Carnegie Mellon University
Environmental Health and Safety (EHS)

Spring Carnival Construction Standards
# EHS Spring Carnival Construction Standards

## Contents

1. **Introduction** ...................................................................................................................................................... 4  
   2. **Definitions** ........................................................................................................................................................ 4  
   3. **Roles and Responsibilities** ............................................................................................................................... 5  
      3.1 Carnival Booth Committee: ................................................................................................................... 5  
      3.2 Structural Oversight Committee: .......................................................................................................... 5  
      3.3 Organizations: ........................................................................................................................................ 5  
      3.4 EHS: ......................................................................................................................................................... 6  
   4. **Inspections** ....................................................................................................................................................... 6  
      4.1 Final Inspection ...................................................................................................................................... 6  
   5. **Occupancy** ........................................................................................................................................................ 6  
   6. **Construction and Demolition** .......................................................................................................................... 6  
   7. **Plan Submission and Approval** ....................................................................................................................... 7  
      7.1 Plans must include: ................................................................................................................................ 7  
      7.2 Plan Review Step 1: ................................................................................................................................ 7  
      7.3 Plan Review Step 2: ................................................................................................................................ 8  
   8. **Booth Dimensions** ............................................................................................................................................ 8  
      8.1 Height Limits........................................................................................................................................... 8  
      8.2 Exterior Decorations .............................................................................................................................. 8  
      8.3 Egress Distance ...................................................................................................................................... 9  
   9. **Structural Design** .............................................................................................................................................. 9  
      9.1 Lumber Quality....................................................................................................................................... 9  
      9.2 Floor Design ........................................................................................................................................... 9  
      9.3 Flooring ................................................................................................................................................... 9  
      9.4 Walls ......................................................................................................................................................10  
      9.5 Headers/Beams....................................................................................................................................10  
      9.6 Door Openings .....................................................................................................................................10  
      9.7 Headroom ............................................................................................................................................10  
   10. **Stairs** ...............................................................................................................................................................11  
       10.1 Design Dimension Limits ..................................................................................................................11  
       10.2 Tread Thickness .................................................................................................................................11  
       10.3 Stair Strength ....................................................................................................................................11  
       10.4 Stair Lighting ....................................................................................................................................11
11. Ramps .............................................................................................................................................................11
12. Stair and Rand Handrails ...................................................................................................................................12
13. Clear Width ........................................................................................................................................................12
14. Guard Railings .......................................................................................................................................................12
15. Roof Design .........................................................................................................................................................12
16. Level ...................................................................................................................................................................13
17. Plumb ..................................................................................................................................................................13
18. Fasteners ...........................................................................................................................................................13
19. Electrical ............................................................................................................................................................13
20. Fire Protection .....................................................................................................................................................14
21. Water ..................................................................................................................................................................14
22. Paint ....................................................................................................................................................................15
23. Transportation of Materials and Parts ..............................................................................................................15
24. Other Unsafe Conditions ..................................................................................................................................15
25. Revisions ............................................................................................................................................................16
26. Appendix A Plan Review Checklist ..................................................................................................................17
27. Appendix B Structural Oversite Committee: Plan Re-view ...........................................................................23
1. **Introduction**

Construction for Spring Carnival will follow the International Building Code (IBC) 2009 edition (or any newer revision) occupancy group “B” (Business) with some alterations and interpretations as noted below. Specific items in this document will take precedence over the IBC where they conflict. In addition to the specific items generally accepted, good construction practices are expected to be used in all cases.

2. **Definitions**

2.1 **Committee**: when used with no qualifying phrases, shall refer to the Spring Carnival Booth Committee and members of the Spring Carnival Executive Board.

2.2 **Carnival Booth Committee**: A group of individuals comprised of the Head of Booth, Director of Fraternity, Director of Sorority, Director of Independent, Director of Blitz/Doghouse, and more who are responsible for reviewing and approving organization's booth design/drawings before they are built.

2.3 **Carnival Executive Board**: Representatives from Facilities Management and Campus Services (FMCS), EHS, University Police (UP), University Events, SLICE, and more departments who support the Carnival Booth Committee throughout the booth and carnival planning to ensure needed resources are obtained/available during build week, carnival and teardown.

2.4 **Blitz Booths**: One story wooden houses or boxes of a similar rectangular shape.

2.5 **Booths**: One to two story wooden houses or boxes of different sizes, colors, and themes.

2.6 **Booth Chair**: The Booth Chairs are responsible for knowing Booth Construction Standards and Terms and Conditions, along with all mandates that are created by the Head of Booth. They are held responsible to disseminate information to their organizations members and for adhering to the Booth Construction Standards. Each organization may have multiple Booth Chairs.

