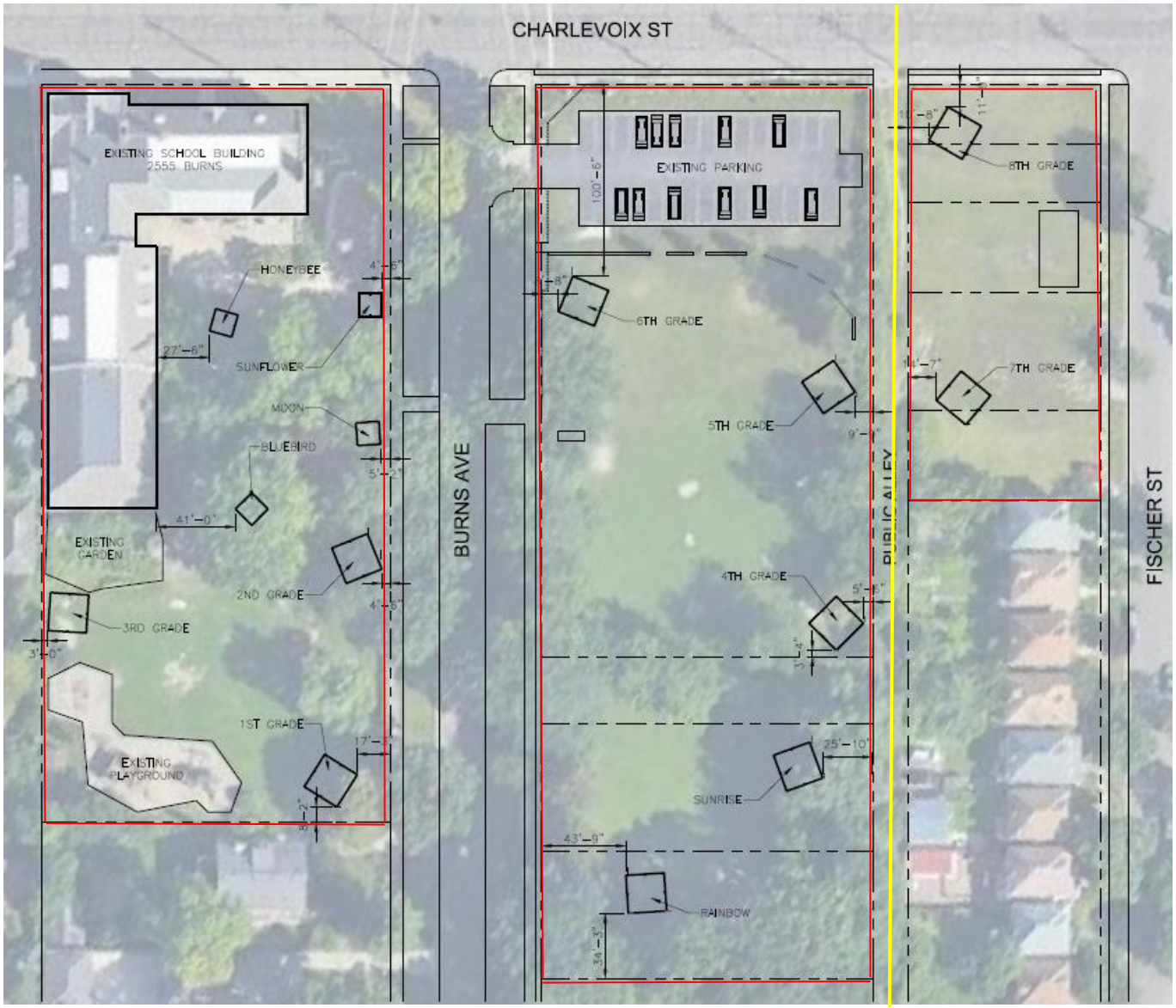
STAFF REPORT: MAY 11, 2022 MEETING **PREPARED BY**: A. DYE
APPLICATION NUMBER: 22-7804, 7809 - 7812
ADDRESS: 2555 & 2508 – 2484 BURNS
HISTORIC DISTRICT: INDIAN VILLAGE
APPLICANT: BRIAN REBAIN
PROPERTY OWNER: DETROIT WALDORF SCHOOL
DATE OF PROVISIONALLY COMPLETE APPLICATION: APRIL 18, 2022
DATE OF STAFF SITE VISIT: APRIL 28, 2022

SCOPE: ESTABLISH PERMANENT OUTDOOR CLASSROOM STRUCTURES, PREVIOUSLY ERECTED PER COVID-19 RESOLUTION

EXISTING CONDITIONS
The school at 2555 Burns was erected in 1913 for the University Liggett School for Girls. Designed by Albert Kahn, the building was sited parallel to Charlevoix. In 1924, an addition was erected. As seen in the below photo, the addition extends forward of the original building at Charlevoix and extends even further south along the west property line. Designed in the Arts & Crafts/Mission style, the exterior showcases stucco and brick walls, brick arched entrances, grouped leaded glass windows, a slate roof with overhanging eaves, and the character-defining mission-shaped parapet above the front entrance. The building's exterior colors, consisting of beige, dark brown, dark red, and gray, complement the surrounding landscape. The large L-shaped building allowed for the retention of a large amount of open space along Burns Avenue, which was subsequently developed as play areas and gardens for the school.


Staff photo, May 3, 2022.

When University Liggett School relocated to Grosse Pointe Woods in the mid-1960s, Detroit Waldorf School, founded in 1965, purchased the property. In 2020, the school erected wood-frame outdoor teaching facilities on the school grounds, as identified on the applicant's site plan on the following page. Locations of the structures were selected to allow for physical distancing between classrooms and the maintenance of existing playground/garden locations.



Site plan submitted by Detroit Waldorf School. HDC staff added red lines to identify the boundaries of the school's property and the yellow line to denote the eastern edge of the Indian Village Historic District.

Waldorf School owns a single large parcel on the west side of Burns, on which the school, playgrounds and gardens are located; four parcels on the east side of Burns which comprise a surface parking lot and open space for additional recreational needs; and five parcels on Fischer Street (which are outside of the historic district).

PROPOSAL

In September 2020, the applicant submitted a proposal for the erection of 14 temporary structures in response to COVID-19. A Notice-To-Proceed was issued for the erection of the 12 structures within the historic district's boundaries under the authority conferred to HDC staff by the Commission's Resolution #20-02. In 2021 and 2022, the structures were modified per the submitted narrative.

With the current submission, the applicant is seeking the Commission's approval to retain the 12 existing shelters within the Indian Village Historic District's boundary as a permanent addition to the Waldorf School property. (The remaining two shelters are located along Fischer Street, which is outside of the district's boundary.)

STAFF OBSERVATIONS AND RESEARCH

- The Indian Village Historic District was established in 1971.
- Based on staff's research of Sanborn maps and building permit cards, it appears that no structures were ever constructed on the east side Burns parcels currently owned by Waldorf School.
- The unadorned outdoor classroom structures, with unstained/unpainted cedar, have begun to weather. It is staff's opinion the structures fit into the surrounding landscape better than if the wood members were painted or stained due to the organic wooded environment in which they were placed. The neutral-toned, weathered stucco finish of the school walls also offers a commonality of colors with the structures.

Large classroom, Staff photo, April 28, 2022

Small classroom, Staff photo, April 28, 2022

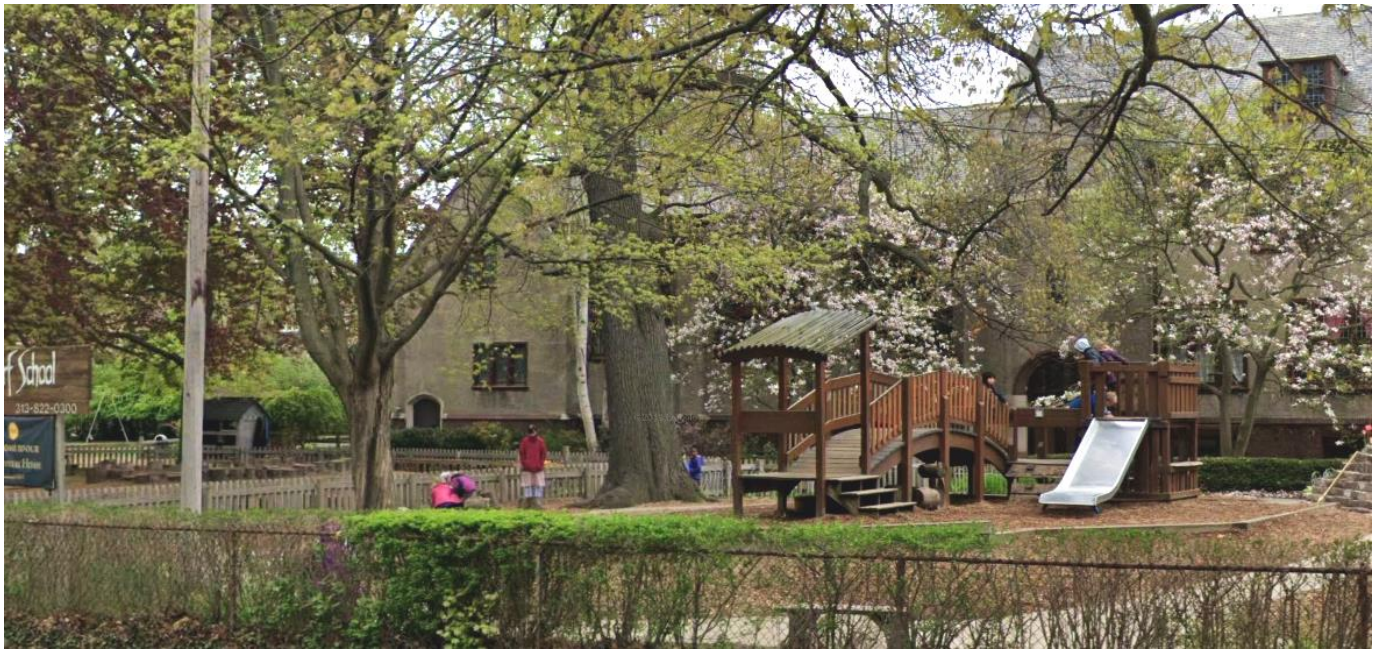
- During a recent site visit while school was in session, staff saw that the outdoor classrooms are not structures used in a passive way, such as a gazebo or pergola, rather, they are engaging structures, similar to the nearby playground equipment and gardens.
- The applicant's narrative discusses additional, inclusive use of these structures by neighboring community and city-wide organizations.
    - Spring 2021 - a Waldorf School Music Fest was held, along with an exhibition of student artwork.
    - Summer 2021 – Detroit Mosaic Theatre utilized the shelters for two weeks of its summer camp.
    - April 2022 – Waldorf School held a free public Storytelling Festival (which featured organizations such as Ruth Ellis Center, Detroit Disability Power, Shakespeare in Detroit, and more).
    - Future 2022 Intentions – host community meetings and events with even more neighboring and city-wide organizations.

ISSUES

- The dimensions listed in the 2020 shelter application are not accurate to what was constructed due to modifications made in the field over the past 18 months. Therefore, staff recommends the Commission use the original documents submitted by the applicant for general reference only. The As-Built Photos and Dimensions document immediately following the staff report compiles the current project under review by the Commission. Besides the increased shelter sizes, the following items should be noted.
    - Black fabric curtains have been installed at three, and at times, four sides of each structure. Staff understands the necessity of enclosures in cold weather, but the contrasting black color creates dark walls in contrast with the spirit of open air, neutrally colored structures.
    - Small solar panels were installed on some fascia boards.
- One of the tenets of the Arts and Crafts movement is the harmonious relationship between buildings and gardens, the blend of naturalism and formal elements. It is staff's opinion, the cumulative effect of the number, and overall sizes, of the structures on the original school site has diminished the park-like environment of the playground and garden areas, which staff identifies as a character-defining feature of the site.

Google street view, May 2019

Staff photo, May 3, 2022



Google street view, May 2019


Staff photo, May 3, 2022

- As the school and community develop expanded uses for the structures, staff is concerned that more incremental changes have the potential to further erode the design envisioned for the structures within a wooded landscape.
- The applicant has requested the Commission issue a Certificate of Appropriateness (COA) for this project. Should the Commission determine the structures do not qualify for a COA, staff recommends that the Commission consider the issuance of a Notice-to-Proceed (NTP) for the project as the structures serve as a

community asset per the applicant's narrative. Specifically, an NTP could be issued if the Commission finds that any of the following conditions prevail and that the work is necessary to substantially improve or correct such condition:

1. The resource constitutes a hazard to the safety of the public or the occupants;
2. The resource is a deterrent to a major improvement program that will be of substantial benefit of the community. Substantial benefit shall be found only if the applicant proposing the work has obtained all necessary planning and zoning approvals, financing and environmental clearances, and the improvement program is otherwise feasible;
3. Retention of the resource would cause undue financial hardship to the owner. Undue financial hardship shall be found only when a governmental action, an act of God, or other events beyond the owner's control created the hardship, and all feasible alternatives to eliminate the financial hardship, which may include offering the resource for sale at its fair market value or moving the resource to an appropriate vacant site within the historic district, have been attempted and exhausted by the owner;
4. Retention of the resource would not be in the interest of the majority of the community.

RECOMMENDATION

Section 21-2-78, Determination of Historic District Commission

It is staff's opinion that the outdoor classroom structures, as installed, alter the features and spaces that characterize the property. Staff therefore recommends the Commission issue a denial for the work as proposed because it does not meet the Secretary of the Interior Standards for Rehabilitation and the Elements of Design for the district, specifically Standards:

1) A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.

2) The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.

Should the Commission issue a NTP for the work, staff recommends the following condition be applied:

- New elements and/or alterations proposed for the 12 structures and site be submitted to HDC staff for review and approval prior to work taking place.

REVISED May 03, 2022

Detroit Historic District Commission
Coleman A Young Municipal Center
2 Woodward Ave #808
Detroit, MI 48226

RE: Detroit Waldorf Outdoor Classrooms

Detroit Historic District Commission:

On behalf of the Detroit Waldorf School (DWS), I am writing to the Detroit Historic District Commission (HDC) to request a Certificate of Appropriateness (CofA) for a series of outdoor classroom structures constructed prior to the 2020-21 school year on an emergency basis in response to the COVID-19 pandemic. The structures were given a Notice to Proceed on a temporary basis (attached) which was subsequently renewed as required. At this time, the school wishes to receive a permanent CofA for the work.

Building

The Detroit Waldorf School is located at 2555 Burns Ave, in the Indian Village Historic District, at the corner of Burns Charlevoix St. The initial school building was designed by Albert Kahn and constructed on the north end of the site along Charlevoix in 1913 for The Liggett School and later expanded with a 1923 Albert Kahn addition to the south that included an auditorium, gymnasium, and additional classroom space. The Liggett School occupied the building until 1965, when a new school building was constructed in Grosse Pointe Woods, and The Liggett School merged with the Grosse Pointe University School to form University Liggett School, leaving the Albert Kahn building on Burns briefly vacant.

DWS was founded by Amelia and Dr. Rudolf Wilhelm in 1965 with a goal of providing a diverse and equitable educational experience for Detroit children. When founded, it was one of the city's only integrated schools, and continues its tradition and commitment to racial, ethnic and economic diversity to this day. When founded, the school was first located in Detroit's Central United Methodist Church, and soon moved into the recently vacated Liggett School where it expanded quickly to include pre-school, kindergarten and elementary classes from 1st – 8th grades. DWS has served as a proud steward of the original Albert Kahn building with careful restoration of the stucco facades, roof and wood windows over the years. Much of the original school interiors are still intact.

Site

As notable as the school building are the school's grounds and play areas. Essential to the Waldorf educational philosophy is its commitment to outdoor free play and learning for students of all ages. Accordingly, the school has cultivated a welcoming and active outdoor space spanning across multiple city blocks. The school's campus includes a playground to the south of the school building that is original to the school site. The school later expanded across Burns to a series of former residential lots now affectionately known as "Quietland". The school recently expanded again, purchasing several former residential lots on Fischer St, directly across the shared alley from Quietland.

Prior to the recent COVID-19 additions, the school grounds included multiple wooden play structures, two swing sets, shade structures, a vegetable garden and multiple areas for unscripted free play and exploration. These areas are generally arranged around the perimeter of the sites with large open, grassy areas in the middle for open play, and open vistas from the adjacent Burns Ave right of way.

The original school site is bounded with a hedgerow and 4' chain link fence along Charlevoix and Burns with an iron swing gate set on two brick piers framing the formal entry to the school grounds off Burns Ave. The rear of the site is bounded with a tall chain link fence to create privacy with the adjacent residential homes. An open play area sits in the middle of the site with two wooden play structures at the south end of the site, a swing set to the west and the school's vegetable garden directly to the south of the school building. Directly in front of the school, the landscape is more developed. Mature trees flank the entrance walkway to the school with open play areas shaded beneath. Play areas for the early childhood program sit closest to the school with a wooden play structure, swing set, and wooden shade structure clustered at the east end of the school building.

The Quietland site is bounded by an unadorned 4' chain link fence along much of Burns with a main entry gate directly across Burns from the formal entry to the school. The center of the site is an open play area with various wooded areas around the rear perimeter of the site for exploration and play. The north end of Quietland houses the school's parking lot, which is bounded on its NW corner by a 6' tall decorative aluminum fence marked with brick piers. The side of the parking lot and alley lot line then transitions to a 6' tall chain link fence grown over with ivy.

To the east, the newly acquired Fischer lots were vacant grassy fields when purchased by the school with no fence line, limited plantings and no structures.

Outdoor Classroom Structures

In the Spring of 2020, with the school closed due to the COVID-19 pandemic, the administration gathered a core group of teachers, staff, and interested parents (including numerous architects, planners, and builders) to formulate a way of providing outdoor gathering spaces for each class in the school. Theses spaces, at that time indeterminate in shape and size, would be used to maintain safe physical distancing between classes throughout the day and create shelters for outdoor classes to take place so the school could operate safely in person during the pandemic. The planning group quickly devised a plan to construct 14 cedar shelters (12 within the boundaries of the IV HD, 2 located outside the district), one for each classroom, sized accordingly to the age and number of children in each class. Landscaped areas would be provided between the shelters to denote boundaries for each class. A donation campaign and volunteer core were quickly marshaled to fund and construct the work.

The cedar shelters were designed to be open on three sides to maintain visibility to/from the adjacent open play areas. A "teaching wall" was constructed of slatted wood on the fourth side, so visibility to/from the adjacent open play areas could be maintained through the structure from all perspectives. The form was a simple shed structure with an open floor area and no built-in furniture to allow for as much flexibility and adaptability for each individual class. Early childhood (ages 3-6) shelters were designed as approximately 12'x16' structures to accommodate smaller classes. (and smaller children) Kindergarten and Grades 1-8 shelters were designed as approximately 20'x24' for larger class sizes.

Material choices were as important to the mission as the shape of the shelter. The character of the new shelters was intentionally designed to be in tune with the natural materials of the existing wooden play structures and mature landscape. Decay resistant (aka "treated") wood was used for all concealed structural elements including the foundation posts, floor and roof framing. Natural, unfinished rough sawn cedar boards were selected over treated wood for all touchable surfaces to ensure the health and well-being of the students. The finish floor boards, teaching wall slats, and rim joists were all constructed of rough sawn cedar. A specialty designed "sandwich column" construction was employed to encapsulate the treated foundation posts between finish cedar column boards, which also serve as the building's primary structure holding up the roof. The roofs were protected with auburn-colored asphalt shingles with a cedar shake replica profile to blend in with the natural materials of the shelters and outdoor landscape. Gutters, downspouts, and rain barrels were limited to non-visible locations along rear fence lines around the site to eliminate having visible synthetic materials visible from the public ROW.

Critical to the plan was the siting of the shelters, all of which were thoughtfully located around the perimeter of the site to ensure proper physical distancing between classes as well as to maintain the general openness of the free play areas on the school's campus. The smaller 15' shelters for the early childhood classes were clustered nearer to the school to follow the previous play area plan as well as to keep the younger kids closer to the school. Grades 1-3 were then spaced around the corners of the south end of the Burns lot. The two Kindergarten shelters were located at the south end of Quietland to be nearer the wooded area. Grades 4-6 were spaced equally around the remaining perimeter of Quietland. The two cedar shelters for grades 7-8 were located on the Fischer lots, the farthest classroom shelters from the school building, and outside the IV historic district.

Elements of Design

Classroom shelters such as these are certainly a novel element in a school campus, and the Elements of Design do not give much guidance on this type of out-building. Most of the direction given is for single-family home buildings. The only mention of either school located in the Indian Village Historic District, DWS and the nearby Nichols Elementary, is to note the presence of open space around the schools as a character defining feature of both. However, from this brief description, some essential design guidance is provided that informed the classroom shelter design.

> *Relationship of open space to structures.* Open space in the district occurs in the form of vacant land, a City park, school yards for the Waldorf and Nichols Schools, and side lots. Where an original or early arrangement of a house and grounds included and still includes landscaped lots which form

part of the landscaping plan for the residence, such landscaped lots are significant landscape features.

