SUBSTRATE.

7. LETTERING AND GRAPHICS
   A. GENERAL: COORDINATE NAMES, ABBREVIATIONS AND OTHER DESIGNATIONS USED IN ELECTRICAL IDENTIFICATION WORK, WITH CORRESPONDING DESIGNATIONS SHOWN, SPECIFIED OR SCHEDULED. PROVIDE NUMBERS, LETTERING, AND WORDING AS INDICATED OR, IF NOT OTHERWISE INDICATED, AS RECOMMENDED BY MANUFACTURER OR AS REQUIRED FOR PROPER IDENTIFICATION AND OPERATION/MAINTENANCE OF ELECTRICAL SYSTEMS AND EQUIPMENT.

8. APPLICATION AND INSTALLATION
   A. GENERAL INSTALLATION REQUIREMENTS:
      1. INSTALL ELECTRICAL IDENTIFICATION PRODUCTS AS INDICATED, IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS AND REQUIREMENTS OF NEC.
      2. COORDINATION: WHERE IDENTIFICATION IS TO BE APPLIED TO SURFACES WHICH REQUIRE FINISH, INSTALL IDENTIFICATION AFTER COMPLETION OF PAINTING.
      3. REGULATIONS: COMPLY WITH GOVERNING REGULATIONS AND REQUESTS OF GOVERNING AUTHORITIES FOR IDENTIFICATION OF ELECTRICAL WORK.

9. OPERATIONAL IDENTIFICATION AND WARNINGS
   A. GENERAL: WHEREVER REASONABLY REQUIRED TO ENSURE SAFE AND EFFICIENT OPERATION AND MAINTENANCE OF ELECTRICAL SYSTEMS, AND ELECTRICALLY CONNECTED MECHANICAL SYSTEMS AND GENERAL SYSTEMS AND EQUIPMENT, INCLUDING PREVENTION OF MISUSE OF ELECTRICAL FACILITIES BY UNAUTHORIZED PERSONNEL, INSTALL SELF-ADHESIVE PLASTIC SIGNS OR SIMILAR EQUIVALENT IDENTIFICATION, INSTRUCTION OR WARNINGS ON SWITCHES, OUTLETS AND OTHER CONTROLS, DEVICES AND DOORS OF ELECTRICAL ENCLOSURES. WHERE DETAILED INSTRUCTIONS OR EXPLANATIONS ARE NEEDED, PROVIDE PLASTICIZED TAGS WITH CLEARLY WRITTEN MESSAGES ADEQUATE FOR INTENDED PURPOSES.

10. EQUIPMENT/SYSTEM IDENTIFICATION
   A. GENERAL: INSTALL ENGRAVED PLASTIC—LAMINATE SIGN ON EACH MAJOR UNIT OF ELECTRICAL EQUIPMENT IN BUILDING; INCLUDING CENTRAL OR MASTER UNIT OF EACH ELECTRICAL SYSTEM INCLUDING COMMUNICATION/ CONTROL/SIGNAL SYSTEMS, UNLESS UNIT IS SPECIFIED WITH ITS OWN SELF-EXPLANATORY IDENTIFICATION OR SIGNAL SYSTEM. EXCEPT AS OTHERWISE INDICATED, PROVIDE SINGLE LINE OF TEXT, 1/2" HIGH LETTERING, ON 1-1/2" HIGH SIGN (2" HIGH WHERE 2 LINES ARE REQUIRED), BLACK LETTERING IN WHITE FIELD. PROVIDE TEXT MATCHING TERMINOLOGY AND NUMBERING OF THE CONTRACT DOCUMENTS AND SHOP DRAWINGS. PROVIDE SIGNS FOR EACH UNIT OF THE FOLLOWING CATEGORIES OF ELECTRICAL WORK:
      1. SWITCHBOARD, PANELBOARDS, ELECTRICAL CABINETS, DISCONNECT SWITCHES AND ENCLOSURES
      2. ACCESS PANEL/DOORS TO ELECTRICAL FACILITIES
      3. TRANSFORMERS
      4. INTERCOM SYSTEM MASTER STATION
      5. TV/AUDIO MONITORING MASTER STATION
      6. FIRE ALARM MASTER STATION
      7. EACH SWITCH IN MAIN SWITCHBOARD
      8. COMMUNICATIONS SYSTEMS TERMINAL CABINETS; SOUND, CCTV, CLOCK, TELEPHONE, ETC.
   B. INSTALL SIGNS AT LOCATIONS INDICATED OR, WHERE NOT OTHERWISE INDICATED, AT LOCATION FOR BEST CONVENIENCE OF VIEWING WITHOUT INTERFERENCE WITH OPERATION AND MAINTENANCE OF EQUIPMENT. SECURE TO SUBSTRATE WITH FASTENERS, EXCEPT USE ADHESIVE WHERE FASTENERS SHOULD NOT OR CANNOT PENETRATE SUBSTRATE.

THESE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY AND COPYRIGHT OF WARE MALCOMB AND SHALL NOT BE USED ON ANY OTHER WORK EXCEPT BY AGREEMENT WITH WARE MALCOMB. WRITTEN DIMENSIONS SHALL TAKE PRECEDENCE OVER SCALED DIMENSIONS AND SHALL BE VERIFIED ON THE JOB SITE. ANY DISCREPANCY SHALL BE BROUGHT TO THE NOTICE OF WARE MALCOMB PRIOR TO THE COMMENCEMENT OF ANY WORK

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SPECIFICATIONS

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# HAT CREEK BURGER - PROTOTYPE 1.1 TABLE OF CONTENTS

## SECTION 16445 - PANELBOARDS - DISTRIBUTION AND BRANCH CIRCUIT

PART 1 GENERAL

1.01 WORK INCLUDED
- A. FURNISH AND INSTALL DISTRIBUTION AND BRANCH CIRCUIT PANEL - BOARDS.
- B. RELATED WORK AND SPECIFICATIONS: SECTION 16010: ELECTRICAL GENERAL PROVISIONS.

1.02 QUALITY ASSURANCE
- A. REFERENCED STANDARDS:
  1. UL 50 - CABINETS AND BOXES.
  2. UL 67 - ELECTRIC PANELBOARDS.
  3. NEMA AB 1 - MOLDED CASE CIRCUIT BREAKERS.
  4. NEMA AB 2 - PROCEDURES FOR VERIFYING THE PERFORMANCE OF MOLDED CASE CIRCUIT BREAKERS.
  5. NEMA FU 1 - LOW VOLTAGE CARTRIDGE FUSES.
  6. NEMA KS 1 - ENCLOSED SWITCHES.
  7. NEMA PB 1 - PANELBOARDS.

1.03 SUBMITTALS
- A. THE FOLLOWING INFORMATION SHALL BE SUBMITTED TO THE ENGINEER:
  1. BREAKER LAYOUT DRAWING WITH DIMENSIONS INDICATED AND NAMEPLATE DESIGNATION
  2. COMPONENT LIST
  3. CONDUIT ENTRY / EXIT LOCATIONS
  4. ASSEMBLY RATINGS INCLUDING:
     - a. SHORT - CIRCUIT RATING
     - b. VOLTAGE
     - c. CONTINUOUS CURRENT
  5. CABLE TERMINAL SIZES

PART 2 PRODUCTS

2.01 ENCLOSURE
- A. CABINET:
  1. CONSTRUCT CABINETS IN ACCORDANCE WITH UL 50. USE PAINTED GALVANIZED SHEET STEEL 16-GAUGE OR MORE.
  2. PROVIDE A MINIMUM 4-INCH GUTTER WIRING SPACE ON EACH SIDE.
  3. REINFORCE CABINETS AND SECURELY SUPPORT BUS BARS AND OVER-CURRENT DEVICES TO PREVENT VIBRATION AND BREAKAGE IN HANDLING.
  4. PROVIDE STANDARD CONDUIT KNOCKOUTS IN CABINET ANDS.
  5. FINISH CABINETS OF SURFACE - MOUNTED PANELBOARDS TO MATCH DOORS AND TRIM AS SPECIFIED BELOW.
  6. PANELBOARDS MOUNTED OUTDOORS SHALL BE WEATHERPROOF, AND SHALL HAVE A DOOR BEHIND DOOR TYPE CONSTRUCTION.
  7. PANELBOARDS MOUNTED IN WET OR CORROSIVE AREAS SHALL HAVE NEMA 4X STAINLESS STEEL ENCLOSURES.
  8. PANELBOARDS MOUNTED SHALL BE NEMA 12 ENCLOSURES FOR AREAS CLASSIFIED AS NEMA 12.
- B. DOORS AND TRIM:
  1. FABRICATE DOORS AND TRIM FROM COLD-ROLLED SHEET STEEL.
  2. EQUIP DOORS WITH FLUSH-TYPE COMBINATION CATCH AND KEY LOCK.
  3. KEY ALL LOCKS ALIKE. FASTEN TRIM FOR FLUSH-MOUNTED PANELBOARDS TO CABINETS BY AN APPROVED MEANS WHICH PERMITS BOTH HORIZONTAL AND VERTICAL ADJUSTMENT.
  4. TRIM FOR SURFACE-MOUNTED PANELBOARDS MUST FIT THE CABINET WITH NO OVERHANG.
  5. APPLY A FINISH TO TRIM AND DOORS CONSISTING OF TWO COATS OF ENAMEL OVER A RUST-INHIBITING PRIME COAT.

2.02 BUS
- A. A. MATERIAL:
  1. PROVIDE TIN PLATED, COPPER BUS BARS, 98 PERCENT IACS CONDUCTIVITY, FULL-SIZED THROUGHOUT THEIR LENGTH.
  2. USE BUSES WITH SILVER-PLATED CONTACT SURFACES.
  3. INCLUDE A TIN PLATED COPPER BUS BAR GROUND BUS IN PANELBOARD RATED NOT LESS THAN 25 PERCENT OF THE MAIN BUS CAPACITY.
  4. FULL SIZE (100% RATED) INSULATED NEUTRAL BUS SHALL BE INCLUDED IN THE PANEL BOARD, SHOWN WITH NEUTRAL. 200% RATED NEUTRAL BUS SHALL BE SUPPLIED FOR PANELS DESIGNATED ON THE DRAWINGS.
  5. THE GROUND AND NEUTRAL BUS SHALL BE AT LEAST ONE TERMINAL SCREW FOR EACH CIRCUIT.
  6. PROVIDE THROUGH FEED OR SUB FEED LUGS WHERE INDICATED.
  7. PROVIDE LUGS AND CONNECTION POINTS ON PHASE, NEUTRAL AND GROUND BUS SUITABLE FOR COPPER CONDUCTORS.
  8. SPACES FOR FUTURE CIRCUIT BREAKERS SHALL BE BUSSED FOR THE MAXIMUM DEVICES THAT CAN BE FITTED.
- B. SIZE BARS AS INDICATED AND BRACE THEM TO WITHSTAND THE AVAILABLE SYMMETRICAL SHORT CIRCUIT CURRENT.
- C. INSTALLATION:
  1. INSTALL BUSES IN ALLOTTED SPACES SO THAT DEVICES CAN BE ADDED WITHOUT ADDITIONAL MACHINING, DRILLING OR TAPPING.
  2. MOUNT NEUTRAL BARS, AS REQUIRED, ON THE OPPOSITE END OF THE MAIN LUGS.

2.03 PROTECTIVE DEVICES
- A. CIRCUIT BREAKERS: PROVIDE CIRCUIT BREAKERS FOR THE SPECIFIED SERVICE WITH THE NUMBER OF POLES AND AMPERE RATINGS INDICATED.
  1. PROVIDE BREAKERS WHICH ARE QUICK-MAKE AND QUICK-BREAK ON BOTH MANUAL AND AUTOMATIC OPERATION.
  2. USE A TRIP-FREE TRIP INDICATING BREAKER.
  3. INCORPORATE INVERSE TIME CHARACTERISTIC BY BIMETALLIC OVERLOAD ELEMENTS AND INSTANTANEOUS CHARACTERISTIC BY MAGNETIC TRIP. WHERE INDICATED, PROVIDE GROUND FAULT CIRCUIT BREAKERS (GFCB).
  4. FOR 2-POLE AND 3-POLE BREAKERS, USE THE COMMON-TRIP TYPE SO THAT AN OVERLOAD OR FAULT ON ONE POLE WILL TRIP ALL POLES SIMULTANEOUSLY. HANDLE TIES ARE NOT ACCEPTABLE
  5. UNLESS OTHERWISE INDICATED, PROVIDE CIRCUIT BREAKERS WITH THE FOLLOWING INTERRUPTING RATINGS:
     - a. EACH CIRCUIT BREAKER USED IN 120/208 VOLT PANELBOARDS SHALL HAVE AN INTERRUPTING CAPACITY OF NOT LESS THAN 10,000 AMPS, RMS SYMMETRICAL.
     - b. EACH CIRCUIT BREAKER USED IN 120/240 VOLT PANELBOARDS SHALL HAVE AN INTERRUPTING CAPACITY OF NOT LESS THAN 10,000 AMPS, RMS SYMMETRICAL.
     - c. EACH CIRCUIT BREAKER USED IN 277/480 VOLT AND 480 VOLT PANELBOARDS SHALL HAVE AN INTERRUPTING CAPACITY NOT LESS THAN 22,000 AMPS, RMS SYMMETRICAL.
     - d. GFCI (GROUND FAULT CIRCUIT INTERRUPTER) SHALL BE PROVIDED FOR CIRCUITS WHERE SHOWN ON THE DRAWINGS. GFCI UNITS SHALL BE 1 POLE, 120 VOLT, MOLDED CASE, BOLT-ON BREAKER MECHANISM. THE UNIT SHALL BE UL LISTED CLASS A GROUP I DEVICE (5 MILLIAMP SENSITIVITY, 25 MILLISECOND TRIP TIME) AND AN INTERRUPTING CAPACITY OF 10,000 AMPS, RMS.
     - e. CIRCUIT BREAKERS SHALL BE AS MANUFACTURED BY THE PANELBOARD MANUFACTURER.
  6. CONNECT BREAKERS TO THE MAIN BUS BY MEANS OF A SOLIDLY BOLTED CONNECTION.
  7. USE BREAKERS WHICH ARE INTERCHANGEABLE, CAPABLE OF BEING OPERATED IN ANY POSITION WITHIN THE PANEL.
  8. INDEPENDENTLY MOUNT BREAKERS SO THAT A SINGLE UNIT CAN BE REMOVED FROM THE FRONT OF THE PANEL WITHOUT DISTURBING OR REMOVING MAIN BUS, OTHER UNITS OR OTHER BRANCH CIRCUIT CONNECTIONS.
  9. PROVIDE INDIVIDUAL BREAKER HANDLE LOCK FOR ALL CIRCUITS THAT SUPPLY EXIT SIGNS, EMERGENCY LIGHTS, AND FIRE ALARM PANELS.
  10. PROVIDE GFCI CIRCUIT BREAKERS FOR HEAT TRACE CIRCUIT, THE RATING SHALL BE AS PER NEC.
- B. SURGE SUPPRESSOR
  1. THE PANELBOARD SHALL BE PROVIDED WITH EXTERNALLY MOUNTED, TRANSIENT VOLTAGE SURGE SUPPRESSION.
- C. SERVICE ENTRANCE
  1. THE PANELBOARD SHALL HAVE A CONNECTION FOR HOUSING AND GROUNDING NEUTRAL CONDUCTOR.
  2. PROVIDE A UL LABEL FOR THE PANELBOARD.

2.04 CIRCUIT IDENTIFICATION
- A. DIRECTORY:
  1. FOR EACH PANELBOARD, PROVIDE A DIRECTORY FRAME MOUNTED INSIDE THE DOOR WITH A HEAT-RESISTANT TRANSPARENT FACE AND A DIRECTORY CARD FOR IDENTIFYING THE LOAD SERVED.
  2. TYPE DIRECTORY AS SPECIFIED IN SECTION 16010.
- B. NAMEPLATE:
  1. PROVIDE A BLACK AN WHITE NAMEPLATE ON THE FACE OF THE PANELBOARD USING THE FOLLOWING AS AN EXAMPLE:

     PANEL HA<br>277/480V, 30, 4W<br>FEEDER FROM MCC-B/SECTION

  2. THE NAMEPLATE SHALL HAVE A MINIMUM THICKNESS OF 1/8".

2.05 LISTING
- A. UL 67 - ELECTRIC PANELBOARDS.

2.06 ACCEPTABLE MANUFACTURERS
- A. ACCEPTABLE MANUFACTURERS ARE CUTLER HAMMER, SQUARE-D, GENERAL ELECTRIC, SIEMENS.

PART 3 EXECUTION

3.01 INSTALLATION
- A. INSTALL PANELBOARDS IN THE LOCATIONS AS SHOWN AND AS RECOMMENDED IN NEMA PB1.1.
- B. IN WET AND CORROSIVE AREAS, INCLUDING OUTDOOR LOCATIONS, INSTALL PANELBOARD ENCLOSURES ON UNISTRUT SUPPORT TO PROVIDE CLEARANCE BEHIND THE MOUNTING SURFACE.
- C. IN WET AND CORROSIVE AREAS, INCLUDING OUTDOOR LOCATIONS, CONDUITS TO THE BOTTOM OF THE ENCLOSURE AND TO THE LOWER 30 PERCENT OF THE SIDES.
- D. ALL CONDUIT CONNECTIONS SHALL BE BY USE OF MYERS HUB.

3.02 MOUNTING HEIGHT
- A. INSTALL THE PANELBOARDS SUCH THAT THE CENTER OF THE SWITCH OR CIRCUIT BREAKER IN THE HIGHEST POSITION WILL NOT BE MORE THAN 6-1/2 FEET ABOVE THE FLOOR OR WORKING PLATFORM.

3.03 SPECIAL REQUIREMENTS
- A. ALL COPPER ITEMS, INCLUDING WIRING, TERMINAL BLOCKS, LUGS, CONNECTORS, BUS, ETC., SHALL BE TIN PLATED COPPER.
- B. ALL STEEL SHALL BE PRIMED AND PAINTED AS SPECIFIED. GALVANIZED ITEMS SHALL ALSO BE PAINTED.
- C. ALL HARDWARE, INCLUDING NUTS, BOLTS, WASHERS, SCREWS, ANCHOR BOLTS, DOOR HINGES, ETC., SHALL BE MADE OF 316 STAINLESS STEEL.
- D. THE MINIMUM REQUIREMENTS OF PAINTING PROCEDURE SHALL BE FOLLOWED:
  1. SURFACE PREPARATION PER SSPC-SP6.
  2. PRIMER: TNEMEC 66, EPOXOLINE - ONE COAT 4 DRY MILS.
  3. FINISH COAT: TNEMEC SERIES 72, EDURA SHIELD - ONE COAT 1.5 DRY MILS (ANSI 61 LIGHT GRAY).
  4. UNDERCOAT FINISH: TNEMEC TAR 46-413-2 COATS 40 DRY MILS TOTAL.

## SECTION 16450 - GROUNDING

1. RELATED DOCUMENTS
- A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
- B. DIVISION-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION APPLY TO WORK OF THIS SECTION.

2. DESCRIPTION OF WORK
- A. EXTENT OF GROUNDING WORK IS INDICATED BY DRAWINGS AND SCHEDULES.
- B. TYPES OF GROUNDING SPECIFIED IN THIS SECTION INCLUDE THE FOLLOWING:
  1. SOLID GROUNDING
- C. APPLICATIONS OF GROUNDING WORK IN THIS SECTION INCLUDING THE FOLLOWING:
  1. UNDERGROUND METAL WATER PIPING
  2. METAL BUILDING FRAMES
  3. GROUNDING ELECTRODES
  4. GROUNDING RODS
  5. SERVICE EQUIPMENT
  6. ENCLOSURES
  7. EQUIPMENT

3. QUALITY ASSURANCE
- A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF ELECTRICAL CONNECTORS, TERMINALS AND FITTINGS, OF TYPES AND RATINGS REQUIRED AND ANCILLARY GROUNDING MATERIALS, INCLUDING STRANDED CABLE, COPPER BRAID AND BUS, GROUND RODS AND PLATE ELECTRODES, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 3 YEARS.
- B. INSTALLER: QUALIFIED WITH AT LEAST 3 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH ELECTRICAL GROUNDING WORK SIMILAR TO THAT REQUIRED FOR PROJECT.
- C. NEC COMPLIANCE: COMPLY WITH NEC REQUIREMENTS AS APPLICABLE TO MATERIALS AND INSTALLATION OF ELECTRICAL GROUNDING SYSTEMS, ASSOCIATED EQUIPMENT AND WIRING. PROVIDE GROUNDING PRODUCTS WHICH ARE UL-LISTED AND LABELED.
- D. UL COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF UL STANDARDS NOS. 467 AND 869 PERTAINING TO ELECTRICAL GROUNDING AND BONDING.
- E. IEEE COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF IEEE STANDARD 142 AND 241 PERTAINING TO ELECTRICAL GROUNDING.

4. SUBMITTALS
- A. PRODUCT DATA: SUBMIT MANUFACTURER'S DATA ON GROUNDING SYSTEMS AND ACCESSORIES.
- B. SHOP DRAWINGS: SUBMIT LAYOUT DRAWINGS OF GROUNDING SYSTEMS AND ACCESSORIES INCLUDING, BUT NOT LIMITED TO, GROUND WIRING, COPPER BRAID AND BUS, GROUND RODS, AND PLATE ELECTRODES.

5. ACCEPTABLE MANUFACTURERS
- A. AVAILABLE MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, MANUFACTURERS OFFERING GROUNDING PRODUCTS WHICH MAY BE INCORPORATED IN THE WORK INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:
  1. BURNDY CORP.
  2. CROUSE-HINDS CO.
  3. ELECTRICAL COMPONENTS DIV.; GOULD INC.
  4. THOMAS AND BETTS CORP.

6. GROUNDING SYSTEMS
- A. MATERIALS AND COMPONENTS:
  1. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE ELECTRICAL GROUNDING SYSTEMS INDICATED; WITH ASSEMBLY OF MATERIALS, INCLUDING, BUT NOT LIMITED TO, CABLES / WIRES, CONNECTORS, TERMINALS (SOLDERLESS LUGS), GROUNDING RODS / ELECTRODES AND PLATE ELECTRODES, BONDING JUMPER BRAID, SURGE ARRESTERS, AND ADDITIONAL ACCESSORIES NEEDED FOR COMPLETE INSTALLATION. WHERE MORE THAN ONE TYPE UNIT MEETS INDICATED REQUIREMENTS, SELECTION IS INSTALLER'S OPTION. WHERE MATERIALS OR COMPONENTS ARE NOT INDICATED, PROVIDE PRODUCTS COMPLYING WITH NEC, UL, IEEE, AND ESTABLISHED INDUSTRY STANDARDS FOR APPLICATIONS INDICATED.
- B. CONDUCTORS: UNLESS OTHERWISE INDICATED, PROVIDE ELECTRICAL GROUNDING CONDUCTORS FOR GROUNDING CONNECTIONS MATCHING POWER SUPPLY WIRING MATERIALS AND SIZED ACCORDING TO NEC.
- C. GROUND RODS: SOLID COPPER OR COPPER CLAD STEEL, MINIMUM 3/4" DIA. X 10'. PROVIDE LONGER RODS IF NECESSARY FOR REQUIRED RESISTIVITY.
- D. ELECTRICAL GROUNDING CONNECTION ACCESSORIES: PROVIDE ELECTRICAL INSULATING TAPE, HEAT-SHRINKABLE INSULATING TUBING, WELDING MATERIALS, BONDING STRAPS, AS RECOMMENDED BY ACCESSORIES MANUFACTURERS FOR TYPE SERVICES INDICATED.

7. INSPECTION
- A. INSTALLER MUST EXAMINE AREAS AND CONDITIONS UNDER WHICH ELECTRICAL GROUNDING CONNECTIONS ARE TO BE MADE AND NOTIFY CONTRACTOR IN WRITING OF CONDITIONS DETRIMENTAL TO PROPER COMPLETION OF WORK. DO NOT PROCEED WITH WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED IN A MANNER ACCEPTABLE TO INSTALLER.

8. INSTALLATION OF ELECTRICAL GROUNDING
- A. GENERAL: INSTALL ELECTRICAL GROUNDING SYSTEMS WHERE SHOWN, IN ACCORDANCE WITH APPLICABLE PORTIONS OF NEC, WITH NECA'S "STANDARD OF INSTALLATION", AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES, TO ENSURE THAT PRODUCTS COMPLY WITH REQUIREMENTS AND SERVE INTENDED FUNCTIONS.
- B. COORDINATE WITH OTHER ELECTRICAL WORK AS NECESSARY TO INTERFACE INSTALLATION OF ELECTRICAL GROUNDING SYSTEM WORK WITH OTHER WORK.
- C. INSTALL CLAMP-ON CONNECTORS ONLY ON THOROUGHLY CLEANED METAL CONTACT SURFACES, TO ENSURE ELECTRICAL CONDUCTIVITY AND CIRCUIT INTEGRITY.
- D. ALL GROUND CONNECTIONS TO WATER SERVICE ENTRANCE SHALL BE INSTALLED TO BE EXPOSED AND VISIBLE FOR INSPECTION AT ALL TIMES. INSULATION SHALL NOT BE INSTALLED OVER GROUND CONNECTIONS.
- E. A WATER PIPE, BY ITSELF, IS NOT AN ADEQUATE GROUNDING ELECTRODE AND MUST BE SUPPLEMENTED BY DUAL GROUNDING ELECTRODES, A MINIMUM OF 8 FEET APART, AND EFFECTIVELY BONDED TOGETHER. THE SUPPLEMENTAL GROUND SHALL BE PER CODE WITH THE "FOOTING TYPE ELECTRODE" TAKING PRECEDENCE WHEN POSSIBLE.
- F. ALL GROUND CONNECTIONS SHALL BE MODE ON SURFACES WHICH HAVE BEEN CLEANED OF ALL PAINT, DIRT, OIL, ETC., SO THAT CONNECTIONS ARE BARE METAL TO BARE METAL CONTACT, ALL GROUND CONNECTIONS SHALL BE TIGHT AND SHALL BE MADE WITH U.L. LISTED GROUNDING DEVICES, FITTINGS, BUSHINGS, ETC.
- G. DUPLEX RECEPTACLES OF ANY AMPERAGE SHALL BE GROUNDING TYPE AND SHALL HAVE A SEPARATE GROUNDING CONTACT. A SEPARATE JUMPER SHALL BE INSTALLED BETWEEN THE GROUNDING TERMINAL ON THE DEVICE AND THE METALLIC BOX, THE CONTRACTOR MAY PROVIDE U.L. LISTED SELF-GROUNDING RECEPTACLES IN LIEU OF PROVIDING THE SEPARATE JUMPER.
- H. SINGLE AND DUPLEX RECEPTACLES SHALL HAVE ALL GROUNDED METAL MECHANICALLY BONDED TOGETHER. PRESSURE BONDING ONLY IS NOT ACCEPTABLE.
- I. SINGLE AND DUPLEX RECEPTACLES WILL BE INSTALLED WITH THE GROUNDING CONTACTS DOWN.
- J. HOSPITAL GRADE OR HIGH ABUSE TYPE WHICH WILL BE INSTALLED WITH THE GROUND CONTACTS UP.
  1. SHOP EQUIPMENT RECEPTACLES SHALL BE INSTALLED WITH THE GROUND CONTACTS UP.
- K. IN ALL CASES WHERE FLEXIBLE METALLIC CONDUIT, NONMETALLIC RIGID CONDUIT OR LIQUID TIGHT FLEXIBLE CONDUIT IS USED, A GREEN WIRE GROUND CONDUCTOR SHALL BE USED TO PROVIDE GROUND CONTINUITY BETWEEN THE EQUIPMENT OF DEVICE AND THE CONDUIT RACEWAY SYSTEM.
- L. PROVIDE A SEPARATE GREEN WIRE GROUND CONDUCTOR FOR EACH BRANCH CIRCUIT ORIGINATING FROM EACH PANELBOARD. THIS GROUND SHALL BE USED TO GROUND THE DEVICE OR LOAD FED, AND SHALL BE BONDED TO COMPONENTS OF THE RACEWAY SYSTEM, SUCH AS JUNCTION BOXES, STARTER OR DISCONNECT SWITCH ENCLOSURES, EQUIPMENT CASES, ETC, THE GREEN WIRE GROUND CONDUCTOR SHALL TERMINATE IN THE PANELBOARD AT THE GREEN WIRE GROUND BUS. GROUND CONDUCTORS FOR BRANCH CIRCUITS SHALL BE OF SIZE INDICATED IN NEC, EXCEPT MINIMUM SIZE GROUND CONDUCTOR SHALL BE NO. 12 AWG.
- M. EACH BRANCH FEEDER ORIGINATING AT THE SWITCHBOARDS(S) SHALL HAVE A GREEN WIRE GROUND CONDUCTOR ORIGINATING AT THE GROUND BUS IN THE SWITCHBOARD AND TERMINATING AT THE GREEN WIRE GROUND BUS IN THE PANELBOARD. THIS GREEN WIRE GROUND CONDUCTOR SHALL BE OF SIZE INDICATED IN NEC EXCEPT IN NO INSTANCE SMALLER THAN NO. 8 AMG.
- N. THE GREEN WIRE GROUND CONDUCTOR IS IN ADDITION TO THE NEUTRAL CONDUCTOR AND IN NO CASE SHALL THE NEUTRAL CONDUCTOR SERVE AS THE GROUNDING MEANS.
- O. MULTIPLE CONDUCTORS IN A SINGLE LUG NOT PERMITTED. EACH GROUNDING CONDUCTOR SHALL TERMINATE IN ITS OWN TERMINAL LUG.

## SECTION 16510 - INTERIOR BUILDING LIGHTING

1. RELATED DOCUMENTS
- A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION-1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
- B. DIVISION-16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION APPLY TO WORK SPECIFIED IN THIS SECTION.

2. DESCRIPTION OF WORK
- A. EXTENT OF INTERIOR LIGHTING FIXTURE WORK IS INDICATED BY DRAWINGS AND SCHEDULES.
- B. TYPES OF INTERIOR LIGHTING FIXTURES IN THIS SECTION INCLUDE THE FOLLOWING:
  1. FLUORESCENT
  2. INCANDESCENT
  3. HIGH INTENSITY DISCHARGE
  4. LED LIGHTING
- C. APPLICATIONS OF INTERIOR LIGHTING FIXTURES REQUIRED FOR PROJECT INCLUDING THE FOLLOWING:
  1. GENERAL LIGHTING
  2. SUPPLEMENTARY LIGHTING
  3. TASK LIGHTING
  4. EMERGENCY LIGHTING

3. QUALITY ASSURANCE
- A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF INTERIOR LIGHTING FIXTURES OF TYPES AND RATING REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.
- B. INSTALLER: QUALIFIED WITH AT LEAST 3 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH INTERIOR LIGHTING FIXTURE WORK SIMILAR TO THAT REQUIRED FOR PROJECT.
- C. NEC COMPLIANCE: COMPLY WITH NEC AS APPLICABLE TO INSTALLATION AND CONSTRUCTION OF INTERIOR BUILDING LIGHTING FIXTURES.
- D. NEMA COMPLIANCE: COMPLY WITH APPLICABLE REQUIREMENTS OF NEMA STD PUB NOS. LE 1 AND LE 2 PERTAINING TO LIGHTING EQUIPMENT.
- E. ANSI/IES COMPLIANCE: COMPLY WITH ANSI 132.1 PERTAINING TO INTERIOR LIGHTING FIXTURES.
- F. ANSI/UL COMPLIANCE: COMPLY WITH ANSI/UL STANDARDS PERTAINING TO INTERIOR LIGHTING FIXTURES FOR HAZARDOUS LOCATIONS.
- G. UL COMPLIANCE: PROVIDE INTERIOR LIGHTING FIXTURES WHICH HAVE BEEN UL-LISTED AND LABELED.
- H. CBM LABELS: PROVIDE FLUORESCENT-LAMP BALLASTS WHICH COMPLY WITH CERTIFIED BALLAST MANUFACTURERS ASSOCIATION STANDARDS AND CARRY THE CBM LABEL.

4. SUBMITTALS
- A. PRODUCT DATA: SUBMIT MANUFACTURER'S DATA ON INTERIOR BUILDING LIGHTING FIXTURES, LAMP AND BALLASTS TO ARCHITECT. LIGHTING FIXTURES SHALL BE IN STRICT ACCORDANCE WITH THE FIXTURE SCHEDULE. SUBSTITUTIONS WILL NOT BE ACCEPTED WITHOUT FORMAL WRITTEN PRIOR APPROVAL. REQUESTS FOR REVIEW OF SUBSTITUTIONS SHALL BE SUBMIT A MINIMUM OF 10 DAYS PRIOR TO BID. ANY OTHER REQUESTS WILL BE REJECTED.
- B. SHOP DRAWINGS: SUBMIT FIXTURE SHOP DRAWINGS IN BOOKLET FORM WITH SEPARATE SHEET FOR EACH FIXTURE, ASSEMBLED IN LUMINAIRE “TYPE” ALPHABETICAL ORDER, WITH PROPOSED FIXTURE AND ACCESSORIES CLEARLY INDICATED ON EACH SHEET TO ARCHITECT.

5. ACCEPTABLE MANUFACTURERS
- A. MANUFACTURERS/CATALOG NUMBERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE FIXTURES MANUFACTURED BY MANUFACTURERS AS INDICATED ON THE FIXTURE SCHEDULE. CATALOG NUMBERS GIVEN ON THE FIXTURE SCHEDULE ARE INTENDED TO PROVIDE THE GENERAL DESCRIPTION OF THE REQUIRED FIXTURE AND ITS QUALITY. ADDITIONAL ACCESSORIES, MOUNTING HARDWARE, OPTIONS, ETC., NOT SPECIFICALLY DESCRIBED BY THE CATALOG NUMBER BUT REQUIRED FOR A PROPERLY OPERATING AND INSTALLED FIXTURE OR AS DESCRIBED BY ADDITIONAL NOTATION ON THE DRAWINGS OR IN THE SPECIFICATIONS, SHALL BE PROVIDED.

6. INTERIOR LIGHTING FIXTURES
- A. GENERAL: PROVIDE LIGHTING FIXTURES, OF SIZES, TYPES, AND RATINGS INDICATED; COMPLETE WITH, BUT NOT NECESSARILY LIMITED TO, HOUSINGS, LAMPS, LAMP HOLDERS, REFLECTORS, BALLASTS, STARTERS AND WIRING.
  1. FLUORESCENT—LAMP BALLASTS: PROVIDE ENERGY SAVING HIGH FREQUENCY ELECTRONIC FLUORESCENT—LAMP BALLASTS, CAPABLE OF OPERATING 32 WATT, OCTIC, T-8 LAMP TYPES; WITH HIGH POWER FACTOR, RAPID—START, AND LOW-NOISE FEATURES; TYPE 1; CLASS P; SOUND—RATED A, AND WITH INTERNAL THERMAL PROTECTION. ALL FLUORESCENT FIXTURE BALLASTS SHALL BE OF THE SAME MANUFACTURER AND TYPE. BALLASTS SHALL ALSO MEET THE FOLLOWING REQUIREMENTS:
  2. OPERATE LAMPS AT 20 KHZ OR HIGHER WITH NO DETECTABLE FLICKER.
  3. BALLAST MANUFACTURER SHALL HAVE BEEN PRODUCING ELECTRONIC BALLASTS IN THE U.S. FOR MORE THAN FIVE YEARS WITH A LOW FAILURE RATE.
  4. BALLASTS SHALL BE APPROVED AND LISTED BY UL.
  5. BALLASTS SHALL COMPLY WITH ALL APPLICABLE STATE AND FEDERAL EFFICIENCY STANDARDS.
  6. BALLASTS SHALL COMPLY WITH FCC AND NEMA LIMITS GOVERNING ELECTROMAGNETIC AND RADIO FREQUENCY INTERFERENCE AND SHALL NOT INTERFERE WITH OPERATION OF OTHER NORMAL ELECTRICAL EQUIPMENT.
  7. BALLASTS SHALL MEET ALL APPLICABLE ANSI AND IEEE STANDARDS REGARDING HARMONIC DISTORTION AND SURGE PROTECTION, BUT IN NO CASE SHALL HAVE TOTAL HARMONIC DISTORTION EXCEEDING 20%.
  8. BALLASTS SHALL NOT BE AFFECTED BY LAMP FAILURE AND SHALL YIELD NORMAL PUBLISHED EXPECTED LAMP LIFE.
  9. LAMP CURRENT CREST FACTOR SHALL NOT EXCEED 1.7.
  10. BALLASTS SHALL OPERATE AT AN INPUT FREQUENCY OF 60 HZ AND AN INPUT VOLTAGE OF THAT INDICATED ON THE DRAWINGS FOR THE FIXTURE VOLTAGE.
  11. BALLASTS SHALL HAVE A POWER FACTOR ABOVE 0.95.
  12. BALLASTS SHALL OPERATE AS A PARALLEL CIRCUIT ALLOWING REMAINING LAMPS TO MAINTAIN FULL OUTPUT IF COMPANION LAMPS FAIL.
  13. BALLASTS SHALL CARRY A MINIMUM THREE YEAR WARRANTY, INCLUDING LABOR ALLOWANCE.
  14. BALLASTS SHALL BE MANUFACTURED BY MAGNETEK, MOTOROLA OR APPROVED EQUAL.
- B. FUSING ALL FLUORESCENT BALLASTS SHALL BE FUSED. FUSES MAY BE DELETED IF THE BALLAST IS SUPPLIED WITH AUTOMATICALLY RESETTING THERMAL OVERLOADS INTERNAL TO THE BALLAST.
- C. H.I.D. LAMP BALLASTS: PROVIDE ENERGY SAVING BALLASTS, CAPABLE OF OPERATING LAMP TYPES INDICATED; WITH HIGH POWER FACTOR, FIXTURE TO HAVE QUARTZ RESTRIKE WHERE INDICATED AND LOW-NOISE FEATURE AND WITH INTERNAL THERMAL PROTECTION, CLASS H INSULATION. H.I.D. BALLASTS SHALL BE MANUFACTURED BY ADVANCED, VALMONT, MAGNETEK OR APPROVED EQUAL.
- D. LAMPS: PROVIDE LAMPS OF THE WATTAGE AND TYPES SPECIFIED ON THE DRAWINGS. COORDINATE LAMP TYPE WITH BALLAST FOR A COMPLETE OPERATIONAL, ENERGY SAVING LIGHTING SYSTEM WHICH WILL OPERATE FOR THE EXPECTED LAMP AND BALLAST LIFE. LAMPS SHALL BE AS MANUFACTURED BY GENERAL ELECTRIC, PHILLIPS, OR OSRAM/SYLVANIA.
  1. FLUORESCENT LAMPS SHALL BE RAPID START, T—8, MEDIUM BI—PIN, 32 WATT, 3500K, 85 CRI, 3,000 LUMENS, 20,000 AVERAGE RATED HOURS.
  2. LAMP AND BALLAST COMBINATIONS SHALL HAVE NO NOTICEABLE FLICKER OR DELAYED STARTING. LAMPS SHALL START INSTANTANEOUSLY AND ILLUMINATE IMMEDIATELY. ANY DELAY IN STARTING WILL NOT BE ACCEPTABLE AND THE LAMP AND/OR BALLAST SHALL BE REPLACED.
  3. ALL LAMP TYPES AND COLOR SHALL BE VERIFIED WITH THE LIGHTING CONSULTANT PRIOR TO ORDERING.

7. INSTALLATION OF INTERIOR LIGHTING FIXTURES
- A. INSTALL INTERIOR LIGHTING FIXTURES AT LOCATIONS AND HEIGHTS AS INDICATED, IN ACCORDANCE WITH FIXTURE MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC, NECA'S "STANDARD OF INSTALLATION", NEMA STANDARDS, AND WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT LIGHTING FIXTURES FULFILL REQUIREMENTS.
- B. COORDINATE WITH OTHER ELECTRICAL WORK AS APPROPRIATE TO PROPERLY INTERFACE INSTALLATION OF INTERIOR LIGHTING FIXTURES WITH OTHER WORK.
- C. FASTEN FIXTURES SECURELY TO BUILDING STRUCTURAL SUPPORT; AND ENSURE THAT PENDANT FIXTURES ARE PLUMB AND LEVEL. PROVIDE ALL REQUIRED MOUNTING HARDWARE AND STEEL CHANNEL TO SUPPLEMENT STRUCTURAL SUPPORT WHERE NECESSARY. FIXTURES SHALL NOT BE SUPPORTED FROM DUCTWORK, PIPING, CONDUITS, CEILING GRID OR ANY OTHER NON-STRUCTURAL BUILDING MEMBER.
- D. COORDINATE FIXTURE INSTALLATION WITH MECHANICAL DUCT WORK, DIFFUSERS, RETURN GRILLES, COMMUNICATION SYSTEMS DEVICES, ETC., TO AVOID ANY INTERFERENCES.

8. ADJUST AND CLEAN
- A. CLEAN INTERIOR LIGHTING FIXTURES OF DIRT AND DEBRIS UPON COMPLETION OF INSTALLATION PROTECT INSTALLED FIXTURES FROM DAMAGE DURING REMAINDER OF CONSTRUCTION PERIOD.

9. FIELD QUALITY CONTROL
- A. UPON COMPLETION OF INSTALLATION OF INTERIOR LIGHTING FIXTURES, AND AFTER BUILDING CIRCUITRY HAS BEEN ENERGIZED, APPLY ELECTRICAL ENERGY TO DEMONSTRATE CAPABILITY AND COMPLIANCE WITH REQUIREMENTS. WHERE POSSIBLE, CORRECT MALFUNCTIONING UNITS AT SITE, THEN RETEST TO DEMONSTRATE COMPLIANCE; OTHERWISE, REMOVE AND REPLACE WITH NEW UNITS, AND PROCEED WITH RETESTING.
- B. AT THE TIME OF SUBSTANTIAL COMPLETION, REPLACE LAMPS IN INTERIOR LIGHTING FIXTURES WHICH ARE OBSERVED TO BE NOTICEABLY DIMMED AFTER CONTRACTOR'S USE AND TESTING, AS JUDGED BY OWNER.
- C. REFER TO DIVISION—1 SECTIONS FOR THE REPLACEMENT/RESTORATION OF LAMPS IN INTERIOR LIGHTING FIXTURES, WHERE USED FOR TEMPORARY LIGHTING PRIOR TO TIME OF SUBSTANTIAL COMPLETION.

