



CITY OF CHICAGO

DEPARTMENT OF BUILDINGS

PORCH DESIGN & CONSTRUCTION

GUIDELINES

GLOSSARY OF TERMS
MATERIALS FOR CONSTRUCTION
BUILDING CODE
DRAWINGS
DRAWINGS – PLANS
DRAWINGS – COLUMN CONNECTIONS
DRAWINGS – WALL CONNECTIONS
DRAWINGS – POST SPLICE
DRAWINGS – STAIRS
DRAWINGS – GUARDRAILS
DRAWINGS – FOOTINGS
DRAWINGS – TRIBUTARY AREA
LOAD TABLES
EXAMPLE DESIGN
PORCH CHECKLIST
PORCH EVALUATION
PORCH PROCESS
FREQUENTLY ASKED QUESTIONS

CITY OF CHICAGO
DEPARTMENT OF BUILDINGS
ISSUED MAY 26, 2011



CITY OF CHICAGO

DEPARTMENT OF BUILDINGS

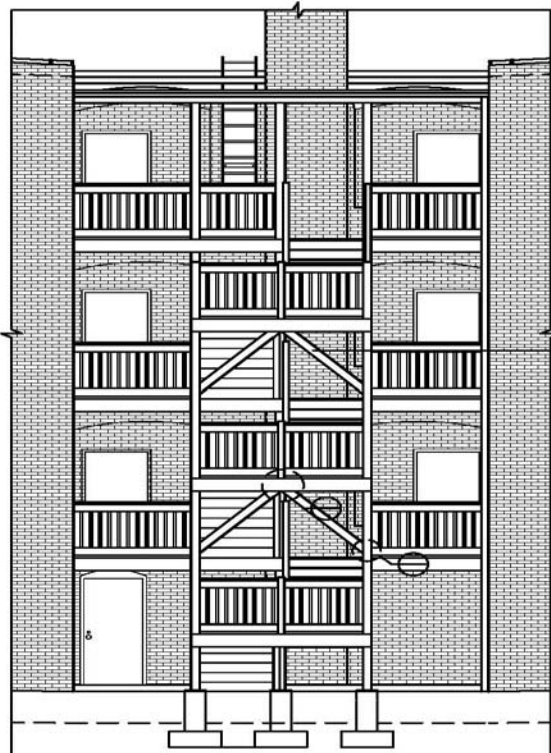
THIS PAGE LEFT INTENTIONALLY BLANK

**INTRODUCTION**

These Porch Design & Construction Guidelines are a reference for homeowners, building owners, licensed design professionals and contractors and are intended to assist in establishing a consistent understanding of wood porch construction in the City of Chicago. The Guidelines provide information regarding the design and construction of wood porches and decks, including Chicago Building Code and Department of Buildings requirements.

The information included in these Guidelines can be used for the evaluation of existing porches and decks as well as the design of new structures. Tables are provided to assist in determining the load capacity of joists, beams, columns and bolted connections for simple structural configurations. Example framing plans and connection details are also provided to illustrate possible configurations of wood framing. A formal method of porch and deck evaluation is provided in the Porch Checklist and Evaluation Sections and the processes for obtaining building permits are listed in the Porch Process Section.

The design information included in these Guidelines is not, however, intended to provide the sole method of porch and deck design and construction necessary to meet the requirements of the Chicago Building Code. As there are innumerable porch configurations in the City of Chicago, the load tables, details and examples cannot be expected to address every possible condition. The applicability of any detail or framing plan must be made with consideration of the actual porch configuration and required load transfer. For conditions that are beyond the applicability of the framing shown and load tables provided, designs must be created that conform to the requirements of the Chicago Building Code, referenced standards (such as the National Design Specification), and accepted structural engineering practice.



The information listed in the load tables is provided for convenience only. It is the responsibility of the owner, contractor, architect and/or structural engineer to ensure that all members and connections are adequate for their intended purpose and meet the requirements of the Chicago Building Code.

TABLE OF CONTENTS**SECTION A: GLOSSARY OF TERMS 1**

The Glossary of Terms includes definitions of construction materials and building components.

SECTION B: MATERIALS FOR CONSTRUCTION 5

Section B includes specific information regarding materials commonly used for the construction of decks and porches.

SECTION C: BUILDING CODE 9

Section C includes excerpts from the Chicago Building Code that are applicable to porch design and construction.

SECTION D: DRAWINGS 15

Section D includes porch plans and details to illustrate how wood framing and connections are drawn and can be constructed.

1: DRAWINGS – PLANS & ELEVATIONS 17**2: DRAWINGS – COLUMN CONNECTIONS 25****3: DRAWINGS – WALL CONNECTIONS 29****4: DRAWINGS – POST SPLICES 34****5: DRAWINGS – STAIR DETAILS 36****6: DRAWINGS – GUARDRAIL DETAILS 42****7: DRAWINGS – FOOTINGS 48****8: DRAWINGS – TRIBUTARY AREA 51****SECTION E: LOAD TABLES 57**

The Load Tables of Section E are provided to assist in determining the correct wood member and bolt sizes.

SECTION F: EXAMPLE DESIGN 73

The Sample Designs of Section F incorporate the information of Sections D & E to create a porch design.

SECTION G: PORCH CHECKLIST 81

The Porch Checklist of Section G is used to evaluate the condition of a porch or deck.

SECTION H: PORCH EVALUATION 87

The Porch Evaluation of Section H is used to determine the quantity of repair/replacement and the level of required compliance.

SECTION I: PORCH PROCESS 95

Section I is provided to show what the process is for porch design, DOB permitting, construction, inspections and closeout.

SECTION J: FREQUENTLY ASKED QUESTIONS 101

Section J provides answers to questions that provide further clarity to the porch design and construction process.

This **P**age **L**eft **I**ntentionally **B**lank

This section includes definitions of the most commonly used terms and phrases associated with porches and decks. The definitions are presented to provide a consistent understanding of those terms. A consistent meaning of terms allows building owners and all of those involved in the design and construction process to have the same understanding and be able to readily communicate with one another.

BALUSTER – An element used as infill in guards on decks or stairs. The infill occurs between the top rails and the decks or stair treads. For porches, a commonly used baluster consists of 2x2 lumber oriented vertically and spaced with a clear distance of less than 4 inches.

Balusters must be attached to the guardrail systems to prevent being dislodged by impact or other lateral forces. The use of nails is not sufficient to attach balusters. Balusters must be attached to supporting wood members with screws sufficient to prevent being dislodged or becoming loose over time.

BEAM – A horizontal member used to transfer or carry loads from one structural element to another. Beams frame into other beams, columns or building walls to support joists, landings or stair stringers. Sometimes, beams are called “lookouts” or “girders”, depending upon their use.

BEAM POCKET – An opening in a masonry building wall used to support one end of a beam that runs perpendicular to the wall. Note that beam pockets should not be located over door or window openings.

BOLLARD – A device that is commonly used to protect portions of buildings or other structures from damage by vehicles. A typical bollard consists of 4 inch or larger steel pipe filled with concrete and set in a concrete foundation.

BRICK VENEER – A non-load bearing masonry facing that provides a weather barrier, but does not add to the structural integrity of the wall. Brick veneer is attached to the structural wall to prevent the veneer from being toppled by wind loads and in some cases to carry the load of the brick. The structural wall can consist of concrete block, wood frame, light gage metal frame or other systems.

BRIDGING – See Joist Bracing.

BUILDING PERMIT – A document issued by the City of Chicago that gives a building owner legal permission to make an improvement to their property. Obtaining a permit requires the submittal of an application.

CARRIAGE BOLT – A steel bolt with a round shaped head and threaded shaft that, with a nut, is used to make a connection between structural components. As the nut on the carriage bolt is tightened, a square portion of the shaft directly under the head becomes embedded in the wood preventing the bolt from turning. (See Materials Section for further information.)

CELL – The hollow space inside of a concrete block which may or may not be filled with grout and reinforcement steel.

COLUMN – A vertical member, continuous or in spliced sections, that is used to support the levels of a porch, deck, landing or stairway. A column transfers the load from the decks of the porch to the ground below. Sometimes, columns are called “uprights” or “posts.”

COMMON BRICK – Can typically be found on the side and rear elevations of older masonry buildings. Common brick is typically softer and dimensionally less exact than face brick and was less expensive than face brick.

CONCRETE – A manmade material that is cast into shapes and is used extensively for foundations and other building structural components. Concrete is also used extensively for driveways, sidewalks and curbs. Concrete is primarily made up of Portland cement and large and small aggregates such as crushed stone and sand. The Portland cement chemically reacts with water to form a paste that, when cured, binds the aggregates into a structural shape. (See Materials Section for further information.)

CONCRETE BLOCK – Also known as “Concrete Masonry Unit” or “CMU.” Concrete block is commonly available in nominal 2 inch to 12 inch thicknesses and in 4 inch and larger sizes is hollow. Concrete block is frequently used as the structural portion of a wall, supporting both gravity and wind loads.

DECK – A general term that refers to one level of framing of a porch. The term may also refer to a single level platform constructed near grade adjacent to single family residences. A deck may consist of decking, joists and beams joined to create one structural platform.

DECKING – Refers to boards that form the walking surface of porches. They are typically nailed or screwed to joists and/or beams. Wood decking can consist of either tongue and groove or individually spaced boards. Plywood is not an acceptable decking material for porches or decks.

DEPARTMENT OF BUILDINGS (DOB) – The City of Chicago's Department of Buildings, which is a regulatory agency responsible for issuing permits for construction and conducting inspections, is dedicated to advancing public safety through vigorous enforcement, community partnership and use of creative technical solutions thereby making Chicago a safe place to live, work, and build.

DOWNSPOUT – A hollow metal tube or pipe that conducts the flow of rainwater from the gutters to grade or other pipes.

FACE BRICK – Is a hard fired clay or shale that is used in masonry wall construction. Unlike common brick, face brick is dimensionally accurate, with carefully controlled colors and texture. Face brick is used on exterior walls where a durable and architecturally significant façade is desired.

FASTENER – A general term referring to dowel type connectors such as bolts, nuts, screws, and nails. (See Materials Section for further information.)

FLASHING – Typically a thin sheet of material that is formed into a shape and is used to prevent water from infiltrating to the interior of a building. Flashing can be fabricated from lead, copper, galvanized steel, stainless steel, modified bitumen, or plastic. It is used to bridge gaps between building surfaces such as walls and roofs. Flashing is also installed in walls above windows, doors and ledger beams to conduct water that has infiltrated the façade of a building back to the exterior face of the building. (See Materials Section for further information.)

FOOTING - The portion of the building or structure foundation that bears directly on the soil. The foundation may also include walls or piers that bear on the footing. The bottom of the footing must be a minimum of 42 inches below grade. The footing (or pad) must also be large enough to spread the load onto the supporting soil without exceeding the allowable soil bearing pressure.

FRAME CONSTRUCTION – The creation of wall and floor structures using dimension lumber that is nailed together. The most common form of wood frame construction used today is platform framing. A typical frame wall is constructed with 2x4 dimension lumber used as studs, headers and sill plates.

GROUT – A concrete mix, with small aggregate, that is used to fill voids in masonry walls such as cells in concrete block. The grout is intended to enhance the structural integrity of the masonry wall.

GUARD – Guards are used to enclose the edges of porches, decks, and stairs to minimize the possibility of users from falling from those elevated structures to lower levels. Guards used at the edges of porches or decks must be a minimum of 42 inches in height. Guards may be commonly known as porch or deck guardrails. Guards can also include handrails and stair guards. (See also Handrails and Stair Guards)

GUTTER – A trough located at the eave or low edge of a roof to collect rain water. The rain water is then conducted to the ground through downspouts. Gutters can be formed or extruded from metal or plastic.

HANDRAILS – A horizontal or sloping rail intended for grasping by the hand for guidance or support.

HEX BOLT – A steel dowel type fastener with a hexagonal-shaped head and threaded shaft that, with a nut, is used to make a connection between structural components. (See Materials Section for further information.)

HOT-DIP GALVANIZING – A process by which steel is made resistant to corrosion (rusting) by being dipped in a liquid form of zinc. Hot dip galvanizing provides a thicker coating of zinc than other plating processes. A metal connector or fastener that is hot dipped galvanized will be resistant to corrosion for a far longer time than a steel item that is electroplated. (See Materials Section for further information.)

JOIST – A member that spans between beams or beams and walls. Joists are uniformly spaced; typically at 16 inches on center. Joists can bear on top of beams or frame into the sides of beams using joist hangers. Where joists bear on top of beams, they must be adequately attached to prevent lateral displacement.

JOIST BRACING – Also known as “Bridging”. The bracing or bridging provides restraint against rotation of joists in long spans. Joist bracing may consist of solid wood pieces, diagonal metal lacing, or diagonal wood lacing.

JOIST HANGER – A prefabricated metal connector used to join wood joists to beams. Proprietary connectors are available from several manufacturers. For the hanger to be fully effective, the connector must be installed in compliance with the manufacturer’s instructions.

LAG BOLT OR LAG SCREW – A steel dowel type fastener that has tapered threads at one end and a hex head at the other. Lag screws are used to attach wood members together or metal connectors to wood members. (See Materials Section for further information.)

LANDING – A horizontal surface of limited area that the user walks upon to make the transition from one flight of stairs to another.

LATERAL BRACING – Is a system within the porch structure to prevent lateral movement such as racking and possible collapse. Many, if not most, porches rely on the buildings that they are attached to for lateral stability. Therefore, the porch structures must be securely attached to the main buildings through the ledger beams or other means. However, even with attachment to the main building the outstanding or free edge of the porch structure must be braced. This is especially true of stair structures that are constructed at the edge of the main porch platforms or decks. (See Drawing 1D for a plan of this type of porch.)

The forces that can cause racking of a porch structure are wind loads, vibration and impact from porch use and out of plumb framing. Because these forces can occur or impinge on any porch structure,

every porch structure must be designed and constructed to include a lateral bracing system. The lateral bracing system must be designed to resist a lateral load equal to at least the wind load plus 2% of the gravity dead and live loads. The minimum wind load is defined as 20 pounds per square foot (psf) in the Chicago Building Code.

Lateral bracing is therefore most commonly found on the face of the porch structure that is parallel to the rear wall of the building. This is also considered to be the free edge(s) of the porch platform(s). X, K or inverted V bracing is commonly used for this purpose as are diagonal braces at the corners of posts and beams. The X, K or inverted V bracing carries the lateral load from the various levels of the porch to the ground.

As the building is typically considered adequate to provide some lateral support, no bracing is usually considered necessary to prevent movement perpendicular to the rear wall of the building. It is also possible, with some porch configurations, to brace the porch structure with diagonal bracing in the plane of the decks. If the porch decks are designed to act as horizontal diaphragms, then it is possible for the entire structure to be adequately braced using the stability of the building. Bracing of decks can be accomplished by the use of dimension lumber attached diagonally under the joists and beams. Furthermore, decks can be turned into diaphragms by installing the deck boards on a 45 degree angle.

Because of the multitude of porch configurations in the City of Chicago and many possible bracing configurations, specific methods of lateral bracing are not considered, in detail, in these Design Guidelines.

LEDGER BEAM – Not a beam in the conventional sense; it does not span some distance carrying load. Rather, a ledger beam is rigidly attached to a building facade and provides for a transfer of load from the joists or other beams directly to the wall to which it is mounted. Ledger beams provide support not only for gravity (vertical) loads but also provide transfer of lateral loads for stability for the entire deck structure. Wood or steel ledger beams are most commonly bolted to brick, concrete block or wood frame walls. Ledger beams must not be supported on brick veneers or building sheathing.

MASONRY CONSTRUCTION – Typically refers to wall construction that consists of concrete block and/or brick and is the primary means of structural support for the building. In this type of construction, the masonry walls are said to be bearing walls.

MORTAR – A fundamental component of a masonry wall. Mortar is not filler, rather it supports and bonds the concrete block, brick and/or cut stone together. Mortar typically consists of Portland cement, lime and sand. The proportions of these components vary depending upon the type of wall and masonry materials used.

MULTIPLE WYTHE SOLID BRICK – Consists of multiple vertical layers or wythes of brick that are bonded together into a solid wall.

NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION – The NDS is published by the American Forest and Paper Association and is the standard for the design of wood members used in porch structures. The NDS provides the maximum stresses and forces that wood members and wood connections can support or carry.

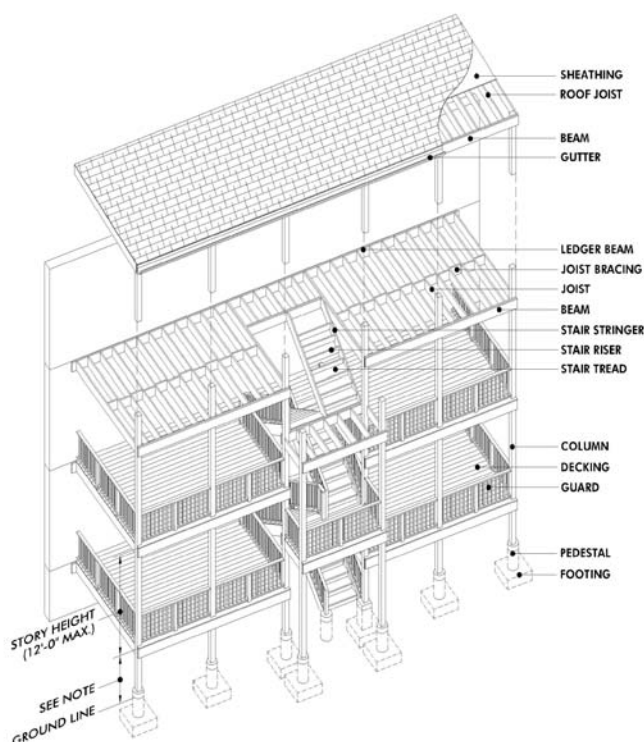
NOSING – An extension of a stair tread beyond the face of a riser. In wood construction, stair treads commonly include nosings.

PIER – A short concrete column cast on top of a footing. In the context of porch and deck construction, the pier supports a column or post. It is a portion of the foundation that transfers the column load to the footing and is almost entirely below grade.

PLYWOOD – A manufactured wood product that is comprised of multiple wood veneers that are glued together under high pressure. Plywood is available in 4 feet by 8 feet sheets, in a number of thicknesses and made from many different species of wood.

PORCH – An open structure that is typically located at the rear of a building that forms a part of the means of egress from the building. Porches are typically of differing construction from the principal portion of the building and are separated from the building by a fire rated wall. Porches include decks, stairs and landings but not all of the deck areas are necessarily a part of the means of egress path. A porch may or may not include a roof.

PORCH (3D GRAPHIC) – Below is an illustration of a porch with the various components annotated.



PRESSURE TREATED LUMBER (See “Wolmanized Lumber”) – Is commonly known as treated lumber or “Wolmanized Lumber.” In general, the treatment process involves filling the cells of the wood with chemical compounds that are toxic to micro-organisms and insects and significantly reduces the deterioration of the wood in-use. There are several varieties of chemical treatment available, which are described in more detail in the Materials Section. (See also Wolmanized Lumber)

REDI-MIX CONCRETE – Concrete that is purchased from a supplier and delivered by truck to the construction site.

REINFORCEMENT – Consists of deformed steel bars that are incorporated into structural concrete members such as slabs, beams, columns and foundations. (See Materials Section for further information.)

RIM JOIST – A component of a wood platform frame used for a floor or flat roof. The rim joist forms the perimeter of the platform frame.

RISER – A component of a stair consisting of a board closing the gap between the treads. The rise is the vertical dimension between each

tread. The rise between all of the treads in a flight of stairs must be consistent.

SHEATHING – A sheet type material that is applied over structural framing. On wall framing, the sheathing is placed on the outside face of the 2x4 studs to provide a back-up for siding, stucco or brick veneer. The wall sheathing also provides lateral stability for the wood frame building. On roof framing, sheathing is the structural surface upon which the roofing is installed. Structural sheathing typically consists of plywood or oriented strand board (OSB). Fire-rated sheathing includes gypsum board.

SIDING – The exterior finish material used on the outside of a building of frame construction, generally consisting of wood, aluminum, or vinyl.

SOUTHERN YELLOW PINE – The most commonly used species of wood for porch and deck construction in the Chicago area. It has good structural properties and accepts pressure treatment well. (See Materials Section for further information.)

SPLICE – The connection of two structural members to form a longer and structurally continuous member.

STORY HEIGHT – The vertical dimension between finished floor levels of a building.

STAIR GUARD – A component of a stair that is intended to minimize the possibility of a fall from a stair to a lower level. Guards whose top rail also serves as a handrail shall have a height of between 34 inches and 38 inches.

STAIR STRINGER – Supports the stair treads and spans from floor to floor or floor to intermediate level. Even though stair stringers are sloped, they are beams.

STRUCTURAL GLUED LAMINATED SOFTWOOD TIMBER – is an engineered wood product that is constructed of multiple layers of wood to form a relatively large beams and columns. These beams and columns are commonly known as Glulams and are frequently available in widths of 3-1/2” to 5-7/16” and in depths of 9-1/2” to 18”. Because Glulams are constructed of carefully selected glued wood their strength is considerably higher than similar sized solid wood members. The use of these members may be suitable for deck and porch construction but are not specifically referenced in these Guidelines.

STUCCO – Also known as cement-plaster and is an exterior building finish. It is made from Portland cement, sand and lime and is applied in three coats on top of lath. The top or finish coat can be smooth or textured.

STUD – A vertical structural member that is typically a wood 2x4 used in frame construction.

TREAD – A horizontal component of a stair that the user steps upon to ascend or descend from one level to another. The rise is the vertical dimension between each tread. The width of all treads and height of all risers must be dimensionally consistent and not vary within any flight of stairs.

UNIT (Dwelling Unit) – Refers to a single apartment in a multi-family building.

WET SERVICE USE – is a condition where the porch structure is exposed to rain or snow. Lumber is said to be used under wet service conditions when the moisture content of the wood is above 19% for an extended period of time.

Wet service is of importance because the allowable stresses and capacity of wood members and their connections is reduced. In addition, the metal connectors and fasteners are exposed to conditions

that will cause accelerated corrosion and must be protected using a process such as Hot-Dip Galvanizing.

WOLMANIZED LUMBER (See Pressure-treated Lumber) – Is a trade name and it is used generically to refer to preservative treated lumber that is commonly used in porch and deck construction. (See Pressure Treated Lumber and Materials Section for further information.)

WYTHER – A single continuous vertical layer of brick in a wall. Solid brick walls typically consist of multiple layers or wythes to form one solid wall. For example, a 12 inch thick solid brick wall would be constructed of three wythes of brick.

The following is an overview of the materials most commonly used in the design and construction of porches and decks.

PORCH SUPERSTRUCTURE

Beams, Columns, Joists, Decking, Fasteners, & Connectors

WOOD MEMBERS: Wood is the most commonly used material for porch and deck construction. It is easily cut and drilled and it is durable, when properly protected. Other materials, such as structural steel or steel and wood, in combination, are also used for some larger porches and decks, but are beyond the scope of this Guide.

TYPICAL SOUTHERN PINE LUMBER GRADE MARKS

Quality Southern Pine lumber is graded in accordance with the grading rules of the Southern Pine Inspection Bureau (SPIB). SPIB, Timber Products Inspection, Inc., Renewable Resource Associates, Inc. (RRA) and other organizations* are accredited to inspect and grade mark Southern Pine lumber in accordance with SPIB grading rules.

1 Inspection Service: Southern Pine Inspection Bureau (SPIB)
2 Inspection Service: Timber Products Inspection, Inc. (TP)
3 Inspection Service: Renewable Resource Associates, Inc. (RRA)
4 Lumber Grade
5 Mill Identification Number
6 Lumber Species
7 (optional) Logo denoting a member mill of Southern Forest Products Association (SFPA)
8 Moisture Content (MC): Kiln-dried (KD) to a maximum of 19%
9 Heat Treated

*Note: Other agencies are accredited by ALSC to inspect and grade all or selected Southern Pine products according to SPIB Grading Rules, including: California Lumber Inspection Service (CLIS); Northeastern Lumber Manufacturers Association (NELMA); West Coast Lumber Inspection Bureau (WCLIB); and Western Wood Products Association (WWPA).

TYPICAL QUALITY MARK FOR TREATED LUMBER

1 Trademark of inspection agency accredited by American Lumber Standard Committee (ALSC)*
2 American Wood Protection Association (AWPA) Use Category
3 Preservative used for Treatment
4 Retention Level
5 Dry or KDAT, if applicable
6 Exposure Category
7 Treating Company & Location
8 Year of Treatment, if required

* Contact the Southern Pine Council for a listing of accredited inspection agencies.

The most commonly used species of wood for porch and deck construction in the Chicago area is Southern Pine. Other species of wood are available, but have lower strength properties than Southern Pine and, therefore, require a larger member for a given span or load.

The grain of Southern Pine is aesthetically appealing, especially when natural finishes and stains are used. It is also easily pressure treated

due to its unique cellular structure and does not require any type of perforation (incising) of the wood to accept chemical preservatives.

The term "Wolmanized" is a trade name for wood preservative treatment and is used by many as a generic reference to preservative treated wood. The preservative treatment is not simply surface applied, but is impregnated into the wood under pressure. Therefore, the term "pressure treated" can also refer to preservative treated wood.

Prior to 2003, the most common preservative treatment chemical was chromated copper arsenate, or "CCA". As of December 31, 2003 and due to new requirements of the EPA, the use of CCA for wood treatment for residential use was to be minimized or eliminated. Therefore, differing treatments are now being used. Two types of treatments, are alkaline copper quaternary (ACQ-C or ACQ-D) or copper azole (CA-B or CA-C). Other preservative treating chemicals are also available, but their suitability for porch and deck applications should be verified with the appropriate manufacturer or the American Wood Protection Association (AWPA). The AWPA creates standards regarding wood preservative treatment.

Treated lumber is marked or tagged with a label indicating the treatment process, the amount of chemical retention, the AWPA use category and the treating company. The preservative retention is the amount of chemical retained per cubic foot of wood. The use category describes the correct application for the treated wood product. For the lumber used in porch construction, the minimum use category would be UC3-B, Exterior Above Ground, Uncoated or Poor Water Runoff. Use Category, UC4-A, Ground Contact, General Use, may also be appropriate.

The quality and strength of the lumber is also marked on the wood. A grade stamp is applied to each piece of lumber indicating, the grading agency, type or species of wood, the grade of the wood, the drying process, the moisture content that the wood was dried to and the source of the material. The grading agency is to be accredited by the American Lumber Standard Committee (ALSC). In the case of Southern Pine, the inspection agency is typically the Southern Pine Inspection Bureau (SPIB). All lumber used for porch and deck construction in Chicago must have identifiable grade stamps on each piece.

The species and grade of the lumber relate directly to the strength of that member. Grades for Southern Pine are (from highest to lowest quality) Dense Select Structural, Select Structural, Non-Dense Select Structural, No. 1 Dense, No. 1, No. 1 Non-Dense, No. 2 Dense, No. 2, No. 2 Non-Dense, and No. 3 and Stud. Not all sizes of lumber are available in the same grades or range of grades. The grades listed in this design guide are No. 1 and No. 2.

Because of the corrosive nature of some preservative treatments and the severe exposure of porch structures, all fasteners used shall be stainless steel or shall have a hot-dipped galvanized coating. Aluminum should not be used in contact with preservative treated wood.

COMMON NAILS: Common nails are available in different thickness and lengths and are referred to as "# penny". The figure below shows



the common thickness or gage (D) and length (L). For example, a 16d "16 penny" nail has a gage thickness (D) of 8 and a length (L) of 3 1/2".

Stainless steel or hot-dipped galvanized nails will be used for attaching joist hangers, spiking wood members together, bridging, and securing other miscellaneous members. Nails shall conform to ASTM Standard F 1667. Use only common nails, exposed tips of nails shall be clinched.

DECK SCREWS: Deck screws are also designated by a number and length and similar to nails, the number refers to the thickness. Deck



screws are considered self-tapping and predrilling is typically not required. Deck screws (#8 size minimum) should be used to attach

decking members. The advantage of using deck screws over nails is that over time, the nails may pop up above the deck surface and will require continued maintenance. Screws should be driven flush with the top of the deck surface. Stainless steel or hot-dipped galvanized steel decking screws which are 2 ½" to 3 ½" long should be used to fasten the deck boards to the joists.

LAG BOLTS: Lag Bolts (also known as Lag Screws) are designated by diameter and length. For example, a ½" x 2 ½" bolt has a ½"



diameter and is 2 ½" long. Lag bolts have a hex head at one end and a coarse thread over much of their shaft length. They are, in essence,

large screws used to connect wood members together without the use of a nut. Lag bolts should be hot-dipped galvanized steel or stainless steel. Lag bolts must conform to ANSI/ASME Standard B18.2.1.

HEX BOLTS: Hex or machine bolts are designated by diameter and length. For example, a ½" x 2 ½" bolt has a ½" diameter and is 2 ½"







long. Hex bolts are used to connect wood members together by extending through all wood and/or steel members involved in the connection. Washers and a nut are used in conjunction with the bolt to secure the members together. Hex bolts should be

hot-dipped galvanized steel or stainless steel. Hex bolts must conform to ANSI/ASME Standard B18.2.1.

The following table is an excerpt from Appendix III of ANSI/ASTM B18.2.1, Square and Hex Bolt Screws.

ASTM AND SAE GRADE MARKINGS FOR STEEL BOLTS AND SCREWS

Grade Marking	Specification	Material
 No Mark	SAE – Grade 1	Low or Medium Carbon Steel
	ASTM – A307	Low Carbon Steel
	SAE – Grade 2	Low or Medium Carbon Steel
	SAE – Grade 5	Medium Carbon Steel, Quenched and Tempered
	ASTM – A449	
	SAE – Grade 5.2	Low Carbon Martensite Steel, Quenched and Tempered
	ASTM – A325 Type 1	Medium Carbon Steel, Quenched and Tempered Radial Dashes Optional

The lack of a mark on the head of the bolt does not mean that any bolt without a mark meets the strength requirements of ASTM A307 or SAE Grade 2 but rather that there are no identifying marks for those material specifications. The adequacy of bolts without identifying marks must be confirmed with the packaging and receipts.

CARRIAGE BOLTS: Carriage Bolts or bolts with a round head are also designated by diameter and length. Unlike lag bolts and hex bolts, they are not covered by ANSI/ASME Standard B18.2.1, Square and Hex Head Bolts. Carriage Bolts are also not referenced in the National Design Specification for Wood Construction (NDS), but are used for wood connections. At a minimum carriage bolts must conform to ASTM A307 Grade A. As with all fasteners, carriage bolts should be hot-dipped galvanized or stainless steel.

WOOD SCREWS: Wood screws are not the same as deck screws. Wood screws should be used where a reliable structural connection is required. Wood screws must conform to ANSI/ASTM Standard B18.6.1.

METAL CONNECTORS: Prefabricated metal connectors (or cold formed steel connectors) can be used to make connections between various components of the porch. Commonly used connectors are joist hangers and column bases. The connectors must be used in compliance with the manufacturer's recommendations and must be sized for the design load at the connection.

All metal connectors shall be either "continuous" hot-dip galvanized with a 1.85 ounce/square foot of zinc coating per ASTM Standard A653, or "batch"/"post" hot-dip galvanized with zinc per ASTM Standard A123 or A153, or stainless steel. Fasteners and connectors must be fabricated from like materials. In other words, hot-dip galvanized fasteners and connectors must be used together, and stainless steel fasteners and connectors must be used together.

STRUCTURAL STEEL: Structural Steel can be used for most any component of a porch. While structural steel porch structures are beyond the scope of this Guide, some structural steel is considered for connections. Where structural steel is used for rolled column and beams shapes it shall conform to ASTM Standard A992. Where structural steel is used for plates, channels and angles, it shall conform to ASTM Standard A36. Where structural steel consists of hollow structural sections it shall conform to ASTM Standard A500 Grade B. Bolts for connections shall conform to ASTM Standard A325.

The structural steel shall be fabricated and erected in conformance with the American Institute of Steel Construction, Inc. (AISC) Specification for Structural Steel Buildings. All structural steel shall be coated with a rust prohibitive primer with a minimum dry thickness of 3 mils.

FOUNDATIONS

Footings & Piers

CONCRETE: For porch construction, concrete will most likely be used for the foundations or slabs-on-grade such as sidewalks. The concrete is primarily comprised of Portland Cement and large and small aggregates such as crushed stone and sand. The proportions of the constituent materials of the concrete batch are very important for maximum strength and durability.