The primary point to take from this section is to understand that the open space around the school is the most important feature of the landscape to preserve. Given that, great care was taken in the siting of the shelters to preserve that sense of open space.

When standing inside each of the shelters, open views of the school grounds are framed by the structure itself, creating a great visual connection between the classes out to the grounds. Moreover, the open sides and slatted wood walls of the shelters do not obscure views from the public ROW into the school grounds. Most importantly, the early childhood shelters closest to the school are located so as not to block primary views of the original Albert Kahn school, one of only three schools ever designed by the master architect, and the only one still standing. In all instances, there was both a practical and aesthetic consideration to maintaining and even promoting the open character of the school grounds.

Equal to the impact of having an appropriate location for each shelter, the materials of the shelters also play a significant role on their visual impact within the historic district. Natural wood materials and finishes were purposefully used to blend seamlessly into the mature wooded landscape around the school, and as the cedar boards have already aged, their bright unfinished color has started to patina into a darker, unassuming finish. Many of the existing wood structures on the site (play and shade structures) also have a naturally aged wood finish, and so these new structures blend easily within the school grounds' existing context.

Community Partnership

The classroom shelters have also provided a venue for events for the Detroit Waldorf School and the larger Detroit community. In the spring of 2021, a DWS Music Fest featuring youth performers was held at the shelters alongside a public exhibition of student artwork, both of which showcased the diverse talents of DWS students. Additionally, in the summer of 2021, the Detroit Mosaic Theatre utilized the shelters for two weeks for its summer camp, and this partnership is anticipated again this summer. DWS is also excited to host the free, public Storytelling Festival on April 30th featuring organizations such as the Ruth Ellis Center, Detroit Disability Power, Shakespeare in Detroit, and Inside Out Literary Arts and storytellers Andaiya Spencer, Eradajere Oleita, Jatu Gray, and Jennine Spencer. There are many other intentions to use the shelters for future community meetings and events including camps, performances, scouting groups, DPSCD partnerships, and DWS Winter Faires. DWS has had conversations with churches, The Villages of Detroit CDC, Indian Village Women's Garden Club, Detroit Future City, Detroit Audubon, Detroit Hives, and the neighbors on Fischer, to name a few groups. The shelters have already inspired new partnerships and engaged hundreds in the Detroit community, and their potential for future community impact is without limit.

Subsequent Modifications

- During the 2020 school year, as the season turned towards winter and air temperatures dropped, it became urgently clear that some kind of additional protection would be required on the shelters in order for classes to continue to use them throughout the majority of the day. The solution was found through donated fabric from Carhartt and the work of a local non-profit and DWS faculty and parents to sew and install curtains on three sides of the shelters. The curtains are still installed today.
- During the summer of 2021, teachers raised a concern that some of the shelters were undersized for their mission of providing a dedicated outdoor classroom. In response, volunteers erected shelter floor extensions, approximately 4' x 16' on the small shelters and 4' x 24' on the large shelters, on each side of four shelters. (three for early childhood and the 1st grade)
- Gutters, downspouts, and rain collection barrels were added to some shelters where not readily visible from the public ROW. All shelters located near Burns St did not have the gutters added because of visibility concerns.
- Teachers have made minor ad hoc modifications to individual shelters including addition of furniture, chalkboards, art pieces, small solar powered lights, and other items.

Conclusion

We respectfully submit this request to the Detroit Historic District Commission for your consideration. Additional photos and sketches have been provided showing the current as-built condition for each shelter. The site plan has also been updated with names to correspond to this as-built document. We look forward to meeting with Commission at the May 2022 meeting and will be happy to answer any questions as HDC staff prepares their review of and report on the work.

Sincerely,

Brian Rebain, RA, NCARB
DWS Class of 2021 and 2024 Parent

CLASSROOM SHELTER

DETROIT WALDORF SCHOOL

REVISED 05/03/22

SITE PLAN

PROJECT INFORMATION

PROJECT LOCATION:	2555 BURNS DETROIT, MI 48214
OWNER:	DETROIT WALDORF SCHOOL 2555 BURNS DETROIT, MI 48214
ARCHITECT OF RECORD:	KRAEMER DESIGN GROUP, LLC BRIAN REBAIN, RA, NCARB STATE OF MICHIGAN CERTIFICATE NO. 1301040246 1420 BROADWAY DETROIT, MI 48226 www.thekraemeredge.com (313) 965-3399
STRUCTURAL ENGINEER:	RESURGET MARC STEINHOBEL 4219 WOODWARD AVE SUITE 306 DETROIT, MI 48201

CODE SUMMARY

PROJECT DESCRIPTION: EMERGENCY ERECTION OF TEMPORARY OUTDOOR WOOD CLASSROOM SHELTERS TO SERVE THE SCHOOL DURING THE COVID PANDEMIC. THERE ARE 14 PROPOSED SHELTERS. TEN MEASURE 20'X20', AND FOUR MEASURE 12'X12'. THE SHELTERS ARE SPACED THROUGHOUT THE SCHOOL GROUNDS TO ALLOW FOR EFFECTIVE PHYSICAL DISTANCING BETWEEN THE CLASSROOMS, WHILE ALSO PROVIDING GOOD LOCATIONS FOR OVERSIGHT OF THE STUDENTS AS WELL AS MAINTAIN EXISTING PLAYFIELD LOCATIONS. TWLEVE SHELTERS ARE LOCATED ON LOTS IN THE INDIAN VILLAGE HISTORIC DISTRICT CURRENTLY ZONED R1 AND APPROVED FOR EDUCATIONAL USE. TWO SHELTERS ARE LOCATED ON LOTS ADJACENT TO THE IV-HD ON FISCHER ST, CURRENTLY ZONED R2.

ZONING: R1-H; R2 - SEE ATTACHED SITE PLAN

ZONING ORDINANCE SUMMARY: SHELTERS ARE BEING PROPOSED AS TEMPORARY ACCESSORY STRUCTURES TO THE PRIMARY SCHOOL FUNCTIONS AT THE MAIN BUILDING LOCATED AT 2555 BURNS, AT THE CORNER OF CHARLEVOIX AND BURNS ST. THE OWNER IS SEEKING TEMPORARY APPROVAL TO USE THESE STRUCTURES AS PART OF THEIR IN-SCHOOL LEARNING COVID PREPAREDNESS PLAN. APPROVAL IS BEING SOUGHT PURSUANT TO THE REQUIREMENTS OF THE FOLLOWING SECTIONS OF THE CITY OF DETROIT ZONING ORDINANCE:

Sec. 50-12-553. - Natural disasters and emergencies.
Temporary uses and structures needed as the result of a natural disaster or other health and safety emergencies are allowed for the duration of the emergency.

FURTHERMORE:

Sec. 50-12-559. - Other uses.
The Buildings, Safety Engineering, and Environmental Department may approve other temporary uses and activities or special events where it is determined that such uses would not jeopardize the health, safety or general welfare, or be injurious or detrimental to properties adjacent to, or in the vicinity of, the proposed location of the activity.

OCCUPANCY CLASSIFICATION: EDUCATIONAL (ACCESSORY USE)

CONSTRUCTION TYPE: OUTDOOR WOOD SHADE STRUCTURE

APPLICABLE CODES: BUILDING: MICHIGAN BUILDING CODE (MBC) 2015

KraemerDesignGroup
1420 Broadway | Detroit MI 48226 | p 313 965 3399 | f 313 965 3555
www.thekraemeredge.com

Architect

Consultant

TEMPORARY OUTDOOR CLASSROOM SHELTER
2555 BURNS
DETROIT, MI

DETROIT WALDORF SCHOOL
2555 BURNS
DETROIT, MI

Project / Owner

Seal

Revision	Date
HDC UPDATES	05/03/22
FOR PERMIT	09/04/20

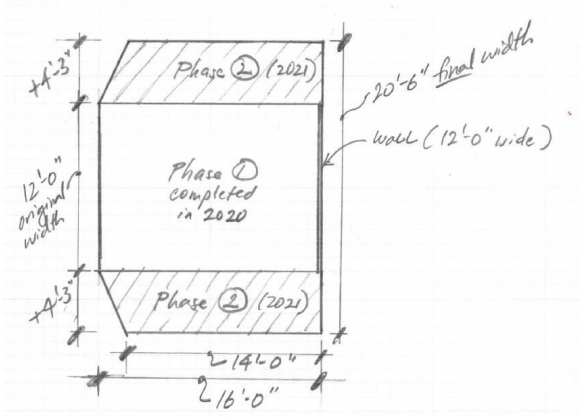
Date 09/04/20

Sheet Title
COVER

Sheet Number
COVER

SUNFLOWER (Pre-K, built 2020, expanded 2021)

General View



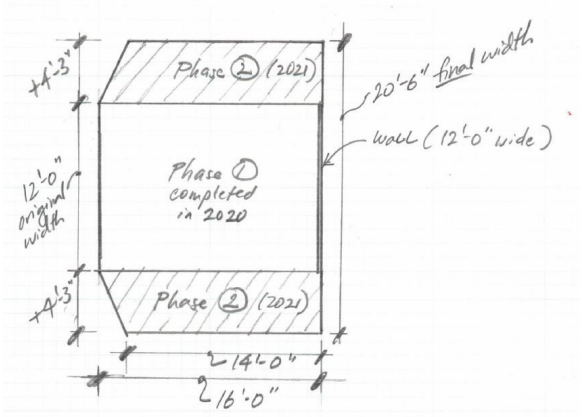
Deck Dimensions (as built)

Front View

Side View

HONEYBEE (Pre-K, built 2020, expanded 2021)

General View

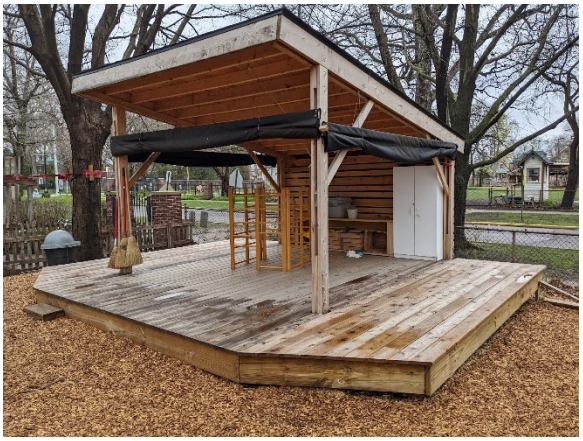


Deck Dimensions (as built)

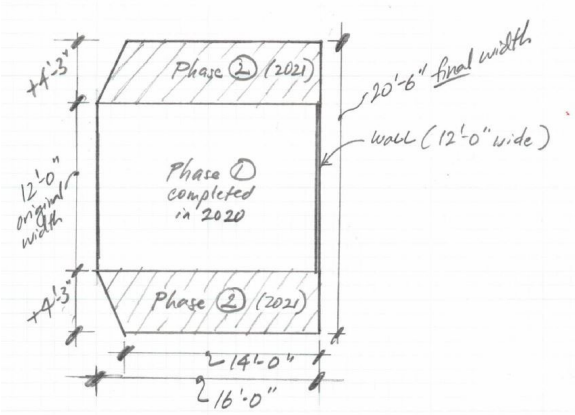
Front View

Side View

MOON (Pre-K, built 2020, expanded 2021)



General View



Deck Dimensions (as built)

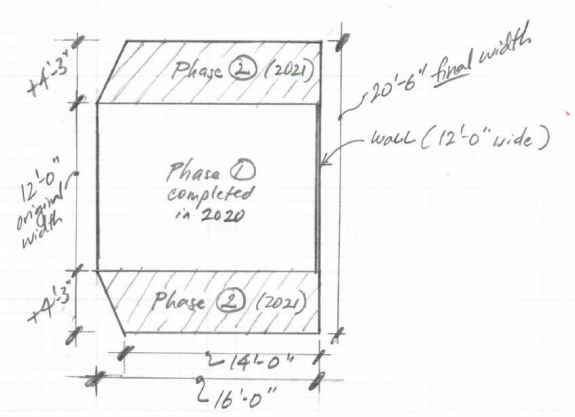
Front View

Side View

05-03-22 HDC As-Built
Photos and Dimensions

BLUEBIRD (Pre-K, built 2020, expansion started 2021)

General View



Deck Dimensions (when complete)

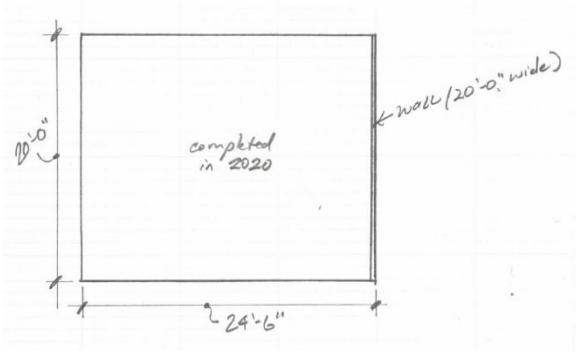
Front View

Side View

05-03-22 HDC As-Built
Photos and Dimensions

RAINBOW KINDERGARTEN (built 2020)

General View



Deck Dimensions (as built)

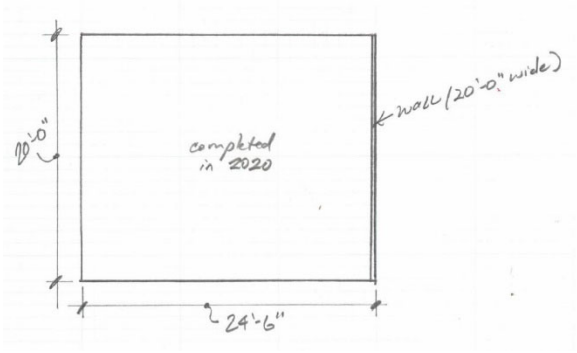
Front View

Side View

05-03-22 HDC As-Built
Photos and Dimensions

SUNRISE KINDERGARTEN (built 2020)

General View



Deck Dimensions (as built)

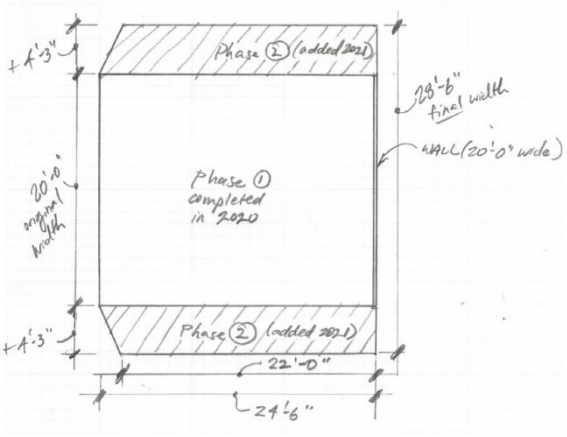
Front View

Side View

05-03-22 HDC As-Built
Photos and Dimensions

1st GRADE (built 2020, expanded 2021)

General View



Deck Dimensions (as built)

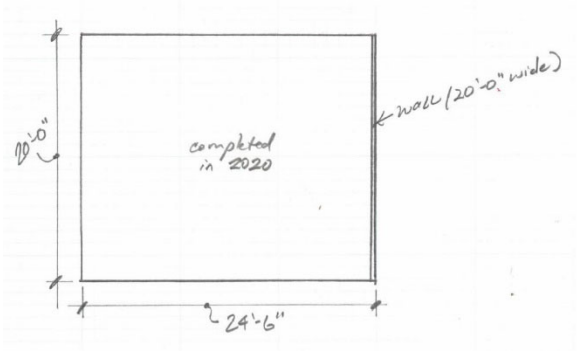
Front View

Side View

05-03-22 HDC As-Built
Photos and Dimensions

2ND GRADE (built 2020)

General View



Deck Dimensions (as built)

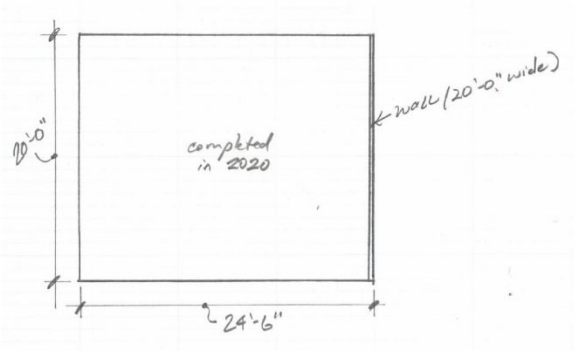
Front View

Side View

05-03-22 HDC As-Built
Photos and Dimensions

3RD GRADE (built 2020)

General View



Deck Dimensions (as built)

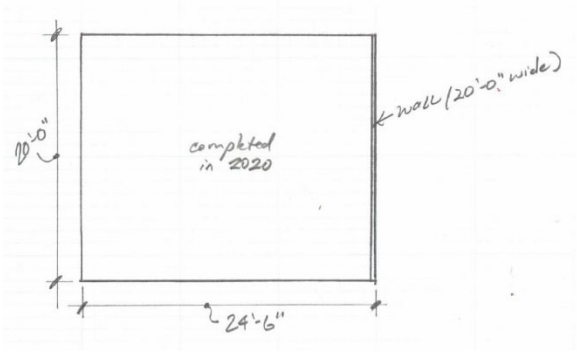
Front View

Side View

05-03-22 HDC As-Built
Photos and Dimensions

4TH GRADE (built 2020)

General View



Deck Dimensions (as built)

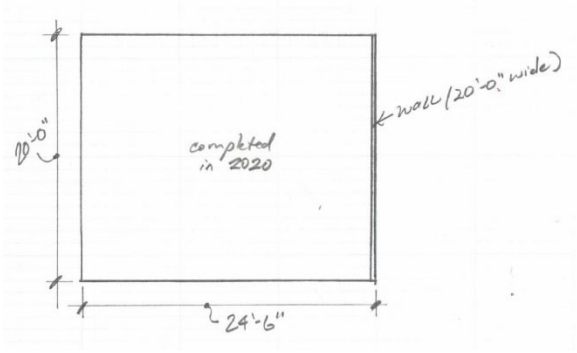
Front View

Side View

05-03-22 HDC As-Built
Photos and Dimensions

5TH GRADE (built 2020)

General View



Deck Dimensions (as built)

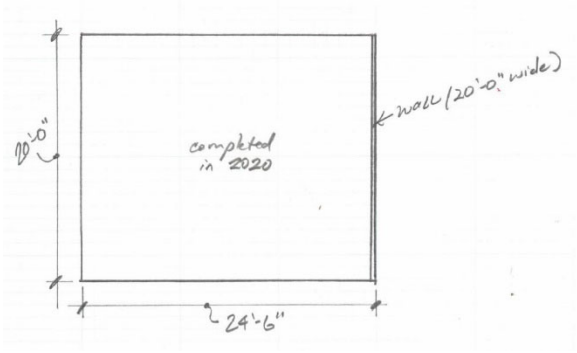
Front View

Side View

05-03-22 HDC As-Built
Photos and Dimensions

6TH GRADE (built 2020)

General View



Deck Dimensions (as built)

Front View

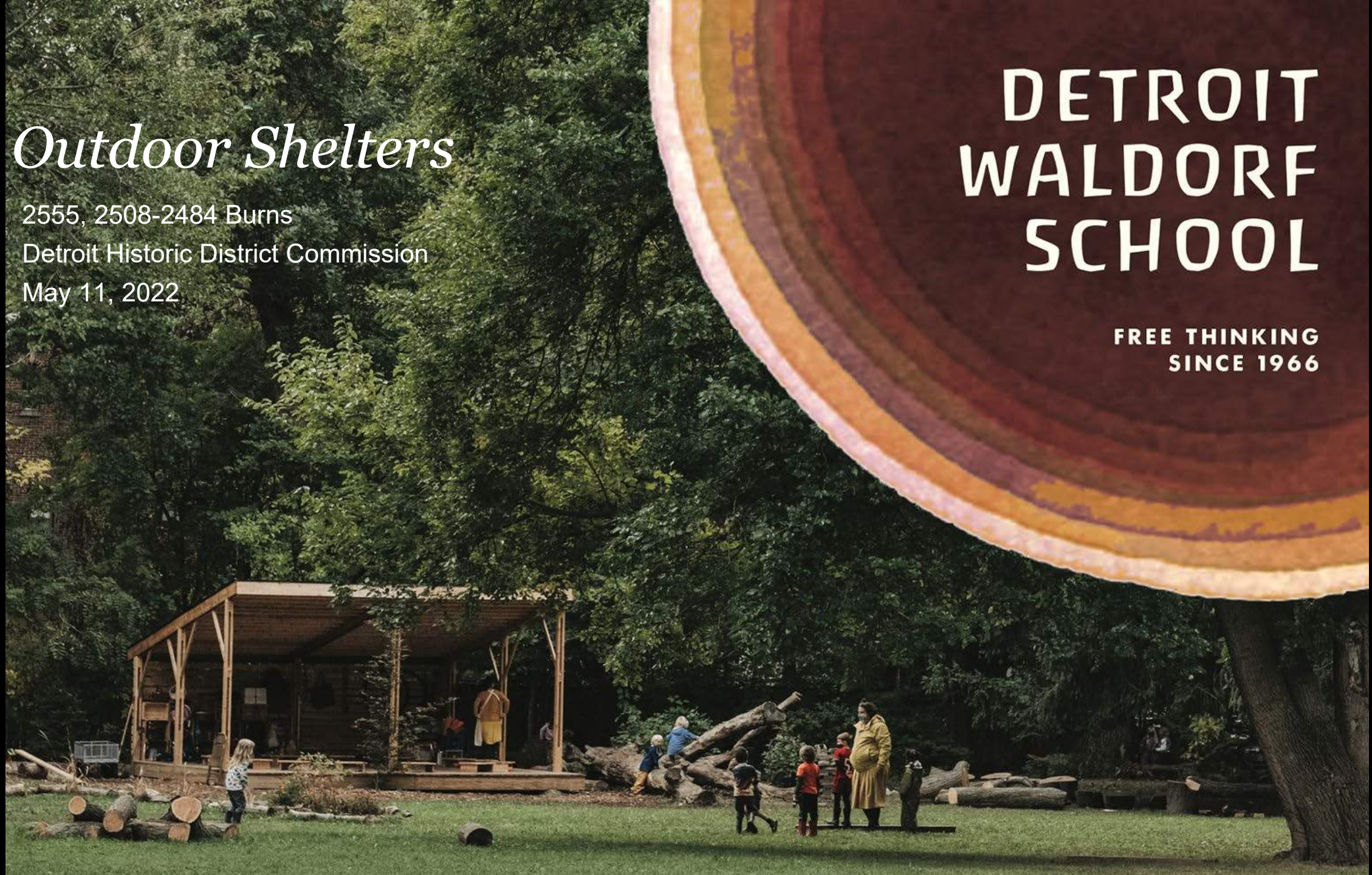
Side View

Outdoor Shelters

2555, 2508-2484 Burns

Detroit Historic District Commission

May 11, 2022



History of Detroit Waldorf School Building

- Located in historic Indian Village
- Designed by architect Albert Kahn
- Built in 1913, expanded in 1923
- Occupied first by The Liggett School
- Acquired by Detroit Waldorf School in 1965
- Last standing Albert Kahn-designed school in world