10. GROUNDIN
- A. PROVIDE TIGHT EQUIPMENT GROUNDING CONNECTIONS FOR EACH INTERIOR LIGHTING FIXTURE INSTALLATION.

## SECTION 16520 - EXTERIOR BUILDING LIGHTING

1. RELATED DOCUMENTS
- A. DRAWINGS AND GENERAL PROVISIONS OF CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND DIVISION—1 SPECIFICATION SECTIONS, APPLY TO WORK OF THIS SECTION.
- B. DIVISION—16 BASIC ELECTRICAL MATERIALS AND METHODS SECTION APPLY TO WORK SPECIFIED IN THIS SECTION.

2. DESCRIPTION OF WORK
- A. EXTENT OF EXTERIOR LIGHTING FIXTURE WORK IS INDICATED BY DRAWINGS AND SCHEDULES. TYPES OF EXTERIOR LIGHTING FIXTURES IN THIS SECTION INCLUDE THE FOLLOWING:
  1. HIGH INTENSITY DISCHARGE
  2. FLUORESCENT
- B. APPLICATIONS OF EXTERIOR LIGHTING FIXTURES REQUIRED FOR PROJECT INCLUDING THE FOLLOWING:
  1. OUTDOOR SUPPLEMENTARY LIGHTING

3. QUALITY ASSURANCE
- A. MANUFACTURERS: FIRMS REGULARLY ENGAGED IN MANUFACTURE OF EXTERIOR LIGHTING FIXTURES OF TYPES AND RATINGS REQUIRED, WHOSE PRODUCTS HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR NOT LESS THAN 5 YEARS.
- B. INSTALLER: QUALIFIED WITH AT LEAST 5 YEARS OF SUCCESSFUL INSTALLATION EXPERIENCE ON PROJECTS WITH EXTERIOR LIGHTING FIXTURE WORK SIMILAR TO THAT REQUIRED FOR PROJECT.
- C. NEC COMPLIANCE: COMPLY WITH NEC AS APPLICABLE TO INSTALLATION AND CONSTRUCTION OF EXTERIOR BUILDING LIGHTING FIXTURES.
- D. UL COMPLIANCE: PROVIDE EXTERIOR LIGHTING FIXTURES WHICH ARE UL-LISTED AND LABELED.
- E. CBM LABELS: PROVIDE BALLASTS WHICH COMPLY WITH CERTIFIED BALLAST MANUFACTURERS ASSOCIATION STANDARDS AND CARRY THE CBM LABEL.

4. SUBMITTALS
- A. PRODUCT DATA: SUBMIT MANUFACTURER'S DATA ON EXTERIOR LIGHTING FIXTURES, LAMPS, AND BALLASTS TO ARCHITECT.
- B. SHOP DRAWINGS: SUBMIT DIMENSIONED DRAWINGS OF EXTERIOR LIGHTING FIXTURE. SUBMIT FIXTURE SHOP DRAWINGS IN BOOKLET FORM WITH SEPARATE SHEET FOR EACH FIXTURE, ASSEMBLED IN LUMINAIRE “TYPE” ALPHABETICAL ORDER, WITH PROPOSED FIXTURE AND ACCESSORIES CLEARLY INDICATED ON EACH SHEET TO ARCHITECT. PROVIDE PHOTOMETRIC DATA FOR EACH FIXTURE TYPE. CLEARLY INDICATE FIXTURE LAMP AND BALLAST TYPE AND MANUFACTURER.

5. ACCEPTABLE MANUFACTURERS
- A. MANUFACTURERS/CATALOG NUMBERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE FIXTURES MANUFACTURED BY MANUFACTURERS AS INDICATED ON THE FIXTURE SCHEDULE. CATALOG NUMBERS GIVEN ON THE FIXTURE SCHEDULE ARE INTENDED TO PROVIDE THE GENERAL DESCRIPTION OF THE REQUIRED FIXTURE AND ITS QUALITY. ADDITIONAL ACCESSORIES, MOUNTING HARDWARE, OPTIONS, ETC., NOT SPECIFICALLY DESCRIBED BY THE CATALOG NUMBER BUT REQUIRED FOR A PROPERLY OPERATING AND INSTALLED FIXTURE OR AS DESCRIBED BY ADDITIONAL NOTATION ON THE DRAWINGS OR IN THE SPECIFICATIONS, SHALL BE PROVIDED.

6. EXTERIOR LIGHTING FIXTURES
- A. GENERAL: PROVIDE LIGHTING FIXTURES, OF SIZES, TYPES, AND RATINGS INDICATED; COMPLETE WITH, BUT NOT NECESSARILY LIMITED TO, HOUSINGS, LAMPS, LAMP HOLDERS, REFLECTORS, BALLASTS, STARTERS AND WIRING.
- B. H.L.D—LAMP BALLASTS: PROVIDE ENERGY SAVING HIGH INTENSITY DISCHARGE LAMP TYPE BALLASTS, CAPABLE OF OPERATING THE ASSOCIATED LAMP TYPE FOR ITS RATED LIFE; WITH HIGH POWER FACTOR, AND LOW—NOISE FEATURES; TYPE 1; CLASS P; SOUND—RATED A, AND WITH INTERNAL THERMAL PROTECTION. ALL HID FIXTURE BALLASTS SHALL BE OF THE SAME MANUFACTURER AND TYPE. PROVIDE QUARTZ RESTRIKE FEATURE WHERE INDICATED ON THE DRAWINGS. BALLASTS SHALL OPERATE THE LAMP AT FULL BRIGHTNESS AND SHALL BE SUITABLE FOR THE EXTERIOR ENVIRONMENT, INCLUDING THE APPROPRIATE TEMPERATURE RATING.

7. INSTALLATION OF EXTERIOR LIGHTING FIXTURES
- A. INSTALL EXTERIOR LIGHTING FIXTURES AT LOCATIONS AND HEIGHTS AS INDICATED, IN ACCORDANCE WITH FIXTURE MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC, NECA'S "STANDARD OF INSTALLATION", NEMA STANDARDS, AND WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT LIGHTING FIXTURES FULFILL REQUIREMENTS.
- B. COORDINATE WITH OTHER ELECTRICAL WORK AS APPROPRIATE TO PROPERLY INTERFACE INSTALLATION OF EXTERIOR LIGHTING FIXTURES WITH OTHER WORK.
- C. FASTEN FIXTURES SECURELY TO REQUIRED STRUCTURAL SUPPORTS; AND CHECK TO ENSURE THAT SOLID PENDANT FIXTURES ARE PLUMB.

8. ADJUST AND CLEAN
- A. CLEAN EXTERIOR LIGHTING FIXTURES OF DIRT AND DEBRIS UPON COMPLETION OF INSTALLATION.
- B. PROTECT INSTALLED FIXTURES FROM DAMAGE DURING REMAINDER OF CONSTRUCTION PERIOD.

9. FIELD QUALITY CONTROL
- A. UPON COMPLETION OF INSTALLATION OF EXTERIOR LIGHTING FIXTURES, AND AFTER BUILDING CIRCUITRY, APPLY ELECTRICAL ENERGY TO LIGHTING FIXTURES TO DEMONSTRATE CAPABILITY AND COMPLIANCE WITH REQUIREMENTS. WHERE POSSIBLE, CORRECT MALFUNCTIONING UNITS AT SITE, THEN RETEST TO DEMONSTRATE COMPLIANCE; OTHERWISE, REMOVE AND REPLACE WITH NEW UNITS, AND PROCEED WITH RETESTING.
- B. AT THE TIME OF SUBSTANTIAL COMPLETION, REPLACE LAMPS IN EXTERIOR LIGHTING FIXTURES WHICH ARE OBSERVED TO BE NOTICEABLY DIMMED AFTER CONTRACTOR'S USE AND TESTING, AS JUDGED BY OWNER. FURNISH STOCK OR REPLACEMENT LAMPS AMOUNTING TO 15% (BUT NOT LESS THAN ONE LAMP IN EACH CASE) OF EACH TYPE AND SIZE LAMP USED IN EACH TYPE FIXTURE. DELIVER REPLACEMENT STOCK AS DIRECTED TO OWNER'S STORAGE SPACE.
- C. REFER TO DIVISION—1 SECTIONS FOR THE REPLACEMENT/RESTORATION OF LAMPS IN EXTERIOR LIGHTING FIXTURES, WHERE USED FOR TEMPORARY LIGHTING PRIOR TO TIME OF SUBSTANTIAL COMPLETION.

10. GROUNDING
- A. PROVIDE TIGHT EQUIPMENT GROUNDING CONNECTIONS FOR EACH EXTERIOR LIGHTING FIXTURE INSTALLATION.

## SECTION 16721 - FIRE ALARM AND SMOKE DETECTION SYSTEMS

1. SECTION INCLUDES
- A. A COMBINATION ADDRESSABLE AND HARD WIRED FIRE ALARM AND SMOKE DETECTION SYSTEM.

2. REFERENCES.
- A. NFPA 70 — NATIONAL ELECTRICAL CODE — 2005.
- B. NFPA 72 — NATIONAL FIRE ALARM CODE — 2006.
- C. NFPA 101 — LIFE SAFETY CODE — 2006.
- D. ANSI ALL7.1-1986 AMERICAN NATIONAL STANDARD FOR BUILDINGS AND FACILITIES PROVIDING ACCESSIBILITY AND USABILITY FOR PHYSICALLY HANDICAPPED PEOPLE.
- E. AMERICAN WITH DISABILITIES ACT OF 1990 AND APPLICABLE SECTIONS OF THE UNIFORM FEDERAL ACCESSIBILITY STANDARD.

3. REGULATORY REQUIREMENTS
- A. SYSTEM: UL LISTED.
- B. CONFORM TO REQUIREMENTS OF NFPA 101 AND THE LOCAL FIRE MARSHALL.

4. DESCRIPTION OF SYSTEM
- A. THE SYSTEM SHALL BE AN ADDRESSABLE, MICROPROCESSOR BASED FIRE ALARM CONTROL SYSTEM WITH TRANSIENT PROTECTION ON EACH CIRCUIT AND WALK-THROUGH TEST CAPABILITY. THE SYSTEM SHALL HAVE THE CAPABILITY TO CONTROL AND SUPERVISE ALL THE ADDRESSABLE DEVICES AND NON—ADDRESSABLE APPLIANCE AND AUXILIARY CONTROL CIRCUITS. EACH COMPONENT OF THE SYSTEM SHALL BE UL LISTED FOR ITS USE. THE SYSTEM SHALL HAVE A DYNAMIC LCD DISPLAY AND BE LOCATED IN A CONSTANTLY ATTENDED LOCATION WHILE THE BUILDING IS OCCUPIED.

5. QUALIFICATIONS
- A. MANUFACTURER: COMPANY SPECIALIZING IN SMOKE DETECTION AND FIRE ALARM SYSTEMS WITH FIVE (5) YEARS DOCUMENTED EXPERIENCE.
- B. INSTALLER: COMPANY SPECIALIZING IN SMOKE DETECTION AND FIRE ALARM SYSTEMS WITH FIVE (5) YEARS DOCUMENTED EXPERIENCE WITH PROJECTS OF EQUIVALENT SCOPE OF WORK AND SIZE AND CERTIFIED BY THE FLORIDA STATE LICENSING BOARD AS FIRE ALARM INSTALLING CONTRACTOR. THE ACTUAL INSTALLER SHALL BE LISCENSED TO INSTALL FIRE ALARM SYSTEMS AND SHALL BE CERTIFIED BY THE SYSTEM MANUFACTURER TO INSTALL THE SYSTEM. PROOF OF CERTIFICATION AND LISCENSURE SHALL BE PROVIDED UPON REQUEST.

6. SUBMITTALS
- A. SUBMIT SIX (6) COPIES SHOP DRAWINGS AND PRODUCT DATA.
- B. PROVIDE COMPLETE POINT TO POINT WIRING DIAGRAMS, DATA SHEETS, AND EQUIPMENT RATINGS, LAYOUT, DIMENSIONS, AND FINISHES. INDICATE THE LOCATION OF SURGE PROTECTION DEVICES.
- C. SUBMIT MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- D. SUBMIT MANUFACTURER'S CERTIFICATE THAT THE SYSTEM MEETS OR EXCEEDS SPECIFIED REQUIREMENTS — CERTIFICATION PER NFPA 72.
- E. SUBMIT COPY OF CONTRACTOR'S LICENSE BEFORE WORK BEGINS.
- F. SUBMIT BATTERY CALCULATIONS INDICATING THE REQUIRED BATTERY, INCLUDING THE SPECIFIED SPARE CAPACITY.
- G. SUBMIT VOLTAGE DROP CALCULATIONS.
- H. PROVIDE TRAINING FOR FOUR (4) PEOPLE ON THE OPERATION, MAINTENANCE, AND REPAIR OF THE SYSTEM AT THE CONTRACTOR'S EXPENSE. TRAINING SHALL BE CERTIFIED BY THE MANUFACTURER AND BE AT DIFFERENT TIMES FOR EACH PERSON. INCLUDE TRANSPORTATION, ROOM AND BOARD WHERE NEEDED.

7. PROJECT RECORD DRAWINGS
- A. CONTRACTOR SHALL PROVIDE (2) PLUS ELECTRICAL SETS OF AS—BUILT DRAWINGS TO THE OWNER UPON COMPLETION OF PROJECT.
- B. AS—BUILTS SHALL INCLUDE THE LOCATION OF END—OF-LINE DEVICES, SURGE PROTECTION DEVICES AND EXACT CONDUIT AND WIRE ROUTING. NUMBERS AND TYPES OR CONDUCTORS SHALL BE INDICATED FOR EACH CIRCUIT.

8. OPERATION AND MAINTENANCE DATA
- A. PROVIDE (2) PLUS ELECTRICAL COPIES OF OPERATION AND MAINTENANCE DATA PRIOR AT THE COMPLETION OF CONSTRUCTION FOR ALL POINT DEVICES, CPUS, AND ALL OTHER EQUIPMENT.
- B. INCLUDE OPERATING INSTRUCTIONS, AND MAINTENANCE AND REPAIR PROCEDURES.
- C. PROVIDE MANUFACTURER REPRESENTATIVE'S LETTER STATING THAT THE SYSTEM IS OPERATIONAL.
- D. MAINTAIN SYSTEM FOR A MINIMUM OF ONE (1) YEAR, AFTER COMPLETE ACCEPTANCE BY THE OWNER, IN ACCORDANCE WITH NFPA 72 AND 72E.
- E. PROVIDE, AT THE END OF THE FIRST YEAR AFTER CONSTRUCTION COMPLETION, A YEARLY CERTIFICATION AS OUTLINED BY THE STATE FIRE MARSHAL'S RULE 4A—48.

9. DELIVERY, STORAGE, AND HANDLING
- A. PRODUCTS SHALL BE DELIVERED TO JOB SITE IN MANUFACTURERS ORIGINAL SHIPPING PACKAGES.
- B. PROVIDE STORAGE AND PROTECTION OF PRODUCTS, AS NEEDED.

10. MANUFACTURERS
- A. NOTIFIER SYSTEM AFP300.
- B. EQUAL BY EST.
- C. EQUAL BY ADT

NOTE: APPROVAL OF MANUFACTURER'S EQUIPMENT DOES NOT ANY WAY RELIEVE THE CONTRACTOR FROM MEETING THE PERFORMANCE CRITERIA AS OUTLINED IN THE PLANS AND SPECIFICATIONS.

11. FIRE ALARM CONTROL PANEL (FACP)
- A. CONTROL PANEL CONSTRUCTION SHALL BE MODULAR WITH SOLID STATE, MICROPROCESSOR BASED ELECTRONICS AND SHALL CONFORM TO ALL REQUIREMENTS MADE NECESSARY BY THE LOCAL FIRE MARSHALL. IT SHALL DISPLAY ONLY THOSE PRIMARY CONTROLS AND DISPLAYS ESSENTIAL TO OPERATION DURING A FIRE ALARM CONDITION. KEYBOARDS OR KEYPADS SHALL NOT BE REQUIRED TO OPERATE THE SYSTEM DURING FIRE ALARM CONDITIONS. A LOCAL AUDIBLE DEVICE SHALL SOUND DURING ALARM, TROUBLE OR SUPERVISORY CONDITIONS. THIS AUDIBLE DEVICE SHALL SOUND DIFFERENTLY DURING EACH CONDITION TO DISTINGUISH ONE (1) CONDITION FROM ANOTHER WITHOUT HAVING TO VIEW THE PANEL. THIS AUDIBLE DEVICE SHALL ALSO SOUND DURING EACH KEYPRESS TO PROVIDE AN AUDIBLE FEEDBACK TO ENSURE THAT THE KEY HAS BEEN PRESSED PROPERLY. THE PANEL SHALL BE COMPLETE WITH ALL REQUIRED CARDS FOR THE POINTS NECESSARY FOR ALL THE DEVICES INDICATED, PLUS CAPABILITY FOR EXPANSION TO 30% MORE POINTS, MINIMUM. PROVIDE THE NECESSARY HARD WIRED CIRCUITS FOR ALL THE INDICATING APPLIANCE AND AUXILIARY CONTROL DEVICES. PROVIDE A TWO SPARE INDICATING APPLIANCE CIRCUITS IN ADDITION TO THE REQUIRED INDICATING APPLIANCE CIRCUITS TO SERVE THE APPLIANCES SHOWN ON THE DRAWINGS.
  1. PROVIDE VOICE EVACUATION SYSTEM AS REQUIRED BY LOCAL CODES OR JURISDICTION. PROVIDE MICROPHONE, PRE-RECORDED VOICE MESSAGE AND AMPLIFIER AND OTHER REQUIRED DEVICES FOR A VOICE ANNUNCIATED SYSTEM. PRE-RECORDED MESSAGE SHALL BE CAPABLE OF BEING REVISED AND RE—RECORED. CONFIRM EXACT MESSAGE REQUIRED BY THE LOCAL FIRE MARSHAL PRIOR TO INSTALLATION.
- B. THE FOLLOWING PRIMARY CONTROLS SHALL BE VISIBLE THROUGH A FRONT ACCESS PANEL:
  1. EIGHTY CHARACTER LIQUID CRYSTAL DISPLAY. INDIVIDUAL RED SYSTEM ALARM LED.
  2. INDIVIDUAL YELLOW SUPERVISORY SERVICE LED. INDIVIDUAL YELLOW TROUBLE LED.
  3. GREEN “POWER ON” LED.
  4. ALARM ACKNOWLEDGE KEY.
  5. SUPERVISORY ACKNOWLEDGE KEY.
  6. TROUBLE ACKNOWLEDGE KEY.
  7. ALARM SILENCE KEY.
  8. SYSTEM RESET KEY.
- C. THE CONTROL SHALL PROVIDE THE FOLLOWING:
  1. SETTING OF TIME AND DATE.
  2. LED TESTING. ALARM, TROUBLE, AND ABNORMAL CONDITION LISTING.
  3. ENABLING AND DISABLING OF EACH MONITOR POINT SEPARATELY.
  4. ACTIVATION AND DEACTIVATION OF EACH CONTROL POINT SEPARATELY.
  5. CHANGING OPERATOR ACCESS LEVELS.
  6. WALK TEST ENABLE.
  7. RUNNING DIAGNOSTIC FUNCTIONS.
  8. DISPLAYING SOFTWARE REVISION LEVEL.
  9. DISPLAYING HISTORICAL LOGS.
  10. DISPLAYING CARD STATUS.
  11. POINT LISTING.
  12. SPEAKER SILENCE SWITCH.
- D. FOR MAINTENANCE PURPOSES, THE FOLLOWING LISTS SHALL BE AVAILABLE FROM THE POINT LISTS MENU.
  1. ALL POINTS LISTED BY ADDRESS.
  2. MONITOR POINT LIST.
  3. SIGNAL/SPEAKER LIST.
  4. AUXILIARY CONTROL LIST.
  5. FEEDBACK POINT LIST.
  6. PSEUDO POINT LIST.
  7. LED/SWITCH STATUS LIST.

12. DEVICES AND ACCESSORIES
- A. MANUAL STATION: SEMI—FLUSH MOUNTED, SUPERVISED, NORMALLY OPEN SINGLE ACTION MANUAL STATION. MANUAL STATIONS SHALL BE SINGLE ACTION AND SHALL BE CONSTRUCTED OF CAST METAL OR LEXAN WITH RAISED WHITE LETTERING AND A SMOOTH HIGH GLOSS FINISH. THE STATION SHALL HAVE A HINGED FRONT WITH KEY LOCK. STATIONS WHICH UTILIZE SCREWDRIVERS, ALLEN WRENCHES, OR OTHER COMMONLY AVAILABLE TOOLS SHALL NOT BE ACCEPTED. STATIONS SHALL BE KEYED ALIKE WITH THE FIRE ALARM CONTROL PANEL. WHEN THE STATION IS OPERATED, THE HANDLE SHALL LOCK IN A PROTRUDING MANNER TO FACILITATE QUICK VISUAL IDENTIFICATION OF THE ACTIVATED STATION. STATIONS SHALL BE THE ADDRESSABLE TYPE.
- B. HEAT DETECTOR: EASY INSTALLATION, LOW PROFILE WITH WIDE BASE TO COVER MOUNTING PLATE AND BOX. DETECTORS SHALL BE WHITE AND HAVE A DANGLING DISK TO INDICATE ELEMENT OPERATION. DETECTORS WILL BE FIXED TEMPERATURE WITH THERMOSTATS RATED AT 135 DEGREES F, EXCEPT WHEN THE PLANS CALL FOR A 194 OR 200 DEGREES F RATING. THE DETECTOR SHALL BE THE ADDRESSABLE TYPE FOR USE WITH AN ADDRESSABLE SYSTEM AND SHALL BE UL LISTED FOR THIS PURPOSE.
  1. HEAT DETECTORS INSTALLED IN HAZARDOUS ENVIRONMENTS SHALL BE THE EXPLOSION PROOF TYPE.
- C. SMOKE DETECTORS: NFPA 72E; PHOTOELECTRIC TYPE WITH PLUG-IN BASE, SUPERVISED VISUAL INDICATION OF DETECTOR ACTUATION, SUITABLE FOR MOUNTING ON FOUR INCH (4”) OUTLET BOX.
  1. DETECTORS SHALL BE LISTED TO U.L. STANDARD 268 AND SHALL BE DOCUMENTED COMPATIBLE WITH THE CONTROL EQUIPMENT TO WHICH IT IS CONNECTED. DETECTORS SHALL BE LISTED FOR THIS PURPOSE BY UNDERWRITERS LABORATORIES, INC. THE DETECTORS SHALL OBTAIN THEIR OPERATING POWER FROM THE FIRE ALARM PANEL SUPERVISED DETECTION LOOP. THE OPERATING VOLTAGE SHALL BE 24 VDC (NOMINAL). REMOVAL OF THE DETECTOR HEAD SHALL INTERRUPT THE SUPERVISORY CIRCUIT OF THE FIRE ALARM DETECTION LOOP AND CAUSE A TROUBLE SIGNAL TO BE GENERATED AT THE CONTROL PANEL. DETECTORS SHALL BE THE ADDRESSABLE TYPE FOR USE ON AN ADDRESSABLE TYPE SYSTEM.
  2. EACH DETECTOR SHALL HAVE A FLASHING STATUS INDICATING LED FOR VISUAL SUPERVISION. WHEN THE DETECTOR IS ACTUATED, THE FLASHING LED WILL LATCH ON STEADY AND AT FULL BRILLIANCE. THE DETECTOR MAY BE RESET BY ACTUATING THE CONTROL PANEL RESET SWITCH.
  3. TO MINIMIZE NUISANCE ALARMS, VOLTAGE AND RF TRANSIENT SUPPRESSION TECHNIQUES SHALL BE EMPLOYED AS—WELL—AS A SMOKE VERIFICATION CIRCUIT AND AN INSECT SCREEN. THE DETECTOR DESIGN SHALL PROVIDE FULL SOLID—STATE CONSTRUCTION AND COMPATIBILITY WITH OTHER NORMALLY OPEN FIRE ALARM DETECTION LOOP DEVICES (HEAT DETECTORS, PULL STATIONS, ETC.). THE DETECTOR HEAD SHALL BE EASILY DISASSEMBLED TO FACILITATE CLEANING.
- D. HORNS/SPEAKERS: MOISTURE REPELLENT, FIRE RETARDANT SPEAKER OR HORN DESIGNED FOR SMOOTH FREQUENCY RESPONSE WITH MINIMAL DISTORTION. HORN/SPEAKERS SHALL BE LISTED AND APPROVED FOR USE AS A FIRE ALARM INDICATING APPLIANCE. HORN/SPEAKERS SHALL ALL SOUND THE SAME GENERAL ALARM SOUND. OUTDOOR SPEAKERS SHALL BE WEATHERPROOF AND LISTED FOR USE AS AN OUTDOOR FIRE ALARM INDICATIONG APPLIANCE.
  1. SOUND LEVEL: 87 DB AT 10 FEET NOT TO EXCEED 120 DBA.
- E. VISUAL FLASHING LAMPS (XENON STROBE): VISUAL INDICATING APPLIANCES SHALL BE COMPRISED OF XENON FLASHTUBE AND BE ENTIRELY SOLID STATE. THESE DEVICES SHALL BE UL LISTED AND BE CAPABLE OF EITHER CEILING OR WALL MOUNTING. THE LEXAN LENS SHALL BE PYRAMIDAL IN SHAPE TO ALLOW BETTER VISIBILITY. SEPARATE ALARM INDICATING CIRCUITS SHALL BE PROVIDED FOR STROBES. THE MAXIMUM STROBE PULSE DURATION SHALL BE 0.2 SECONDS WITH A MAXIMUM DUTY CYCLE OF 40 PERCENT. THE INTENSITY SHALL BE A MINIMUM 100 CANDELA AND THE FLASH RATE SHALL BE AT LEAST 1 HZ BUT NOT TO EXCEED 3 HZ. STROBE MUST MEET CURRENT ADA REQUIREMENTS.
- F. AUDIO/VISUAL ALARM INDICATING APPLIANCE: AUDIO/VISUAL UNITS SHALL PROVIDE A COMMON ENCLOSURE FOR THE FIRE ALARM AUDIBLE AND VISUAL ALARM DEVICES. THE HOUSING SHALL BE DESIGNED TO ACCOMMODATE EITHER HORNS, BELLS, CHIMES, OR SPEAKERS. THE UNIT SHALL BE COMPLETE WITH A TAMPER RESISTANT, PYRAMIDAL SHAPED LEXAN LENS WITH “FIRE” LETTERING VISIBLE FROM A 180 DEGREE FIELD OF VIEW. THE FRONT PANEL OR BEZEL WHICH IS CONSTRUCTED OF CAST METAL MAYBE INVERTED SO THAT THE LENS IS BELOW THE AUDIBLE DEVICE. THE LAMP ASSEMBLY SHALL INCORPORATE A BUILT-IN REFLECTOR FOR MORE EFFICIENT LIGHT PROPAGATION AND A SPECIAL SHOCK—MOUNTING ARRANGEMENT TO RESIST “BULB FAILURE DUE TO VIBRATION. LAMP SHALL BE PROVIDED WITH A 4 WIRE CONNECTION TO INSURE PROPERLY SUPERVISED IN/OUT SYSTEM CONNECTION. UNIT SHALL BE COMPLETE WITH ALL MOUNTING HARDWARE INCLUDING BACKBOX. AUDIO/VISUAL UNIT SHALL BE UL LISTED FOR ITS INTENDED PURPOSE. THE VISUAL FLASHING LAMPS SHALL MEET THE SPECIFICATION INDICATED ABOVE IN PART E.
  1. MINIMUM DB: 87 DB AT 10 FEET PER UL 464.
- G. DUCT SMOKE DETECTORS: DUCT SMOKE DETECTORS SHALL BE OF THE SOLID STATE PHOTOELECTRIC TYPE AND SHALL OPERATE ON THE LIGHT SCATTERING PHOTODIODE PRINCIPLE. THE DETECTORS SHALL BE DESIGNED TO IGNORE INVISIBLE AIRBORNE PARTICLES OR SMOKE DENSITIES THAT ARE BELOW THE FACTORY SET ALARM POINT. NO RADIOACTIVE MATERIALS SHALL BE USED. DETECTORS SHALL BE THE ADDRESSABLE TYPE FOR USE ON AN ADDRESSABLE TYPE SYSTEM. DETECTORS SHALL BE PROVIDED WITH THE CAPABILITY OF PERFORMING AUTOMATIC FAN SHUTDOWN EITHER DIRECTLY FROM THE DETECTOR OR VIA THE MAIN CONTROL PANEL. ALL REQUIRED WIRING AND SUPERVISION SHALL BE PROVIDED FOR ALL REQUIRED FAN SHUTDOWN. PROVIDE ALL RELAYS AND SUPERVISE RELAYS AS REQUIRED.
- H. PROVIDE ALL REQUIRED AUXILIARY CONTROL CIRCUITS FOR HOOD FIRE SUPPRESSION SYSTEM SUPERVISION, APPLIANCE SHUTDOWN, DOOR RELEASE, HOOD SUPPLY FAN SHUTDOWN, GAS SHUTDOWN, DAMPERS, VALVE CLOSURE AND OTHER REQUIRED CONTROL FUNCTIONS INDICATED ON THE DRAWINGS OR OTHERWISE SPECIFIED. ALL AUXILIARY CONTROL CIRCUITS SHALL BE INDICATED ON THE ANNUNCIATOR AS A SEPARATE ZONE OR SHALL BE ADDRESSABLE SO THE DEVICE CAN BE IDENTIFIED QUICKLY AND ACCURATELY.
- I. PROVIDE WALL MOUNTED, MAGNETIC DOOR HOLDER/AUTOMATIC DOOR RELEASE DEVICES. DOOR HOLDER SHALL HAVE A MINIMUM 25 IBS. HOLDING FORCE.

13. BATTERY BACK-UP
- A. THE SYSTEM SHALL BE BATTERY BACK-UP FOR 24 HOURS WITH FIVE (5) MINUTES OF ALARM CAPABILITIES (PER NFPA 72) WITH ALL SYSTEM INDICATING APPLIANCES OPERATING, INCLUDING STROBES. PROVIDE BATTERY WITH 30% SPARE CAPACITY FOR THE POTENTIAL ADDITION OF INDICATING APPLIANCES.

14. LIGHTNING PROTECTION
- A. PROVIDE SURGE PROTECTION ON ALL CIRCUITS.
- B. PROVIDE LIGHTNING PROTECTION AT ALL POINTS ENTERING AND LEAVING THE BUILDING (INCLUDING WALKWAYS) AND AT THE FACP LOCATION SHOWN ON THE DRAWINGS. THE 120 VOLT POWER CIRCUIT SHALL BE PROVIDED WITH LIGHTNING PROTECTION.
- C. SURGE PROTECTION SHALL BE MANUFACTURED AND LISTED FOR USE WITH THE FIRE ALARM SYSTEM.

15. ENTIRE BUILDING
- A. ALL PULL STATIONS, HEAT DETECTORS, AND SMOKE DETECTORS SHALL, WHEN PLACED IN AN ALARM MODE, SOUND THE BUILDING GENERAL ALARM, FLASH STROBE LIGHTS, SHUTDOWN AHUS, RELEASE DOOR HOLDERS, AND ANNUNCIATE THE ADDRESS OF THE INITIATING DEVICE OR THE ZONE OF ANY OF THE EXISTING HARD WIRED DEVICES TO THE FACP.
- B. ALL PULL STATIONS, HEAT DETECTORS, SMOKE DETECTORS, AND DUCT SMOKE DETECTORS SHALL, WHEN PLACED IN A TROUBLE MODE, INDICATE THE ADDRESS OF THE DEVICE OR ZONE OF ANY EXISTING DEVICE EXPERIENCING TROUBLE TO THE FACP.
- C. DUCT SMOKE DETECTORS SHALL BE HARDWIRED INTERLOCKED TO SHUTDOWN THEIR RESPECTIVE UNITS ON ALARM OR DETECTION OF SMOKE. DUCT SMOKE DETECTORS SHALL SOUND A SUPERVISORY SIGNAL TO THE FACP AND SHALL NOT SOUND THE GENERAL ALARM.
- D. THE SYSTEM SHALL BE FULLY PROGRAMMED AND COMPLETELY OPERATIONAL PRIOR TO ACCEPTANCE. THE FACP AND CPU SHALL HAVE THE CAPABILITY TO BE FULLY PROGRAMMABLE BY OWNER’S PERSONNEL.
- E. THE MANUFACTURER SHALL PROVIDE THE NECESSARY DOCUMENTATION AND TRAINING TO ALLOW THE OWNER’S PERSONNEL TO MAINTAIN AND CHANGE SOFTWARE.
- F. PROGRAM DATA SHALL BE STORED IN NON-VOLATILE MEMORY WITH BATTERY BACK-UP. PROGRAM DATA SHALL NOT BE LOST DUE TO TEMPORARY OUTAGES, SURGES, DIPS, ETC.

16. INSTALLATION OF FIRE ALARM AND DETECTION SYSTEMS
- A. INSTALL FIRE ALARM AND DETECTION SYSTEMS AS INDICATED, IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS AND COMPLYING WITH APPLICABLE PORTIONS OF NEC AND NECAS "STANDARD OF INSTALLATION” AND NFPA-72E.
- B. WIRING SYSTEMS AND MATERIALS
  1. WIRING SHALL BE IN ACCORDANCE WITH REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE AND NFPA REGULATION 72. THE FIRE ALARM SYSTEM, INCLUDING COMPONENTS, CONDUIT, BOXES AND WIRING SHALL BE COMPLETELY INSTALLED AND WIRING AND CONDUIT SHALL BE PROPERLY TAGGED AND COLOR CODED. THE ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTIONS AS SHOWN AND REQUIRED BY THE EQUIPMENT MANUFACTURER’S WIRING INSTRUCTIONS.
  2. COLOR CODE — THE COLOR CODES OF THE FIRE ALARM CABLING SHALL CONFORM WITH THE FOLLOWING:
     - a. SPEAKER — RED (+) AND BLACK (-).
     - b. PULL STATION/HEAT/SMOKE DETECTOR — BLUE AND YELLOW.
     - c. FAN SHUT-DOWN — WHITE.
     - d. VISUAL FLASHING LAMPS (XENON STROBES) — PURPLE AND ORANGE.
     - e. SPARE WIRES — ANY DIFFERENT COLOR, MUST BE SAME THROUGHOUT THE BUILDING.
  3. ALL WIRING TO BE INSTALLED IN CONDUIT WITH CONTINUOUS GROUND.
  4. ALL JUNCTION BOX COVERS SHALL BE PAINTED RED. ALL LENGTHS OF CONDUITS SHALL HAVE AT LEAST ONE RED STRIPE.
  5. AHU SHUTDOWN RELAYS AND EQUIPMENT CONTROL RELAYS SHALL BE MOUNTED WITHIN THREE (3) FEET OF CONTROLLED DEVICE. AHU SHUTDOWN RELAYS SHALL BE WIRED ON A SEPARATE CIRCUIT.
  6. VISUAL FLASHING LAMPS AND SPEAKERS SHALL BE WIRED ON ALTERNATE CIRCUITS TO PROVIDE COVERAGE IN THE EVENT OF THE FAILURE OF ONE CIRCUIT. PROVIDE THE REQUIRED NUMBER OF CIRCUITS FOR THE INDICATED NUMBER OF ALARM INDICATING DEVICES.
- C. PROVIDE CONDUIT, WIRE AND CIRCUIT BREAKERS TO CONNECT FIRE ALARM CONTROL PANELS TO EMERGENCY CIRCUIT. THE FIRE ALARM CIRCUIT BREAKER SHALL BE ACCESSIBLE TO AUTHORIZED PERSONNEL ONLY AND SHALL BE MARKED FIRE ALARM CIRCUIT CONTROL. PROVIDE HANDLE LOCK FOR CIRCUIT BREAKER HANDLE.
- D. PROVIDE A DISABLE SWITCH FOR SYSTEM SPEAKERS AT THE FIRE ALARM CONTROL PANEL. LABEL SWITCH “ALARM SILENCE SWITCH’. (IF THE SWITCH IS LEFT IN THE DISABLE POSITION DURING NORMAL SYSTEM OPERATION, A TROUBLE SIGNAL SHALL SOUND AT THE CONTROL PANEL.).

17. QUALITY ASSURANCE
- A. NEC COMPLIANCE COMPLY WITH NEC AS APPLICABLE TO CONSTRUCTION AND INSTALLATION OF FIRE ALARM AND DETECTION SYSTEM COMPONENTS AND ACCESSORIES.
- B. UL COMPLIANCE AND LABELING — PROVIDE FIRE ALARM AND DETECTION SYSTEM COMPONENTS WHICH ARE UL LISTED AND LABELED. INSTALLATION IS TO BE BY A UL LISTED INSTALLER.
- C. MISC. COMPLIANCE — THE FIRE ALARM SYSTEM IS TO BE INSTALLED IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S WRITTEN INSTRUCTIONS AND COMPLY WITH ALL APPLICABLE PORTIONS OF THE NECAS "STANDARD INSTALLATION” AND ALL LOCAL CODES AND ORDINANCES.

18. FIELD QUALITY CONTROL
- A. INSPECT RELAYS AND SIGNALS FOR MALFUNCTIONING, AND WHERE NECESSARY ADJUST UNITS FOR PROPER OPERATION TO FULFILL PROJECT REQUIREMENTS. ANY FINE ADJUSTMENT SHALL BE PERFORMED BY SPECIALLY TRAINED PERSONNEL IN DIRECT EMPLOY OF MANUFACTURER OF THE FIRE ALARM DETECTION SYSTEM EQUIPMENT. THE MANUFACTURER'S REPRESENTATIVE SHALL PERFORM A QUALITY INSPECTION OFF THE FINAL INSTALLATION AND, IN THE PRESENCE OF THE ELECTRICAL CONTRACTOR, ARCHITECT/ENGINEER, AND OWNER’S REPRESENTATIVES, SHALL PERFORM A COMPLETE FUNCTIONAL TEST OF THE SYSTEM. A SYSTEM CERTIFICATION VERIFYING THE PROPER SYSTEM OPERATION SHALL BE REQUIRED PRIOR TO ACCEPTANCE BY THE OWNER.