One of the components of the concrete, when it is being cast, is water. The water facilitates a "flowable" mix that is relatively easy to place into a form. More importantly, the water chemically reacts with the Portland Cement to form a paste that, when cured, binds the aggregates together. If the amount of water in the concrete mix is too high, the paste becomes diluted and the strength of the cast material can be

diminished. If the amount of water in the mix is too small or low, the chemical reaction of the Portland Cement will be insufficient and the strength of the concrete will again be diminished. For this reason, the amount of water in the concrete mix, when it is delivered in a ready-mix truck, should not be changed or increased. Similarly, if the source of the concrete is to be dry ready-mixed material delivered in bags, the amount of water added must be within the manufacturer's recommendations.

One of the consequences of an improper amount of water in the concrete mix is that the exposed surface of the slab or foundation may not be durable and may deteriorate, crumble or spall. A weak concrete surface can be caused by a lack of water during curing because of evaporation. The exposed surfaces of the concrete must be protected so that the water does not evaporate until the paste has reached sufficient strength. The protection should be left in place or maintained for no less than three days and preferably seven days.

Durable concrete is also obtained by adding microscopic air bubbles to the concrete mix. The bubbles allow for expansion of water within the concrete during freezing weather. The air bubbles are commonly referred to as air-entrainment. Typical recommended air entrainment is 4% to 6%. The air entrainment is created at the batching plant by the addition of an admixture.

One measure of the quality of the concrete is its compressive strength. Typically, a minimum compressive strength for concrete being used for foundations and slabs-on-grade is 3000 to 3500 pounds per square inch (psi). As the chemical reaction of the paste is time dependent and the concrete gains strength over time, the standard amount of time allowed for determining the design compressive strength is 28 days at approximately 70 degrees F. Therefore, the design strength of the concrete would be specified as $f'_c = 3500$ psi at 28 days. The time required for the concrete to cure is also temperature dependent. As the temperature decreases the concrete takes longer to cure or obtain its design strength. When the temperature drops below freezing, the concrete must also be protected from freezing.

When casting a footing, the entire volume must be filled with concrete in a continuous process. That is, the footing should not be partially filled with concrete and then the process stopped. If the footing is not complete filled in one continuous operation, cold joints will form. A cold joint is effectively a structural separation between portions of the footing. A cold joint may result in the footing breaking into sections under the load or weight of the porch.

When casting a footing, the contractor must also ensure that the concrete is well consolidated in the form. Concrete that is well consolidated does not have voids within the mass of the concrete or at the perimeter of the foundation. One method of consolidation is to vibrate the concrete with a vibrator.

CONCRETE REINFORCEMENT: Reinforcement steel or bars are incorporated into concrete structural elements, such as foundations, to provide greater strength. The quality of reinforcement steel is defined in the ASTM Standard A615. For use in porch foundations, Grade 60 steel should be used. If the reinforcement steel must be spliced, the overlap should be a minimum of 30 times the bar diameter (in inches).

EXTERIOR WALLS

Brick, Concrete Block, Mortar & Flashing

MASONRY: Masonry is a general term that refers to brick or concrete block materials used in wall construction. Masonry Units shall comply with applicable ASTM Standards. Mortar: Shall be ASTM C204 Type N, M or S, with $f'_m = 1,150$ psi. No Calcium chloride shall be used. In a

masonry building, the beam pocket construction will require masonry work.

FLASHING: Flashing is installed to prevent water from penetrating the exterior to the interior of the wall. Flashing can consist of a variety of materials. Most commonly, flashing consists of formed light gage metal or a membrane. The membrane can consist of self adhering asphaltic material or a specially formulated plastic. In porch construction, flashing is commonly installed in beam pockets and above ledger beams.

Flashing used for beam pockets in masonry construction or for ledger beams in frame construction can be stainless steel (28 GA., 0.015 inch minimum thickness, ASTM Standard A167, Type 304) or cold rolled copper (16 oz. minimum, 0.021 inch minimum thickness, ASTM Standard B370). The copper flashing is easier to work with, but will stain and discolor. The stainless steel is extremely durable, non-staining, but is more difficult to form than copper flashing. Attach flashing with fasteners that will not cause corrosion and lap flashing in a fashion that will not allow water penetration but will conduct water to the exterior.

THIS **P**AGE **L**EFT **I**NENTIONALLY **B**LANK

The following is an overview of the Chicago Building Code requirements that most frequently apply to the design and construction of porches and decks. For regulations that relate to all situations including uncommon or unique solutions refer to the current Chicago Building Code. The Chicago Building Code is accessible online, free of charge, at <http://www.amlegal.com/>.

GENERAL REQUIREMENTS

CHAPTER 15-8 FIRE-RESISTIVE REQUIREMENTS 7(15-8-320) PORCHES

A porch shall be defined as in Section 2(13-4-010) of this Code. Porches constructed of combustible materials shall be permitted when attached to residential units of Types III-B, III-C, IV-A or IV-B construction with the following limitations:

- (a) Porches shall not exceed three stories in height.
- (b) Porches shall not project more than ten feet from the building nor exceed 150 square feet in area per dwelling unit, exclusive of stairs.
- (c) Porches shall not be located less than six feet from an interior lot line, except that porches meeting requirements (a) and (b) of this section may be located as close as three feet from an interior lot line if the porch side walls are fire-rated at one hour or more.

Exceptions: (1) Pre-ordinance porches (erected prior to January 20, 1950) not exceeding four stories in height and erected less than six feet from an interior lot line may be replaced with respect to height, size and location, subject to approval of the building commissioner. (2) New unenclosed front porches on new or existing buildings shall be permitted to be erected not less than three feet from an interior lot line if all of the following requirements are met: (i) the porch does not exceed one story in height; and (ii) the porch fronts entirely on a street; and (iii) the porch does not project more than ten feet from the building nor exceed 200 square feet in floor area, exclusive of stairs.

CHAPTER 15-8 FIRE-RESISTIVE REQUIREMENTS 7(15-8-321) DECKS

A deck shall be defined as an open, unroofed floor structure used in conjunction with a principal building or installed on the roof of a building. A deck other than a rooftop deck may be classified as attached or detached depending on its relationship to the principal building. An unprotected wood deck shall be located not closer than six feet to an interior lot line, except that:

- (a) An attached unprotected wood deck may be located not closer than three feet from an interior lot line provided the deck does not exceed 400 square feet in area, is separated by not less than six feet from another structure on the same lot and the deck has been provided with a lattice or wire mesh skirting if the deck has clearance of less than five feet under supports;
- (b) If the attached deck is laid directly on the ground without any air spaces under individual boards, it may be carried up to the lot line;
- (c) If an attached rooftop wood deck is protected by a two-hour noncombustible parapet wall at least three feet high and the aggregate area of a wood deck not meeting Class A Roof Covering requirements does not exceed 33 percent of the total roof area, then the deck may be run to the face of the parapet wall;
- (d) The 400 square foot limitation shall not apply when the deck is at least six feet from the interior lot line.

CHAPTER 15-8 FIRE-RESISTIVE REQUIREMENTS 7(15-8-323) WEATHER-PROTECTED ENTRIES

A weather-protected entry shall be defined as a covered unheated structure attached to a building at the building entrance to facilitate ingress and egress. A weather-protected entry of unprotected wood frame construction shall be located at least six feet from an interior lot line, except that if the weather-protected entry is not larger than 50 square feet and is separated from another building on the same lot by not less than six feet, the entry may be located as close as one foot from an interior lot line.

CHAPTER 13-200 REHABILITATION CODE 34(13-200-260) PORCHES AND DECKS

Existing porches and decks may be repaired or replaced in the same location with construction of the same type as that of the existing porch or deck.

- (1) Existing porches not exceeding three stories in height may be extended up one story to the roof level regardless of their location with respect to the lot line or other buildings on the same lot, if in conformance with the zoning ordinance.
- (2) Existing porches may be enclosed, regardless of their location with respect to the lot line or other buildings on the same lot, if construction requirements of Chapter 6(13-60) are met. If the existing porch is less than six feet from an interior lot line, the enclosure shall be a minimum of one hour rated construction, if in conformance with the zoning ordinance.
- (3) Replacement porches shall be designed to meet all load criteria for new construction.

CHAPTER 13-196 EXISTING BUILDINGS MIN. REQUIREMENTS 34(13-196-570) STAIRWAYS AND PORCHES – MAINTENANCE

Every stairway, inside or outside of the dwelling and every porch shall be kept in safe condition and sound repair and:

- (a) Every flight of stairs and every porch floor shall be free of holes, grooves, and cracks, which are large enough to constitute possible accidents hazards.
- (b) Every stairwell and every flight of stairs, which is more than two risers high, shall have rails not less than two and one-half feet high, measured vertically from the nose of the tread to the top of the rail; and every porch which is more than two risers high shall have rails not less than three and one-half feet above the floor of the porch.
- (c) Every rail and balustrade is firmly fastened and is maintained in good condition.
- (d) No flight of stairs shall have settled more than one inch out of its intended position or have pulled away from supporting or adjacent structures.
- (e) No flight of stairs shall have rotting, loose or deteriorating supports.
- (f) The riser height and the tread width of each flight of stairs shall be uniform.
- (g) Every stair tread shall be sound and be securely fastened in a substantially level position.
- (h) Every stair tread shall be strong enough to bear a concentrated load of at least 400 pounds without danger of breaking.
- (i) Every porch shall have a sound floor.
- (j) No porch shall have rotting, loose or deteriorating supports.

FOUNDATIONS

CHAPTER 13-132 FOUNDATIONS

18(13-132-080) FOOTINGS - REQUIREMENTS

Footings shall be provided under walls, piers or columns where required to distribute their loads in accordance with the allowable bearing values of the supporting soils as provided in Section 18(13-132-020). Footings shall comply with the provisions of Sections 18(13-132-090) to 18(13-132-110), inclusive.

CHAPTER 13-132 FOUNDATIONS

18(13-132-090) FOOTINGS - PROPORTION

Footings shall be so proportioned as to insure a minimum of unequal settlement.

CHAPTER 13-132 FOUNDATIONS

18(13-132-100) FOOTINGS – DEPTH REQUIREMENTS

All footings shall be carried to a depth of at least three feet six inches below the adjoining ground surface, except that a reinforced concrete slab foundation extending over the entire area below a one- story building shall be permitted at a lesser depth below the adjoining ground surface when so designed as to eliminate structural damage from frost action.

CHAPTER 13-132 FOUNDATIONS

18(13-132-110) FOOTINGS - CONSTRUCTION

(a) *General.* Footings shall be constructed of solid masonry or concrete with or without reinforcement and shall be so designed that stresses in the material used shall not exceed the maximum allowable stresses required in the following chapters of this Code.

- (1) Reinforced concrete footings, Chapter 19(13-136)
- (2) Plain concrete footings, Chapters 19(13-136) and 19(13-140)
- (3) Masonry footings, Chapter 21(13-140)

(b) *Masonry Footings.* Footings constructed of solid masonry units shall have a depth at least twice the total projection beyond the wall or column base. When brick work in foundation walls is stepped to form a footing, the maximum offset for each course shall be one and one-half inches.

(c) (See Entire Code for Details.)

WOOD CONSTRUCTION

CHAPTER 13-144 WOOD CONSTRUCTION

23(13-144-010) GENERAL

(a) The meanings of abbreviations used in this chapter are listed in Section 17(13-12-070)(j).

(b) All structural wood members and their connections shall be of sufficient size or capacity to carry all design loads without exceeding the allowable design values specified in the American Forest and Paper Association's (formerly National Forest Product Association) National Design Specification for Wood Construction (ANSI/NFPA NDS-91) referenced in Chapter 17(13-120).

(c) Wood construction shall also comply with the standards listed in Section 17(13-120-070)(a) and (c).

CHAPTER 13-144 WOOD CONSTRUCTION

23(13-144-020) MATERIAL

All lumber used for load supporting purposes, including edge-jointed or edge-glued lumber, shall be identified by the grade stamp of an approved lumber grading agency or an approved lumber inspection agency certified by the American Lumber Standards Committee and acceptable to the building commissioner. In lieu of a grade stamp on the material, a certificate of inspection as to material and grade shall be acceptable for precut, remanufactured or rough-sawn lumber and for sizes larger than three inches nominal thickness and such certificate of inspection shall be issued by a lumber grading agency or a lumber inspection agency approved by the American Lumber Standards Committee.

CHAPTER 13-144 WOOD CONSTRUCTION

23(13-144-040) PLYWOOD AND STRUCTURAL USE PANELS

All plywood and structural use panels used structurally shall meet the performance standards and all other requirements of United States Product Standard PSI 1-83 for Construction and Industrial Plywood, the APA Performance Standards and Policies for Structural Use Panels PRP 108-88, or the American National Standard for Hardwood and Decorative Plywood ANSI/HPMA HP-83. For the type, grade and span ratings or species group of plywood involved and shall be so identified by an approved agency. Allowable working stresses and design properties shall conform to the APA Plywood Design Specification PDS-86, or the HPMA Structural Design Guide for Hardwood Plywood H.P.-S.G.-86, or the HPMA Structural Design Guide for Hardwood Plywood H.P.-S.G.-86.

CHAPTER 13-144 WOOD CONSTRUCTION

23(13-144-070) TREATED WOOD

(a) *Decay.* All wood used in conditions conducive to decay shall be either a naturally durable species or pressure-preservative treated wood and where permitted for use as a structural element, design values for untreated lumber shall apply. Pressure-preservative treated wood including plywood shall meet the retention, penetration and other requirements applicable to the species, product, treatment and conditions of use detailed in AWPA P1-91, C2-91, C3-92, C4-92, C9-90, C22-91 and C24-86. Preservatives shall conform to AWPA P1-91, P2-90, P5-91, P8-91 and P9-91. All piles, poles, lumber and plywood which are required to be pressure-preservative treated shall bear the quality mark of an approved inspection agency which maintains continuing supervision, testing and inspection over the quality of the product. Quality control inspection agencies for pressure-preservative treated wood shall be accredited as to competency and performance by the American Lumber Standards Committee or its equivalent and shall be acceptable to the building commissioner. Said mark shall include the following information in legible format: identification of the inspection agency; identification of the treating plant; and the purposes for which the product was treated.

(b) *Fire-Retardant Wood.* This is *lumber* and plywood as defined in Subsection 7(15-12-040)(f) and shall comply with the requirements of that subsection. When permitted for use as a structural element, design values for untreated lumber shall be adjusted for lumber that is pressure impregnated with fire-retardant chemicals. Adjustments to the design values shall be based upon an approved method of investigation which takes into consideration the effects of the anticipated temperature and humidity to which the fire-retardant treated wood will be subjected, the type of treatment and re-drying procedure. The material shall bear the quality mark of an approved agency having a re- examination service, and such quality mark shall show the performance rating of the material. Fire-retardant treated wood shall be dried before use to a moisture content of 19 percent or less for lumber and 15 percent or less for plywood.

DESIGN LOADS

CHAPTER 13-52 MINIMUM DESIGN LOADS

16(13-52-080) DEAD LOADS

Dead loads comprise the weight of all permanent construction, including walls, floors, roofs, ceilings, stairways and fixed service equipment, plus the net effect of prestressing.

(a) *Weight of Materials and Constructions.* In estimating dead loads for purposes of design, the actual weights of materials and constructions shall be used, provided that in the absence of definite information, values satisfactory to the building commissioner are assumed.

(b) American National Standard. Minimum Design Loads for Buildings and other structures, A.N.S.I. A58.1 – 1982, Appendix Tables A1 and A2, may be referenced for information on dead loads.

(c) (See Entire Code for Details.)

CHAPTER 13-52 MINIMUM DESIGN LOADS

16(13-52-090) LIVE LOADS

Live loads are those produced by the use and occupancy of the building or other structure and do not include environmental loads such as wind load, snow load, rain load, or dead load.

(a) *Required Live Loads.* The live loads assumed in the design of buildings and other structures shall be the maximum loads likely to be produced by the intended use or occupancy but shall in no case be less than the minimum uniformly distributed unit loads required by Table 16(13-52-090) set out in this section, reduced as appropriate in accordance with Section 16(13-52-210), or the concentrated loads required by Table 16(13-52-130) as set out in Section 16(13-52-130).

CHAPTER 13-52 MINIMUM DESIGN LOADS

TABLE: 16(13-52-090) MINIMUM UNIFORMLY DISTRIBUTED FLOOR LIVE LOADS

OCCUPANCY: (Lbs. per square foot)

A. Residential Units

(a) thru (d) (See Entire Code for Details.)

(e) Public Stairways 100 Lbs. per square foot

(f) Balconies (exterior) 100 Lbs. per square foot

(g) Porches 100 Lbs. per square foot

(h) Decks 100 Lbs. per square foot

CHAPTER 13-52 MINIMUM DESIGN LOADS

16(13-52-100) THRUSTS ON HANDRAILS AND GUARDS.

Stairway, porch, deck and balcony railing, both exterior and interior, shall be designed to resist a simultaneous vertical and horizontal thrust of 50 lbs./ft. (pounds-force, per linear foot) applied at the top of the railing or a concentrated load of 200 lbs./ft. in any direction, whichever produces the greatest stress. For one- and two-family dwelling units, a thrust of 20 lbs./ft. may be used instead of 50 lbs./ft. for interior stair balusters or wall-mounted interior handrails only.

EXIT REQUIREMENTS & STAIR CONSTRUCTION

CHAPTER 13-64 RESIDENTIAL UNITS

3(13-64-090) STAIRWAYS

Stairways serving second floors in Class A-1 buildings shall be interior stairways.

CHAPTER 13-160 EXIT REQUIREMENTS

10(13-160-040) EXIT TYPES – ABOVE OR BELOW GRADE.

Exits from a story above or below grade shall consist of interior stairways except as otherwise required in this section.

(a) thru (c) (See Entire Code for Details.)

(d) *Exterior Stairways.* Exterior stairways may be used in lieu of not more than 50 percent of the required interior stairways; provided, however, that the vertical distance from grade to the highest floor served by an exterior stairway shall not exceed 30 feet.

(e) thru (h) (See Entire Code for Details.)

CHAPTER 13-160 EXIT REQUIREMENTS

10(13-160-050) MINIMUM NUMBER OF EXITS

There shall be not less than two exits from every building, floor, space or room, except that one exit may be permitted from any room or space under the conditions outlined in subsection (a) through (b) of this section; and one exit may be permitted from a floor under the conditions outlined in subsections (c) through (o) of this section.

(a) In all occupancies except hazardous use units, one exit shall be permitted from any room or space designed or used for an occupancy of not more than 50 persons and having an area not exceeding 1,200 square feet; or when used for business, mercantile, industrial and storage uses not exceeding 4,000 square feet provided the travel distance from the exit door to the most remote point in the room or space does not exceed 75 feet, or 115 feet if equipped throughout with a standard automatic sprinkler system as defined in Chapter 15-16 of this Code.

(b) In all occupancies one exit shall be permitted from any room or space having an area not exceeding 2,000 square feet and used exclusively for storage purposes with only incidental human occupancy.

(c) In single-family dwellings and townhouses, one exit shall be permitted from any floor not more than one story above or below grade; provided that the area of such floor shall not exceed 1,500 square feet.

(d) In multiple dwellings, one exit serving one family only shall be permitted from the first or second story, and one exit shall be permitted from a basement space provided that the area of such floor or basement shall not exceed 800 square feet.

(e) thru (l) (See Entire Code for Details.)

(m) In multiple and single-family dwellings of any construction type not over three stories in height, units having an area not over 1,500 square feet on the third floor and at least one interior stair serving exclusively that unit, leading from the third floor to an exterior exit, may substitute for the second exit from the third floor of one of the following means of escape:

(1) A continuous exterior deck linking three or more units at the third floor level, with at least one hinged glazed door from each unit to the deck, provided such door has a glass light immediately above the lock rail, made of one or more panes of glass not thicker than double-strength glass, and the edge of the glass light is not further than nine inches from any locking devices in the door.

(2) A stair from each unit leading to the building roof through a penthouse and hinged door, provided the building consists of at least

three units and each hinged penthouse door contains a glass light constructed as in paragraph (1) above. In the event that roof decks are provided for more than one-third of the units, an exterior stair or protected interior stair shall be provided from the roof to grade.

(3) An approved automatic sprinkler system complying with one of the following National Fire Prevention Association Standards:

N.F.P.A. 13, 1994 Edition; N.F.P.A. 13R, 1991 Edition; or N.F.P.A. 13D, 1991 Edition.

(n) In townhouse dwellings of IIB construction or better up to four stories in height, units having an area not over 1,500 square feet on the highest story and having at least one interior stair serving exclusively that unit and leading from the highest story to an exterior exit, may substitute for the second exit required from the third or fourth stories a continuous exterior deck linking three or more units at the highest story, provided that:

(1) a clear unobstructed 3 foot wide path is reserved for egress to a stair leading directly to an outside exit at grade

(2) each habitable room on the third and fourth floor is provided with at least one outside window having a sill height not higher than 44 inches above the finished floor and an operable sash with a clear opening of not less than 24 inches horizontally or 36 inches vertically and a minimum area of six square feet; and

(3) all bedrooms are provided with 1 3/4 inch thick solid core doors and with solid 1 3/4 inch rabbetted door jambs.

(o) In single-family dwellings and in two-unit multi-family dwellings not over three stories, the second exit from the third floor of a unit may be waived if:

(1) the third floor area of that unit is not over 800 square feet;

(2) in addition to the interior stair, a second exit is provided from the second floor to an exterior porch or deck leading to finish grade;

(3) said porch or deck is not higher than 12 feet above finish grade;

(4) each habitable room on the third floor is provided with at least one outside operable window having a sill height not higher than 44 inches above the finished floor and a minimum clear opening of either 24 inches horizontally or 36 inches vertically, and a minimum area of six square feet;

(5) all bedrooms are provided with 1 3/4 inch thick solid core doors and with 1 3/4 solid inch rabbetted door jambs;

(6) either the interior stair termination at the third floor is enclosed with a solid core door set in solid wood jambs as described in subsection (o)(5) of this section, or a balcony is provided at the third level with a minimum depth of three feet perpendicular to the exterior building wall.

CHAPTER 13-160 EXIT REQUIREMENTS 10(13-160-200) MEASUREMENT OF WIDTH

(a) The width of doors shall be taken as the nominal width of the door leaf. The reduction of clear width of doorway opening resulting from door stops and thickness of door leaf when open shall not exceed two inches for each unit of exit width.

(b) The width of stairs shall be the clear width between walls, railings or newel posts. Handrails may project not more than four inches on each side into the required width. When doors open onto a stair landing, 75 percent of the required exit width shall be maintained beyond the edge of such door when opened in any position

(c) The width of corridors shall be the clear, unobstructed width. Doors opening into a required exit corridor shall not restrict the required width when opened in any position.

CHAPTER 13-160 EXIT REQUIREMENTS 10(13-160-220) MINIMUM WIDTH OF EXITS

The width of required exits shall comply with the requirements of Section 10(13-160-210) as to capacity, but in no case shall such width be less than the minimum widths required in this section.

(a) *Doors.* All doors required as exits shall be not less than 36 inches wide with the following exceptions:

(1) (See Entire Code for Details.)

(2) In residential units, exit doors serving only one dwelling unit shall be not less than 32 inches in width.

(3) thru (9) (See Entire Code for Details.)

(b) *Stairs and Corridors.* All stairs and corridors required as exits shall be not less than 44 inches in width with the following exceptions

(1) In all occupancies except nursing homes, hospitals and sheltered care facilities, stairs and corridors in buildings with a total occupancy of 50 persons or less above the grade level, as defined in Section 13-4-010, shall not be less than 36 inches wide.

(2) Within single-family (A1) and multiple dwelling (A2) residential units, stairs and corridors serving only one dwelling unit shall be not less than 36 inches in width.

(c) thru (e) (See Entire Code for Details.)

CHAPTER 13-160 EXIT REQUIREMENTS 10(13-160-230) OUTSIDE EXITS

(a) All outside exits at grade floor level shall lead to a public way directly or by way of a yard, court or fire-resistive passageway enclosed with walls, floors and ceiling providing fire-resistance of not less than two hours. The width of such yards, courts or passageways shall be not less than the width of any exit leading thereto. When a yard, court or passageway serves more than one exit, the width shall be increased cumulatively in the direction of exit travel.

(b) Where the grade floor is not more than six feet above the ground level outside the building access from an outside exit to a public way, yard or court may be by way of an outside platform having a dimension in the direction of travel of not less than four feet and connecting to grade level with outside steps having treads, risers and railings, required in Section 10(13-160-290). In determining requirements for outside exits, terraces extending not less than 20 feet from a building wall may be considered as constituting grade.

CHAPTER 13-160 EXIT REQUIREMENTS 10(13-160-300) STAIRWAYS - TREADS AND RISERS

(a) (See Entire Code for Details.)

(b) In occupancies other than institutional and assembly units the maximum height of a riser shall be eight inches, and the minimum width of a tread, exclusive of nosing, shall be nine inches. The width of a tread, including nosing, shall be not less than ten inches.

(c) The height of two risers plus the width of one tread shall equal not less than 24 inches or more than 27 inches.

(d) Winders shall not be permitted in stairs required as exits except in single-family and two-family dwellings. The width of a tread of a winder measured at a distance of 18 inches from the inside railing shall be not

less than nine inches nor less than the treads of the flight below or above the winding section.

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-310) STAIRWAYS - LANDINGS**

(a) The maximum vertical rise of a flight between floors, between landings or between a floor and a landing shall not exceed nine feet in assembly units nor 12 feet in all other occupancies.

(b) The length of a landing in the direction of travel shall be not less than the width of the stairs, but need not exceed four feet in a stair of any width.

(c) Except in single-family and two-family dwellings, no flight shall have less than two risers.

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-320) STAIRWAYS - HANDRAILS**

(a) All stairways shall have walls, railings or guards on both sides and shall have handrails on both sides except as follows:

(1) Stairs less than 44 inches wide may have a handrail on one side only.

(2) Intermediate handrails, continuous between landings, shall be provided where required to provide a lateral distance between handrails not exceeding 88 inches.

(b) thru (c) (See Entire Code for Details.)

The height to the top of handrails shall be two feet, ten inches to three feet, two inches above the floor and shall return to the wall.

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-330) STAIRWAYS - CONSTRUCTION**

Stairs, other than those in single-family and two-family dwellings or serving only one dwelling unit in a multiple dwelling, shall comply with the following construction requirements:

(a) Stairs shall be constructed entirely of noncombustible materials in the following buildings:

(1) Buildings of Types I-A, I-B, I-C and II construction;

(2) Buildings of institutional and assembly units except churches;

(3) Buildings of all occupancies four stories or more in height or having an occupancy content of more than 40 persons above or below the grade floor level.

(b) and (c) (See Entire Code for Details.)

(d) The finished surface of treads and landings shall be of materials which will not cause danger of slipping.

(e) No closet or storage space shall be located beneath stairs.

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-340) STAIRWAYS - ENCLOSURES**

Enclosures of stairways shall comply with the requirements of Section 7(15-8-140)

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-350) STAIRWAYS - HEADROOM**

In residential units, stairways serving not more than two dwelling units shall have clear headroom of not less than six feet eight inches. In all other occupancies the clear headroom shall be not less than seven feet.

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-580) EXTERIOR STAIRS**

Exterior stairs required as a means of exit shall comply with all applicable requirements for interior stairs and with the provisions of Sections 10(13-160-590) to 10(13-160-620), inclusive.

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-590) EXTERIOR STAIRS - TREADS AND RISERS**

Solid risers shall not be required. Treads and landings shall be solid except for openings required for drainage.

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-600) EXTERIOR STAIRS - OPENING PROTECTIVE**

Except in residential units, all openings within 15 feet of an exterior stair shall be protected with fire doors, windows or shutters complying with the requirements of Section 7(15-8-070).

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-610) EXTERIOR STAIRS - PERMANENT**

Exterior stairs shall be built permanently to the ground without counter-balanced or movable sections.

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-620) EXTERIOR STAIRS - CONSTRUCTION**

Exterior stairs shall be constructed entirely of non-combustible materials in the following buildings:

(a) Buildings of Types I-A, I-B, I-C and II construction;

(b) (See Entire Code for Details.)

**CHAPTER 13-160 EXIT REQUIREMENTS
10(13-160-660) EXIT LIGHTING**

All exit areas shall be adequately lighted by electricity. Except in single-family and two-family dwellings, such lighting shall be continuous during the time that conditions of occupancy require that the exit ways be open or available and the intensity of lighting required in Section 10(13-160-670) is not provided by means of natural light. Emergency exit lighting shall be provided in intermediate care facilities for the developmentally disabled – 15 or less.

**CHAPTER 13-124 SAFEGUARDS DURING CONSTRUCTION -
BUILDING SAFETY REQUIREMENTS**

33(13-124-310) GUARDS – REQUIRED

Guards to prevent persons from falling shall be provided as required in Sections 33(13-124-320) and 33(13-124-330), inclusive.

**CHAPTER 13-124 SAFEGUARDS DURING CONSTRUCTION -
BUILDING SAFETY REQUIREMENTS
33(13-124-320) GUARDS – REQUIRED – WHERE**

Guards shall be required at every point of danger including the following:

(a) At all edges of every floor, balcony, mezzanine or other space used or intended for human occupancy which is at a height of more than two feet above the floor, ground or pavement directly below, except that loading platforms and similar uses need not be equipped with guards;

(b) At all windows or doorways having a sill two feet or less above the floor of a room or space, unless such window or doorway opens directly upon the ground, pavement or guarded space, the level of

which is less than two feet below the sill of such opening or unless the construction of the window serves the same purpose;

(c) At all sides of every open areaway exceeding three feet in depth except the side providing access to a stairway.

**CHAPTER 13-124 SAFEGUARDS DURING CONSTRUCTION -
BUILDING SAFETY REQUIREMENTS
13-124-330 GUARDS – TYPES**

Guards may be formed by walls, balustrades, grills or railings not less than three feet, six inches in height, by area gratings or by other approved devices.

Exception: For single-family and two-family dwellings, and within individual dwelling units in other Class A-2 occupancies which are primarily permanent in nature, guards whose top rail also serves as a handrail shall have a height of not less than 34 inches and not more than 38 inches, measured vertically from the leading edge of the stair tread nosing.

**CHAPTER 13-124 SAFEGUARDS DURING CONSTRUCTION -
BUILDING SAFETY REQUIREMENTS**

13-124-335 OPENINGS IN GUARDS

Open guards shall have balusters or ornamental patterns such that a four-inch-diameter sphere cannot pass through any opening up to a height of 34 inches. From a height of 34 inches to 42 inches above the adjacent walking surfaces, a sphere eight inches in diameter shall not pass.

Exceptions:

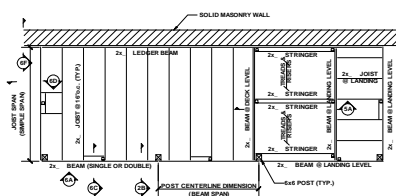
1. The triangular openings formed by the riser, tread and bottom rail at the open side of a stairway shall be of a maximum size such that a sphere of six inches in diameter cannot pass through the opening.
2. At elevated walking surfaces for access to and use of electrical, mechanical or plumbing systems or equipment, guards shall have balusters or be of solid materials such that a sphere with a diameter of 21 inches cannot pass through any opening.
3. In Class G, H-1, H-2 and I occupancies and in Residential Restrained Care Facilities in Class B occupancies, balusters, horizontal intermediate rails or other construction shall not permit a sphere with a diameter of 21 inches to pass through any opening.
4. (See Entire Code for Details.)

Guards shall not have an ornamental pattern that would provide a ladder effect.

INTRODUCTION

This section includes framing plan, section and detail drawings of wood porches and decks. These drawings illustrate several methods of porch, deck and stair design and construction. Also included are tributary width and area diagrams for use with the load tables of Section E.

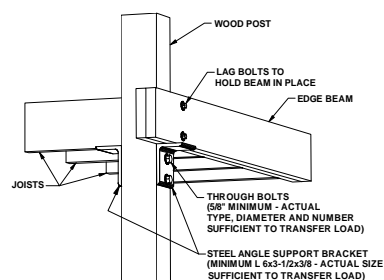
SECTION D1: EXAMPLE FRAMING PLANS & BRACING ELEVATIONS



Several example framing plans have been provided to illustrate a few configurations. As there are innumerable porch configurations in the City of Chicago, these examples are provided for purposes of illustration only.

PAGE 17

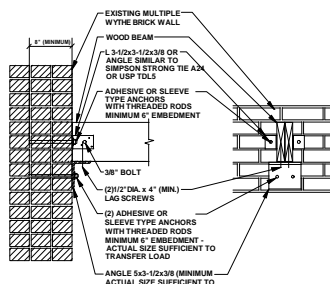
SECTION D2: COLUMN CONNECTION DETAILS



Several example beam-column connection details have been provided. The applicability of any detail must be made with consideration of the actual porch configuration and required load transfer.