Need and Inspiration

- Covid-19 and need to continue in-person learning
- Fresh air classrooms created during the 1918 pandemic
- Historic precedents:

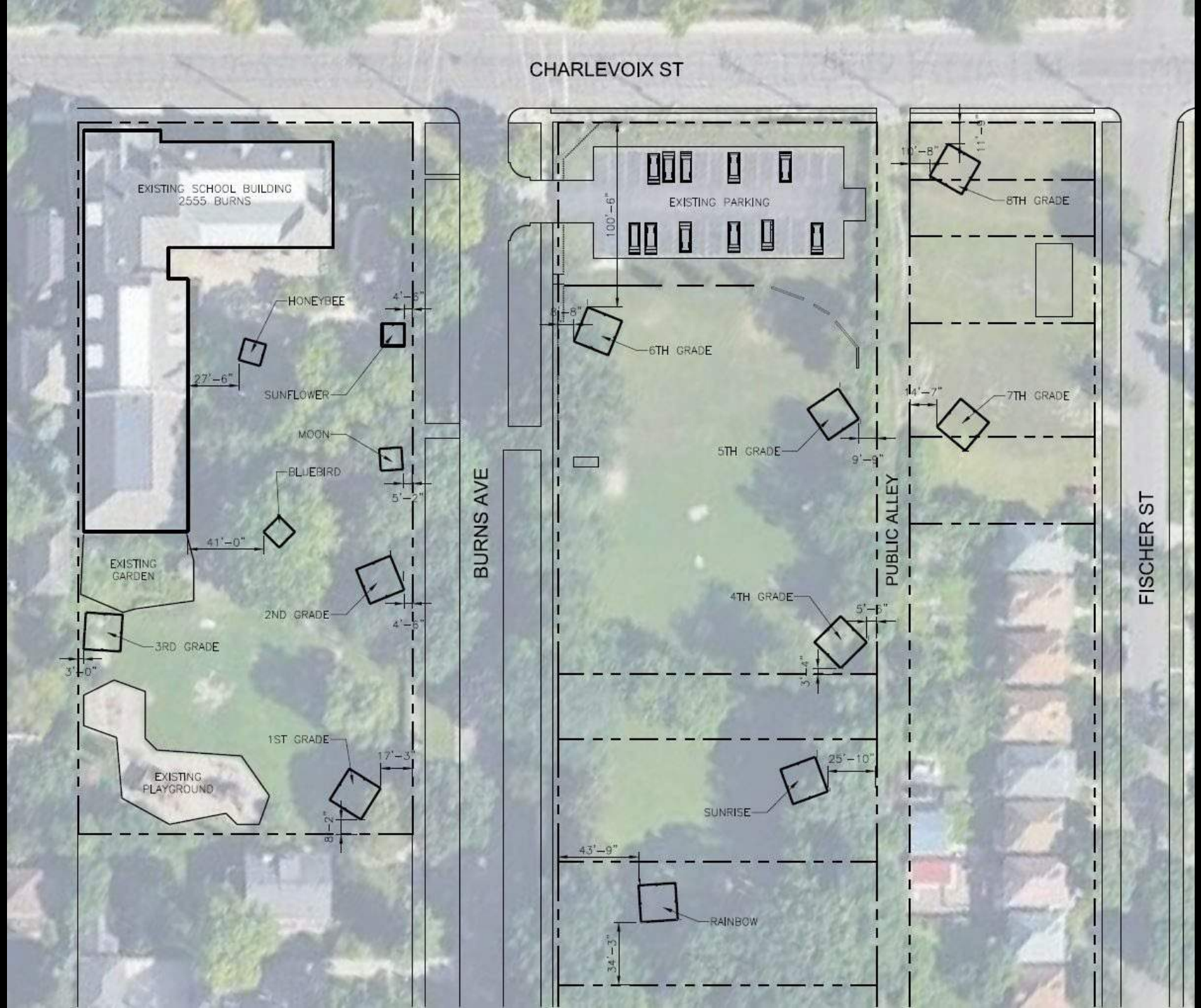
  www.nytimes.com/2020/07/17/nyregion/coronavirus-nyc-schools-reopening-outdoors.html

  www.washingtonpost.com/history/2020/09/14/open-air-schools-outdoor-coronavirus/

  www.smithsonianmag.com/history/history-outdoor-schooling-180975696/

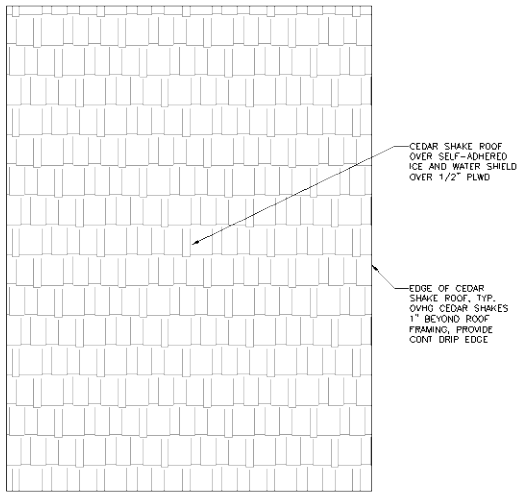
  www.history.com/news/school-outside-tuberculosis


Outdoor Classroom
Campus Planning

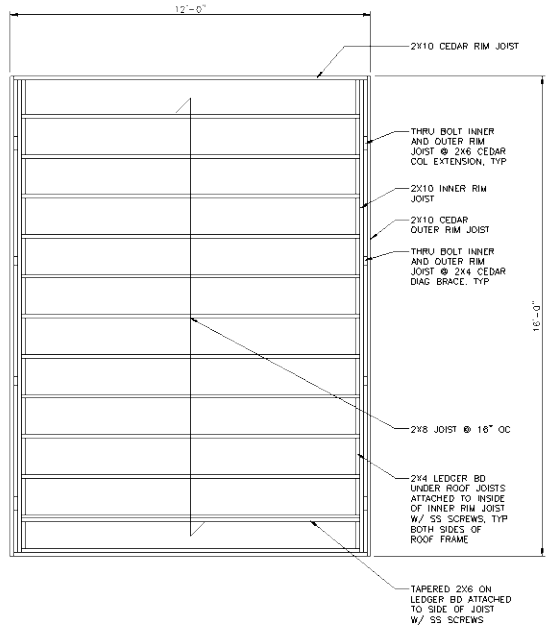

CHARLEVOIX ST
EXISTING SCHOOL BUILDING
2555 BURNS
HONEYBEE
4'-6"
27'-6"
SUNFLOWER
MOON
BLUEBIRD
5'-2"
41'-0"
EXISTING
GARDEN
2ND GRADE
4'-6"
3RD GRADE
3'-0"
1ST GRADE
17'-3"
EXISTING
PLAYGROUND
8'-2"
BURNS AVE
EXISTING PARKING
100'-6"
8'-8"
6TH GRADE
5TH GRADE
9'-9"
4TH GRADE
5'-5"
3'-4"
PUBLIC ALLEY
25'-10"
SUNRISE
43'-9"
RAINBOW
34'-3"
10'-8"
11'-9"
8TH GRADE
14'-7"
7TH GRADE
FISCHER ST

Outdoor Classroom Structures

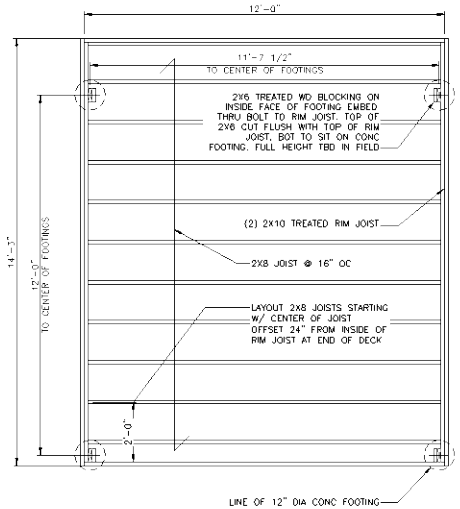
- 14 cedar shelters (12 within Indian Village and 2 outside the district)
- Simple shed structure open on 3 sides with teaching wall
- Donation funded and volunteer constructed
- Granted a Notice to Proceed on a temporary basis in 2020



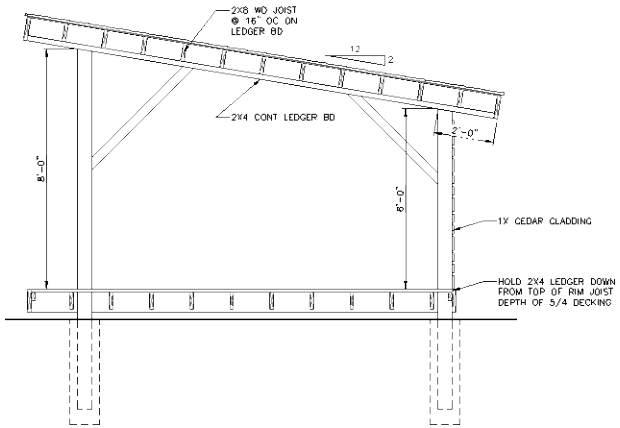
ROOF PLAN
SCALE: 1/2"=1'-0"



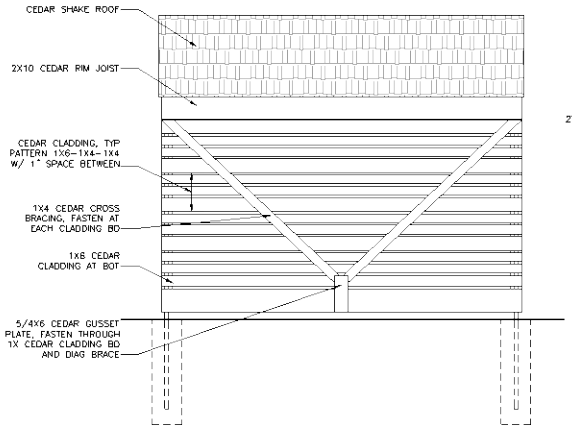
ROOF FRAMING PLAN
SCALE: 1/2"=1'-0"



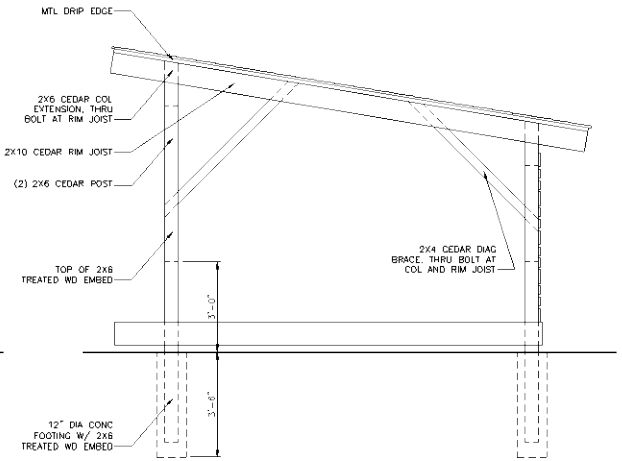
FLOOR FRAMING PLAN
SCALE: 1/2"=1'-0"



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



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



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

0 0" 1 2" 4
SCALE : 1/2" =1'-0"

PLOTTED ON 9/11/2020 9:21 AM | PLOTTED BY BRIAN RESAIN

KraemerDesignGroup
1400 Broadway | Detroit, MI 48226 | p 313 965 3999 | f 313 965 5555
www.kraemerdesigngroup.com
Architect

Consultant

DETROIT WALDORF
2555 BURNS
DETROIT, MI

Project / Owner

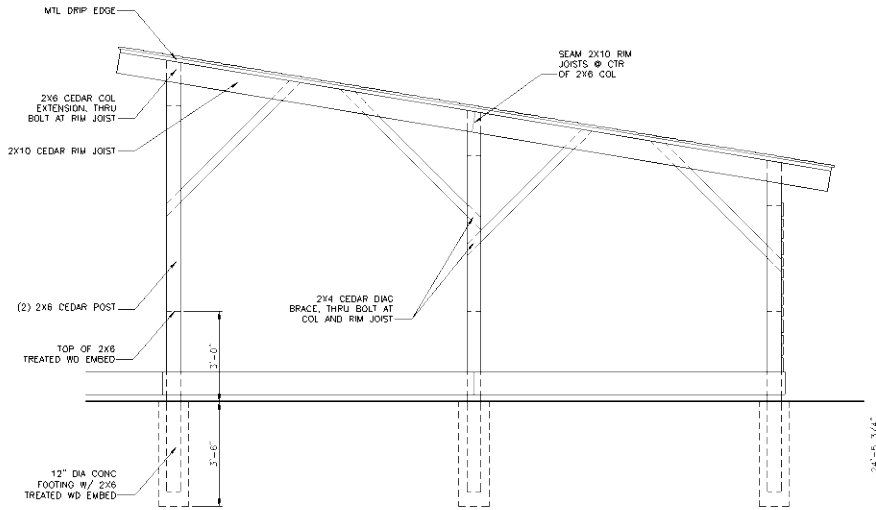
STATE OF MICHIGAN
BRIAN A. RESAIN
ARCHITECT
No. 1301057269
LICENSED ARCHITECT

Seal

FOR PERMIT	09/04/20
Revision	Date
Date	

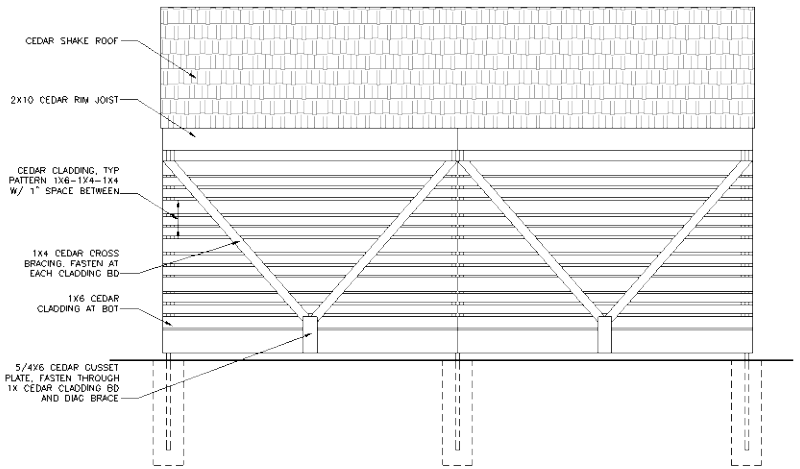
Sheet Title
12X12 SHELTER PLANS, ELEVS AND SECTION

Sheet Number
A1



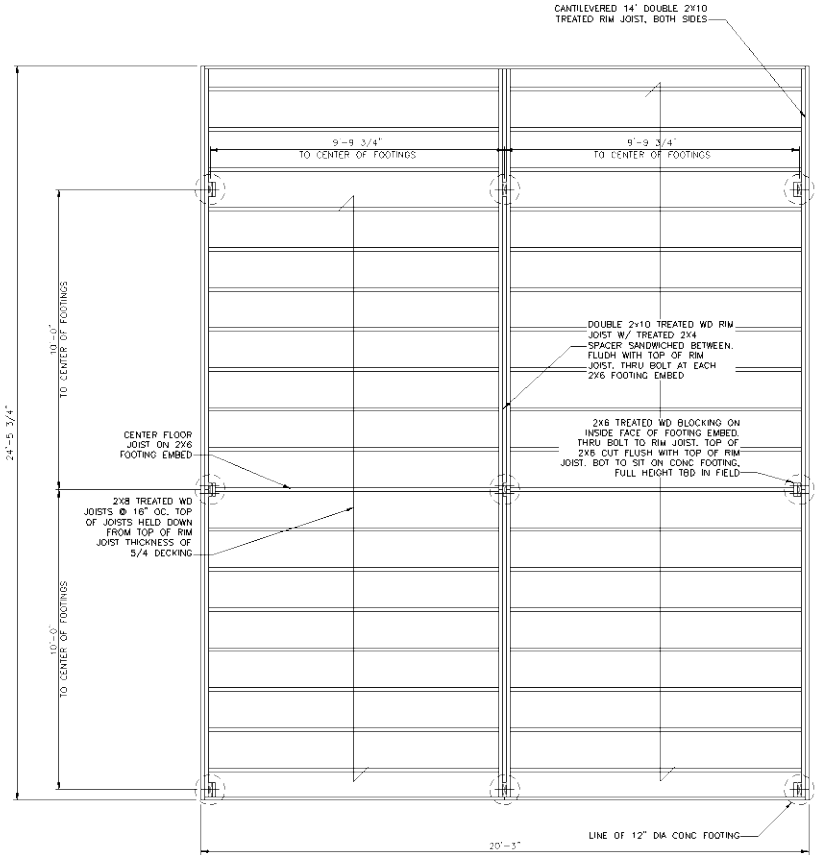
SIDE ELEVATION

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



REAR ELEVATION

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



FLOOR FRAMING PLAN

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

0 6" 1' 2' 4'
SCALE : 1/2" =1'-0"

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www.kraemerdesigngroup.com
Architect

Consultant

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DETROIT, MI

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STATE OF MICHIGAN
BRIAN A. REBAIN
ARCHITECT
No. 1301057260
LICENSED ARCHITECT