19. SYSTEM GUARANTEE
- A. ALL COMPONENTS, PARTS, AND ASSEMBLIES SUPPLIED BY THE MANUFACTURER SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF TWELVE (12) MONTHS COMMENCING THE DATE OF SUBSTANTIAL COMPLETION. WARRANTY SERVICE SHALL BE PROVIDED BY A QUALIFIED FACTORY TRAINED REPRESENTATIVE OF THE EQUIPMENT MANUFACTURER. SERVICE RESPONSE TIME SHALL BE A MAXIMUM OF FOUR (4) HOURS BEFORE ARRIVAL TO SITE.
- B. TESTING: THE CONTRACTOR SHALL PERFORM ALL ELECTRICAL AND MECHANICAL TESTS REQUIRED BY THE EQUIPMENT MANUFACTURER'S FORM AND NATIONAL FIRE PROTECTION ASSOCIATION — 72H. ALL TEST AND REPORT COSTS SHALL BE IN THE CONTRACT PRICE. A CHECKOUT REPORT SHALL BE PREPARED BY THE INSTALLATION TECHNICIANS AND SUBMITTED IN TRIPLICATE, ONE (1) COPY OF WHICH WILL BE REGISTERED WITH THE EQUIPMENT MANUFACTURER. THE REPORT SHALL INCLUDE, BUT NOT BE LIMITED TO:
  1. A COMPLETE LIST OF EQUIPMENT INSTALLED AND WIRED.
  2. INDICATION THAT ALL EQUIPMENT IS PROPERLY INSTALLED AND FUNCTIONS AND CONFORMS WITH THESE SPECIFICATIONS.
  3. TEST RESULT OF INDIVIDUAL INITIATING DEVICES AND INDICATING APPLIANCES.
  4. SERIAL NUMBERS, LOCATIONS BY ZONE AND MODEL NUMBER FOR EACH INSTALLED DETECTOR.
  5. RESPONSE TIME ON THERMOSTATS AND FLAME DETECTORS (IF USED).
  6. TECHNICIAN’S NAME, CERTIFICATE NUMBER AND DATE.
- C. DOCUMENTATION: AFTER COMPLETION OF THE TESTS AND ADJUSTMENTS LISTED ABOVE, THE CONTRACTOR SHALL SUBMIT THE FOLLOWING INFORMATION TO THE OWNER.
  1. A COPY OF THE TEST REPORT DESCRIBED IN THIS SPECIFICATION AND A CERTIFICATE OF COMPLIANCE PREPARED AS PER NATIONAL FIRE PROTECTION ASSOCIATION STANDARD 72A CHAPTER 2, SECTION 2—2.4, AND STATE FIRE MARSHAL’S RULE 4A—48 TO BE COMPLETE AT FINAL TEST.
  2. AFFIXED TO FACP A STANDARD SERVICE TAG, AS DESCRIBED IN RULE 4A—48 FOR FIRE ALARM CONTRACTORS BY THE OFFICE OF THE STATE FIRE MARSHAL.
  3. FINAL TESTS AND INSPECTION SHALL BE HELD IN PRESENCE OF THE OWNERS' REPRESENTATIVES AND TO THEIR SATISFACTION. THE CONTRACTOR SHALL SUPPLY PERSONNEL AND REQUIRED AUXILIARY EQUIPMENT FOR THIS TEST WITHOUT ADDITIONAL COST TO THE OWNER.
  4. TO ASSURE THAT WIRE SIZE, POWER SUPPLY, NUMBER OF DEVICES ON A CIRCUIT, ETC. ARE SUITABLE TO SUPPORT 100% OF DEVICES BEING IN ALARM OR OPERATED SIMULTANEOUSLY, THIS TEST SHALL INCLUDE THE FOLLOWING:
     - a. PLACE ALL SENSORS AND MONITOR MODULES IN ALARM. EACH SHALL DISPLAY IT'S ADDRESS AND ALARM CONDITION. AT LEAST THE FIRST TEN (10) DEVICES ON EACH CIRCUIT SHALL ALSO HAVE THEIR ALARM LEDS LIGHTED.
     - b. OPERATE ALL CONTROL MODULES FOR THE ALARM OR OPERATED CONDITION. EACH MODULE SHALL DISPLAY IT'S ADDRESS AND CONDITION.
     - c. RESET ALL ALARMED AND OPERATED DEVICES. THE PANEL SHALL DISPLAY THE ADDRESS OR ZONE OF ANY OFF—NORMAL DEVICES.
     - d. TEST A REPRESENTATIVE NUMBER OF SENSORS FOR ALARM VERIFICATION BY MOMENTARILY TESTING FOR ALARM. THE SENSOR SHALL NOT INITIATE AN ALARM. THEN, TEST BY PLACING THE SENSOR IN ALARM SUCH THAT IT REMAINS IN ALARM FOR THE SELECTED VERIFICATION TIME. THE SENSOR SHALL INITIATE AN ALARM.
     - e. ACCEPTANCE OF THE SYSTEM SHALL ALSO REQUIRE A DEMONSTRATION OF THE STABILITY OF THE SYSTEM. THIS SHALL BE ADEQUATELY DEMONSTRATED IF THE SYSTEM OPERATES FOR A NINETY (90) DAY TEST PERIOD WITHOUT ANY UNWARRANTED ALARMS. SHOULD UNWARRANTED ALARM(S) OCCUR, THE CONTRACTOR SHALL READJUST OR REPLACE THE DETECTOR(S) AND BEGIN ANOTHER NINETY (90) DAY TEST PERIOD. AS REQUIRED BY THE ENGINEER THE CONTRACTOR SHALL RECHECK THE DETECTORS USING THE FIRE TEST AFTER EACH READJUSTMENT OR REPLACEMENT OF DETECTORS. THIS TEST SHALL NOT START UNTIL THE OWNER HAS OBTAINED BENEFICIAL USE OF THE BUILDING UNDER TESTS.
     - f. IF THE REQUIREMENTS PROVIDED IN THE PARAGRAPH ABOVE ARE NOT COMPLETED WITHIN THIRTY (30) DAYS AFTER BEGINNING THE TESTS DESCRIBED THEREIN, THE CONTRACTOR SHALL REPLACE THE SYSTEM WITH ANOTHER ACCEPTABLE MANUFACTURER AND THE PROCESS REPEATED UNTIL ACCEPTANCE OF THE EQUIPMENT BY THE OWNER.
     - g. BEFORE FINAL ACCEPTANCE OF WORK; THE CONTRACTOR SHALL DELIVER (2) PLUS ELECTRICAL COPIES OF A COMPOSITE “OPERATING AND SHOP MAINTENANCE MANUAL.” EACH MANUAL SHALL CONTAIN, BUT NOT BE LIMITED TO:
     - h. A STATEMENT OF GUARANTEE INCLUDING DATE OF TERMINATION AND NAME AND PHONE NUMBER OF THE PERSON TO BE CALLED IN THE EVENT OF EQUIPMENT FAILURE.
     - i. INDIVIDUAL FACTORY ISSUED MANUALS CONTAINING ALL TECHNICAL INFORMATION ON EACH PIECE OF EQUIPMENT INSTALLED. IN THE EVENT THAT SUCH MANUALS ARE NOT OBTAINABLE FROM THE FACTORY, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COMPILE AND INCLUDE THEM. ADVERTISING BROCHURES OR OPERATIONAL INSTRUCTIONS SHALL NOT BE USED IN LIEU OF THE REQUIRED TECHNICAL MANUALS.
     - j. ONE (1) COPY OF ALL APPROVED SHOP DRAWINGS, INSTRUCTION SHEETS, OPERATING INSTRUCTIONS, AND SPARE PARTS BULLETINS.
     - k. A TRAINING SESSION, FOR PERSONNEL SELECTED BY THE OWNER, SHALL BE PRESENTED BY A FULLY QUALIFIED, TRAINED REPRESENTATIVE OF THE EQUIPMENT MANUFACTURER WHO IS_ THOROUGHLY KNOWLEDGEABLE OF THE SPECIFIC INSTALLATION.
     - l. PROVIDE A WRITTEN DESCRIPTION OF STANDARD CONTROL PANEL FUNCTIONS AND USER INSTRUCTIONS AT EACH FACP. THESE INSTRUCTIONS SHALL BE WRITTEN IN STANDARD LAYMEN’S ENGLISH SO THAT AN UNFAMILIAR OPERATOR CAN ACCOMPLISH BASIC FUNCTIONS SUCH AS RESET.
- D. WARRANTY : ALL EQUIPMENT AND SYSTEMS SHALL BE WARRANTED BY THE CONTRACTOR FOR A PERIOD OF ONE (1) YEAR FOLLOWING THE DATE OF FINAL ACCEPTANCE. THE WARRANTY SHALL INCLUDE PARTS, LABOR, PROMPT FIELD SERVICE, PICK—UP, AND DELIVERY.
  1. PROVIDE ONE (1) YEAR OF TESTING AS PER NATIONAL FIRE PROTECTION ASSOCIATION 72, WHICH SHALL CONSIST OF:
  2. AT THE END OF THE ONE YEAR WARRANTY PERIOD PROVIDE A TEST AND WRITTEN REPORT WHICH CERTIFY THAT ALL INITIATING DEVICES HAVE BEEN TESTED AND WHICH INDICATE THE RESULT OF THE INSPECTION AS REQUIRED BY THE OWNER. PROVIDE THE REQUIRED CERTIFICATION TAG. PROBLEMS DISCOVERED DURING THIS TESTING AND INSPECTION SHALL BE COVERED UNDER THE WARRANTY. IT IS THE CONTRACTOR'S RESPONSIBILTY TO PERFORM THIS TESTING PRIOR TO THE END OF THE ONE YEAR WARRANTY OR PROVIDE AN EXTENDED WARRANTY IF THE TEST IS PERFORMED AFTER THE WARRANTY PERIOD WAS SCHEDULED TO EXPIRE.

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04/05/2022

HAT CREEK - WEST LAKE
5902 BEE CAVE RD
WEST LAKE HILLS, TEXAS 78746

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| DRAWING LIST | |
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| Sheet Number | Sheet Name |
| S-000 | COVER SHEET |
| S-100 | GENERAL NOTES |
| S-101 | SPECIAL INSPECTIONS |
| S-200 | FOUNDATION PLAN |
| S-210 | LOW FRAMING PLAN |
| S-211 | HIGH FRAMING PLAN |
| S-300 | TYPICAL FOUNDATION DETAILS |
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| S-500 | TYPICAL FRAMING DETAILS |
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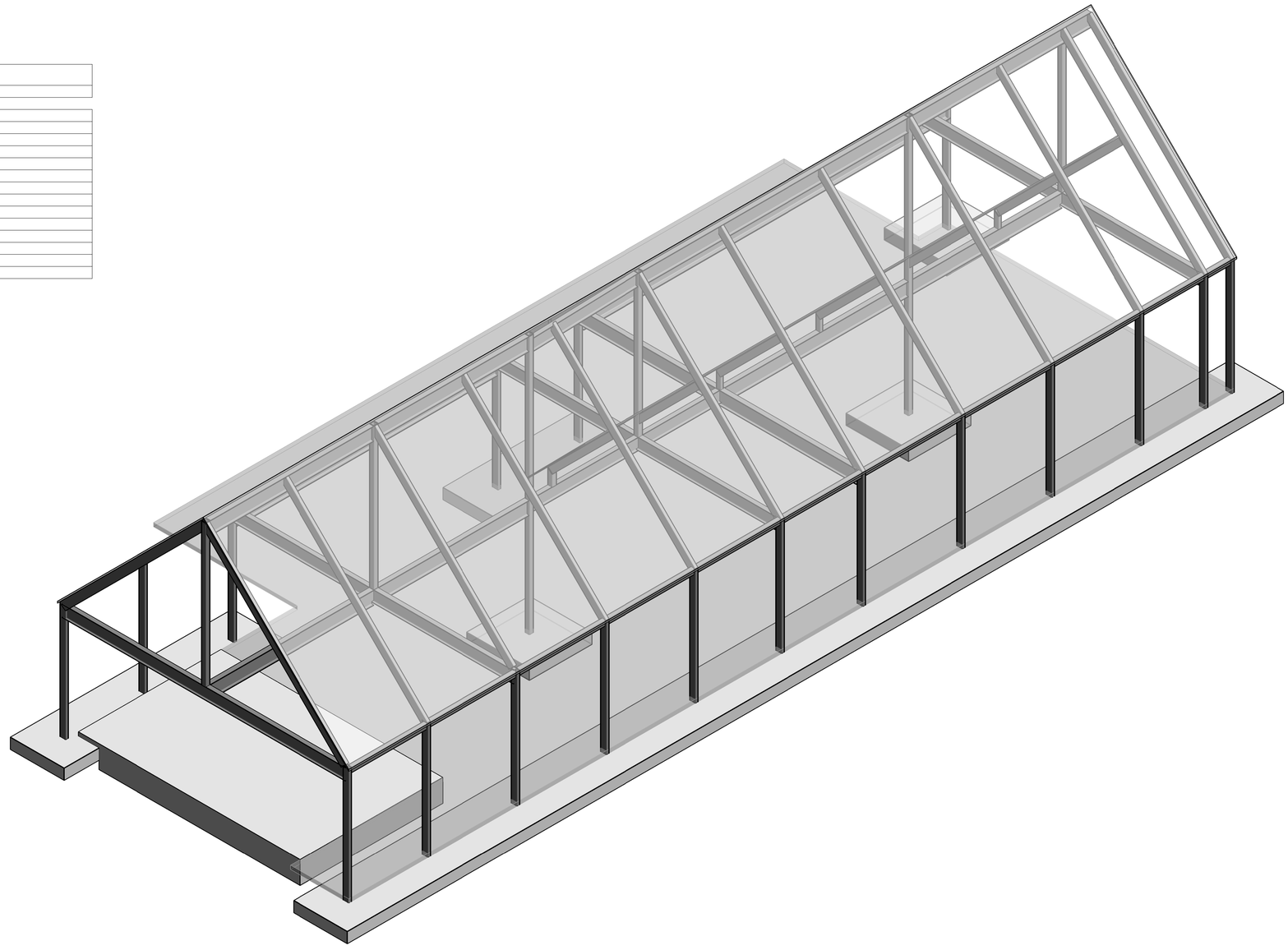
| S-502 | ENLARGED FRAMING DETAILS |
| S-503 | ENLARGED FRAMING DETAILS |
| X-001 | ISOMETRIC VIEW |
| X-002 | ISOMETRIC VIEW |



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## GENERAL NOTES

### DIVISION 01 - GENERAL REQUIREMENTS

**1.1 BUILDING CODES & ORDINANCES**

A. ALL DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL BUILDING CODES/ORDINANCES AND FIRE CODES, INCLUDING THE FOLLOWING:
1. CITY OF WEST LAKE HILLS CODE OF ORDINANCES, ADOPTED FEBRUARY 9, 2021
2. INTERNATIONAL BUILDING CODE (IBC) 2015 EDITION

**1.2 SPECIAL INSPECTIONS**

A. THE OWNER SHALL ENGAGE ONE OR MORE SPECIAL INSPECTORS WHO SHALL PROVIDE INSPECTIONS AND MATERIALS TESTING DURING CONSTRUCTION. ALL SPECIAL INSPECTIONS AND TESTING SHALL CONFORM TO THE REQUIREMENTS OF THE IBC SECTION 1705.
B. SPECIAL INSPECTIONS ARE IN ADDITION TO THE INSPECTIONS CONDUCTED BY THE LOCAL BUILDING OFFICIAL. SPECIAL INSPECTIONS SHALL NOT RELIEVE THE OWNER AND CONTRACTOR FROM REQUESTING THE BUILDING OFFICIALS INSPECTIONS REQUIRED BY IBC SECTION 110.
C. SPECIAL INSPECTORS SHALL BE GIVEN PROPER NOTICE AND ACCESS TO THE SITE TO PERFORM TESTING AND INSPECTION AS NECESSARY.
D. REQUIRED CATEGORIES OF SPECIAL INSPECTIONS:
1. STEEL CONSTRUCTION (IBC SECTION 1705.2)
i. SPECIAL INSPECTION OF STEEL FABRICATION PROCESS SHALL NOT BE REQUIRED WHERE THE FABRICATOR IS APPROVED IN ACCORDANCE WITH IBC.
2. CONCRETE CONSTRUCTION (IBC SECTION 1705.3)
3. MASONRY CONSTRUCTION (IBC SECTION 1705.4)
4. SOILS (IBC SECTION 1705.6)
5. DRIVEN DEEP FOUNDATIONS (IBC SECTION 1705.7)
6. CAST-IN-PLACE DEEP FOUNDATIONS (IBC SECTION 1705.8)
E. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR:
1. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED TO VERIFY THAT IT CONFORMS TO THE CONTRACT DOCUMENTS.
2. THE SPECIAL INSPECTOR SHALL NOT AUTHORIZE OR APPROVE DEVIATIONS FROM THE CONTRACT DOCUMENTS. ALL DEVIATIONS FROM THE CONTRACT DOCUMENTS MUST BE INITIATED BY THE CONTRACTOR VIA A WRITTEN REQUEST FOR INFORMATION (RFI) AND APPROVED BY THE ENGINEER OF RECORD PRIOR TO PROCEEDING WITH THE WORK.
3. THE SPECIAL INSPECTOR SHALL FURNISH WRITTEN INSPECTION REPORTS TO THE ENGINEER OF RECORD. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF CORRECTIONS ARE NOT MADE, THE BUILDING OFFICIAL AND ENGINEER AND/OR ARCHITECT SHALL BE NOTIFIED.

**1.3 DEFERRED SUBMITTALS**

A. IN ACCORDANCE WITH IBC 107.3.4.1 AND LOCAL BUILDING DEPARTMENT REQUIREMENTS, DEFERRED SUBMITTALS ARE DEFINED AS THOSE PORTIONS OF THE DESIGN THAT ARE NOT SUBMITTED AT THE TIME OF THE APPLICATION FOR PERMIT AND WHICH ARE TO BE SUBMITTED TO THE BUILDING OFFICIAL WITHIN A SPECIFIED PERIOD.
B. DEFERRAL OF ANY SUBMITTAL ITEMS SHALL HAVE PRIOR APPROVAL OF THE BUILDING OFFICIAL. THE ARCHITECT OR ENGINEER OF RECORD SHALL LIST THE DEFERRED SUBMITTALS ON THE PLANS AND CONTRACTOR SHALL SUBMIT THE DEFERRED SUBMITTAL DOCUMENTS FOR REVIEW BY THE BUILDING OFFICIAL.
C. ALL DEFERRED SUBMITTAL ITEMS SHALL BE SIGNED AND SEALED BY A DESIGN PROFESSIONAL LICENSED IN THE STATE WHERE THE PROJECT IS LOCATED.
D. DOCUMENTS FOR DEFERRED SUBMITTAL SHALL BE SUBMITTED TO THE ARCHITECT OR ENGINEER OF RECORD A MINIMUM OF 30 DAYS PRIOR TO FABRICATION. DEFERRED SUBMITTAL DOCUMENTS WILL BE REVIEWED BY THE ARCHITECT OR ENGINEER OF RECORD FOR GENERAL CONFORMANCE WITH CONTRACT DOCUMENTS. A COPY OF THE DEFERRED SUBMITTAL DOCUMENTS SHALL BE SUBMITTED TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED. THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.
E. THE ENGINEER OF RECORD IS DELEGATING THE DESIGN OF THE FOLLOWING ITEMS, ALL OF WHICH WILL BE DEFERRED SUBMITTALS:
1. TEMPORARY EARTH RETENTION SYSTEMS
2. GLAZING SYSTEMS AND THEIR CONNECTIONS
3. PRECAST CONCRETE (INCLUDING CAST-IN FABRICATED HARDWARE)
4. STEEL STAIRS AND LANDINGS
5. GUARDRAILS AND HANDRAILS
6. STRUCTURAL STEEL CONNECTIONS (AS SPECIFIED)
7. TEMPORARY BRACING AND SHORING SYSTEMS FOR SLABS, BEAMS, AND WALLS
8. POST-TENSIONING SHOP DRAWINGS
9. LIGHT GUAGE STEEL FRAMING AND THEIR CONNECTIONS
10. AWNINGS AND OTHER PREFABRICATED/PRE-ENGINEERED SYSTEMS

**1.6 LOADING AND DESIGN PARAMETERS - ASCE7-10 OR AS SPECIFIED HEREIN**

A. RISK CATEGORY — II
B. SUPERIMPOSED DEAD LOADING:
1. ROOF:
i. BUILT-UP ROOFING, INSULATION, WATERPROOFING — 16 PSF
C. LIVE LOADING:
1. ROOF:
i. UNIFORM LOAD — 20 PSF
2. SLAB ON GRADE:
i. UNIFORM LOAD — 100 PSF
D. SNOW LOADING:
1. IMPORTANCE FACTOR (Is) — 1.0
2. EXPOSURE FACTOR (Ce) — 0.9
3. THERMAL FACTOR (Ct) — 1.0
4. GROUND SNOW LOAD (Pg) — 5.0 PSF
5. FLAT ROOF SNOW LOAD (Pf) — 3.2 PSF
6. MINIMUM LOW-SLOPE ROOF SNOW LOAD (Pm) — 5.0 PSF
7. MAX DRIFT SURCHARGE (Pd) — 0.0 PSF
8. WIDTH OF MAX SNOW DRIFT (w) — 0.0 FT
E. RAIN LOADING:
1. STRUCTURE IS DESIGNED IN ACCORDANCE WITH ASCE7 FOR EACH PORTION OF ROOF TO SUSTAIN THE LOAD OF RAINWATER THAT WILL ACCUMULATE ON IT IF THE PRIMARY DRAINAGE SYSTEM FOR THAT PORTION IS BLOCKED, INCLUSIVE OF UNIFORM LOAD CAUSED BY WATER THAT RISES ABOVE THE INLET OF THE SECORDARY DRAINAGE SYSTEM AT ITS DESIGN FLOW.
F. ATMOSPHERIC ICE LOADING:
1. STRUCTURE IS NOT DESIGNED FOR ATMOSPHERIC ICING
G. EARTH LATERAL LOADING:
1. SEE ITEM 31.2.A.1
H. WIND LOADING:
1. ULTIMATE DESIGN WIND SPEED (Vult) — 115 MPH
2. NOMINAL DESIGN WIND SPEED (Vasd) — 89 MPH
3. EXPOSURE CATEGORY — B
4. INTERNAL PRESSURE COEFFICIENT (GCpi) — +/- 0.18
5. THE FINAL NET DESIGN WIND PRESSURE FOR MAIN WIND FORCE RESISTING SYSTEM DESIGN, INCLUDING ALL PERMITTED REDUCTIONS, SHALL NOT BE LESS THAN 8 PSF FOR THE ROOF AND 16 PSF FOR THE WALLS, PROJECTED ONTO A VERTICAL PLANE NORMAL TO THE ASSUMED WIND DIRECTION.
6. THE FINAL NET DESIGN WIND PRESSURE FOR COMPONENTS AND CLADDING DESIGN, INCLUDING ALL PERMITTED REDUCTIONS, SHALL NOT BE LESS THAN 16 PSF ACTING IN ANY DIRECTION.
7. COMPONENTS AND CLADDING DESIGN PRESSURES (PSF)

| EFFECTIVE WIND AREA | | ROOF ZONE 1 + | ROOF ZONE 1 - | ROOF ZONE 2 + | ROOF ZONE 2 - | ROOF ZONE 3 + | ROOF ZONE 3 - |
|---|---|---|---|---|---|---|---|
| ≤ 10 | SF | 29.2 | 31.2 | 29.2 | 35.3 | 29.2 | 35.3 |
| 25 | SF | 28.4 | 29.6 | 28.4 | 33.6 | 28.4 | 33.6 |
| 50 | SF | 27.8 | 28.4 | 27.8 | 32.4 | 27.8 | 32.4 |
| >100 | SF | 27.2 | 27.2 | 27.2 | 31.2 | 27.2 | 31.2 |

| EFFECTIVE WIND AREA | | WALL ZONE 4 + | WALL ZONE 4 - | WALL ZONE 5 + | WALL ZONE 5 - |
|---|---|---|---|---|---|
| ≤ 10 | SF | 31.2 | 33.2 | 31.2 | 39.3 |
| 50 | SF | 28.7 | 30.8 | 28.7 | 34.3 |
| 200 | SF | 26.6 | 28.6 | 26.6 | 30.0 |
| >500 | SF | 25.2 | 27.2 | 25.2 | 27.2 |

8. MAIN WIND FORCE RESISTING SYSTEM (MWFRS) BEHAVIOR:
i. NORTH/SOUTH DIRECTION:
ANALYSIS PROCEDURE:
DIRECTIONAL PROCEDURE (CHAPTER 27)
ii. EAST/WEST DIRECTION:
ANALYSIS PROCEDURE:
DIRECTIONAL PROCEDURE (CHAPTER 27)
I. SEISMIC LOADING:
1. IMPORTANCE FACTOR (Ie) — 1.00
2. SPECTRAL RESPONSE ACCELERATIONS
i. SHORT PERIODS (SS) — 0.063 %g
ii. 1 SEC PERIOD (S1) — 0.032 %g
3. SITE CLASS — D
4. DESIGN SPECTRAL RESPONSE ACCELERATIONS
i. SHORT PERIODS (SDS) — 0.067 %g
ii. 1 SEC PERIOD (SD1) — 0.052 %g
5. DESIGN CATEGORY — A
J. STRUCTURAL INTEGRITY (NOTIONAL) LOADING:
1. NOTIONAL BEHAVIOR:
i. NORTH/SOUTH DIRECTION:
NOTIONAL LOAD — 0.01 %W
ii. EAST/WEST DIRECTION:
NOTIONAL LOAD — 0.01 %W

**1.12 CONSTRUCTION AND COORDINATION NOTES**

A. THE CONTRACTOR SHALL COORDINATE AND CHECK ALL DIMENSIONS RELATING TO ARCHITECTURAL FINISHES, MECHANICAL EQUIPMENT AND OPENINGS, ELEVATOR SHAFTS AND OVERRIDES, ETC. AND NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH ANY WORK.
B. METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR OR SUBCONTRACTOR. THE GENERAL CONTRACTOR OR SUBCONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO MAINTAIN AND INSURE THE INTEGRITY OF THE STRUCTURE AT ALL STAGES OF CONSTRUCTION.
C. CONSTRUCTION MEANS, METHODS, PROCEDURES, BRACING, AND SAFETY ARE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR OR SUBCONTRACTOR. THE STRUCTURAL DRAWINGS REPRESENT THE COMPLETE STRUCTURAL SYSTEM IN ITS FINISHED STATE.
D. THE STRUCTURE HAS BEEN DESIGNED FOR THE IN-SERVICE LOADS ONLY. THE METHODS, PROCEDURES, AND SEQUENCES OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR. SUPPORTING FORMWORK FOR ELEVATED CONCRETE CONSTRUCTION SHALL NOT BE REMOVED BEFORE THE CONCRETE HAS GAINED SUFFICIENT STRENGTH TO SAFELY STRESS ALL TENDONS FOR POST-TENSION SYSTEMS AND SUPPORT THE DEAD AND SUPERIMPOSED LOADS WHICH SUBSEQUENTLY WOULD BE APPLIED. REFER TO CONCRETE FORMWORK SPEC SECTION 031000 FOR ADDL INFORMATION.
E. ALL OMISSIONS OR CONFLICTS AMONG VARIOUS ELEMENTS OF DRAWINGS AND/OR SPECIFICATIONS SHALL BE REPORTED TO ENGINEER BEFORE PROCEEDING WITH ANY WORK. THE MOST STRINGENT RESTRICTIONS AND REQUIREMENTS SHALL GOVERN A CONFLICT UNLESS NOTED OTHERWISE.
F. NO STRUCTURAL MEMBERS SHALL BE PENETRATED OR CUT FOR PIPES, DUCTS, ETC., UNLESS SPECIFICALLY DETAILED OR APPROVED IN WRITING BY ENGINEER. ALL PENETRATIONS SHALL BE SUBMITTED TO ENGINEER OF RECORD FOR REVIEW AND APPROVAL.
G. VERIFY AND COORDINATE LOCATION AND SIZE OF ALL OPENINGS AND SLEEVES THROUGH FLOORS, WALLS, AND ROOFS WITH RESPECTIVE SUBCONTRACTOR (MECHANICAL, ELECTRICAL, HVAC, ETC.)
H. THE STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS AND SPECIFICATIONS OF ALL OTHER DISCIPLINES AND COORDINATED WITH THE WORK OF ALL TRADES.
I. VERIFY STRUCTURAL ELEVATIONS AND DIMENSIONS WITH RESPECT TO OTHER TRADES AND DRAWINGS.
J. VERIFY LOCATION OF SLAB DEPRESSIONS, FLOOR DRAINS, INSERTS, AND OTHER RELATED ITEMS.
K. SCALES NOTED ON THE DRAWINGS ARE FOR GENERAL REFERENCE ONLY. NO DIMENSIONAL INFORMATION SHALL BE OBTAINED BY DIRECT SCALING OF THE DRAWINGS.
L. FLOOR SLAB ELEVATIONS INDICATED ON DRAWINGS ARE ESTABLISHED TO PROVIDE POSITIVE DRAINAGE AND PROVIDE REQUIRED HEADROOM CLEARANCE, REFER TO ITEMS 1.8 AND 1.9. NOTIFY ENGINEER OF GRADES INDICATED WHICH DO NOT ALLOW FOR MINIMUM HEADROOM CLEARANCE OR POSITIVE DRAINAGE.
M. DO NOT INSTALL CONDUIT IN SUPPORTED SLABS, SLABS-ON-GRADE, COLUMNS, OR WALLS UNLESS EXPLICITLY SHOWN OR NOTED ON STRUCTURAL DRAWINGS OR APPROVED BY ENGINEER OR RECORD.
N. VISITS TO JOB SITE BY ENGINEER TO OBSERVE CONSTRUCTION DO NOT IN ANY WAY MEAN GUARANTEE OF CONTRACTORS WORK NOR RESPONSIBILITY FOR COORDINATION, SUPERVISION, NOR SAFETY AT JOB SITE.
O. ONLY LARGER SLEEVE OPENINGS AND FRAMED OPENINGS IN STRUCTURAL FRAMING COMPONENT MEMBERS ARE INDICATED ON THE STRUCTURAL DRAWINGS. HOWEVER, ALL SLEEVES, INSERTS AND OPENINGS, INCLUDING FRAMES AND/OR SLEEVES SHALL BE PROVIDED FOR PASSAGE, PROVISION AND/OR INCORPORATION OF THE WORK OF THE CONTRACT, INCLUDING BUT NOT LIMITED TO MECHANICAL, ELECTRICAL AND PLUMBING WORK. THIS WORK SHALL INCLUDE THE COORDINATION OF SIZES, ALIGNMENT, DIMENSIONS, POSITION, LOCATIONS, ELEVATIONS AND GRADES AS REQUIRED TO SERVE THE INTENDED PURPOSE. OPENINGS NOT INDICATED ON THE STRUCTURAL DRAWINGS, BUT REQUIRED AS NOTED ABOVE, SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW.
P. COMPATIBILITY OF THE STRUCTURE AND PROVISIONS FOR BUILDING EQUIPMENT SUPPORTED ON OR FROM STRUCTURAL COMPONENTS SHALL BE VERIFIED AS TO SIZE, DIMENSIONS, CLEARANCES, ACCESSIBILITY, WEIGHTS AND REACTION WITH THE EQUIPMENT FOR WHICH THE STRUCTURE HAS BEEN DESIGNED PRIOR TO SUBMISSION OF SHOP DRAWINGS AND DATA FOR EACH PIECE OF EQUIPMENT AND FOR STRUCTURAL COMPONENTS. DIFFERENCES SHALL BE NOTED ON THE SUBMITTALS.
Q. THE DETAILS DESIGNATED AS "TYPICAL DETAILS" APPLY GENERALLY TO THE STRUCTURAL DRAWINGS IN ALL AREAS WHERE CONDITIONS ARE SIMILAR TO THOSE DESCRIBED IN THE DETAILS.
R. ALL STRUCTURAL ELEMENTS OF THE PROJECT HAVE BEEN DESIGNED BY THE ENGINEER TO RESIST THE REQUIRED CODE VERTICAL AND LATERAL FORCES THAT COULD OCCUR IN THE FINAL COMPLETED STRUCTURE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL REQUIRED BRACING DURING CONSTRUCTION TO MAINTAIN THE STABILITY AND SAFETY OF ALL STRUCTURAL ELEMENTS DURING THE CONSTRUCTION PROCESS UNTIL THE LATERAL-LOAD RESISTING OR STABILITY-PROVIDING SYSTEM IS COMPLETELY INSTALLED AND THE STRUCTURE IS COMPLETELY TIED TOGETHER. TEMPORARY SUPPORTS SHALL NOT RESULT IN THE OVERSTRESS OR DAMAGE OF THE ELEMENTS TO BE BRACED NOR ANY ELEMENTS USED AS BRACE SUPPORTS.
S. PERIODIC SITE OBSERVATION BY FIELD REPRESENTATIVES OF WGI IS SOLELY FOR THE PURPOSE OF DETERMINING IF THE WORK IS PROCEEDING IN ACCORDANCE WITH THE STRUCTURAL CONTRACT DOCUMENTS. THIS LIMITED SITE OBSERVATION IS NOT INTENDED TO BE A CHECK OF THE QUALITY OR QUANTITY OF THE WORK, BUT RATHER A PERIODIC CHECK IN AN EFFORT TO INFORM THE OWNER AGAINST DEFECTS AND DEFICIENCIES IN THE WORK OF THE CONTRACTOR.
T. DO NOT INSTALL CONDUIT IN SUPPORTED SLABS, SLABS ON GRADE, OR CONCRETE WALLS UNLESS EXPLICITLY SHOWN OR NOTED ON THE STRUCTURAL DRAWINGS.
U. DO NOT SUSPEND ANY ITEMS, SUCH AS DUCTWORK, MECHANICAL OR ELECTRICAL FIXTURES, CEILINGS, ETC. FROM STEEL ROOF DECK
V. THE MECHANICAL CONTRACTOR SHALL VERIFY THAT MECHANICAL UNITS SUPPORTED BY THE STEEL FRAMING ARE CAPABLE OF SPANNING THE DISTANCE BETWEEN THE SUPPORTING MEMBERS INDICATED ON THE STRUCTURAL DRAWINGS. THE MECHANICAL CONTRACTOR SHALL SUPPLY ADDITIONAL SUPPORT FRAMING AS REQUIRED.
W. ALL REQUESTS FOR SUBSTITUTIONS OF MATERIALS OR DETAILS SHOWN IN THE STRUCTURAL CONTRACT DOCUMENTS SHALL BE SUBMITTED FOR APPROVAL DURING THE BIDDING PERIOD.
X. ONCE BIDS ARE ACCEPTED, PROPOSED SUBSTITUTIONS WILL BE CONSIDERED ONLY WHEN THEY ARE OFFICIALLY SUBMITTED WITH AN IDENTIFIED SAVINGS OR DURATION TO BE DEDUCTED FROM THE CONTRACT AND/OR SCHEDULE IMPACT. SUBMITTALS NOT SATISFYING THE ABOVE CRITERIA WILL NOT BE CONSIDERED.
Y. STRUCTURAL DRAWINGS ARE NOT PERMITTED TO BE USED AS SHOP DRAWINGS.
Z. GC TO ALLOW 10 BUSINESS DAYS MINIUM PER SHOP DRAWING FOR COMPLETE REVIEW. MULTIPLE REVIEWS COMMENCE AT THE DISCRETION OF WGI. U.N.O. BY WGI EACH SHOP DRAWING WILL BE REVIEWED IN THE ORDER IT WAS RECEIVED. EACH REVIEW WILL BEGIN AFTER RETURNING THE PREVIOUS SHOP DRAWING. WGI WILL NOT ASSUME PRIORITY FOR REVIEW OF MULTIPLE SUBMITTALS RECEIVED. DELAYS DUE TO INADEQUATE PLANNING FOR THIS REQUIRED TIME ARE NOT THE FAULT OF WGI AND WGI SHALL NOT BE HELD LIABLE FOR ANY DELAY CLAIMS.

### DIVISION 02 - EXISTING CONDITIONS

**2.1 EXISTING STRUCTURES**

1. WHERE DIMENSIONS ARE INDICATED FOR EXISTING STRUCTURES OR UTILITIES, THEY ARE APPROXIMATE AND FOR REFERENCE ONLY. CONTRACTOR SHALL VERIFY IN FIELD (VIF) ALL DIMENSIONS AND ELEVATIONS PRIOR TO CONSTRUCTION. ANY VARIATIONS BETWEEN EXISTING DIMENSIONS AND/OR ELEVATIONS ON DRAWINGS SHALL BE REPORTED TO ENGINEER.

### DIVISION 05 - METALS

**5.1 STEEL FRAMING**

A. ALL DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE FOLLOWING:
1. ANSI/AISC 360-10
B. REFER TO SPECIFICATION SECTION 051200 STRUCTURAL STEEL FOR ADDL INFO
C. REFER TO SPECIFICATION SECTION 055700 MISCELLANEOUS METALS FOR ADDL INFO
D. FRAMING SHAPES:
1. W-SHAPES:
i. MATERIAL PROPERTIES:
a. ASTM A992 GRADE 50
ii. COATING PROPERTIES:
a. AS REQD, SEE ITEM 5.1.E
2. CHANNELS, ANGLES, M-SHAPES, S-SHAPES:
i. MATERIAL PROPERTIES:
a. ASTM A36
ii. COATING PROPERTIES:
a. AS REQD, SEE ITEM 5.1.E
3. HOLLOW STRUCTURAL SECTIONS (HSS):
i. MATERIAL PROPERTIES:
a. ASTM A500 GRADE C
ii. COATING PROPERTIES:
a. AS REQD, SEE ITEM 5.1.E
5. PLATES AND BARS:
i. MATERIAL PROPERTIES:
a. ASTM A36
ii. COATING PROPERTIES:
a. AS REQD, SEE ITEM 5.1.E
E. METALS PROTECTION SHALL BE PER ACI 362.1R AS MINIMUMS, EXCEPT AS NOTED ON DRAWINGS AND SPECIFIED HEREIN. THE METALS PROTECTION SCHEDULE BELOW SHALL GOVERN IN ALL CASES EXCEPT WHERE DEVIATIONS ARE SPECIFICALLY NOTED ON DRAWINGS. ALL METAL COATINGS SHALL BE COORDINATED TO BE COMPATIBLE WITH FINAL PAINTING SYSTEMS.

| SPEC # | ELEMENT DESCRIPTION | COATING REQUIREMENTS |
|---|---|---|
| 055700 | EMBED PLATES | (PRIME & PAINT)(HOT-DIP GALVANIZED) |
| 055700 | BRICK SHELF ANGLES | (PRIME & PAINT)(HOT-DIP GALVANIZED) |
| 055700 | MISC. FRAMING EXPOSED TO WEATHER | (PRIME & PAINT)(HOT-DIP GALVANIZED) |
| 055700 | MISC. FRAMING NOT EXPOSED TO WEATHER | (PRIME & PAINT)(HOT-DIP GALVANIZED) |

F. FRAMING CONNECTIONS:
1. WELDED CONNECTIONS:
i. ALL WELDING SHALL BE MADE WITH E70XX LOW HYDROGEN ELECTRODES UNLESS NOTED OTHERWISE AND SHALL CONFORM TO THE LATEST EDITION OF THE AMERICAN WELDING SOCIETY SPECIFICATIONS. ALL WELDS SHALL BE PERFORMED BY AN AWS CERTIFIED WELDER. CERTIFICATION SHALL BE APPROPRIATE FOR WELDING METHOD AND POSTION.
ii. STAINLESS STEEL ELECTRODES SHALL BE TYPE 308L OR 347.
iii. MINIMUM WELD SIZE IS 1/4 INCH UNLESS NOTED OTHERWISE.
iv. FOR GALVANIZED CONNECTION HARDWARE REQUIRING FIELD WELDING, REMOVE SLAG, WIRE BRUSH, AND APPLY THREE COATS OF ZRC (COLD GALVANIZING) AFTER WELDING.
2. BOLTED CONNECTIONS:
i. BOLTED CONNECTIONS SHALL BE MADE USING ONE OF THE FOLLOWING:
a. BEARING TYPE CONNECTION WITH THREADS INCLUDED IN SHEAR PLANE (CONDITION N) WITH BOLTS, NUTS, AND WASHERS. TURN OF THE NUT METHOD.
b. SLIP CRITICAL OR OTHER TYPE CONNECTION AS INDICTED ON DRAWINGS.
ii. BOLT SIZE SHALL BE 3/4 INCH DIAMETER UNLESS NOTED OTHERWISE.
iii. MATERIAL PROPERTIES:
a. ASTM F3125 GRADE A325
iv. COATING PROPERTIES:
a. UNCOATED
3. CONNECTIONS NOT SPECIFICALLY DETAILED ON DRAWINGS SHALL BE DESIGNED BY FABRICATOR IN ACCORDANCE WITH AISC SPECIFICATIONS
i. SHOP CONNECTIONS SHALL BE BOLTED OR WELDED.
ii. FIELD CONNECTIONS SHALL BE BOLTED WHERE POSSIBLE UNLESS NOTED OTHERWISE.
iii. USE DOUBLE ANGLE CONNECTIONS WHERE POSSIBLE UNLESS NOTED OTHERWISE.
iv. WHEN NO REACTIONS ARE INDICATED, DESIGN CONNECTIONS AS A SIMPLE SHEAR CONNECTION TO SUPPORT A REACTION VALUE EQUAL TO ONE HALF THE AISC TABULATED ALLOWABLE UNIFORM LOAD VALUE (6 KIPS MINIMUM)
G. FRAMING ACCESSORIES:
1. SHEAR CONNECTORS (HEADED STUD ANCHORS):
i. MATERIAL PROPERTIES:
a. ASTM A108 GRADES 1015-1020, AWS D1.1 TYPE A FOR DIA: 1/4" - 3/8"
b. ASTM A108 GRADES 1015-1020, AWS D1.1 TYPE B FOR DIA: 1/2" - 1"
ii. COATING PROPERTIES:
a. UNCOATED
b. ASTM B695 CLASS 50 (MECHANICALLY DEPOSITED ZINC COATING)
2. ANCHOR RODS:
i. MATERIAL PROPERTIES:
a. ASTM F1554 GRADE 55
ii. COATING PROPERTIES:
a. UNCOATED
b. ASTM A153 CLASS C (HOT-DIP GALVANIZED)
3. HEAVY HEX NUTS:
i. MATERIAL PROPERTIES:
a. ASTM A563
ii. COATING PROPERTIES:
a. MATCH MATING COMPONENTS
4. WASHERS:
i. MATERIAL PROPERTIES:
a. ASTM F436
ii. COATING PROPERTIES:
a. MATCH MATING COMPONENTS
5. PLATE WASHERS:
i. MATERIAL PROPERTIES:
a. SEE ITEM 5.1.D.5.1
ii. COATING PROPERTIES:
a. MATCH MATING COMPONENTS
6. HEADED STUD ANCHORS (FOR EMBEDS):
i. MATERIAL PROPERTIES:
a. ASTM A108 GRADES 1015-1020, AWS D1.1 TYPE A FOR DIA: 1/4" - 3/8"
b. ASTM A108 GRADES 1015-1020, AWS D1.1 TYPE B FOR DIA: 1/2" - 1"
ii. COATING PROPERTIES:
a. MATCH MATING EMBED
iii. CONNECTION TO EMBED:
a. MANUFACTURER TO PROVIDE AUTOMATIC STUD WELD
7. DEFORMED BAR ANCHORS (FOR EMBEDS):
i. MATERIAL PROPERTIES:
a. ASTM A496, AWS D1.1 TYPE C
ii. COATING PROPERTIES:
a. MATCH MATING EMBED
iii. CONNECTION TO EMBED:
a. MANUFACTURER TO PROVIDE AUTOMATIC STUD WELD
b. SHOP WELDING SHALL BE PERMITTED FOR ASTM A706 DEFORMED BAR ANCHORS. HOWEVER, E70 ELECTRODES ARE NOT PERMITTED FOR GRADE 60 ANCHORS.
1. FOR ANCHORS ORIENTED PERPENDICULAR TO ANCHORING PLATE, THE FOLLOWING MINIMUM ALL-AROUND FILLET WELDS SHALL BE PROVIDED USING E80 ELECTRODES:
#3: 1/4" #4: 1/4" #5: 5/16" #6: 3/8" #7: 7/16" #8: 1/2"
H. GENERAL - STEEL FRAMING:
1. NO SPLICES IN COLUMNS WILL BE PERMITTED UNLESS SPECIFICALLY NOTED ON DRAWINGS.
I. FABRICATION
1 SPLICING OF STRUCTURAL STEEL MEMBERS IS PROHIBITED WITHOUT PRIOR APPROVAL OF THE ENGINEER AS TO LOCATION AND TYPE OF SPLICE TO BE MADE. ANY MEMBER HAVING SPLICE NOT SHOWN AND DETAILED ON SHOP DRAWINGS WILL BE REJECTED.
J. ERECTION
1 ERECTION TOLERANCES OF ANCHOR BOLTS, EMBEDDED ITEMS, AND ALL STRUCTURAL STEEL UNLESS SPECIFIED OTHERWISE ON THE STRUCTURAL DRAWINGS SHALL CONFORM TO THE AISC CODE OF STANDARD PRACTICE.
2 FIELD CUTTING OF STRUCTURAL STEEL OR ANY FIELD MODIFICATIONS TO STRUCTURAL STEEL SHALL NOT BE MADE WITHOUT PRIOR APPROVAL OF THE ENGINEER.
3 CONTRACTOR SHALL PROTECT ANY UNPRIMED STRUCTURAL STEEL FROM DETRIMENTAL EFFECTS OF CORROSION, AS REQUIRED, UNTIL THE STEEL IS ENCLOSED AND PROTECTED BY THE NEW CONSTRUCTION.
4 HOT DIP GALVANIZE AFTER FABRICATION ALL STRUCTURAL STEEL ITEMS AND CONNECTIONS PERMANENTLY EXPOSED TO THE WEATHER, WHETHER SPECIFIED ON THE STRUCTURAL DRAWINGS OR NOT. SUCH ITEMS INCLUDE, BUT ARE NOT LIMITED TO:
a. SHELF ANGLES
b. PARAPET WALL SUPPORTING MEMBERS
c. WINDOW WASHING SUPPORT MEMBERS
d. ALL EMBEDDED PLATES IN CONCRETE
e. BUILDING CLADDING SUPPORT STEEL IN SPACE NOT AIR CONDITIONED AND/OR EXPOSED TO MOISTURE OUTSIDE THE EXTERIOR WATERPROOFING SURFACE IF ANY.
f. COOLING TOWER FRAMING AND SUPPORTS
g. COOLING TOWER SCREEN SUPPORT MEMBERS AND BRACES.
h. RAILING EXPOSED TO WEATHER.
i. EXAMINE THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR OTHER ITEMS REQUIRED TO BE HOT DIPPED GALVANIZED. GALVANIZE ALL NUTS, BOLTS, AND WASHERS USED IN CONNECTION WITH SUCH STEEL. FIELD WELDED CONNECTIONS SHALL HAVE WELDS PROTECTED WITH “Z.R.C. COLD GALVANIZING COMPOUND” AS MANUFACTURED BY Z.R.C. COMPANY.
5 GRIND SMOOTH ALL WELDS VISIBLE TO THE PUBLIC. GRIND OFF ALL WELD SPLATTER.
K. CONTRACTOR SHALL COORDINATE STRUCTURAL STEEL FIREPROOFING REQUIREMENTS. ALL INTERIOR STRUCTURAL STEEL, INCLUDING STEEL JOISTS, SCHEDULED OR INDICATED TO RECEIVE SPRAY APPLIED FIREPROOFING SHALL BE DELIVERED TO THE PROJECT SITE UNPRIMED. STEEL EXPOSED TO CORROSIVE CONDITIONS AFTER INSTALLATION SHALL BE PRIMED WITH A PROTECTIVE COATING WHICH DOES NOT DIMINISH THE BOND BETWEEN THE SPRAY APPLIED FIREPROOFING, AND THE STEEL SUBSTRATE. ANY PRIMER, AND/OR COATING APPLIED TO STRUCTURAL STEEL SHALL BE APPROVED FOR USE IN THE APPLICABLE U.L. FIRE RESISTANCE ASSEMBLY USED ON THE PROJECT.
L. FOR LOOSE LINTELS, MASONRY SHELF ANGLES AND OTHER SUCH ITEMS GENERALLY NOT SHOWN ON THE STRUCTURAL DRAWINGS, REFER TO THE ARCHITECTURAL DRAWINGS. SEE GENERAL NOTES ON LINTELS THIS SHEET FOR SIZES, REINFORCING, ETC.
M. STEEL COLUMNS BELOW GRADE SHALL BE ENCASED IN A MINIMUM OF 4" CONCRETE OR PAINTED WITH 2 COATS OF ASPHALTUM PAINT, UNLESS OTHERWISE SHOWN.
N. STEEL BEAMS NOT SPECIFED TO RECEIVE CAMBER SHALL BE ERECTED SUCH THAT ANY MINOR CAMBER INDUCED FROM ROLLING OR SHOP ASSEMBLY WILL BE UPWARD IN THE FINAL INSTALLED STATE
O. THE ERECTOR SHALL SHIM BETWEEN PARALLEL ROOF BEAMS AND JOISTS WITH DIFFERENTIAL MILL AND INDUCED CAMBERS FOR LEVEL DECK BEARING.
P. REFER TO THE DIVISION 5 STRUCTURAL STEEL SPECIFICATION OF THE PROJECT MANUAL FOR STRUCTURAL STEEL SURFACE PREPARATIONS AND PRIME PAINTING REQUIREMENTS.
Q. PROVIDE CAP PLATES/END PLATES TO CLOSE OFF EXPOSED, OPEN ENDS OF ALL TUBULAR MEMBERS, UNLESS NOTED. SEAL WELD WITH PARTIAL PENETRATION SQUARE GROOVE WELDS FOR WATERTIGHT CONDITION.