PAGE 25

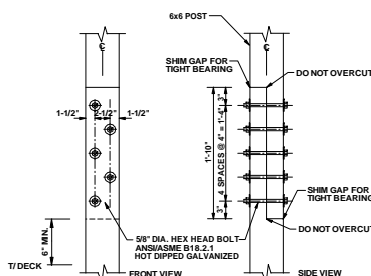
SECTION D3: WALL CONNECTION DETAILS



Beam-wall connection details have been provided. The applicability of any detail must be made with consideration of the beam size and wall construction, as well as the required load transfer.

PAGE 29

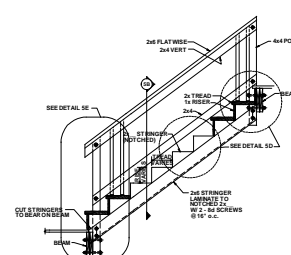
SECTION D4: POST SPLICE DETAILS



Two column splice details have been provided. As with any of the details provided in these drawings, other methods of column splices may be used and not every detail is applicable to every porch.

PAGE 34

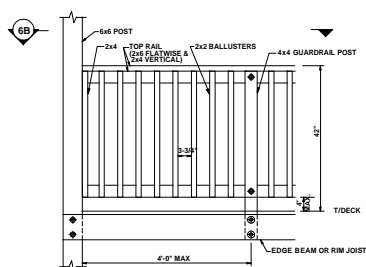
SECTION D5: STAIR DETAILS



Stair framing details have been provided where the connection of the stringers and handrails are made using 4x4's. Other connection details may be more appropriate depending upon the overall porch framing.

PAGE 36

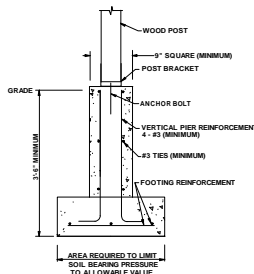
SECTION D6: GUARDRAIL DETAILS



Guardrail framing and connection details have been provided. In general, the details include the use of dimension lumber and bolts. Specialty connectors are used only at the intermediate post-deck connections.

PAGE 42

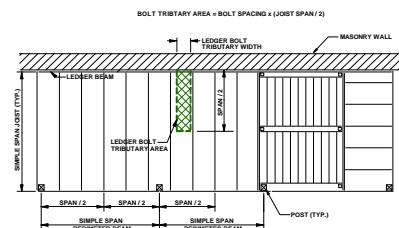
SECTION D7: FOOTING DETAILS



A square footing and pier detail has been provided, in addition to a circular one piece foundation. Details of walls and other types of foundations have not been provided, but may be appropriate.

PAGE 48

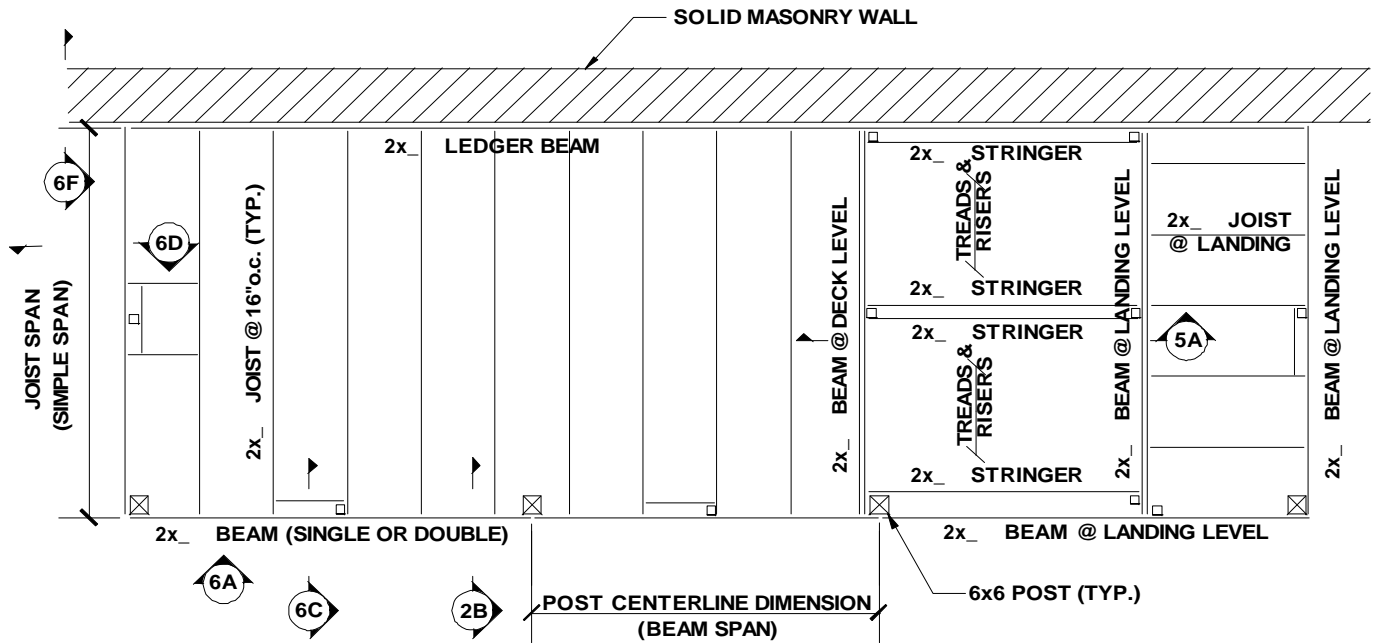
SECTION D8: TRIBUTARY AREA DIAGRAMS



The Tributary Area Diagrams are a graphical representation of physical area of the deck that is supported by various components. The diagrams are intended for use with the load tables of Section E.

PAGE 51

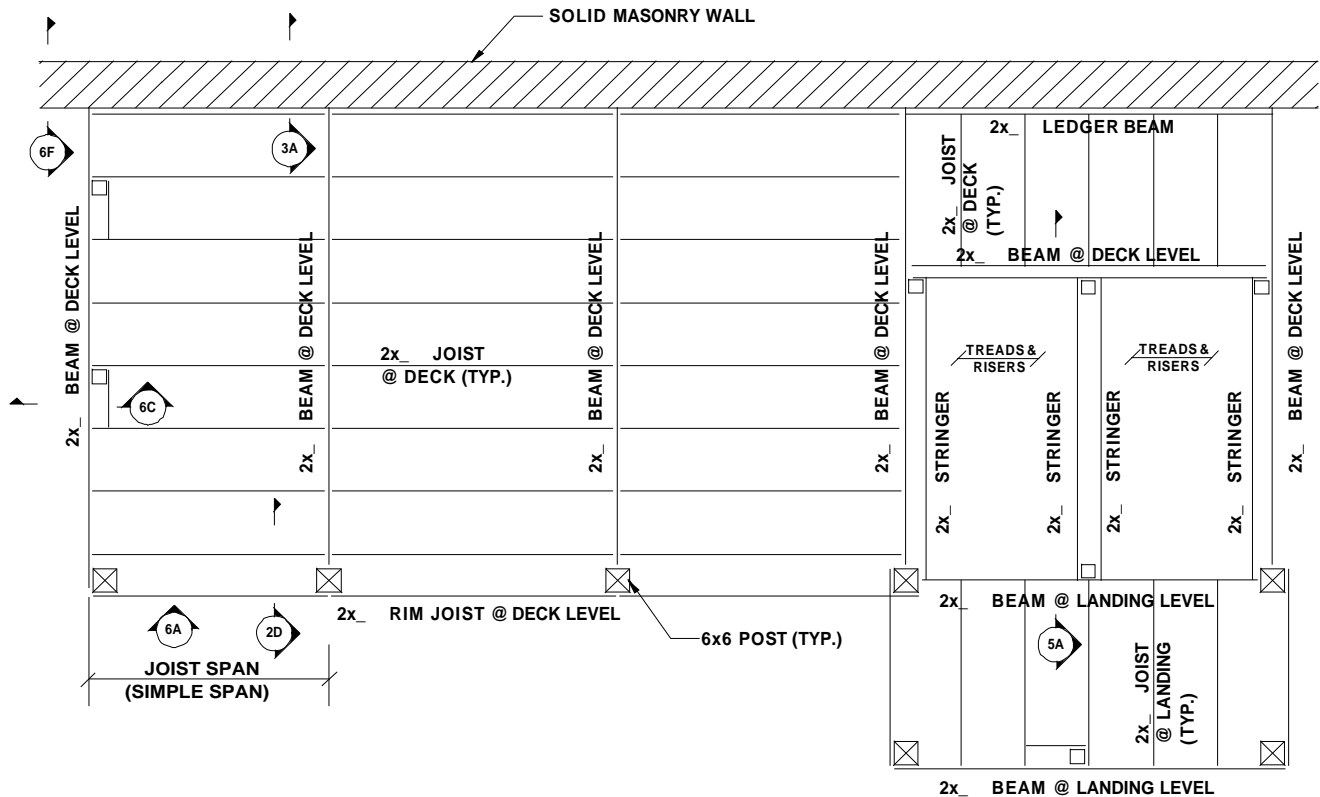
THIS PAGE LEFT INTENTIONALLY BLANK



1A

PLAN – JOISTS PERPENDICULAR MASONRY TO WALL

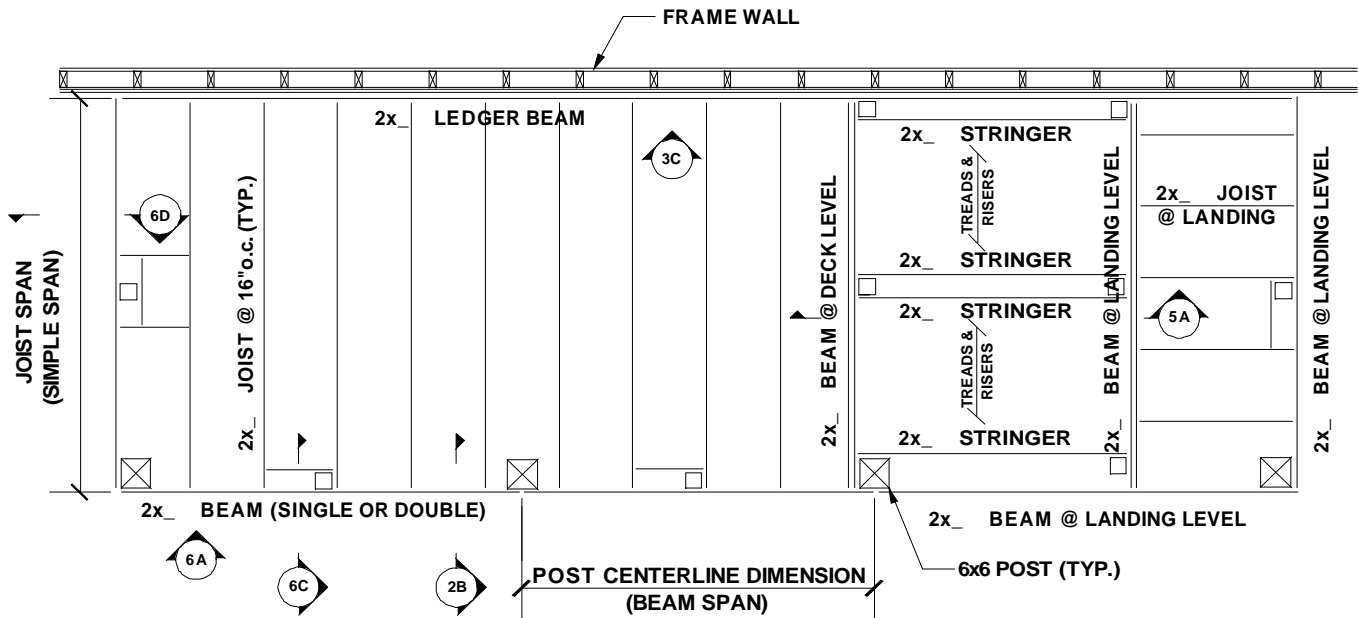
SCALE: NONE



1B

PLAN – JOISTS PARALLEL TO MASONRY WALL

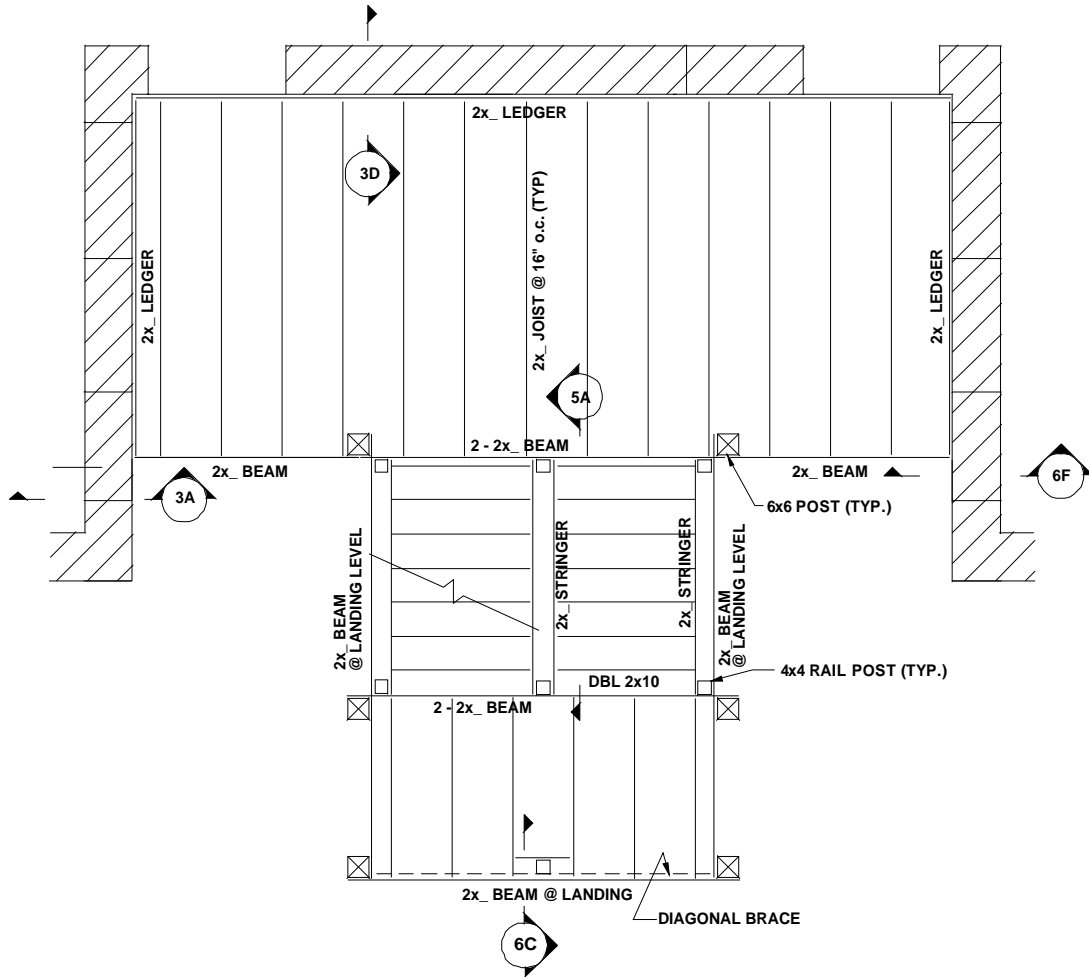
SCALE: NONE



1C

PLAN – JOISTS PERPENDICULAR TO WOOD STUD WALL

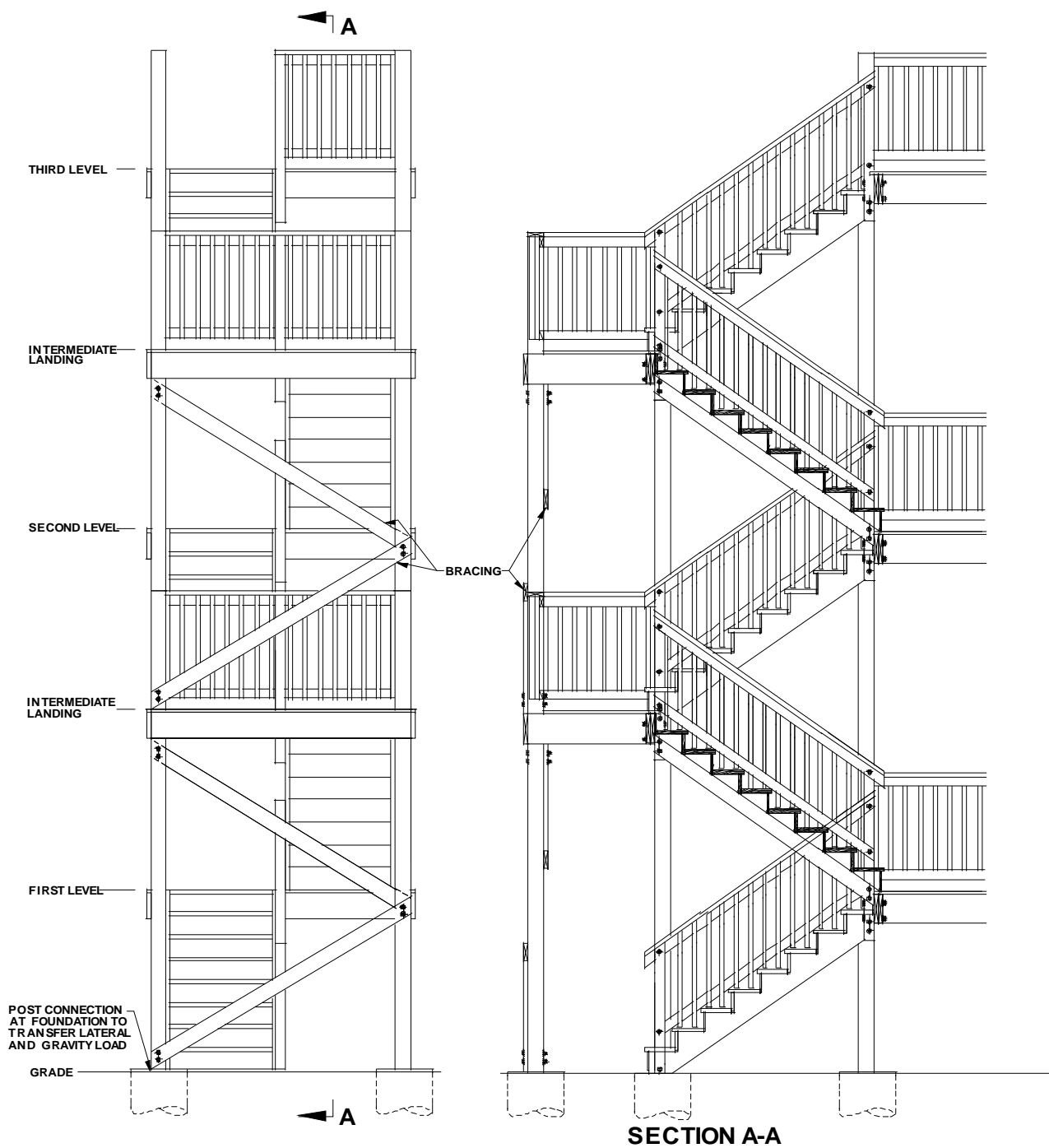
SCALE: NONE



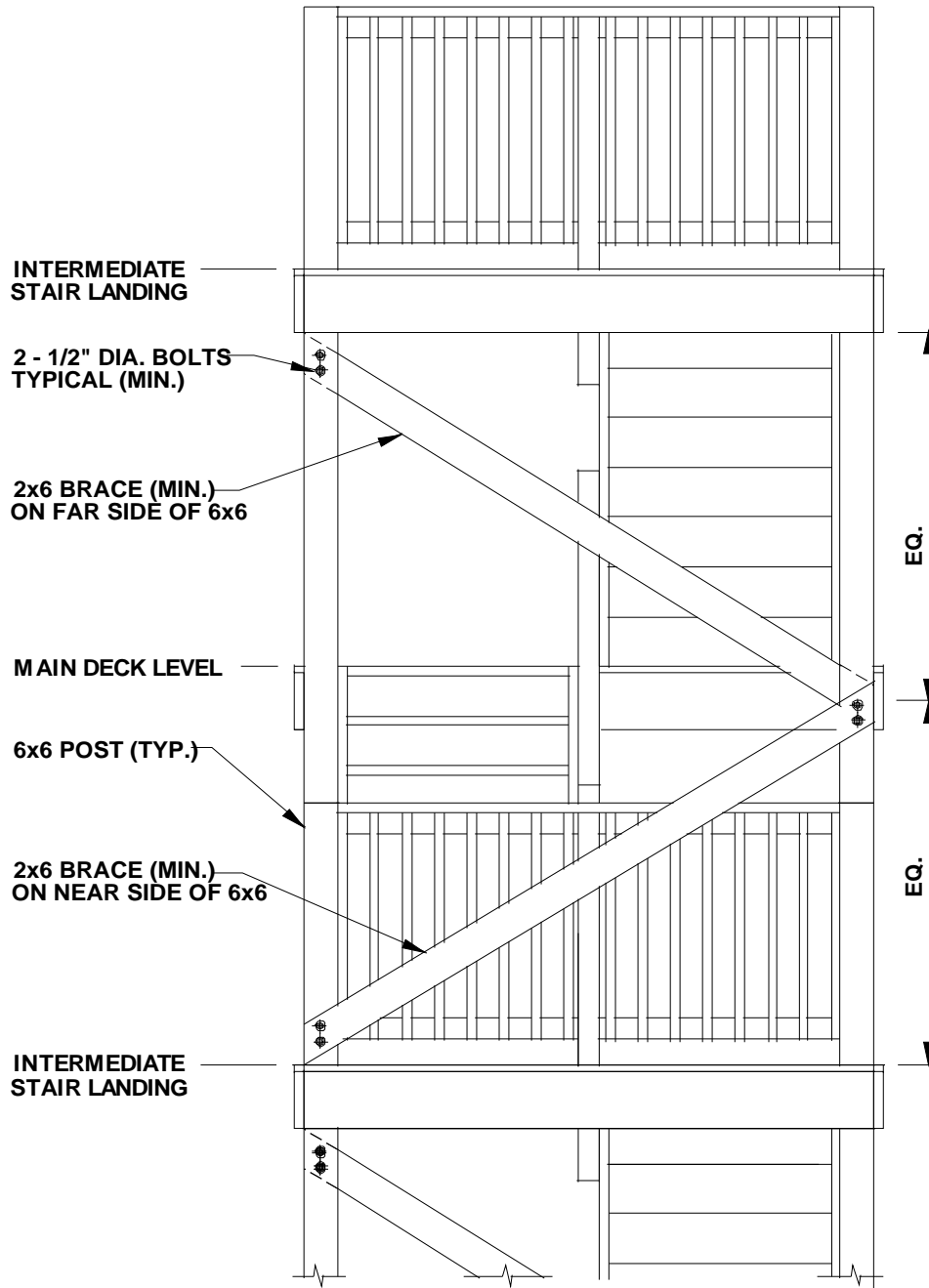
1D

PLAN – FREE STANDING STAIR @ MASONRY WALL

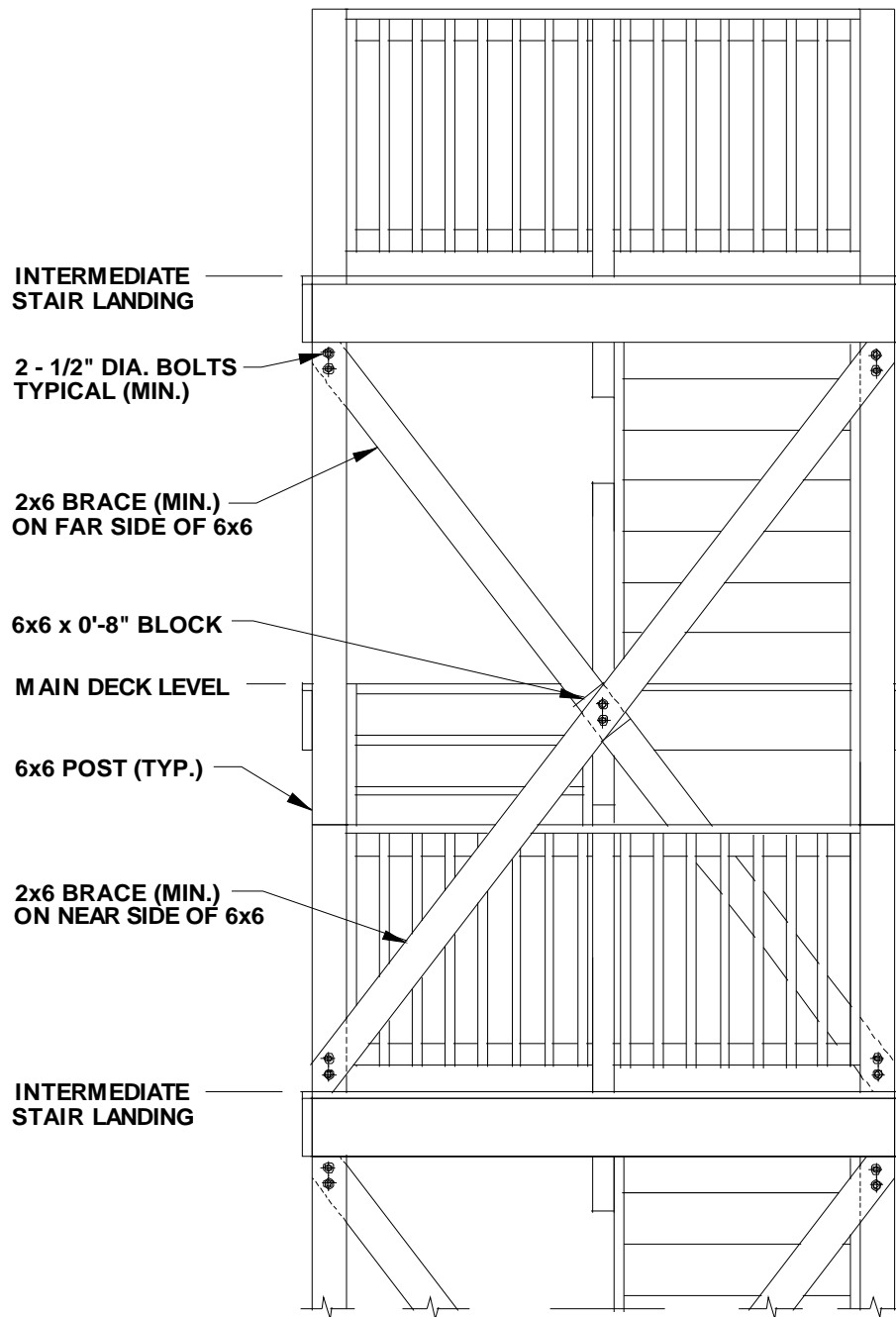
SCALE: NONE

**1E****ELEVATION – FREE STANDING STAIR K-BRACING**

SCALE: NONE

**1F****ELEVATION – K-BRACING**

SCALE: NONE

**1G****ELEVATION – X-BRACING**

SCALE: NONE

BUILDING ADDRESS:			
OWNER:			
DRAWN BY:		DATE:	

Required Information:

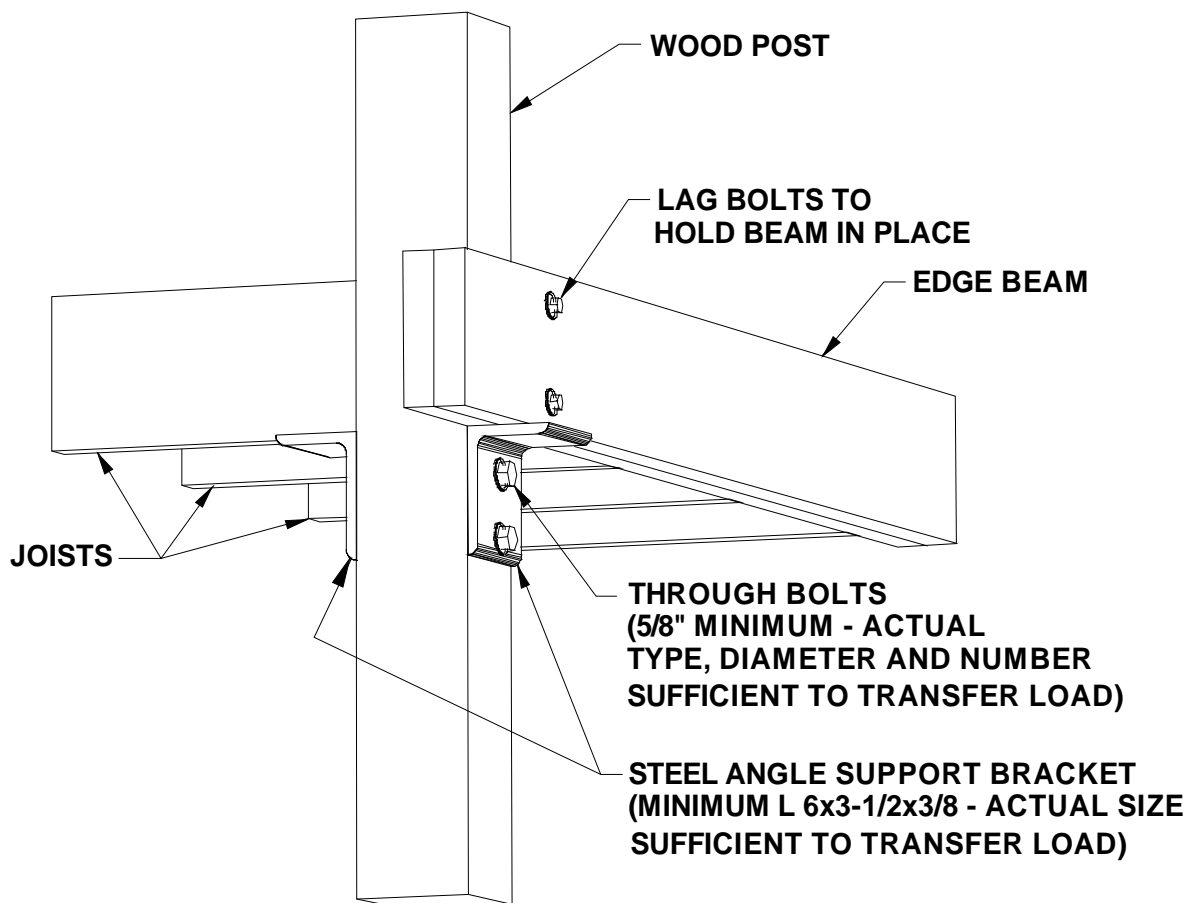
- Property Lines
- Dimensions from Porch / Deck to Property Lines
- Framing Plan
- Porch / Deck Dimensions
- Dimensions from Grade to 1st Floor
- Stair Locations
- Ledger Beam & Ledger Bolt Sizes
- Joist Locations, Sizes & Spacing
- Beam Locations & Sizes
- Column / Post Locations & Sizes
- Footing Locations & Sizes
- Cross reference details on framing plans
- Provide photographs of existing porch conditions

THIS BLANK RULED PAGE IS PROVIDED FOR HOMEOWNERS TO CREATE A SITE PLAN OR FRAMING PLAN.