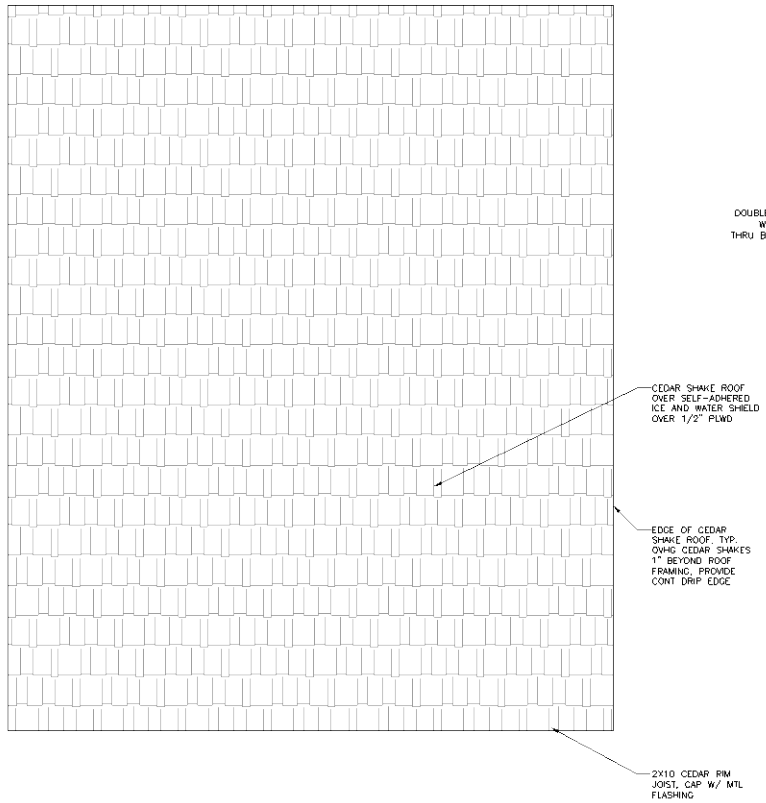
Seal

FOR PERMIT	09/04/20
Revision	Date
Date	

Sheet Title
20X20 SHELTER
PLANS AND ELEVS

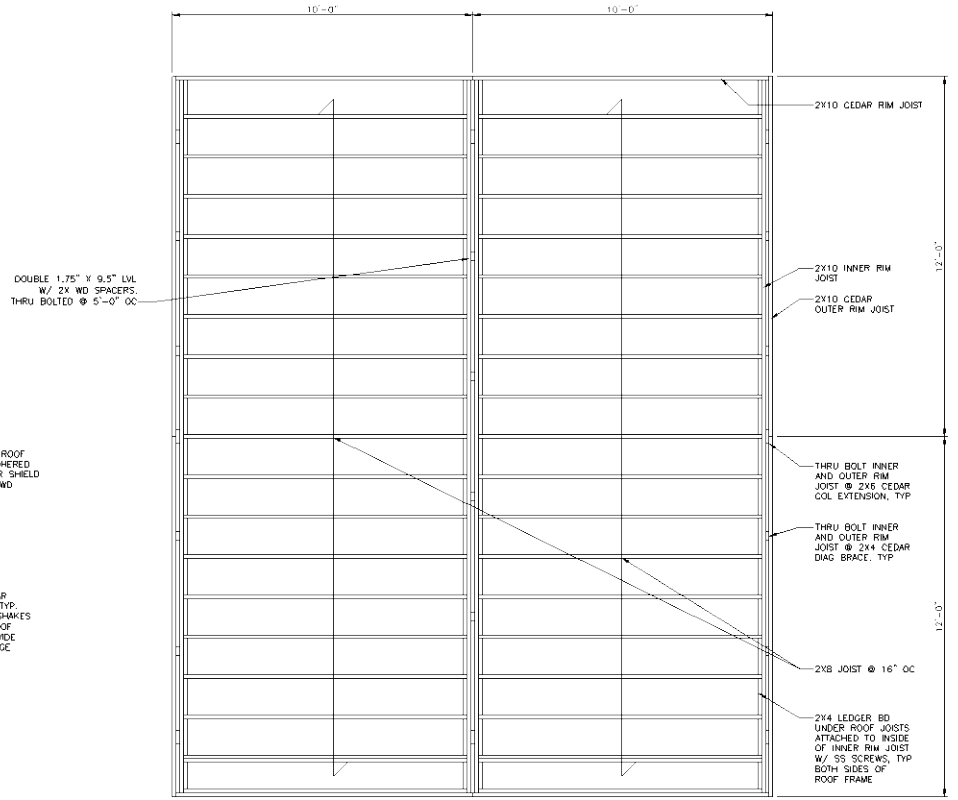
Sheet Number
A2

PLOTTED ON 9/11/2020 9:22 AM | PLOTTED BY BRIAN REBAIN



ROOF PLAN

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



ROOF FRAMING PLAN

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

0 0" 1' 2" 4'
SCALE : 1/2" =1'-0"

PLOTTED ON 9/11/2020 9:22 AM | PLOTTED BY BRIAN RESAIN

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Architect

Consultant

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DETROIT, MI
Project / Owner

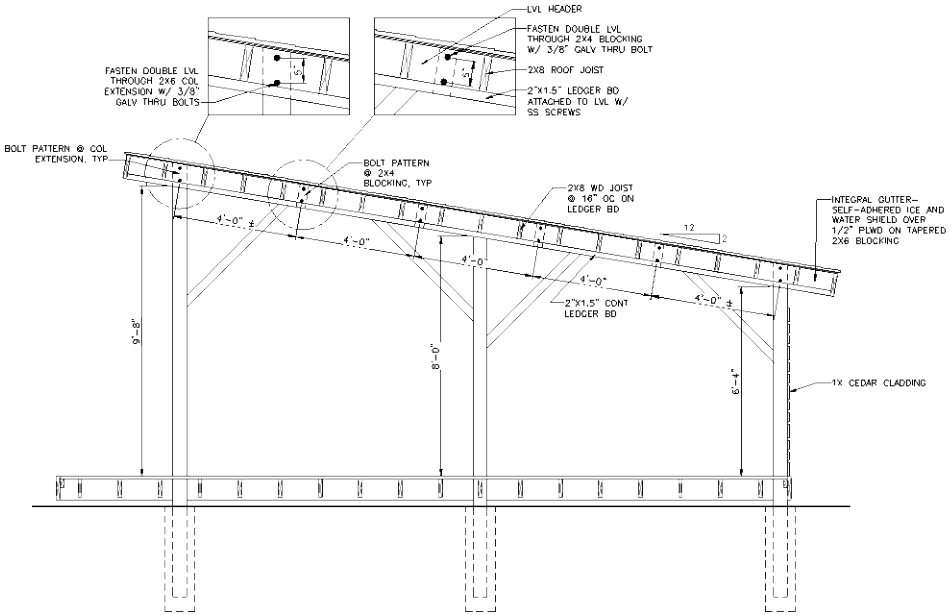
STATE OF MICHIGAN
BRIAN A. RESAIN
ARCHITECT
No. 1301057268
REGISTERED ARCHITECT
Seal

FOR PERMIT	09/04/20
Revision	Date

Date

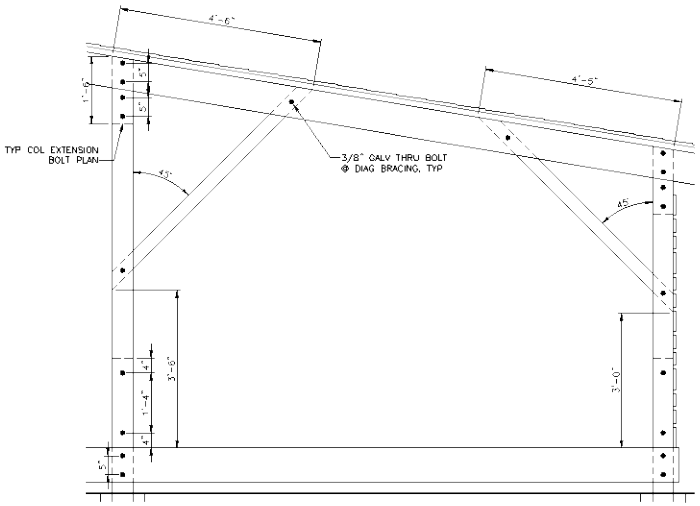
Sheet Title
20X20 SHELTER ROOF PLANS AND TYP GUTTER DETAIL

Sheet Number
A3



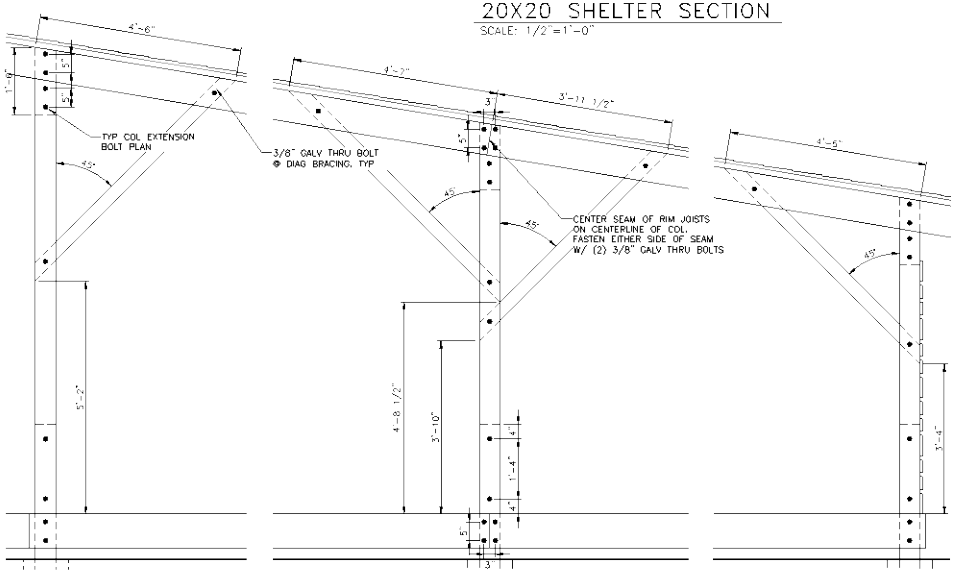
20X20 SHELTER SECTION

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



12X12 COL BOLT PLAN

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



20X20 COL BOLT PLAN

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

0 0" 1' 2" 4'

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

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Consultant

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STATE OF MICHIGAN
BRIAN A. REBAIN
ARCHITECT
NO. 1301057249
LICENSED ARCHITECT

Seal

FOR PERMIT	09/04/20
Revision	Date
Date	

Sheet Title

COLUMN BOLT PLANS AND STRUCTURAL CALCS

Sheet Number

A4

Breaking Ground

- Constructed in Summer 2020 by school and community volunteers

6 weeks of work…

...successfully finished
by opening day, fall 2020

...and in service, in all weather conditions (January 2021)

Honeybee Pre-K

Current conditions, May 2022

Moon
Pre-K

Sunflower Pre-K

Bluebird Pre-K

Rainbow Kindergarten

Sunrise Kindergarten

First Grade

Second Grade

Third Grade

Fourth Grade

Fifth Grade

Sixth Grade

Seventh Grade

Eighth Grade

Publicity

- Second Wave Media

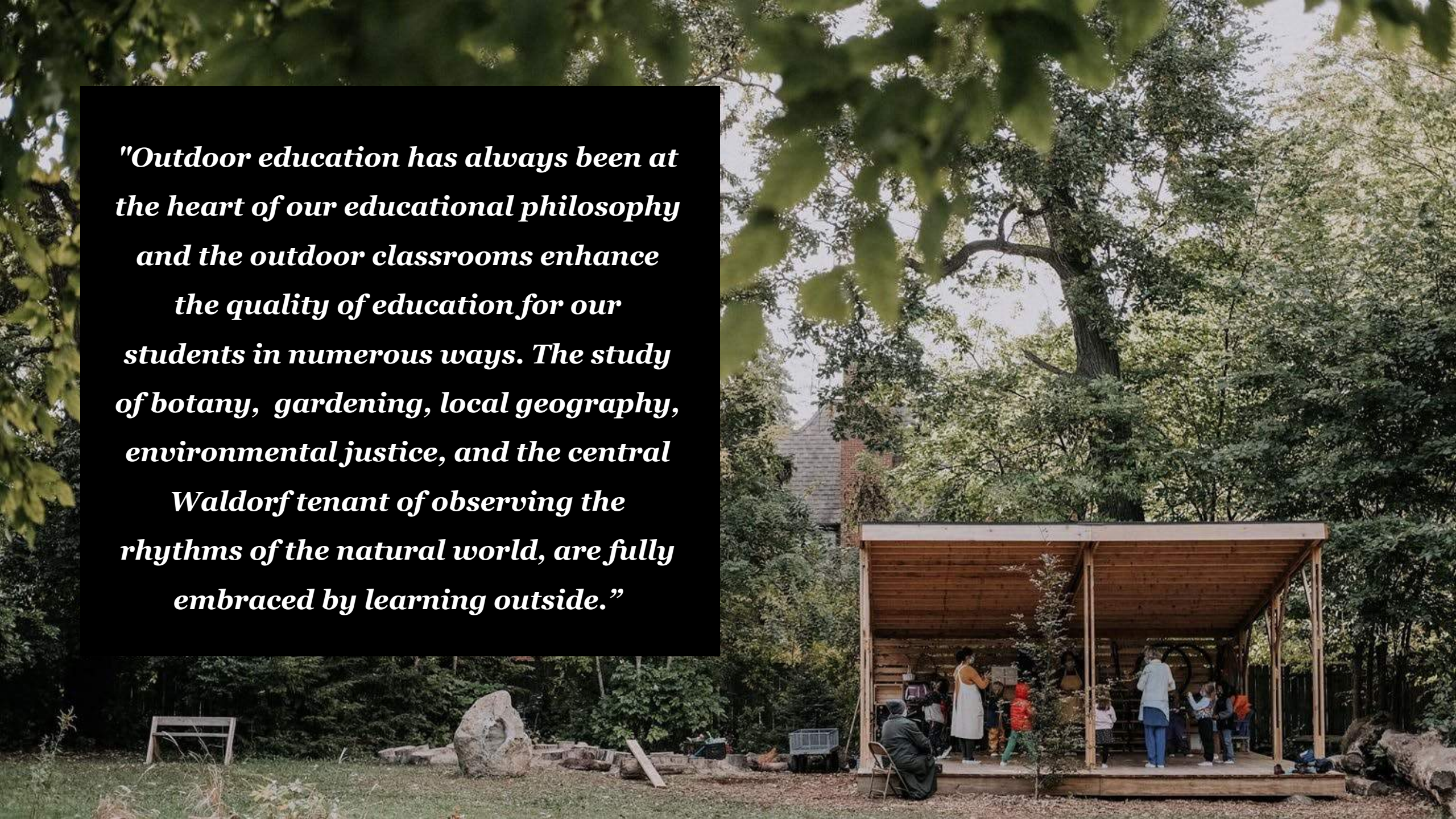
  www.secondwavemedia.com/metromode/features/detroit-waldorf-school.aspx

- Click On Detroit

  www.nbcnews.com/news/education/tents-yurts-snowsuits-schools-seeking-alternativess-remote-learning-move-classes-n1235809

- NBC News

  www.clickondetroit.com/news/local/2020/08/20/detroit-school-prepares-for-in-person-learning-by-adding-5000-square-feet-in-outdoor-classrooms/



"Outdoor education has always been at the heart of our educational philosophy and the outdoor classrooms enhance the quality of education for our students in numerous ways. The study of botany, gardening, local geography, environmental justice, and the central Waldorf tenant of observing the rhythms of the natural world, are fully embraced by learning outside."

Benefits

- Outdoor learning is proven to benefit student mental health and academic performance.
- Learning outdoors helps develop a sense of place and civic attitudes and behaviors.
- Outdoor education and these outdoor structures engage families and the greater community.

Enriched learning


Botany


EAST
PRAIRIE
entrance
7th
8th

Community Partnerships

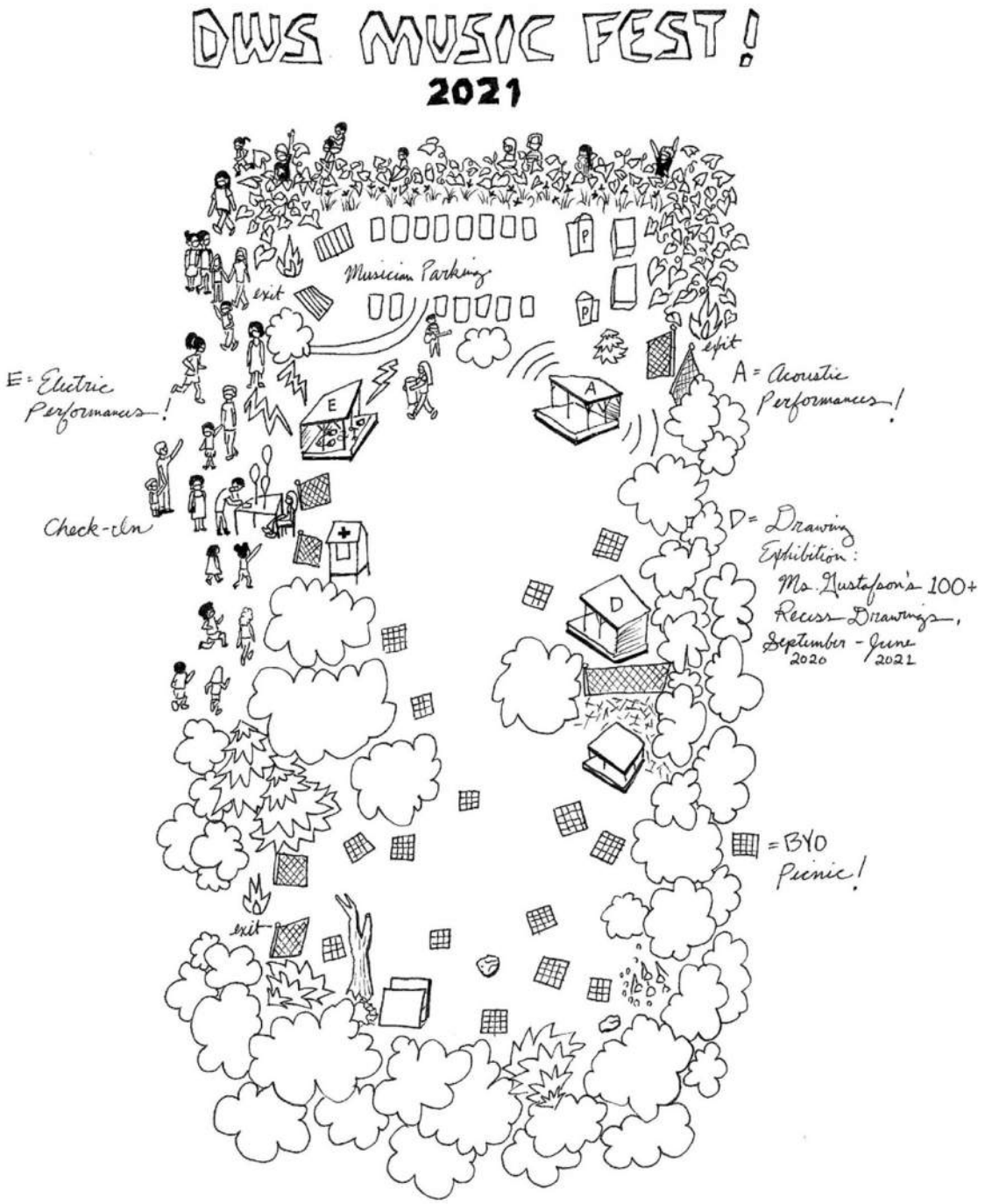
- Engagement with Detroit community
- New and strengthened partnerships
- Classrooms offer collaborative spaces for community events and performances.

Mosaic Youth Theatre Camp

- Summer 2021, 2 weeks
- 3rd-8th graders

Community Music Festival

- Summer 2021
- Song, dance, poetry performances
- Also planned for Summer 2022



Storytelling Festival

- April 30, 2022
- Hosted by DWS Diversity, Equity, and Inclusion Committee
- Free and open to public
- Community Partners for event:
  - Mosaic Youth Theatre
  - Ruth Ellis Center
  - Detroit Disability Power
  - Detroit Pizza Bar
  - Cold Truth
  - Shakespeare in Detroit
  - Inside Out Literary Arts

Detroit Waldorf School

3rd

1st

2nd

Honeybee

Hummingbird

Sunflower

Burns St.

Quietland

SIMONE SHURNEY, DWS TEACHER


SHAKESPEARE IN DETROIT

ERADAJERE OLEITA, CHIP BAG PROJECT

Future Community Engagement

Serving our Detroit neighbors and community through the following future plans:

- Musical and theatre performances
- Art shows
- Community markets
- Winter faires
- Public engagements with community leaders and citizens
- Nonprofit partnerships
- Community festivals
- School collaborations
- Create additional revenue streams for our school and partners


Thank You

CITY OF DETROIT
HISTORIC DISTRICT COMMISSION

2 WOODWARD, SUITE 808
DETROIT, MICHIGAN 48226
PHONE 313-224-1762

October 20, 2020

NOTICE TO PROCEED
FOR TEMPORARY WORK IN RESPONSE TO COVID-19

Brian Rebain
KRAEMER DESIGN GROUP, LLC
1420 Broadway
Detroit, MI 48226

RE: Application Number 20-6913; 2555 Burns (Detroit Waldorf School), Indian Village Historic District

Dear Mr. Rebain,

The staff of the Detroit Historic District Commission has reviewed the above-referenced application for temporary work in response to the COVID-19 emergency, pursuant to Section 5(10) of the Michigan Local Historic District Act, as amended, being MCL 399.205(10), MSA 5-3407(5)(10); Sections. 21-2-57 and 21-2-73 of the 2019 Detroit City Code and Detroit Historic District Commission Resolution 20-02 (adopted June 10, 2020) and Resolution 20-06 (adopted October 14, 2020), and finds the following work to be inappropriate per the defined Elements of Design for the Indian Village Historic District and the Secretary of the Interior's Standards for Rehabilitation (36 CFR Part 67):

- **Installation of 14 wood shelters on wood post footings, and metal roof**
- **Landscape plantings**

However, pursuant to Detroit Historic District Commission Resolutions 20-02 and 20-06, the Detroit Historic District Commission has authorized the above-referenced temporary work to proceed via the issuance of a Notice to Proceed (NTP) because the following condition prevails:

Retaining the resource is not in the interest of the majority of the community.