**5.3 STEEL DECKING**

A. REFER TO SPECIFICATION SECTION 053100 STEEL DECKING FOR ADDL INFO
B. STEEL DECKING SHALL COMPLY WITH STEEL DECK INSTITUTE SPECIFICATIONS
C. STEEL DECKING SHALL BE SIZED AS INDICATED ON DRAWINGS
D. STEEL DECKING SHALL BE FABRICATED IN CONTINUOUS PANELS BRIDGING FOUR SUPPORTS (SPANNING OVER THREE CONSECUTIVE SPANS) UNLESS NOTED OTHERWISE
E. STEEL DECKING SHALL BE FASTENED AS INDICATED ON DRAWINGS OR SPECIFICATIONS
F. STEEL ROOF DECKING:
1. ALL DESIGN AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH ANSI/SDI RD-2017
2. MATERIAL PROPERTIES:
i. ASTM A653 GRADE 50 MIN
3. COATING PROPERTIES:
i. ASTM A653 (ZINC)
G. SHEET STEEL FOR GALVANIZED ROOF DECK AND ACCESSORIES SHALL CONFORM TO ASTM A653, STRUCTURAL QUALITY, WITH A MINIMUM YIELD STRENGTH OF 33 KSI. GALVANIZING SHALL CONFORM TO ASTM A653 WITH A MINIMUM COATING OF {G60 OR G90} AS DEFINED IN A653.
H. SHEET STEEL FOR PRIME PAINTED ROOF DECK AND ACCESSORIES SHALL CONFORM TO ASTM A1008 WITH A MINIMUM YIELD STRENGTH OF 33 KSI.
I. ROOF DECK SHALL BE CONTINUOUS OVER FOUR OR MORE SUPPORTS.
J. PLACE DECK PANELS ON STRUCTURAL SUPPORTS AND ADJUST TO FINAL POSITION WITH ENDS LAPPED 2 INCHES OVER STRUCTURAL SUPPORTS. PROVIDE MINIMUM END BEARING OF 2 INCHES.
a. 0.1 TIMES THE BUILDING LESSER PLAN DIMENSION.
b. 0.4 TIMES THE EAVE HEIGHT
c. MINIMUM WITH OF 4 FEET.
K. ROOF DECK CONNECTIONS SHALL CONFORM TO THE REQUIREMENTS OF FACTORY MUTUAL CLASS 1-90 (DATA SHEET 1-28, JANUARY 2012). FOR CONNECTION PURPOSES, THE WIDTH OF THE ROOF CORNERS AND PERIMETER, INCLUDING RIDGES, IS DEFINED AS THE SMALLER OF:
L. POWER DRIVEN FASTENERS SHALL BE SELECTED BY THE CONTRACTOR FOR THE COMBINATIONS OF DECK GAUGE AND DECK SUPPORT MEMBER THICKNESS. SUBMIT PROPOSED FASTENERS WITH COMPLETE MANUFACTURER'S INFORMATION, INCLUDING DIAPHRAGM SHEAR VALUES FOR THE ENGINEER TO REVIEW.
M. PUDDLE WELDS SHALL BE 5/8" MINIMUM DIAMETER AND SHALL BE MADE THROUGH WELD WASHERS FOR DECKING LIGHTER THAN 22 GAUGE.
N. MECHANICAL, ELECTRICAL AND PLUMBING SYSTEMS SHALL NOT BE SUPPORTED BY THE METAL ROOF DECK.

### DIVISION 31 - EARTHWORK

**31.1 FOUNDATIONS AND OTHER EARTH BEARING SYSTEMS**

A. FOUNDATIONS AND OTHER EARTH BEARING SYSTEMS ARE DESIGNED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE INTERNATIONAL BUILDING CODE (IBC) 2015 EDITION
B. OTHER EARTH BEARING SYSTEMS:
1. CAST-IN-PLACE CONCRETE SLAB-ON-GRADE:
i. REFER TO SPECIFICATION SECTION 033000 CAST-IN-PLACE CONCRETE FOR ADDL INFO
ii. SIZES AND LOCATIONS AS SPECIFIED ON DRAWINGS.
iii. MATERIAL PROPERTIES AS SPECIFIED IN DIVISION 03.
iv. CONCRETE ELEMENTS ON NATIVE SOIL OR ENGINEERED FILL:
a. BEARING STRATUM SHALL COMPLY WITH THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC) 2015 EDITION
b. LOCATION SHALL BE ASSUMED AS TYPICAL UNLESS NOTED OTHERWISE.
c. SUBGRADE SHALL CONSIST OF 12 INCHES MINIMUM OF COMPACTED GRANULAR MATERIAL (MDOT CLASS II OR MDOT 21AA).
d. ALL MATERIALS TO BE COMPACTED STANDARD PROCTOR ASTM D698. TESTING LABORATORY TO VERIFY ADEQUACY OF SUBGRADE PREPARATION, FILL MATERIAL AND COMPACTION AS FOLLOWS: 95%
2. SITE PAVINGS, WALKS, AND AREAS OF GENERAL GRADING/BACKFILLING:
i. AS SPECIFIED BY CIVIL UNLESS NOTED OTHERWISE
C. SHALLOW FOUNDATIONS:
1. FOUNDATIONS SHALL BE PLACED AT ELEVATIONS SPECIFIED ON DRAWINGS. BASE OF SHALLOW FOUNDATIONS SHALL BE LOCATED A MINIMUM OF 42 INCHES BELOW ADJACENT DESIGN GRADES FOR FROST PROTECTION. SUBGRADE SHALL BE THAWED, IF FROZEN, TO A VERIFIED DEPTH MATCHING THAT REQUIRED FOR FROST PROTECTION.
2. CAST-IN-PLACE CONCRETE FOOTINGS, MATS, AND STRIPS:
i. REFER TO SPECIFICATION SECTION 033000 CAST-IN-PLACE CONCRETE FOR ADDL INFO
ii. SIZES AND LOCATIONS AS SPECIFIED ON DRAWINGS.
iii. MATERIAL PROPERTIES AS SPECIFIED IN DIVISION 03.
iv. CONCRETE ELEMENTS ON NATIVE SOIL OR ENGINEERED FILL:
a. BEARING STRATUM SHALL COMPLY WITH THE REQUIREMENTS OF THE INTERNATIONAL BUILDING CODE (IBC) 2015 EDITION
b. LOCATION SHALL BE ASSUMED AS TYPICAL UNLESS NOTED OTHERWISE.
c. ALLOWABLE DESIGN CAPACITIES:
1. GRAVITY BEARING (UNIFORM UNO) — 1500 PSF (NET)
2. SLIDING COEFFICIENT — 0.1
D. EXECUTION AND INSTALLATION OF VOID FORMS
1 VOID FORMS SHALL BE THE PRODUCT OF A REPUTABLE MANUFACTURER REGULARLY ENGAGED IN THE COMMERCIAL PRODUCTION OF CORRUGATED PAPER VOID FORM PRODUCTS.
2 PRODUCT SUBMITTALS MUST BE PROVIDED BY THE MANUFACTURER FOR EVIDENCE THAT PRODUCTS MEET THE REQUIREMENTS.
3 VOID FORM COMPOSITION SHALL BE OF CORRUGATED PAPER MATERIAL WITH A WAX COATED EXTERIOR AND AN INTERIOR FABRICATION OF A UNIFORM CELLULAR CONFIGURATION. IT SHALL BE COMPOSED OF COMPONENTS CONSTRUCTED OF NOT MORE THAN PARTIALLY WAX-IMPREGNATED MEDIUM PAPER, LAMINATED WITH MOISTURE RESISTANT ADHESIVE. VOID FORM CONSTRUCTED OF FULLY-WAXED IMPREGNATED PAPER IS NOT ACCEPTABLE DUE TO THE RESISTANCE TO MOISTURE DETERIORATION.
4 VOID FORMS MUST HAVE A DESIGNED STRENGTH TO SUSTAIN THE DEAD LOAD OF LIQUID CONCRETE PLUS NORMAL CONSTRUCTION LOADS UNTIL APPLIED LOADS CAN BE SUPPORTED BY THE CONCRETE STRUCTURE, WHILE MAINTAINING FULL VOID DEPTH AS INDICATED ON DRAWINGS. JOBSITE MOISTURE WILL RAPIDLY REDUCE THE ORIGINAL SUPPORTING STRENGTH.
5 VOID FORM MATERIAL SHALL BE DESIGNED TO LOSE ITS STRENGTH UPON CONTACT WITH SOIL MOISTURE BENEATH STRUCTURAL SLABS AND GRADE BEAMS. ADEQUATE ENVIRONMENTAL MOISTURE MUST BE AVAILABLE AND MAINTAINED IN THE VOIDED AREA TO ALLOW VOID FORMS TO INCORPORATE THIS MOISTURE AFTER THE SETTING OF CONCRETE.
6 GRADE BEAMS SUPPORTED BY CARTON FORMS, WHICH REQUIRE SOIL RETENTION PRODUCTS, SHALL BE FORMED RATHER THAN CAST DIRECTLY AGAINST THE SOIL.
7 PREPARE GROUND SURFACE ON AN EVEN PLANE WITH NO PROJECTIONS THAT WILL POINT LOAD CARTON FORMS.
8 SUBSTRATE HAVING CAPILLARY BREAKS MAY DENY THE VOID FORM AN ADEQUATE AMOUNT OF MOISTURE ABSORPTION NEEDED TO SOFTEN. IF THIS CONDITION EXISTS, SPECIAL HANDLING MAY BE REQUIRED IF THE VOID MATERIAL MUST DEGRADE IN A SPECIFIC TIME PERIOD.
9 UPON REQUEST, A MANUFACTURER'S REPRESENTATIVE SHALL BE AVAILABLE TO ATTEND A PRE-CONSTRUCTION MEETING TO DISCUSS PROPER PREPARATION AND VOID FORM INSTALLATION TECHNIQUES.
10 INSTALL VOID FORM SYSTEM IN STRICT CONFORMANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
11 THERE SHOULD BE POSITIVE DRAINAGE PROVIDED AWAY FROM THE STRUCTURE TO PREVENT ACCUMULATION OF WATER NEAR THE FOUNDATION.
12 VOID FORM PRODUCTS MUST BE KEPT DRY PRIOR TO PLACEMENT OF CONCRETE. PROTECT VOID FORMS FROM RAIN AND ON-SITE SEEPAGE. DO NOT INSTALL VOID FORMS ON A WET SUB-GRADE OR DURING INCLEMENT WEATHER.
13 CARTON FORMS SHOULD NOT BE PLASTIC WRAPPED NOR PLACED IN POLY BAGS.
14 VOID FORMS HAVING QUESTIONABLE MOISTURE CONTENT OR OBVIOUS STRUCTURAL DAMAGE SHALL BE REMOVED AND BE REPLACED PRIOR TO PLACEMENT OF CONCRETE. THE CONTRACTOR MUST ENSURE DURING CONCRETE PLACEMENT THAT THE CARTON FORMS HAVE NOT COLLAPSED.
15 VOID FORM MUST BE THE SAME WIDTH OF THE GRADE BEAM. TRAPEZOIDAL FORMS MAY NOT BE USED.
16 INSTALL CORRUGATED PRODUCTS THAT ARE PRE-MANUFACTURED, SEALED VOID FORMS, WITH CURVED, RADIAL, VERTICALLY SUPPORTED EDGES ADJACENT TO ALL DRILLED PIERS. THIS WILL PREVENT DAMAGE TO THE INTERIOR SUPPORTING NETWORK CAUSED BY FIELD-CUTTING. IF PIER INTERSECTIONS AT SLABS/BEAMS REQUIRE ALTERING DUE TO AWKWARD FIELD CONDITIONS, PRODUCTS MANUFACTURED FOR THIS SPECIFIC PURPOSE (WITH APPROVED SUBMITTAL) IS ACCEPTABLE FOR FIELD-CUTTING OR PRODUCT MODIFICATION.
17 THE UPPER 2’ PORTION OF EACH DRILLED PIER MUST BE PROPERLY FORMED AND CONTAINED TO THE DESIGNATED DIAMETER. THE PLACEMENT OF CONCRETE TO THE REQUIRED ELEVATION CAN BE DONE BY HAND PLACEMENT METHODS.
18 ALL TOP SURFACES OF SLAB AND GRADE BEAM VOID FORMS MUST BE PROTECTED BY A LAYER OF ¼” THICK PROTECTION BOARD IN ORDER TO DISTRIBUTE POINT LOADING, BRIDGE SMALL GAPS, AND PROTECT VOID FORMS FROM PUNCTURE AND OTHER DAMAGE DURING CONSTRUCTION.
19 SOIL RETENTION PRODUCTS SHALL BE COMPOSED OF LIGHTWEIGHT, PLASTIC MATERIALS THAT ARE NOT ADVERSELY AFFECTED BY MOISTURE. THEY MUST BE FLEXIBLE, IMPACT RESISTANT AND HAVE SUFFICIENT STRENGTH TO RESIST LATERAL LOADS APPLIED BY SOIL.
20 SOIL RETAINERS MAY BE INSTALLED IN STRAIGHT, CLEAN TRENCHES AT SIDES OF VOID FORMS PRIOR TO CONCRETE PLACEMENT. THE GAPS BETWEEN THE TRENCH AND RETAINERS MUST BE PROPERLY POSITIONED OR BACKFILLED PRIOR TO THE PLACEMENT OF CONCRETE. DO NOT CAST THE SIDES OF CONCRETE BEAMS DIRECTLY AGAINST THE SOIL.
21 CONCRETE GRADE BEAMS THAT ARE WOOD/METAL FORMED COMMONLY REQUIRE SOIL RETAINERS TO BE VERTICALLY POSITIONED A MINIMUM OF 6” ABOVE THE VOID MATERIAL AND 4”-6” BELOW AT BOTH SIDES. THESE DIMENSIONS MAY VARY ON VOID SPACES IN EXCESS OF 12” INCHES OR ENGINEERING REQUIREMENTS. IF REQUIRED, THEY MAY BE AFFIXED TO THE CONCRETE BEAM BY ADHESIVE, PIN/WASHER/LOAD, OR CONCRETE HARD NAIL/WASHER @ 18” – 24” O.C.
22 RETAINERS, (IMPACT-RESISTANT, WHITE (CPPP) POLYPROPYLENE, OR HIGH DENSITY, BLACK (HDPE) POLYETHYLENE PLASTIC) – ALLOW COMPACTION EQUIPMENT TO OPERATE DIRECTLY ADJACENT TO WALL OR SLAB. EITHER PRODUCT IS DESIGNED TO HELP DETER RAPID MOISTURE LOSS AROUND THE PERIMETER OF A SLAB AND PREVENTS THE MIGRATION OF BACKFILL MATERIAL INTO THE VOIDED AREA. THE BLACK RETAINER (HDPE) SHOULD EXTEND AT LEAST 2”- 4” ABOVE THE TOP OF THE VOID FORM AND 3” IN A DUG GROOVE AWAY FROM WALL WHEN POSITIONED AT AN ANGLE.

**31.3 GENERAL - EARTHWORK**

A. ALL FOUNDATIONS AND OTHER EARTH BEARING SYSTEMS, PERMANENT LATERAL EARTH RETAINING ELEMENTS, EARTHWORK, EXCAVATION, BACKFILL, AND SUBGRADE DRAINAGE SHALL BE SUBJECT TO OBSERVATION BY GEOTECHNICAL ENGINEER WHOSE APPROVAL IS REQUIRED PRIOR TO PLACEMENT OF OTHER CONSTRUCTION MATERIALS OR CONCRETE. CONTRACTOR SHALL COORDINATE THE CONSTRUCTION SCHEDULE WITH THE GEOTECHNICAL ENGINEER TO FACILITATE OBSERVATION.
B. CONTRACTOR SHALL DETERMINE IN FIELD HORIZONTAL AND VERTICAL LOCATION OF ANY EXISTING UTILITY LINES AND/OR APPURTENANCES AND ADVISE ENGINEER OF ANY CONFLICTS WITH NEW STRUCTURE PRIOR TO CONSTRUCTION. DO NOT DESTROY ANY EXISTING UNDERGROUND STRUCTURES UNLESS AUTHORIZATION IS OBTAINED PRIOR TO CONSTRUCTION.
C. CONTRACTOR SHALL MAINTAIN SAFETY IN CONNECTION WITH EARTH SLOPES CAUSED BY TRENCHING, EXCAVATION, AND/OR FILL DURING CONSTRUCTION. WHERE HEIGHT OF SUCH SLOPES WILL EXCEED 8 FEET OR AS SPECIFIED ON DRAWINGS, SUBMIT FOR RECORD LAYOUT DRAWINGS INDICATING DESIGN OF TEMPORARY EARTH RETENTION SYSTEM WHICH WILL BE IMPLEMENTED (SUCH AS SHEETING AND SHORING OR OTHER METHODS), PREPARED, SIGNED, AND SEALED BY A GEOTECHNICAL AND/OR STRUCTURAL ENGINEER REGISTERED IN STATE WHICH PROJECT IS LOCATED. REFER TO SPECIFICATION SECTION 315000 EXCAVATION SUPPORT AND PROTECTION FOR ADDL INFO.
D. ANY UNUSUAL SOIL CONDITIONS (WATER, SOFT LAYERS, ODORS, ETC.) ENCOUNTERED DURING EXCAVATION SHOULD BE IMMEDIATELY BROUGHT TO ATTENTION OF THE GEOTECHNICAL ENGINEER.

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GENERAL NOTES

| DATE | REMARKS |
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SPECIAL INSPECTIONS

1. Special Inspections shall be performed in accordance with Chapter 17 of the 2015 International Building Code (IBC) by a Special Inspector hired by the Owner to perform the Special Inspections listed below. The Special Inspector shall be qualified by an approved agency according to the City's building official to perform the special inspections for which they will be undertaking. The Contractor shall coordinate with and notify the Special Inspector of all tests. The Special Inspector shall be responsible to verify that the items detailed in the Construction Documents were built accordingly and shall prepare, sign, and furnish inspection reports to the building official and the Architect for all time spent at the site. The Inspector shall bring discrepancies to the immediate attention of the General Contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the building official and to the Architect prior to the completion of that phase of the work. These special inspections are in addition to the other inspections listed in these Structural Notes or Project Specifications.

2. Where structural load-bearing members and assemblies are shop fabricated, the Special Inspector shall verify that the fabricator maintains detailed fabrication and quality control procedures that provide a basis for inspection control of the workmanship and the fabricator's ability to conform to the Construction Documents and Referenced Standards, unless the fabricator is registered and approved to perform such work without special inspection.

VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION (IBC TABLE 1705.3)

| SPECIAL INSPECTION REQUIRED | VERIFICATION AND INSPECTION | INSPECTION FREQUENCY | | REFERENCED STANDARD | IBC REFERENCE |
|---|---|---|---|---|---|
| | | CONTINUOUS | PERIODIC | | |
| YES | 1. Inspection of reinforcing steel, including prestressing tendons, and placement. | -- | X | ACI 318 Ch. 20, 25.2, 25.3, 26.5.1-26.5.3 | 1908.4 |
| | 2. Reinforcing bar welding: | | | AWS D1.4 ACI 318: 26.5.4 | -- |
| YES | a. Verify weldability of reinforcing bars other than ASTM A706 | -- | X | | |
| YES | b. Inspect single-pass fillet welds, maximum 5/16" | -- | X | | |
| YES | c. Inspect all other welds. | X | -- | | |
| YES | 3. Inspection of anchors cast in concrete. | -- | X | ACI 318: 17.8.2 | -- |
| | 4. Inspection of post-installed anchors in hardened concrete. | | | | -- |
| YES | a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. | X | -- | ACI 318: 17.8.2.4 | |
| YES | b. Mechanical anchors and adhesive anchors not defined in 4.a. | -- | X | ACI 318: 17.8.2 | |
| YES | Special Inspector must be certified by ACI/CRSI "Adhesive Anchor Installer. A report must be submitted to the licensed design professional and building official documenting, stating how each anchor was installed, including the Manufacturer's Printed Installation Instructions per ACI 318 | -- | -- | ACI 318: 17.8.2.2 17.8.2.4 | |
| YES | 5. Verify use of required design mix. | -- | X | ACI 318: Ch. 19, 26.4.3, 26.4.4 | 1904.1, 1904.2, 1908.2, 1908.3 |
| YES | 6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete. | X | -- | ASTM C172 ASTM C31 ACI 318: 26.4.5, 26.12 | 1908.10 |
| YES | 7. Inspect concrete and shotcrete placement for proper application techniques. | X | -- | ACI 318: 26.4.5 | 1908.6, 1908.7, 1908.8 |
| YES | 8. Verify maintenance of specified curing temperature and techniques. | -- | X | ACI 318: 26.4.7-26.4.9 | 1908.9 |
| | 9. Inspection of prestressed concrete: | | | | |
| NO | a. Application of prestressing forces | X | -- | ACI 318: 26.9.2.1 | -- |
| NO | b. Grouting of bonded prestressing tendons | X | -- | ACI 318: 26.9.2.3 | |
| NO | 10. Inspect erection of precast concrete members. | -- | X | ACI 318: 26.8 | -- |
| NO | 11. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs. | -- | X | ACI 318: 26.10.2 | -- |
| YES | 12. Inspect formwork for shape, location and dimensions of the concrete member being formed. | -- | X | ACI 318: 26.10.1(b) | -- |

VERIFICATION AND INSPECTION OF SOILS (IBC TABLE 1705.6)

| SPECIAL INSPECTION REQUIRED | VERIFICATION, INSPECTION AND TESTING | INSPECTION FREQUENCY | |
|---|---|---|---|
| | | CONTINUOUS | PERIODIC |
| NO | 1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity. | -- | X |
| YES | 2. Verify excavations are extended to proper depth and have reached proper material. | -- | X |
| YES | 3. Perform classification and testing of compacted fill materials. | -- | X |
| YES | 4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill. | X | -- |
| YES | 5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly. | -- | X |

VERIFICATION AND INSPECTION TASKS FOR WELDING OF STRUCTURAL STEEL[1] (AISC 360-10 Table N5.4)

| SPECIAL INSPECTION REQUIRED | VERIFICATION AND INSPECTION | INSPECTION FREQUENCY | | REFERENCED STANDARD | IBC REFERENCE |
|---|---|---|---|---|---|
| | | CONTINUOUS | PERIODIC | | |
| | 1. Inspection tasks prior to welding: | | | | |
| YES | a. Welding procedure specifications (WPSs) available | X | -- | AISC 360-10 N5.4-1: AWS D1.1 | 1705.2.1 |
| YES | b. Manufacturer certifications for welding consumables available | X | -- | | |
| YES | c. Material identification (type/grade) [2] | -- | X | | |
| YES | d. Welder identification system [2] | -- | X | | |
| YES | e. Fit-up of groove welds (including joint geometry) [2]<br>1) Joint preparation<br>2) Dimensions (alignment, root opening, root face, bevel)<br>3) Cleanliness (condition of steel surfaces)<br>4) Tacking (tack weld quality and location)<br>5) Backing type and fit (if applicable) | -- | X | | |
| YES | f. Configuration and finish of access holes. [2] | -- | X | | |
| YES | g. Fit-up of fillet welds [2]<br>1) Dimensions (alignment, gaps at root)<br>2) Cleanliness (condition of steel surfaces)<br>3) Tacking (tack weld quality and location) | -- | X | | |
| YES | h. Check welding equipment | -- | X | | |
| | 2. Inspection tasks during welding: | | | | |
| YES | a. Use of qualified welders | -- | X | AISC 360-10 N5.4-2: AWS D1.1 | 1705.2.1 |
| YES | b. Control and handling of welding consumables [2]<br>1) Packaging<br>2) Exposure control | -- | X | | |
| YES | c. No welding over cracked tack welds [2] | -- | X | | |
| YES | d. Environmental conditions [2]<br>1) Wind speed within limits<br>2) Precipitation and temperature | -- | X | | |
| YES | e. WPS followed [2]<br>1) Settings on weld equipment<br>2) Travel speed<br>3) Selected welding materials<br>4) Shielding gas type/flow rate<br>5) Preheat applied<br>6) Interpass temperature maintained (min./max.)<br>7) Proper position (F, V, H, OH) | -- | X | | |
| YES | f. Welding techniques [2]<br>1) Interpass and final cleaning<br>2) Each pass within profile limitations<br>3) Each pass meets quality requirements | -- | X | | |
| | 3. Inspection tasks after welding: | | | | |
| YES | a. Welds cleaned | -- | X | AISC 360-10 N5.4-2: AWS D1.1 | 1705.2.1 |
| YES | b. Size, length and location of welds | X | -- | | |
| YES | c. Welds meet visual acceptance criteria<br>1) Crack prohibition<br>2) Weld/base-metal fusion<br>3) Crater cross section<br>4) Weld profiles<br>5) Weld size<br>6) Undercut<br>7) Porosity | X | -- | | |
| YES | d. Arc strikes | X | -- | | |
| YES | e. k-area [3] | X | -- | | |
| YES | f. Backing removed and weld tabs removed (if required) | X | -- | | |
| YES | g. Repair activities | X | -- | | |
| YES | h. Document acceptance or rejection of welded joint or member | X | -- | | |

1. Inspection tasks noted in this table are the responsibility of the Special Inspector or Quality Assurance Inspector (QAI). The fabricator and erector are responsible for all inspection tasks indicated in AISC 360-10 Section N5 and assigned to the Quality Control Inspector (QCI)
2. Inspection tasks may be coordinated with the fabricator or erector's Quality Control Inspector (QCI) where indicated with this footnote. All other tasks shall be performed by the Special Inspector.
3. When welding of doubler plates, continuity plates or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3 in. (75 mm) of the weld.

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SPECIAL INSPECTIONS

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FOUNDATION NOTES:

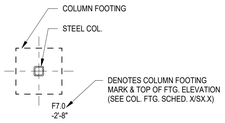
1. FINISH FLOOR ELEVATION = 0'-0", UNLESS NOTED OTHERWISE.
2. REFER TO THE ARCHITECTURAL DRAWINGS FOR EXACT LOCATIONS OF FLOOR RECESSES, DROPS AND SLOPES NOT DIMENSIONED ON PLAN. REFER TO MECHANICAL, ELECTRICAL, AND PLUMBING DRAWINGS FOR LOCATION AND DIMENSIONS OF FLOOR PENETRATIONS NOT DIMENSIONED ON PLAN. CONTRACTOR TO COORDINATE.
3. CENTERLINES OF FOUNDATIONS NOT SPECIFICALLY LOCATED ON PLAN BY NOTE OR DIMENSION SHALL BE LOCATED AS FOLLOWS:

   A. SUPPORTING FREESTANDING COLUMNS: CENTERLINES OF COLUMN.

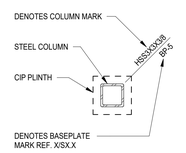
   B. SUPPORTING GRADEBEAMS AND WALLS: CENTERLINE OF GRADEBEAM OR WALL IN ONE DIRECTION, GRID OR AS NOTED IN OTHER DIRECTION. AT CORNER CONDITIONS: CENTERLINES OF GRADEBEAMS OR WALLS.

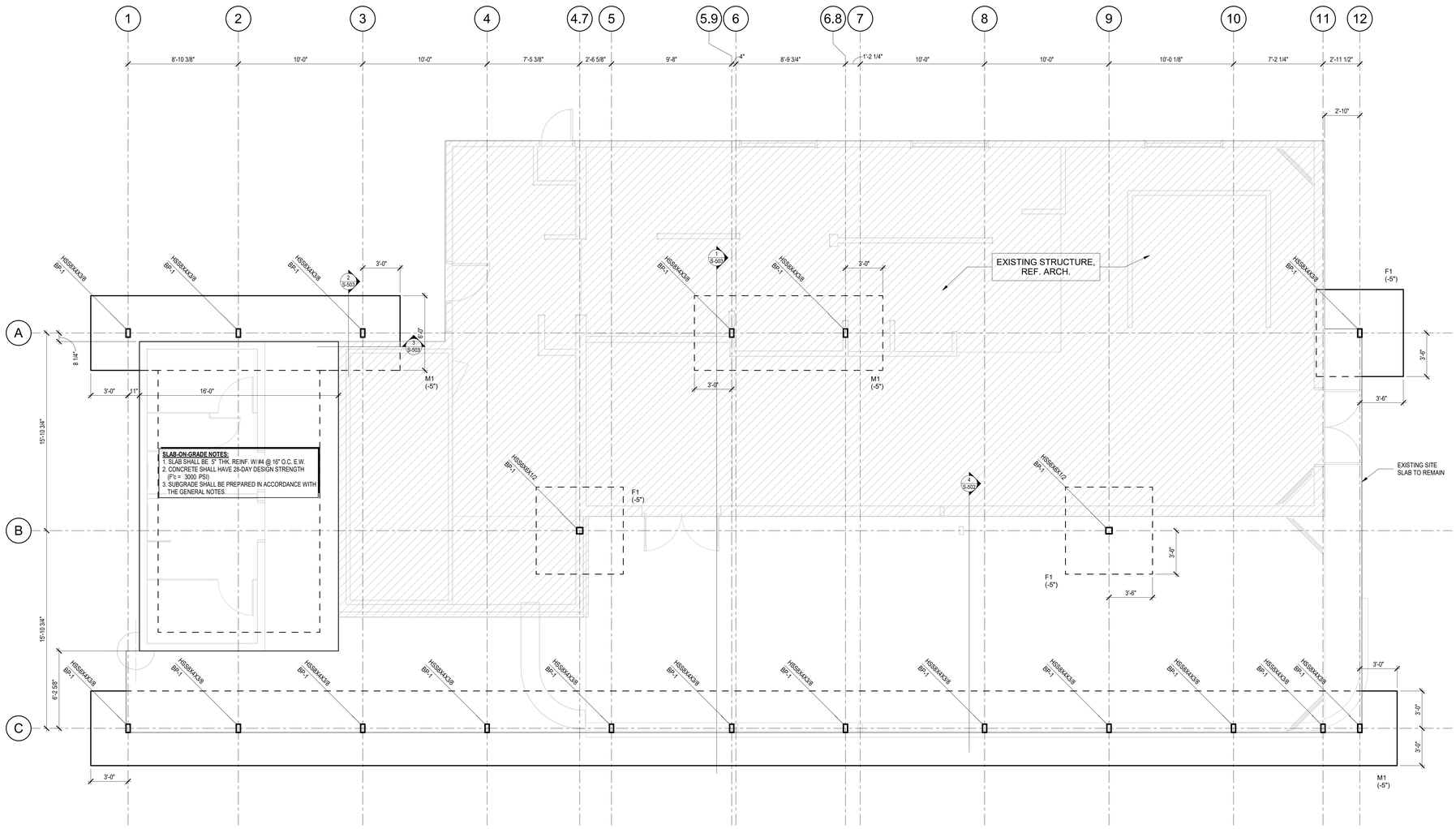
   C. COLUMNS EMBEDED IN GRADEBEAMS OR WALLS (PILASTERS): CENTERLINES OF THE COLUMN.

ISOLATED FOOTING NOTES:




STEEL COLUMN NOTES:




## 1 FOUNDATION PLAN

SCALE: 1/4" = 1'-0"

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# WESTLAKE EXPANSION

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FOUNDATION PLAN

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STEEL FRAMING NOTES:

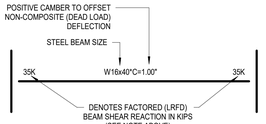
1. REF. SX.X FOR STRUCTURAL NOTES, DESIGN DATA, SCHEDULES & LEGENDS.
2. ALL CONTRACTORS ARE REQUIRED TO COORDINATE THEIR WORK WITH ALL DISCIPLINES TO AVOID CONFLICTS. THE MECHANICAL, ELECTRICAL, AND PLUMBING ASPECTS ARE NOT IN THE SCOPE OF THESE DRAWINGS. THEREFORE, ALL REQUIRED MATERIALS AND WORK MAY NOT BE INDICATED.
3. ALL ELEVATIONS ARE REFERENCED FROM THE FIRST FLOOR FINISHED FLOOR ELEVATION +0'-0". REF CIVIL DWGS.
4. REF. ARCH. DRAWINGS. FOR ALL DIMENSIONS NOT SHOWN. CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES.
5. COORDINATE EXACT SIZE & LOCATION OF ANY MECHANICAL OPENINGS IN FLOOR SLAB, ROOF DECK, OR WALLS WITH THE M.E.P. CONTRACTOR. LOCATION & SIZE OF ALL DUCT OPENINGS, GRILLS, ETC. SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
6. ALL ELEVATIONS SHOWN ON PLAN INDICATE TOP OF STEEL BEAM UNLESS NOTED OTHERWISE.
7. PROVIDE FRAMES AT ALL ROOF DRAINS, ROOF HATCHES & OTHER ROOF OPENINGS PER TYPICAL DETAILS ON SX.X. COORDINATE EXACT NUMBER, LOCATIONS & DIMENSIONS WITH THE APPROPRIATE CONTRACTORS & THE ARCH. & M.E.P. DRAWINGS.
8. WIDE-FLANGE BEAM & GIRDER NOTATION:BEAM REACTIONS SHOWN IN KIPS (LRFD / FACTORED LOADS) TO BE USED FOR DESIGN OF SHEAR CONNECTION BY STEEL FABRICATOR. SIMPLE SPAN CONNECTIONS FOR BEAMS & GIRDERS LESS THAN 10 FEET IN LENGTH AND WITH NO REACTION SHOWN SHALL BE DESIGNED FOR 10 KIPS MINIMUM. SEE STEEL CONNECTION NOTES ON SHEET SX.X FOR ADDITIONAL INFORMATION.

(R) — DENOTES 18 GA. 2.0D DOVETAIL STEEL ROOF DECK. MAX DECK SPAN IS 11'-0" BETWEEN SUPPORTS. FASTEN DECK TO STRUC. WITH HILTI X-ENP19 PAF AT 24 5/4 PATTERN WITH #10 TEK SCREWS SIDE LAPS AT 8" O.C., TYP.

F.F. — DENOTES FIN. FLOOR

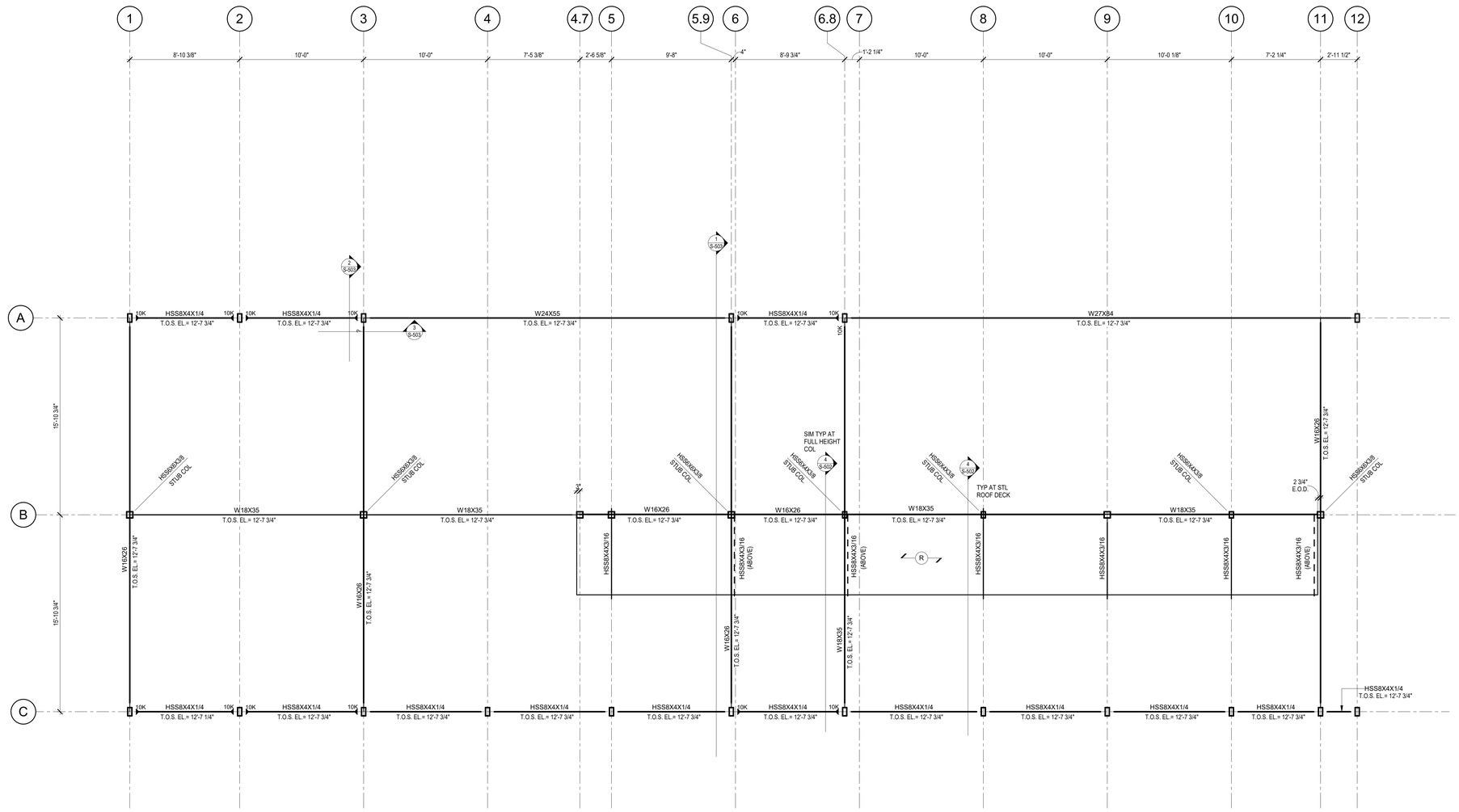
T.O.S. EL. — DENOTES TOP OF STEEL, SLAB, PIER, ETC.