1H

SITE PLAN / FRAMING PLAN – HOMEOWNER ASSISTANCE (TBD)

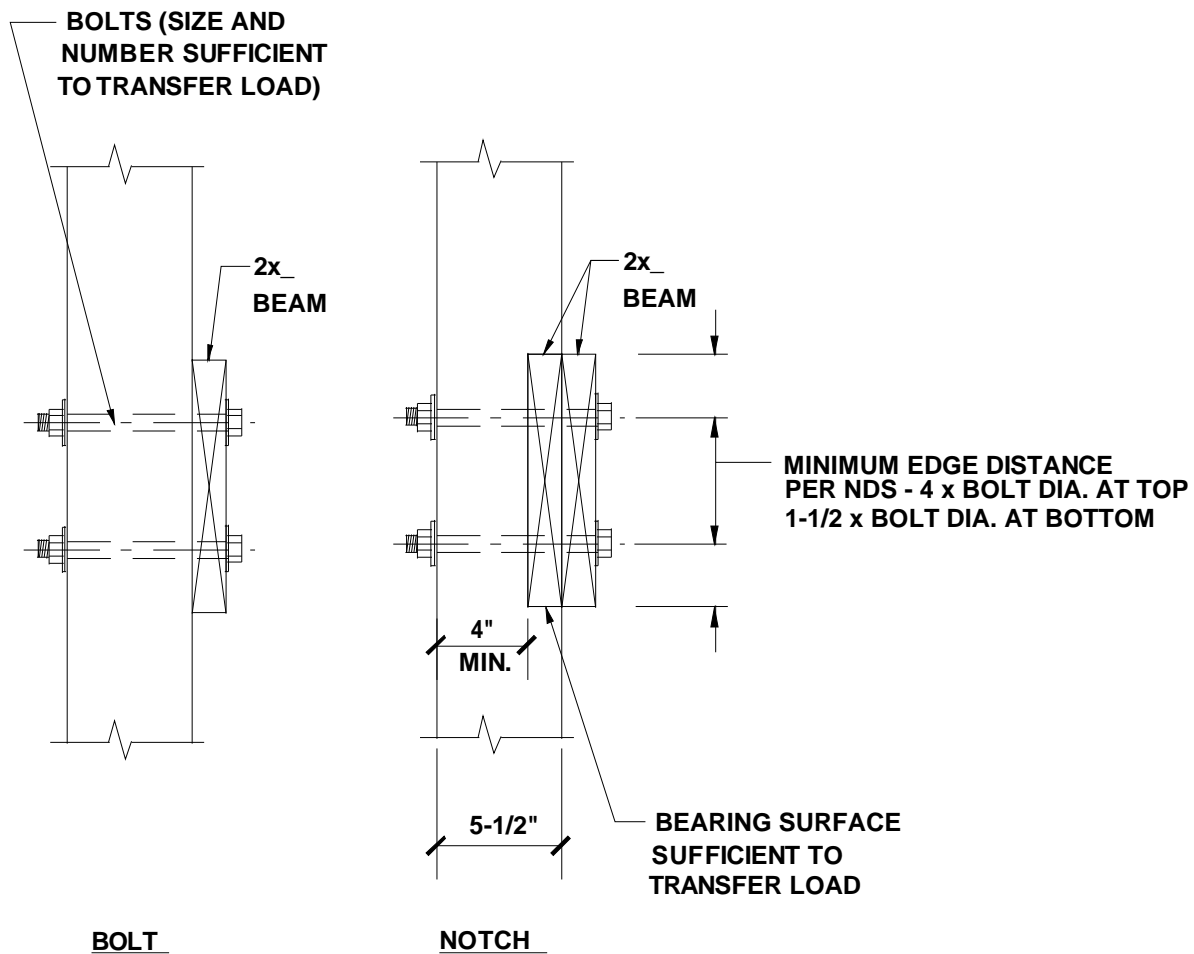
SCALE: NONE

**NOTE:**

ANY OF THE DETAILS 2A, 2B, 2C AND 2D CAN BE USED TO SUPPORT A BEAM AT A COLUMN. THE DETAIL USED DEPENDS UPON THE OVERALL DESIGN OF THE PORCH AND THE LOAD TO BE TRANSFERRED AT A GIVEN LOCATION. FOR EXAMPLE, THE ANGLE SEAT SHOWN IN THIS DETAIL HAS A HIGHER LOAD CAPACITY THAN USING ONLY BOLTS OF THE SAME SIZE AND NUMBER. THIS IS THE CASE BECAUSE THE BOLTS ARE BEARING PARALLEL TO THE COLUMN GRAIN AND THE PERPENDICULAR TO GRAIN LOAD OF THE BEAM IS TRANSFERRED THROUGH BEARING ON THE RELATIVELY LARGE ANGLE SURFACE. SEE LOAD TABLE 9.12 FOR THE DIFFERENCE IN BOLT BEARING CAPACITY FOR NORMAL (OR PERPENDICULAR) TO GRAIN AND PARALLEL TO GRAIN BEARING.

2A**DETAIL – BEAM TO POST CONNECTION**

SCALE: NONE

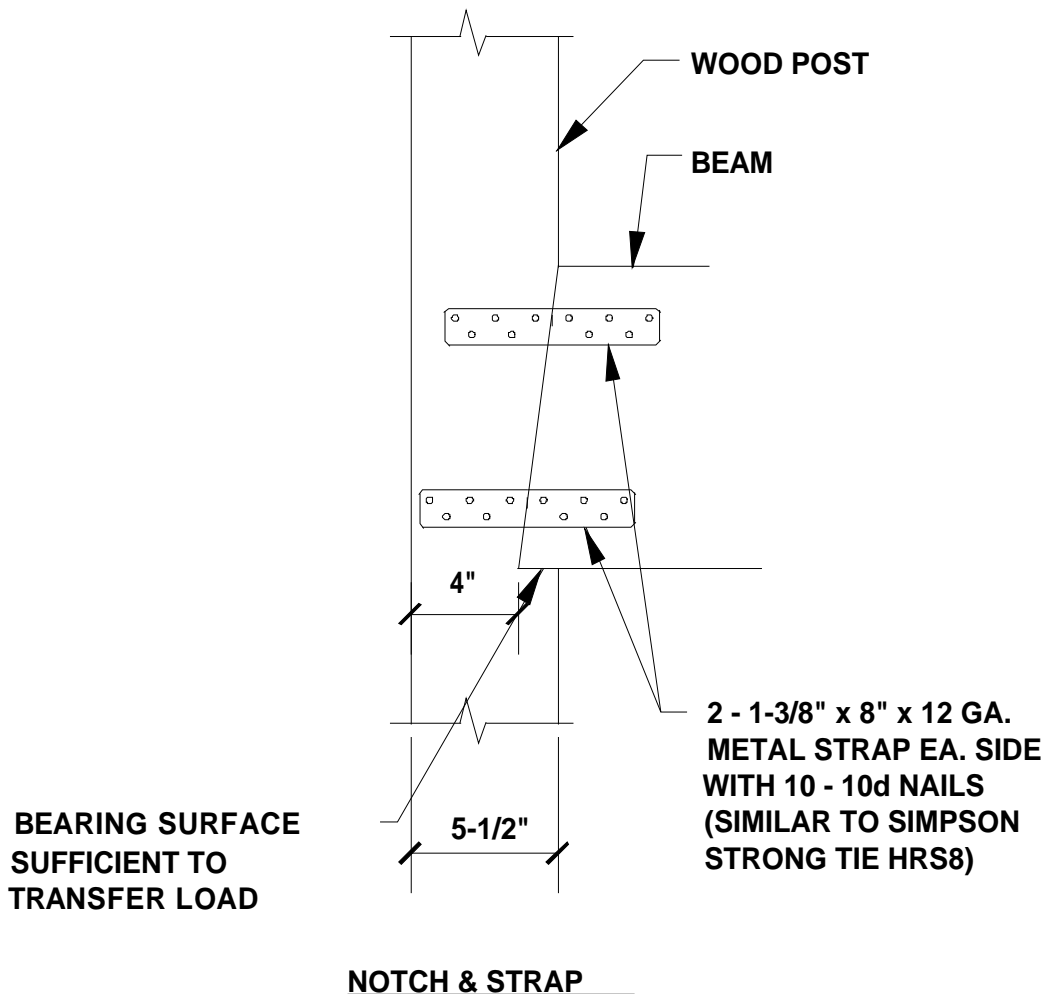


NOTE:

ONLY COLUMNS WITH A FACE WIDTH OF 5-1/2 INCHES OR LARGER CAN BE NOTCHED.

2B**DETAIL – EDGE BEAM TO POST CONNECTION**

SCALE: NONE



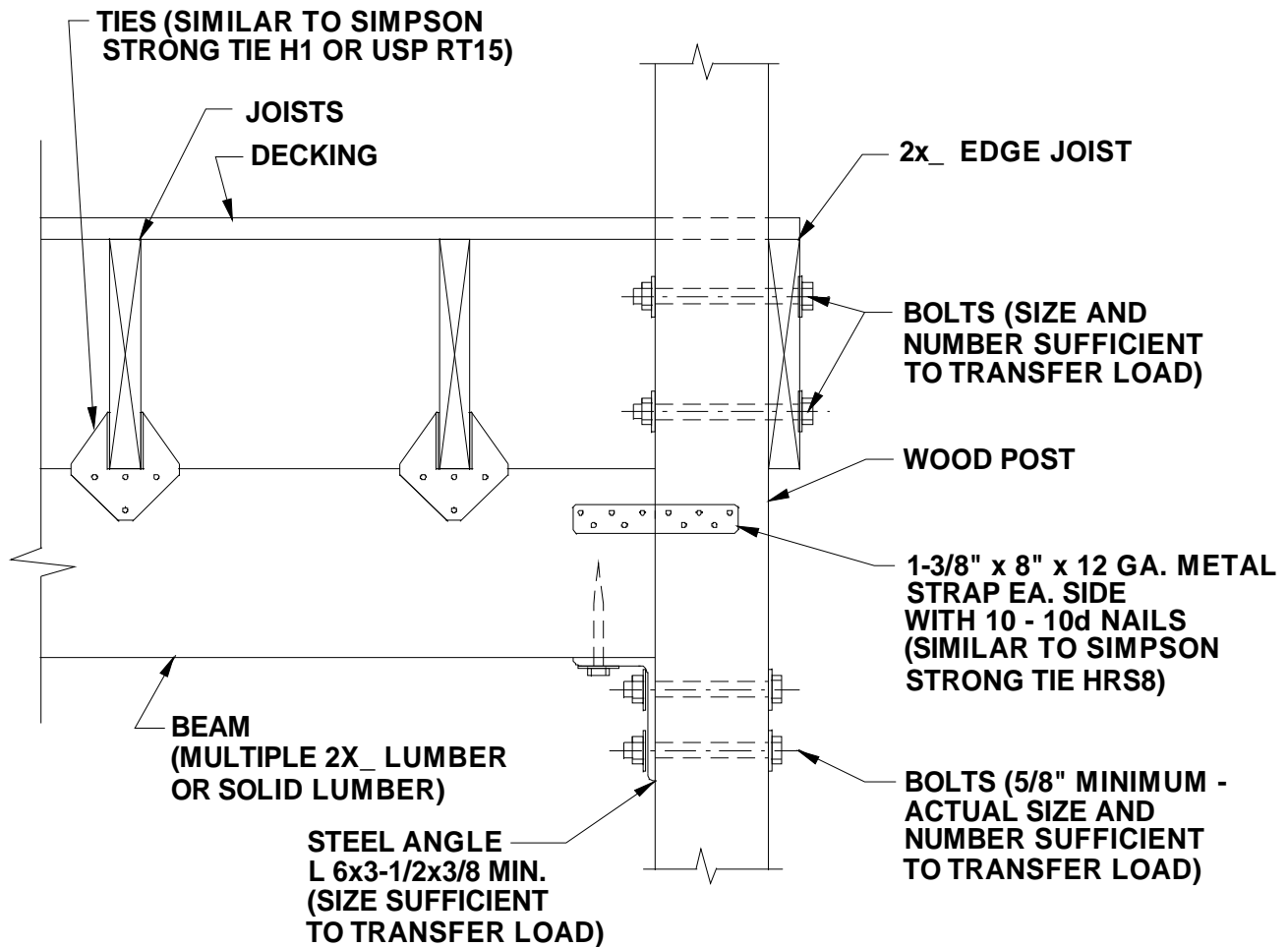
NOTE:

ONLY COLUMNS WITH A FACE WIDTH OF 5-1/2 INCHES OR LARGER CAN BE NOTCHED.

2C

DETAIL – EXISTING BEAM TO POST CONNECTION

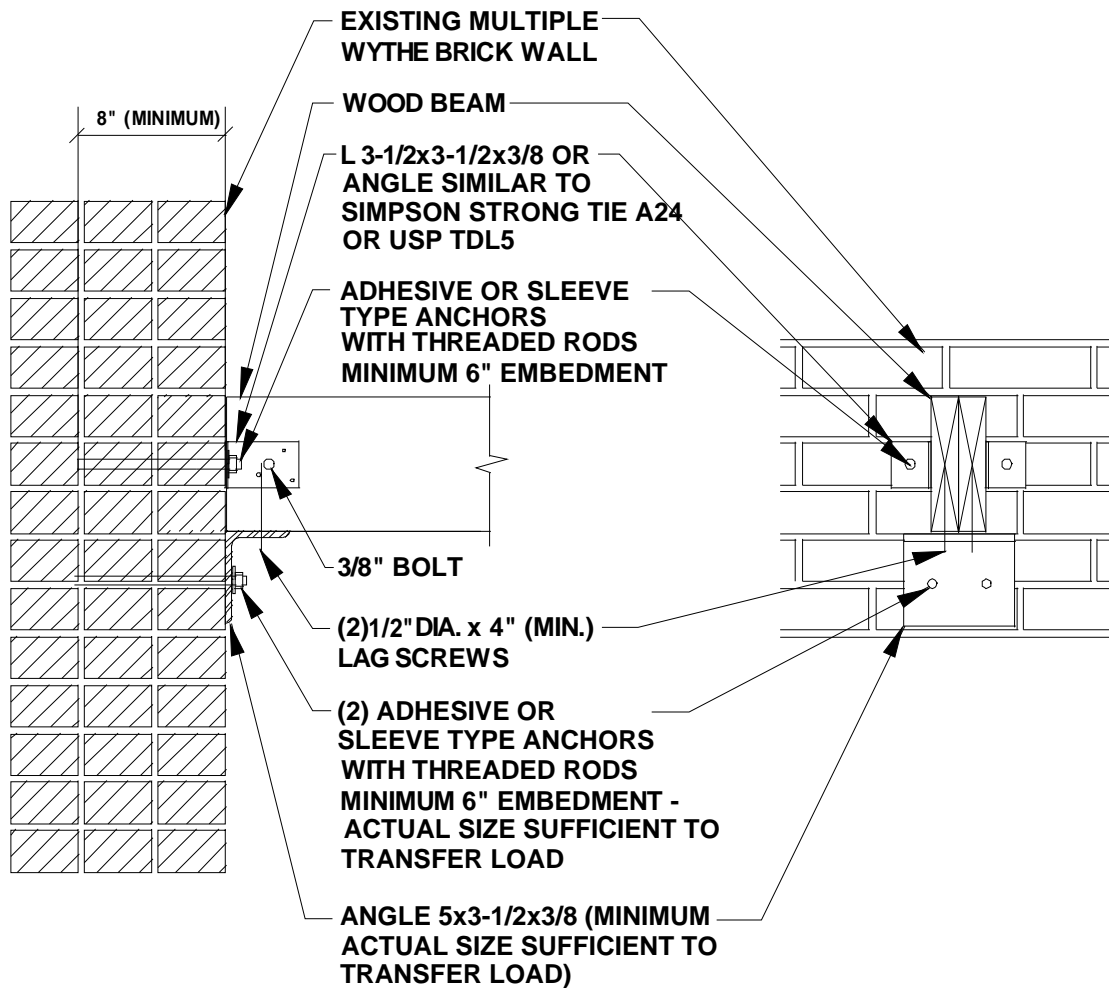
SCALE: NONE



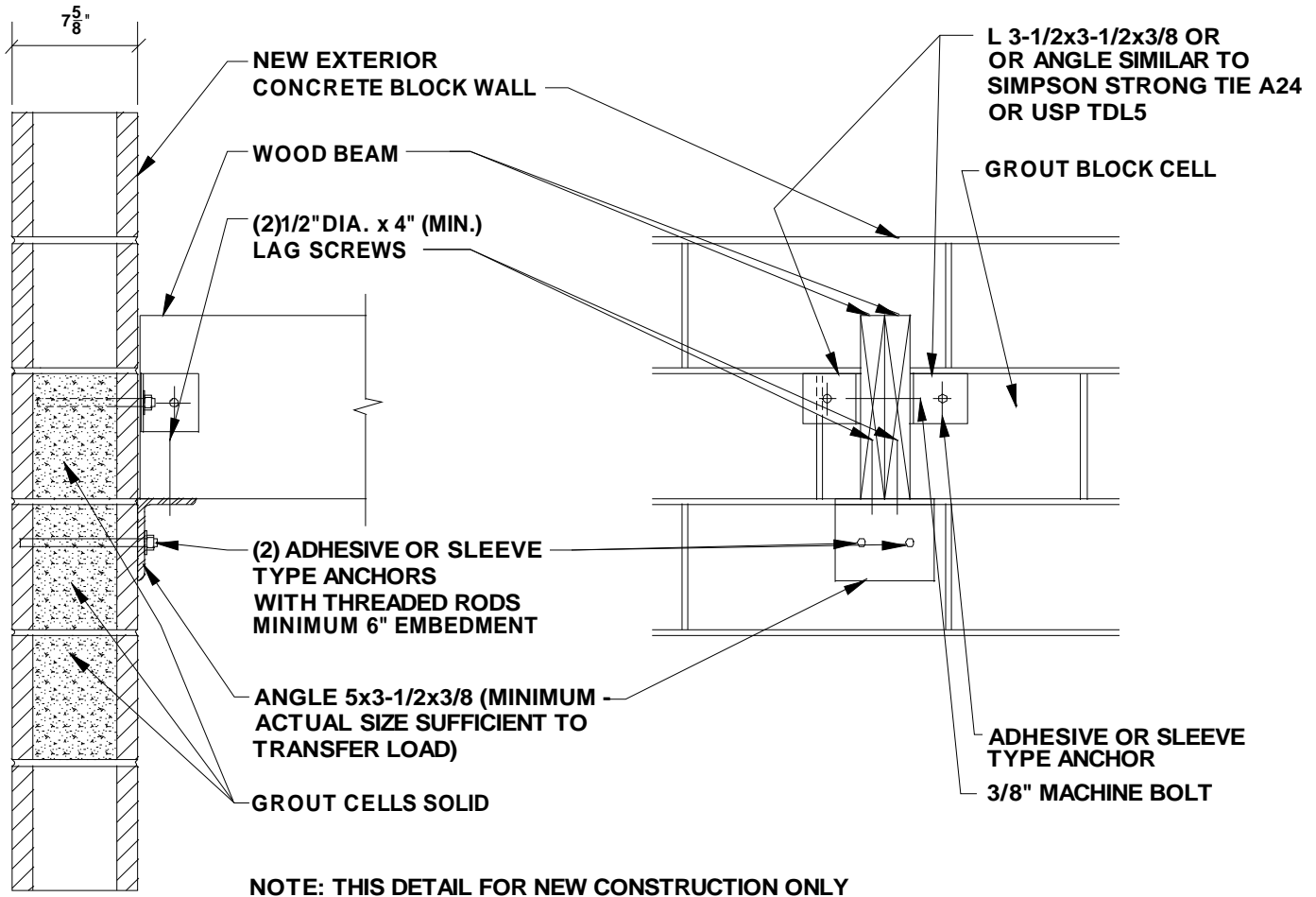
2D

DETAIL – BEAM TO POST CONNECTION

SCALE: NONE

**3A****DETAIL – BEAM TO SOLID BRICK WALL CONNECTION**

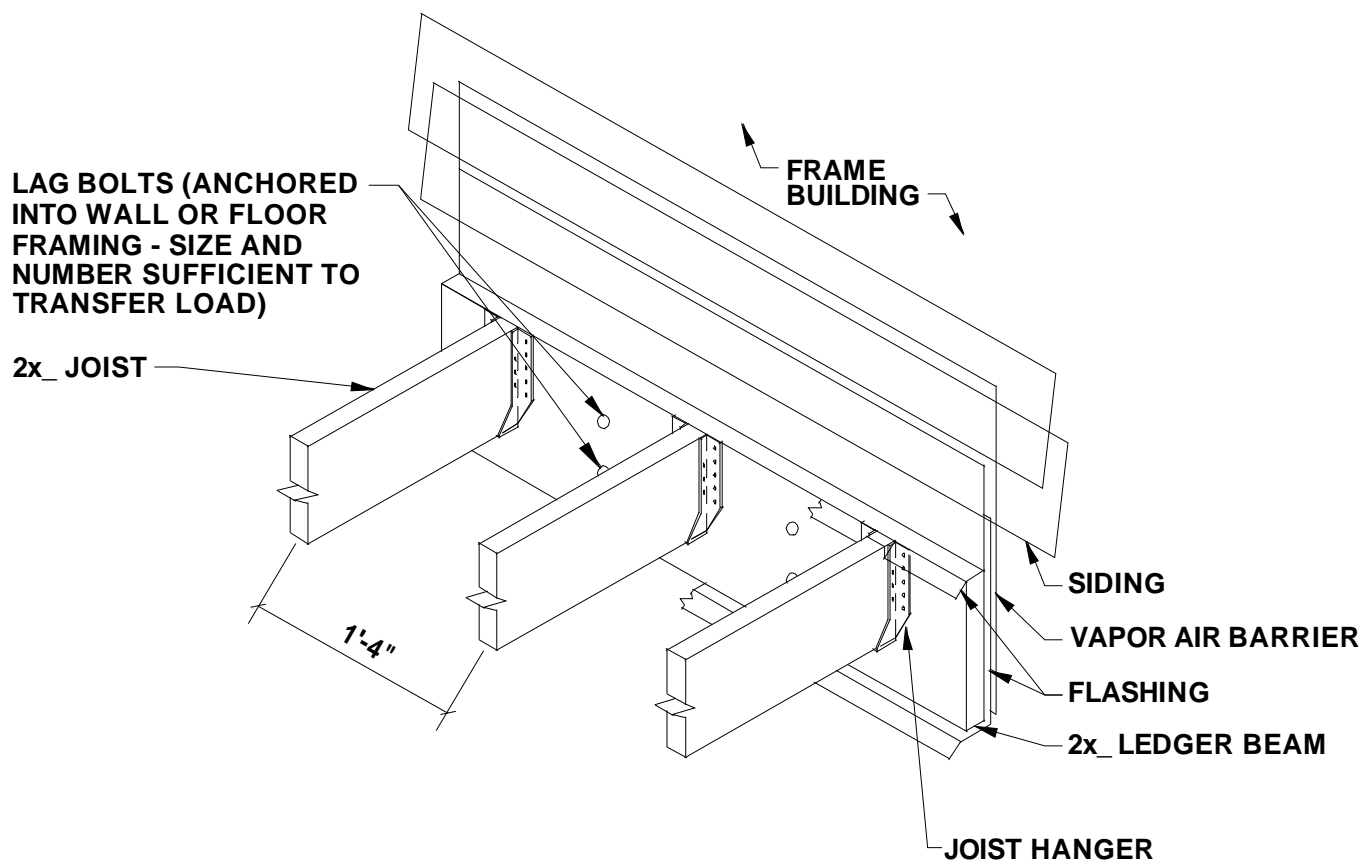
SCALE: NONE



3B

DETAIL – BEAM TO CONCRETE BLOCK WALL CONNECTION

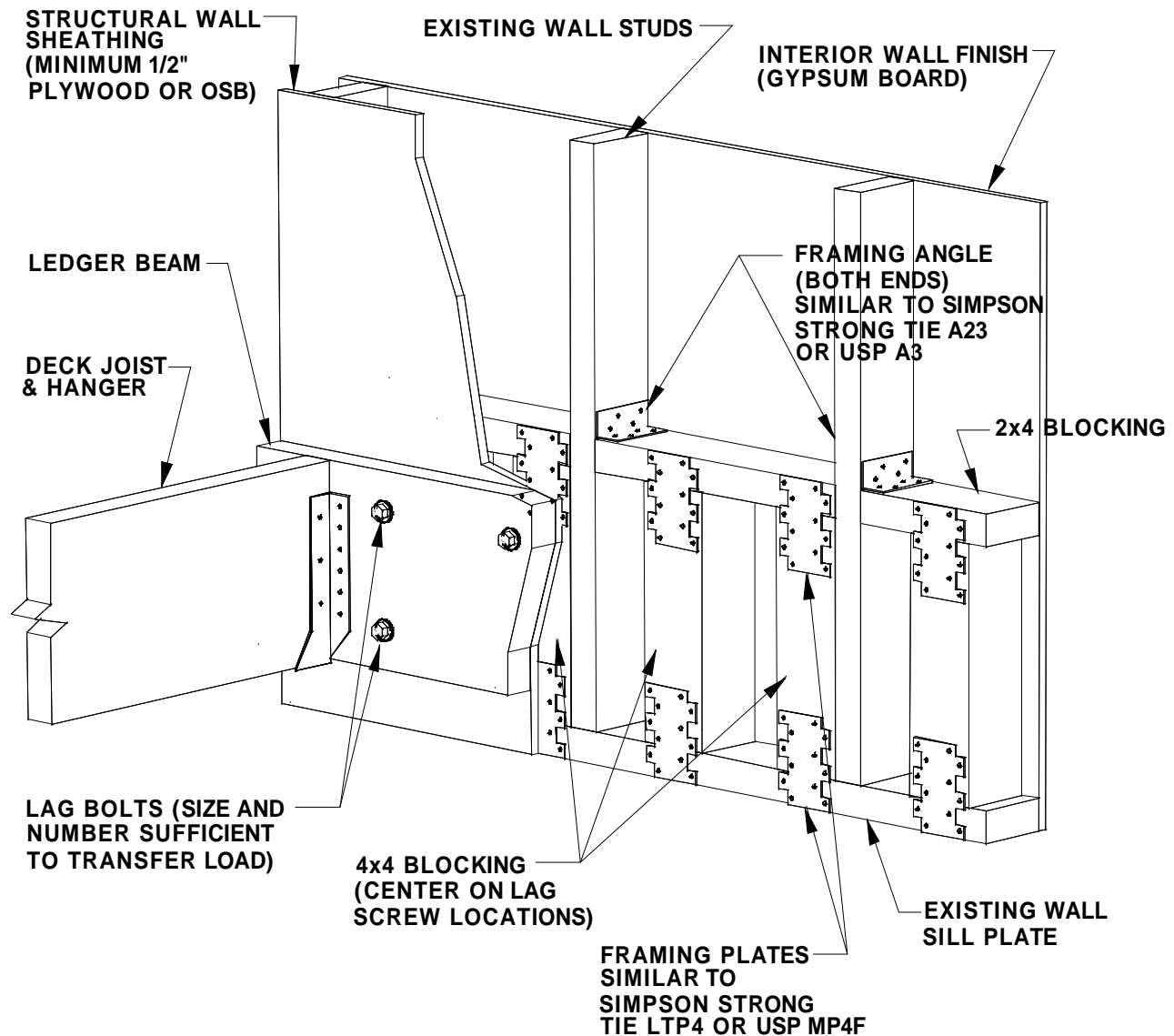
SCALE: NONE

**NOTE:**

LAG SCREWS OR BOLTS MUST BE EMBEDDED INTO THE MAIN OR BUILDING FRAME MEMBER (THE LEDGER BEAM IS THE SECONDARY MEMBER) A MINIMUM OF 4 TIMES THE BOLT DIAMETER EXCLUSIVE OF THE TIP. FOR FULL LAG BOLT SHEAR CAPACITY, THE BOLT MUST BE EMBEDDED INTO THE MAIN MEMBER 8 TIMES THE BOLT DIAMETER EXCLUSIVE OF THE TIP. THEREFORE, 3-1/2 INCH THICK BLOCKING MAY BE NECESSARY IN THE STUD SPACE FOR ADEQUATE LAG SCREW ANCHORAGE OR EMBEDMENT. SEE TABLE 9.12 FOR LAG BOLT SHEAR CAPACITY.