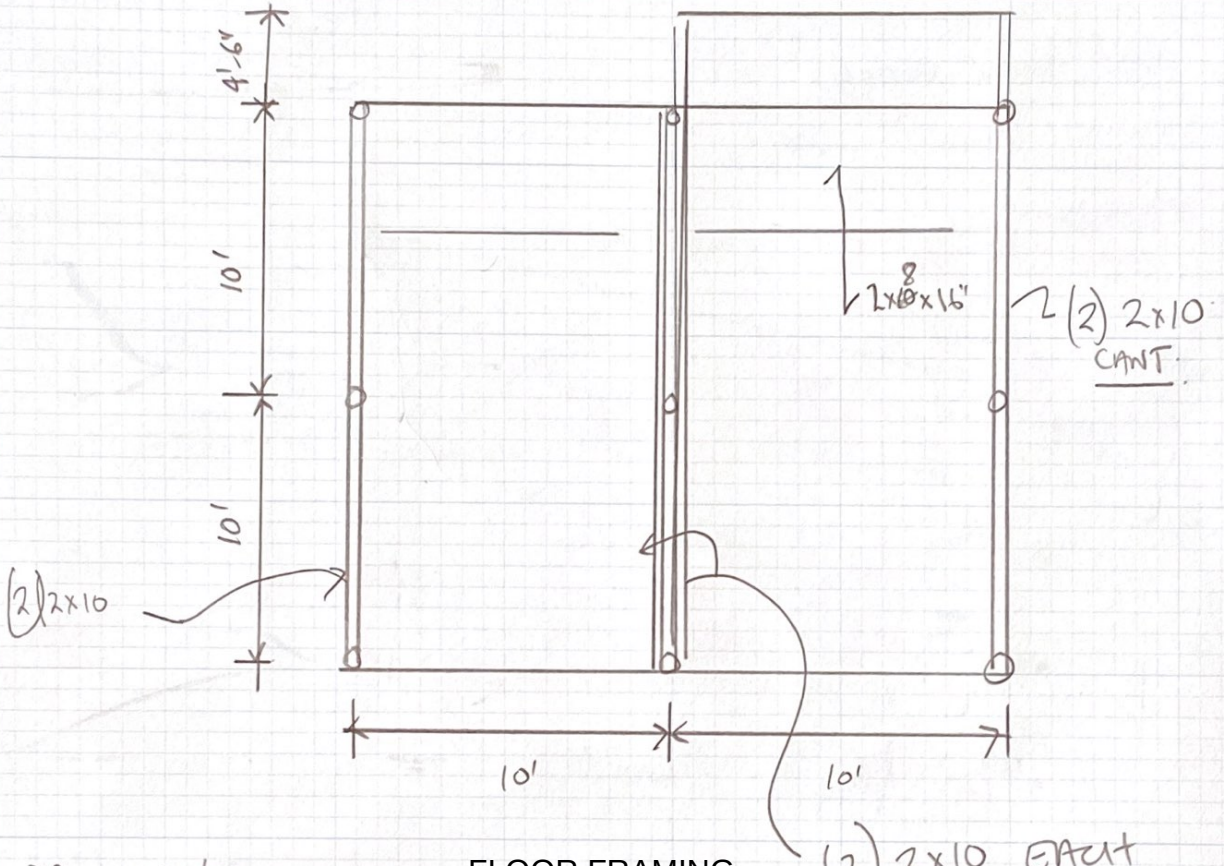
Please retain this document for your files. This NTP is issued only for temporary work installed and removed prior to June 30, 2021, or as otherwise extended by the Commission in response to the ongoing COVID-19 emergency. Environments altered via benefit of this NTP shall be restored to an appropriate historic condition no later than 180 days after the final expiration of Resolution 20-02, absent the issuance of a Certificate of Appropriateness or NTP for permanent work or other extension by the Commission. The Detroit Historic District Commission's approval does not waive the applicant's responsibility to comply with any other applicable ordinances or statutes.

For the Commission:

Daniel Rieden
Staff
Detroit Historic District Commission

RESURGET ENGINEERING

Project: WALDORF	Project Number:
Subject: TEMPORARY CLASSROOMS	Sheet Number:
Reference:	Made By: MDS.
Date: 8/16/20	Checked By:

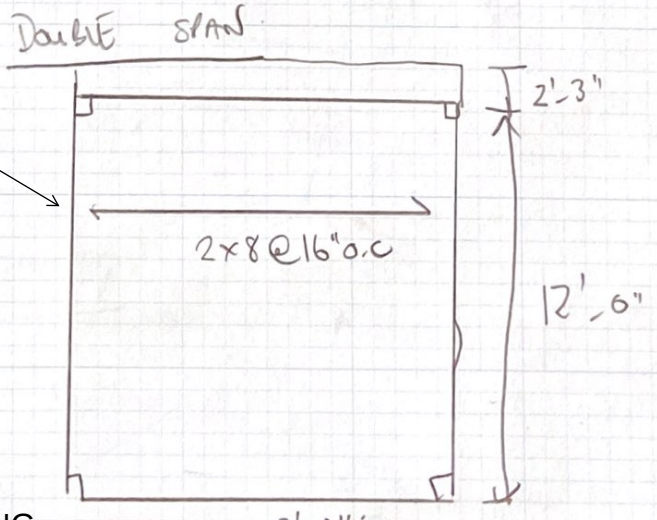


DL = 15psf

LL = 40psf

FLOOR FRAMING
DOUBLE BAY
ROOM

(1) 1 3/4"x14"
Treated PSL beam



STATE OF MICHIGAN
MARC DEON STEINHOBEL
ENGINEER
No. 57104
LICENSED PROFESSIONAL ENGINEER

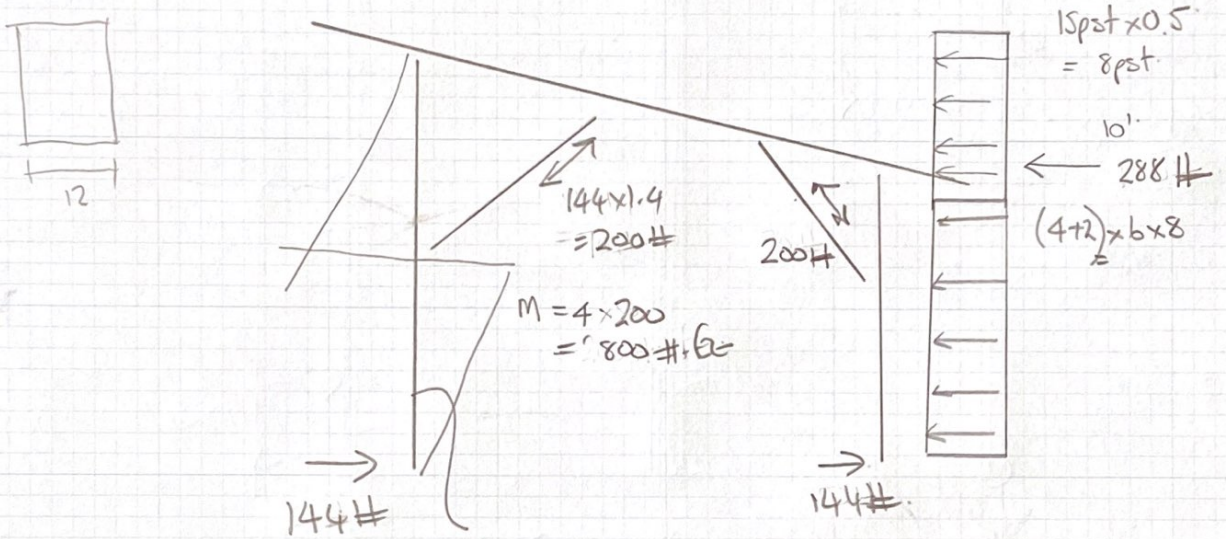
FLOOR FRAMING -
SINGLE BAY ROOM

RESURGET ENGINEERING

Project	Project Number
Subject	Sheet Number
Reference	Made By
Date	Checked By

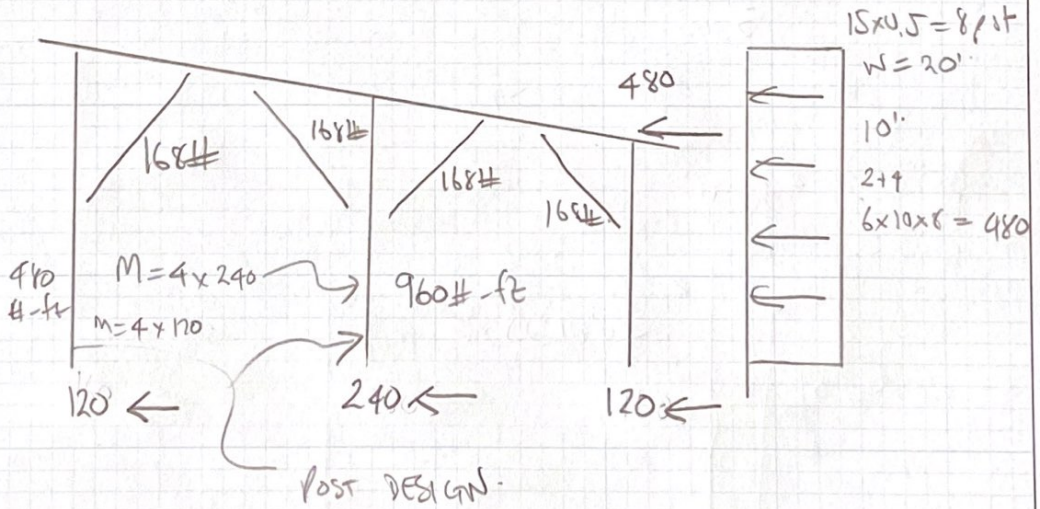
SINGLE BAY.

LATERAL WIND LOAD.



LOST DESIGN.

DOUBLE BAY.



POST DESIGN.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN	Aug. 16, 2020 12:36	Floor Joists.wwb

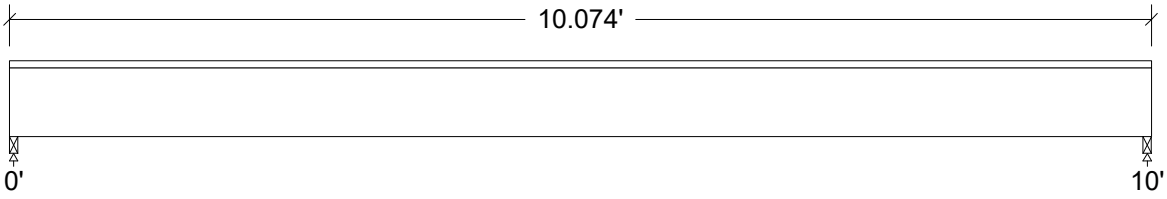
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
dead	Dead	Full Area				15.00(16.0")		psf
Live	Live	Full Area				40.00(16.0")		psf
Self-weight	Dead	Full UDL				2.2		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	112		112
Live	269		269
Factored:			
Total	380		380
Bearing:			
Capacity			
Joist	380		380
Support	699		699
Des ratio			
Joist	1.00		1.00
Support	0.54		0.54
Load comb	#2		#2
Length	0.89		0.89
Min req'd	0.89		0.89
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.25		1.25
Fcp sup	625		625

floor joists

Lumber-soft, S-P-F, No.1/No.2, 2x8 (1-1/2"x7-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Floor joist spaced at 16.0" c/c; Total length: 10.07'; Clear span: 9.926'; Volume = 0.8 cu.ft.

Wet service; Lateral support: top = continuous, bottom = at supports; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 45	Fv' = 131	psi	fv/Fv' = 0.35
Bending(+)	fb = 862	Fb' = 1207	psi	fb/Fb' = 0.71
Live Defl'n	0.20 = L/600	0.33 = L/360	in	0.60
Total Defl'n	0.37 = L/327	0.50 = L/240	in	0.73

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	135	1.00	0.97	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	875	1.00	1.00	1.00	1.000	1.200	-	1.15	1.00	1.00	-	2
Fcp'	425	-	0.67	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.4 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2
Emin'	0.51 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #2  = D+L
 Bending(+): LC #2  = D+L
 Deflection: LC #2  = D+L  (live)
             LC #2  = D+L  (total)
 Bearing   : Support 1 - LC #2 = D+L
             Support 2 - LC #2 = D+L
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V max = 378, V design = 329 lbs; M(+) = 944 lbs-ft
 EI = 66.69e06 lb-in^2
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 2.0 dead + "live"
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Aug. 16, 2020 12:34	floor beam edge.wwb

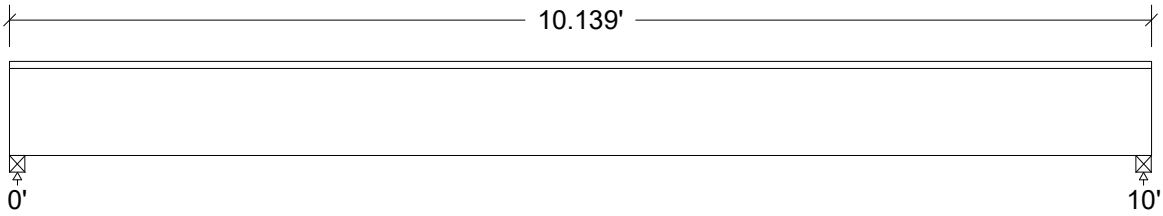
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
dead	Dead	Full Area				15.00(5.00')		psf
Live	Live	Full Area				40.00(5.00')		psf
Self-weight	Dead	Full UDL				5.6		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	408		408
Live	1014		1014
Factored:			
Total	1422		1422
Bearing:			
Capacity			
Beam	1422		1422
Support	2353		2353
Des ratio			
Beam	1.00		1.00
Support	0.60		0.60
Load comb	#2		#2
Length	1.66		1.66
Min req'd	1.66		1.66
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.13		1.13
Fcp sup	625		625

1.02 CLOSE TO 1.0
OK

floor beam - edge

Lumber n-ply, S-P-F, No.1/No.2, 2x10, 2-ply (3"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 10.14'; Clear span: 9.861'; Volume = 2.0 cu.ft.

Wet service; Lateral support: top = continuous, bottom = at supports;

This section FAILS the design check

WARNING: This section violates the following design criteria: Bending

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 63	Fv' = 131	psi	fv/Fv' = 0.48
Bending(+)	fb = 984	Fb' = 962	psi	fb/Fb' = 1.02
Live Defl'n	0.18 = L/664	0.33 = L/360	in	0.54
Total Defl'n	0.33 = L/368	0.50 = L/240	in	0.65

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	135	1.00	0.97	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	875	1.00	1.00	1.00	1.000	1.100	-	1.00	1.00	1.00	-	2
Fcp'	425	-	0.67	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.4 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2
Emin'	0.51 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #2  = D+L
 Bending(+): LC #2  = D+L
 Deflection: LC #2  = D+L  (live)
             LC #2  = D+L  (total)
 Bearing   : Support 1 - LC #2 = D+L
             Support 2 - LC #2 = D+L
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V max = 1403, V design = 1167 lbs; M(+) = 3508 lbs-ft
 EI = 138.50e06 lb-in^2/ply
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 2.0 dead + "live"
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
4. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
5. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Aug. 16, 2020 12:33	floor beam cantilevered.wwb

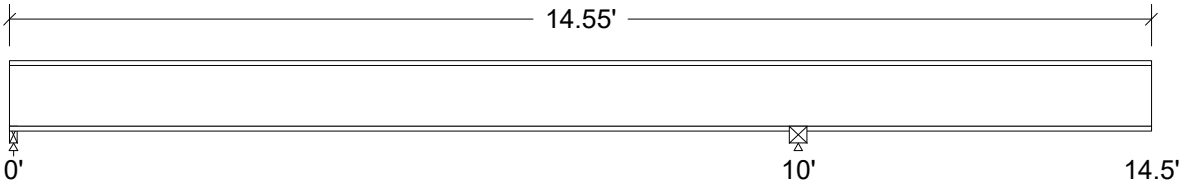
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
dead	Dead	Full Area	No			10.00(5.00')		psf
Live	Live	Full Area	No			40.00(5.00')		psf
Self-weight	Dead	Full UDL	No			5.6		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:					
Dead	224		585		
Live	808		2103		
Factored:					
Total	1032		2687		
Bearing:					
Capacity					
Beam	1032		2687		
Support	1707		3916		
Des ratio					
Beam	1.00		1.00		
Support	0.60		0.69		
Load comb	#2		#2		
Length	1.21		2.77		
Min req'd	1.21		2.77		
Cb	1.00		1.14		
Cb min	1.00		1.14		
Cb support	1.13		1.13		
Fcp sup	625		625		

floor beam - cantilevered

Lumber n-ply, S-P-F, No.1/No.2, 2x10, 2-ply (3"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 14.55'; Clear span: 9.834', 4.385'; Volume = 2.8 cu.ft.

Wet service; Lateral support: top = continuous, bottom = continuous

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 71	Fv' = 131	psi	fv/Fv' = 0.54
Bending(+)	fb = 570	Fb' = 962	psi	fb/Fb' = 0.59
Bending(-)	fb = 726	Fb' = 962	psi	fb/Fb' = 0.75
Deflection:				
Interior Live	0.09 = < L/999	0.33 = L/360	in	0.28
Total	0.15 = L/818	0.50 = L/240	in	0.29
Cantil. Live	0.02 = < L/999	0.30 = L/180	in	0.07
Total	0.03 = < L/999	0.45 = L/120	in	0.07

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	135	1.00	0.97	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	875	1.00	1.00	1.00	1.000	1.100	-	1.00	1.00	1.00	-	2
Fb'-	875	1.00	1.00	1.00	1.000	1.100	-	1.00	1.00	1.00	-	2
Fcp'	425	-	0.67	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.4 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2
Emin'	0.51 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #2  = D+L
 Bending(+): LC #2  = D+L
 Bending(-): LC #2  = D+L
 Deflection: LC #2  = D+L  (live)
             LC #2  = D+L  (total)
 Bearing   : Support 1 - LC #2 = D+L
             Support 2 - LC #2 = D+L
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V max = 1537, V design = 1312 lbs; M(+) = 2032 lbs-ft; M(-) = 2588 lbs-ft
 EI = 138.50e06 lb-in^2/ply
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 2.0 dead + "live"
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Continuous or Cantilevered Beams: NDS Clause 4.2.5.5 requires that normal grading provisions be extended to the middle 2/3 of 2 span beams and to the full length of cantilevers and other spans.
4. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
5. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
6. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN	Aug. 16, 2020 12:55	Roof beam edge.wwb

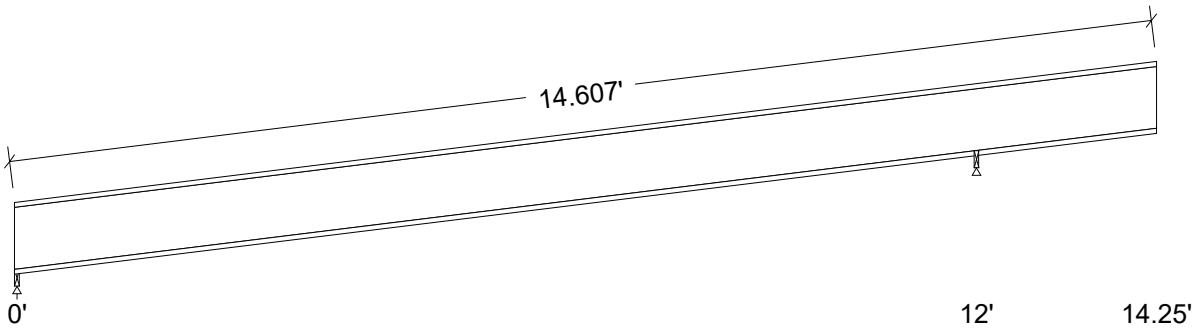
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
dead	Dead	Full Area	No			10.00(5.00')		psf
Snow	Snow	Full Area	Yes			22.00(5.00')		psf
Self-weight	Dead	Full UDL	No			5.6		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:					
Dead	328		477		
Snow	652		930		
Factored:					
Total	980		1407		
Bearing:					
F'theta	433		433		
Capacity					
Beam	980		1407		
Support	1592		1494		
Des ratio					
Beam	1.00		1.00		
Support	0.62		0.94		
Load comb	#3		#2		
Length	0.75		0.71		
Min req'd	0.75		0.71		
Cb	1.00		1.53		
Cb min	1.00		1.53		
Cb support	1.13		1.13		
Fcp sup	625		625		

Roof Beam - edge of double bay

Lumber n-ply, S-P-F, No.1/No.2, 2x10, 2-ply (3"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 14.61'; Clear span: 12.104', 2.251'; Volume = 2.8 cu.ft.; Pitch: 2/12

Lateral support: top = continuous, bottom = continuous

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 48	Fv' = 155	psi	fv/Fv' = 0.31
Bending(+)	fb = 801	Fb' = 1107	psi	fb/Fb' = 0.72
Bending(-)	fb = 118	Fb' = 1107	psi	fb/Fb' = 0.11
Deflection:				
Interior Live	0.18 = L/800	0.41 = L/360	in	0.45
Total	0.36 = L/404	0.73 = L/200	in	0.49
Cantil. Live	-0.11 = L/260	0.15 = L/180	in	0.69
Total	-0.20 = L/134	0.27 = L/100	in	0.74