2.7 **Booth Builders**: Booth Builders are members of organizations who are to build responsibly, listen to their Booth Chairs and members of SCC to ensure safe building of their Booth.

2.8 **Build week**: The week before carnival when originsations build their booths for carnival.

2.9 **Environmental Health and Safety**: EH&S is a university department whose responsibility is to ensure the safety and environmental sustainability of all endeavors across campus, including Booth and Spring Carnival in general. Members of EH&S will be present during Build Week and will assist in inspecting the physical structures throughout the build process.

2.10 **Foot candles**: The amount of illumination the inside surface of a one-foot-radius sphere would be receiving if there were a uniform point source of one candela in the center of the sphere. It can also be defined as the illuminance of one lumen on a one-square foot surface with a uniform distribution.

2.11 **Head of Booth**: The Head of Booth leads Booth Committee and oversees all construction-related booth matters including holding Booth Chair meetings, revising plans, and being the bridge between student organizations that build a Booth and the appropriate Carnegie Mellon staff and faculty involved.

2.12 **Midway**: shall refer to the entire Spring Carnival midway or, as appropriate, the portion of the College of Fine Arts parking lot and adjacent roadways under control of the Committee.
2.13 **Move-on:** the Friday when organizations move their materials to their plot on Midway.

2.14 **Organizations:** A group of students who has been recognized by Student Government. Specifically for this document, organizations reference the student groups who are participating in booth building activities.

2.15 **Spring Carnival:** Defined as the 10 days from the Friday of Move-on when construction begins, through Build Week and Operations, until the Sunday of Teardown when the demolition and clearing of all carnival related activities occur.

2.16 **Spring Carnival Advisor:** The Spring Carnival Advisor is the representative from the Office of Student Leadership, Involvement, and Civic Engagement (SLICE) and the Division of Student Affairs (DoSA) designated to oversee Spring Carnival. The advisor attends meetings, meets regularly with members of the Executive Board, and is has a major presence on Midway throughout the build process.

2.17 **Spring Carnival Committee Chair:** The SCC Chair plans and runs all SCC general body and executive board meetings and oversees the activities of all committees. The SCC Chair is the main point of contact for Spring Carnival-related matters, communicate to campus stakeholders, and will delegate tasks to the heads of various committees.

2.18 **Stair Rise:** vertical difference between adjacent steps or rise of at least 4 inches and no more than 7 inches.

2.19 **Stair Run:** horizontal projection per step or tread less than 11 inches.

2.20 **Structural Oversight Committee:** A group of individuals comprised of at least the Head of Booth, Spring Carnival Committee Advisor, Faculty Booth Plan Reviewer(s), Fire Safety Manager (EHS), Electrical Supervisor (FMCS) who are responsible for reviewing and approving organization’s booth design/drawings before they are built. This committee also reviews and approves the structures at different points in the building process to ensure booths are built according to approved plans.

2.21 **Structures:** Booths that are under construction.

2.22 **Tear down:** The day after carnival in which organizations tear down and dispose or store their booth/structure components.

### 3. Roles and Responsibilities

3.1 **Carnival Booth Committee:**
   - **3.1.1** Reviews organizations booth plans prior to Build Week to approve all construction related activity
   - **3.1.2** Works closely with Environmental Health & Safety and Facilities Management and Campus Services
   - **3.1.3** Collaborates with the faculty member(s) who do the final review and approval of organization booth plans

3.2 **Structural Oversight Committee:**
   - **3.2.3** The SOC is defined to be the faculty and staff representatives of the university whose responsibility is to review the Spring Carnival Booth Building Construction Standards and ensure Teardown safety.

3.3 **Organizations:**
   - **3.3.1** Remain up to date with and adhere to carnival construction standards.
   - **3.3.2** Submit booth drawings and plans to the Structural Oversight Committee and update program as needed based on committee feedback.
   - **3.3.3** Submit updated programs when construction plans change or adjust to
3.3.4 Build and tear down structures in accordance with the organization's approved plans.
3.3.5 Adhere to safety requirements (i.e. PPE requirements, safety training, and housekeeping) when on Midway.
3.3.6 The Committee, or a subcommittee appointed for the purpose, reserves the right to declare any condition, material, design, or activity to be unsafe at its sole discretion.

3.4 EHS:
3.4.1 Assist with the coordination and implementation of various safety trainings to include Scissor Lift training, Forklift training, Hand and Power Tool Safety, Student Shop Safety, Personal Protective Equipment, Hazard Communication, etc.
3.4.2 Provide support to the Carnival Booth Committee in their efforts to coordinate and plan booth and carnival activities.
3.4.3 Obtain needed personal protective equipment and scissor lifts for build week.
3.4.4 Provide fire safety guidance and support to include fire extinguisher training, fire extinguishers and smoke detectors for booths.
3.4.5 Assist Carnival Booth Committee review and approve proposed booth drawings.