DENOTES BEAM-TO-COLUMN MOMENT CONNECTION. REF. 1S/S-500 AND SPECIFIC SECTIONS & DETAILS FOR ADD'L INFO.




NOTE:
1. FOR MOMENT CONNECTIONS BETWEEN DIFFERENT-SIZED BEAMS, DESIGN CONNECTIONS FOR MAXIMUM MOMENT OF SMALLER BEAM
2. FOR BEAMS LESS THAN 8 FEET LONG WITH NO REACTION SHOWN ON PLAN, DESIGN CONNECTION FOR 10K SHEAR REACTION (UNFACTORED/ASD)
3. * INDICATES REQUIRED BOTTOM FLANGE BRACING. REFER SX.X

TYPICAL BEAM DIAGRAM




**1** FRAMING PLAN
SCALE: 1/4" = 1'-0"

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WGI
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Phone: 214.307.4797
TX Registered Engineering Firm F-15085
STATE OF TEXAS
CONRAD M. LOVEJOY
124302
LICENSED
PROFESSIONAL ENGINEER
3/30/2022

# WESTLAKE EXPANSION

5902 BEE CAVE RD.
WEST LAKE HILLS, TX 78746

LOW FRAMING PLAN

| REMARKS | DATE |
|---|---|

| | |
|---|---|
| PA/PM: | Approver |
| DRAWN BY.: | Author |
| JOB NO.: | xxxx.xx.xxx |

SHEET
S-210

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BIM 360://7723.00 - Hat Creek Westlake - R19/7739.00 - HAT CREEK WESTLAKE - EXPANSION - R19.rvt

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STEEL FRAMING NOTES:

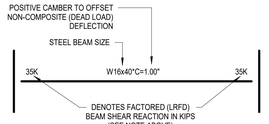
1. REF. SX.X FOR STRUCTURAL NOTES, DESIGN DATA, SCHEDULES & LEGENDS.
2. ALL CONTRACTORS ARE REQUIRED TO COORDINATE THEIR WORK WITH ALL DISCIPLINES TO AVOID CONFLICTS. THE MECHANICAL, ELECTRICAL AND PLUMBING ASPECTS ARE NOT IN THE SCOPE OF THESE DRAWINGS. THEREFORE, ALL REQUIRED MATERIALS AND WORK MAY NOT BE INDICATED.
3. ALL ELEVATIONS ARE REFERENCED FROM THE FIRST FLOOR FINISHED FLOOR ELEVATION +0'-0". REF CIVIL DWGS.
4. REF. ARCH. DRAWINGS. FOR ALL DIMENSIONS NOT SHOWN. CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION AND IMMEDIATELY NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES.
5. COORDINATE EXACT SIZE & LOCATION OF ANY MECHANICAL OPENINGS IN FLOOR SLAB, ROOF DECK, OR WALLS WITH THE M.E.P. CONTRACTOR. LOCATION & SIZE OF ALL DUCT OPENINGS, GRILLS, ETC. SHALL BE VERIFIED PRIOR TO CONSTRUCTION.
6. ALL ELEVATIONS SHOWN ON PLAN INDICATE TOP OF STEEL BEAM UNLESS NOTED OTHERWISE.
7. PROVIDE FRAMES AT ALL ROOF DRAINS, ROOF HATCHES & OTHER ROOF OPENINGS PER TYPICAL DETAILS ON S.X.X. COORDINATE EXACT NUMBER, LOCATIONS & DIMENSIONS WITH THE APPROPRIATE CONTRACTORS & THE ARCH. & M.E.P. DRAWINGS.
8. WIDE-FLANGE BEAM & GIRDER NOTATION/BEAM REACTIONS SHOWN IN KIPS (LRFD / FACTORED LOADS) TO BE USED FOR DESIGN OF SHEAR CONNECTION BY STEEL FABRICATOR. SIMPLE SPAN CONNECTIONS FOR BEAMS & GIRDERS LESS THAN 10 FEET IN LENGTH AND WITH NO REACTION SHOWN SHALL BE DESIGNED FOR 10 KIPS MINIMUM. SEE STEEL CONNECTION NOTES ON SHEET SX.X FOR ADDITIONAL INFORMATION.

(R) — DENOTES 18 GA. 2.0D DOVETAIL STEEL ROOF DECK. MAX DECK SPAN IS 11'-0" BETWEEN SUPPORTS. FASTEN DECK TO STRUC. WITH HILTI X-ENP19 PAF AT 24 5/4 PATTERN WITH #10 TEK SCREWS SIDE LAPS AT 8" O.C., TYP.

F.F. — DENOTES FIN. FLOOR

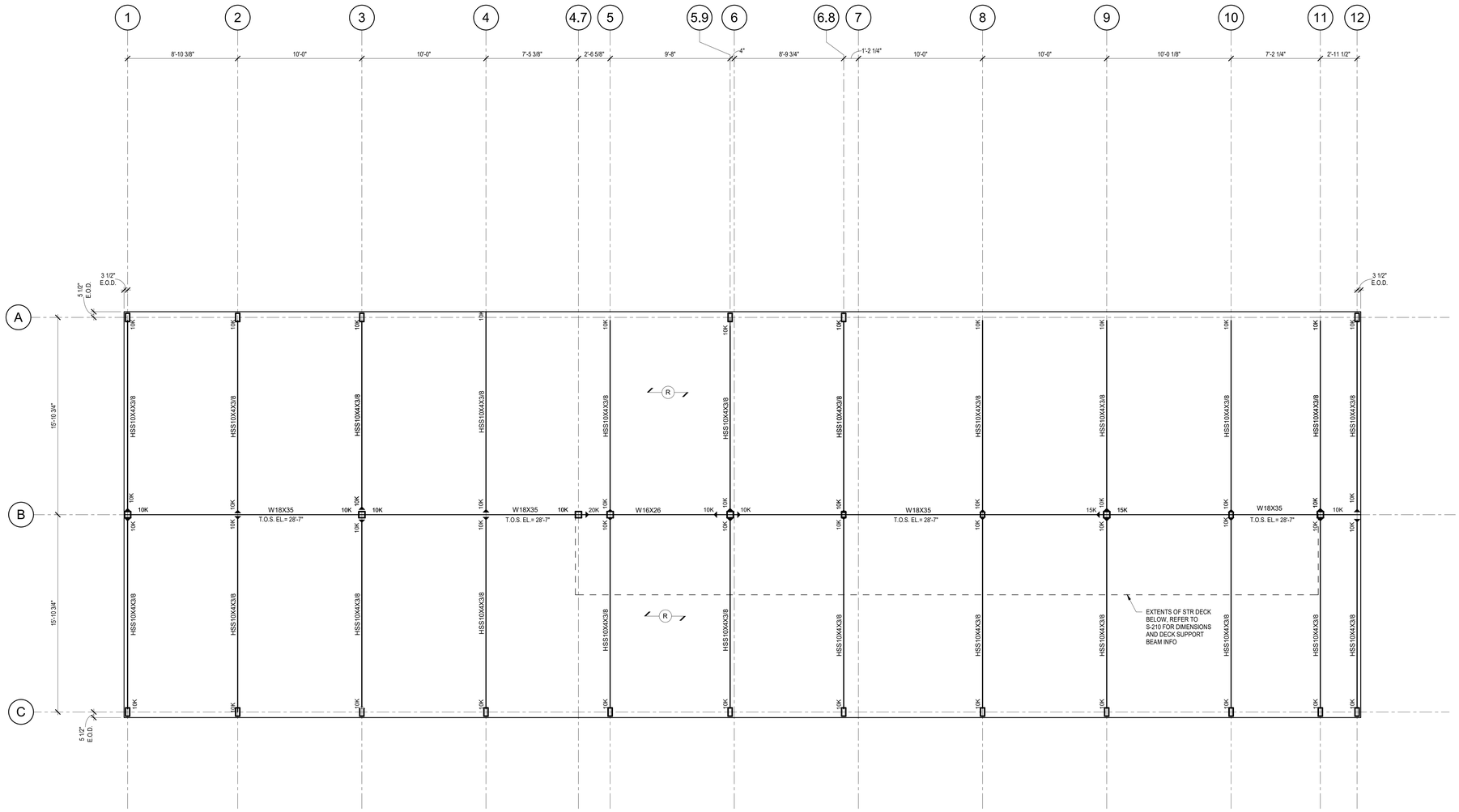
T.O.S. EL. — DENOTES TOP OF STEEL, SLAB, PIER, ETC.

DENOTES BEAM-TO-COLUMN MOMENT CONNECTION. REF. 15/S-500 AND SPECIFIC SECTIONS & DETAILS FOR ADD'L INFO.




NOTE:
1. FOR MOMENT CONNECTIONS BETWEEN DIFFERENT-SIZED BEAMS, DESIGN CONNECTIONS FOR MAXIMUM MOMENT OF SMALLER BEAM
2. FOR BEAMS LESS THAN 8 FEET LONG WITH NO REACTION SHOWN ON PLAN, DESIGN CONNECTION FOR 10K SHEAR REACTION (UNFACTORED/ASD)
3. * INDICATES REQUIRED BOTTOM FLANGE BRACING. REFER SX.X

TYPICAL BEAM DIAGRAM




## 1 FRAMING PLAN

SCALE: 1/4" = 1'-0"

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LICENSED
PROFESSIONAL ENGINEER
12/31/2022

# WESTLAKE EXPANSION

5902 BEE CAVE RD.
WEST LAKE HILLS, TX 78746

HIGH FRAMING PLAN

| REMARKS | DATE |
|---|---|
| | |

| | |
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| DRAWN BY.: | Author |
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| Lap Splices at Slabs/Walls* (Fy = 60 ksi) | | | | |
|---|---|---|---|---|
| Rebar Size | Class A Splice | | Class B Splice | |
| | Top Bars | Other Bars | Top Bars | Other Bars |
| #3 | 1'-0" | 1'-0" | 1'-4" | 1'-4" |
| #4 | 1'-7" | 1'-3" | 2'-1" | 1'-8" |
| #5 | 2'-4" | 1'-10" | 3'-1" | 2'-5" |
| #6 | 3'-1" | 2'-5" | 4'-1" | 3'-2" |
| #7 | 5'-0" | 3'-11" | 6'-6" | 5'-2" |
| #8 | 6'-2" | 4'-9" | 8'-1" | 6'-3" |
| #9 | 7'-6" | 5'-10" | 9'-9" | 7'-7" |
| #10 | 9'-0" | 7'-0" | 11'-9" | 9'-2" |
| #11 | 10'-7" | 8'-2" | 13'-10" | 10'-8" |

* MINIMUM CONCRETE CLEAR COVER = 3/4"

| Lap Splices at Beams* (Fy = 60 ksi) | | | | |
|---|---|---|---|---|
| Rebar Size | Class A Splice | | Class B Splice | |
| | Top Bars | Other Bars | Top Bars | Other Bars |
| #3 | 1'-0" | 1'-0" | 1'-4" | 1'-4" |
| #4 | 1'-3" | 1'-0" | 1'-8" | 1'-4" |
| #5 | 1'-7" | 1'-3" | 2'-1" | 1'-8" |
| #6 | 1'-11" | 1'-6" | 2'-6" | 2'-0" |
| #7 | 2'-9" | 2'-2" | 3'-7" | 2'-10" |
| #8 | 3'-3" | 2'-6" | 4'-3" | 3'-3" |
| #9 | 4'-1" | 3'-2" | 5'-4" | 4'-2" |
| #10 | 5'-0" | 3'-11" | 6'-6" | 5'-2" |
| #11 | 6'-0" | 4'-8" | 7'-10" | 6'-1" |

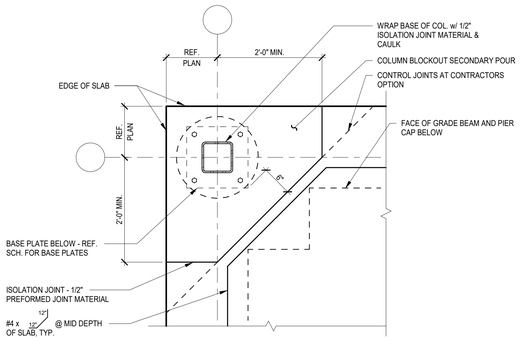
* MINIMUM CONCRETE CLEAR COVER = 1 7/8"

NOTES:

1. TOP BARS ARE HORIZONTAL BARS SO THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR. HORIZONTAL BARS IN WALLS ARE TO BE PROVIDED WITH LAPS AS REQUIRED FOR TOP BARS.
2. EXCEPT AS OTHERWISE INDICATED ON THE DRAWINGS, LAP SPLICE LENGTHS SHALL BE NO LESS THAN (NO MINUS TOLERANCE) SHOWN IN THE TABLES ABOVE.
3. LAP SPLICES SHALL NOT BE MADE AT POINTS OF MAXIMUM STRESS, AS DETERMINED BY THE ENGINEER.
4. SPLICES SHALL NOT BE SPACED CLOSER THAN 6" ON CENTER.
5. ONLY MECHANICAL SPLICES ARE ACCEPTABLE FOR #14 & #18 BARS. MECHANICAL SPLICE SHALL DEVELOP AT LEAST 125 PERCENT OF SPECIFIED YIELD STRENGTH OF BAR. WHERE #14 OR #18 BAR IS SPLICED WITH #11 BAR OR SMALLER, PROVIDE SPLICE LENGTH SPECIFIED FOR SMALLER BAR.
6. FOR EPOXY COATED BARS, THE LAP SPLICE LENGTH TABULATED ABOVE SHALL BE INCREASED BY MULTIPLYING THE APPROPRIATE LENGTH BY 1.5.
7. "CONCRETE CLEAR COVER" DIMENSIONS NOTED ARE DIMENSIONS FROM EDGE OF SPLICED BAR TO NEAREST EDGE OF CONCRETE. CONTACT ENGINEER FOR REVISED SPLICE LENGTHS IF MINIMUM COVER DIMENSIONS ARE NOT PROVIDED.

## 14 TYPICAL LAP SPLICE SCHEDULES

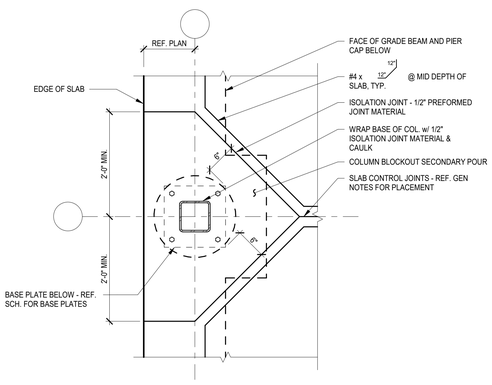
NOT TO SCALE




NOTES:
1. TUBE COLUMN SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. WIDE FLANGES, PIPES, AND OTHER STEEL SHAPES ARE SIMILAR.
2. ADJUST 2'-0" DIMENSION AS REQUIRED TO ACCOMMODATE COLUMN BASE PLATES AND GROUTING PROCEDURES.
3. WHERE THIN-SET EPOXY TERRAZZO OR VINYL SHEET GOODS ARE THE SCHEDULED FLOOR FINISH, ELIMINATE THE DIAMOND-SHAPED ISOLATION JOINT AND EXTEND THE CONTROL JOINTS TO THE COLUMN.

## 13 CORNER COLUMN BLOCKOUT

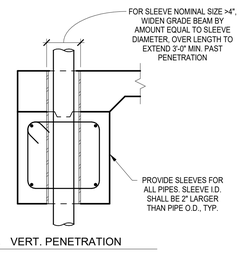
SCALE: 1" = 1'-0"



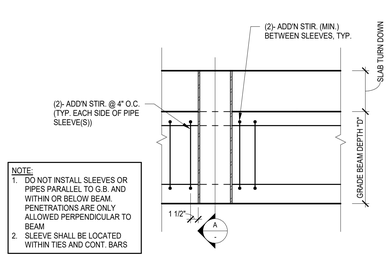

NOTES:
1. TUBE COLUMN SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. WIDE FLANGES, PIPES, AND OTHER STEEL SHAPES ARE SIMILAR.
2. ADJUST 2'-0" DIMENSION AS REQUIRED TO ACCOMMODATE COLUMN BASE PLATES AND GROUTING PROCEDURES.
3. WHERE THIN-SET EPOXY TERRAZZO OR VINYL SHEET GOODS ARE THE SCHEDULED FLOOR FINISH, ELIMINATE THE DIAMOND-SHAPED ISOLATION JOINT AND EXTEND THE CONTROL JOINTS TO THE COLUMN.

## 12 EXTERIOR COLUMN BLOCKOUT

SCALE: 1" = 1'-0"




A VERT. PENETRATION

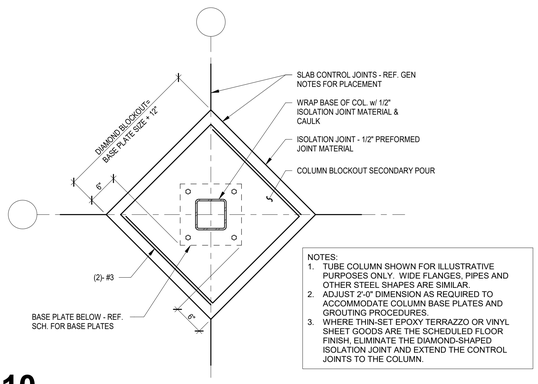



NOTE:
1. DO NOT INSTALL SLEEVES OR PIPES PARALLEL TO G.B. AND WITHIN OR BELOW BEAM. PENETRATIONS ARE ONLY ALLOWED PERPENDICULAR TO BEAM
2. SLEEVE SHALL BE LOCATED WITHIN TIES AND CONT. BARS

X ELEVATION VIEW

## 11 TYPICAL DETAIL AT "L" OR VERTICAL PENETRATION THROUGH GRADE BEAM

SCALE: 1" = 1'-0"




NOTES:
1. TUBE COLUMN SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. WIDE FLANGES, PIPES AND OTHER STEEL SHAPES ARE SIMILAR.
2. ADJUST 2'-0" DIMENSION AS REQUIRED TO ACCOMMODATE COLUMN BASE PLATES AND GROUTING PROCEDURES.
3. WHERE THIN-SET EPOXY TERRAZZO OR VINYL SHEET GOODS ARE THE SCHEDULED FLOOR FINISH, ELIMINATE THE DIAMOND-SHAPED ISOLATION JOINT AND EXTEND THE CONTROL JOINTS TO THE COLUMN.

## 10 INTERIOR COLUMN BLOCKOUT

SCALE: 1" = 1'-0"

## DOWEL SCHEDULE

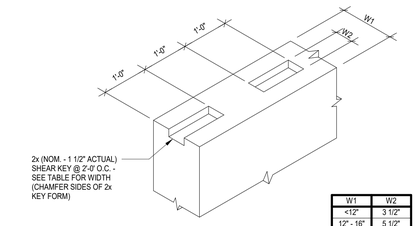
| MARK | SIZE | A | B |
|---|---|---|---|
| DWL-A | #4 | 8" | 2'-0" |
| DWL-B | #4 | 2'-0" | 2'-0" |
| DWL-C | #4 | - | 4'-0" |
| DWL-D | 3/4" DIA. THD. | - | 4'-0" |
| DWL-E | 1/2" DIA. THD. | - | 3'-0" |

NOTES:

1. SCHEDULED DOWELS ARE MARKED "DWL." ON THE SECTIONS AND DETAILS.
2. DOWEL SPACING TO BE THE SAME AS VERTICAL BEAM OR WALL REINFORCEMENT UNLESS NOTED OTHERWISE ON DETAILS.
3. DOWELS WITH "THD." IN "SIZE" COLUMN SHALL BE RICHMOND "CONTINUOUS THREADED LAGSTUD (2/25)" WITH RICHMOND "STANDARD 1/2"x4" 2/15 ANCHOR W/ WASHER" FOR 1/2" DIA. DOWELS AND "STANDARD 3/4"x6" 2/15 ANCHOR W/ WASHER" ANCHORS FOR 3/4"Ø DOWELS OR EQUAL.

## 9 DOWEL SCHEDULE

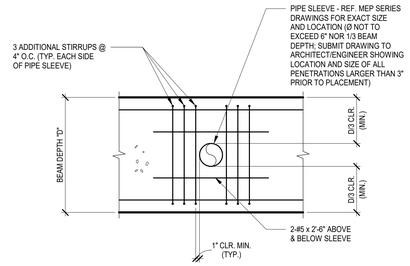
SCALE: 3/4" = 1'-0"




| W1 | W2 |
|---|---|
| <12" | 3 1/2" |
| 12" - 16" | 5 1/2" |
| >16" | 7 1/4" |

## 8 TYPICAL SHEAR WALL KEY AT HORIZONTAL JOINT DETAIL

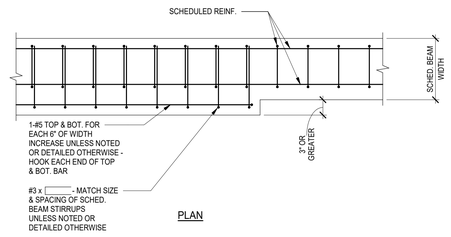
SCALE: 3/4" = 1'-0"




ELEVATION

## 7 TYPICAL HORIZONTAL GRADE BEAM PENETRATION DETAIL

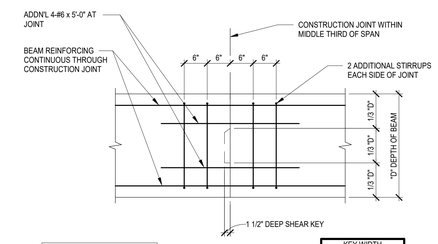
SCALE: 3/4" = 1'-0"




PLAN

## 6 TYPICAL BEAM WITH VARYING WIDTH REINFORCING DETAIL

SCALE: 3/4" = 1'-0"




NOTES:
1. THIS DETAIL APPLIES TO BEAMS <,4'-0" DEPTH.

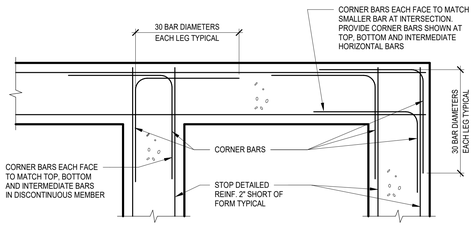
ELEVATION

| KEY WIDTH | |
|---|---|
| GRADEBEAM WIDTH "T" | W |
| ≤ 12" | 3 1/2" |
| 12" TO 16" | 5 1/2" |
| 16" TO 20" | 7 1/4" |
| 20" TO 24" | 9 1/4" |
| 24" TO 30" | 11 1/4" |

## 5 TYPICAL CONCRETE BEAM CONSTRUCTION JOINT DETAIL

SCALE: 3/4" = 1'-0"

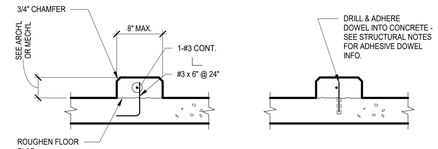
NOTES:
1. MATCH SIZE, LOCATION AND NUMBER OF HORIZONTALBEAM AND WALL BARS, EXCEPT THAT WHERE THERE ARE MORE THAN 2 TOP OR BOTTOM BARS, ONLY THE INSIDE AND OUTSIDE BARS MUST BE MATCHED.
2. WHERE 90 DEGREE HOOKS ARE PROVIDED FOR TOP BARS CORNER BARS MAY BE OMITTED AT TOP. WHERE 90 DEGREE HOOKS ARE PROVIDED FOR BOTTOM BARS, CORNER BARS MAY BE OMITTED AT BOTTOM.

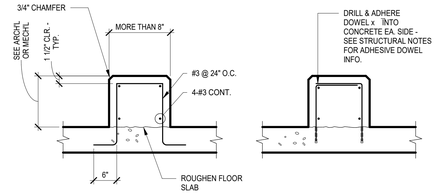



PLAN

## 4 TYPICAL CORNER BARS AT WALL OR GRADE BEAM INTERSECTION DETAIL

SCALE: 3/4" = 1'-0"

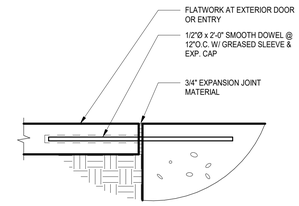



CAST-IN-PLACE DRILLED-IN ALTERNATE

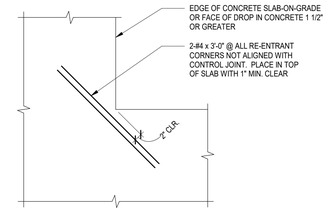
## 3 TYPICAL CONCRETE CURB DETAILS

SCALE: 3/4" = 1'-0"




## 2 TYPICAL FLATWORK AT EXTERIOR DOORS AND ENTRIES DETAIL

SCALE: 1 1/2" = 1'-0"




PLAN

## 1 TYPICAL SLAB-ON-GRADE RE-ENTRANT CORNER REINFORCING DETAIL

SCALE: 3/4" = 1'-0"

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12/30/2022

# WESTLAKE EXPANSION

5902 BEE CAVE RD.
WEST LAKE HILLS, TX 78746

TYPICAL FOUNDATION DETAILS

| REMARKS | DATE |
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| | |
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| PA/PM: | JMO |
| DRAWN BY.: | DJV/DEB |
| JOB NO.: | xxxx.xx.xxx |

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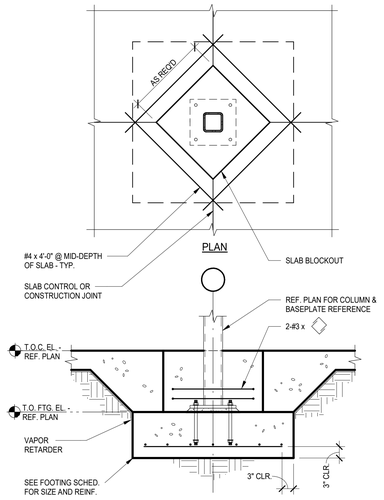
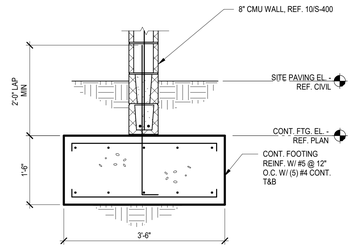
| SPREAD FOOTING SCHEDULE | | | | |
|---|---|---|---|---|
| | FOOTING DIMENSIONS | | | BARS E.W. (T & B) |
| FOOTING MARK | L | W | T | U.N.O. |
| F1 | 7'-0" | 7'-0" | 1'-2" | (7) #5 |

| MAT FOUNDATION SCHEDULE | | |
|---|---|---|
| FOOTING MARK | T | BARS E.W. U.N.O. |
| M1 | 1'-2" | #5 @ 8" O.C. TOP & BOT |

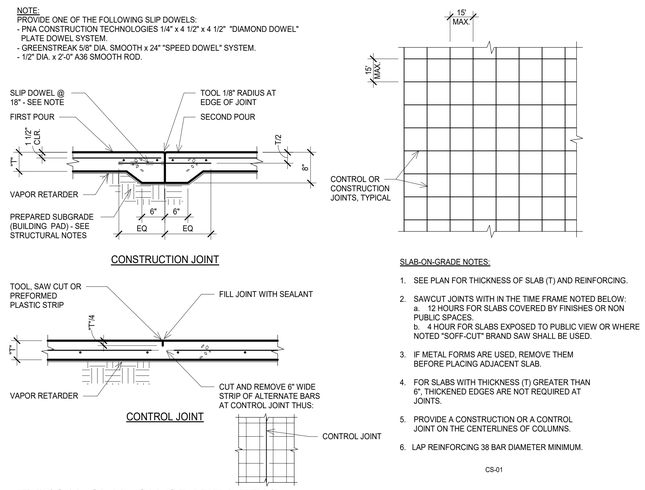



**3** TYPICAL INTERIOR FOOTING DETAIL
SCALE: 3/4" = 1'-0"




**6** FOOTING DETAIL
SCALE: 3/4" = 1'-0"

NOTE:
PROVIDE ONE OF THE FOLLOWING SLIP DOWELS:
- PNA CONSTRUCTION TECHNOLOGIES 1/4" x 4 1/2" x 4 1/2" "DIAMOND DOWEL" PLATE DOWEL SYSTEM.
- GREENSTREAK 5/8" DIA. SMOOTH x 24" "SPEED DOWEL" SYSTEM.
- 1/2" DIA. x 2'-0" A36 SMOOTH ROD.

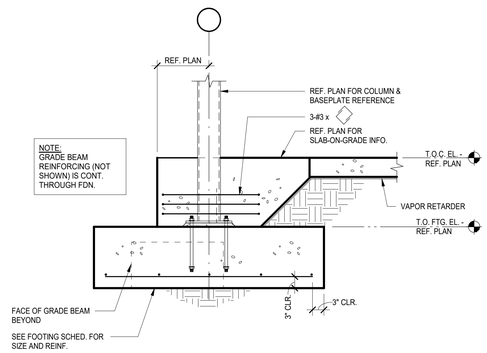



SLAB-ON-GRADE NOTES:

1. SEE PLAN FOR THICKNESS OF SLAB (T) AND REINFORCING.
2. SAWCUT JOINTS WITH IN THE TIME FRAME NOTED BELOW:
   a. 12 HOURS FOR SLABS COVERED BY FINISHES OR NON PUBLIC SPACES.
   b. 4 HOUR FOR SLABS EXPOSED TO PUBLIC VIEW OR WHERE NOTED "SOFF-CUT" BRAND SAW SHALL BE USED.
3. IF METAL FORMS ARE USED, REMOVE THEM BEFORE PLACING ADJACENT SLAB.
4. FOR SLABS WITH THICKNESS (T) GREATER THAN 6", THICKENED EDGES ARE NOT REQUIRED AT JOINTS.
5. PROVIDE A CONSTRUCTION OR A CONTROL JOINT ON THE CENTERLINES OF COLUMNS.
6. LAP REINFORCING 38 BAR DIAMETER MINIMUM.

CS-01

**7** TYPICAL SLAB-ON-GRADE DETAIL
SCALE: 3/4" = 1'-0"




**1** TYPICAL ISOLATED EXTERIOR FOOTING DETAIL
SCALE: 3/4" = 1'-0"

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# WESTLAKE EXPANSION

5902 BEE CAVE RD.
WEST LAKE HILLS, TX 78746

TYPICAL FOUNDATION DETAILS

| DATE | REMARKS |
|---|---|

| | |
|---|---|
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| DRAWN BY.: | Author |
| JOB NO.: | xxxx.xx.xxx |

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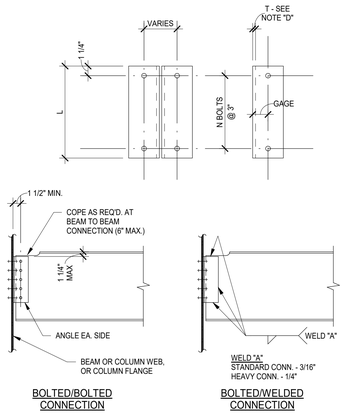



BOLTED/BOLTED CONNECTION

BOLTED/WELDED CONNECTION

| BEAM SIZE | STANDARD | | | HEAVY | | |
|---|---|---|---|---|---|---|
| | ANGLE LENGTH (L) | NO. OF ROWS OF BOLTS (N) | MAX. BEAM REACTION (KIPS) | ANGLE LENGTH (L) | NO. OF ROWS OF BOLTS (N) | MAX. BEAM REACTION (KIPS) |
| W8 | 5 1/2" | 2 | 17 | - | - | N.A. |
| W10 | 5 1/2" | 2 | 19 | - | - | N.A. |
| W12 | 5 1/2" | 2 | 20 | 8 1/2" | 3 | 28 |
| W14 | 8 1/2" | 3 | 32 | 11 1/2" | 4 | 42 |
| W16 | 8 1/2" | 3 | 35 | 11 1/2" | 4 | 46 |
| W18 | 11 1/2" | 4 | 55 | 14 1/2" | 5 | 68 |
| W21 | 11 1/2" | 4 | 64 | 17 1/2" | 5 | 94 |
| W24 | 14 1/2" | 5 | 89 | 20 1/2" | 7 | 123 |
| W27 | 14 1/2" | 5 | 89 | 23 1/2" | 8 | 148 |
| W30 | 17 1/2" | 6 | 104 | 26 1/2" | 9 | 167 |
| W33 | 20 1/2" | 7 | 119 | 29 1/2" | 10 | 186 |
| W36 | 23 1/2" | 8 | 133 | 29 1/2" | 10 | 186 |
| W40 | 26 1/2" | 9 | 147 | 29 1/2" | 10 | 213 |
| W44 | 29 1/2" | 10 | 160 | 29 1/2" | 10 | 213 |

NOTES:

A. RIGHT ANGLE CONNECTIONS SHALL BE DOUBLE ANGLE AS SCHEDULED. SKEWED CONNECTIONS SHALL BE BENT DOUBLE ANGLES OR BENT PLATES PER .

B. NOTED REACTIONS ARE FOR SERVICE LOADS.

C. REFER TO "STRUCTURAL STEEL CONNECTIONS" IN STRUCTURAL NOTES FOR ADD'L INFO.

D. MINIMUM CONNECTION: ANGLE THICKNESS IS 1/4" TYPICAL AND 5/16" AT W33 AND DEEPER "HEAVY" CONNECTIONS.

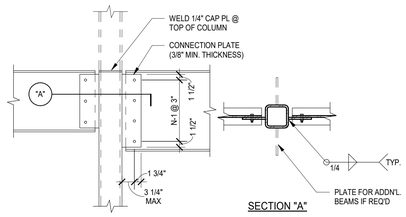
E. BOLTS ARE 3/4" DIA. TYP. AND 7/8" DIA. AT W40 & W44 "HEAVY CONNECTIONS". BOLTS ARE A325N.

F. BEAM CONNECTIONS ARE "STANDARD" U.N.O. ON PLAN.

G. CONTRACTOR SHALL CHECK DESIGN OF ALL BEAMS REQUIRING COPES GREATER THAN SHOWN IN DETAIL BASED ON REACTIONS SHOWN IN TABLE. CONNECTION ANGLES, BOLTS AND WELDS SHALL NOT BE LESS THAN THAT SHOWN.

## 14 AISC TYPE 2 SIMPLE FRAMING CONNECTIONS

SCALE: 3/4" = 1'-0"




SECTION "A"

| BEAM SIZE | PLATE LENGTH (L) | NO. OF BOLTS (N) | MAX BEAM REACTIONS (KIPS) | |
|---|---|---|---|---|
| | | | 3/4" DIA | 7/8" DIA |
| W8 | 6 | 2 | 21.2 | 25.6 |
| W10 | 6 | 2 | 21.2 | 25.6 |
| W12 | 9 | 3 | 31.8 | 38.4 |
| W14 | 9 | 3 | 31.87 | 39.2 |
| W16 | 12 | 4 | 42.4 | 52.2 |
| W18 | 15 | 5 | 53 | 65.3 |
| W21 | 18 | 6 | 63.6 | 78.3 |
| W24 | 18 | 6 | 63.6 | 78.3 |
| W27 | 21 | 7 | 74.2 | 91.3 |
| W30 | 24 | 8 | 84.8 | 103.5 |
| W33 | 27 | 9 | 95.4 | 115.6 |
| W36 | 30 | 10 | 106 | 127.8 |
| W40 | 33 | 11 | 116.6 | 139.9 |
| W44 | 36 | 12 | 127.2 | 152.1 |

NOTES:

A. CONNECTIONS SHALL BE BASED ON REACTIONS SHOWN ON PLANS AND MAXIMUM BEAM REACTION IN ABOVE TABLE. U.N.O.

B. NOTED REACTIONS ARE FOR SERVICE LOADS.

C. SEE "STRUCTURAL STEEL CONNECTIONS" IN STRUCTURAL NOTES FOR ADDN'L. INFO.

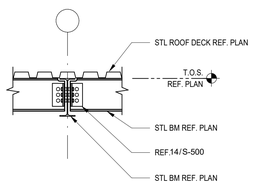
D. MINIMUM CONNECTION: PLATE THICKNESS IS 3/8" TYPICAL AND 7/16" AT W33 AND DEEPER "HEAVY" CONNECTIONS.

E. BOLTS ARE A325N, TYPICAL.

F. BEAM CONNECTIONS ARE "STANDARD" U.N.O. ON PLAN.

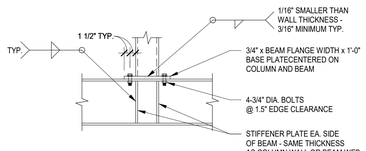
## 13 TYPICAL BEAM WEB TO TUBE COLUMN CONNECTION

SCALE: 3/4" = 1'-0"




## 12 TYPICAL BEAM CONNECTION

SCALE: 3/4" = 1'-0"




COLUMN WEB PARALLEL TO BEAM

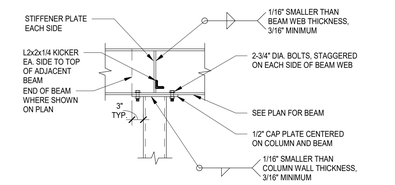
NOTES:

1. CONNECT INTERSECTING BEAMS TO STIFFENER PLATES USING BOLTS IN SINGLE SHEAR DESIGNED FOR ECCENTRIC BEAM REACTION.

2. PROVIDE FLANGE EXTENSIONS AS REQ'D. TO MATCH COLUMN BASE PLATE WIDTH.

## 11 TYPICAL COLUMN SUPPORTED ON BEAM CONNECTION DETAIL

SCALE: 3/4" = 1'-0"




NOTES:

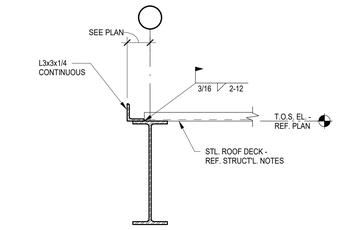
1. SEE ROOF PLAN FOR ROOF SLOPE. SLOPE CAP PLATES ACCORDINGLY.

2. STIFFENER PLATES SHALL BE EQUAL IN THICKNESS TO THE COLUMN WALL THICKNESS OR BEAM WEB THICKNESS, WHICHEVER IS GREATER.

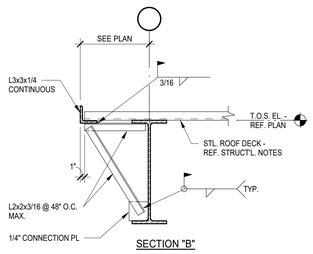
3. CONNECT INTERSECTING BEAMS TO STIFFENER PLATES USING BOLTS IN SINGLE SHEAR DESIGNED FOR ECCENTRIC BEAM REACTION.

## 10 TYPICAL CAP PLATE - BOLTED CONNECTION DETAIL

SCALE: 3/4" = 1'-0"




SECTION "A"



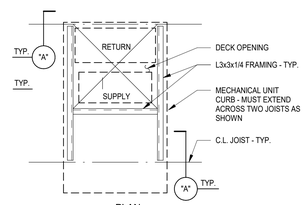

SECTION "B"

NOTES:

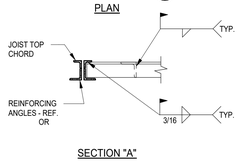
1. USE SECTION "B" WHEN MIN. OVERLAP OF ANGLE ON BEAM OF 1" CANNOT BE MAINTAINED.

## 7 TYPICAL EXTERIOR BEAM DETAIL

SCALE: 3/4" = 1'-0"




PLAN




SECTION "A"

NOTES:

1. COORDINATE OPENING SIZE WITH MECHANICAL UNIT MANUFACTURER.

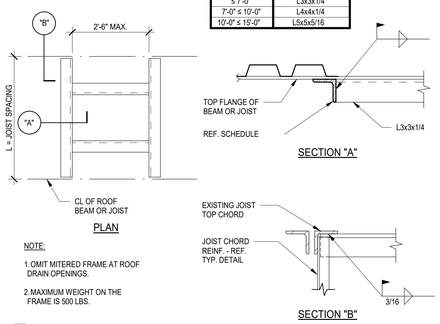
2. WHERE SUPPLY AND RETURN DUCTS STRADDLE A JOIST, PROVIDE ANGLE FRAME SIMILAR TO THAT SHOWN ON EACH SIDE OF JOIST.

3. REF. -/--- FOR ROOFTOP UNIT SUPPORT DETAIL

4. THIS DETAIL APPLIES ONLY TO THE CASE WHERE THE RTU CURBS EXTEND ACROSS TWO JOISTS.

## 6 TYPICAL SCHEMATIC ROOFTOP MOUNTED MECHANICAL UNIT OPENING FRAMING DETAIL

SCALE: 3/4" = 1'-0"




PLAN

| L | ANGLE SIZE |
|---|---|
| ≤ 7'-0" | L3x3x1/4 |
| 7'-0" ≤ 10'-0" | L4x4x1/4 |
| 10'-0" ≤ 15'-0" | L5x5x5/16 |




SECTION "A"




SECTION "B"

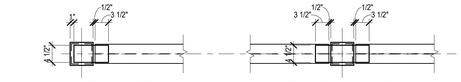
NOTE:

1. OMIT MITERED FRAME AT ROOF DRAIN OPENINGS.

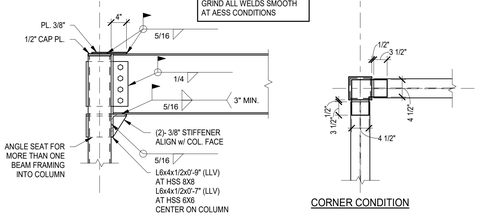
2. MAXIMUM WEIGHT ON THE FRAME IS 500 LBS.