3C**DETAIL – LEDGER BEAM TO WOOD FRAME WALL CONNECTION**

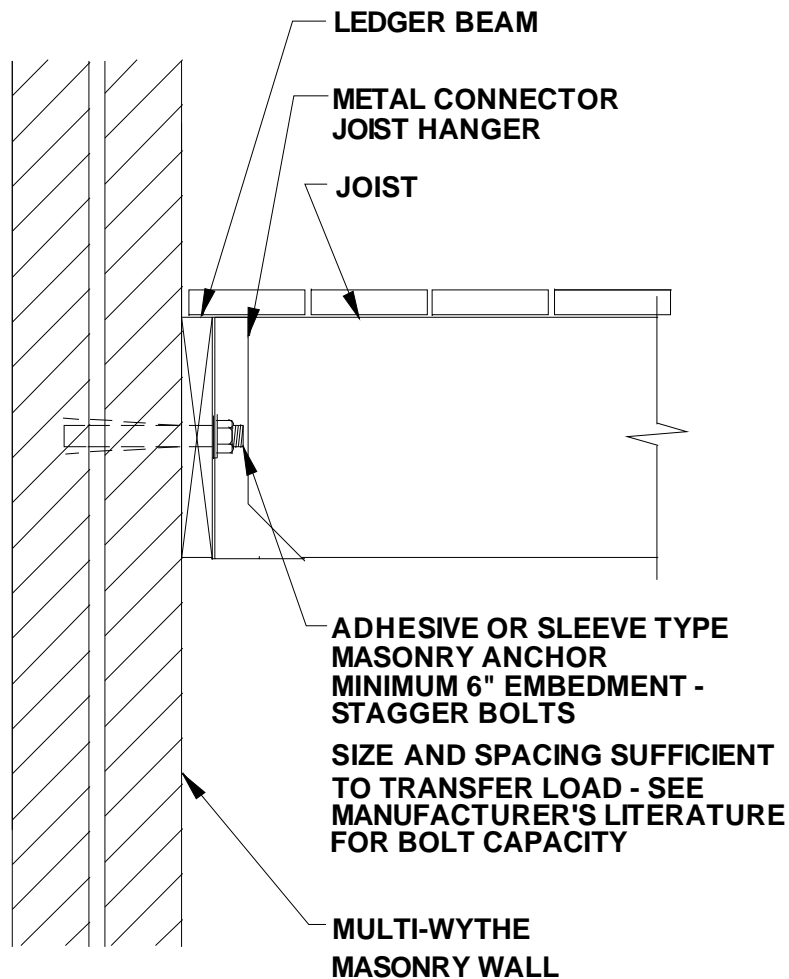
SCALE: NONE



3D

DETAIL – WOOD STUD WALL BLOCKING FOR LEDGER SUPPORT

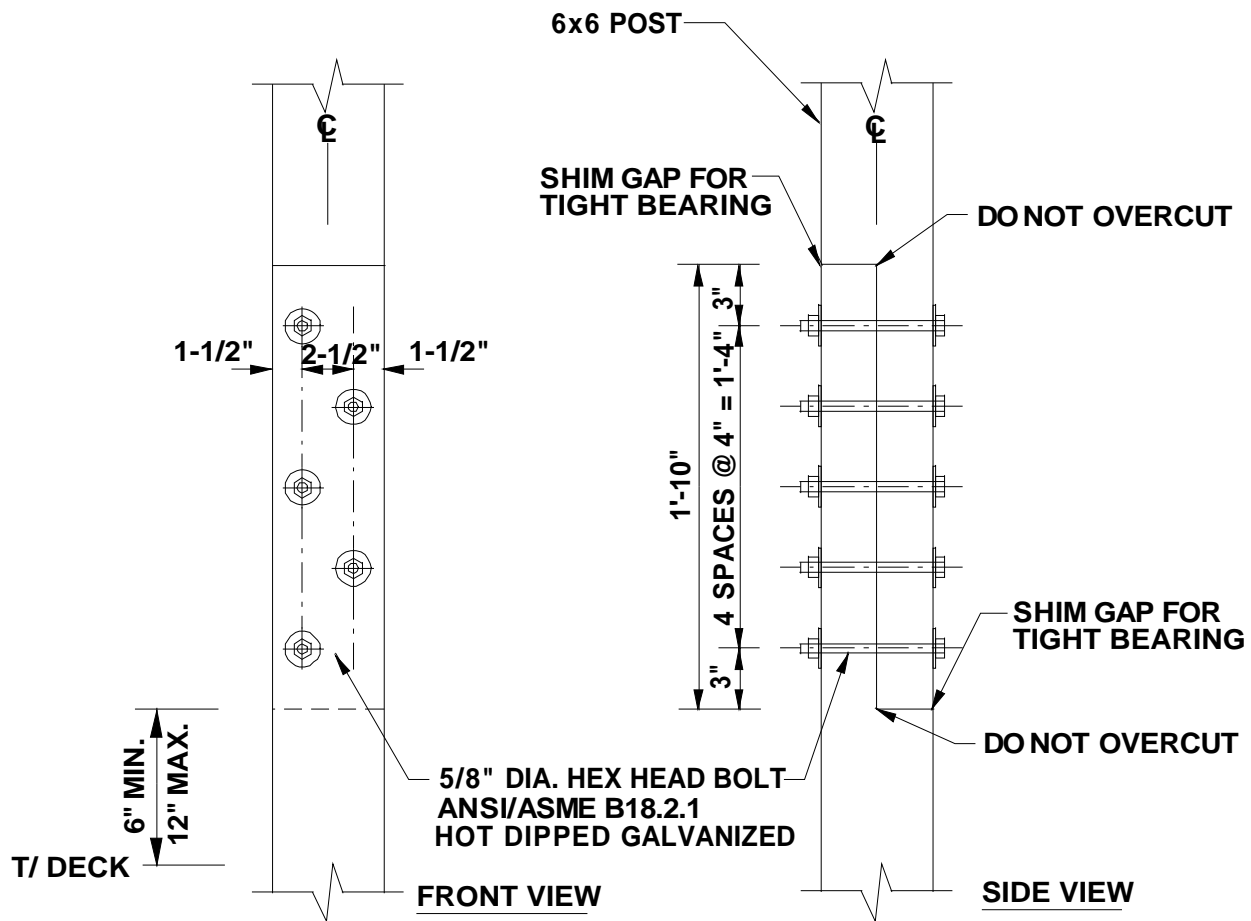
SCALE: NONE



3E

DETAIL – LEDGER BEAM TO MASONRY WALL CONNECTION

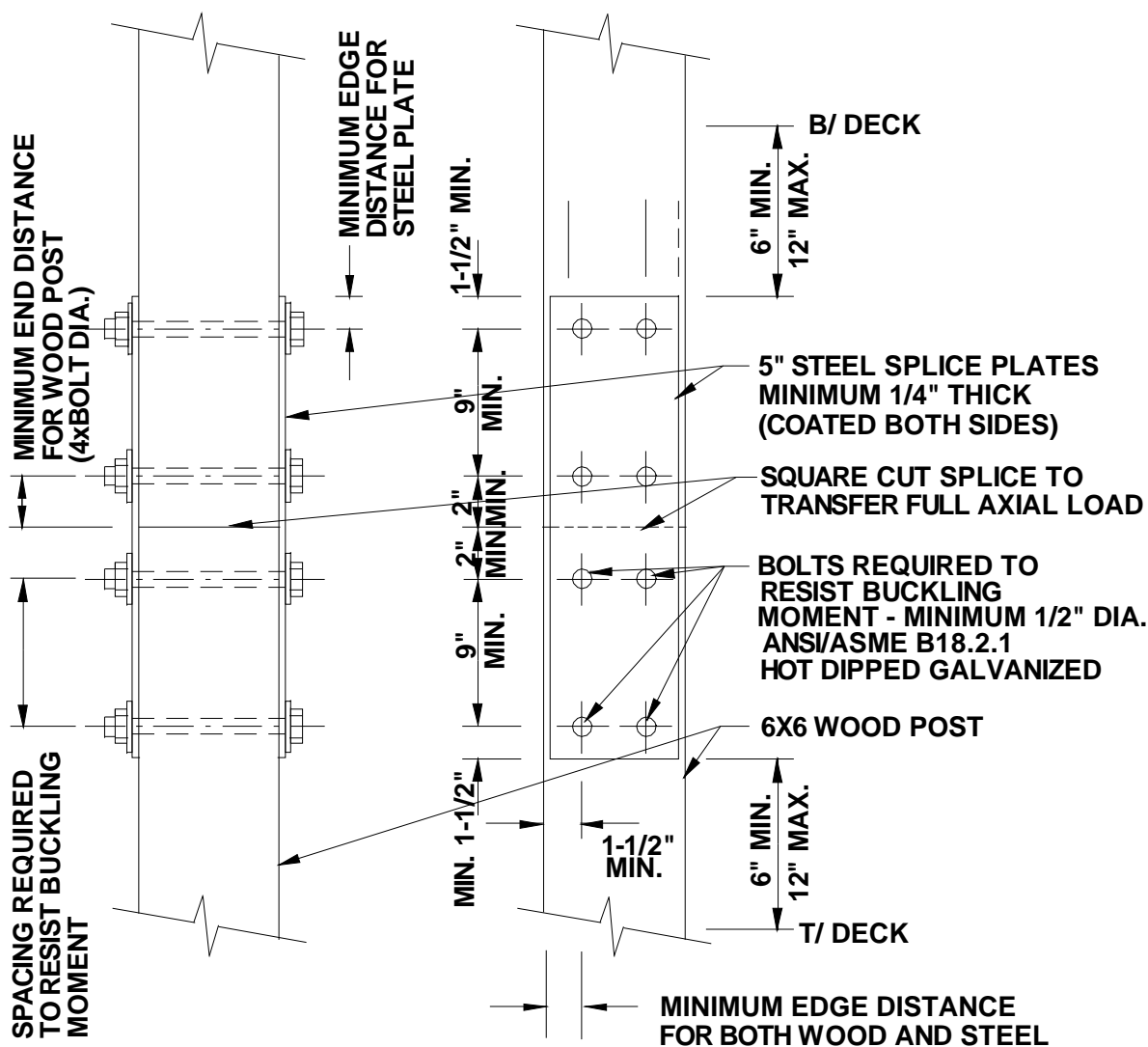
SCALE: NONE



NOTE: DO NOT LOCATE SPLICE AT BEAM OR
GUARDRAIL TO COLUMN CONNECTION

4A**DETAIL – HALF LAP POST SPLICE**

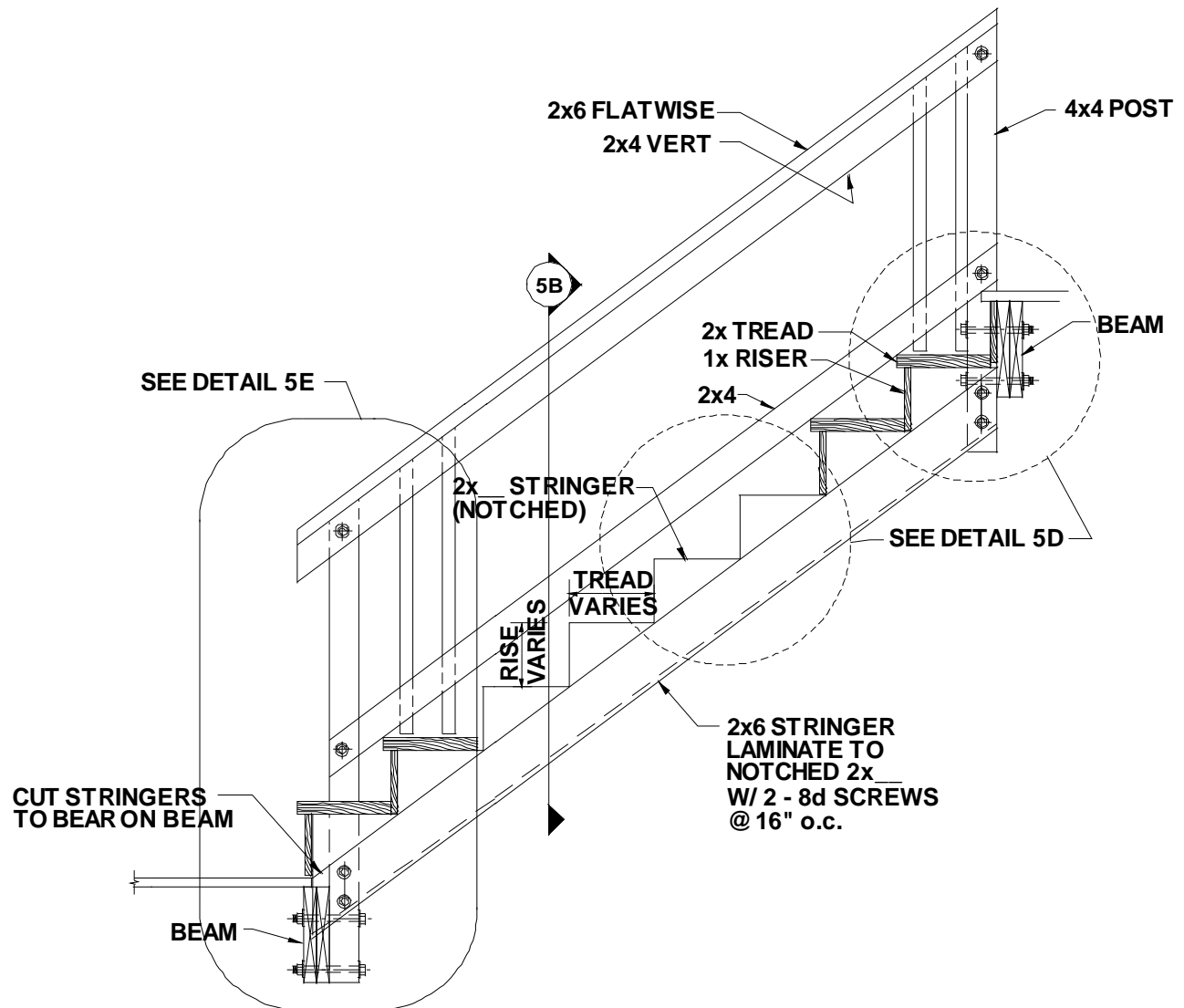
SCALE: NONE



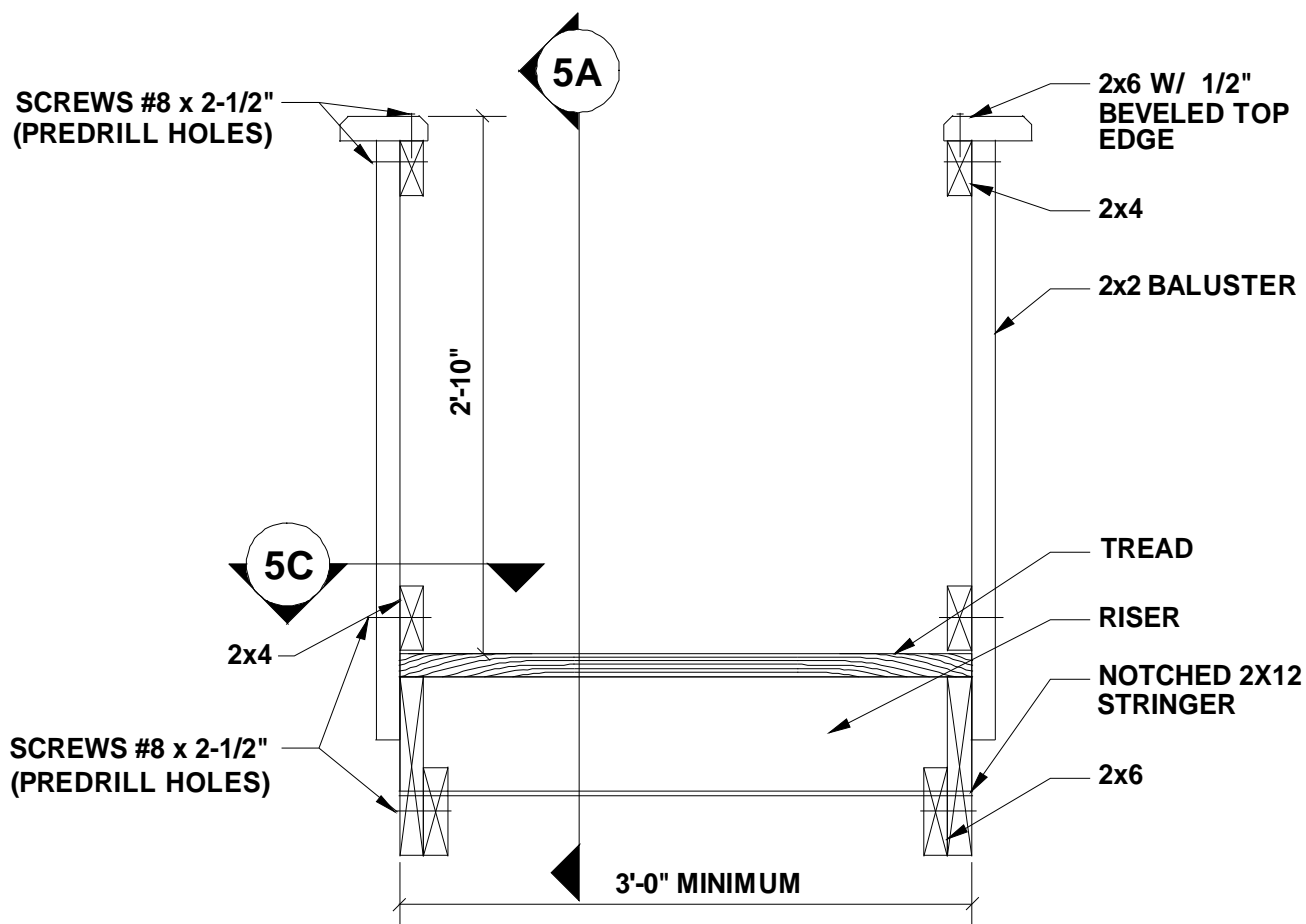
4B

DETAIL – POST SPLICE USING PLATES

SCALE: NONE

**5A****SECTION – STAIR LONGITUDINAL**

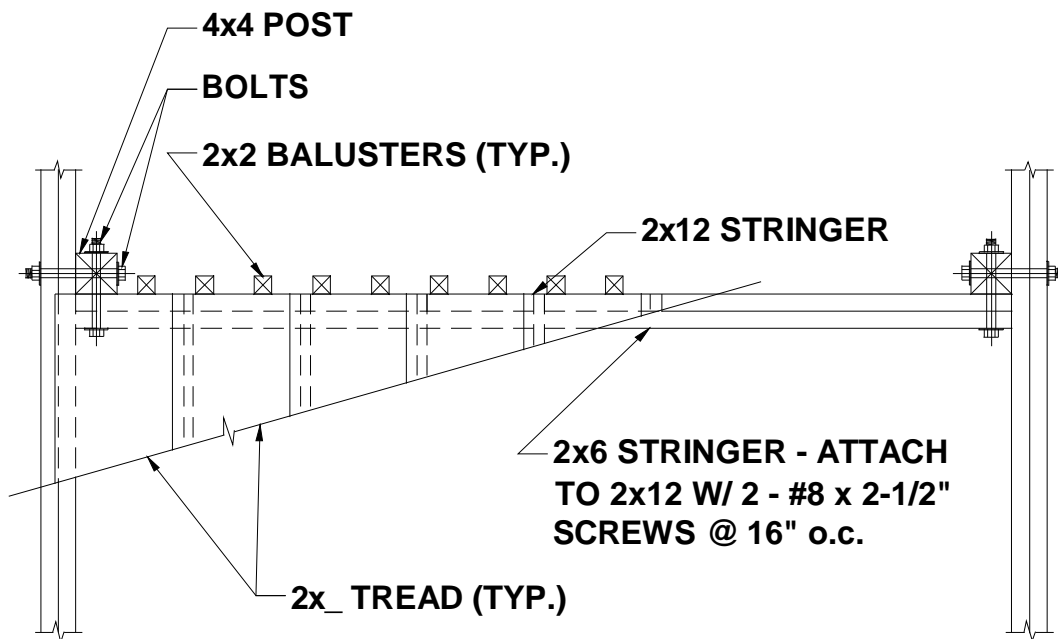
SCALE: NONE



5B

SECTION – STAIR TRANSVERSE

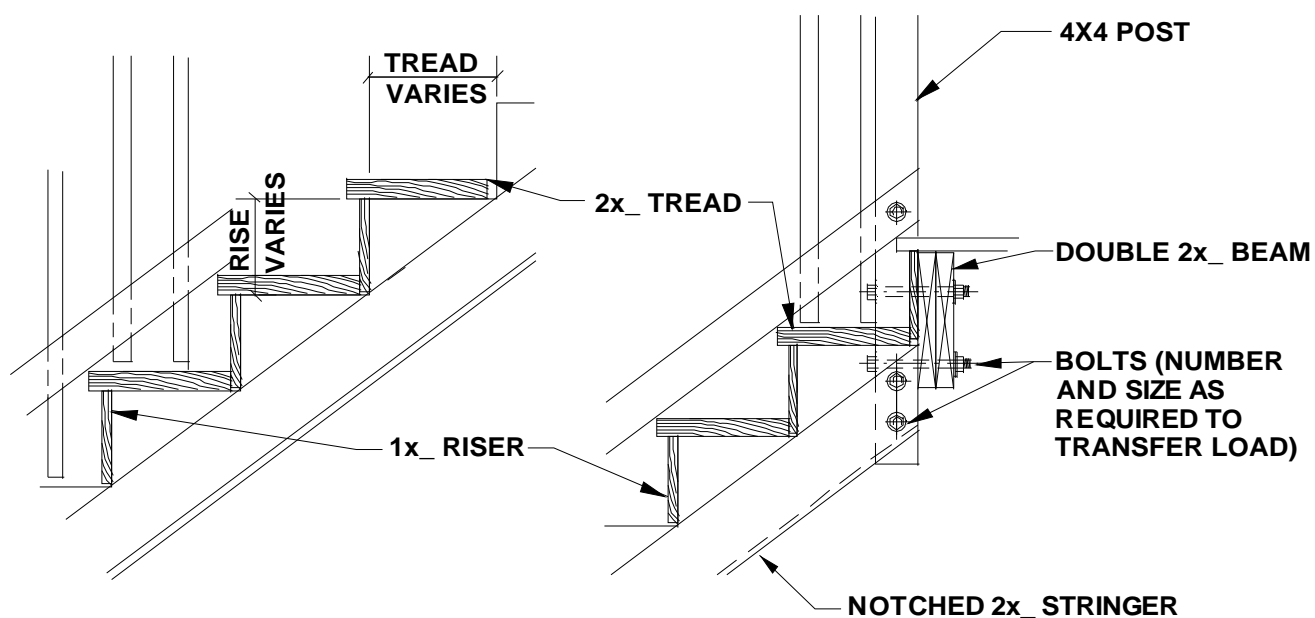
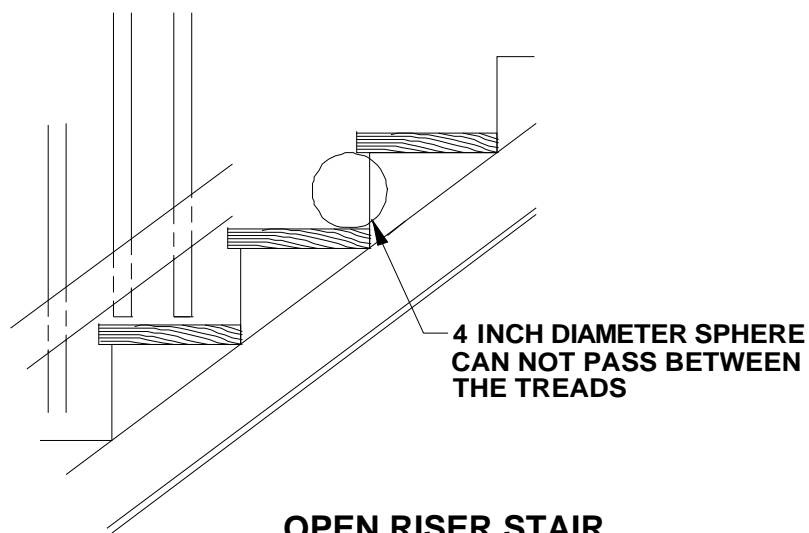
SCALE: 1/8" = 1'-0"



5C

PARTIAL PLAN – STAIR

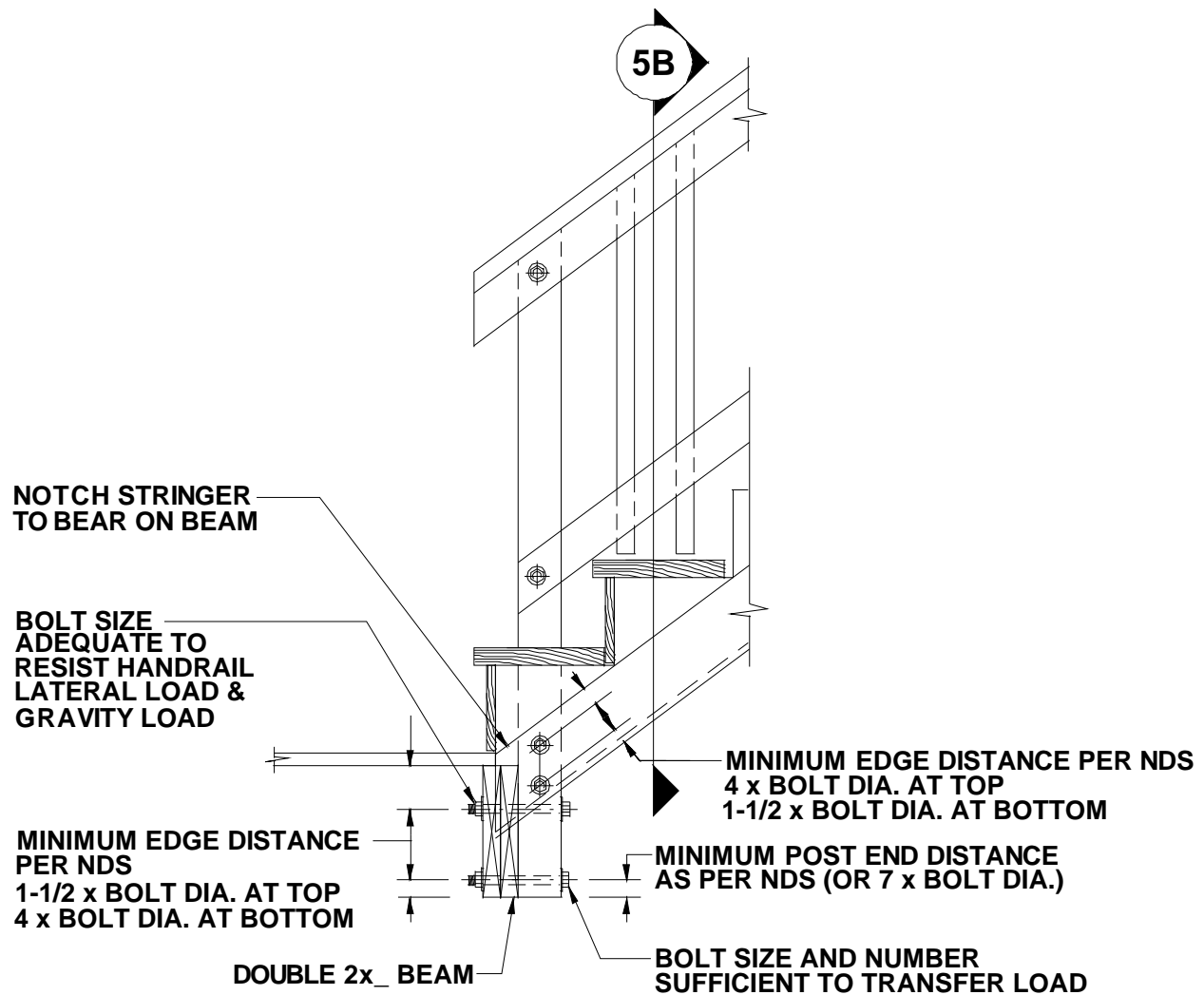
SCALE: NONE



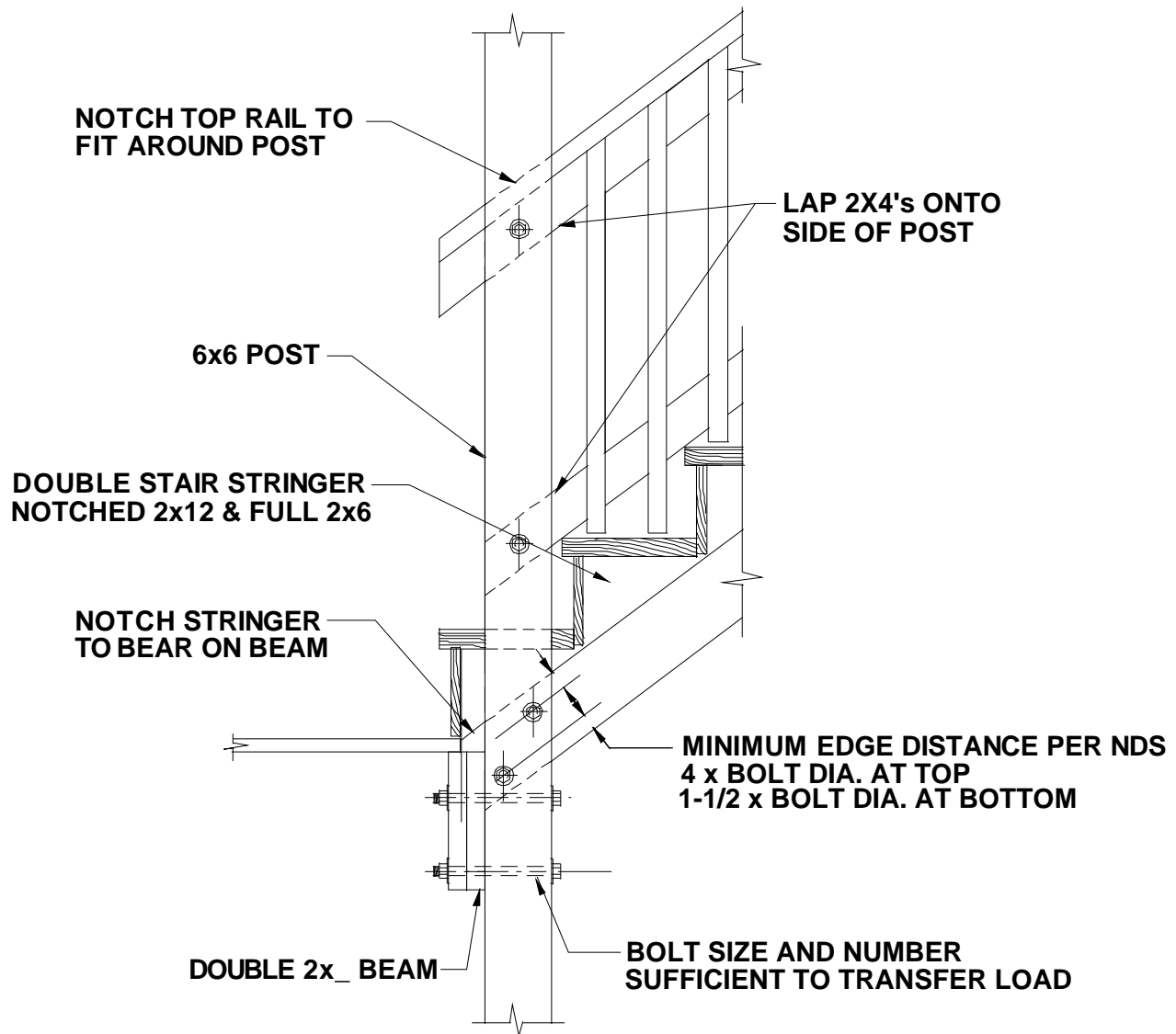
5D

DETAIL – UPPER STAIR STRINGER CONNECTION

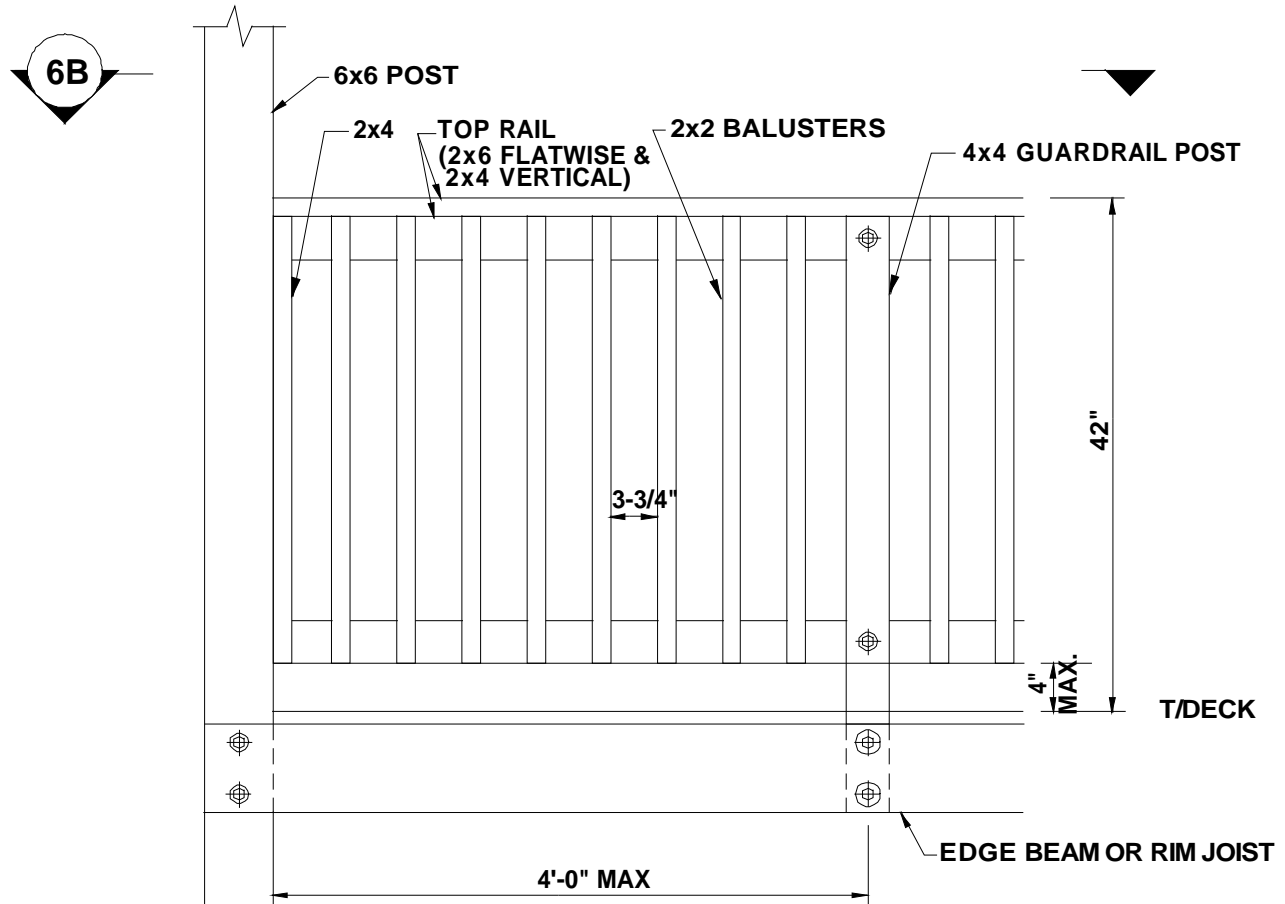
SCALE: NONE

**5E****DETAIL – LOWER STRINGER CONNECTION**

SCALE: NONE

**5F****DETAIL – STAIR CONNECTION AT 6x6 POST**

SCALE: NONE



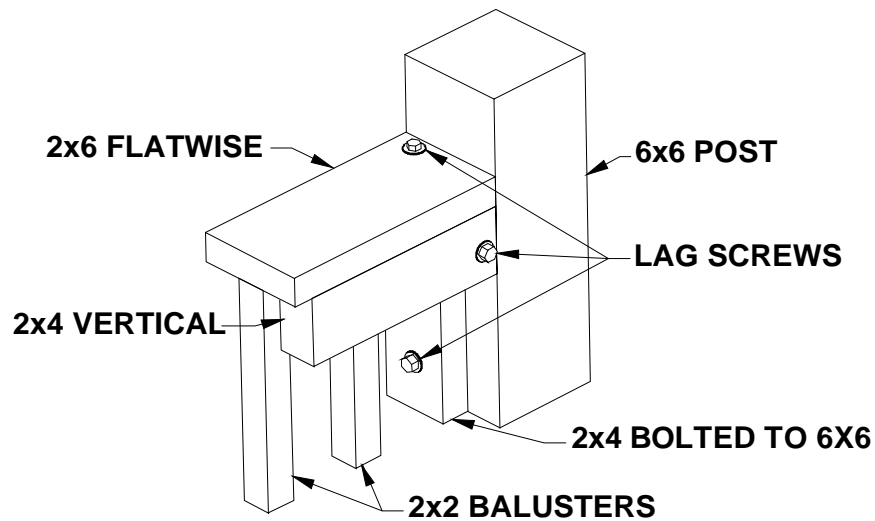
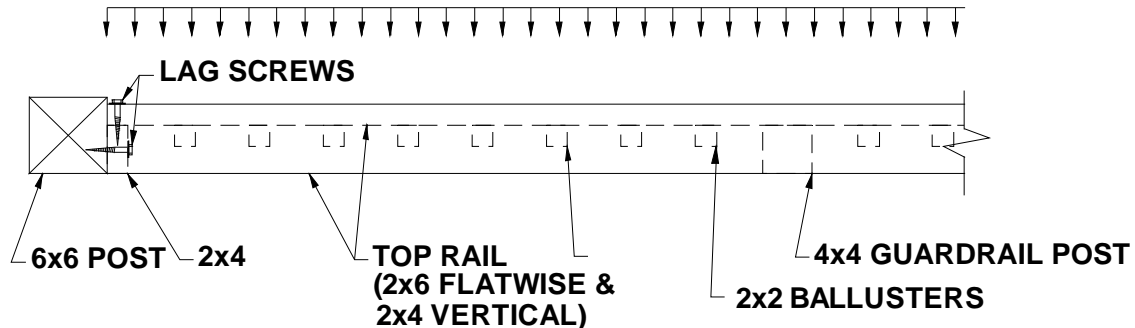
6A