4. Inspections
4.1 Final Inspection
4.1.1 Organizations will be able to schedule a final inspection in the 24 hours prior to opening. Structures not passing the inspection will be given an opportunity to correct the problems and schedule another inspection.
4.1.2 Structures must pass their final inspection to be permitted to open for public occupancy.
4.1.3 No structural changes may be made to a structure after it passes its inspection. If any changes are made, it must be re-inspected before reopening to the public.
4.1.4 Structures are subject to additional unscheduled inspections at any time.

5. Occupancy
5.1 No booth will be permitted to be occupied by more than 50 persons at any time.

6. Construction and Demolition
6.1 Construction and demolition of structures must proceed in a safe manner, both for those involved in those activities and for others nearby.
6.2 Construction and demolition must proceed according to the approved plans. Any Organization deviating from the approved plans will be required to stop all other work until the deviation from the plans is corrected. Alternatively, an organization may submit revised plans to address the change; work may start again once the revised plans are approved.
6.3 No persons are to climb on or otherwise be supported by any partial structure or improvised scaffolding that is not of sufficient strength to support them. Any structural member acting in shear should not be considered of sufficient strength to
support a person. Other persons bracing or holding a part of the structure will not be considered when evaluating the strength of the support. Cross bracing is required to support any walls that are not yet fully connected.

6.4 Unless otherwise designated by the Committee, the Midway is considered to be a construction site from the start of the move-on process until the Midway opens to the public, and then again from the start of tear-down until the Committee declares that teardown has completed.

6.5 Appropriate personal protective equipment (including hard hats, safety glasses and closed toed shoes) must be worn by all persons in that area while the Midway is deemed to be a construction site.

6.6 All persons on Midway must wear safety glasses at all times. When using bladed instruments, safety glasses are required. Sunglasses and prescription glasses are not a substitute for safety glasses. Gloves and long pants are recommended to be worn when appropriate.

6.7 Long hair must be secured and tucked in to prevent entanglement with powered rotating equipment including powered hand drills.

7. Plan Submission and Approval

All plans submitted for approval must be in PDF format with each page sized to print on 8½x11 inch paper.

7.1 Plans must include:

7.1.1 Floor plans, sections, and details showing all structural elements with additional details for prefabricated components, support beams and posts, doors, windows, structural connections between walls, stairs, ramps, and railings. All elements must be fully dimensioned.

7.1.2 Drawings of all decorative elements including fastener details.

7.1.3 A complete description of all structural and decorative materials used that includes an estimate of the total quantities of each used.

7.1.4 Electrical and wiring diagrams that include the locations of wires, receptacles, switches, lights, and all other electrical elements used.

7.1.5 A list of all electrical devices to be used including their power consumption.

7.1.6 A description (with drawings, if appropriate) of how the structure will be moved to the Midway and installed there.

7.1.7 A description (with drawings, if appropriate) of how the structure will be removed from the Midway and disposed of or stored.

7.1.8 A description of the booth to be printed in Spring Carnival literature

7.1.9 Environmental Judging Form

7.2 Plan Review Step 1:
Plans shall be submitted electronically to the Spring Carnival Committee Head of Booth (Carly Sacco) with the information detailed above by student organization booth chairs. Each student organization who builds a booth has at least one designated booth chair. Once plans are received, the Head of Booth works with the Spring Carnival Booth Committee to review the plans based on the plan review check list (see Attachment A). The organization will be informed of the check list review results and will be provided an
opportunity to make needed corrections and resubmit. Once the Head of Booth has all
questions answered from the student organizations and feels it is prepared for further
review, they will submit the plans electronically into Plan Review Step 2.

7.3  **Plan Review Step 2:**
Once plans are approved in Step 1, they will be electronically submitted by the Spring
Carnival Head of Booth to the Structural Oversite Committee. Each member of the
Structural Oversite Committee can review the documents simultaneously to look at their
respective sections and provide comments/concerns. Each member of the Structural
Oversite Committee is responsible for reviewing the submitted plan(s) based on their
area of expertise, providing feedback and recommendations (See Appendix B). Based on
their review, the Structural Oversite Committee member will determine if the plan can be
approved or needs to be rejected and returned to the student organization. Once the
review process is complete, any student organization with a rejected plan will be given
the opportunity to make changes and resubmit their plan to the Spring Carnival Head of
Booth for another round of revisions.

A construction plan will be considered approved by the Structural Oversite Committee
once it has received approval by all members.