## 5 TYPICAL ROOF OPENING DETAIL

SCALE: 3/4" = 1'-0"

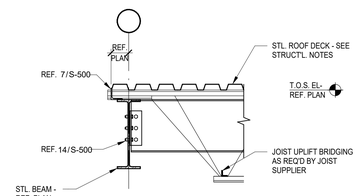



NOTE:
GRIND ALL WELDS SMOOTH AT AESS CONDITIONS



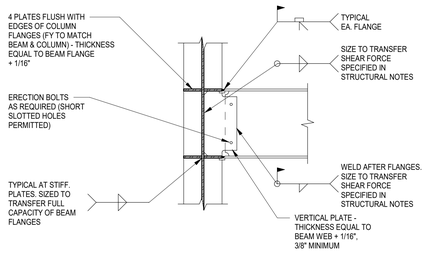

## 4 MOMENT CONNECTION WF TO TUBE

SCALE: 3/4" = 1'-0"



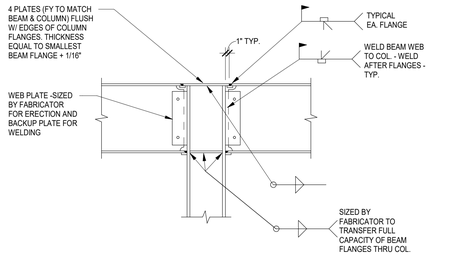

## 3 TYPICAL PERIMETER BEAM DETAIL

SCALE:NO SCALE




## 2 TYPICAL GIRDER TO COLUMN WEB MOMENT CONNECTION DETAIL

SCALE: 3/4" = 1'-0"




## 1 TYPICAL BEAM TO TOP OF COLUMN MOMENT CONNECTION DETAIL

SCALE: 3/4" = 1'-0"

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# WESTLAKE EXPANSION

5902 BEE CAVE RD.
WEST LAKE HILLS, TX 78746

TYPICAL FRAMING DETAILS

| DATE | REMARKS |
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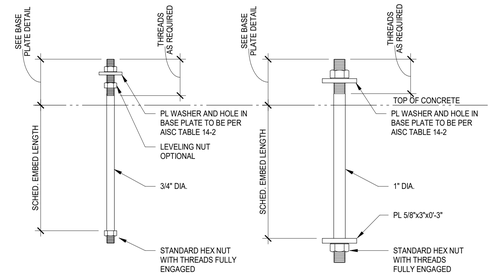
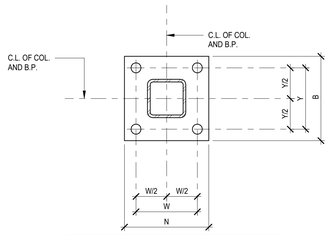
## BASE PLATE SCHEDULE

| MARK | DETAIL | B | N | THICKNESS | W | X | Y | Z | Rod Ø | ANCHOR RODS TYPE | ANCHOR RODS EMBED. LENGTH | ANCHOR RODS QUANTITY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BP-1 | | | | | | | | | | | | |

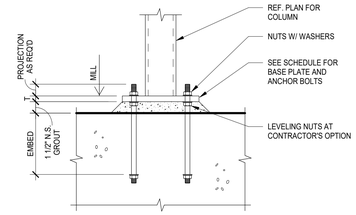



**3** TYPICAL ANCHOR BOLT TYPES
SCALE: 3/4" = 1'-0"




NOTES:
1. WELD TO BE MINIMUM SIZE REQUIRED BY A.I.S.C. FOR THICKNESS OF BASE PLATE USED.
2. REF. COLUMN BASE PLATE TYPICAL DETAIL - HSS FOR BASE PLATE ELEVATION.
3. OVERSIZED BOLT HOLES NOT PERMITTED FOR LATERAL RESISTING BASE PLATES.

**2** TYPICAL BASE PLATE DETAIL
SCALE: 1 1/2" = 1'-0"




ELEVATION

**1** TYPICAL COLUMN BASE PLATE DETAIL
SCALE: 3/4" = 1'-0"

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WESTLAKE EXPANSION
5902 BEE CAVE RD.
WEST LAKE HILLS, TX 78746

TYPICAL FRAMING DETAILS

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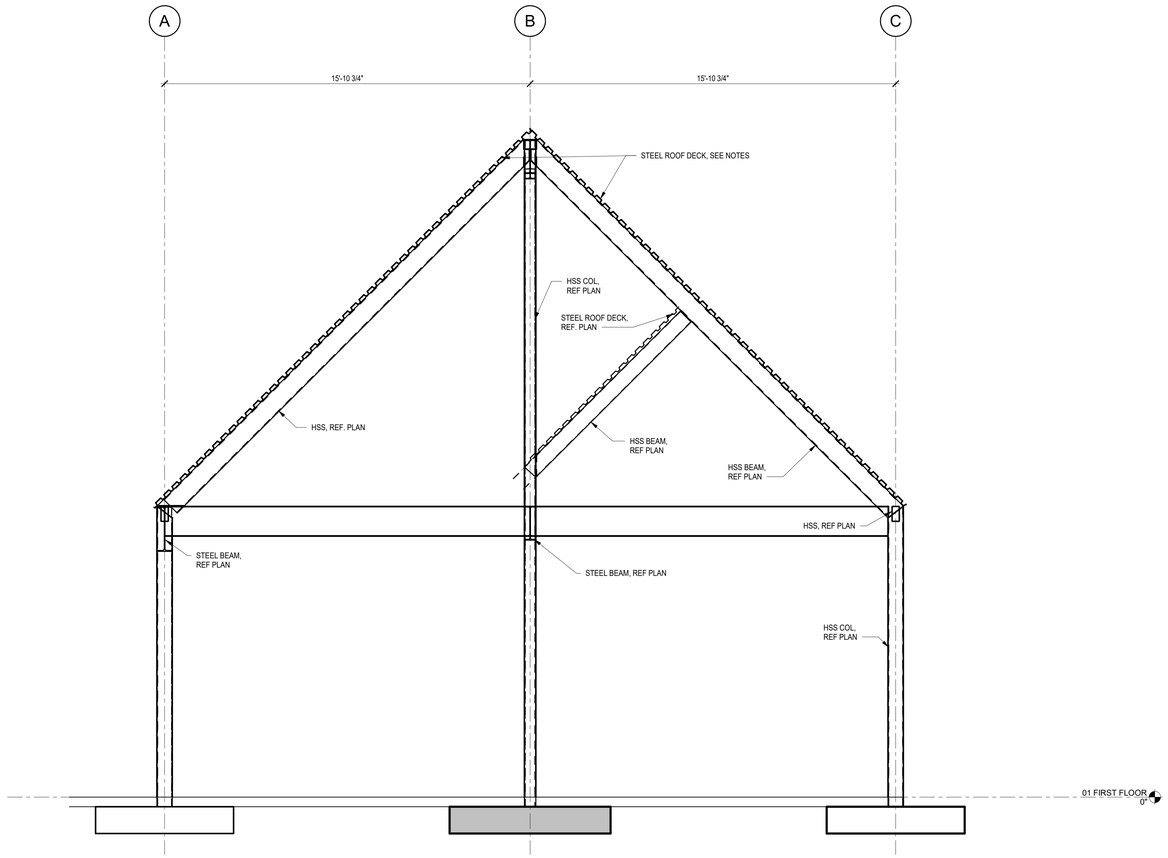
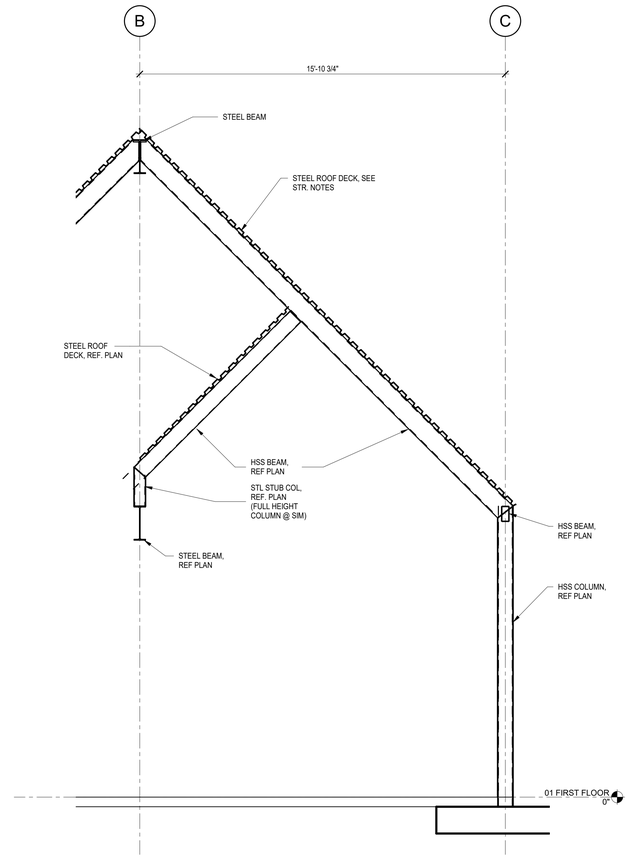



**3** Section 6
SCALE: 3/8" = 1'-0"




**4** Section 10
SCALE: 3/8" = 1'-0"

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# WESTLAKE EXPANSION

5902 BEE CAVE RD.
WEST LAKE HILLS, TX 78746

## ENLARGED FRAMING DETAILS

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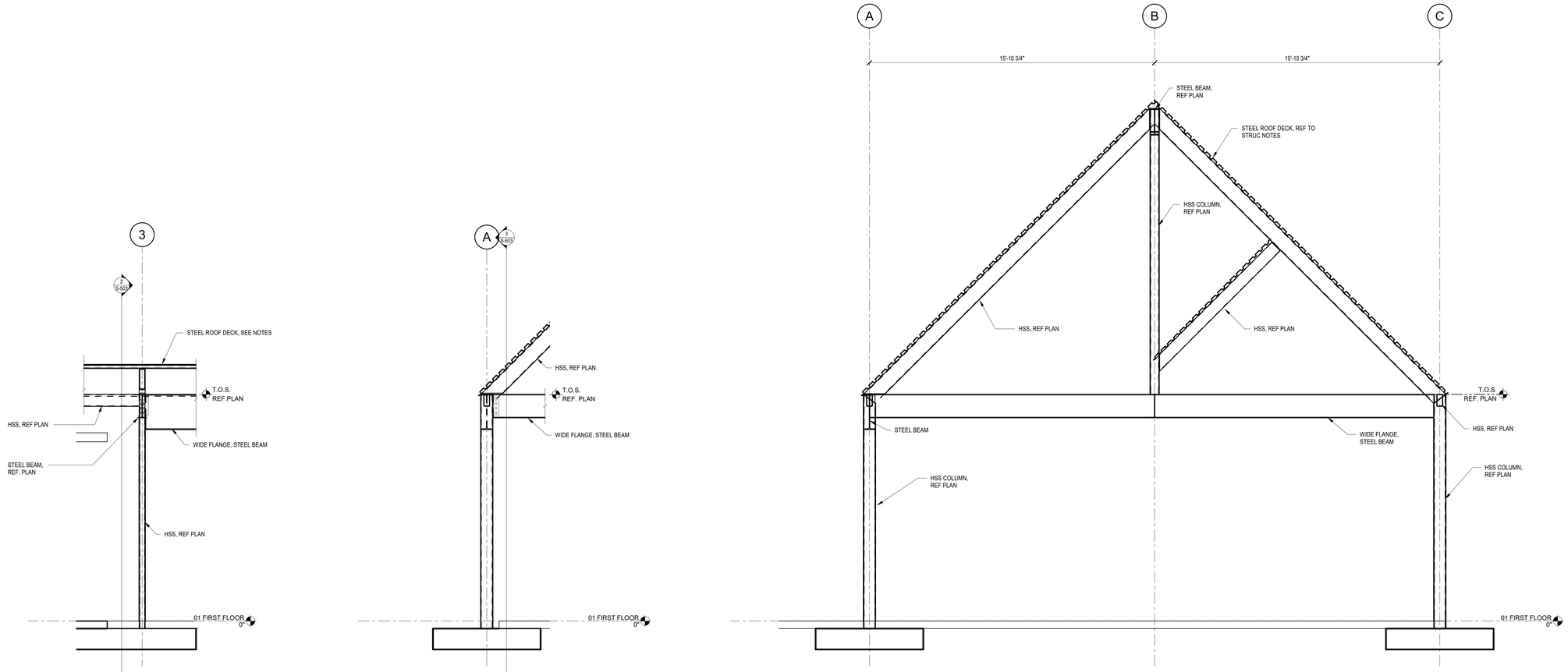


**1** Section 9
SCALE: 3/8" = 1'-0"

**2** Section 8
SCALE: 3/8" = 1'-0"

**3** Section 1
SCALE: 3/8" = 1'-0"

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## ENLARGED FRAMING DETAILS

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## MECHANICAL AND PLUMBING SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| | THIN LINE WEIGHTS REPRESENT EXISTING WORK |
| | BOLD LINE WEIGHTS REPRESENT NEW WORK |
| | EXISTING DUCTWORK TO BE REMOVED |
| | EXISTING DUCTWORK |
| | NEW DUCTWORK |
| →D | CHANGE OF ELEVATION - RISE (R) DROP (D) |
| | DUCT UP, POSITIVE PRESSURE FIRST FIGURE IS TOP DIMENSION |
| | DUCT UP, NEGATIVE PRESSURE FIRST FIGURE IS TOP DIMENSION |
| | DUCT DOWN, POSITIVE PRESSURE FIRST FIGURE IS TOP DIMENSION |
| | DUCT DOWN, NEGATIVE PRESSURE FIRST FIGURE IS TOP DIMENSION |
| | MANUAL VOLUME DAMPER |
| | FIRE DAMPER, VERTICAL POSITION |
| | FIRE DAMPER, HORIZONTAL POSITION |
| | CEILING DIFFUSER |
| | CEILING EXHAUST/RETURN GRILLE |
| | SLOT DIFFUSER |
| | SIDEWALL GRILLE OR REGISTER |
| | INDICATES DIRECTION OF AIRFLOW |
| AIR DEVICE TAG (A / 10"ø / 200) | A — SCHEDULE DESIGNATION; 10"ø — NECK SIZE; 200 — AIR QUANTITY (CFM) |
| DETAIL TAG (01 / M201) | 01 — DETAIL NUMBER; M201 — SHEET ON WHICH DETAIL APPEARS |
| RISER TAG (P1) | P: PLUMBING RISER/F: FIRE RISER; 1 — RISER NUMBER |
| H | HUMIDISTAT SENSOR |
| G | TEMPERATURE AND HUMIDITY GAUGE |
| S | TEMPERATURE SENSOR |
| T | THERMOSTAT |
| | EXISTING PIPING TO BE REMOVED |
| SAN | SANITARY SEWER |
| GW | GREASE WASTE |
| | DOMESTIC COLD WATER |
| | DOMESTIC HOT WATER |
| | DOMESTIC HOT WATER RETURN |
| | VENT |
| CD | CONDENSATE DRAIN |
| F | FIRE PIPING |
| G | GAS PIPING |
| TW | TEMPERED WATER PIPING |
| | CONNECT NEW TO EXISTING |
| | PIPE, TURNED UP |
| | PIPE, TURNED DOWN |
| | CONNECTION, BOTTOM |
| | CONNECTION, TOP |
| | ELBOW |
| | TEE |
| | CAP |
| | STRAINER |
| | UNION |
| | FLANGE |
| | CONCENTRIC REDUCER |
| | ECCENTRIC REDUCER |
| | ANGLE VALVE |
| | SHUT-OFF VALVE |
| | BUTTERFLY VALVE |
| | CHECK VALVE |
| | GATE VALVE |
| | GLOBE VALVE |
| | PLUG VALVE |
| | PRESSURE RELIEF VALVE |
| | PRESSURE REDUCING VALVE |
| | AUTOMATIC BUTTERFLY VALVE |
| | AUTOMATIC 2-WAY VALVE |
| | AUTOMATIC 3-WAY VALVE |
| | PENETRATION |
| | WATER HAMMER ARRESTER |

NOTES:
1. ALL SYMBOLS MAY NOT APPEAR ON DRAWINGS.
2. PROVIDE TAMPER-RESISTANT RECEPTACLES IN ACCORDANCE WITH NEC 406.12.
3. ALL WALL MOUNTED DEVICES (POWER, DATA, TELEPHONE, ETC.) SHALL BE MOUNTED NO LESS THAN 15" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. DATA OUTLETS SHALL BE MOUNTED AT SAME HEIGHT AS ADJACENT RECEPTACLE.
4. ALL LIGHT CONTROLS (SWITCHES, DIMMERS AND/OR SENSORS) SHALL BE MOUNTED NO MORE THAN 48" ABOVE FINISHED FLOOR UNLESS NOTED OTHERWISE. LIGHT CONTROLS SHOWN SIDE BY SIDE ON FLOOR PLANS SHALL BE GANGED TOGETHER WITHIN THE SAME COVER PLATE.
5. COORDINATE FINISH OF ELECTRICAL DEVICES WITH ARCHITECT UNLESS NOTED OTHERWISE.
(2021.01)

## ELECTRICAL AND LIGHTING SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| | THIN LINE WEIGHTS REPRESENT EXISTING WORK |
| | BOLD LINE WEIGHTS REPRESENT NEW WORK |
| | DASHED LINE REPRESENTS DEMO WORK |
| | CONDUIT |
| | UNDERGROUND/UNDERFLOOR CONDUIT |
| | FLEXIBLE CONDUIT |
| | PLUG MOLD |
| | WIRING, HOMERUN |
| | WIRING, NEUTRAL |
| | WIRING, HOT |
| | WIRING, SWITCHLEG |
| | WIRING, GROUND |
| | WIRING, ISOLATED GROUND |
| | CONTINUATION |
| | SIMPLEX RECEPTACLE |
| | DUPLEX RECEPTACLE |
| | FLUSH FLOOR MOUNTED DUPLEX RECEPTACLE |
| | CEILING MOUNTED DUPLEX RECEPTACLE |
| | ABOVE COUNTER DUPLEX RECEPTACLE MOUNT @ 44" AFF UNO |
| | IG RECEPTACLE |
| | QUADRAPLEX RECEPTACLE |
| | FLUSH FLOOR MOUNTED QUADRAPLEX RECEPTACLE |
| | CEILING MOUNTED QUADRAPLEX RECEPTACLE |
| | ABOVE COUNTER QUADRAPLEX RECEPTACLE MOUNT @ 44" AFF UNO |
| | IG QUADRAPLEX RECEPTACLE |
| | SPECIAL PURPOSE RECEPTACLE (VERIFY EXACT NEMA CONFIGURATION IN FIELD) |
| | FLUSH FLOOR MOUNTED SPECIAL PURPOSE RECEPTACLE (VERIFY EXACT NEMA CONFIGURATION IN FIELD) |
| | CEILING MOUNTED SPECIAL PURPOSE RECEPTACLE (VERIFY EXACT NEMA CONFIGURATION IN FIELD) |
| | DUPLEX RECEPTACLE ON EMERGENCY CIRCUIT |
| | ABOVE COUNTER DUPLEX RECEPTACLE ON EMERGENCY CIRCUIT MOUNT @ 44" AFF UNO |
| | QUADRAPLEX RECEPTACLE ON EMERGENCY CIRCUIT |
| | ABOVE COUNTER QUAD RECEPTACLE ON EMERGENCY CIRCUIT MOUNT @ 44" AFF UNO |
| NC | NURSE CALL. PROVIDE 3/4" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING. |
| DS | DUTY STATION. PROVIDE 3/4" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING. |
| ZD | ZONE DOME |
| EC | TOILET HELP CALL. PROVIDE 3/4" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING. |
| CD | CORRIDOR DOME LIGHT. PROVIDE 3/4" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING. |
| P1 | CODE CALL PANEL. PROVIDE 3/4" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING. |
| M1 | MONITOR PANEL. PROVIDE 3/4" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING. |
| | DATA COMMUNICATIONS OUTLET WITH 1" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING. CONDUIT SIZE IS BASED ON MAX OF (4) CAT6 CABLES. COORDINATE WITH OWNER PRIOR TO INSTALLATION. |
| | FLUSH FLOOR DATA COMMUNICATIONS OUTLET |
| | TELEPHONE OUTLET WITH 1" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING. |
| | FLUSH FLOOR TELEPHONE OUTLET |
| | TELEPHONE / DATA OUTLET WITH 1" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING. CONDUIT SIZE IS BASED ON MAX OF (6) CAT6 CABLES. COORDINATE WITH OWNER PRIOR TO INSTALLATION. |
| | FLUSH FLOOR TELEPHONE / DATA OUTLET |
| | FLUSH FLOOR BOX FOR RECEPTACLES, COMMUNICATIONS AND/OR A/V DEVICES. PROVIDE BOX SUITABLE FOR APPLICATION. MODEL WIREMOLD EVOLUTION EFB4SS OR EQUAL. |
| | VERTICAL DROP POLE WITH 2 CHANNELS FOR POWER AND COMMUNICATIONS. MODEL SHALL BE WIREMOLD #2SDTC UNO ON PLANS. VERIFY LENGTH AND FINISH PRIOR INSTALLATION. |
| USB | USB OUTLET EXTENSION. PROVIDE WITH (2) PORTS AND EXTEND 3/4" CONDUIT BETWEEN LOCATIONS. COORDINATE EXACT REQUIREMENTS WITH OWNER. |
| TV | RECESSED COMBINATION A/V (TELEVISION) OUTLET AND DUPLEX RECEPTACLE MOUNTED AT 84" AFF UNO ON PLANS. UTILIZE RECEPTACLE SHOWN ADJACENT TO DEVICE ON FLOOR PLAN. PROVIDE. 3/4" EC AND PULL STRING TO 6" ABOVE ACCESSIBLE CEILING FOR LOW-VOLTAGE. MODEL SHALL BE PASS & SEYMOUR #TVQMW. |
| TV | CEILING MOUNTED A/V (TELEVISION) OUTLET |
| J | JUNCTION BOX |
| J | WALL MOUNTED JUNCTION BOX |
| | DISCONNECT SWITCH |
| | FUSED DISCONNECT SWITCH |
| | COMBINATION MOTOR STARTER |
| | VFD (VARIABLE FREQUENCY DRIVE) |
| | TVSS (TRANSIENT VOLTAGE SURGE SUPPRESSOR) |
| | MOTOR RATED SWITCH |
| | MOTOR |
| M | MOTION DETECTOR. ACUITY #WSXA |
| M | CEILING MOUNTED MOTION DETECTOR. ACUITY #CM PDT |
| OS | OCCUPANCY SENSOR. ACUITY #WSXA PDT |
| OS | CEILING MOUNTED OCCUPANCY SENSOR. ACUITY #CM PDT |
| OSD | OCCUPANCY SENSOR DIMMER. ACUITY #WSXA PDT D |
| VS | VACANCY SENSOR. ACUITY #WSXA PDT SA |
| VS | CEILING MOUNTED VACANCY SENSOR. ACUITY #CM PDT |
| 7A | CURRENT LIMITER FOR TRACK LIGHTING WITH AMP RATING. ACUITY #SILVER BULLET SERIES |

## ELECTRICAL AND LIGHTING SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| | SWITCH |
| 2 | DOUBLE POLE SWITCH |
| 3 | THREE-WAY SWITCH |
| 4 | FOUR-WAY SWITCH |
| | DIMMER SWITCH. MODEL SHALL BE CRESTRON CLW SERIES. REFER TO DRAWINGS FOR LOAD AND LIGHT TYPE. |
| | LOW-VOLTAGE CONTROLS |
| P | PILOT LIGHT SWITCH |
| T | TIMECLOCK SWITCH. MODEL SHALL BE INTERMATIC ST700W OR EQUAL. |
| | SPEAKER |
| V | WALL MOUNTED VOLUME CONTROL (P.A.) |
| CR | CARD READER |
| DC | DOOR CONTACT |
| KP | KEY PAD |
| ML | MAG-LOCK |
| | GENERATOR |
| ST | SHUNT TRIP |
| C | CLOCK |
| M | METER |
| K | KIRK-KEY INTERLOCK |
| | 120V/208Y OR 120/240V ELECTRICAL PANEL |
| | 277V/480Y ELECTRICAL PANEL |
| | TRANSFORMER |
| | GROUND BUS. PROVIDE 1/4" X 4" X 12" COPPER GROUND BUS ON ISOLATORS UNO ON PLANS. |
| | VIA LIGHTING CONTACTOR |
| LIGHT FIXTURE LABELS (A / 1) | A — SWITCH DESIGNATION; 1 — LIGHT FIXTURE TYPE |
| | HATCH REPRESENTS EMERGENCY FIXTURE |
| | 2' X 4' LIGHT FIXTURE. REFERENCE LIGHT FIXTURE SCHEDULE. |
| | 2' X 2' LIGHT FIXTURE. REFERENCE LIGHT FIXTURE SCHEDULE. |
| | UTILITY STRIP. REFERENCE LIGHT FIXTURE SCHEDULE. |
| | DOWNLIGHT. REFERENCE LIGHT FIXTURE SCHEDULE. |
| | SCONCE. REFERENCE LIGHT FIXTURE SCHEDULE. |
| | WALL WASHER. REFERENCE LIGHT FIXTURE SCHEDULE. |
| | PENDANT. REFERENCE LIGHT FIXTURE SCHEDULE. |
| | UNDER CABINET LIGHT FIXTURE. REFERENCE LIGHT FIXTURE SCHEDULE. |
| | WALL PACK. REFERENCE LIGHT FIXTURE SCHEDULE. |
| | POLE MTD. SITE LIGHT FIXTURE REFERENCE LIGHT FIXTURE SCHEDULE. |
| | EXIT SIGN CHEVRON |
| | SINGLE FACE EXIT SIGN SHADED AREA INDICATES ILLUMINATED FACE. MODEL SHALL BE DUAL-LITE #SESRWEI UNO ON PLANS. CONFIRM FINISH. |
| | DOUBLE FACE EXIT SIGN SHADED AREA INDICATES ILLUMINATED FACE. MODEL SHALL BE DUAL-LITE #SEDRWEI UNO ON PLANS. CONFIRM FINISH. |
| | SINGLE FACE WALL MOUNTED EXIT SIGN. MODEL SHALL BE DUAL-LITE #SESRWEI UNO ON PLANS. CONFIRM FINISH. |
| | DOUBLE FACE WALL MOUNTED EXIT SIGN. MODEL SHALL BE DUAL-LITE #SEDRWEI UNO ON PLANS. CONFIRM FINISH. |
| | COMBO EXIT SIGN AND EMERGENCY EGRESS LIGHTING FIXTURE. MODEL SHALL BE DUAL-LITE #LTURWI03L UNO ON PLANS. CONFIRM FINISH. |
| | EMERGENCY LIGHTING FIXTURE. MODEL SHALL BE DUAL-LITE #LZ1503L UNO ON PLANS. CONFIRM FINISH. |
| | EXTERIOR EMERGENCY LIGHTING FIXTURE. MODEL SHALL BE DUAL-LITE #PGW-HTR UNO ON PLANS. CONFIRM FINISH. |

## FIRE ALARM SYMBOLS

| SYMBOL | DESCRIPTION |
|---|---|
| | THIN LINE WEIGHTS REPRESENT EXISTING WORK |
| | BOLD LINE WEIGHTS REPRESENT NEW WORK |
| | DASHED LINE REPRESENTS DEMO WORK |
| A | FM 200 ABORT SWITCH |
| M | MANUAL FM 200 RELEASE PULL STATION |
| DH | DOOR HOLDER |
| FAA | FIRE ALARM ANNUNCIATOR PANEL |
| FACP | FIRE ALARM CONTROL PANEL |
| FS | FIRE ALARM SYSTEM FLOW SWITCH |
| TS | FIRE ALARM TAMPER SWITCH |
| GEN | GENERATOR REMOTE ANNUNCIATOR PANEL |
| H | ADA APPROVED FIRE ALARM HORN. MOUNT @ 80" AFF. |
| H | ADA APPROVED FIRE ALARM HORN. CEILING MOUNTED. |
| F | ADA APPROVED AUDIO/VISUAL FIRE ALARM SIGNALING DEVICE. MOUNT @ 80" AFF. |
| F | ADA APPROVED AUDIO/VISUAL FIRE ALARM SIGNALING DEVICE. CEILING MOUNTED. |
| S | ADA APPROVED STROBE ONLY FIRE ALARM DEVICE. MOUNT @ 80" AFF. |
| S | ADA APPROVED STROBE ONLY FIRE ALARM DEVICE. CEILING MOUNTED. |
| P | ADA APPROVED FIRE ALARM PULLSTATION DEVICE |
| | SMOKE DETECTOR |
| U | UNDERFLOOR SMOKE DETECTOR |
| D | DUCT MOUNTED SMOKE DETECTOR |
| | REMOTE PILOT LIGHT |
| | HEAT DETECTOR |
| U | UNDERFLOOR HEAT DETECTOR |
| | FLAME DETECTOR |
| F | FIRE ALARM SPEAKER |

## ABBREVIATIONS

| TEXT | DESCRIPTION |
|---|---|
| ADA | AMERICANS WITH DISABILITIES ACT |
| AFF | ABOVE FINISHED FLOOR |
| B | EXISTING JUNCTION BOX WITH BLANK PLATE |
| BDD | BACKDRAFT DAMPER |
| BOD | BOTTOM OF DUCT |
| BFF | BELOW FINISHED FLOOR |
| BFP | BACKFLOW PREVENTER |
| BHP | BRAKE HORSEPOWER |
| C | CONDUIT |
| CB | CIRCUIT BREAKER |
| CD | CONDENSATE DRAIN |
| CFM | CUBIC FEET PER MINUTE |
| CHR | CHILLED WATER RETURN |
| CHS | CHILLED WATER SUPPLY |
| CO | CLEANOUT |
| CR | CONDENSER WATER RETURN |
| CS | CONDENSER WATER SUPPLY |
| CU | COPPER |
| CW | DOMESTIC COLD WATER |
| (D) | EXISTING TO BE DEMOLISHED |
| DCO | DOUBLE CLEANOUT |
| (E) | EXISTING TO REMAIN |
| E/A | EXHAUST AIR |
| EAT | ENTERING AIR TEMPERATURE |
| EC | EMPTY CONDUIT |
| EMT | ELECTRICAL METALLIC TUBING |
| ESP | EXTERNAL STATIC PRESSURE |
| EWC | ELECTRIC WATER COOLER |
| EWH | ELECTRIC WATER HEATER |
| EWT | ENTERING WATER TEMPERATURE |
| °F | DEGREES FAHRENHEIT |
| F | FIRE LINE |
| FCO | FLOOR CLEANOUT |
| FDS | FUSED DISCONNECT SWITCH |
| FLD | FLOOR DRAIN |
| FD | FIRE DAMPER |
| FS | FLOOR SINK |
| FSD | COMBINATION FIRE SMOKE DAMPER |
| G | GAS |
| GFI | GROUND FAULT INTERRUPTER |
| GND | GROUND |
| GPM | GALLONS PER MINUTE |
| HG | REFRIGERANT HOT GAS |
| HP | HORSEPOWER |
| HR | HEATING HOT WATER RETURN |
| HS | HEATING HOT WATER SUPPLY |
| HW | HOT WATER SUPPLY |
| HWR | HOT WATER RETURN |
| IC | IN COUNTER |
| IG | ISOLATED GROUND |
| IMC | INTERMEDIATE METAL CONDUIT |
| K/E | KITCHEN EXHAUST |
| KW | KILOWATT |
| L | LAVATORY |
| M/A | MAKE-UP AIR |
| MB | MOP BASIN |
| MTD | MOUNTED |
| (N) | NEW |
| NIC | NOT IN CONTRACT |
| N3R | NEMA 3R |
| O/A | OUTSIDE AIR |
| OBD | OPPOSED BLADE DAMPER |
| OCD | OVERFLOW CONDENSATE DRAIN |
| OCPD | OVERCURRENT PROTECTIVE DEVICE |
| OD | OVERFLOW ROOF DRAIN |
| OFCI | OWNER FURNISHED, CONTRACTOR INSTALLED |
| PBD | PARALLEL BLADE DAMPER |
| PSI | POUNDS PER SQUARE INCH |
| (R) | EXISTING TO BE RELOCATED |
| R/A | RETURN AIR |
| RD | ROOF DRAIN |
| RL | REFRIGERANT LIQUID |
| RMC | RIGID METALLIC CONDUIT |
| RO | REVERSE OSMOSIS |
| RS | REFRIGERANT SUCTION |
| S | SINK |
| S/A | SUPPLY AIR |
| SAN | SANITARY SEWER |
| SD | STORM DRAIN |
| SIM | SIMILAR |
| SPD | SURGE PROTECTION DEVICE |

## ABBREVIATIONS

| TEXT | DESCRIPTION |
|---|---|
| TP | TRAP PRIMER |
| TVSS | TRANSIENT VOLTAGE SURGE SUPPRESSOR |
| TWH | TANKLESS WATER HEATER |
| TW | TEMPERED WATER |
| U | URINAL |
| UF | UNDERFLOOR |
| UG | UNDERGROUND |
| UNO | UNLESS NOTED OTHERWISE |
| USB | UNIVERSAL SERIAL BUS. PROVIDE NEMA 5-20R DUPLEX RECEPTACLE WITH (2) USB TYPE 'A' PORTS RATED FOR 5.0 AMPS. PROVIDE HUBBELL USB20ASW OR EQUAL. |
| USBC | UNIVERSAL SERIAL BUS. PROVIDE NEMA 5-20R DUPLEX RECEPTACLE WITH (1) USB TYPE 'A' PORT & (1) USB TYPE 'C' PORT RATED FOR 5.0 AMPS. PROVIDE HUBBELL USB20AC5W OR EQUAL. |
| V | VENT |
| VFD | VARIABLE FREQUENCY DRIVE |
| VIF | VERIFY IN FIELD |
| VTR | VENT THROUGH ROOF |
| W | WALL MOUNTED |
| WC | WATER CLOSET |
| WCO | WALL CLEANOUT |
| WP | WEATHER PROOF |

## MECHANICAL SYSTEMS COMMISSIONING

### THESE SYSTEMS ARE EXEMPT FROM COMMISSIONING REQUIREMENTS:

A. IN BUILDINGS WHERE TOTAL MECHANICAL EQUIPMENT CAPACITY IS < 480,000 BTU/H (40 TONS) COOLING CAPACITY AND < 600,000 BTU/H COMBINED SERVICE WATER HEATING AND SPACE-HEATING CAPACITY

### C408.2.2 - SYSTEMS ADJUSTING AND BALANCING

A. HVAC SYSTEMS BALANCED PER GENERALLY ACCEPTED ENGINEERING STANDARDS
B. AIR AND WATER FLOW RATES MEASURED AND ADJUSTED TO DELIVER FINAL FLOW RATES WITHIN TOLERANCES IN PRODUCT SPECIFICATIONS
C. TEST AND BALANCE ACTIVITIES TO INCLUDE AIR SYSTEM AND HYDRONIC SYSTEM BALANCING

### C408.2.2.1 - AIR SYSTEMS BALANCING

A. EACH SUPPLY AIR OUTLET AND ZONE TERMINAL DEVICE EQUIPPED WITH MEANS FOR AIR BALANCING PER CHAPTER 6 OF THE IMC
B. NO DISCHARGE DAMPERS USED FOR AIR-SYSTEM BALANCING ON CONSTANT VOLUME FANS AND VARIABLE VOLUME FANS WITH MOTORS ≥ 10 HP
C. AIR SYSTEMS BALANCED IN A MANNER TO FIRST MINIMIZE THROTTLING LOSSES, THEN, FOR FANS WITH SYSTEM POWER > 1HP, FAN SPEED ADJUSTED TO MEET DESIGN FLOW CONDITIONS
D. EXCEPTION - FANS WITH MOTORS ≤ 1HP ARE NOT REQUIRED TO HAVE A MEANS FOR AIR BALANCING

### C408.2.2.2 - HYDRONIC SYSTEMS BALANCING

A. INDIVIDUAL HYDRONIC HEATING AND COOLING COILS EQUIPPED WITH MEANS FOR BALANCING AND MEASURING FLOW
B. HYDRONIC SYSTEMS PROPORTIONATELY BALANCED IN A MANNER TO FIRST MINIMIZE THROTTLING LOSSES, THEN PUMP IMPELLER TO BE TRIMMED OR PUMP SPEED TO BE ADJUSTED TO MEET DESIGN FLOW CONDITIONS
C. EACH HYDRONIC SYSTEM TO HAVE EITHER CAPABILITY TO MEASURE PRESSURE ACROSS THE PUMP, OR TEST PORTS AT EACH SIDE OF EACH PUMP
D. EXCEPTIONS WITH A MEANS FOR BALANCING OR MEASURING FLOW:
   1. PUMPS WITH PUMP MOTORS ≤ 5HP
   2. WHERE THROTTLING RESULTS IN ≤ 5% OF NAMEPLATE HP DRAW ABOVE THAT REQUIRED IF THE IMPELLER WERE TRIMMED

### C408.2.3.1 - FUNCTIONAL PERFORMANCE TESTING - EQUIPMENT

A. TO DEMONSTRATE THE INSTALLATION AND OPERATION OF COMPONENTS, SYSTEMS, AND SYSTEM-TO-SYSTEM INTERFACING RELATIONSHIPS IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS, SUCH THAT OPERATION, FUNCTION, AND MAINTENANCE SERVICEABILITY FOR EACH OF THE COMMISSIONED SYSTEMS IS CONFIRMED
B. TESTING TO INCLUDE ALL MODES AND SEQUENCE OF OPERATION, INCLUDING UNDER FULL-LOAD, PART-LOAD AND THE FOLLOWING EMERGENCY CONDITIONS:
   1. ALL MODES AS DESCRIBED IN THE SEQUENCE OF OPERATION
   2. REDUNDANT OR AUTOMATIC BACK-UP MODE
   3. PERFORMANCE OF ALARMS, AND
   4. MODE OF OPERATION UPON A LOST OFF POWER AND RESTORATION OF POWER
C. EXCEPTION - UNITARY OR PACKAGED HVAC EQUIPMENT LISTED IN TABLES C403.2.3(1) THROUGH C403.2.3(3) THAT DONT REQUIRE SUPPLY AIR ECONOMIZERS

### C408.2.3.2 - FUNCTIONAL PERFORMANCE TESTING - CONTROLS

A. HVAC AND SWH CONTROL SYSTEMS TO BE TESTED TO DOCUMENT THAT CONTROL DEVICES, COMPONENTS, EQUIPMENT, AND SYSTEMS ARE CALIBRATED, ADJUSTED AND OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS
B. SEQUENCES OF OPERATION TO BE FUNCTIONALLY TESTED TO DOCUMENT THEY OPERATE IN ACCORDANCE WITH APPROVED PLANS AND SPECIFICATIONS

### C408.2.3.3 - FUNCTIONAL PERFORMANCE TESTING -ECONOMIZERS

A. AIR ECONOMIZERS TO UNDERGO A FUNCTIONAL TEST TO DETERMINE THEY OPERATE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS

## FUNCTIONAL TESTING OF LIGHTING CONTROLS

### C408.3.1.1 - OCCUPANT SENSOR CONTROLS

A. CERTIFY LOCATION AND AIMING PER MANUFACTURER RECOMMENDATION
B. TEST ALL SENSORS IF PROJECT ≤ 7
C. IF > 7 SENSORS, TEST FOR EACH UNIQUE COMBINATION OF SENSOR TYPE AND SPACE GEOMETRY
D. WHERE MULTIPLES OF EACH UNIQUE COMBINATION OF SENSOR TYPE AND SPACE GEOMETRY ARE PROVIDED > 10%, BUT IN NO CASE < 1 OF EACH COMBINATION SHALL BE TESTED UNLESS THE CODE OFFICIAL OR DESIGN PROFESSIONAL REQUIRES A HIGHER PERCENTAGE TO BE TESTED
E. WHERE >30% OF TESTED CONTROLS FAIL, ALL REMAINING IDENTICAL COMBINATIONS MUST BE TESTED
F. VERIFY THE FOLLOWING:
   1. STATUS INDICATOR, VERIFY CORRECT OPERATION
   2. LIGHTS TURN OFF OR DOWN TO PERMITTED LEVEL WITHIN REQUIRED TIME
   3. AUTO-ON - LIGHTS TURN ON TO PERMITTED LEVEL WHEN SOMEONE ENTERS THE SPACE
   4. MANUAL ON - LIGHTS TURN ON ONLY WHEN MANUALLY ACTIVATED
   5. LIGHTS ARENT INCORRECTLY TURNED ON BY MOVEMENT IN NEARBY AREAS OR BY HVAC OPERATION

### C408.3.1.2 - TIME-SWITCH CONTROLS

A. CONFIRM PROGRAMMED SCHEDULES
B. DOCUMENT SCHEDULES FOR OWNER
C. VERIFY CORRECT TIME AND DATE ARE SET
D. VERIFY ANY BATTERY BACKUP IS INSTALLED AND ENERGIZED
E. VERIFY OVERRIDE TIME LIMIT SET TO ≤ 2 HOURS
F. SIMULATE OCCUPIED CONDITION AND VERIFY AND DOCUMENT:
   1. LIGHTS TURN ON AND OFF WITH RESPECTIVE SWITCHES
   2. SWITCH ONLY OPERATES LIGHTS IN ENCLOSED SPACE WHERE SWITCH IS LOCATED
G. SIMULATE UNOCCUPIED CONDITION AND VERIFY AND DOCUMENT:
   1. ALL NONEXEMPT LIGHTS TURN OFF
   2. MANUAL OVERRIDE ONLY OPERATES LIGHTING WHERE IT IS LOCATED

### C408.3.1.3 - DAYLIGHT RESPONSIVE CONTROLS

A. PROPERLY LOCATED, FIELD-CALIBRATED, AND SET TO HAVE APPROPRIATE SETPOINTS AND THRESHOLD LIGHT LEVELS
B. DAYLIGHT CONTROLLED LIGHTING LOADS ADJUST TO CORRECT LEVELS WITH AVAILABLE DAYLIGHT
C. AUTHORIZED PERSONNEL HAVE READY ACCESS TO CALIBRATION ADJUSTMENT EQUIPMENT

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5902 BEE CAVES ROAD
WEST LAKE HILLS, TEXAS 78746

COVERSHEET - MEP

| DATE | REMARKS |
|---|---|

| | |
|---|---|
| PA/PM: | PROJECT LEAD |
| DRAWN BY.: | DRAFTER |
| JOB NO.: | DAL21-0008-00 |

SHEET
MEP1.00

NOVA ENGINEERING
MEP CONSULTANTS | TEXAS REG # F-9273 | 21197.00
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# DIVISION 13: SPECIAL SYSTEMS (2020.02)

## 13851 - FIRE ALARM SYSTEMS (EXISTING)

A. FIRE ALARM SYSTEM SHALL BE AN EXTENSION OF THE EXISTING FIRE ALARM SYSTEM(S). PROVIDE NEW DEVICES TO FIT AND MATCH EXISTING FIRE ALARM EQUIPMENT. PROVIDE NEW CONTROL AND/OR ANNUNCIATOR PANELS AS NECESSARY. PROVIDE NEW EQUIPMENT TO ENABLE FIRE ALARM SYSTEM TO ACCOMMODATE BOTH EXISTING AND NEW ALARM, INDICATING AND INITIATION DEVICES.
B. PROVIDE NECESSARY WIRE AND CONDUIT FOR TYING NEW FIRE ALARM INITIATING AND SIGNALING DEVICES TO NEAREST AVAILABLE FIRE ALARM INITIATING ZONE. VERIFY THAT EXISTING FIRE ALARM SYSTEM HAS CAPACITY FOR ADDITIONAL EQUIPMENT. PROVIDE ADDITIONAL CAPACITY AS REQUIRED FOR NEW EQUIPMENT.