DETAIL – PARTIAL GUARDRAIL ELEVATION

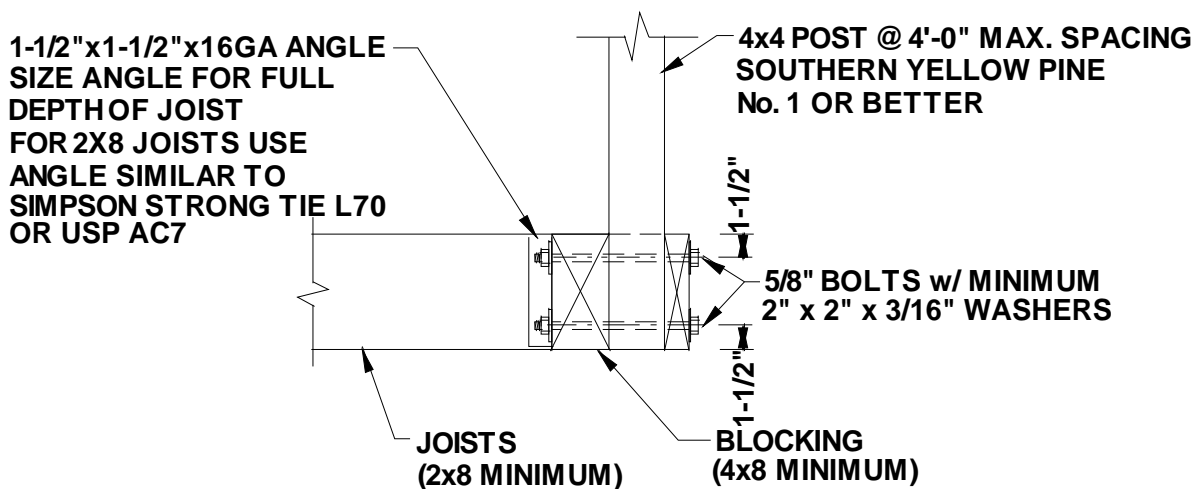
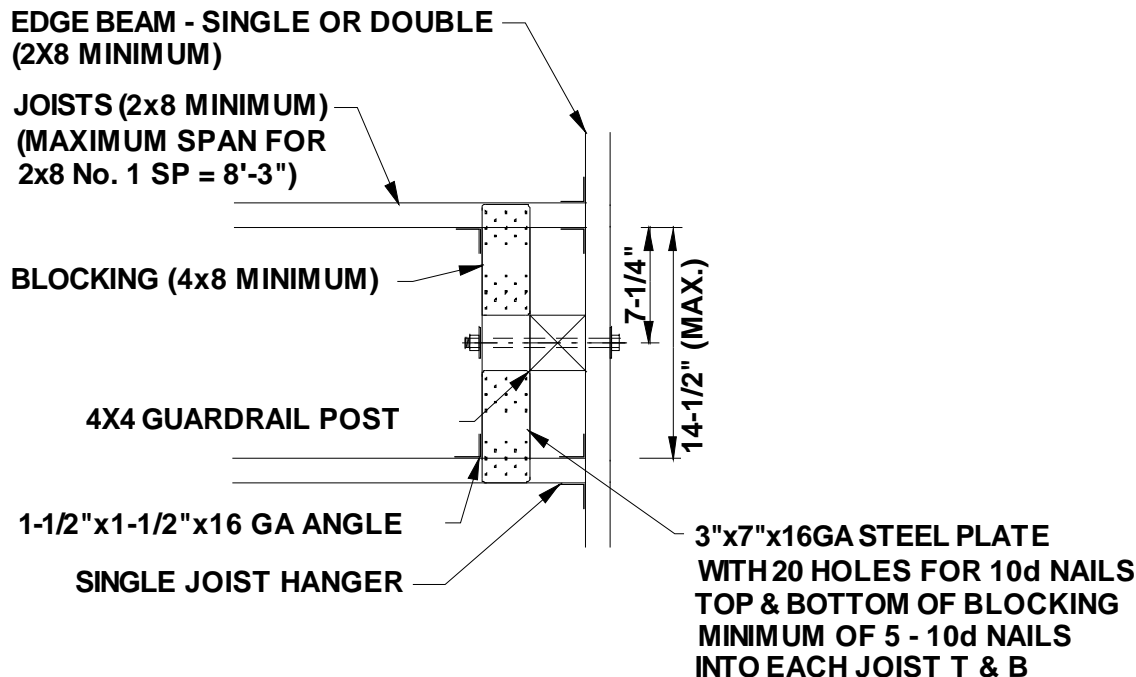
SCALE: NONE



TOP RAIL MUST SUPPORT 50 LBS./FT. BOTH VERTICALLY AND HORIZONTALLY SIMULTANEOUSLY OR 200 lbs. CONCENTRATED LOAD ANYWHERE ALONG THE LENGTH IN ANY DIRECTION

**6B****DETAIL – PARTIAL GUARDRAIL**

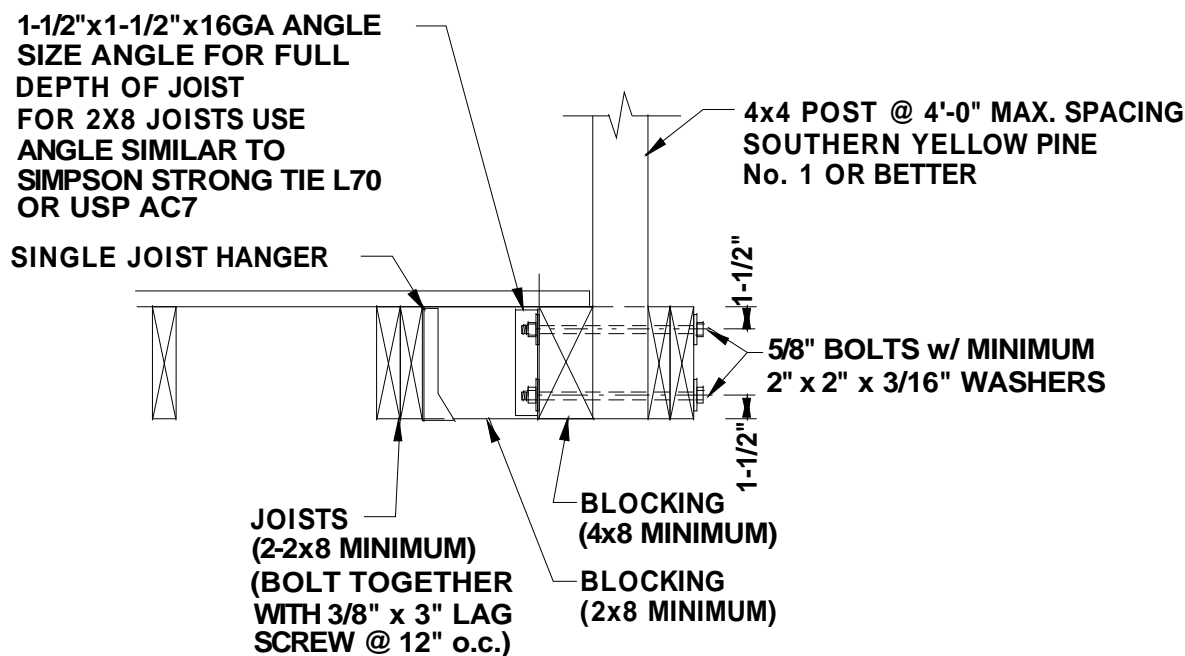
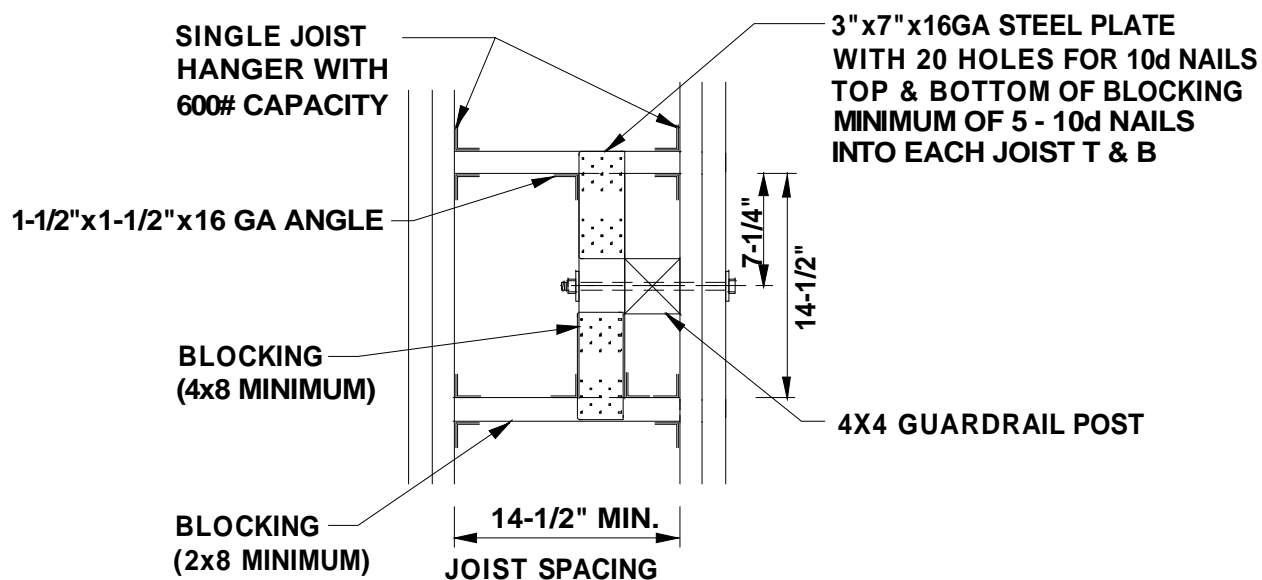
SCALE: NONE



6C

DETAIL – GUARDRAIL POST W/ JOIST NORMAL TO EDGE

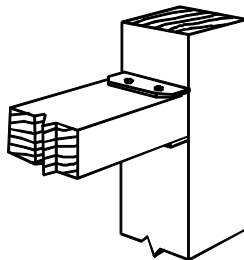
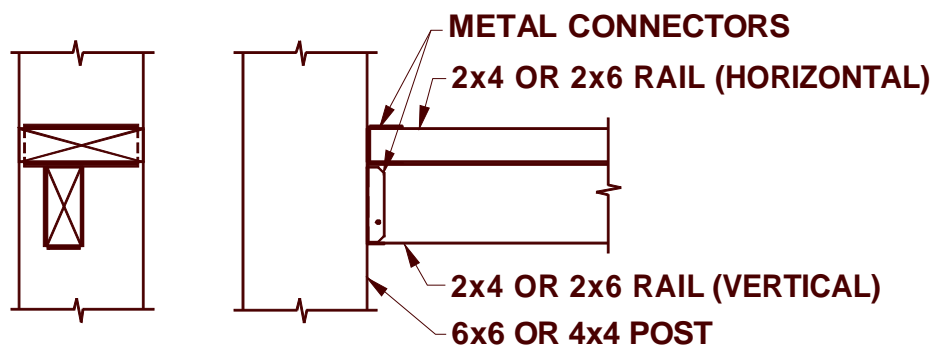
SCALE: NONE



6D

DETAIL – GUARDRAIL POST W/ JOISTS PARALLEL TO EDGE

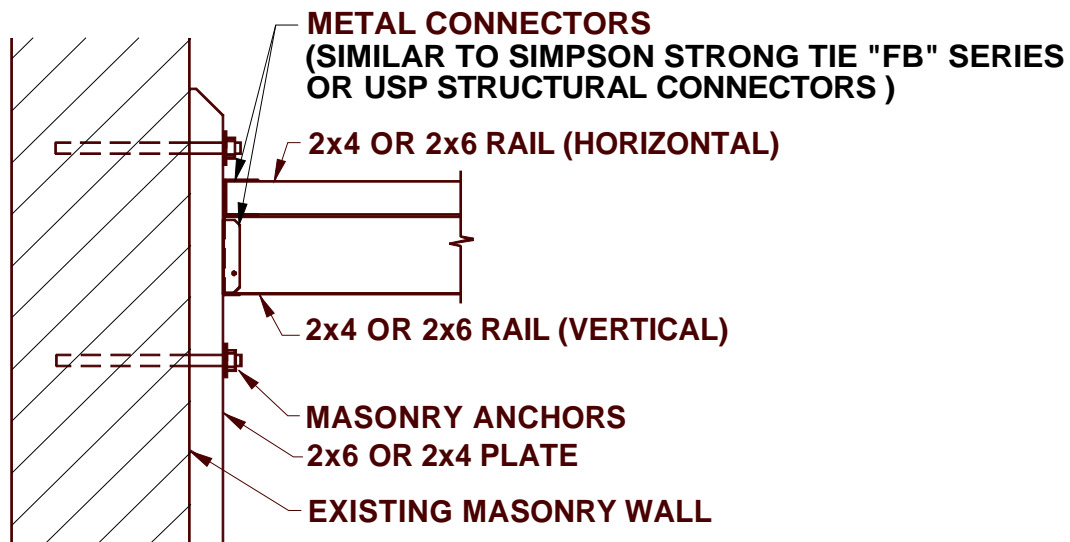
SCALE: NONE



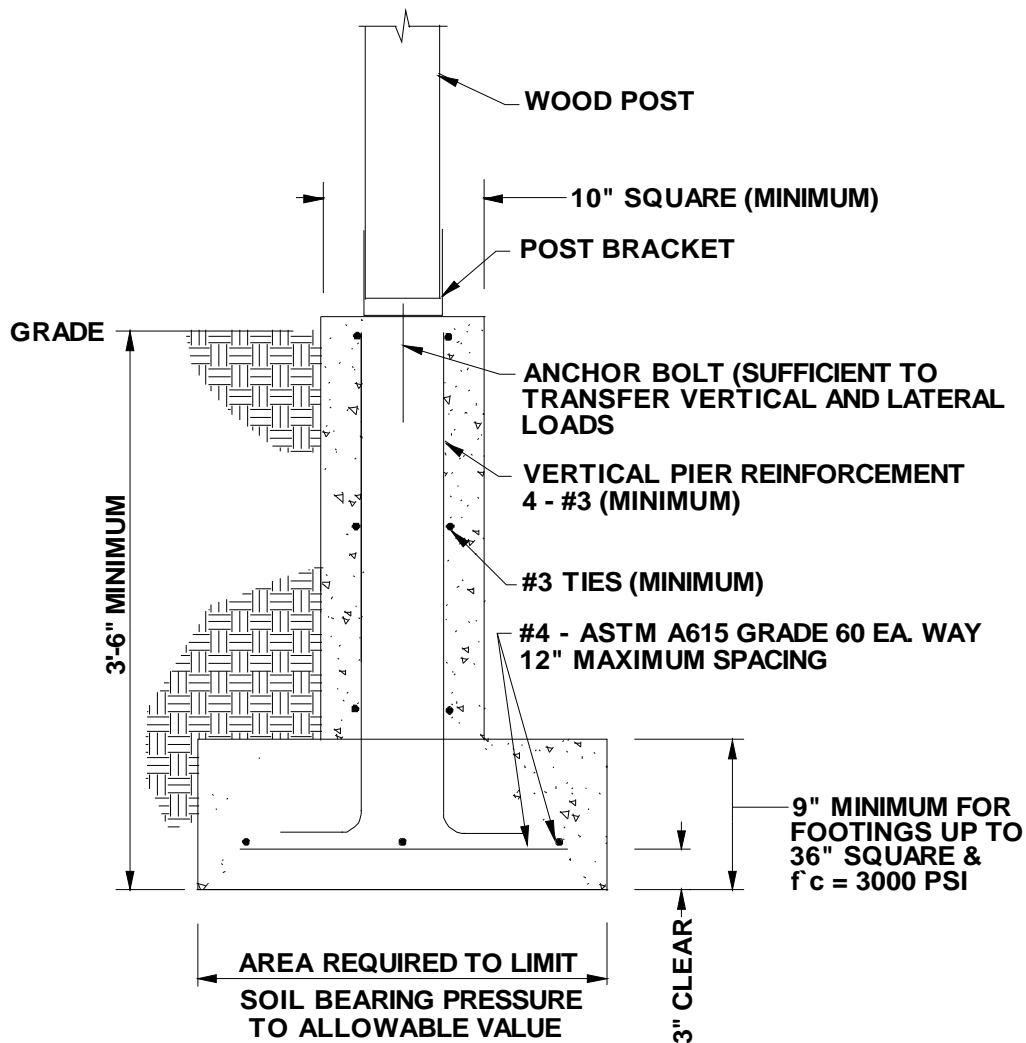
6E

DETAIL – PREFABRICATED BRACKET TOP RAIL CONNECTION

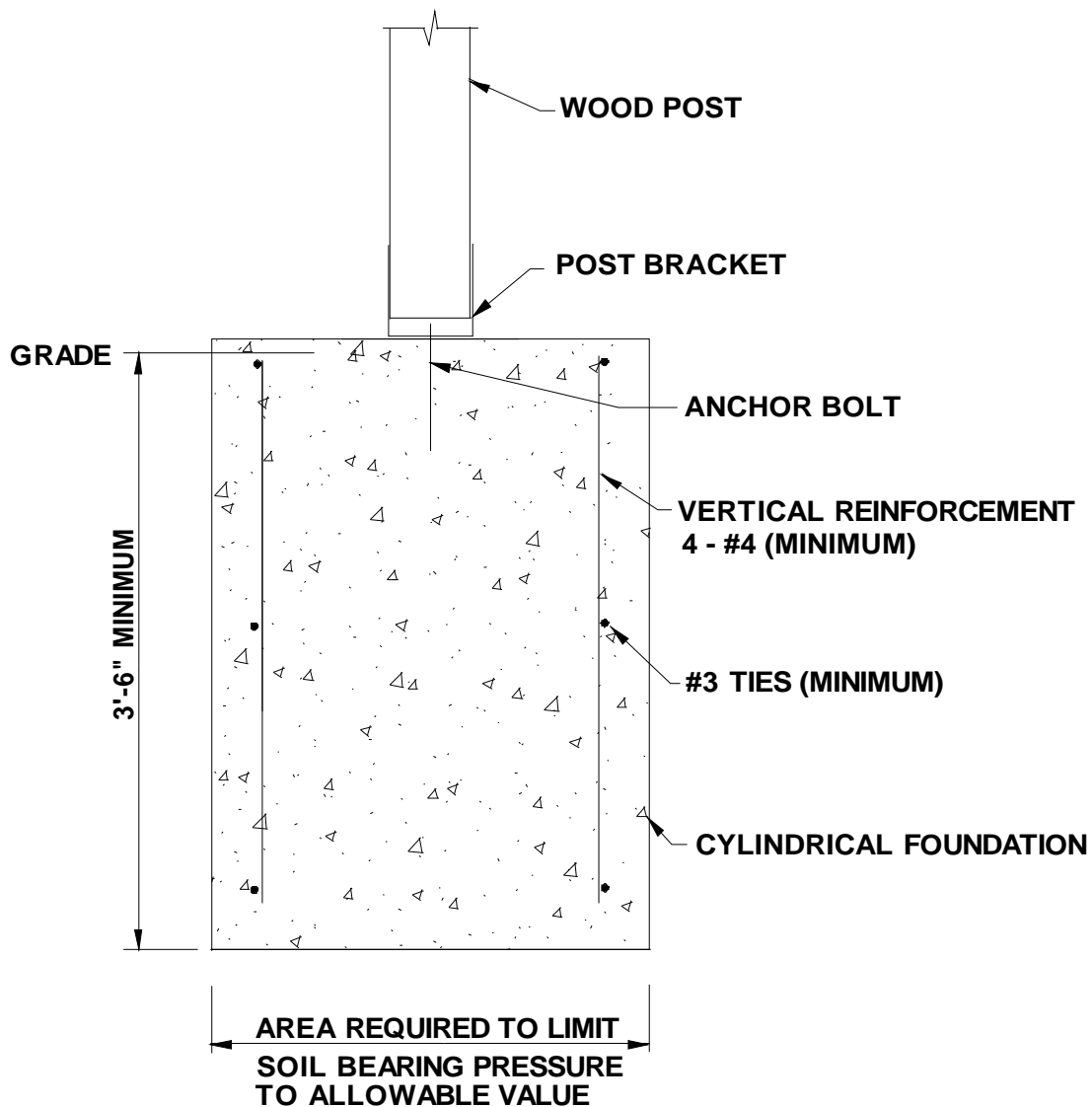
SCALE: NONE

**6F****DETAIL – TOP RAIL CONNECTION @ BRICK WALL**

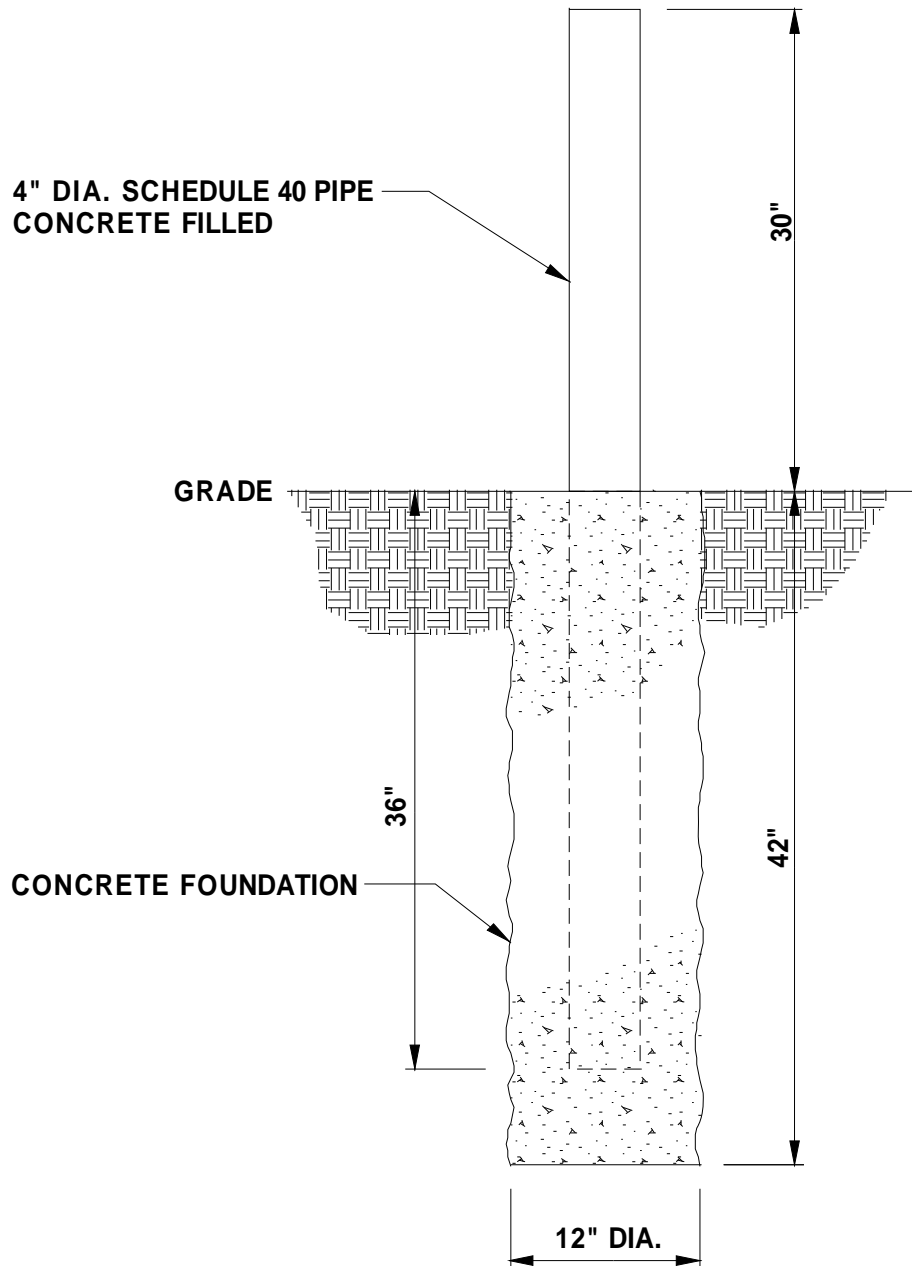
SCALE: NONE

**7A****DETAIL – POST SPREAD FOOTING**

SCALE: NONE

**7B****DETAIL – CYLINDRICAL POST FOUNDATION**

SCALE: NONE

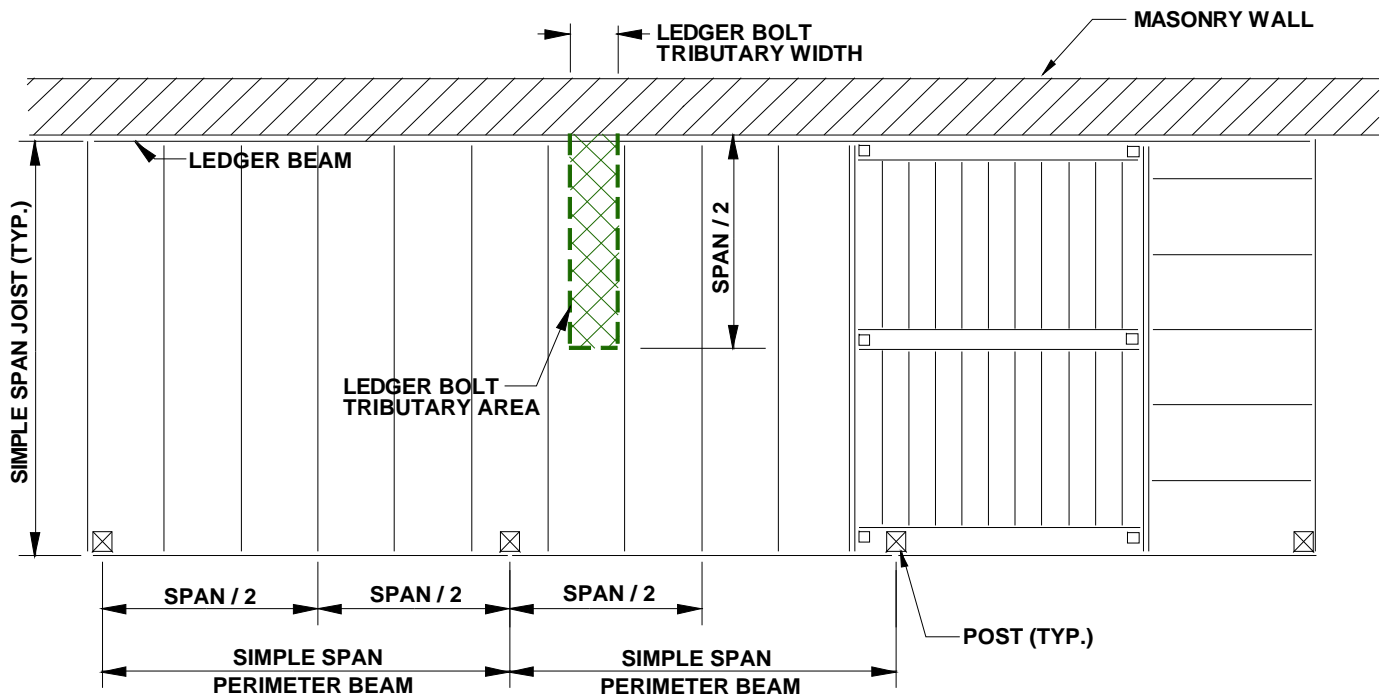


7C

DETAIL – BOLLARD

SCALE: NONE

$$\text{BOLT TRIBUTARY AREA} = \text{BOLT SPACING} \times (\text{JOIST SPAN} / 2)$$



THIS DRAWING IS A DEPICTION OF THE BOLT TRIBUTARY AREA FOR A LEDGER BOLT AND SHOULD BE USED WITH TABLES 9.13 AND 9.15. THE BOLT TRIBUTARY AREA IS DEFINED AS THE AREA SUPPORTED BY ONE BOLT.

8A

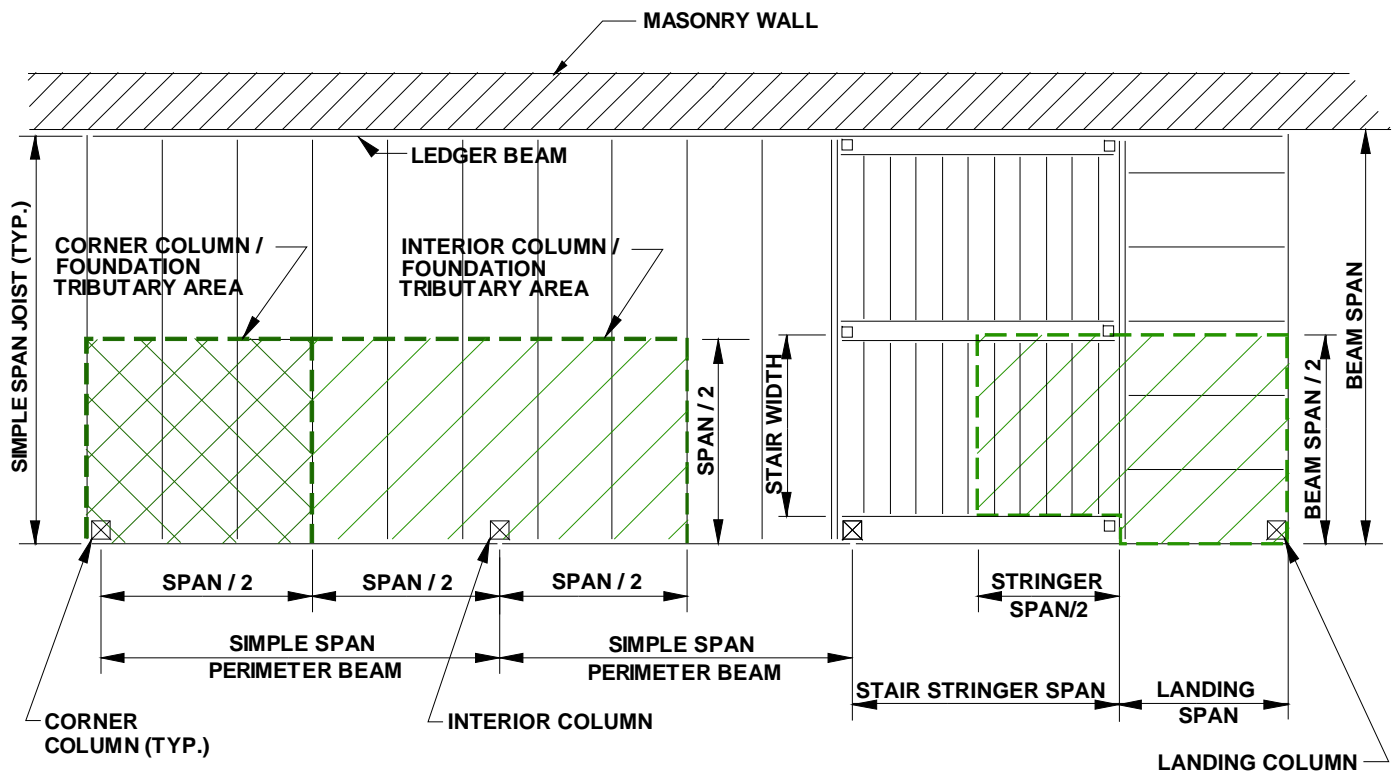
PLAN – BOLT TRIBUTARY AREA

SCALE: NONE

CORNER COLUMN TRIBUTARY AREA = (JOIST SPAN / 2) x (BEAM SPAN / 2)

INTERIOR COLUMN TRIBUTARY AREA = (JOIST SPAN / 2) x (2 x BEAM SPAN / 2)

LANDING COLUMN TRIBUTARY AREA = (LANDING SPAN) x (BEAM SPAN / 2) + (STAIR WIDTH) x (STRINGER SPAN / 2)

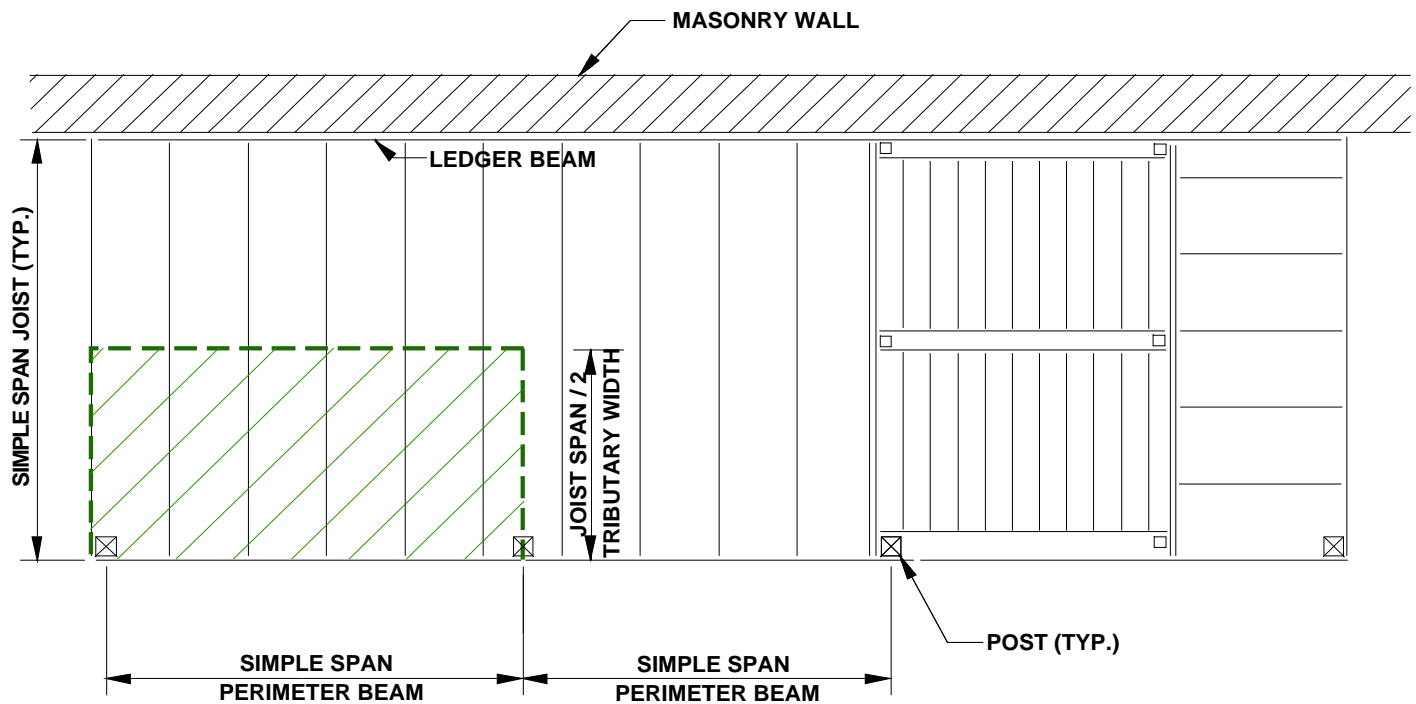


THIS DRAWING DEPICTS THREE DIFFERENT COLUMN TRIBUTARY AREAS AND SHOULD BE USED WITH TABLE 9.11.