8.  **Booth Dimensions**

8.1  **Height Limits**
8.1.1  No part of a booth may exceed 12 feet in height.
8.1.2  No platform surface on which patrons will stand may be higher than 10 feet.
8.1.3  The roof, the highest surface once can stand on during construction, may be
no higher than 20 feet.
8.1.4  Any part of the structure exceeding 19 feet in height must be drawn in exact
detail and will only be approved at the discretion of the Structural Oversight
Committee and the Committee.
8.1.5  Some plots may be subject to lower maximum heights because of overhead
obstructions.
8.1.6  All heights are as measured from the lowest point of the plot.

8.2  **Exterior Decorations**
8.2.1  Decorative pieces on second floor roofs must be:
8.2.2  Firmly affixed and should be able to withstand strong winds
8.2.3  Made of lightweight materials such as paper Mache. Use of plywood or 2 x
4” wood components should be minimal.
8.2.4  Preassembled so that most of what needs to be done at this height is to
attach the decoration.
8.2.5  Time spent on 2nd floor roofs should be minimized and limited to
attaching roofing material and/or preassembled decorative items.

All elements of a booth must fall within the plot lines at all heights, with the exception of
a 1’ overhang allowance at least 7’ above the ground. Any materials overhanging the
designated plot size must not be structural or dangerous in any way. All elements falling within this exception must be fully detailed in an organization's plans and are at the discretion of the Structural Oversight Committee and Booth Committee to approve or reject.

8.3 **Egress Distance**

8.3.1 No point in the booth may be more than 50 feet from an exit, measured along the center of the path a person would walk to that exit.

8.3.2 Pathways must be at least 6 feet wide and available throughout staging area. Materials must be stacked to allow for egress around the booths.

8.3.4 Allow for paths for the scaffolding to access the booths and to be moved around Midway.

8.3.5 Pathways must be with lighting no less than 1 foot-candle (11 lux) at the walking surface, so persons walking through the booth can see the path.

9. **Structural Design**

9.1 **Lumber Quality**

9.1.1 All structural components must be #2 or better lumber with the exception that “stud” quality lumber may be used for its intended purpose as wall studs.

9.1.2 Material showing signs of deterioration, or that is past its useful life shall not be used.

9.2 **Floor Design**

9.2.1 Floor joists must be installed no farther apart than 16 inches on center. Joists are limited to the maximum spans shown here:

<table>
<thead>
<tr>
<th>Nominal Size</th>
<th>Floor Joist Maximum Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x4</td>
<td>Up to 4'0” ONLY within 12 inches of the ground</td>
</tr>
<tr>
<td>2x6</td>
<td>9’0”</td>
</tr>
<tr>
<td>2x8</td>
<td>11'6”</td>
</tr>
<tr>
<td>2x10</td>
<td>14'0”</td>
</tr>
<tr>
<td>2x12</td>
<td>16'0”</td>
</tr>
</tbody>
</table>

All joists and rafters must be supported from below either by a structural wall or by a header beam and posts sized appropriately to support a live load of 50 pounds per square foot in addition to the weight of other parts of the structure that will be supported. Joists are not permitted to be supported by fasteners in shear.

9.3 **Flooring**

9.3.1 Floors must be no less than 3/4 inch thick (nominal) plywood properly installed.

9.3.2 If the underlying joists are installed on no more than 12 inch centers then
1/2 inch thick (nominal) plywood may be used if properly installed.

9.3.3  Major axis of the plywood must be perpendicular to the joists.

9.3.4  Flooring must be plywood only - Oriented Strand Board (OSB) is not permitted for use on floors.

9.3.5  All plywood seams must have joists below them.

9.3.6  Base of any interior post must have adequate support, i.e. transfer the load directly to the asphalt.

9.4  Walls

9.4.1  Structural walls must be made up of 2x4 (nominal) lumber or larger spaced no farther apart than 16 inches on center, with the exception that walls supporting only a roof or decorative elements may increase the spacing to 24 inches on center.

9.4.2  At least one side of each structural wall must be covered with no less than 3/8 inch thick (nominal) plywood or oriented strand board (OSB) properly installed.

9.4.3  All structural sheathing panel edges must be completely backed by framing. Interior, non-structural partitions do not need sheathing.

9.5  Headers/Beams

Any gaps in structural walls (i.e., doors or windows) must have properly supported headers. Headers are limited to the maximum spans shown here:

<table>
<thead>
<tr>
<th>Material</th>
<th>Supporting Any Floor</th>
<th>Supporting Only a Roof</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Double 2x4</td>
<td>2'8”</td>
<td>3'6”</td>
<td></td>
</tr>
<tr>
<td>Double 2x6</td>
<td>3'11”</td>
<td>5'5”</td>
<td></td>
</tr>
<tr>
<td>Double 2x8</td>
<td>5'0”</td>
<td>6'10”</td>
<td></td>
</tr>
<tr>
<td>Double 2x10</td>
<td>6'1”</td>
<td>8’5”</td>
<td>Requires doubled jack studs at each end</td>
</tr>
<tr>
<td>Double 2x12</td>
<td>7’1”</td>
<td>9’9”</td>
<td>Requires doubled jack studs at each end</td>
</tr>
</tbody>
</table>

9.6  Door Openings

9.6.1  Doors or doorways must have at least 32 inches wide and 6’8” inches high clear space when the door is open.

9.6.2  Doors may not have locks or latches. Any closing doors must open in the direction of egress.

9.7  Headroom

9.7.1  7 foot minimum headroom must be maintained at all times not otherwise specified.