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	135	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	875	1.15	1.00	1.00	1.000	1.100	-	1.00	1.00	1.00	-	3
Fb'-	875	1.15	1.00	1.00	1.000	1.100	-	1.00	1.00	1.00	-	2
Fcp'	425	-	1.00	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.4 million	1.00	1.00	-	-	-	-	1.00	1.00	-	3
Emin'	0.51 million	1.00	1.00	-	-	-	-	1.00	1.00	-	3

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #2  = D+S
 Bending(+): LC #3  = D+S (pattern: Ss)
 Bending(-): LC #2  = D+S
 Deflection: LC #3  =   (live)
             LC #3  =   (total)
 Bearing   : Support 1 - LC #3 = D+S (pattern: Ss)
             Support 2 - LC #2 = D+S
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load Patterns: s=S/2,  X=L+S or L+Lr,  _=no pattern load in this span
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V max = 1019, V design = 890 lbs; M(+) = 2855 lbs-ft; M(-) = 421 lbs-ft
 EI = 138.50e06 lb-in^2/ply
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 2.0 dead + "live"
 Bearing: Allowable bearing at an angle F'theta  calculated for each support
 as per NDS 3.10.3
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Continuous or Cantilevered Beams: NDS Clause 4.2.5.5 requires that normal grading provisions be extended to the middle 2/3 of 2 span beams and to the full length of cantilevers and other spans.
4. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
5. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
6. SLOPED BEAMS: level bearing is required for all sloped beams.
7. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Aug. 16, 2020 12:57	Roof beam edge - center.wwb

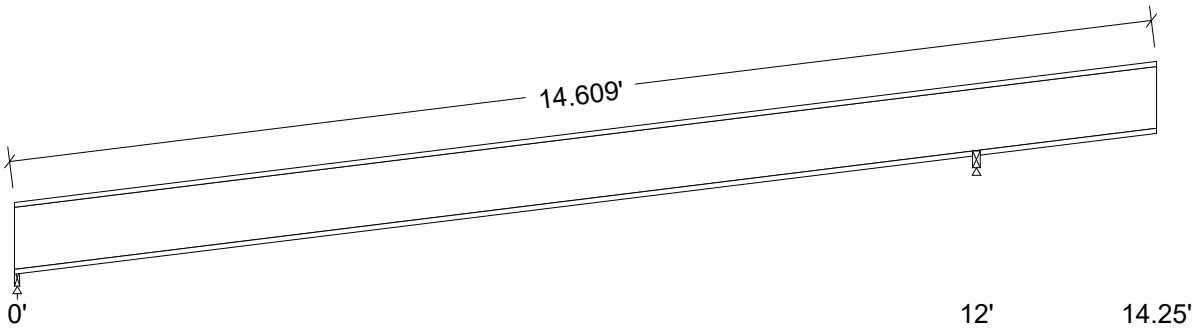
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
dead	Dead	Full Area	No			10.00	(10.00')	psf
Snow	Snow	Full Area	Yes			22.00	(10.00')	psf
Self-weight	Dead	Full UDL	No			9.3		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:					
Dead	646		937		
Snow	1305		1860		
Factored:					
Total	1950		2797		
Bearing:					
F'theta	766		766		
Capacity					
Beam	2158		4100		
Support	1950		2797		
Des ratio					
Beam	0.90		0.68		
Support	1.00		1.00		
Load comb	#3		#2		
Length	0.81		1.16		
Min req'd	0.81**		1.16**		
Cb	1.00		1.32		
Cb min	1.00		1.32		
Cb support	1.11		1.11		
Fcp sup	625		625		

**Minimum bearing length governed by the required width of the supporting member.

Roof Beam - Center of double bay

LVL n-ply, 2.0E, 2500Fb, 1-3/4"x9-1/4", 2-ply (3-1/2"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 14.61'; Clear span: 12.083', 2.232'; Volume = 3.3 cu.ft.; Pitch: 2/12

Lateral support: top = continuous, bottom = continuous

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 82	Fv' = 328	psi	fv/Fv' = 0.25
Bending(+)	fb = 1365	Fb' = 2978	psi	fb/Fb' = 0.46
Bending(-)	fb = 201	Fb' = 2978	psi	fb/Fb' = 0.07
Deflection:				
Interior Live	0.22 = L/667	0.41 = L/360	in	0.54
Total	0.43 = L/339	0.73 = L/200	in	0.59
Cantil. Live	-0.13 = L/217	0.15 = L/180	in	0.83
Total	-0.24 = L/113	0.27 = L/100	in	0.88

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	285	1.15	-	1.00	-	-	-	-	1.00	-	1.00	2
Fb'+	2500	1.15	-	1.00	1.000	1.036	-	1.00	1.00	-	-	3
Fb'-	2500	1.15	-	1.00	1.000	1.036	-	1.00	1.00	-	-	2
Fcp'	750	-	-	1.00	-	-	-	-	1.00	-	-	-
E'	2.0 million		-	1.00	-	-	-	-	1.00	-	-	3
Eminy'	1.04 million		-	1.00	-	-	-	-	1.00	-	-	3

CRITICAL LOAD COMBINATIONS:

```
Shear     : LC #2  = D+S
Bending(+): LC #3  = D+S (pattern: Ss)
Bending(-): LC #2  = D+S
Deflection: LC #3  =   (live)
            LC #3  =   (total)
Bearing   : Support 1 - LC #3 = D+S (pattern: Ss)
            Support 2 - LC #2 = D+S
D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
All LC's are listed in the Analysis output
Load Patterns: s=S/2,  X=L+S or L+Lr,  _=no pattern load in this span
Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
V max = 2027, V design = 1763 lbs; M(+) = 5679 lbs-ft; M(-) = 837 lbs-ft
EI = 230.84e06 lb-in^2/ply
"Live" deflection is due to all non-dead loads (live, wind, snow…)
Total deflection = 2.0 dead + "live"
Bearing: Allowable bearing at an angle F'theta  calculated for each support
as per NDS 3.10.3
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
4. SLOPED BEAMS: level bearing is required for all sloped beams.
5. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
6. SCL: Structural composite lumber design has assumed: - dry service conditions - no preservative or fire-retardant treatment - no notches
7. BUILT-UP SCL: Contact manufacturer for connection details when side-loaded or when loads are not applied equally to all plies.
8. SCL deflection is based on apparent modulus of elasticity (MoE) that incorporates the effect of shear deflection. Sizer does not currently calculate shear deflection separately using true MoE.

WoodWorks® SOFTWARE FOR WOOD DESIGN	**COMPANY** Aug. 16, 2020 12:41	**PROJECT** Floor Joists SINGLE SPAN ROOM.wwb

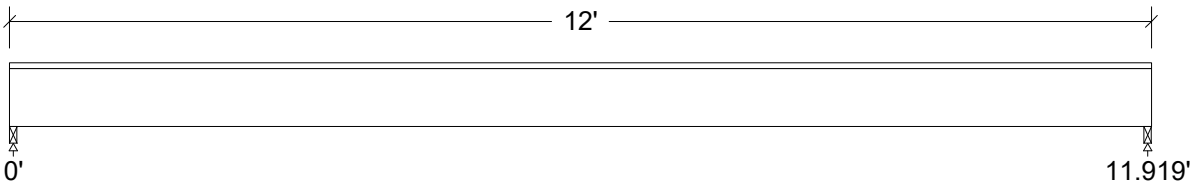
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
dead	Dead	Full Area				10.00(16.0")		psf
Live	Live	Full Area				40.00(16.0")		psf
Self-weight	Dead	Full UDL				2.2		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	93		93
Live	320		320
Factored:			
Total	413		413
Bearing:			
Capacity			
Joist	413		413
Support	759		759
Des ratio			
Joist	1.00		1.00
Support	0.54		0.54
Load comb	#2		#2
Length	0.97		0.97
Min req'd	0.97		0.97
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.25		1.25
Fcp sup	625		625

floor joist single bay room

Lumber-soft, S-P-F, No.1/No.2, 2x8 (1-1/2"x7-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Floor joist spaced at 16.0" c/c; Total length: 12.0'; Clear span: 11.839'; Volume = 0.9 cu.ft.

Wet service; Lateral support: top = continuous, bottom = at supports; Repetitive factor: applied where permitted (refer to online help);

This section FAILS the design check

WARNING: This section violates the following design criteria: Deflection

1.02 ok

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 50	Fv' = 131	psi	fv/Fv' = 0.39
Bending(+)	fb = 1117	Fb' = 1207	psi	fb/Fb' = 0.92
Live Defl'n	0.40 = L/354	0.40 = L/360	in	1.02
Total Defl'n	0.64 = L/223	0.72 = L/200	in	0.89

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	135	1.00	0.97	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	875	1.00	1.00	1.00	1.000	1.200	-	1.15	1.00	1.00	-	2
Fcp'	425	-	0.67	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.4 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2
Emin'	0.51 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #2  = D+L
 Bending(+): LC #2  = D+L
 Deflection: LC #2  = D+L  (live)
             LC #2  = D+L  (total)
 Bearing   : Support 1 - LC #2 = D+L
             Support 2 - LC #2 = D+L
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V max = 410, V design = 366 lbs; M(+) = 1223 lbs-ft
 EI = 66.69e06 lb-in^2
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 2.0 dead + "live"
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN	Aug. 16, 2020 12:45	floor beam edge SINGLE SPAN ROOM.wwb

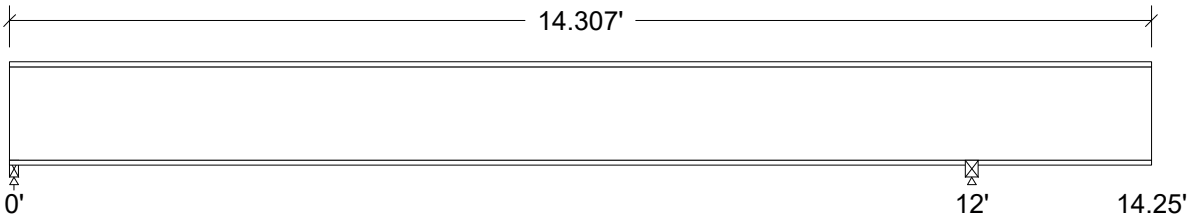
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
dead	Dead	Full Area	No			10.00(6.00')		psf
Live	Live	Full Area	No			40.00(6.00')		psf
Self-weight	Dead	Full UDL	No			7.1		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:					
Dead	392		567		
Live	1403		2031		
Factored:					
Total	1795		2598		
Bearing:					
Capacity					
Beam	1795		3060		
Support	1816		2598		
Des ratio					
Beam	1.00		0.85		
Support	0.99		1.00		
Load comb	#2		#2		
Length	1.37		1.96		
Min req'd	1.37		1.96**		
Cb	1.00		1.19		
Cb min	1.00		1.19		
Cb support	1.21		1.21		
Fcp sup	625		625		

**Minimum bearing length governed by the required width of the supporting member.

floor beam - edge single bay room

LVL n-ply, 1.8E, 2200Fb, 1-3/4"x14", 1-ply

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 14.31'; Clear span: 11.862', 2.168'; Volume = 2.4 cu.ft.

Lateral support: top = continuous, bottom = continuous

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 93	Fv' = 285	psi	fv/Fv' = 0.33
Bending(+)	fb = 1080	Fb' = 2154	psi	fb/Fb' = 0.50
Bending(-)	fb = 163	Fb' = 2154	psi	fb/Fb' = 0.08
Deflection:				
Interior Live	0.14 = < L/999	0.40 = L/360	in	0.36
Total	0.22 = L/648	0.72 = L/200	in	0.31
Cantil. Live	-0.08 = L/344	0.15 = L/180	in	0.52
Total	-0.12 = L/221	0.27 = L/100	in	0.45

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CV	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	285	1.00	-	1.00	-	-	-	-	1.00	-	1.00	2
Fb'+	2200	1.00	-	1.00	1.000	0.979	-	1.00	1.00	-	-	2
Fb'-	2200	1.00	-	1.00	1.000	0.979	-	1.00	1.00	-	-	2
Fcp'	750	-	-	1.00	-	-	-	-	1.00	-	-	-
E'	1.8 million		-	1.00	-	-	-	-	1.00	-	-	2
Eminy'	0.93 million		-	1.00	-	-	-	-	1.00	-	-	2

CRITICAL LOAD COMBINATIONS:

Shear : LC #2 = D+L
Bending(+): LC #2 = D+L
Bending(-): LC #2 = D+L
Deflection: LC #2 = D+L (live)
LC #2 = D+L (total)
Bearing : Support 1 - LC #2 = D+L
Support 2 - LC #2 = D+L

D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
All LC's are listed in the Analysis output
Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2

CALCULATIONS:

V max = 1907, V design = 1525 lbs; M(+) = 5145 lbs-ft; M(-) = 777 lbs-ft
EI = 720.29e06 lb-in^2
"Live" deflection is due to all non-dead loads (live, wind, snow…)
Total deflection = 2.0 dead + "live"

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
4. SCL: Structural composite lumber design has assumed: - dry service conditions - no preservative or fire-retardant treatment - no notches
5. BUILT-UP SCL: Contact manufacturer for connection details when side-loaded or when loads are not applied equally to all plies.
6. SCL deflection is based on apparent modulus of elasticity (MoE) that incorporates the effect of shear deflection. Sizer does not currently calculate shear deflection separately using true MoE.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN	Aug. 16, 2020 12:47	Roof Joists SINGLE SPAN ROOM.wwb

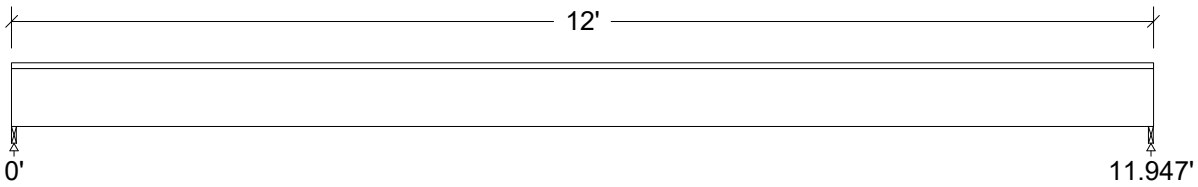
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
dead	Dead	Full Area				10.00(16.0")		psf
Snow	Snow	Full Area				22.00(16.0")		psf
Self-weight	Dead	Full UDL				2.2		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:			
Dead	93		93
Snow	176		176
Factored:			
Total	269		269
Bearing:			
Capacity			
Joist	269		269
Support	495		495
Des ratio			
Joist	1.00		1.00
Support	0.54		0.54
Load comb	#2		#2
Length	0.63		0.63
Min req'd	0.63		0.63
Cb	1.00		1.00
Cb min	1.00		1.00
Cb support	1.25		1.25
Fcp sup	625		625

Roof Joist Single bay room

Lumber-soft, S-P-F, No.1/No.2, 2x8 (1-1/2"x7-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Floor joist spaced at 16.0" c/c; Total length: 12.0'; Clear span: 11.895'; Volume = 0.9 cu.ft.

Wet service; Lateral support: top = continuous, bottom = at supports; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 33	Fv' = 151	psi	fv/Fv' = 0.22
Bending(+)	fb = 731	Fb' = 1389	psi	fb/Fb' = 0.53
Live Defl'n	0.22 = L/639	0.40 = L/360	in	0.56
Total Defl'n	0.46 = L/310	0.72 = L/200	in	0.64

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	135	1.15	0.97	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	875	1.15	1.00	1.00	1.000	1.200	-	1.15	1.00	1.00	-	2
Fcp'	425	-	0.67	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.4 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2
Emin'	0.51 million		0.90	1.00	-	-	-	-	1.00	1.00	-	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #2  = D+S
 Bending(+): LC #2  = D+S
 Deflection: LC #2  = D+S  (live)
             LC #2  = D+S  (total)
 Bearing   : Support 1 - LC #2 = D+S
             Support 2 - LC #2 = D+S
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V max = 268, V design = 240 lbs; M(+) = 801 lbs-ft
 EI = 66.69e06 lb-in^2
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 2.0 dead + "live"
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.

	COMPANY	PROJECT
WoodWorks® SOFTWARE FOR WOOD DESIGN	Aug. 16, 2020 12:50	Roof beam edge SINGLE SPAN ROOM.wwb

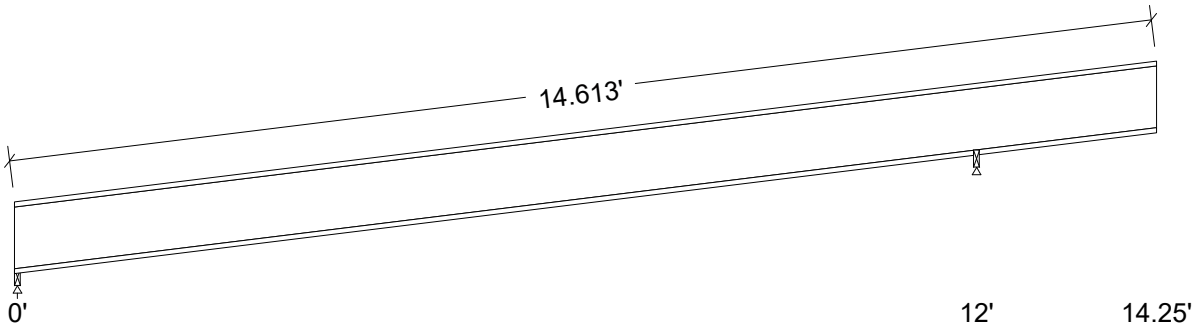
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Pat-tern	Location [ft] Start	End	Magnitude Start	End	Unit
dead	Dead	Full Area	No			10.00(6.00')		psf
Snow	Snow	Full Area	Yes			22.00(6.00')		psf
Self-weight	Dead	Full UDL	No			5.6		plf

Maximum Reactions (lbs), Bearing Capacities (lbs) and Bearing Lengths (in) :



Unfactored:					
Dead	388		562		
Snow	783		1116		
Factored:					
Total	1171		1678		
Bearing:					
F'theta	433		433		
Capacity					
Beam	1171		1678		
Support	1902		1935		
Des ratio					
Beam	1.00		1.00		
Support	0.62		0.87		
Load comb	#3		#2		
Length	0.90		0.92		
Min req'd	0.90		0.92		
Cb	1.00		1.41		
Cb min	1.00		1.41		
Cb support	1.13		1.13		
Fcp sup	625		625		

Roof Beam - single room

Lumber n-ply, S-P-F, No.1/No.2, 2x10, 2-ply (3"x9-1/4")

Supports: All - Timber-soft Beam, D.Fir-L No.2

Total length: 14.61'; Clear span: 12.089', 2.242'; Volume = 2.8 cu.ft.; Pitch: 2/12

Lateral support: top = continuous, bottom = continuous

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 57	Fv' = 155	psi	fv/Fv' = 0.37
Bending(+)	fb = 956	Fb' = 1107	psi	fb/Fb' = 0.86
Bending(-)	fb = 141	Fb' = 1107	psi	fb/Fb' = 0.13
Deflection:				
Interior Live	0.22 = L/667	0.41 = L/360	in	0.54
Total	0.43 = L/339	0.73 = L/200	in	0.59
Cantil. Live	-0.13 = L/217	0.15 = L/180	in	0.83
Total	-0.24 = L/113	0.27 = L/100	in	0.88

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL	CF	Cfu	Cr	Cfrt	Ci	Cn	LC#
Fv'	135	1.15	1.00	1.00	-	-	-	-	1.00	1.00	1.00	2
Fb'+	875	1.15	1.00	1.00	1.000	1.100	-	1.00	1.00	1.00	-	3
Fb'-	875	1.15	1.00	1.00	1.000	1.100	-	1.00	1.00	1.00	-	2
Fcp'	425	-	1.00	1.00	-	-	-	-	1.00	1.00	-	-
E'	1.4 million	1.00	1.00	-	-	-	-	1.00	1.00	-	3
Emin'	0.51 million	1.00	1.00	-	-	-	-	1.00	1.00	-	3

CRITICAL LOAD COMBINATIONS:

```
Shear     : LC #2  = D+S
Bending(+): LC #3  = D+S (pattern: Ss)
Bending(-): LC #2  = D+S
Deflection: LC #3  =   (live)
            LC #3  =   (total)
Bearing   : Support 1 - LC #3 = D+S (pattern: Ss)
            Support 2 - LC #2 = D+S
D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
All LC's are listed in the Analysis output
Load Patterns: s=S/2,  X=L+S or L+Lr,  _=no pattern load in this span
Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
V max = 1216, V design = 1060 lbs; M(+) = 3407 lbs-ft; M(-) = 502 lbs-ft
EI = 138.50e06 lb-in^2/ply
"Live" deflection is due to all non-dead loads (live, wind, snow…)
Total deflection = 2.0 dead + "live"
Bearing: Allowable bearing at an angle F'theta  calculated for each support
as per NDS 3.10.3
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. Continuous or Cantilevered Beams: NDS Clause 4.2.5.5 requires that normal grading provisions be extended to the middle 2/3 of 2 span beams and to the full length of cantilevers and other spans.
4. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.
5. BUILT-UP BEAMS: it is assumed that each ply is a single continuous member (that is, no butt joints are present) and that each ply is equally top-loaded. Where beams are side-loaded, special fastening details may be required.
6. SLOPED BEAMS: level bearing is required for all sloped beams.
7. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Aug. 16, 2020 13:19	TYPICAL POST.wwc