8B

PLAN – COLUMN TRIBUTARY AREA

SCALE: NONE



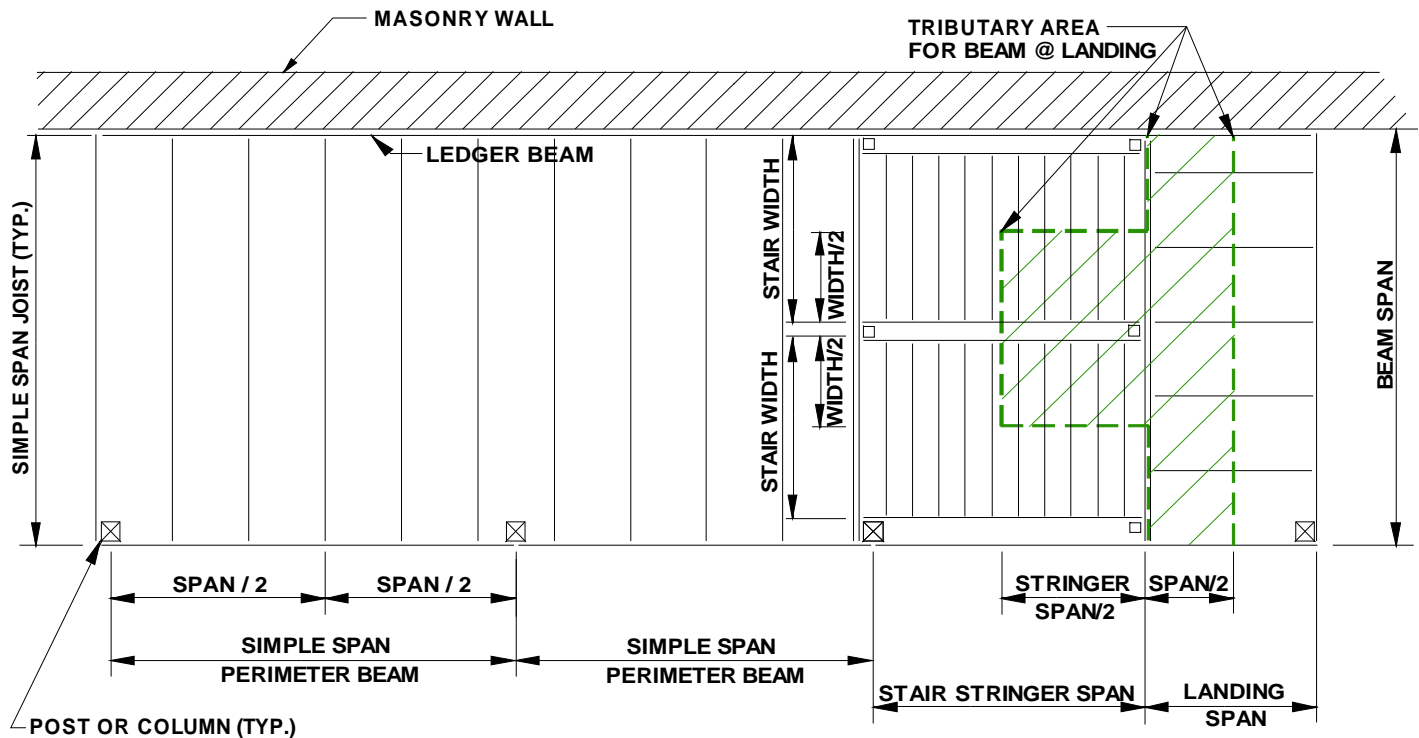
THIS DRAWING DEPICTS THE TRIBUTARY WIDTH FOR A PERIMETER BEAM AND SHOULD BE USED WITH TABLE 9.1.

8C

PLAN – BEAM TRIBUTARY WIDTH

SCALE: NONE

LOWER LANDING BEAM TRIBUTARY AREA =
 $(\text{LANDING SPAN} / 2) \times (\text{BEAM SPAN}) + (2 \times \text{STAIR WIDTH} / 2) \times \text{STRINGER SPAN} / 2$



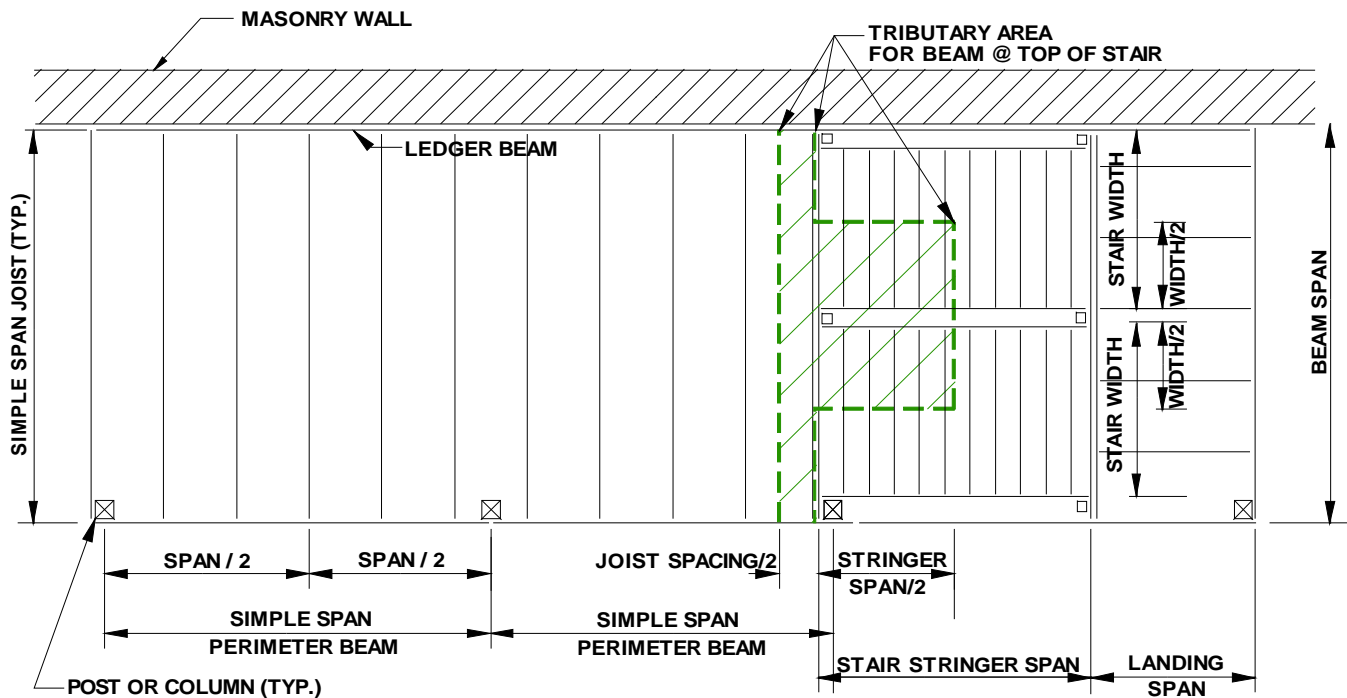
THIS DRAWING DEPICTS THE TRIBUTARY AREA FOR THE BEAM SUPPORTING THE ENDS OF THE STAIR STRINGERS AND THE LANDING JOISTS. THE DRAWING SHOULD BE USED WITH TABLE 9.3.

8D

PLAN – LOWER LANDING BEAM TRIBUTARY AREA

SCALE: NONE

BEAM @ TOP OF STAIR TRIBUTARY AREA =
 $(\text{JOIST SPACING} / 2) \times (\text{BEAM SPAN}) + (2 \times \text{STAIR WIDTH} / 2) \times (\text{STRINGER SPAN} / 2)$



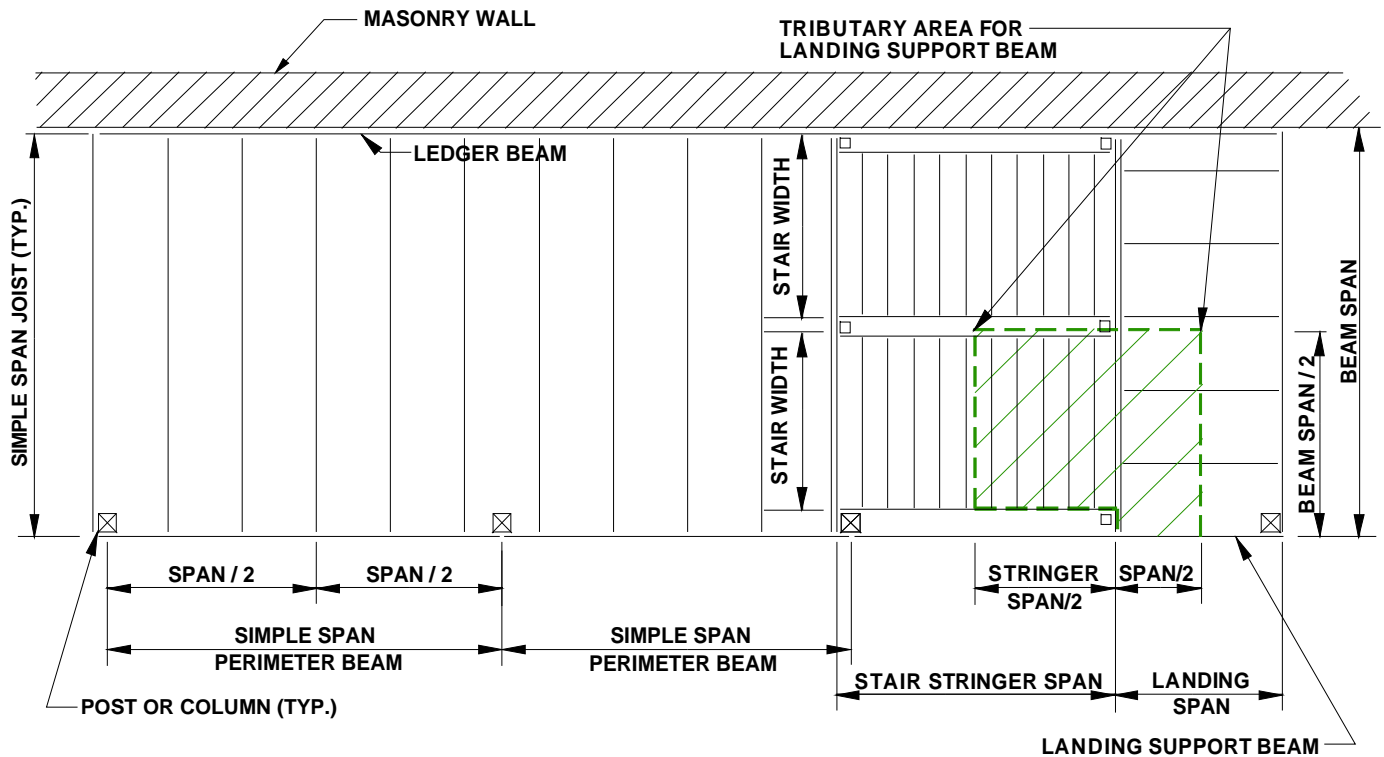
THIS DRAWING DEPICTS THE TRIBUTARY AREA FOR THE BEAM SUPPORTING THE ENDS OF THE STAIR STRINGERS AND A PORTION OF THE DECK. THE DRAWING SHOULD BE USED WITH TABLE 9.3.

8E

PLAN – STAIR SUPPORT BEAM AT DECK LEVEL TRIBUTARY AREA

SCALE: NONE

$$\text{LANDING SUPPORT BEAM TRIBUTARY AREA} = (\text{LANDING SPAN} / 2) \times (\text{BEAM SPAN} / 2) + (\text{STAIR WIDTH}) \times (\text{STRINGER SPAN} / 2)$$



THIS DRAWING DEPICTS THE TRIBUTARY AREA FOR THE PERIMETER BEAM SUPPORTING THE END OF THE BEAM SHOWN IN DRAWING 8D. THE DRAWING SHOULD BE USED WITH TABLE 9.3.

8F

PLAN – LANDING SUPPORT BEAM TRIBUTARY AREA

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

The following tables can be used to determine the size and/or number of various components of a wood porch or deck. Tables are provided for joists, beams, columns, bolts and foundations. All of the tables for wood framing include three wood species and two grades of lumber. The tables for bolts include three wood species and a consideration of the type of material on either side of the connection. (i.e. wood to wood, wood to steel and wood to concrete or masonry.) The tables for foundations include the allowable tributary area for a range of round foundation sizes.

The Wood Beam Maximum Span Table applies only to simple span beams supporting simple span joists. As listed in this table, simple span members are those that are supported at either end and are uniformly loaded between their ends. An illustration of the tributary width of a beam is included in Section D, Drawing 8C. For a beam supporting simple span joists, the tributary width is the joist span on both sides of the beam divided in half. Where joists or beams are cantilevered, a separate analysis and design must be made of those members using accepted engineering practice and the provisions of the National Design Specification for Wood Construction of the American Forest and Paper Association, as well as the requirements of the Chicago Building Code.

TABLE 9.1: WOOD BEAM MAXIMUM SPANS						LIVE LOAD: 100PSF		DEAD LOAD: 10PSF	
Beam Size	Species	Grade	Beam Supporting Width or Spacing (ft.)						
			1	2	3	4	5	6	7
1 - 2x8	Southern Pine	No. 1	10'-0"	7'-1"	5'-9"	5'-0"	4'-6"	4'-1"	3'-9"
		No. 2	8'-11"	6'-4"	5'-2"	4'-6"	4'-0"	3'-8"	3'-5"
	Spruce Pine Fir	No. 1	9'-1"	6'-5"	5'-3"	4'-6"	4'-1"	3'-8"	3'-5"
		No. 2	8'-6"	6'-0"	4'-11"	4'-3"	3'-10"	3'-6"	3'-3"
	Douglas Fir Larch	No. 1	8'-11"	6'-4"	5'-2"	4'-6"	4'-0"	3'-8"	3'-5"
		No. 2	8'-11"	6'-4"	5'-2"	4'-6"	4'-0"	3'-8"	3'-5"
1 - 2x10	Southern Pine	No. 1	11'-10"	8'-4"	6'-10"	5'-11"	5'-4"	4'-10"	4'-6"
		No. 2	11'-6"	8'-2"	6'-8"	5'-9"	5'-2"	4'-9"	4'-4"
	Spruce Pine Fir	No. 1	11'-0"	7'-9"	6'-4"	5'-6"	4'-11"	4'-6"	4'-2"
		No. 2	10'-4"	7'-4"	6'-0"	5'-2"	4'-8"	4'-3"	3'-11"
	Douglas Fir Larch	No. 1	11'-10"	8'-4"	6'-10"	5'-11"	5'-3"	4'-10"	4'-6"
		No. 2	11'-3"	7'-11"	6'-6"	5'-7"	5'-0"	4'-7"	4'-3"
1 - 2x12	Southern Pine	No. 1	14'-1"	9'-11"	8'-2"	7'-0"	6'-4"	5'-9"	5'-4"
		No. 2	13'-6"	9'-6"	7'-9"	6'-9"	6'-0"	5'-6"	5'-1"
	Spruce Pine Fir	No. 1	12'-9"	9'-0"	7'-4"	6'-4"	5'-8"	5'-2"	4'-10"
		No. 2	12'-0"	8'-6"	6'-11"	6'-0"	5'-4"	4'-11"	4'-6"
	Douglas Fir Larch	No. 1	13'-8"	9'-8"	7'-11"	6'-10"	6'-1"	5'-7"	5'-2"
		No. 2	13'-0"	9'-2"	7'-6"	6'-6"	5'-10"	5'-4"	4'-11"
1 - 6x6	Southern Pine	No. 1	13'-11"	9'-10"	8'-0"	6'-11"	6'-2"	5'-8"	5'-3"
		No. 2	11'-11"	8'-5"	6'-11"	6'-0"	5'-4"	4'-11"	4'-6"
	Spruce Pine Fir	No. 1	12'-4"	8'-8"	7'-1"	6'-2"	5'-6"	5'-0"	4'-8"
		No. 2	10'-0"	7'-1"	5'-10"	5'-0"	4'-6"	4'-1"	3'-10"
	Douglas Fir Larch	No. 1	13'-11"	9'-10"	8'-0"	6'-11"	6'-2"	5'-8"	5'-3"
		No. 2	12'-1"	8'-7"	7'-0"	6'-1"	5'-5"	4'-11"	4'-7"
2 - 2x8	Southern Pine	No.1	14'-1"	10'-0"	8'-2"	7'-1"	6'-4"	5'-9"	5'-4"
		No. 2	12'-8"	8'-11"	7'-4"	6'-4"	5'-8"	5'-2"	4'-9"
	Spruce Pine Fir	No.1	12'-9"	9'-1"	7'-5"	6'-5"	5'-9"	5'-3"	4'-10"
		No. 2	12'-1"	8'-6"	6'-11"	6'-0"	5'-5"	4'-11"	4'-7"
	Douglas Fir Larch	No.1	12'-8"	8'-11"	7'-4"	6'-4"	5'-8"	5'-2"	4'-9"
		No. 2	12'-8"	8'-11"	7'-4"	6'-4"	5'-8"	5'-2"	4'-9"
2 - 2x10	Southern Pine	No.1	16'-9"	11'-10"	9'-8"	8'-4"	7'-6"	6'-10"	6'-4"
		No. 2	16'-4"	11'-6"	9'-5"	8'-2"	7'-4"	6'-8"	6'-2"
	Spruce Pine Fir	No.1	15'-7"	11'-0"	9'-0"	7'-9"	7'-0"	6'-4"	5'-11"
		No. 2	14'-8"	10'-4"	8'-6"	7'-4"	6'-7"	6'-0"	5'-7"
	Douglas Fir Larch	No.1	16'-9"	11'-10"	9'-8"	8'-4"	7'-6"	6'-10"	6'-4"
		No. 2	15'-10"	11'-3"	9'-2"	7'-11"	7'-1"	6'-6"	6'-0"
2 - 2x12	Southern Pine	No.1	19'-11"	14'-1"	11'-6"	9'-11"	8'-11"	8'-2"	7'-6"
		No. 2	19'-1"	13'-6"	11'-0"	9'-6"	8'-6"	7'-9"	7'-2"
	Spruce Pine Fir	No.1	18'-0"	12'-9"	10'-5"	9'-0"	8'-1"	7'-4"	6'-10"
		No. 2	17'-0"	12'-0"	9'-10"	8'-6"	7'-7"	6'-11"	6'-5"
	Douglas Fir Larch	No.1	19'-4"	13'-8"	11'-2"	9'-8"	8'-8"	7'-11"	7'-4"
		No. 2	18'-4"	13'-0"	10'-7"	9'-2"	8'-3"	7'-6"	6'-11"

The Wood Beam Maximum Concentrated Load Table applies only to simple span beams supporting a concentrated load at or near midspan. As listed in this table, simple span members are those that are supported at either end only. A determination of the actual concentrated load on a beam must be made by an analysis of the joists, stair stringers and other members supported by that beam using accepted engineering practice, as well as the requirements of the Chicago Building Code. Examples of beams with concentrated loads and their tributary areas are included in Section D, Drawings 8D, 8E and 8F. In general, beams with concentrated loads occur at stair and landing framing.

TABLE 9.2: WOOD BEAM MAXIMUM CENTER CONCENTRATED LOAD (lbs.)

	Species	Grade	Beam Span (ft.)						
			4	5	6	7	8	9	10
1 - 2x8	Southern Pine	No. 1	1357	1085	905	775	678	603	543
		No. 2	1092	873	728	624	546	485	437
	Spruce Pine Fir	No. 1	1111	888	740	635	555	494	444
		No. 2	985	788	657	563	493	438	394
	Douglas Fir Larch	No. 1	1095	876	730	626	547	487	438
		No. 2	1095	876	730	626	547	487	438
1 - 2x10	Southern Pine	No. 1	1902	1521	1268	1087	951	845	761
		No. 2	1806	1445	1204	1032	903	803	722
	Spruce Pine Fir	No. 1	1640	1312	1094	937	820	729	656
		No. 2	1457	1165	971	832	728	647	583
	Douglas Fir Larch	No. 1	1900	1520	1266	1086	950	844	760
		No. 2	1713	1371	1142	979	857	761	685
1 - 2x12	Southern Pine	No. 1	2677	2142	1785	1530	1338	1190	1071
		No. 2	2454	1963	1636	1402	1227	1091	982
	Spruce Pine Fir	No. 1	2186	1749	1458	1249	1093	972	875
		No. 2	1943	1554	1295	1110	971	863	777
	Douglas Fir Larch	No. 1	2541	2033	1694	1452	1270	1129	1016
		No. 2	2292	1834	1528	1310	1146	1019	917
1 - 6x6	Southern Pine	No. 1	2649	2119	1766	1514	1324	1177	1059
		No. 2	1962	1570	1308	1121	981	872	785
	Spruce Pine Fir	No. 1	2078	1662	1385	1187	1039	923	831
		No. 2	1385	1108	924	792	693	616	554
	Douglas Fir Larch	No. 1	2649	2119	1766	1514	1324	1177	1060
		No. 2	2020	1616	1347	1154	1010	898	808
2 - 2x8	Southern Pine	No.1	2714	2171	1809	1551	1357	1206	1085
		No. 2	2184	1747	1456	1248	1092	971	873
	Spruce Pine Fir	No.1	2221	1777	1481	1269	1111	987	888
		No. 2	1971	1577	1314	1126	985	876	788
	Douglas Fir Larch	No.1	2190	1752	1460	1251	1095	973	876
		No. 2	2190	1752	1460	1251	1095	973	876
2 - 2x10	Southern Pine	No.1	3804	3043	2536	2174	1902	1691	1521
		No. 2	3612	2889	2408	2064	1806	1605	1445
	Spruce Pine Fir	No.1	3281	2625	2187	1875	1640	1458	1312
		No. 2	2913	2331	1942	1665	1457	1295	1165
	Douglas Fir Larch	No.1	3799	3039	2533	2171	1900	1689	1520
		No. 2	3427	2741	2284	1958	1713	1523	1371
2 - 2x12	Southern Pine	No.1	5354	4283	3569	3059	2677	2380	2142
		No. 2	4908	3926	3272	2805	2454	2181	1963
	Spruce Pine Fir	No.1	4373	3498	2915	2499	2186	1943	1749
		No. 2	3886	3109	2590	2220	1943	1727	1554
	Douglas Fir Larch	No.1	5081	4065	3388	2904	2541	2258	2033
		No. 2	4585	3668	3057	2620	2292	2038	1834

NOTES FOR TABLES 9.1 & 9.2:

1)	All Species	The tabulated values include wet service adjustment factor but do not include adjustment for preservative treatment. Consult the treatment manufacturer for the appropriate adjustment factor, if any.
2)	Spruce Pine Fir & Douglas Fir Larch	The tabulated values do not include incising adjustment factor for preservative treatment.

The Wood Beam Maximum Concentrated Load Tributary Area Table applies only to simple span beams supporting a concentrated load at or near midspan. As listed in this table, simple span members are those that are supported at either end only. The concentrated load capacities of the previous table are divided by the uniform load of 110 psf to obtain equivalent tributary areas. The tributary areas listed are the maximum area of deck, stair and landing that the listed beams can support over the spans listed. Examples of beams with concentrated loads and their tributary areas are included in Section D, Drawings 8D, 8E and 8F. In general, beams with concentrated loads occur at stair and landing framing.

TABLE 9.3: WOOD BEAM MAXIMUM CENTER CONCENTRATED LOAD TRIBUTARY AREA (sq. ft.)

			LIVE LOAD: 100PSF							DEAD LOAD: 10PSF
	Species	Grade	Beam Span (ft.)							
			4	5	6	7	8	9	10	
1 - 2x8	Southern Pine	No. 1	12	10	8	7	6	5	5	
		No. 2	10	8	7	6	5	4	4	
	Spruce Pine Fir	No. 1	10	8	7	6	5	4	4	
		No. 2	9	7	6	5	4	4	4	
	Douglas Fir Larch	No. 1	10	8	7	6	5	4	4	
		No. 2	10	8	7	6	5	4	4	
1 - 2x10	Southern Pine	No. 1	17	14	12	10	9	8	7	
		No. 2	16	13	11	9	8	7	7	
	Spruce Pine Fir	No. 1	15	12	10	9	7	7	6	
		No. 2	13	11	9	8	7	6	5	
	Douglas Fir Larch	No. 1	17	14	12	10	9	8	7	
		No. 2	16	12	10	9	8	7	6	
1 - 2x12	Southern Pine	No. 1	24	19	16	14	12	11	10	
		No. 2	22	18	15	13	11	10	9	
	Spruce Pine Fir	No. 1	20	16	13	11	10	9	8	
		No. 2	18	14	12	10	9	8	7	
	Douglas Fir Larch	No. 1	23	18	15	13	12	10	9	
		No. 2	21	17	14	12	10	9	8	
1 - 6x6	Southern Pine	No. 1	24	19	16	14	12	11	10	
		No. 2	18	14	12	10	9	8	7	
	Spruce Pine Fir	No. 1	19	15	13	11	9	8	8	
		No. 2	13	10	8	7	6	6	5	
	Douglas Fir Larch	No. 1	24	19	16	14	12	11	10	
		No. 2	18	15	12	10	9	8	7	
2 - 2x8	Southern Pine	No.1	25	20	16	14	12	11	10	
		No. 2	20	16	13	11	10	9	8	
	Spruce Pine Fir	No.1	20	16	13	12	10	9	8	
		No. 2	18	14	12	10	9	8	7	
	Douglas Fir Larch	No.1	20	16	13	11	10	9	8	
		No. 2	20	16	13	11	10	9	8	
2 - 2x10	Southern Pine	No.1	35	28	23	20	17	15	14	
		No. 2	33	26	22	19	16	15	13	
	Spruce Pine Fir	No.1	30	24	20	17	15	13	12	
		No. 2	26	21	18	15	13	12	11	
	Douglas Fir Larch	No.1	35	28	23	20	17	15	14	
		No. 2	31	25	21	18	16	14	12	
2 - 2x12	Southern Pine	No.1	49	39	32	28	24	22	19	
		No. 2	45	36	30	25	22	20	18	
	Spruce Pine Fir	No.1	40	32	27	23	20	18	16	
		No. 2	35	28	24	20	18	16	14	
	Douglas Fir Larch	No.1	46	37	31	26	23	21	18	
		No. 2	42	33	28	24	21	19	17	

NOTES:

1)	All Species	The tabulated values include wet service adjustment factor but do not include adjustment for preservative treatment. Consult the treatment manufacturer for the appropriate adjustment factor, if any.
2)	Spruce Pine Fir & Douglas Fir Larch	The tabulated values do not include incising adjustment factor for preservative treatment.

TABLE 9.4: WOOD BEAM MAXIMUM SPANS

LIVE LOAD: 40PSF

DEAD LOAD: 10PSF

Beam Size	Species	Grade	Beam Supporting Width or Spacing (ft.)						
			1	2	3	4	5	6	7
1 - 2x8	Southern Pine	No. 1	14'-10"	10'-6"	8'-7"	7'-5"	6'-7"	6'-1"	5'-7"
		No. 2	13'-3"	9'-5"	7'-8"	6'-8"	5'-11"	5'-5"	5'-0"
	Spruce Pine Fir	No. 1	13'-5"	9'-6"	7'-9"	6'-8"	6'-0"	5'-6"	5'-1"
		No. 2	12'-8"	8'-11"	7'-4"	6'-4"	5'-8"	5'-2"	4'-9"
	Douglas Fir Larch	No. 1	13'-3"	9'-5"	7'-8"	6'-8"	5'-11"	5'-5"	5'-0"
		No. 2	13'-3"	9'-5"	7'-8"	6'-8"	5'-11"	5'-5"	5'-0"
1 - 2x10	Southern Pine	No. 1	17'-7"	12'-5"	10'-2"	8'-9"	7'-10"	7'-2"	6'-8"
		No. 2	17'-1"	12'-1"	9'-11"	8'-7"	7'-8"	7'-0"	6'-6"
	Spruce Pine Fir	No. 1	16'-4"	11'-7"	9'-5"	8'-2"	7'-4"	6'-8"	6'-2"
		No. 2	15'-5"	10'-11"	8'-11"	7'-8"	6'-11"	6'-3"	5'-10"
	Douglas Fir Larch	No. 1	17'-6"	12'-5"	10'-1"	8'-9"	7'-10"	7'-2"	6'-8"
		No. 2	16'-8"	11'-9"	9'-7"	8'-4"	7'-5"	6'-10"	6'-3"
1 - 2x12	Southern Pine	No. 1	20'-11"	14'-9"	12'-1"	10'-5"	9'-4"	8'-6"	7'-11"
		No. 2	20'-0"	14'-2"	11'-7"	10'-0"	8'-11"	8'-2"	7'-7"
	Spruce Pine Fir	No. 1	18'-11"	13'-4"	10'-11"	9'-5"	8'-5"	7'-9"	7'-2"
		No. 2	17'-10"	12'-7"	10'-3"	8'-11"	8'-0"	7'-3"	6'-9"
	Douglas Fir Larch	No. 1	20'-4"	14'-4"	11'-9"	10'-2"	9'-1"	8'-3"	7'-8"
		No. 2	19'-3"	13'-8"	11'-2"	9'-8"	8'-7"	7'-10"	7'-3"
1 - 6x6	Southern Pine	No. 1	20'-7"	14'-7"	11'-11"	10'-4"	9'-2"	8'-5"	7'-9"
		No. 2	17'-9"	12'-6"	10'-3"	8'-10"	7'-11"	7'-3"	6'-8"
	Spruce Pine Fir	No. 1	18'-3"	12'-11"	10'-6"	9'-1"	8'-2"	7'-5"	6'-11"
		No. 2	14'-11"	10'-6"	8'-7"	7'-5"	6'-8"	6'-1"	5'-8"
	Douglas Fir Larch	No. 1	20'-7"	14'-7"	11'-11"	10'-4"	9'-2"	8'-5"	7'-9"
		No. 2	18'-0"	12'-9"	10'-5"	9'-0"	8'-0"	7'-4"	6'-10"
2 - 2x8	Southern Pine	No.1	20'-11"	14'-10"	12'-1"	10'-6"	9'-4"	8'-7"	7'-11"
		No. 2	18'-9"	13'-3"	10'-10"	9'-5"	8'-5"	7'-8"	7'-1"
	Spruce Pine Fir	No.1	19'-0"	13'-5"	10'-11"	9'-6"	8'-6"	7'-9"	7'-2"
		No. 2	17'-10"	12'-8"	10'-4"	8'-11"	8'-0"	7'-4"	6'-9"
	Douglas Fir Larch	No.1	18'-9"	13'-3"	10'-10"	9'-5"	8'-5"	7'-8"	7'-1"
		No. 2	18'-9"	13'-3"	10'-10"	9'-5"	8'-5"	7'-8"	7'-1"
2 - 2x10	Southern Pine	No.1	24'-10"	17'-7"	14'-4"	12'-5"	11'-1"	10'-2"	9'-5"
		No. 2	24'-2"	17'-1"	14'-0"	12'-1"	10'-10"	9'-11"	9'-2"
	Spruce Pine Fir	No.1	23'-1"	16'-4"	13'-4"	11'-7"	10'-4"	9'-5"	8'-9"
		No. 2	21'-9"	15'-5"	12'-7"	10'-11"	9'-9"	8'-11"	8'-3"
	Douglas Fir Larch	No.1	24'-10"	17'-6"	14'-4"	12'-5"	11'-1"	10'-1"	9'-4"
		No. 2	22'-6"	16'-8"	13'-7"	11'-9"	10'-6"	9'-7"	8'-11"
2 - 2x12	Southern Pine	No.1	29'-6"	20'-11"	17'-1"	14'-9"	13'-2"	12'-1"	11'-2"
		No. 2	28'-3"	20'-0"	16'-4"	14'-2"	12'-8"	11'-11"	10'-8"
	Spruce Pine Fir	No.1	26'-9"	18'-11"	15'-5"	13'-4"	11'-11"	10'-11"	10'-1"
		No. 2	25'-2"	17'-10"	14'-6"	12'-7"	11'-3"	10'-3"	9'-6"
	Douglas Fir Larch	No.1	28'-8"	20'-4"	16'-7"	14'-4"	12'-10"	11'-9"	10'-10"
		No. 2	27'-3"	19'-3"	15'-9"	13'-8"	12'-2"	11'-2"	10'-4"

NOTES:

1)	All Species	The tabulated values include wet service adjustment factor but do not include adjustment for preservative treatment. Consult the treatment manufacturer for the appropriate adjustment factor, if any.
2)	Spruce Pine Fir & Douglas Fir Larch	The tabulated values do not include incising adjustment factor for preservative treatment.