9.7.2  Nose of stairs should not extend past end of wall, i.e. step up should allow 7 foot minimum headroom.

9.7.3  Objects may hang down below that height but no lower than 6’8” at any point and over no more than 50% of the ceiling.
10. **Stairs**

10.1 **Design Dimension Limits**
- **10.1.1** Stairs may not have a run (horizontal projection per step or tread) less than 11 inches and must have a rise (vertical difference between adjacent steps or rise) of at least 4 inches and no more than 7 inches. The variability between the largest and smallest riser height and the largest and smallest tread length may not exceed 3/8 inch in any flight of stairs.
- **10.1.2** Riser heights and tread depths must total 18 inches.
- **10.1.3** Stairways must be at least 36 inches wide.
- **10.1.4** Headroom over steps must be at least 80 inches measured vertically from a line that connects the front edges of each step.
- **10.1.5** There shall be a landing at the top and bottom of each flight of stairs that is at least as long as the flight of stairs is wide. It is permissible to use the pavement outside of the structure as the lower landing as long as the height from the pavement to the first step is within 1 inch of the riser height of the rest of the flight of stairs across the entire width of the first step.
- **10.1.6** Any time there is a change in platform elevation the change must meet the requirements of a step. Changes in elevation more than 36 inches apart horizontally shall be considered to be individual steps.
- **10.1.7** Curved stairways are permissible when they meet the above requirements for width and headroom (measured in the center of the nosing of the stair tread) as well as meeting the requirements for a means of egress in the IBC.
- **10.1.8** An additional step or platform may be placed outside of a plot in the case where leveling creates the need for an extra step or platform to make stairs conform to code.

10.2 **Tread Thickness**
Stair treads may either be either:
- **10.2.1** A single piece of nominal 2x12 lumber that is no more than 36 inches between supports and no more than 6 inches overhung beyond the outer support
- **10.2.2** A single piece of 3/4 inch thick plywood that does not span more than 16 inches and has no unsupported edges.

10.3 **Stair Strength**
- **10.3.1** Stair carriages must be supported from below. Stair carriages should have no more than 1 foot of span for every 1 inch of carriage waist.
- **10.3.2** Stairs must withstand a vertically downward single point load of 250 pounds per step applied at any point on any step. (For example, a flight of 10 stairs must withstand a 2500 pound load)
- **10.3.3** Stairs must have adequate lateral bracing to withstand a 500 pound side load applied at any point.

10.4 **Stair Lighting**
- **10.4.1** Stairways that are enclosed on more than one side must be illuminated with lighting no less than 1 foot-candle (11 lux) at the walking surface level.

11. **Ramps**
- **11.1** Ramps are permitted so long as they have no more than a 1 in 8 slope.
12. **Stair and Rand Handrails**
   12.1 Handrails are required anywhere there are 2 or more risers or on any ramp.
   12.2 Handrails are required in addition to a guard railing on steps and must be continuous along at least one side of any flight of stairs.
   12.3 Handrails must be 34 to 38 inches high measured vertically from the tips of the stair nosings or from the ramp surface. The height of the handrail must not vary more than 3/8 inch over the length of the handrail.
   12.4 Handrails must have a rounded profile on top, no smaller than 1-1/4 inch in diameter and no larger than 2 inches in diameter.
   12.5 A minimum clearance of 1-1/2 inches must be maintained between a handrail and an adjacent wall or guard railing.
   12.6 Handrails must withstand a 300 pound force in any direction at any point.

13. **Clear Width**
   13.1 All walkways, stairways, and ramps must have a clear width of 36 inches or more.
   13.2 Handrails are allowed to project up to 4-1/2 inches into this clear space and still be in compliance with this requirement.
   13.3 No sharp or otherwise dangerous projections are permitted from any wall or hanging object below a height of 7 feet from the closest walking surface.