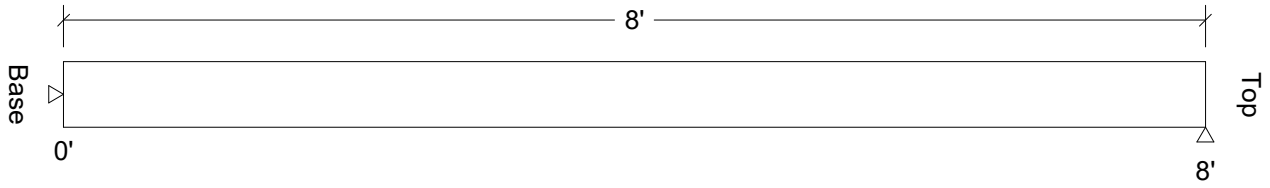
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Location [ft] Start	End	Magnitude Start	End	Unit
DEAD	Dead	Axial	(Ecc. = 0.92")		500		lbs
SNOW	Snow	Axial	(Ecc. = 0.92")		1000		lbs
Load3	Wind	Point	4.00		144		lbs
Self-weight	Dead	Axial			27		lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	5		-5
Snow	10		-10
Wind	72		72
Axial:			
Dead	527		527
Snow	1000		1000
Factored:			
R->L			-14
Load comb			#2
L->R	48		40
Load comb	#5		#4

SUPPORT POSTS

Lumber n-ply, S-P-F, Stud, 2x6, 2-ply (3"x5-1/2")

Support: Non-wood

Total length: 8.0'; Volume = 0.9 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: bolts; Wet service; Ke x Lb: 1.0 x 8.0 = 8.0 ft; Ke x Ld: 1.0 x 8.0 = 8.0 ft; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 4	Fv' = 210	psi	fv/Fv' = 0.02
Bending(+)	fb = 152	Fb' = 891	psi	fb/Fb' = 0.17
Axial	fc = 93	Fc' = 216	psi	fc/Fc' = 0.43
Combined	(axial + eccentric + side load bending)			Eq.15.4-1 = 0.34
Axial Bearing	fc = 93	Fc* = 834	psi	fc/Fc* = 0.11
Live Defl'n	0.04 = < L/999	0.80 = L/120	in	0.04
Total Defl'n	0.05 = < L/999	0.80 = L/120	in	0.06

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	135	1.60	0.97	1.00	-	-	-	-	1.00	1.00	5
Fb'+	675	1.60	1.00	1.00	0.825	1.000	-	1.00	1.00	1.00	5
Fc'	725	1.15	1.00	1.00	0.259	1.000	-	-	1.00	1.00	2
Fc'comb	725	1.60	-	-	0.192	-	-	-	-	-	3
E'	1.2 million		0.90	1.00	-	-	-	-	1.00	1.00	3
Emin'	0.44 million		0.90	1.00	-	-	-	-	1.00	1.00	3
Fc*	725	1.15	1.00	1.00	-	1.000	-	-	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #5  = D+.6W
 Bending(+): LC #5  = D+.6W
 Deflection: LC #4  = .6D+.6W  (live)
             LC #3  = D+.75(S+.6W)  (total)
 Axial     : LC #2  = D+S
 Combined  : LC #3  = D+.75(S+.6W)   fb= 103   Fb'= 891
             FcE= 1068     Pxe/S=fc(6xe/d)= 76
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V = 48 lbs; M(+) = 192 lbs-ft; P = 1527 lbs, Kf = 0.75
 EI = 24.96e06 lb-in^2/ply
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 2.0 dead + "live"
 Lateral stability:  Lu = 8.00'  Le = 14.75'  RB = 20.8; b = single ply width
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
5. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.

WoodWorks® SOFTWARE FOR WOOD DESIGN	COMPANY	PROJECT
	Aug. 16, 2020 13:23	TYPICAL POST - DOUBLE BAY WITH WIND.wwc

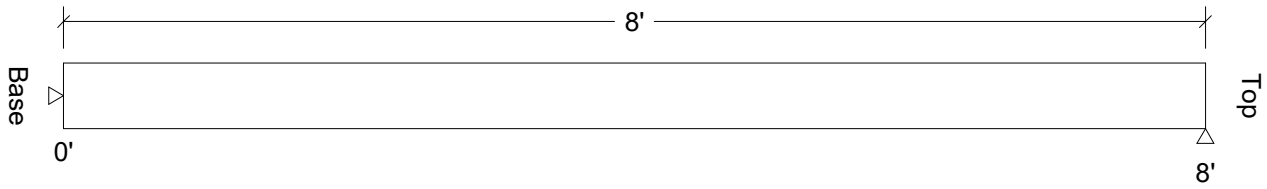
Design Check Calculation Sheet

WoodWorks Sizer 2019 (Update 1)

Loads:

Load	Type	Distribution	Location [ft] Start	Location [ft] End	Magnitude Start	Magnitude End	Unit
DEAD	Dead	Axial	(Ecc. = 0.92")		600		lbs
SNOW	Snow	Axial	(Ecc. = 0.92")		1100		lbs
Load3	Wind	Point	4.00		240		lbs
Self-weight	Dead	Axial			27		lbs

Reactions (lbs):



Unfactored:			
Lateral:			
Dead	6		-6
Snow	11		-11
Wind	120		120
Axial:			
Dead	627		627
Snow	1100		1100
Factored:			
R->L			-16
Load comb			#2
L->R	78		69
Load comb	#5		#4

SUPPORT POSTS

Lumber n-ply, S-P-F, Stud, 2x6, 2-ply (3"x5-1/2")

Support: Non-wood

Total length: 8.0'; Volume = 0.9 cu.ft.

Pinned base; Load face = width(b); Built-up fastener: bolts; Wet service; Ke x Lb: 1.0 x 8.0 = 8.0 ft; Ke x Ld: 1.0 x 8.0 = 8.0 ft; Repetitive factor: applied where permitted (refer to online help);

This section PASSES the design code check.

Analysis vs. Allowable Stress and Deflection using NDS 2018 :

Criterion	Analysis Value	Design Value	Unit	Analysis/Design
Shear	fv = 7	Fv' = 210	psi	fv/Fv' = 0.03
Bending(+)	fb = 247	Fb' = 891	psi	fb/Fb' = 0.28
Axial	fc = 105	Fc' = 216	psi	fc/Fc' = 0.49
Combined	(axial + eccentric + side load bending)			Eq.15.4-1 = 0.47
Axial Bearing	fc = 105	Fc* = 834	psi	fc/Fc* = 0.13
Live Defl'n	0.06 = < L/999	0.80 = L/120	in	0.07
Total Defl'n	0.07 = < L/999	0.80 = L/120	in	0.09

Additional Data:

FACTORS:	F/E(psi)	CD	CM	Ct	CL/CP	CF	Cfu	Cr	Cfrt	Ci	LC#
Fv'	135	1.60	0.97	1.00	-	-	-	-	1.00	1.00	4
Fb'+	675	1.60	1.00	1.00	0.825	1.000	-	1.00	1.00	1.00	5
Fc'	725	1.15	1.00	1.00	0.259	1.000	-	-	1.00	1.00	2
Fc'comb	725	1.60	-	-	0.192	-	-	-	-	-	3
E'	1.2 million		0.90	1.00	-	-	-	-	1.00	1.00	5
Emin'	0.44 million		0.90	1.00	-	-	-	-	1.00	1.00	5
Fc*	725	1.15	1.00	1.00	-	1.000	-	-	1.00	1.00	2

CRITICAL LOAD COMBINATIONS:

```
 Shear     : LC #4  = .6D+.6W
 Bending(+): LC #5  = D+.6W
 Deflection: LC #4  = .6D+.6W  (live)
             LC #5  = D+.6W  (total)
 Axial     : LC #2  = D+S
 Combined  : LC #3  = D+.75(S+.6W)   fb= 171   Fb'= 891
             FcE= 1068     Pxe/S=fc(6xe/d)= 87
 D=dead L=live S=snow W=wind I=impact Lr=roof live Lc=concentrated E=earthquake
 All LC's are listed in the Analysis output
 Load combinations: ASD Basic from ASCE 7-16 2.4 / IBC 2018 1605.3.2
```

CALCULATIONS:

```
 V = 75 lbs; M(+) = 311 lbs-ft; P = 1727 lbs, Kf = 0.75
 EI = 24.96e06 lb-in^2/ply
 "Live" deflection is due to all non-dead loads (live, wind, snow…)
 Total deflection = 2.0 dead + "live"
 Lateral stability:  Lu = 8.00'  Le = 14.75'  RB = 20.8; b = single ply width
```

Design Notes:

1. WoodWorks analysis and design are in accordance with the ICC International Building Code (IBC 2018), the National Design Specification (NDS 2018), and NDS Design Supplement.
2. Please verify that the default deflection limits are appropriate for your application.
3. BUILT-UP COLUMNS: nailed or bolted built-up columns shall conform to the provisions of NDS Clause 15.3.
4. FIRE RATING: Joists, wall studs, and multi-ply members are not rated for fire endurance.
5. Axial load eccentricity applied in direction of load face only. It is the designers responsibility to check for effect of eccentricity in the other direction.

TEMPORARY CLASSROOM SHELTER

DETROIT WALDORF SCHOOL

09/04/2020

SITE PLAN

PROJECT INFORMATION

PROJECT LOCATION:	2555 BURNS DETROIT, MI 48214
OWNER:	DETROIT WALDORF SCHOOL 2555 BURNS DETROIT, MI 48214
ARCHITECT OF RECORD:	KRAEMER DESIGN GROUP, LLC BRIAN REBAIN, RA, NCARB STATE OF MICHIGAN CERTIFICATE NO. 1301040246 1420 BROADWAY DETROIT, MI 48226 www.thekraemeredge.com (313) 965-3399
STRUCTURAL ENGINEER:	RESURGET MARC STEINHOBEL 4219 WOODWARD AVE SUITE 306 DETROIT, MI 48201

CODE SUMMARY

PROJECT DESCRIPTION: EMERGENCY ERECTION OF TEMPORARY OUTDOOR WOOD CLASSROOM SHELTERS TO SERVE THE SCHOOL DURING THE COVID PANDEMIC. THERE ARE 14 PROPOSED SHELTERS. TEN MEASURE 20'X20', AND FOUR MEASURE 12'X12'. THE SHELTERS ARE SPACED THROUGHOUT THE SCHOOL GROUNDS TO ALLOW FOR EFFECTIVE PHYSICAL DISTANCING BETWEEN THE CLASSROOMS, WHILE ALSO PROVIDING GOOD LOCATIONS FOR OVERSIGHT OF THE STUDENTS AS WELL AS MAINTAIN EXISTING PLAYFIELD LOCATIONS. TWLEVE SHELTERS ARE LOCATED ON LOTS IN THE INDIAN VILLAGE HISTORIC DISTRICT CURRENTLY ZONED R1 AND APPROVED FOR EDUCATIONAL USE. TWO SHELTERS ARE LOCATED ON LOTS ADJACENT TO THE IV-HD ON FISCHER ST, CURRENTLY ZONED R2.

ZONING: R1-H; R2 - SEE ATTACHED SITE PLAN

ZONING ORDINANCE SUMMARY: SHELTERS ARE BEING PROPOSED AS TEMPORARY ACCESSORY STRUCTURES TO THE PRIMARY SCHOOL FUNCTIONS AT THE MAIN BUILDING LOCATED AT 2555 BURNS, AT THE CORNER OF CHARLEVOIX AND BURNS ST. THE OWNER IS SEEKING TEMPORARY APPROVAL TO USE THESE STRUCTURES AS PART OF THEIR IN-SCHOOL LEARNING COVID PREPAREDNESS PLAN. APPROVAL IS BEING SOUGHT PURSUANT TO THE REQUIREMENTS OF THE FOLLOWING SECTIONS OF THE CITY OF DETROIT ZONING ORDINANCE:

Sec. 50-12-553. - Natural disasters and emergencies.
Temporary uses and structures needed as the result of a natural disaster or other health and safety emergencies are allowed for the duration of the emergency.

FURTHERMORE:

Sec. 50-12-559. - Other uses.
The Buildings, Safety Engineering, and Environmental Department may approve other temporary uses and activities or special events where it is determined that such uses would not jeopardize the health, safety or general welfare, or be injurious or detrimental to properties adjacent to, or in the vicinity of, the proposed location of the activity.

OCCUPANCY CLASSIFICATION: EDUCATIONAL (ACCESSORY USE)

CONSTRUCTION TYPE: OUTDOOR WOOD SHADE STRUCTURE

APPLICABLE CODES: BUILDING: MICHIGAN BUILDING CODE (MBC) 2015

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Architect

Consultant

TEMPORARY OUTDOOR CLASSROOM SHELTER
2555 BURNS
DETROIT, MI

DETROIT WALDORF SCHOOL
2555 BURNS
DETROIT, MI

Project / Owner

STATE OF MICHIGAN
BRIAN A. REBAIN
ARCHITECT
No. 1301057260
LICENSED ARCHITECT

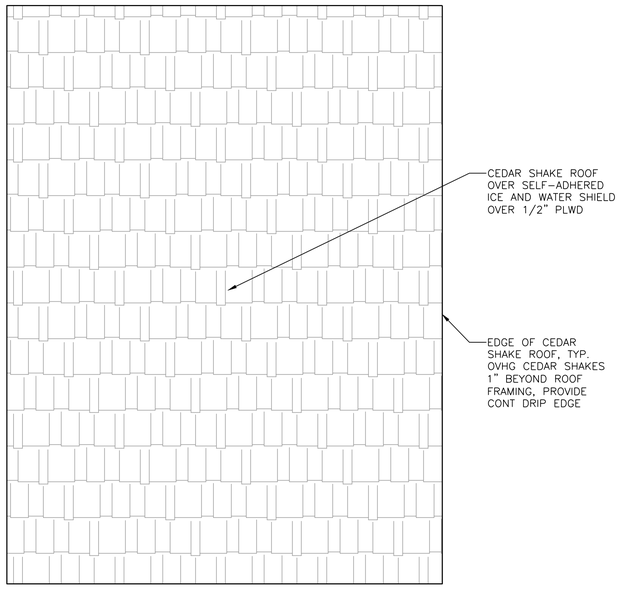
Seal

Revision	Date
FOR PERMIT	09/04/20

Date 09/04/20

Sheet Title
COVER

Sheet Number
COVER



ROOF PLAN
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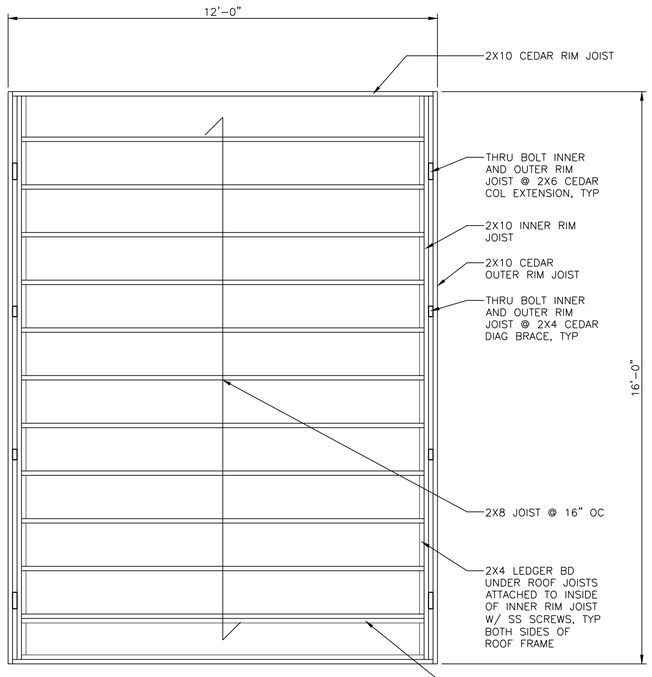

ROOF FRAMING PLAN
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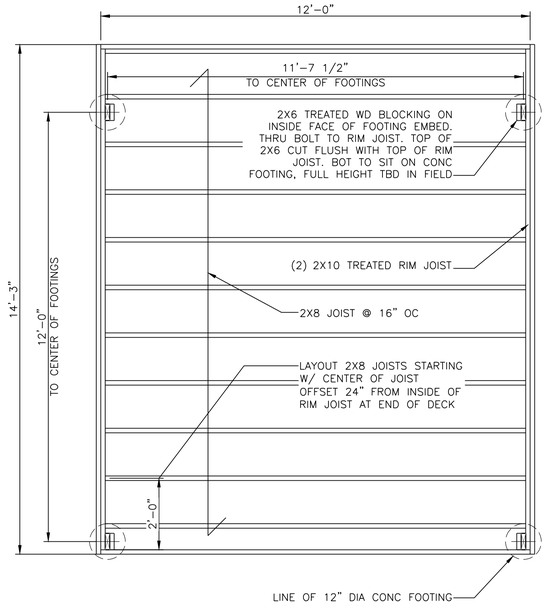

FLOOR FRAMING PLAN
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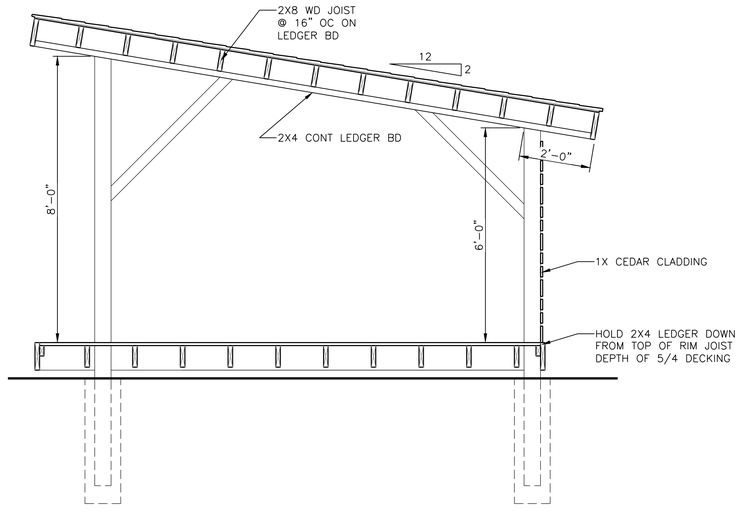

SHELTER SECTION
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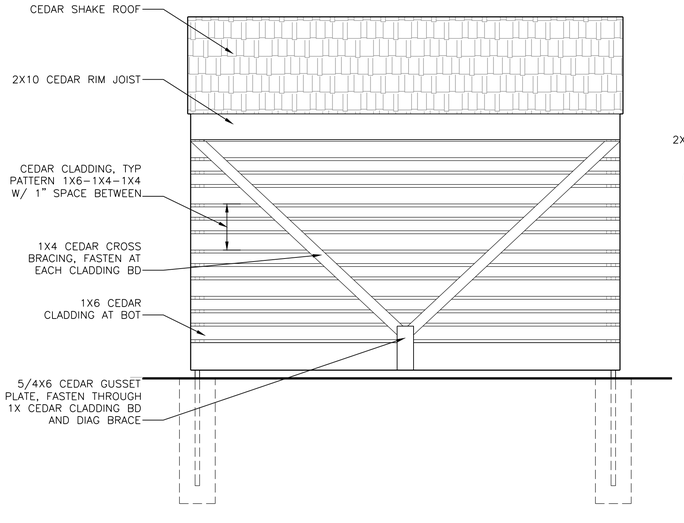

REAR ELEVATION
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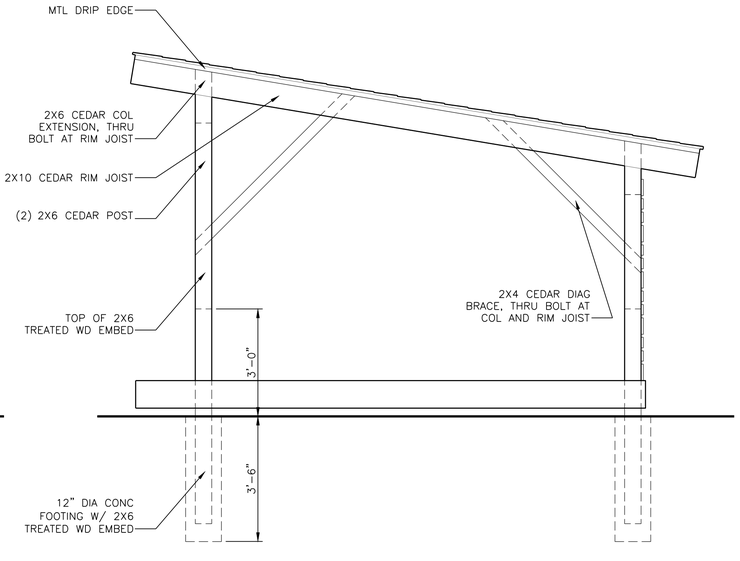

SIDE ELEVATION
SCALE: 1/2"=1'-0"