## 13915 - FIRE SUPPRESSION PIPING

A. PROVIDE COMPLETE WET PIPE FIRE SPRINKLER SYSTEM FOR THE ENTIRE SPACE. FIRE SPRINKLER SYSTEM SHALL BE APPROVED BY THE AUTHORITIES HAVING JURISDICTION. SUBMIT SPRINKLER LAYOUT FOR REVIEW.
B. SPRINKLER HEADS IN FINISHED AREAS SHALL BE CONCEALED TYPE WITH WHITE COVER PLATES. SPRINKLER HEADS SHALL BE CENTERED IN CEILING TILES.
C. COORDINATE THE DESIGN AND LAYOUT OF FIRE SUPPRESSION PIPING WITH THE WORK OF ALL TRADES TO ALLOW ADEQUATE ABOVE CEILING CLEARANCES FOR MECHANICAL EQUIPMENT, DUCTS, CONDUIT, PLUMBING PIPING, AND LIGHT FIXTURES.
D. REVISIONS TO THE EXISTING FIRE SUPPRESSION PIPING SYSTEM SHALL BE PROVIDED TO MAINTAIN A FULLY OPERATIONAL SYSTEM THAT SATISFIES THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION. FIRE SUPPRESSION SYSTEM SHALL BE LIGHT HAZARD UNLESS OTHERWISE NOTED.
E. SPRINKLER HEADS IN FINISHED CEILINGS SHALL BE CONCEALED TYPE WITH WHITE FLUSH COVERS OR RECESSED TYPE WITH TWO-PIECE CHROME ESCUTCHEONS AS NOTED. SPRINKLER HEADS IN UNFINISHED SPACES SHALL BE CHROME PENDANT TYPE.
F. EXTENDED COVERAGE TYPE SPRINKLER HEADS MAY BE USED WHERE APPROVED BY THE AUTHORITIES HAVING JURISDICTION.

# DIVISION 15: MECHANICAL (2020.01)

## 15050 - BASIC MECHANICAL MATERIALS AND METHODS

A. PROVIDE ALL EQUIPMENT, MATERIALS, LABOR, SUPERVISION, AND SERVICES NECESSARY FOR OR INCIDENTAL TO THE INSTALLATION OF COMPLETE AND OPERATING MECHANICAL SYSTEMS AS SHOWN OR INDICATED ON THE DRAWINGS. PROPER PRECAUTIONS SHALL BE TAKEN TO PROTECT ALL EXISTING OPERATIONS AND PROPERTY WITH WHICH WORK COMES IN CONTACT OR OVER WHICH MATERIALS, EQUIPMENT, DEBRIS, ETC. MAY BE TRANSPORTED, HOISTED, OR MOVED. ALL DAMAGE RESULTING FROM THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER.
B. MATERIALS AND/OR EQUIPMENT FAILING TO GIVE SATISFACTORY SERVICE DURING A ONE YEAR MATERIALS AND LABOR WARRANTY PERIOD SHALL BE REPAIRED OR REPLACED WITH NEW.
C. SUBMIT A PDF FILE OF PRODUCT DATA FOR ALL MECHANICAL AND PLUMBING ITEMS FOR APPROVAL.
D. NOTIFY AND COORDINATE WITH THE OWNER FOR APPROVAL AND SCHEDULING OF ANY BUILDING OR EXISTING TENANT SYSTEM INTERRUPTION.
E. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED RECOMMENDATIONS FOR THE SERVICE INTENDED. THE INSTALLATION OF ALL EQUIPMENT SHALL BE MADE BY EXPERIENCED CRAFTSMEN IN A MANNER DEMONSTRATING NEAT WORKMANSHIP.
F. THE SCOPE OF WORK SHALL INCLUDE ALL MATERIAL, TOOLS, SERVICE, AND COSTS NECESSARY TO COMPLETELY INSTALL ALL MECHANICAL WORK. IT IS THE INTENT AND MEANING OF THE CONTRACT DOCUMENTS THAT THE MECHANICAL SYSTEM BE INSTALLED COMPLETE INCLUDING ALL ITEMS AND APPURTENANCES NECESSARY, REASONABLY INCIDENTAL, OR CUSTOMARILY INCLUDED EVEN THOUGH EACH AND EVERY ITEM IS NOT SPECIFICALLY MENTIONED OR SHOWN.
G. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH THE CONTRACT DOCUMENTS AND ALL APPLICABLE CODES AND STANDARDS WHICH INCLUDE ALL ORDINANCES, AMENDMENTS, AND UTILITY COMPANY REGULATIONS. WHERE CONFLICTS EXIST AMONG APPLICABLE CODES AND STANDARDS, THE ARCHITECT SHALL BE NOTIFIED IN WRITING. SHOULD WORK BE PERFORMED THAT DOES NOT COMPLY WITH APPLICABLE CODES AND STANDARDS, THOSE DEFECTS SHALL BE CORRECTED WITH NO CHANGE IN CONTRACT AMOUNT.
H. THE CONTRACT DOCUMENTS WERE PREPARED FROM INFORMATION MADE AVAILABLE; HOWEVER, CONDITIONS SURROUNDING THE INSTALLATION OF THE WORK SHALL BE CAREFULLY INVESTIGATED PRIOR TO SUBMITTING A BID, FABRICATION OF DUCTS OR PIPING, OR PROCEEDING WITH INSTALLATION. CONFLICTS DUE TO EXISTING CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT FOR REVIEW AND RESOLUTION. UPON COMMENCEMENT OF CONSTRUCTION, IT SHALL BE UNDERSTOOD THAT THE CONDITIONS OF THE PREMISES HAVE BEEN ACCEPTED.
I. COORDINATE LOCATIONS OF EXISTING EQUIPMENT (DUCTS, TERMINAL BOXES, ETC.) WITH NEW FLOOR TO STRUCTURE PARTITIONS. RELOCATE EQUIPMENT IF REQUIRED TO MAINTAIN ADEQUATE SERVICE CLEARANCE.
J. ALL EXISTING MECHANICAL EQUIPMENT AND PLUMBING FIXTURES IMPACTED BY THE DRAWINGS AND DESIGNATED TO REMAIN SHALL BE INSPECTED PRIOR TO SUBMITTING A BID. THIS EQUIPMENT IS TO BE SERVICED, CLEANED, AND PLACED IN WORKING ORDER AS PART OF THIS WORK; THEREFORE, ALL REPAIRS, PARTS, ETC. SHALL BE INCLUDED.
K. ALL MECHANICAL AND PLUMBING EQUIPMENT SHALL BE AS SCHEDULED OR AS APPROVED EQUAL BY THE ENGINEER.
L. ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA) AND THE TEXAS ACCESSIBILITY STANDARDS (TAS).
M. ALL BIDDERS SHALL BE FAMILIAR WITH EXISTING CONDITIONS ON THE PREMISES AND BE PREPARED TO COORDINATE WITH ALL EXISTING CONDITIONS TO BE ENCOUNTERED BY ALL TRADES. ANY EXCEPTIONS SHALL BE NOTED IN WRITING AND SHALL BE INCLUDED IN THE BID.
N. THE WORKING CONDITION OF ALL EXISTING EQUIPMENT TO BE RE-USED SHALL BE VERIFIED PRIOR TO THE START OF CONSTRUCTION. THE OWNER SHALL BE GIVEN WRITTEN NOTIFICATION OF ANY MISSING OR MALFUNCTIONING DEVICES.
O. COORDINATE EQUIPMENT SUBSTITUTIONS FOR THE SCHEDULED OR SPECIFIED ITEM WITH ALL OTHER TRADES. COMPENSATION TO OTHER TRADES DUE TO CHANGES IN RATED VOLTAGE, PHASE, AMPERAGE, PHYSICAL SIZE, WEIGHT, ARRANGEMENT, SHAPE, COLOR, OR OTHER CHARACTERISTIC AND THE RELATED EFFECTS ARISING FROM THE SUBSTITUTION SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR MAKING THE CHANGE.
P. THE DRAWINGS ARE DIAGRAMMATIC, BUT SHALL BE FOLLOWED AS CLOSELY AS ACTUAL CONSTRUCTION AND WORK OF OTHER TRADES WILL PERMIT. PIPING ARRANGEMENTS, MECHANICAL COMPONENT LOCATIONS, AND THE LIKE HAVE BEEN DESIGNED FOR ECONOMY CONSISTENT WITH GOOD PRACTICE AND OTHER CONSIDERATIONS. MAJOR CHANGES TO THE SYSTEMS ARRANGED AS SHOWN ON THE DRAWINGS MUST BE APPROVED IN WRITING AND ALL SUCH CHANGES SHALL BE INCORPORATED INTO THE 'AS-BUILT' DRAWINGS.
Q. UPON COMPLETION OF THE WORK, ALL EXPOSED PORTIONS OF THE MECHANICAL EQUIPMENT PROVIDED SHALL BE THOROUGHLY CLEANED. REMOVE ALL TRACES OF SOIL, LABELS, GRADE, OIL, AND OTHER FOREIGN MATERIAL USING ONLY THE TYPES OF CLEANERS RECOMMENDED BY THE MANUFACTURERS OF THE EQUIPMENT BEING CLEANED.
R. UPON COMPLETION, PROVIDE MANUFACTURER'S OPERATING AND MAINTENANCE MANUALS FOR ALL EQUIPMENT INSTALLED AS PART OF THE WORK TO THE OWNER.
S. PROVIDE TRAINING TO OPERATING PERSONNEL FOR ALL SYSTEMS AND EQUIPMENT INSTALLED AS PART OF THE WORK.
T. MAINTAIN MINIMUM CLEARANCES ABOVE FINISHED CEILINGS TO ALLOW INSTALLATION OF MECHANICAL EQUIPMENT, DUCTS, CONDUIT, PLUMBING PIPING, FIRE SUPPRESSION PIPING, AND LIGHT FIXTURES.
U. IN THE EVENT OF A CONFLICT WITHIN THE CONTRACT DOCUMENTS, PROVIDE THE GREATER QUANTITY OR HIGHER QUALITY.
V. UPON THE COMPLETION OF THE WORK, PROVIDE 'AS-BUILT' RECORD DRAWINGS TO THE OWNER. DRAWINGS SHALL BE PROVIDED IN ELECTRONIC FORMAT COMPATIBLE WITH AUTOCAD RELEASE 2012.
W. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE RULES, REGULATIONS, INDUSTRY STANDARDS, LOCAL CODES, LAWS, AND ORDINANCES. IN THE EVENT THAT A DISCREPANCY IS FOUND IN THE CONTRACT DOCUMENTS, NOTIFY THE ENGINEER IMMEDIATELY.

## 15060 - HANGERS AND SUPPORTS

A. ALL EQUIPMENT AND PIPING SHALL BE PROPERLY SUPPORTED WITHIN THE BUILDING AND ADEQUATE PROVISIONS SHALL BE MADE FOR SLOPE AND ANCHORAGE. HANGERS, RODS, CLAMPS, AND INSERTS SHALL BE APPROVED BY UL FOR THE SERVICE INTENDED.

## 15075 - MECHANICAL IDENTIFICATION

A. ALL MAJOR EQUIPMENT SHALL BE PROVIDED WITH ENGRAVED NAMEPLATES ATTACHED WITH SCREWS. LABELS SHALL USE NOMENCLATURE FROM EQUIPMENT SCHEDULES.
B. PIPING SYSTEMS SHALL BE IDENTIFIED WITH SNAP-ON PIPE MARKERS LOCATED EVERY TEN FEET. MARKERS SHALL DESIGNATE PIPE CONTENT AND FLOW DIRECTION.

## 15081 - DUCT INSULATION

A. INTERIOR METAL DUCTS SHALL BE INSULATED EXTERNALLY WITH TYPE IV DUCT WRAP, TWO INCH THICKNESS (ONE AND ONE-HALF INCHES IN PLACE), OR LINED WITH ONE-HALF INCH THICKNESS DUCT LINER. ALL DUCT DIMENSIONS INDICATE FREE AREA REQUIRED. INCREASE DUCT DIMENSIONS AS REQUIRED IF LINER IS USED.
B. INSTALLED R-VALUE SHALL BE EQUAL TO 5.0.
C. ALL INSULATION AND JACKET MATERIALS EXPOSED TO RETURN AIR SHALL BE SPECIFICALLY APPROVED FOR THAT APPLICATION.

## 15083 - PIPE INSULATION

A. CHILLED WATER AND REFRIGERANT SUCTION LINES 1.5 INCHES AND SMALLER SHALL BE INSULATED WITH 1 INCH THICKNESS PRE-FORMED GLASS FIBER PIPE INSULATION WITH WHITE ALL SERVICE JACKET AND INTEGRAL VAPOR BARRIER. INSULATION THICKNESS ON THESE LINES GREATER THAN 1.5 INCHES SHALL BE 1.5 INCH THICKNESS.
B. CIRCULATED DOMESTIC HOT WATER PIPING SHALL BE INSULATED WITH 1 INCH THICKNESS PRE-FORMED GLASS FIBER PIPE INSULATION WITH WHITE ALL SERVICE JACKET.
C. DOMESTIC COLD WATER, HOT WATER, AND HVAC CONDENSATE DRAIN PIPING SHALL BE INSULATED WITH 0.5 INCH THICKNESS PRE-FORMED GLASS FIBER PIPE INSULATION WITH WHITE ALL SERVICE JACKET AND INTEGRAL VAPOR BARRIER.
D. ALL INSULATION AND JACKET MATERIALS EXPOSED TO RETURN AIR SHALL BE SPECIFICALLY APPROVED FOR THAT APPLICATION.

## 15110 - VALVES

A. ALL VALVES SHALL BE RATED FOR THE MAXIMUM PRESSURE OF THE SYSTEM IN WHICH THEY ARE TO BE INSTALLED.
B. ALL WATER SERVICE VALVES SHALL BE LUG TYPE BUTTERFLY OR BALL TYPE.

## 15140 - DOMESTIC WATER PIPING

A. DOMESTIC COLD, HOT, AND CIRCULATED HOT WATER PIPING AND EQUIPMENT CONDENSATE DRAIN PIPING SHALL BE TYPE L HARD COPPER WITH WROUGHT COPPER FITTINGS.
B. DIELECTRIC UNIONS, FITTINGS, OR COUPLINGS SHALL BE USED WHEN DISSIMILAR METALS ARE JOINED.

## 15150 - SANITARY WASTE AND VENT PIPING

A. SANITARY WASTE, VENT, AND DRAIN PIPING 2 INCHES AND LARGER SHALL BE SERVICE WEIGHT CAST IRON. PIPING BELOW THE SLAB SHALL BE HUB AND SPIGOT TYPE WITH SEALED JOINTS. PIPING ABOVE THE SLAB SHALL BE NO-HUB TYPE. VENT PIPING MAY BE SCHEDULE 40 GALVANIZED STEEL, DWV COPPER, OR SERVICE WEIGHT CAST IRON. WASTE PIPING SMALLER THAN 2 INCHES MAY BE DWV COPPER. SCHEDULE 40 PVC PIPING MAY BE USED WHERE ACCEPTED BY THE AUTHORITIES HAVING JURISDICTION; HOWEVER, PVC PIPING MAY NOT BE USED IN SPACES USED FOR RETURN AIR PLENUMS.

## 15194 - FUEL GAS PIPING

A. UNDERGROUND GAS PIPING SHALL BE WRAPPED BLACK STEEL (WELDED) OR POLYETHYLENE. ABOVE GROUND GAS PIPING SHALL BE PAINTED BLACK STEEL, SCHEDULE 40, THREADED. ENCLOSE ALL INDOOR GAS PIPING IN CONTINUOUS SLEEVE WHERE REQUIRED BY THE AUTHORITIES HAVING JURISDICTION.

## 15410 - PLUMBING FIXTURES

A. PLUMBING FIXTURES AND EQUIPMENT SHALL BE PROVIDED AS SCHEDULED OR INDICATED AND INSTALLED COMPLETE WITH STOP VALVES, SUPPLIES, ESCUTCHEONS, AND ALL OTHER APPURTENANCES REQUIRED TO CONNECT TO ROUGH-IN PIPING AT FLOORS AND WALLS.

## 15815 - METAL DUCTS

A. DUCTS SHALL BE MINIMUM 24 GAUGE SHEETMETAL CONSTRUCTED AND SEALED IN ACCORDANCE WITH THE LATEST SMACNA STANDARDS FOR THE PRESSURE CLASS OF THE SYSTEM SERVED.
B. UNLESS NOTED OTHERWISE, ALL DUCT DIMENSIONS INDICATE THE FREE AREA REQUIRED. WHERE INTERNAL DUCT LINER IS USED, INCREASE THE DUCT DIMENSIONS ACCORDINGLY.
C. ALL SUPPLY AND RETURN DUCTS WITHIN TWENTY FEET OF AIR CONDITIONING UNITS AND WITHIN EIGHT FEET OF TERMINAL BOXES SHALL BE LINED WITH ONE INCH THICKNESS, ONE AND ONE-HALF POUND DENSITY ACOUSTIC DUCT LINER APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

## 15820 - DUCT ACCESSORIES

A. PROVIDE FLEXIBLE DUCT CONNECTIONS AT EQUIPMENT.
B. FLEXIBLE DUCTS MAY BE USED FOR INDIVIDUAL RUNOUTS; HOWEVER, RUNOUTS SHALL NOT EXCEED 6 FEET IN TOTAL LENGTH AND BE PROPERLY SUPPORTED TO PREVENT RESTRICTIONS TO AIR FLOW. ALL CHANGES IN DIRECTION GREATER THAN FORTY-FIVE DEGREES SHALL BE MADE WITH RIGID DUCT FITTINGS.
C. FLEXIBLE DUCTS SHALL HAVE ONE INCH THICKNESS EXTERNAL INSULATION WITH FOIL JACKET AND VAPOR BARRIER. FLEXIBLE DUCTS SHALL MEET CLASS I, UL-181 AND 25/50 FIRE RATING REQUIREMENTS.
D. VERIFY ADEQUATE PATHS ARE PROVIDED FOR RETURN AIR. LINED RETURN AIR TRANSFER BOOTS SHALL BE PROVIDED IN ALL FLOOR TO STRUCTURE PARTITIONS TREATED FOR SOUND. TRANSFER BOOTS SHALL BE SIZED FOR A MAXIMUM VELOCITY OF 500 FPM.
E. ALL FIRE DAMPERS SHALL BE TYPE B WITH THE CURTAIN OUT OF THE AIRSTREAM.
F. PROVIDE ACCESS DOORS AT EACH DUCT MOUNTED FIRE DAMPER.
G. PROVIDE MANUAL VOLUME CONTROL DAMPER IN THE DUCT RUNOUT TO EACH AIR SUPPLY DEVICE.

## 15830 - FANS

A. ALL FANS SHALL BE AMCA CERTIFIED.

## 15855 - DIFFUSERS, REGISTERS, AND GRILLES

A. DIFFUSERS, REGISTERS, AND GRILLES SHALL BE BUILDING STANDARD UNLESS NOTED OTHERWISE AND SHALL BE PROVIDED WITH MOUNTING FRAMES COMPATIBLE WITH THE CEILING OR WALL TYPE IN WHICH THEY ARE TO BE INSTALLED.

## 15900 - HVAC INSTRUMENTATION AND CONTROLS

A. PROVIDE ALL CONTROLS REQUIRED TO COMPLETELY ACCOMPLISH THE IMPLIED OR INTENDED FUNCTIONS AND OPERATION OF THE SYSTEMS AND EQUIPMENT INSTALLED.
B. CONTROLS SHALL COMPATIBLE WITH AND CONNECT TO THE EXISTING BUILDING CONTROL SYSTEM. IF PNEUMATIC CONTROLS ARE USED, THE QUALITY AND CAPACITY OF THE EXISTING CONTROL AIR SYSTEM SHALL BE VERIFIED AND COORDINATED WITH THE NEW CONTROL DEVICES.
C. ELECTRIC AND/OR ELECTRONIC CONTROLS SHALL BE INSTALLED COMPLETE WITH REQUIRED POWER CIRCUITS, POWER SUPPLIES, WIRING, CONDUIT, ACCESSORIES, AND ENCLOSURES.
D. PROVIDE DDC CONTROLS.
E. LOCATIONS OF ALL THERMOSTATS/SENSORS SHALL BE COORDINATED WITH FURNITURE LOCATIONS AND FINISHES. THERMOSTATS/SENSORS SHALL NOT BE INSTALLED BEHIND SYSTEM FURNITURE PANELS, IN MILLWORK, OR ABOVE DIMMERS.
F. THERMOSTATS AND SENSORS SHALL BE INSTALLED TO COMPLY WITH THE REQUIREMENTS OF TAS AND ADA.
G. EACH SYSTEM SHALL HAVE ONE SOLID-STATE PROGRAMMABLE THERMOSTAT WHICH SHALL HAVE THE CAPABILITY TO SET BACK OR SHUT DOWN THE SYSTEM BASED ON DAY OF THE WEEK AND TIME OF DAY, AND PROVIDE A READILY ACCESSIBLE MANUAL OVERRIDE THAT WILL RETURN TO PRESET OR SHUTDOWN SCHEDULE WITHOUT REPROGRAMMING.

## 15950 - TESTING, ADJUSTING, AND BALANCING

A. ALL MECHANICAL SYSTEMS SHALL BE TESTED AND BALANCED USING AABC OR NEBB PROCEDURES. FINAL REPORT SHALL BE SUBMITTED TO THE OWNER.

# DIVISION 16: ELECTRICAL (2020.01)

## 16010 - BASIC ELECTRICAL REQUIREMENTS

A. PROVIDE LABOR MATERIALS, EQUIPMENT AND TRANSPORTATION TO RECEIVE, INSTALL, ADJUST, AND PUT INTO OPERATION COMPLETE ELECTRICAL SYSTEMS IN ACCORDANCE WITH THE INTENT OF THE CONTRACT DOCUMENTS. PROVIDE PRODUCTS NOT MENTIONED BUT OBVIOUSLY NECESSARY AND INCIDENTAL TO THE COMPLETION OF THIS WORK.
B. OBTAIN ALL PERMITS AND PAY ALL FEES.
C. ALL WORK DONE SHALL BE PERFORMED BY QUALIFIED ELECTRICIANS, UNDER THE SUPERVISION AND DIRECTION OF A SUPERINTENDENT HAVING SUCCESSFUL EXPERIENCE INSTALLING AND SUPERVISING EQUIPMENT AND SYSTEMS OF SIMILAR TYPE AND SIZE AS INDICATED BY CONTRACT DOCUMENTS.
D. EXAMINE AND BECOME FAMILIAR WITH ALL CONTRACT DOCUMENTS IN THEIR ENTIRETY. SURVEY THE PROJECT AND BECOME FAMILIAR WITH CONDITIONS AND SCOPE OF WORK. ALL COSTS SUBMITTED SHALL BE BASED ON A THOROUGH KNOWLEDGE OF ALL WORK AND MATERIALS REQUIRED. ANY ADDITIONAL COSTS DUE TO FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
E. COORDINATE WORK WITH ALL OTHER TRADES. GIVE SPECIAL CONSIDERATION TO COORDINATING INSTALLATION OF LIGHTING, SPRINKLER PIPING, AND DUCTWORK. COORDINATE WALL OUTLET LOCATIONS WITH MILLWORK. COORDINATE WALL SWITCHES WITH DOOR SWINGS. VERIFY EXACT LOCATION, COLOR AND FINISH OF OUTLETS AND DEVICES WITH INTERIOR DESIGNER, ARCHITECT, OR DESIGNATED TENANT REPRESENTATIVE PRIOR TO INSTALLATION.
F. PRODUCTS OF A SIMILAR NATURE SHALL BE THE SAME TYPE AND MANUFACTURER. PROVIDE THE STANDARD PRODUCTS OF MANUFACTURERS REGULARLY ENGAGED IN THE PRODUCTION OF SPECIFIED PRODUCTS, UNLESS OTHERWISE REQUIRED BY THE DRAWINGS.
G. ALL PRODUCTS SHALL BE UL LISTED AND INSTALLED IN ACCORDANCE WITH NATIONALLY RECOGNIZED AND ACCEPTED STANDARDS AND PROCEDURES.
H. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE RULES, REGULATIONS, INDUSTRY STANDARDS, LOCAL CODES, LAWS, AND ORDINANCES. IN THE EVENT THAT A DISCREPANCY IS FOUND IN THE CONTRACT DOCUMENTS, NOTIFY THE ENGINEER IMMEDIATELY.

## 16050 - BASIC ELECTRICAL MATERIALS AND METHODS

A. FOR SUBMITTALS, PROVIDE A PDF FILE OF ELECTRICAL MATERIALS AND PRODUCTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING: LIGHTING FIXTURES, DEVICES (SWITCHES, RECEPTACLES, ETC.), SWITCHBOARDS, TRANSFORMERS, PANELBOARDS, CIRCUIT AND MOTOR DISCONNECTS, MOTOR CONTROLLERS, SUPPORTING DEVICES, TRANSIENT VOLTAGE SURGE SUPPRESSION, AND FIRE ALARM SYSTEMS.
B. COMPILE AND ASSEMBLE THE WARRANTIES FOR ALL EQUIPMENT SPECIFIED IN DIVISION 16, INTO A SEPARATED SET OF VINYL COVERED, THREE RING BINDERS, TABULATED AND INDEXED FOR EASY REFERENCE. PROVIDE COMPLETE WARRANTY INFORMATION FOR EACH ITEM TO INCLUDE PRODUCT OR EQUIPMENT TO INCLUDE DATE OF BEGINNING OF WARRANTY OR BOND; DURATION OF WARRANTY OR BOND; AND NAMES, ADDRESSES, AND TELEPHONE NUMBERS AND PROCEDURES FOR FILING A CLAIM AND OBTAINING WARRANTY SERVICES.
C. PREPARE MAINTENANCE MANUALS THAT INCLUDE THE FOLLOWING INFORMATION FOR EQUIPMENT ITEMS:
   1. DESCRIPTION OF FUNCTION, NORMAL OPERATING CHARACTERISTICS AND LIMITATIONS, PERFORMANCE CURVES, ENGINEERING DATA AND TESTS, AND COMPLETE NOMENCLATURE AND COMMERCIAL NUMBERS OF REPLACEMENT PARTS.
   2. MANUFACTURER'S PRINTED OPERATING PROCEDURES TO INCLUDE START-UP, BREAK-IN, AND ROUTINE AND NORMAL OPERATING INSTRUCTIONS; REGULATION, CONTROL, STOPPING, SHUTDOWN, AND EMERGENCY INSTRUCTIONS; AND SUMMER AND WINTER OPERATING INSTRUCTIONS.
   3. MAINTENANCE PROCEDURES FOR ROUTINE PREVENTATIVE MAINTENANCE AND TROUBLESHOOTING; DISASSEMBLY, REPAIR, AND REASSEMBLY; ALIGNING AND ADJUSTING INSTRUCTIONS.
   4. SERVICING INSTRUCTIONS AND LUBRICATION CHARTS AND SCHEDULES.
D. UPON COMPLETION OF WORK, PREPARE ELECTRICAL 'AS-BUILT' DRAWINGS. PRESENT COMPLETED DRAWINGS TO OWNER AND TWO SETS TO ARCHITECT. 'AS-BUILT' DRAWINGS SHALL INCLUDE ALL BRANCH CIRCUIT WORK, PANELBOARD INFORMATION, FINAL SWITCHING, FINAL LOCATION OF ALL EQUIPMENT, ETC.
E. PROVIDE SUPPORTING DEVICES FOR ALL ELECTRICAL SYSTEMS IN ACCORD WITH APPLICABLE CODES AND STANDARDS AND AS REQUIRED.
F. PROVIDE ONLY FASTENERS OF THE FOLLOWING TYPES, MATERIALS, AND CONSTRUCTION FEATURES:
   1. EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.
   2. TOGGLE BOLTS: ALL STEEL SPRINGHEAD TYPE.
   3. POWDER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL, DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE.

## 16060 - GROUNDING

A. PROVIDE AN ELECTRICAL EQUIPMENT GROUND SYSTEM AND AN ELECTRICAL SERVICE GROUND SYSTEM AS REQUIRED BY THE LOCAL AUTHORITIES HAVING JURISDICTION. A SEPARATE INSULATED EQUIPMENT GROUND CONDUCTOR SHALL BE INSTALLED IN ALL FEEDERS AND BRANCH CIRCUITS, INCLUDING ALL MOTOR FEEDERS FROM STARTER TO MOTOR. TEST AND SUBMIT REPORT OF GROUNDING SYSTEM TESTS.
B. PATIENT CARE AREAS:
   1. PROVIDE A REDUNDANT GROUNDING PATH BY USING A SEPARATE INSULATED EQUIPMENT GROUNDING CONDUCTOR IN CONJUNCTION WITH A TOTALLY SEPARATE GROUNDING PATH ON EITHER A METAL RACEWAY OR A CABLE WITH AN OUTER METAL ARMOR OR METAL SHEATH IDENTIFIED AS AN ACCEPTABLE GROUNDING RETURN PATH.

## 16075 - ELECTRICAL IDENTIFICATION

A. FURNISH AND INSTALL ENGRAVED PLASTIC LAMINATE NAMEPLATES FOR ALL PANELS, SWITCHGEAR, SWITCHES, MOTOR STARTERS, AND ELECTRICAL EQUIPMENT. PROVIDE BRANCH CIRCUIT IDENTIFICATION (PANEL AND BRANCH CIRCUIT NUMBER) ON EACH SWITCH, RECEPTACLE, ETC., AND/OR ASSOCIATED WALL PLATE, FOR EVERY DEVICE. EXCEPT AS OTHERWISE INDICATED, PROVIDE SINGLE LINE OF TEXT, WITH 1/2-INCH-HIGH LETTERING ON 1-1/2-INCH-HIGH LABEL (2-INCH-HIGH WHERE TWO LINES ARE REQUIRED), WHITE LETTERING IN BLACK FIELD. TEXT SHALL MATCH TERMINOLOGY AND NUMBERING OF THE CONTRACT DOCUMENTS AND SHOP DRAWINGS.
B. PROVIDE TYPED PANELBOARD SCHEDULES FOR ALL NEW PANELBOARDS AND ALL PANELBOARDS TO WHICH CIRCUITS HAVE BEEN ADDED.

## 16080 - ELECTRICAL TESTING

A. ALL ELECTRICAL EQUIPMENT AND WIRING SYSTEMS SHALL BE THOROUGHLY TESTED AND ALL DEFECTS AND MALFUNCTIONING EQUIPMENT SHALL BE CORRECTED, REPAIRED OR REPLACED. ALL SYSTEMS SHALL BE TESTED; TEST DATA SHALL BE PROVIDED FOR OWNER'S RECORDS.

## 16120 - CONDUCTORS AND CABLES

A. PROVIDE COPPER, TYPE THW, THWN, OR THHN AS REQUIRED FOR THE INTENDED USE. MINIMUM CONDUCTOR SIZE FOR BRANCH CIRCUITS SHALL BE NUMBER 12 AWG. USE NUMBER 10 AWG FOR ALL 120 VOLT BRANCH CIRCUITS LONGER THAN 100 FEET AND FOR ALL 277 VOLT BRANCH CIRCUITS LONGER THAN 200 FEET MEASURED FROM PANEL TO CENTER OF LOAD.
B. INSTALL ALL CONDUCTORS IN CONDUIT. USE UL APPROVED PULLING LUBRICANT WHERE REQUIRED.
C. USE NUMBER 12 AWG AS MINIMUM CONDUCTOR SIZE FOR POWER SYSTEMS AND FOR CONTROL CIRCUITS. ALL WIRES NUMBER 10 AWG AND SMALLER SHALL BE SOLID; ALL CONTROL WIRES SHALL BE STRANDED AND TERMINATED WITH CRIMPED LUGS.
D. WHERE ALLOWED BY CODE, TYPE "MC" CABLE IS ACCEPTABLE ONLY ABOVE LAY-IN CEILINGS FOR MAXIMUM 6 FT. LENGTHS AS LIGHTING FIXTURE WHIPS

## 16130 - RACEWAYS AND BOXES

A. CONCEAL ALL CONDUITS, UNLESS INDICATED OTHERWISE, WITHIN FINISHED WALLS, CEILINGS, AND FLOORS. KEEP RACEWAYS AT LEAST 6 INCHES AWAY FROM PARALLEL RUNS OF FLUES AND STEAM OR HOT WATER PIPES. INSTALL RACEWAYS LEVEL, SQUARE AT RIGHT ANGLES TO THE BUILDING AND AT PROPER ELEVATIONS.
B. USE ONLY MALLEABLE IRON METALLIC CONDUIT BODIES (DIECAST BODIES ARE NOT ACCEPTABLE). USE ONLY STEEL BODIES WITH GLAND RING COMPRESSION-THREADED TYPE EMT CONNECTORS WITH INSULATED THROATS.
C. OUTDOORS: USE THE FOLLOWING WIRING METHODS:
   1. EXPOSED: INTERMEDIATE METAL CONDUIT.
   2. CONCEALED: INTERMEDIATE METAL CONDUIT.
   3. UNDERGROUND, SINGLE RUN: RIGID NONMETALLIC CONDUIT.
   4. UNDERGROUND, GROUPED: RIGID NONMETALLIC CONDUIT.
   5. CONNECTION TO VIBRATING EQUIPMENT: INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC, OR ELECTRIC SOLENOID OR MOTOR-DRIVEN EQUIPMENT: LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
   6. INDOORS OR OUTDOORS: CONNECTION TO VIBRATING EQUIPMENT AND HYDRAULIC, PNEUMATIC, OR ELECTRIC SOLENOID OR MOTOR-DRIVEN EQUIPMENT IN MOIST OR HUMID LOCATION OR CORROSIVE ATMOSPHERE, OR WHERE SUBJECT TO WATER SPRAY OR DRIPPING OIL, GREASE, OR WATER: LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
D. INDOORS: USE THE FOLLOWING WIRING METHODS:
   1. CONNECTION TO VIBRATING EQUIPMENT: INCLUDING TRANSFORMERS AND HYDRAULIC, PNEUMATIC OR ELECTRIC SOLENOID OR MOTOR-OPERATED EQUIPMENT: FLEXIBLE METAL CONDUIT.
   2. EXPOSED: ELECTRICAL METALLIC TUBING.
   3. CONCEALED: ELECTRICAL METALLIC TUBING.
E. ELECTRICAL METALLIC TUBING (EMT) IS EXCLUDED FROM USE IN THE FOLLOWING LOCATIONS OR CONDITIONS:
   1. OUTSIDE STRUCTURE OR ON ROOF.
   2. AT OR BELOW GRADE.
   3. IN OR BENEATH SLABS ON GRADE.
   4. IN HAZARDOUS LOCATIONS.
   5. WHERE EXPOSED TO PHYSICAL DAMAGE.
   6. WHERE SUBJECT TO EXCESSIVE MOISTURE OR DETERIORATION.
   7. HIGH VOLTAGE RACEWAYS.
F. MINIMUM CONDUIT SIZE, INCLUDING FLEXIBLE CONDUIT, SHALL BE 3/4 INCH UNLESS MINIMUM SIZES ARE INDICATED TO BE LARGER FOR SPECIFIC SYSTEMS SPECIFIED ELSEWHERE IN THE DOCUMENTS.
G. PROVIDE GALVANIZED STEEL PULL AND JUNCTION BOXES THAT COMPLY WITH NEC AS TO SIZE AND CONSTRUCTION.
H. FOR JUNCTION AND PULL BOXES, USE BOXES NOT LESS THAN 4-INCHES SQUARE AND 4-INCHES DEEP WITH REMOVABLE COVERS.
I. USE CAST ALUMINUM OR CAST IRON BOXES WITH THREADED HUBS AND GASKETED COVERS IN DAMP/WET AREAS OR OUTDOORS.

## 16140 - WIRING DEVICES

A. PROVIDE UL LISTED SPECIFICATION GRADE MINIMUM 20 AMP (120 AND/OR 277 VOLT) SWITCHES AND RECEPTACLES. PROVIDE TAMPER-RESISTANT RECEPTACLES IN ACCORDANCE WITH NEC 406.12. ISOLATED GROUND RECEPTACLES SHALL BE FURNISHED WITH AN ORANGE TRIANGLE ON THE FACE OF THE DEVICE. DEVICES AND WALL PLATES SHALL BE COLORED RED WHERE CONNECTED TO THE EMERGENCY POWER DISTRIBUTION SYSTEM. COLOR OF DEVICES NOT CONNECTED TO THE EMERGENCY SYSTEM SHALL BE AS SELECTED BY THE ARCHITECT.
B. PROVIDE SOLID STATE DIMMER SWITCHES CONFORMING TO NEMA WD 1, MOUNTED IN OUTLET BOXES AS INDICATED AND IN ACCORDANCE WITH THE FOLLOWING:
   1. INCANDESCENT LAMP DIMMERS: MODULAR DIMMER SWITCHES FOR INCANDESCENT FIXTURES; SWITCH POLES AND WATTAGE AS INDICATED, 120-VOLTS, 60-HZ, WITH CONTINUOUSLY ADJUSTABLE ROTARY KNOB OR TOGGLE, ANODIZED ALUMINUM FACE, SINGLE-POLE, WITH SOFT-TAP OF OTHER QUIET ON-OFF SWITCH. EQUIP WITH ELECTROMAGNETIC FILTER TO ELIMINATE NOISE, RF AND TV INTERFERENCE, AND 5 INCH WIRE CONNECTING LEADS.
   2. FLUORESCENT LAMP DIMMERS: FULL-WAVE MODULAR TYPE AC DIMMER SWITCHES, FOR FLUORESCENT FIXTURES; WATTAGE AND VOLTAGE RATINGS AS INDICATED, AND WITH ELECTROMAGNETIC FILTERS TO MINIMIZE NOISE, AND RF AND TV INTERFERENCE. CONSTRUCT WITH CONTINUOUSLY ADJUSTABLE TRIM POTENTIOMETER FOR ADJUSTMENT OF LOW END DIMMING, ANODIZED HEAT SINKS, 5 INCH WIRE CONNECTING LEADS AND QUIET ON-OFF SWITCH. INCLUDE COMPATIBLE DIMMING LAMP BALLASTS.

## 16170 - CIRCUIT AND MOTOR DISCONNECTS

A. DISCONNECT SWITCHES SHALL BE HEAVY-DUTY, QUICK MAKE, QUICK BREAK, 3 PHASE, 3 OR 4 POLE WITH AMPERE RATING AS REQUIRED OR SAME AS UPSTREAM OVERCURRENT PROTECTIVE DEVICE.

## 16231 - PACKAGED ENGINE GENERATORS

A. PROVIDE A DIESEL GENERATOR IN SOUNDPROOF ENCLOSURE WITH BELLY TANK FROM GENERAC, KHOLER OR CUMMINS. REFER TO ELECTRICAL PLANS FOR VOLTAGE AND KW REQUIREMENTS. GENERATOR SHALL BE CONSTRUCTED IN ACCORDANCE WITH UL2200, UL508, UL142, UL498 & ETL. PROVIDE BELLY TANK CAPABLE OF SUPPORTING THE GENERATOR AT 80% LOAD FOR 24 HOURS. PROVIDE REMOTE ANNUNCIATOR PANEL IN TENANT BREAKROOM.