14. **Guard Railings**
   14.1 Guard railings are required anywhere that there is a change in elevation of more than 7 inches.
   14.2 Guard railings must have a height no less than 42 inches from the height of the raised platforms or from the nosings of the steps if along a flight of stairs.
   14.3 Guard railings must be constructed in a manner that prevents children from climbing them and so that a 4 inch diameter sphere cannot pass through them at any point from the platform to the top of the railing (with the exception that the bottom of a guard railing along a flight of stairs cannot pass a 6 inch diameter sphere between the stairs and the bottom of the railing structure).
   14.4 Guard railings must withstand a 300 pound force in any direction at any point.
   14.5 Temporary guardrails must surround and walking surface with a height greater than 4 feet, unless the walls are being erected in a timely manner.

15. **Roof Design**
   15.1 Roof rafters must be installed no farther apart than 24 inches on center and limited to the spans shown here:
## Nominal Size  
<table>
<thead>
<tr>
<th>Nominal Size</th>
<th>Roof Rafter Maximum Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x4</td>
<td>7’5”</td>
</tr>
<tr>
<td>2x6</td>
<td>9’6”</td>
</tr>
<tr>
<td>2x8</td>
<td>12’0”</td>
</tr>
<tr>
<td>2x10</td>
<td>15’0”</td>
</tr>
<tr>
<td>2x12</td>
<td>18’0”</td>
</tr>
</tbody>
</table>

15.2 All rafters must be supported from below either by a structural wall or by a header beam and posts sized appropriately to support a live load of 50 pounds per square foot in addition to the weight of other parts of the structure that will be supported. Rafters are not permitted to be supported by fasteners in shear.

15.3 Roofs must be no less than 3/8 inch thick (nominal) plywood or oriented strand board (OSB) properly installed.

### Level
16.1 Any platform more than 12 inches from the lowest point of the ground underneath must be level. No variation of more than 1/2 inch between any two points of the platform or 1/4 inch between any two points less than 12 inches apart is permitted.

### Plumb
17.1 Structural walls supporting other elements must be plumb to within 1/4 inch in 10 feet.

### Fasteners
18.1 Appropriate fasteners including bolts, construction screws or nails, must be used for all structural construction. Drywall screws are not permitted for use on structural elements. Structural elements may not be supported by fasteners in shear.

### Electrical
Booths needing electricity will be provided a 20 ampere, 120 volt service terminated in a NEMA 5-20R receptacle (common household "Edison" type). The normal operating amperage for a full-size booth is not to be more than 16 amperes. Blitz booths may not draw more than 8 amperes each under normal operating conditions. All electrical work in or on a booth must comply with the requirements for single-family residential construction in the National Electrical Code (NFPA 70), 2008 or newer edition. Additionally, all switches and receptacles, including the initial plug used to tie into the receptacle provided, must be rated for 20 amperes. This is unless a 15 ampere circuit breaker in a proper enclosure is installed or with the approval of the Spring Carnival Electrical Chairperson. Electrical work must be carried out in a neat and workmanlike manner. All cabling must be rated appropriately for its amperage and weather exposure, as well as have
sufficient jacketing free of nicks or signs of inappropriate wear. Cable must be secured to the structure with appropriate hardware at a minimum of every 4', as well as within 6" of entry to any electrical boxes. Where necessary, cable should be protected from accidental physical damage. Any holes bored to allow cables to pass through joists, rafters, or wood members should be centered between the two nearest edges.

Electrical boxes housing splices, receptacles, switches, or lighting fixtures must be securely fasted to the structure. Boxes must provide sufficient strain relief to all wires entering them. A minimum of 6" of wire is required between the entry to the box and the components to which the wire is attached. Wire must be tightly and appropriately terminated using screws or wire nuts, and no termination or splice may occur outside of an electrical box. Electrical boxes must be covered, and all metal components housing an electrical system must be grounded. All electrical components exposed to the elements must be appropriately rated.

All electrical wiring runs and connections must be inspected and approved by the Spring Carnival Electrical Chairperson or his/her representative before being closed or covered.

20. Fire Protection

20.1 No smoking or open flames shall be permitted on the Midway at any time.
20.2 No flammable gases or liquids may be used in the construction of the structure or as a part of the structure itself. This includes oil-based paints or paint thinners and gasoline.
20.3 Straw, hay, dry grass, or similar materials that cannot be flame-proofed are not permitted.
20.4 Foam may only be used under the following conditions:
   20.4.1 All foam must be pre-soaked (not merely sprayed) in approved flame retardant.
   20.4.2 The maximum dimensions of any single piece of foam used cannot exceed 24x24x2 inches.
   20.4.3 Total thicknesses of foam applied to any structure cannot be greater than 4 inches.
   20.4.4 Urethane foam and foam designated as flammable or combustible shall not be used for any reason.
20.5 No plastic sheeting or tarps are permitted as a permanent part of the structure. They may be used during inclement weather as a temporary cover only when Midway is not open and as long as they are secured properly while in use and removed when the inclement weather ends.
20.6 Fog machines or other devices that can produce the appearance of smoke are not permitted on the Spring Carnival Midway.
20.7 Each booth must have at all times a smoke detector. Each organization will obtain it from the Committee and must return it on the day of tear-down.