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

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Sheet Title
12X12 SHELTER PLANS, ELEVS AND SECTION

Sheet Number
A1

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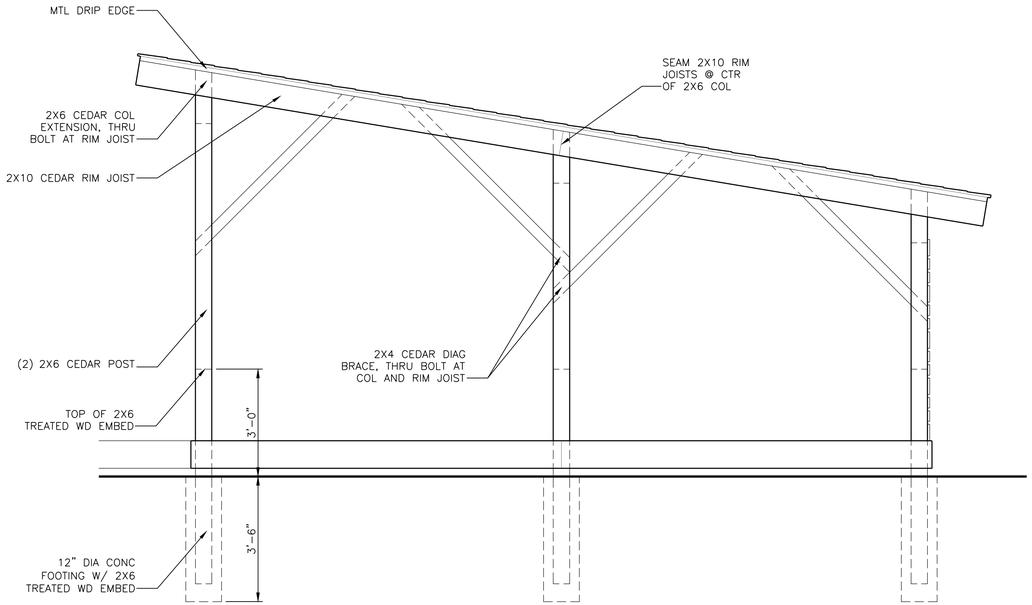

SIDE ELEVATION

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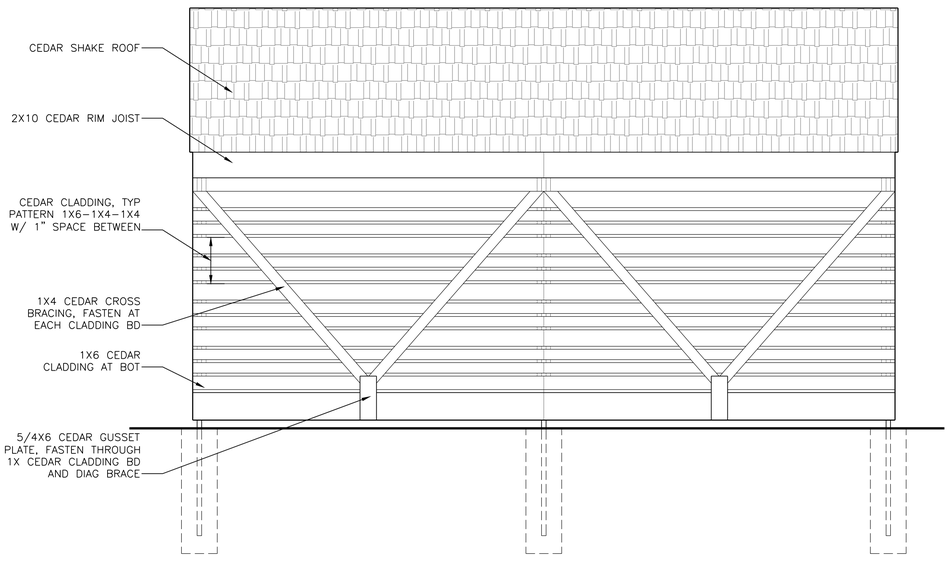

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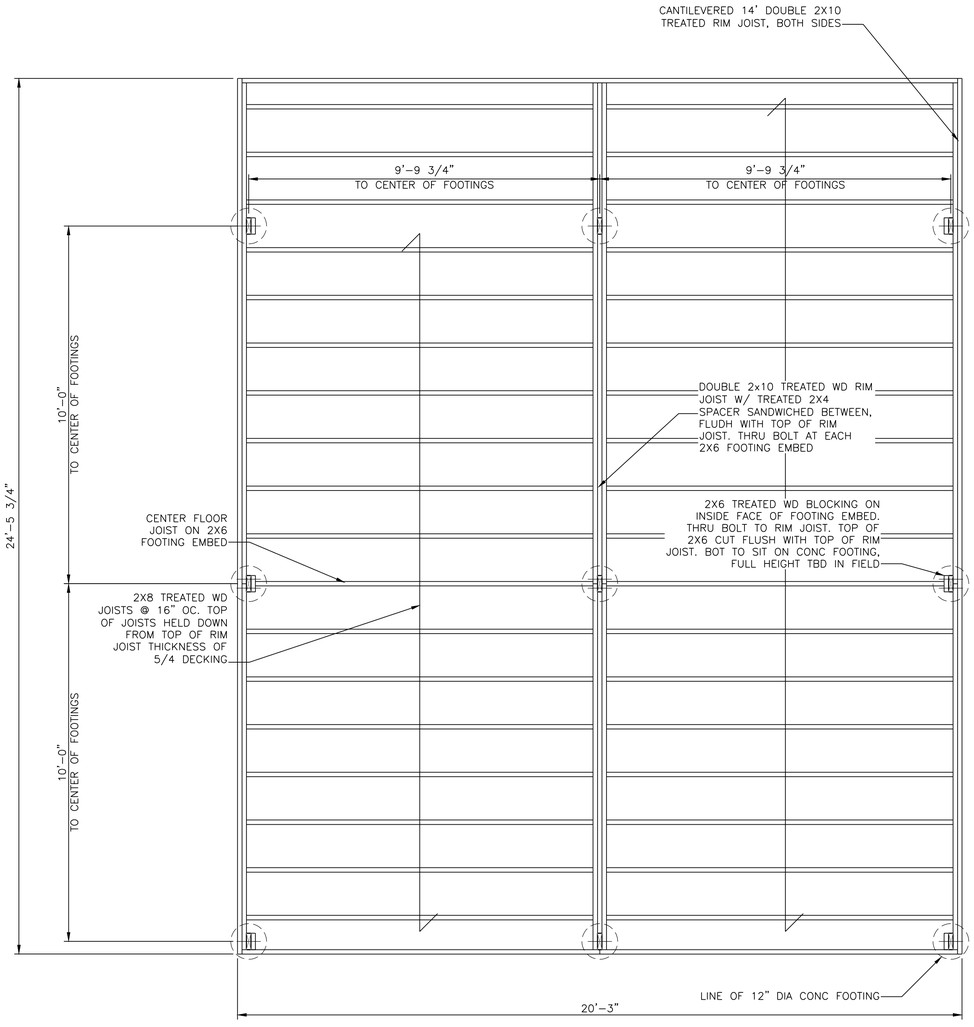

FLOOR FRAMING PLAN

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

0 6" 1' 2' 4'
SCALE : 1/2" =1'-0"

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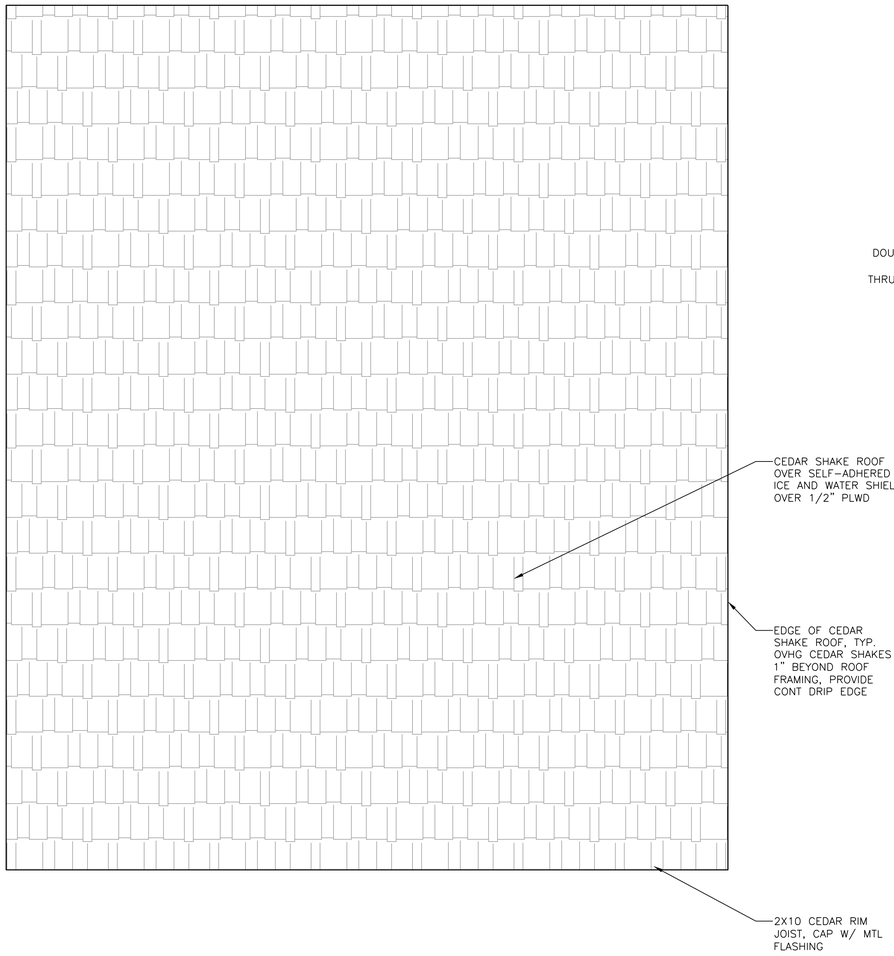
Sheet Title
20X20 SHELTER
PLANS AND ELEVS

Sheet Number
A2



ROOF PLAN

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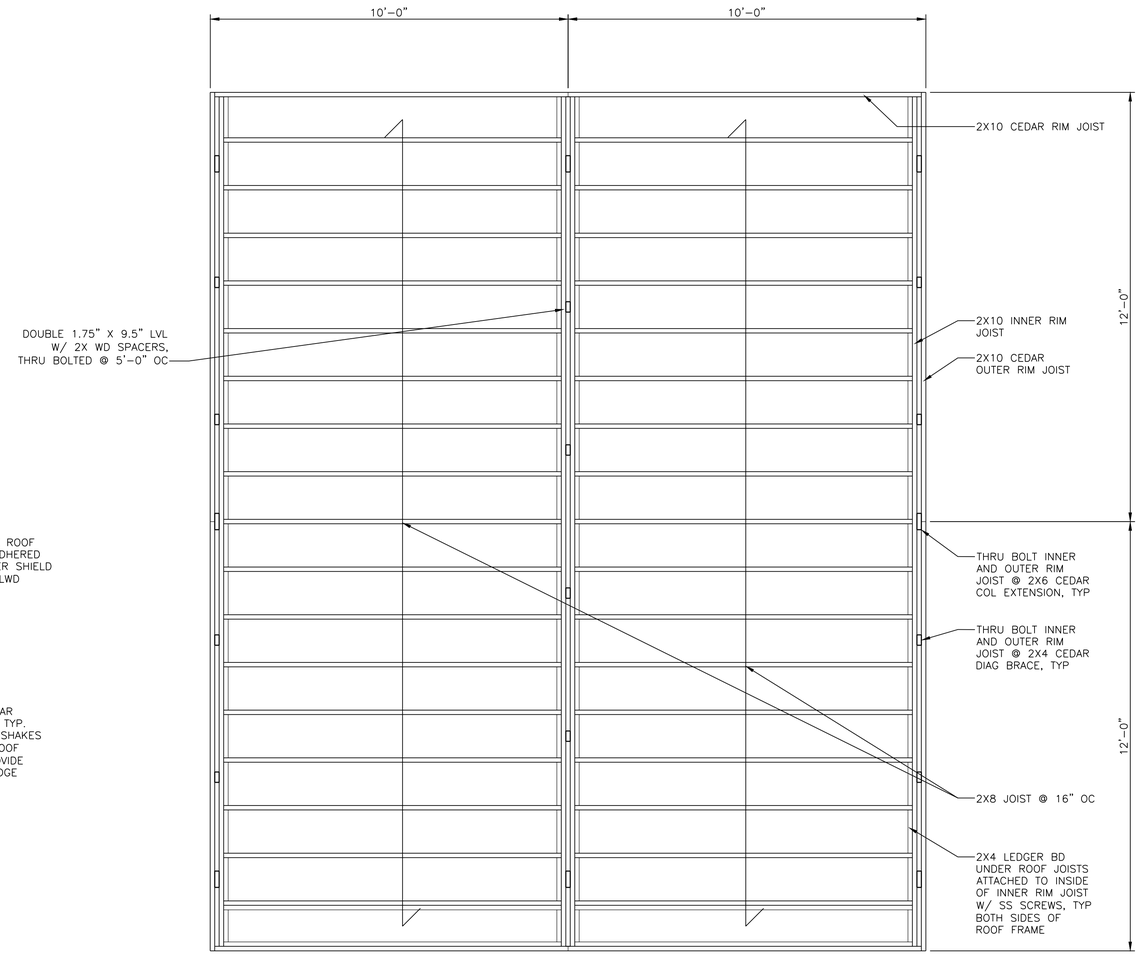

ROOF FRAMING PLAN

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

0 6" 1' 2' 4'
SCALE : 1/2" =1'-0"

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Sheet Title
20X20 SHELTER ROOF PLANS AND TYP GUTTER DETAIL

Sheet Number
A3

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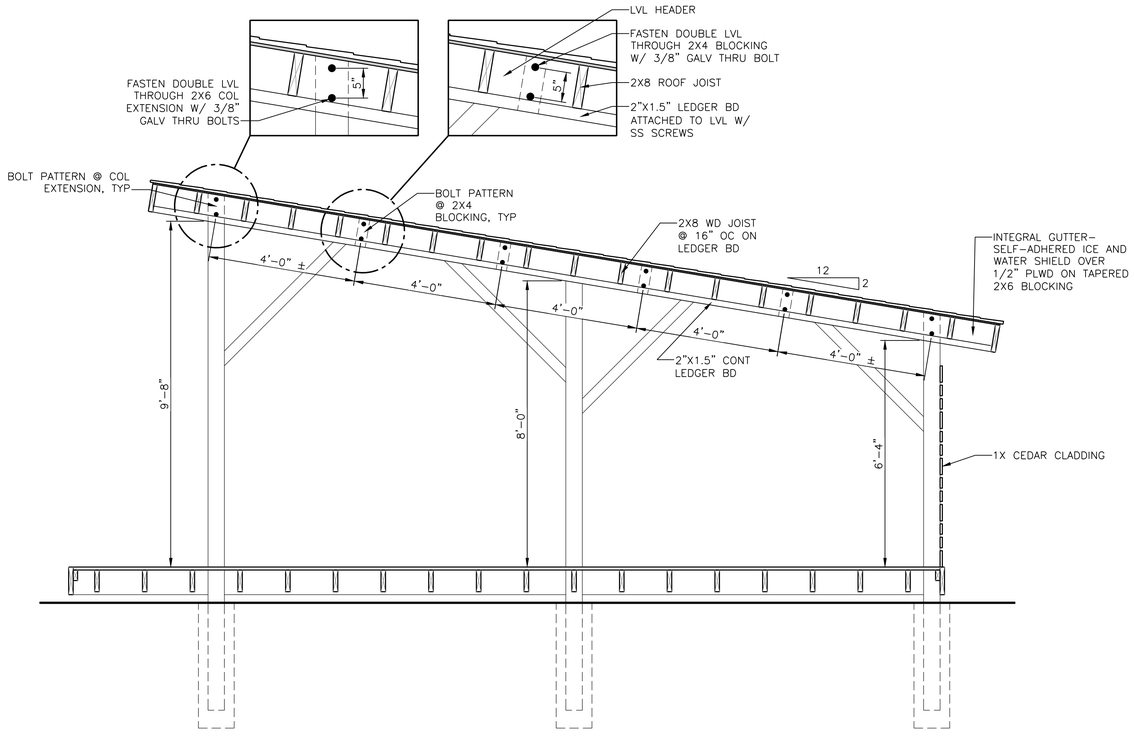

20X20 SHELTER SECTION

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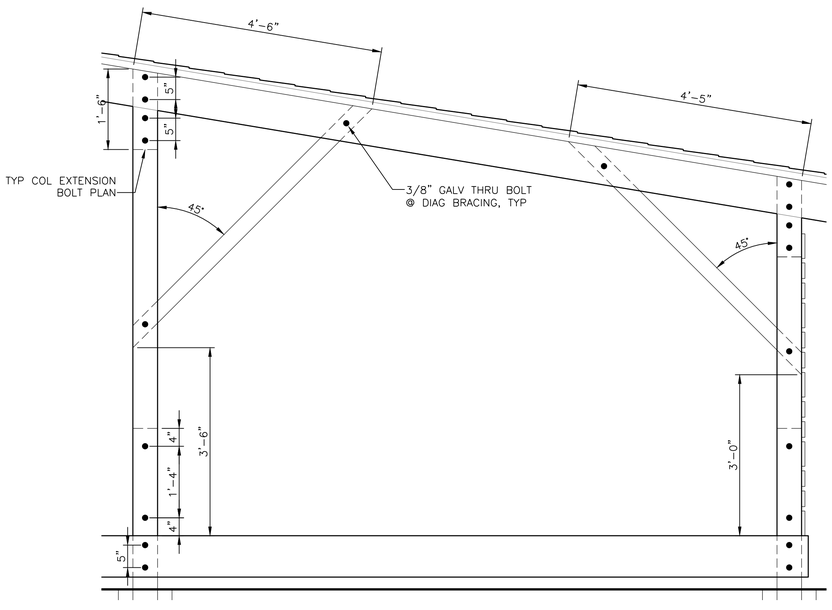

12X12 COL BOLT PLAN

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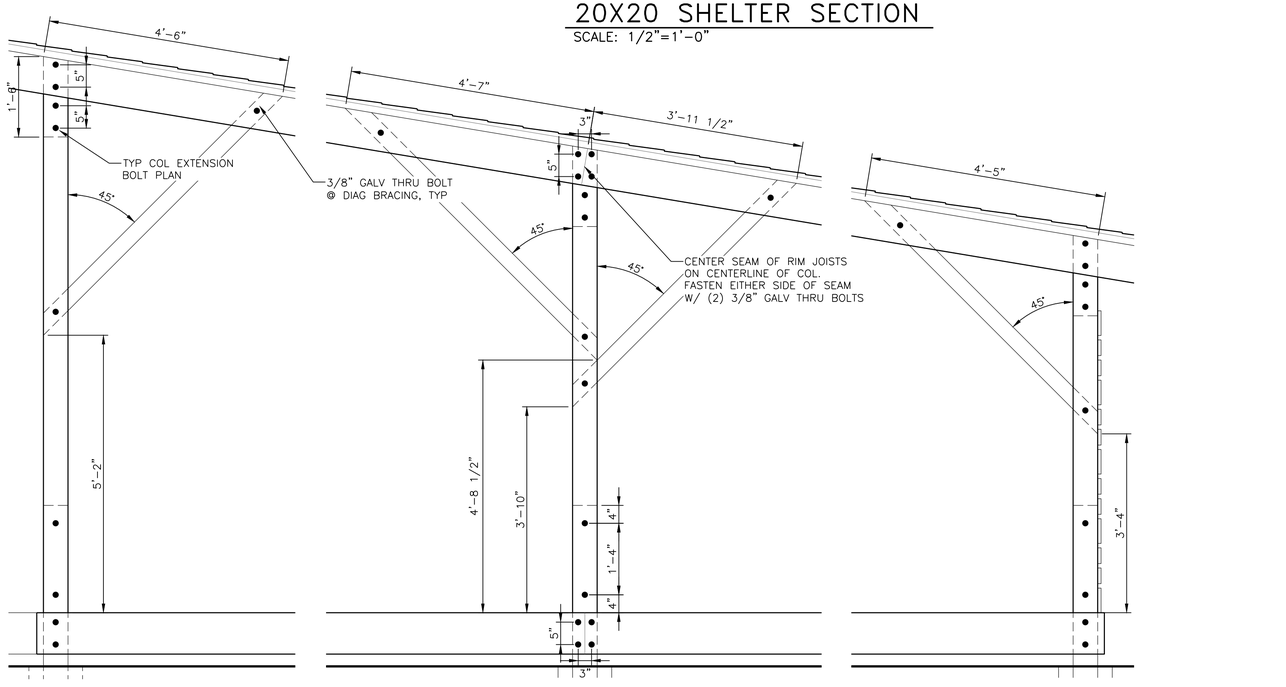

20X20 COL BOLT PLAN

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

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

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Sheet Title

COLUMN BOLT PLANS AND STRUCTURAL CALCS

Sheet Number

A4