## 16271 - TRANSFORMERS

A. GENERAL PURPOSE DRY-TYPE TRANSFORMERS:
   1. COMPLY WITH NEMA STANDARD ST 20 "DRY-TYPE TRANSFORMERS FOR GENERAL APPLICATIONS." WINDINGS: 2-WINDING TYPE. THREE PHASE TRANSFORMERS SHALL USE ONE COIL PER PHASE IN PRIMARY AND SECONDARY. PROVIDE ALL COPPER WINDINGS. INSULATION TEMPERATURE RISE: 150 DEGREES C MAXIMUM RISE ABOVE 40 DEGREES C. TAPS SHALL BE SIX 2-1/2 PERCENT TAPS, 2 ABOVE AND 4 BELOW RATED HIGH-VOLTAGE.
B. HARMONIC CANCELLATION TRANSFORMERS:
   1. TRANSFORMER, WITH CHARACTERISTICS AND OPTIONS SPECIFIED. COILS SHALL BE CONTINUOUS COPPER WINDINGS WITHOUT SPLICES, EXCEPT FOR TAPS. PRIMARY WINDING: ONE COIL PER PHASE AND PER CORE LEG; 3-PHASE, 3-WIRE INPUT. PHASE SHIFT: PRIMARY TO SECONDARY TO TREAT TARGETED HARMONICS. INSULATION CLASS: CLASS 'R' (CLASS 'H' IS NOT ACCEPTABLE). RATED OPERATING TEMPERATURE RISE: 130 DEGREES C ABOVE 40 DEGREES AMBIENT. EFFICIENCY SHALL BE GREATER THAN 98 PERCENT PER EPA ENERGY STAR ENERGY SAVINGS PROGRAM REQUIREMENT. ELECTROSTATIC SHIELDING: EACH WINDING IS INDEPENDENTLY SINGLE SHIELDED WITH A FULL-WIDTH COPPER ELECTROSTATIC SHIELD. NEUTRAL CONDUCTOR RATING SHALL BE 200 PERCENT OF PHASE RATING. LOAD COMPATIBILITY SHALL BE K-30 LOAD CURRENT HANDLING CAPABILITY, CREST FACTOR UP TO 5; UP TO ITS NAMEPLATE KVA RATING WITHOUT DERATING. TRANSFORMERS SHALL BE DESIGNED TO TREAT ALL MAJOR HARMONICS PRODUCED BY PHASE-NEUTRAL, PHASE-PHASE, AND 3-PHASE SIX-PULSE ELECTRONIC EQUIPMENT: 3RD, 5TH, 7TH AND 9TH. 3RD HARMONIC AND OTHER ZERO SEQUENCE CURRENTS SHALL BE TREATED IN THE SECONDARY WINDINGS OF THE TRANSFORMER THROUGH FLUX CANCELLATION, AND SHALL NOT BE COUPLED INTO THE PRIMARY WINDING. TRAPPING THESE CURRENTS IN THE PRIMARY DELTA WINDING, AS IS THE CASE FOR THE DELTA-WYE TRANSFORMER CONFIGURATION, IS NOT ACCEPTABLE. 5TH AND 7TH HARMONICS ARE TREATED BY INTRODUCING THE APPROPRIATE PRIMARY-TO-SECONDARY PHASE-SHIFT IN THE TRANSFORMER SUCH THAT THESE CURRENTS SUBTRACT AT THE COMMON BUS WITH 5TH & 7TH HARMONIC CURRENTS PRODUCED BY OTHER SIMILAR HARMONIC CURRENT SOURCES FED FROM THE SAME BUS. FUNDAMENTAL CURRENT IMBALANCE SHALL BE REDUCED ON THE PRIMARY SIDE OF THE TRANSFORMER COMPARED TO THE SECONDARY SIDE.

## 16289 - TRANSIENT VOLTAGE SURGE SUPPRESSORS

A. UNITS SHALL BE CURRENT TECHNOLOGY MODEL SELECT 3 300 OR APPROVED EQUAL.

## 16400 - SERVICE ENTRANCE

A. PROVIDE SERVICE-ENTRANCE EQUIPMENT AND ACCESSORIES; OF TYPES, SIZES, RATINGS AND ELECTRICAL CHARACTERISTICS INDICATED, WHICH COMPLY WITH MANUFACTURER'S STANDARD MATERIALS, DESIGN AND CONSTRUCTION IN ACCORDANCE WITH PUBLISHED PRODUCT INFORMATION, AND AS REQUIRED FOR COMPLETE INSTALLATION, AND AS SPECIFIED HEREIN.
B. PROVIDE EITHER RIGID STEEL CONDUIT OR PVC CONDUIT ENCASED IN CONCRETE RACEWAYS.

## 16410 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

A. CLASS J FUSES: UL 198C, "HIGH-INTERRUPTING CAPACITY FUSES, CURRENT- LIMITING TYPE." CLASS L FUSES: UL 198C, "HIGH-INTERRUPTING CAPACITY FUSES, CURRENT- LIMITING TYPE."
B. CIRCUIT BREAKERS: UL 489, "MOLDED CASE CIRCUIT BREAKERS AND CIRCUIT BREAKER ENCLOSURES," AND NEMA AB 1, "MOLDED CASE CIRCUIT BREAKERS.".

## 16420 - ENCLOSED CONTROLLERS

A. PROVIDE FULL-VOLTAGE, NONREVERSING, ACROSS-THE-LINE, MAGNETIC CONTROLLER, WITH HAND-OFF-AUTO SWITCH, RED AND RED PILOT LIGHTS ON THE FACE OF THE ENCLOSURE. PROVIDE CONTROL POWER TRANSFORMER INTEGRAL WITH CONTROLLER WHERE NO OTHER SUPPLY OF 120 VOLT CONTROL POWER TO CONTROLLER IS INDICATED. PROVIDE CONTROL POWER TRANSFORMER WITH ADEQUATE CAPACITY TO OPERATE CONNECTED PILOTS, INDICATING AND CONTROL DEVICES, PLUS 100 PERCENT SPARE CAPACITY.
B. FOR COMBINATION CONTROLLER, PROVIDE CLASS 'J' FUSED SWITCH; FACTORY ASSEMBLED WITH CONTROLLER AND ARRANGED TO DISCONNECT IT. INTERLOCK SWITCH WITH UNIT COVER OR DOOR.

## 16511 - INTERIOR LIGHTING

A. SUPPORT ALL RECESSED AND SEMI-RECESSED FIXTURES. INSTALL UNITS MAY BE SUPPORTED FROM SUSPENDED CEILING SUPPORT SYSTEM. INSTALL CEILING SYSTEM SUPPORT RODS OR WIRES AT A MINIMUM OF FOUR RODS OR WIRES PER FIXTURE LOCATED NOT MORE THAN 6 INCHES FROM FIXTURE CORNERS. CONFORM TO THE FOLLOWING:
   1. FIXTURES SMALLER THAN CEILING GRID: INSTALL A MINIMUM OF FOUR RODS OR WIRES FOR EACH FIXTURE AND LOCATE AT CORNER OF THE CEILING GRID WHERE THE FIXTURE IS LOCATED. DO NOT SUPPORT FIXTURES BY CEILING ACOUSTICAL PANELS.
   2. FIXTURES OF SIZES LESS THAN CEILING GRID: CENTER IN THE ACOUSTICAL PANEL. SUPPORT FIXTURES INDEPENDENTLY WITH AT LEAST TWO 3/4-INCH METAL CHANNELS SPANNING AND SECURED TO THE CEILING TEES.
   3. INSTALL SUPPORT CLIPS FOR RECESSED FIXTURES, SECURELY FASTENED TO CEILING GRID MEMBERS, AT OR NEAR EACH FIXTURE CORNERS.

## 16950 - COMMISSIONING

A. PROVIDE INDEPENDENT TESTING AGENCY TO PERFORM FUNCTIONAL TESTING OF LIGHTING CONTROLS PER IECC. REFER TO PROVISIONS WITHIN THESE DOCUMENTS.

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04/04/22

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SPECIFICATIONS - MEP

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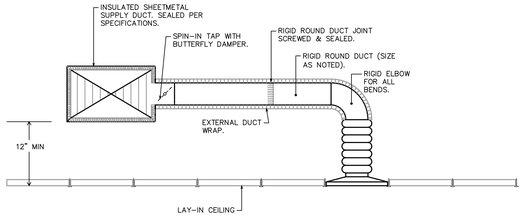


## 03 TYPICAL DIFFUSER CONNECTION
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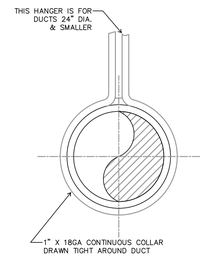


## 02 ROUND DUCT HANGER
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## GENERAL NOTE(S):

1. COORDINATE FINAL PLACEMENT OF DIFFUSERS WITH ARCHITECTURAL RCP AND LIGHTING LAYOUT.

2. DUCTWORK IS DIAGRAMMATICAL IN NATURE. BRANCH DUCTS THAT CROSS UNDER/OVER MAIN DUCT RUNS ARE SHOWN WITH BROKEN LINES. THOSE BRANCH DUCTS SHALL BE FITTED WITH TRANSITIONS TO ROUTE ABOVE/BELOW THE MAINS.

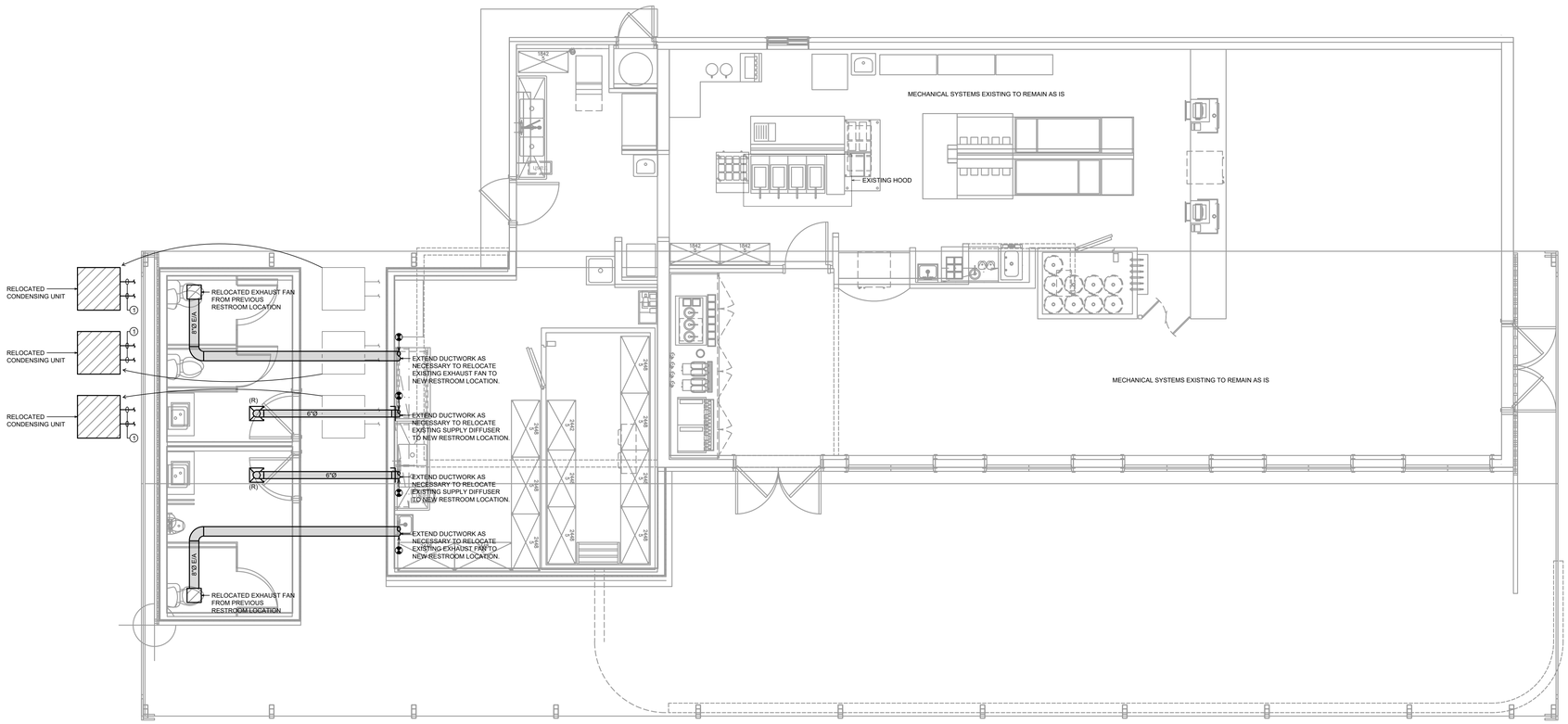
3. MAINTAIN A MINIMUM 10'-0" CLEARANCE BETWEEN OUTSIDE AIR INTAKES AND BUILDING EXHAUST PER INTERNATIONAL MECHANICAL CODE.

4. ALL EXISTING MECHANICAL SYSTEMS SHALL BE TESTED PRIOR TO CONSTRUCTION TO VERIFY EXISTING CAPACITIES. CLEAN ALL COILS, CHANGE OUT ALL FILTERS, REPLACE ALL BELTS, AND TAKE THE NECESSARY PROCEDURES TO ENSURE THAT ALL REUSED EQUIPMENT IS IN PROPER WORKING CONDITION.

5.EXISTING DUCTWORK IS APPROXIMATE (BASED OFF EXISTING SITE PHOTOS). EXACT ROUTING WILL NEED TO BE VERIFIED FOR ANY MAJOR DISCREPANCIES. ALL EXISTING DUCTWORK THAT REMAINS SHALL BE CLEANED AND INSPECTED FOR LEAKS. REPAIR ANY LEAKS THAT MAY BE PRESENT AT THE TIME OF EXAMINATION.

## KEYED NOTES BY SYMBOL:

1. RS & RL LINES SIZED PER MANUFACTURER'S RECOMMENDATION. ROUTE TO RESPECTIVE INDOOR/OUTDOOR UNIT.




## 01 FLOOR PLAN - MECHANICAL
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## KITCHEN EQUIPMENT SCHEDULE

| ITEM # | DESCRIPTION | QTY. | CIRCUIT NO. | LOAD (VA) | VOLTAGE/PH. | WIRE | CONDUIT | TERMINATION | HEIGHT |
|---|---|---|---|---|---|---|---|---|---|
| CO1 | CONVENIENCE OUTLET | 6 | 1 | 1600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 18" AFF |
| CO2 | CONVENIENCE OUTLET | 1 | 1 | 1600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 18" AFF |
| E2 | POS SYSTEM | 2 | 1 | 600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 18" AFF |
| E3 | WALK-IN REFRIGERATOR | 1 | 1 | 600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 18" AFF |
| E4 | DOOR HEATER AND LIGHT CIRCUIT | 1 | 2 | 1600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | J-BOX | DFA |
| E4B | C02 ALARM | 1 | 2 | 1600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | DFA |
| E4.1 | EVAPORATOR COIL | 1 | 2 | 1206 | 208V/1Ø | (2)#12 & #12G. | 3/4" | J-BOX | DFA |
| E4.2 | REMOTE CONDENSING UNIT | 1 | 1 | 1872 | 208V/1Ø | (2)#12 & #12G. | 3/4" | J-BOX | VERIFY |
| E7 | ICE CREAM MACHINE | 1 | 1 | 2184 | 208V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 6-20R | 18" AFF |
| E13 | REFRIGERATOR | 1 | 1 | 600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 18" AFF |
| E16 | HEAT STRIP THRU CONTROLS | 1 | 1 | 600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | J-BOX | 54" AFF |
| E17 | HEAT STRIP THRU CONTROLS | 2 | 1 | 996 | 120V/1Ø | (2)#12 & #12G. | 3/4" | J-BOX | 53" & 68" AFF |
| E18 | CHEESE MELTER | 1 | 1 | 1656 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 64" AFF |
| E19 | REFRIGERATOR | 1 | 1 | 600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 18" AFF |
| E21 | ICE MACHINE | 1 | 1 | 2330 | 208V/1Ø | (2)#12 & #12G. | 3/4" | J-BOX | 84" AFF |
| E32 | DOOR HEATER AND LIGHT CIRCUIT | 1 | 1 | 1600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | J-BOX | DFA |
| E32B | TEMPERATURE MONITORING SYSTEM | 1 | 1 | 1600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | DFA |
| E32.1 | EVAPORATOR COIL | 1 | 1 | 240 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | DFA |
| E32.2 | REMOTE CONDENSING UNIT | 1 | 1 | 2496 | 208V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | VERIFY |
| E36 | SODA DISPENSER | 1 | 1 | 1600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 48" AFF |
| E37 | ICE MACHINE | 2 | 1 | 2600 | 208V/1Ø | (2)#12 & #12G. | 3/4" | J-BOX | 84" AFF |
| E38 | TEA BREWER | 2 | 1 | 1600 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 48" AFF |
| E40 | REFRIGERATED COLD PAN | 1 | 1 | 864 | 120V/1Ø | (2)#12 & #12G. | 3/4" | NEMA 5-20R | 18" AFF |

NOTE:
ELECTRICAL CONTRACTOR SHALL COORDINATE LAYOUT AND ELECTRICAL REQUIREMENTS WITH FOOD SERVICE PLANS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER.

## KEYED NOTES BY SYMBOL:

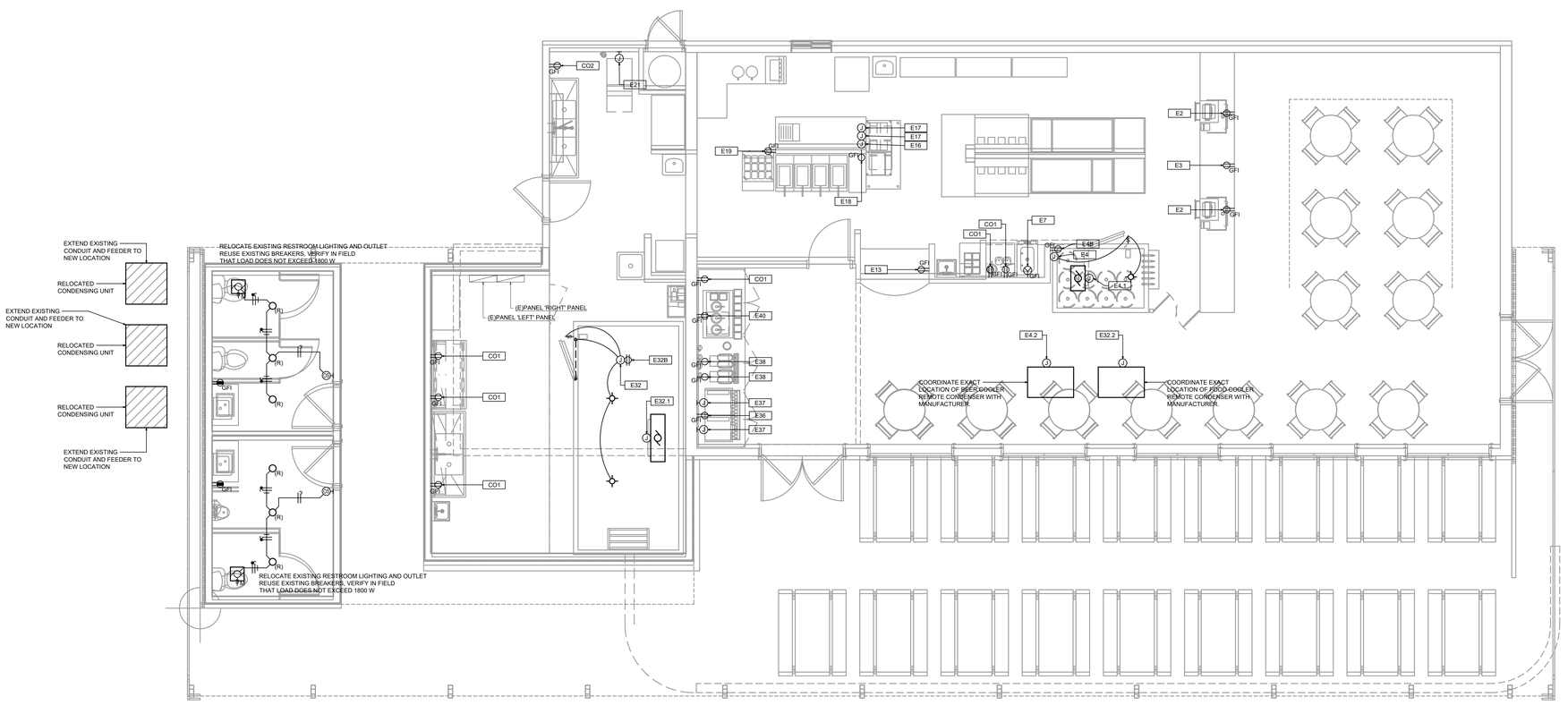
| | |
|---|---|
| 1 | REUSE EXISTING KITCHEN EQUIPMENT BREAKERS |
| 2 | USE EXISTING SPARE BREAKERS |

## GENERAL NOTES:

1. CONTRACTOR TO VERIFY EXISTING FIELD CONDITIONS AND REPORT BACK DISCREPANCY

## ELECTRICAL KITCHEN NOTES:

1. REFER TO KITCHEN PLANS FOR DIMENSIONS. ELEVATIONS GIVEN ARE FROM FINISHED FLOOR TO CENTERLINE OF OUTLET. ALL CONVENIENCE OUTLETS ARE TO BE SET HORIZONTALLY.
2. ELECTRICIAN TO CONNECT ALL ELECTRICAL EQUIPMENT AND FIXTURES AND DO ANY INTERNAL WIRING REQUIRED IN THE FIXTURES AS REQUIRED BY THE SPECIFICATIONS. ALL ELECTRICAL OUTLET COVER PLATES ARE TO BE STAIN- LESS STEEL AND ARE TO BE FURNISHED BY THE ELECTRICIAN, AS WELL AS THE RECEPTACLE, UNLESS OTHERWISE SPECIFIED IN THE ITEM SPECIFICATIONS. KITCHEN EQUIPMENT SUPPLIER TO FURNISH A GALVANIZED JUNCTION BOX IN THE FIXTURE CUTOUT TO RECEIVE THE RECEPTACLE, UNLESS OTHERWISE NOTED. ALL DISCONNECT SWITCHES REQUIRED ARE TO BE FURNISHED AND INSTALLED BY THE ELECTRICIAN AT TIME OF INSTALLATION.
3. ALL WORK TO BE PERFORMED IN FULL ACCORDANCE WITH ALL APPLICABLE CODES RELATING TO HOOK-UP, INSTALLATION AND WIRING OF EQUIPMENT.
4. ALL ELECTRICAL WORK FOR FABRICATED FOODSERVICE EQUIPMENT SHALL BE COMPLETELY WIRED BY KITCHEN EQUIPMENT DIVISION TO A JUNCTION BOX OR PULL-BOX MOUNTED ON THE EQUIPMENT IN AN ACCESSIBLE POSITION. FINAL CONNECTIONS TO EQUIPMENT JUNCTION-BOX OR PULL-BOX AND ALL ELECTRICAL WORK FROM PANEL BOARDS, TO BE BY THE ELECTRICAL CONTRACTOR.
5. FINAL CONNECTIONS TO ALL EQUIPMENT TO BE BY ELECTRICAL CONTRACTOR, INCLUDING MATERIALS.
6. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL THE FOLLOWING:
   A. ALL JUNCTION-BOXES, ELECTRICAL OUTLETS, COVER PLATES,SWITCHES, ETC., NOT BUILT INTO FIXTURES OR EQUIPMENT. ALL OUTLETS, JUNCTION-BOXES, COVER PLATES, ETC., IN DISHROOMS, OR AS INDICATED ON SCHEDULES, MUST BE VAPOR-PROOF.
   B. ALL PLUGS AND CORDS AS NOTED ON SCHEDULE. ALL CORDS SHALL BE N.E.M.A.-RATED AND U.L.-APPROVED FOR MANUFACTURED AND/OR FABRICATED EQUIPMENT.
7. WHERE PORTIONS OF A RACEWAY ARE KNOWN TO BE SUBJECTED TO DIFFERENT TEMPERATURES, WHERE CONDENSATION IS KNOW TO BE A PROBLEM, AS IN COLD STORAGE AREAS THE RACEWAY SHALL BE FILLED WITH AN APPROVED MATERIAL. NEC ARTICLE 300.7

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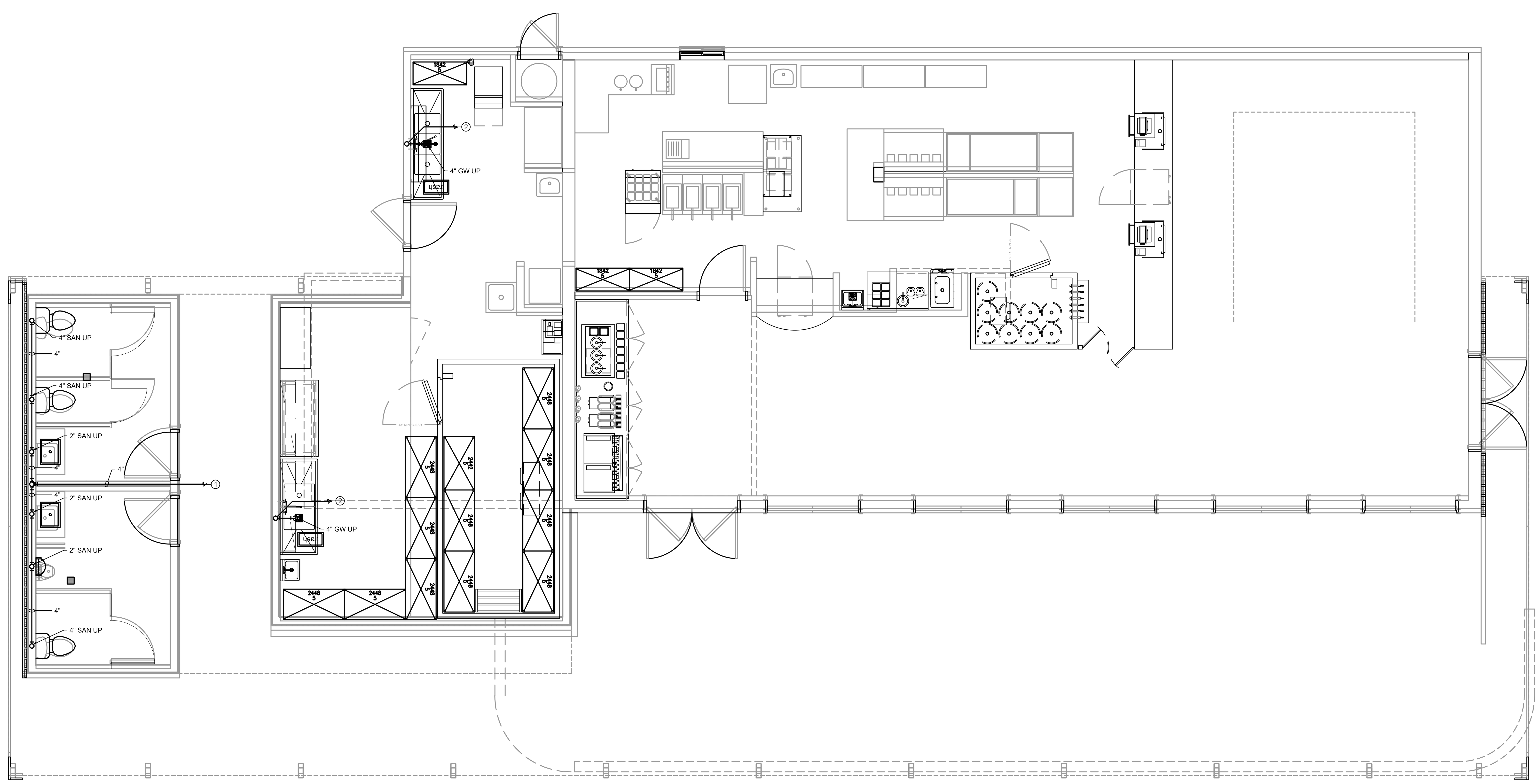
1. ALL EXISTING PLUMBING LINES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND SIZES OF ALL EXISTING PLUMBING PRIOR TO BID.
2. CONTRACTOR SHALL PROVIDE ISOLATION SHUT-OFF VALVES ON THE INCOMING WATER LINES FOR EVERY PLUMBING FIXTURE.

## KEYED NOTES BY SYMBOL:

(1) ROUTE NEW SANITARY SEWER TO NEAREST EXISTING SANITARY MAIN. FIELD VERIFY EXISTING SANITARY SEWER MAIN SIZE, LOCATION, DEPTH, AND DIRECTION OF FLOW PRIOR TO CONSTRUCTION.

(2) ROUTE NEW GREASE WASTE TO NEAREST EXISTING GREASE WASTE PIPING. FIELD VERIFY EXISTING SANITARY SEWER MAIN SIZE, LOCATION, DEPTH, AND DIRECTION OF FLOW PRIOR TO CONSTRUCTION.




01 UNDERFLOOR PLAN - PLUMBING
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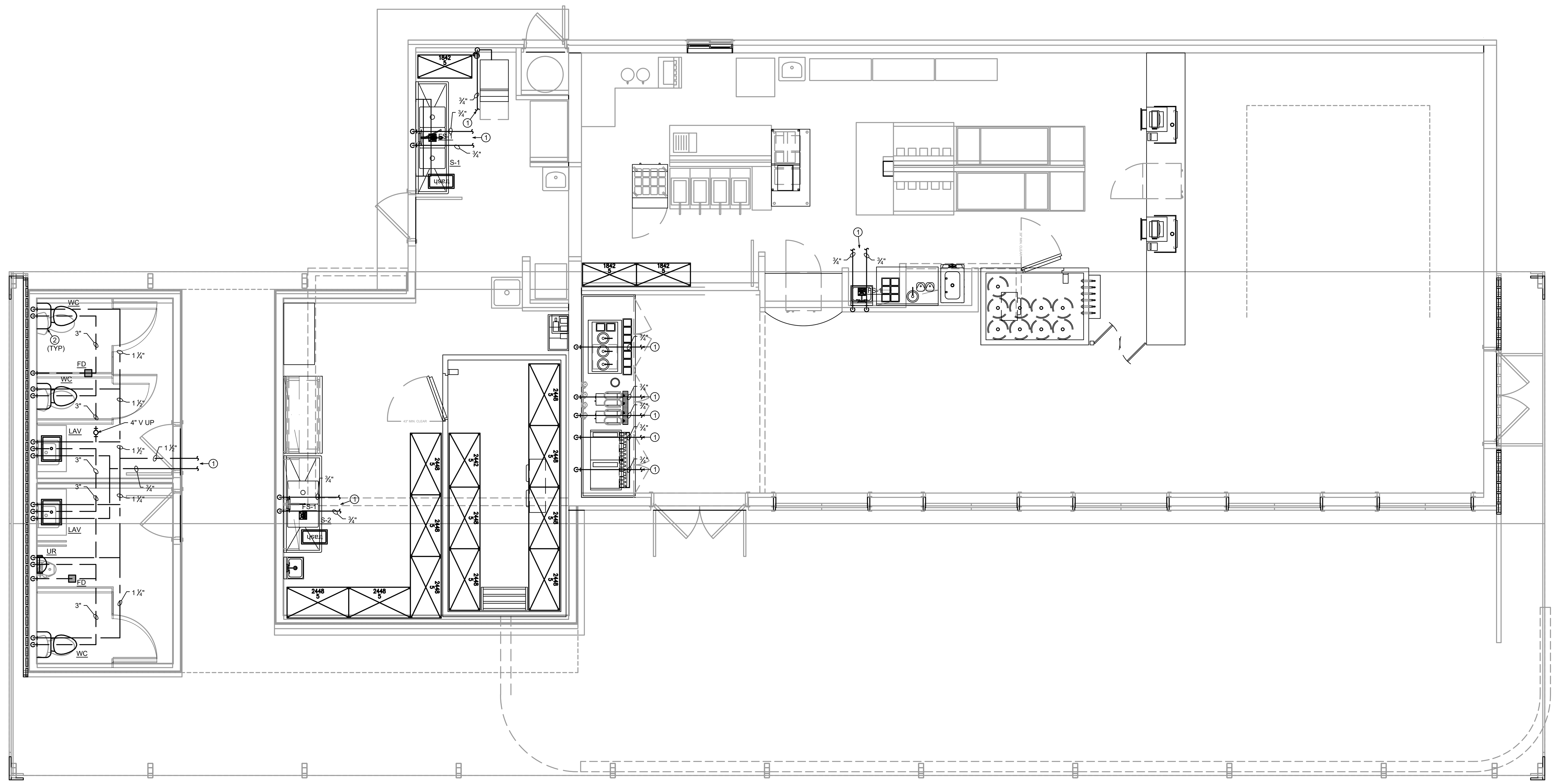
1. ALL EXISTING PLUMBING LINES SHOWN ARE APPROXIMATE. CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND SIZES OF ALL EXISTING PLUMBING PRIOR TO BID.
2. CONTRACTOR SHALL PROVIDE ISOLATION SHUT-OFF VALVES ON THE INCOMING WATER LINES FOR EVERY PLUMBING FIXTURE.

## KEYED NOTES BY SYMBOL:

(1) ROUTE NEW CW AND HW PIPING TO NEAREST EXISTING CW AND HW MAIN PIPING. FIELD VERIFY EXISTING CW AND HW MAIN PIPING LOCATION AND SIZE PRIOR TO CONSTRUCTION.

(2) EXISTING PLUMBING FIXTURES TO BE RELOCATED TO NEW LOCATION.




01 FLOOR PLAN - PLUMBING
SCALE: 1/4" = 1'-0"

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PROFESSIONAL ENGINEER
04/04/22

# HAT CREEK BURGER
# WEST LAKE
5902 BEE CAVES ROAD
WEST LAKE HILLS, TEXAS 78746

FLOOR PLAN - PLUMBING

| DATE | REMARKS |
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| | |
|---|---|
| PA/PM: | PROJECT LEAD |
| DRAWN BY.: | DRAFTER |
| JOB NO.: | DAL21-0008-00 |

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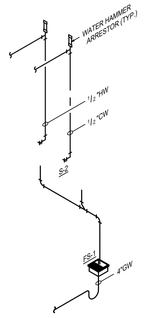
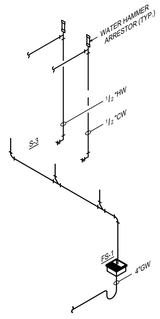
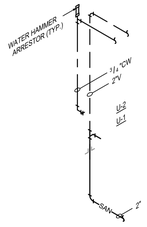
CAUTION: IF THIS SHEET IS NOT 30"x42" IT IS A REDUCED PRINT



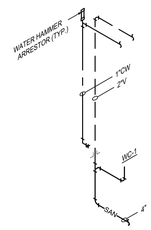

TYPICAL KITCHEN 2 COMPARTMENT SINK
## P5 PLUMBING RISER DIAGRAM
SCALE: NOT TO SCALE



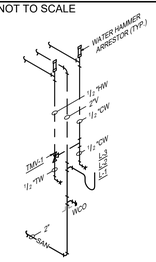

TYPICAL KITCHEN 3 COMPARTMENT SINK
## P4 PLUMBING RISER DIAGRAM
SCALE: NOT TO SCALE




TYPICAL URINAL
## P3 PLUMBING RISER DIAGRAM
SCALE: NOT TO SCALE




TYPICAL WATER CLOSET
## P2 PLUMBING RISER DIAGRAM
SCALE: NOT TO SCALE




TYPICAL LAVATORY
## P1 PLUMBING RISER DIAGRAM
SCALE: NOT TO SCALE

## PLUMBING FIXTURE SCHEDULE

| FIXTURE | SPECIFICATION |
|---|---|
| FD | J.R. SMITH MODEL 2005A-P050 FLOOR DRAIN COMPLETE WITH POLISHED BRONZE STRAINER AND TRAP PRIMER CONNECTION. |
| FS | ZURN FD2375-NH3 12"X12" A.R.C. FLOOR SINK, 6 INCH SUMP DEPTH, WITH 1/2 INCH GRATE AND 3 INCH PIPE CONNECTION, CAST IRON BODY, ACID-RESISTANT COATING AND PVC ANTI-SPLASH DOME STRAINER. |
| LAV | AMERICAN STANDARD MODEL 0427.444EC "CADET" VITREOUS CHINA OVAL COUNTERTOP LAVATORY (4" CENTERS) COMPLETE WITH "P" TRAP, SUPPLIES, AMERICAN STANDARD MODEL 7402.172V "CENTERSET" LAVATORY FAUCET, AND GRID STRAINER DRAIN. |
| S-1 | OWNER FURNISHED SINK, REFER TO ARCHITECTURAL DRAWINGS FOR LOCATION AND DETAILS. |
| S-2 | GRIFFIN MODEL TU2 BACK SUPPLY THROUGH STAINLESS STEEL URINAL COMPLETE WITH BEEHIVE TYPE STRAINER, P-TRAP AND VANDAL RESISTANT STAINLESS STEEL TRAP ENCLOSURE. MOUNTING TO COMPLY WITH ADA GUIDELINES AND ANSI A117.1 REQUIREMENTS AND FLUSH HANDLE ON WIDE SIDE OF STALL. |
| UR | AMERICAN STANDARD MODEL 6550.005 "ALLBROOK FLOWISE" VITREOUS CHINA URINAL COMPLETE WITH TOP SPUD, CARRIER FITTINGS, AND AMERICAN STANDARD MODEL 6063.051.002 (0.5 GPF) BATTERY POWERED FLUSH VALVE. |
| WC | AMERICAN STANDARD MODEL 3357.128 "AFWALL" VITREOUS CHINA WALL MOUNTED ELONGATED BOWL COMPLETE WITH OPEN FRONT SEAT (LESS COVER), CARRIER FITTINGS, AND AMERICAN STANDARD MODEL 6067.322.007 FLUSH VALVE. MOUNTING TO COMPLY WITH ADA GUIDELINES AND ANSI A117.1 REQUIREMENTS AND FLUSH HANDLE ON WIDE SIDE OF STALL. |

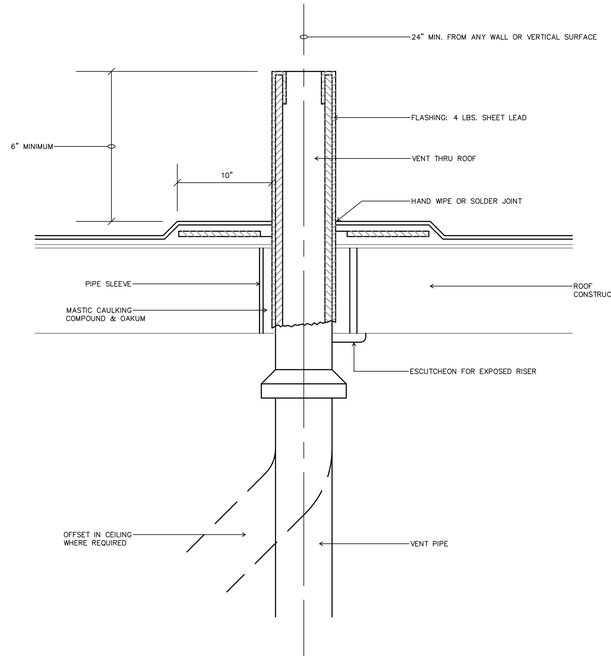
ALL FIXTURES REQUIRING "P" TRAPS, TUBING WASTE TO WALL, AND TAILPIECES SHALL BE 17 GAUGE CHROME PLATED, MCGUIRE OR EQUAL. MOUNTING TO COMPLY WITH ADA & TAS. LOCATE FLUSH VALVE ON WIDE SIDE OF STALL.

## PLUMBING FIXTURE CONNECTION SCHEDULE

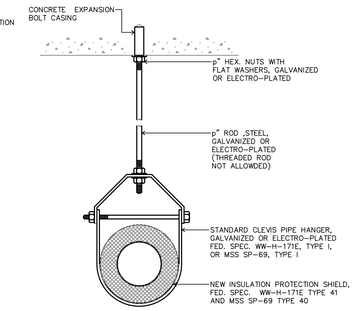
| DESIGNATION | FIXTURE | C.W. | H.W. | SAN. | VENT |
|---|---|---|---|---|---|
| FD | FLOOR DRAIN | ½" | – | 3" | 2" |
| FS | FLOOR SINK | – | – | 3" | 2" |
| L | LAVATORY | ½" | ½" | 2" | 2" |
| U | URINAL | ¾" | – | 2" | 2" |
| WC | WATER CLOSET | ½" | – | 4" | 2" |

NOTE: ABOVE SIZES ARE MINIMUM UNLESS OTHERWISE NOTED ON DWG.

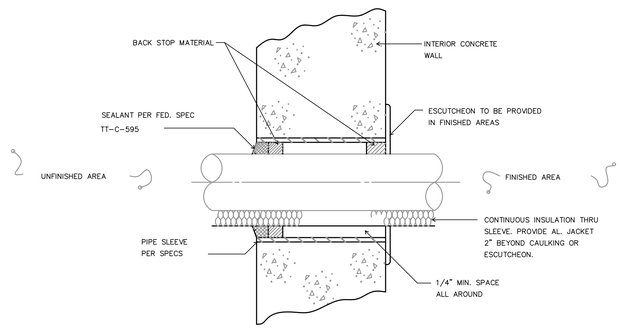
GENERAL NOTES:
1. PITCH ALL DRAINAGE PIPING AT ¼" FOOT MINIMUM UNLESS OTHERWISE NOTED.
2. ALL UNDERGROUND DRAINAGE PIPING SHALL BE MINIMUM OF 2" IN SIZE & ¼" PER FT. SLOPE.
3. PROVIDE TRAP PRIMER UNITS FOR ALL FLOOR DRAINS WITHOUT INDIRECT WASTE PIPING.



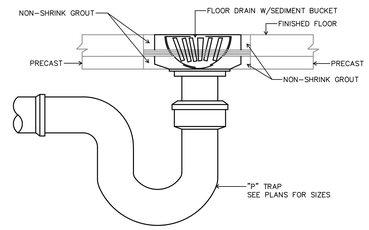

## 04 VENT THRU ROOF DETAIL
SCALE: NOT TO SCALE




## 02 PIPE HANGER
SCALE: NOT TO SCALE




## 03 WALL PIPE SLEEVE DETAIL
SCALE: NOT TO SCALE




## 01 FLOOR DRAIN DETAIL
SCALE: NOT TO SCALE

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SCHEDULES AND DETAILS - PLUMBING

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