21. Water

21.1 No container holding more than 50 gallons of water may be used.
21.2 The depth of the water in any open container larger than 4 inches across at its narrowest dimension may not exceed 10 inches at the deepest point.
21.3 Exceptions may be granted for a dunking booth or similar attraction at the discretion of the Committee.

21.4 All water used in booths must be continuously recycled and non-stagnating.

22. **Paint**

22.1 Organization must use tarps for canvas while painting. No paint should be able to get on sidewalks or the parking lot.

23. **Transportation of Materials and Parts**

23.1 No part of a structure may be carried onto the Midway that cannot be safely handled by a maximum of 6 people.

23.2 No item may be rolled onto Midway that cannot be safely handled by a maximum of 3 people.

23.3 Larger items may be delivered by a closed box truck, or any truck approved by the members of Carnival Executive Board, so long as they can safely be loaded, moved, and unloaded.

23.4 Forklifts, or other heavy machinery, may only be operated by those who have received proper training to become a qualified operator, and have been given permission by the Head of Booth and the rest of the Committee.

24. **Other Unsafe Conditions**

The Committee, or a subcommittee appointed for the purpose, reserves the right to declare any condition, material, design, or activity to be unsafe at its sole discretion with support of the whole committee. The Unsafe Conditions Committee will also review elements brought to their attention that are questioned to be unsafe. Organizations shall comply with all instructions given as a result.

Any member of the committee listed below can curtail and stop any unsafe conditions while the committee discusses. Where feasible, reasonable opportunities will be given to correct the problem or problems before the structure is closed permanently. No person may have any part of his/her body under or on any component that is not structurally supported. The committee will be comprised of the following people:

24.1 Advisor of Spring Carnival Committee
24.2 Chair(s) of Spring Carnival Committee
24.3 Head of Booth for Spring Carnival Committee
24.4 Structural Oversight Faculty Member
24.5 Fire Safety Manager, Environmental Health & Safety
24.6 Director or Designee from Environmental Health & Safety
### 25. Revisions

<table>
<thead>
<tr>
<th>Date</th>
<th>Documented Changes</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/11/2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6/28/2021</td>
<td>Updated Format and Accessibility Update</td>
<td>MAS (EHS)</td>
</tr>
<tr>
<td>11/1/2021</td>
<td>Resolved comments/additions from EHS</td>
<td>ASG</td>
</tr>
<tr>
<td>12/21/2021</td>
<td>Added section to detail the structural oversite committee</td>
<td>REC</td>
</tr>
<tr>
<td></td>
<td>Added appendix A and B</td>
<td></td>
</tr>
<tr>
<td>6/9/2022</td>
<td>Updated Format and re-added appendix A and B</td>
<td>MAS</td>
</tr>
</tbody>
</table>
26. **Appendix A Plan Review Checklist**

Organization:

Review Number:

Reviewed By:

Date:

**Plans**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor plans, sections, and details showing all structural elements with additional details for prefabricated components, support beams and posts, doors, windows, structural connections between walls, stairs, ramps, and railings. All elements must be fully dimensioned.</td>
<td></td>
</tr>
<tr>
<td>Drawings of all decorative elements including fastener details.</td>
<td></td>
</tr>
<tr>
<td>A complete description of all structural and decorative materials used that includes an estimate of the total quantities of each used.</td>
<td></td>
</tr>
<tr>
<td>Electrical and wiring diagrams that include the locations of wires, receptacles, switches, lights, and all other electrical elements used.</td>
<td></td>
</tr>
<tr>
<td>A list of all electrical devices to be used including their power consumption.</td>
<td></td>
</tr>
<tr>
<td>A description (with drawings, if appropriate) of how the structure will be moved to the Midway and installed there.</td>
<td></td>
</tr>
<tr>
<td>A description (with drawings, if appropriate) of how the structure will be removed from the Midway and disposed of or stored.</td>
<td></td>
</tr>
<tr>
<td>A description of the booth to be printed in Spring Carnival literature</td>
<td></td>
</tr>
<tr>
<td>Environmental Judging Form</td>
<td></td>
</tr>
</tbody>
</table>

Comments:
**1st Floor**

**Floors**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor joists are &lt; 16” on center</td>
<td></td>
</tr>
<tr>
<td>Floor joist max. span meets construction standards</td>
<td></td>
</tr>
<tr>
<td>Flooring specified to be plywood (&gt;= ¾”) (Unless floor joists are no less than 12 inches on center, then ½” may be used)</td>
<td></td>
</tr>
<tr>
<td>All plywood seams are supported by joists</td>
<td></td>
</tr>
</tbody>
</table>

Comments:

**Walls**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural walls made of 2x4 (or &gt;) lumber</td>
<td></td>
</tr>
<tr>
<td>Wall studs spaced &lt; 16” on center</td>
<td></td>
</tr>
<tr>
<td>At least one side of each structural wall is covered by (&gt;¾”) plywood or OSB</td>
<td></td>
</tr>
<tr>
<td>Sheathing edges are backed by framing</td>
<td></td>
</tr>
<tr>
<td>Walls are supported from below by floor frame joists</td>
<td></td>
</tr>
<tr>
<td>Double top plate is used or strongtie bracket quantities are listed</td>
<td></td>
</tr>
</tbody>
</table>

Comments:
# Headers

| Header span meets construction standards |

Comments:

# Stairs

| Stairs’ run and rise total approx. 18 inches |
| Stairs’ run is over 11 inches |
| Stairs’ rise is between 4 and 7 inches |
| Stairway at least 36 inches wide |
| Headroom is at least 80 inches |
| Landing at the bottom and top is at least as long as the stairway is wide |
| Treads are of sufficient thickness (see construction standards) |
| Carriage waist is at least 1 inch for every 1 foot of carriage length |
| Stairs are supported from below by floor frame joists |

Comments:
## Handrails

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handrails are 34 to 38 inches high</td>
</tr>
<tr>
<td>Handrails have a rounded profile on top</td>
</tr>
<tr>
<td>Clearance between handrail and adjacent wall is at least 1-½ inches</td>
</tr>
</tbody>
</table>

Comments:

## 2nd Floor

### Floors

<table>
<thead>
<tr>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floor joists are &lt; 16” on center</td>
</tr>
<tr>
<td>Floor joist max. span meets construction standards</td>
</tr>
<tr>
<td>Flooring specified to be plywood (&gt;= ¾”)</td>
</tr>
<tr>
<td>All plywood seams are supported by joists</td>
</tr>
<tr>
<td>All joists are supported by a structural wall or a header beam</td>
</tr>
</tbody>
</table>

Comments:
## Walls

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structural walls made of 2x4 (or &gt;) lumber</td>
<td></td>
</tr>
<tr>
<td>Wall studs spaced &lt; 16” on center</td>
<td></td>
</tr>
<tr>
<td>At least one side of each structural wall is covered by (&gt;⅜”) plywood or OSB</td>
<td></td>
</tr>
<tr>
<td>Sheathing edges are backed by framing</td>
<td></td>
</tr>
<tr>
<td>Walls are supported from below by floor frame joists</td>
<td></td>
</tr>
<tr>
<td>Double top plate is used or strongtie bracket quantities are listed</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

## Headers

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Header span meets construction standards</td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**
Guardrails

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present at anywhere there is a change in elevation of more than 7 inches</td>
<td></td>
</tr>
<tr>
<td>Guardrails are at least 42 inches in height</td>
<td></td>
</tr>
<tr>
<td>Any spacing is less than 4 inches</td>
<td></td>
</tr>
</tbody>
</table>

Comments:

Roof

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof rafters meet the construction standards</td>
<td></td>
</tr>
<tr>
<td>All rafters are supported from below by either a structural wall or header</td>
<td></td>
</tr>
<tr>
<td>Roofing is no less than ¾ inch thick plywood or OSB (other materials allowed with approval)</td>
<td></td>
</tr>
</tbody>
</table>

Comments:

Overall Comments:
27. **Appendix B Structural Oversite Committee: Plan Re-view**

**Organization:**

**Review Number:**

**Date:**

**FMCS Electrician review will include:** Electrical and wiring diagrams that includes the locations of wires, receptacles, switches, lights, and all other electrical elements used. As well as the list of all electrical devices to be used including their power consumption.

**Reviewer Name:**

**Comments:**

<table>
<thead>
<tr>
<th>Approve</th>
<th>Reject</th>
</tr>
</thead>
</table>

**Architecture review will include:** Structural design of Floor plans, sections, and details showing all structural elements with additional details for prefabricated components, support beams and posts, doors, windows, structural connections between walls, stairs, ramps, and railings. Applicable building codes may be referenced.

**Reviewer Name:**

**Comments:**

| Approve | Reject |
Engineering review will include: Structural design of Floor plans, sections, and details showing all structural elements with additional details for prefabricated components, support beams and posts, doors, windows, structural connections between walls, stairs, ramps, and railings. Applicable building codes may be referenced.

Reviewer Name:

Comments:

Approve   Reject

Fire Safety review will include: Fire extinguisher and smoke detector placement, lighting levels (lux), egress paths, decoration flammability and fire risks. Applicable fire codes may be referenced.

Reviewer Name:

Comments:

Approve   Reject