TABLE 9.5: WOOD ROOF BEAM MAXIMUM SPANS

SNOW LOAD: 25PSF

DEAD LOAD: 10PSF

Beam Size	Species	Grade	Beam Supporting Width or Spacing (ft.)						
			2	3	4	5	6	7	8
1 - 2x8	Southern Pine	No. 1	14'-6"	11'-10"	10'-3"	9'-2"	8'-5"	7'-9"	7'-3"
		No. 2	13'-0"	10'-8"	9'-2"	8'-3"	7'-6"	7'-0"	6'-6"
	Spruce Pine Fir	No. 1	12'-2"	9'-11"	8'-7"	7'-8"	7'-0"	6'-6"	6'-1"
		No. 2	11'-5"	9'-4"	8'-1"	7'-3"	6'-7"	6'-1"	5'-3"
	Douglas Fir Larch	No. 1	13'-0"	10'-8"	9'-3"	8'-3"	7'-6"	7'-0"	6'-6"
		No. 2	12'-4"	10'-1"	8'-9"	7'-9"	7'-2"	6'-7"	6'-2"
1 - 2x10	Southern Pine	No. 1	17'-2"	14'-1"	12'-2"	10'-11"	9'-11"	9'-2"	8'-7"
		No. 2	15'-6"	12'-8"	11'-0"	9'-10"	8'-11"	8'-3"	7'-9"
	Spruce Pine Fir	No. 1	14'-5"	12'-1"	10'-6"	9'-4"	8'-7"	7'-11"	7'-5"
		No. 2	13'-11"	11'-5"	9'-10"	8'-10"	8'-1"	7'-5"	7'-0"
	Douglas Fir Larch	No. 1	15'-11"	13'-0"	11'-3"	10'-1"	9'-2"	8'-6"	7'-11"
		No. 2	15'-1"	12'-4"	10'-8"	9'-6"	8'-8"	8'-1"	7'-6"
1 - 2x12	Southern Pine	No. 1	20'-5"	16'-8"	14'-5"	12'-11"	11'-10"	10'-11"	10'-3"
		No. 2	18'-1"	14'-10"	12'-10"	11'-6"	10'-6"	9'-8"	9'-1"
	Spruce Pine Fir	No. 1	17'-2"	14'-0"	12'-1"	10'-10"	9'-11"	9'-2"	8'-7"
		No. 2	16'-2"	13'-2"	11'-5"	10'-2"	9'-4"	8'-8"	8'-1"
	Douglas Fir Larch	No. 1	18'-5"	15'-0"	13'-0"	11'-8"	10'-7"	9'-10"	9'-2"
		No. 2	17'-6"	14'-3"	12'-4"	11'-1"	10'-1"	9'-4"	8'-9"
1 - 6x6	Southern Pine	No. 1	20'-3"	16'-6"	14'-4"	12'-10"	11'-8"	10'-10"	10'-1"
		No. 2	16'-1"	13'-1"	11'-4"	10'-2"	9'-3"	8'-7"	8'-0"
	Spruce Pine Fir	No. 1	16'-6"	13'-6"	11'-8"	10'-5"	9'-7"	8'-10"	8'-3"
		No. 2	13'-6"	11'-0"	9'-7"	8'-6"	7'-9"	7'-3"	6'-9"
	Douglas Fir Larch	No. 1	20'-3"	16'-6"	14'-4"	12'-10"	11'-8"	10'-10"	10'-1"
		No. 2	16'-4"	13'-4"	11'-6"	10'-4"	9'-5"	8'-9"	8'-2"
2 - 2x8	Southern Pine	No.1	20'-6"	16'-9"	14'-6"	13'-0"	11'-10"	11'-0"	10'-3"
		No. 2	18'-5"	15'-0"	13'-0"	11'-8"	10'-8"	9'-10"	9'-3"
	Spruce Pine Fir	No.1	17'-2"	14'-0"	12'-2"	10'-10"	9'-11"	9'-2"	8'-7"
		No. 2	16'-2"	13'-3"	11'-5"	10'-3"	9'-4"	8'-8"	8'-1"
	Douglas Fir Larch	No.1	18'-5"	15'-1"	13'-0"	11'-8"	10'-8"	9'-10"	9'-3"
		No. 2	17'-6"	14'-3"	12'-4"	11'-1"	10'-1"	9'-4"	8'-9"
2 - 2x10	Southern Pine	No.1	24'-4"	19'-10"	17'-2"	15'-5"	14'-1"	13'-0"	12'-2"
		No. 2	21'-11"	17'-11"	15'-6"	13'-10"	12'-8"	11'-9"	11'-0"
	Spruce Pine Fir	No.1	20'-11"	17'-1"	14'-10"	13'-3"	12'-1"	11'-2"	10'-6"
		No. 2	19'-9"	16'-1"	13'-11"	12'-6"	11'-5"	10'-7"	9'-10"
	Douglas Fir Larch	No.1	22'-6"	18'-4"	15'-11"	14'-3"	13'-0"	12'-0"	11'-3"
		No. 2	21'-4"	17'-5"	15'-1"	13'-6"	12'-4"	11'-5"	10'-8"
2 - 2x12	Southern Pine	No.1	28'-11"	23'-7"	20'-5"	18'-3"	16'-8"	15'-5"	14'-5"
		No. 2	25'-7"	20'-11"	18'-1"	16'-1"	14'-10"	13'-8"	12'-10"
	Spruce Pine Fir	No.1	24'-3"	19'-9"	17'-2"	15'-4"	14'-0"	12'-11"	12'-1"
		No. 2	22'-10"	18'-8"	16'-2"	14'-5"	13'-2"	12'-2"	11'-5"
	Douglas Fir Larch	No.1	26'-0"	21'-3"	18'-5"	16'-5"	15'-0"	13'-11"	13'-0"
		No. 2	24'-8"	20'-2"	17'-6"	15'-7"	14'-3"	13'-2"	12'-4"

NOTES:

1)	All Species	The tabulated values do not include wet service adjustment factor but do include a load duration factor for snow. Preservative treatment is not considered.
----	-------------	---

The Wood Joist Maximum Span Tables apply only to simple span joists. Simple span members are those that are supported at either end and are uniformly loaded between their ends. The table includes joists spaced at 12, 16 and 24 inches on center. Where joists are cantilevered, a separate analysis and design must be made of those members using accepted engineering practice and the provisions of the National Design Specification for Wood Construction of the American Forest and Paper Association, as well as the requirements of the Chicago Building Code.

TABLE 9.6: WOOD JOIST MAXIMUM SPANS

LIVE LOAD: 100PSF

DEAD LOAD: 10PSF

Beam Size	Species	Grade	Joist Spacing (inches on center)		
			12	16	24
2x8	Southern Pine	No. 1	10'-9"	9'-3"	7'-7"
		No. 2	9'-8"	8'-4"	6'-10"
	Spruce Pine Fir	No. 1	9'-9"	8'-5"	6'-11"
		No. 2	9'-2"	7'-11"	6'-6"
	Douglas Fir Larch	No. 1	9'-7"	8'-4"	6'-10"
		No. 2	9'-7"	8'-4"	6'-10"
2x10	Southern Pine	No. 1	12'-9"	11'-1"	9'-0"
		No. 2	12'-5"	10'-9"	8'-10"
	Spruce Pine Fir	No. 1	11'-11"	10'-4"	8'-5"
		No. 2	11'-2"	9'-8"	7'-11"
	Douglas Fir Larch	No. 1	12'-8"	11'-0"	9'-0"
		No. 2	12'-1"	10'-5"	8'-6"
2x12	Southern Pine	No. 1	15'-2"	13'-2"	10'-9"
		No. 2	14'-7"	12'-7"	10'-4"
	Spruce Pine Fir	No. 1	13'-9"	11'-11"	9'-9"
		No. 2	13'-0"	11'-3"	9'-2"
	Douglas Fir Larch	No. 1	14'-9"	12'-9"	10'-5"
		No. 2	14'-0"	12'-1"	9'-11"

NOTES:

1)	All Species	The tabulated values include repetitive member adjustment factor.
2)	All Species	The tabulated values include wet service adjustment factor but do not include adjustment for preservative treatment. Consult the treatment manufacturer for the appropriate adjustment factor, if any.
3)	Spruce Pine Fir & Douglas Fir Larch	The tabulated values do not include incising adjustment factor for preservative treatment.

TABLE 9.7: WOOD JOIST MAXIMUM SPANS

LIVE LOAD: 40PSF

DEAD LOAD: 10PSF

Beam Size	Species	Grade	Joist Spacing (inches on center)		
			12	16	24
2x8	Southern Pine	No. 1	15'-11"	13'-10"	11'-3"
		No. 2	14'-3"	12'-4"	10'-1"
	Spruce Pine Fir	No. 1	14'-6"	12'-6"	10'-3"
		No. 2	13'-7"	11'-10"	9'-8"
	Douglas Fir Larch	No. 1	14'-3"	12'-4"	10'-1"
		No. 2	14'-3"	12'-4"	10'-1"
2x10	Southern Pine	No. 1	18'-11"	16'-5"	13'-5"
		No. 2	18'-5"	16'-0"	13'-1"
	Spruce Pine Fir	No. 1	17'-8"	15'-3"	12'-6"
		No. 2	16'-7"	14'-5"	11'-9"
	Douglas Fir Larch	No. 1	18'-10"	16'-4"	13'-4"
		No. 2	17'-11"	15'-6"	12'-8"
2x12	Southern Pine	No. 1	22'-7"	19'-6"	15'-11"
		No. 2	21'-7"	18'-8"	15'-3"
	Spruce Pine Fir	No. 1	20'-5"	17'-9"	14'-6"
		No. 2	19'-3"	16'-8"	13'-7"
	Douglas Fir Larch	No. 1	21'-10"	18'-11"	15'-5"
		No. 2	20'-9"	17'-11"	14'-8"

NOTES:

1)	All Species		The tabulated values include repetitive member adjustment factor.
2)	All Species		The tabulated values include wet service adjustment factor but do not include adjustment for preservative treatment. Consult the treatment manufacturer for the appropriate adjustment factor, if any.
3)	Spruce Pine Fir & Douglas Fir Larch		The tabulated values do not include incising adjustment factor for preservative treatment.

TABLE 9.8: WOOD ROOF JOIST MAXIMUM SPANS

SNOW LOAD: 25PSF

DEAD LOAD: 10PSF

Beam Size	Species	Grade	Joist Spacing (inches on center)		
			12	16	24
2x8	Southern Pine	No. 1	***	***	15'-8"
		No. 2	***	***	14'-0"
	Spruce Pine Fir	No. 1	***	***	13'-1"
		No. 2	***	15'-1"	12'-4"
	Douglas Fir Larch	No. 1	***	***	14'-0"
		No. 2	***	***	13'-3"

NOTES:

1)	All Species		The tabulated values include repetitive member adjustment factor.
2)	All Species		The tabulated values do not include wet service adjustment factor but do include a load duration factor for snow. Preservative treatment is not considered.
3)	All Species		*** Maximum calculated span is 16'-0" or greater.

The Wood Stair Stringer Maximum Span Table applies only to simple span stringers. Simple span members are those that are supported at either end and are uniformly loaded between their ends. The table includes the horizontal projection of the stringer maximum spans for stair widths listed. The Table is based upon two (2) stringers per stair.

TABLE 9.9: WOOD STAIR STRINGER MAXIMUM SPANS

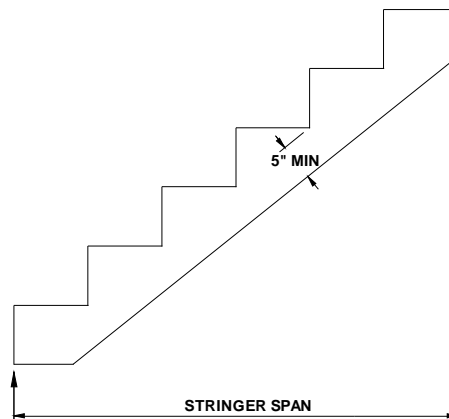
LIVE LOAD: 100PSF

DEAD LOAD: 10PSF

Stringer (Ea. Side)	Species	Grade	Stair Width (ft.)		
			3	3.5	4
Single Notched 2x12	Southern Pine	No. 1	4'-11"	4'-6"	4'-3"
		No. 2	4'-8"	4'-4"	4'-1"
	Spruce Pine Fir	No. 1	4'-5"	4'-1"	3'-10"
		No. 2	4'-2"	3'-10"	3'-7"
	Douglas Fir Larch	No. 1	4'-9"	4'-5"	4'-1"
		No. 2	4'-6"	4'-2"	3'-11"
Notched 2x12 and Full 2x6	Southern Pine	No. 1	7'-6"	7'-0"	6'-6"
		No. 2	7'-2"	6'-8"	6'-3"
	Spruce Pine Fir	No. 1	6'-10"	6'-4"	5'-11"
		No. 2	6'-5"	5'-11"	5'-7"
	Douglas Fir Larch	No. 1	7'-4"	6'-9"	6'-4"
		No. 2	6'-11"	6'-5"	6'-0"
Single Full 2x12	Southern Pine	No. 1	11'-6"	10'-8"	9'-11"
		No. 2	11'-0"	10'-2"	9'-6"
	Spruce Pine Fir	No. 1	10'-5"	9'-8"	9'-0"
		No. 2	9'-10"	9'-1"	8'-6"
	Douglas Fir Larch	No. 1	11'-2"	10'-4"	9'-8"
		No. 2	10'-7"	9'-10"	9'-2"
Notched 2x12 and Full 2x12	Southern Pine	No. 1	12'-7"	11'-8"	10'-11"
		No. 2	12'-1"	11'-2"	10'-6"
	Spruce Pine Fir	No. 1	11'-5"	10'-7"	9'-11"
		No. 2	10'-9"	10'-0"	9'-4"
	Douglas Fir Larch	No. 1	12'-3"	11'-4"	10'-7"
		No. 2	11'-7"	10'-9"	10'-1"

NOTES:

1)	All Species	The tabulated values include wet service adjustment factor but do not include adjustment for preservative treatment. Consult the treatment manufacturer for the appropriate adjustment factor, if any.
2)	Spruce Pine Fir & Douglas Fir Larch	The tabulated values do not include incising adjustment factor for preservative treatment.



The Wood Post Maximum Axial Load Table applies to any configuration of framing. The required load must be based upon an analysis of the framing that the post supports using accepted engineering practice. If the supported framing consists solely of simple span joists and beams, the load that the post must support is the tributary area of each deck times the uniform load of 110 psf.

TABLE 9.10: WOOD POST MAXIMUM AXIAL LOADS (WITHOUT NOTCHES) (LBS.)

Post Size	Species	Grade	Post Unbraced Length (ft.)						
			4	6	8	10	12	14	16
4x4	Southern Pine	No. 1	15070	10450	6690	4490	3190	2370	1830
		No. 2	13620	9650	6250	4210	2990	2230	1720
	Spruce Pine Fir	No. 1	11130	8160	5390	3650	2610	1940	1500
		No. 2	11130	8160	5390	3650	2610	1940	1500
	Douglas Fir Larch	No. 1	14290	10190	6620	4460	3180	2360	1820
		No. 2	12990	9430	6190	4180	2980	2220	1720
4x6	Southern Pine	No. 1	22700	16100	10430	7020	4990	3720	2870
		No. 2	20900	14990	9770	6590	4690	3490	2700
	Spruce Pine Fir	No. 1	16870	12590	8400	5720	4080	3050	2350
		No. 2	16870	12590	8400	5720	4080	3050	2350
	Douglas Fir Larch	No. 1	21690	15750	10330	6990	4980	3710	2860
		No. 2	19700	14560	9650	6550	4670	3480	2690
6x6	Southern Pine	No. 1	22090	21170	19630	17350	14600	11940	9720
		No. 2	14060	13470	12490	11040	9290	7600	6180
	Spruce Pine Fir	No. 1	18750	18000	16730	14840	12540	10290	8390
		No. 2	13400	12860	11950	10600	8960	7350	5990
	Douglas Fir Larch	No. 1	26660	25360	23150	19960	16370	13150	10590
		No. 2	18660	17750	16210	13980	11460	9210	7410

NOTES:

1)	Southern Pine	A.	The maximum axial capacity for a 6x6 with a half lap splice is 11,360 pounds for No. 1 grade and 7,230 pounds for No. 2 grade, above the lap.
		B.	The maximum axial capacity for a 6x6 with a 1-1/2 inch notch is 16,520 pounds for No. 1 grade and 10,510 pounds for No. 2 grade, above the notch.
2)	Spruce Pine Fir	A.	The maximum axial capacity for a 6x6 with a half lap splice is 9,630 pounds for No. 1 grade and 6,880 pounds for No. 2 grade, above the lap.
		B.	The maximum axial capacity for a 6x6 with a 1-1/2 inch notch is 14,010 pounds for No. 1 grade and 10,010 pounds for No. 2 grade, above the notch.
3)	Douglas Fir Larch	A.	The maximum axial capacity for a 6x6 with a half lap splice is 13,760 pounds for No. 1 grade and 9,630 pounds for No. 2 grade, above the lap.
		B.	The maximum axial capacity for a 6x6 with a 1-1/2 inch notch is 20,020 pounds for No. 1 grade and 14,010 pounds for No. 2 grade, above the notch.
4)	All Species		The tabulated values include wet service adjustment factor but do not include adjustment for preservative treatment. Consult the treatment manufacturer for the appropriate adjustment factor, if any.
5)	Spruce Pine Fir & Douglas Fir Larch		The tabulated values do not include incising adjustment factor for preservative treatment.

The Wood Post Maximum Tributary Support Area Table applies only to the support of decks comprised of simple span joists and beams. Simple span members are those that are supported at either end and are uniformly loaded between their ends. An illustration of the tributary area of a column is included in Section D, Drawing 8B. Where joists or beams are cantilevered, a separate analysis and design must be made of those members using accepted engineering practice and the provisions of the National Design Specification for Wood Construction of the American Forest and Paper Association, as well as the requirements of the Chicago Building Code.

TABLE 9.11: WOOD POST MAX. TRIBUTARY SUPPORT AREA (W/O NOTCHES) (SQ. FT.)

Post Size	Species	Grade	LIVE LOAD: 100PSF						DEAD LOAD: 10PSF	
			Post Unbraced Length (ft.)							
			4	6	8	10	12	14	16	
4x4	Southern Pine	No. 1	137	95	61	41	29	22	17	
		No. 2	124	88	57	38	27	20	16	
	Spruce Pine Fir	No. 1	101	74	49	33	24	18	14	
		No. 2	101	74	49	33	24	18	14	
	Douglas Fir Larch	No. 1	130	93	60	41	29	21	17	
		No. 2	118	86	56	38	27	20	16	
4x6	Southern Pine	No. 1	206	146	95	64	45	34	26	
		No. 2	190	136	89	60	43	32	25	
	Spruce Pine Fir	No. 1	153	114	76	52	37	28	21	
		No. 2	153	114	76	52	37	28	21	
	Douglas Fir Larch	No. 1	197	143	94	64	45	34	26	
		No. 2	179	132	88	60	42	32	24	
6x6	Southern Pine	No. 1	201	192	178	158	133	109	88	
		No. 2	128	122	114	100	84	69	56	
	Spruce Pine Fir	No. 1	170	164	152	135	114	94	76	
		No. 2	122	117	109	96	81	67	54	
	Douglas Fir Larch	No. 1	242	231	210	181	149	120	96	
		No. 2	170	161	147	127	104	84	67	

NOTES:

1)	Southern Pine	A.	The maximum post tributary support area for a 6x6 with a half lap splice is 103 sq. ft. for No. 1 grade and 66 sq. ft. for No. 2 grade, above the lap.
		B.	The maximum post tributary support area for a 6x6 with a 1-1/2 inch notch is 150 sq. ft. for No. 1 grade and 105 sq. ft. for No. 2 grade, above the notch.
2)	Spruce Pine Fir	A.	The maximum post tributary support area for a 6x6 with a half lap splice is 88 sq. ft. for No. 1 grade and 63 sq. ft. for No. 2 grade, above the lap.
		B.	The maximum post tributary support area for a 6x6 with a 1-1/2 inch notch is 127 sq. ft. for No. 1 grade and 91 sq. ft. for No. 2 grade, above the notch.
3)	Douglas Fir Larch	A.	The maximum post tributary support area for a 6x6 with a half lap splice is 125 sq. ft. for No. 1 grade and 88 sq. ft. for No. 2 grade, above the lap.
		B.	The maximum post tributary support area for a 6x6 with a 1-1/2 inch notch is 182 sq. ft. for No. 1 grade and 127 sq. ft. for No. 2 grade, above the notch.
4)	All Species		The tabulated values include wet service adjustment factor but do not include adjustment for preservative treatment. Consult the treatment manufacturer for the appropriate adjustment factor, if any.
5)	Spruce Pine Fir & Douglas Fir Larch		The tabulated values do not include incising adjustment factor for preservative treatment.

The Bolt Capacity for Single Shear Connection Table applies to any configuration of framing. The required load must be based upon an analysis of the framing that the connection supports using accepted engineering practice. If the supported framing consists solely of simple span joists and beams, the load that the connection must support is the tributary area times the uniform load of 110 psf.

TABLE 9.12: BOLT CAPACITY FOR SINGLE SHEAR CONNECTIONS (LBS.)

Main Member	Side Member	Limiting Force Direction	Species	Bolt Diameter (in.)					
				3/8"	1/2"	5/8"	3/4"	7/8"	1"
2x_	Single 2x_	Normal to Grain	Southern Pine	186	233	278	322	364	405
			Spruce Pine Fir	135	170	203	235	266	296
			Douglas Fir Larch	166	208	249	288	326	363
4x4 Post	Single 2x_	Normal to Grain	Southern Pine	192	278	393	465	502	536
			Spruce Pine Fir	147	222	287	314	339	363
			Douglas Fir Larch	174	256	366	405	437	467
6x6 Post	Single 2x_	Normal to Grain	Southern Pine	192	278	393	465	502	536
			Spruce Pine Fir	147	222	287	314	339	363
			Douglas Fir Larch	174	256	366	405	437	467
4x4 Post	Double 2x_	Normal to Grain	Southern Pine	212	361	500	621	765	930
			Spruce Pine Fir	179	293	378	483	610	684
			Douglas Fir Larch	200	339	452	566	704	835
6x6 Post	Double 2x_	Normal to Grain	Southern Pine	213	362	502	624	770	942
			Spruce Pine Fir	179	294	380	486	615	728
			Douglas Fir Larch	200	340	454	569	709	874
4x4 Post	3/8" Thick Steel Angle	Parallel to Grain	Southern Pine	403	715	1005	1342	1573	1793
			Spruce Pine Fir	355	629	894	1070	1245	1419
			Douglas Fir Larch	385	684	965	1244	1448	1651
6x6 Post	3/8" Thick Steel Angle	Parallel to Grain	Southern Pine	404	718	1011	1353	1754	2215
			Spruce Pine Fir	356	632	900	1203	1558	1965
			Douglas Fir Larch	386	687	971	1299	1682	2125
Concrete Masonry	Single 2x_	Normal to Grain	Southern Pine	197	284	400	458	493	525
			Spruce Pine Fir	155	234	284	310	334	355
			Douglas Fir Larch	180	265	366	399	430	457

NOTES:

- 1) The table is based upon 2 bolts in a row and row spacing of 3 inches, with the exception of wood to concrete or masonry where the spacing is 6 inches.
- 2) The table is based upon minimum edge and end distances as specified in the National Design Standards (NDS).
- 3) Where the side member consists of double 2x_ lumber, the material must be attached together to act as one piece of lumber
- 4) The values in the table include the wet service adjustment factor.

The Maximum Tributary Support Area Per Bolt Table applies only to the support of simple span joists and beams. Simple span members are those that are supported at either end and are uniformly loaded between their ends. An illustration of the tributary width of a ledger bolt is included in Section D, Drawing 8A. Where joists or beams are cantilevered, a separate analysis and design must be made of those members using accepted engineering practice and the provisions of the National Design Specification for Wood Construction of the American Forest and Paper Association, as well as the requirements of the Chicago Building Code.

TABLE 9.13: MAXIMUM TRIBUTARY SUPPORT AREA PER BOLT: SINGLE SHEAR CONNECTIONS (SQ. FT.)

Main Member	Side Member	Limiting Force Direction	Species	LIVE LOAD: 100 PSF						DEAD LOAD: 10 PSF	
				Bolt Diameter (in.)							
				3/8"	1/2"	5/8"	3/4"	7/8"	1"		
2x_	Single 2x_	Normal to Grain	Southern Pine	1.7	2.1	2.5	2.9	3.3	3.7		
			Spruce Pine Fir	1.2	1.5	1.8	2.1	2.4	2.7		
			Douglas Fir Larch	1.5	1.9	2.3	2.6	3	3.3		
4x4 Post	Single 2x_	Normal to Grain	Southern Pine	1.7	2.5	3.6	4.2	4.6	4.9		
			Spruce Pine Fir	1.3	2	2.6	2.9	3.1	3.3		
			Douglas Fir Larch	1.6	2.3	3.3	3.7	4	4.2		
6x6 Post	Single 2x_	Normal to Grain	Southern Pine	1.7	2.5	3.6	4.2	4.6	4.9		
			Spruce Pine Fir	1.3	2	2.6	2.9	3.1	3.3		
			Douglas Fir Larch	1.6	2.3	3.3	3.7	4	4.2		
4x4 Post	Double 2x_	Normal to Grain	Southern Pine	1.9	3.3	4.5	5.6	7	8.5		
			Spruce Pine Fir	1.6	2.7	3.4	4.4	5.5	6.2		
			Douglas Fir Larch	1.8	3.1	4.1	5.2	6.4	7.6		
6x6 Post	Double 2x_	Normal to Grain	Southern Pine	1.9	3.3	4.6	5.7	7	8.6		
			Spruce Pine Fir	1.6	2.7	3.5	4.4	5.6	6.6		
			Douglas Fir Larch	1.8	3.1	4.1	5.2	6.4	7.9		
4x4 Post	3/8" Thick Steel Angle	Parallel to Grain	Southern Pine	3.7	6.5	9.1	12.2	14.3	16.3		
			Spruce Pine Fir	3.2	5.7	8.1	9.7	11.3	12.9		
			Douglas Fir Larch	3.5	6.2	8.8	11.3	13.2	15		
6x6 Post	3/8" Thick Steel Angle	Parallel to Grain	Southern Pine	3.7	6.5	9.2	12.3	15.9	20.1		
			Spruce Pine Fir	3.2	5.7	8.2	10.9	14.2	17.9		
			Douglas Fir Larch	3.5	6.2	8.8	11.8	15.3	19.3		
Concrete Masonry	Single 2x_	Normal to Grain	Southern Pine	1.8	2.6	3.6	4.2	4.5	4.8		
			Spruce Pine Fir	1.4	2.1	2.6	2.8	3	3.2		
			Douglas Fir Larch	1.6	2.4	3.3	3.6	3.9	4.2		

NOTES:

- 1) The table is based upon 2 bolts in a row and row spacing of 3 inches, with the exception of wood to concrete or masonry where the spacing is 6 inches.
- 2) The table is based upon minimum edge and end distances as specified in the NDS.
- 3) Where the side member consists of double 2x_ lumber, the material must be attached together to act as one piece of lumber
- 4) The values in the table include the wet service adjustment factor.

The Lag Screw (Bolt) Capacity for Single Shear Connection Table applies to any configuration of framing. The required load must be based upon an analysis of the framing that the connection supports using accepted engineering practice. If the supported framing consists solely of simple span joists and beams, the load that the connection must support is the tributary area times the uniform load of 110 psf.

TABLE 9.14: LAG SCREW (BOLT) CAPACITY FOR SINGLE SHEAR CONNECTIONS (LBS.)

Main Member	Side Member	Limiting Force Direction	Species	Bolt Diameter (in.)				
				1/4"	5/16"	3/8"	7/16"	1/2"
2x_	Single 2x_	Normal to Grain	Southern Pine	38	42	53	**	**
			Spruce Pine Fir	30	40	44	**	**
			Douglas Fir Larch	34	45	50	**	**
4X4 Post	Single 2x_	Normal to Grain	Southern Pine	51	71	106	151	151
			Spruce Pine Fir	41	67	88	114	116
			Douglas Fir Larch	45	75	100	136	138
6X6 Post	Single 2x_	Normal to Grain	Southern Pine	51	71	106	151	173
			Spruce Pine Fir	41	67	88	114	133
			Douglas Fir Larch	45	75	100	136	157

NOTES:

- 1) The table is based upon 2 bolts in a row and row spacing of 3 inches.
- 2) The table is based upon minimum edge and end distances as specified in the NDS.
- 3) The values in the table include the wet service adjustment factor.
- 4) **The embedment of the lag screw into the main member must be a minimum of 4D or 4 times the bolt diameter exclusive of the tapered tip of the bolt. For full capacity, the lag screw must be embedded in the main member a minimum of 8D or 8 times the bolt diameter exclusive of the tapered tip of the bolt.

The Maximum Tributary Support Area Per Lag Screw (Bolt) Table applies only to the support of simple span joists and beams. Simple span members are those that are supported at either end and are uniformly loaded between their ends. An illustration of the tributary width of a ledger bolt is included in Section D, Drawing 8A. Where joists or beams are cantilevered, a separate analysis and design must be made of those members using accepted engineering practice and the provisions of the National Design Specification for Wood Construction of the American Forest and Paper Association, as well as the requirements of the Chicago Building Code.

TABLE 9.15: MAXIMUM TRIBUTARY SUPPORT AREA PER LAG SCREW (BOLT): SINGLE SHEAR CONNECTIONS (SQ. FT.)

LIVE LOAD: 100 PSF									DEAD LOAD: 10 PSF	
Main Member	Side Member	Limiting Force Direction	Species	Bolt Diameter (in.)						
				1/4"	5/16"	3/8"	7/16"	1/2"		
2x_	Single 2x_	Normal to Grain	Southern Pine	0.4	0.4	0.5	**	**		
			Spruce Pine Fir	0.3	0.4	0.4	**	**		
			Douglas Fir Larch	0.3	0.4	0.5	**	**		
4x4 Post	Single 2x_	Normal to Grain	Southern Pine	0.5	0.6	1.0	1.4	1.4		
			Spruce Pine Fir	0.4	0.6	0.8	1.0	1.1		
			Douglas Fir Larch	0.4	0.7	0.9	1.2	1.3		
6x6 Post	Single 2x_	Normal to Grain	Southern Pine	0.5	0.6	1.0	1.4	1.6		
			Spruce Pine Fir	0.4	0.6	0.8	1.0	1.2		
			Douglas Fir Larch	0.4	0.7	0.9	1.2	1.4		

NOTES:

- 1) The table is based upon 2 bolts in a row and row spacing of 3 inches.
- 2) The table is based upon minimum edge and end distances as specified in the NDS.
- 3) The values in the table include the wet service adjustment factor.
- 4) **The embedment of the lag screw into the main member must be a minimum of 4D or 4 times the bolt diameter exclusive of the tapered tip of the bolt. For full capacity, the lag screw must be embedded in the main member a minimum of 8D or 8 times the bolt diameter exclusive of the tapered tip of the bolt.

The Maximum Load Capacity for Round Foundation Table applies to any configuration of framing. The required load must be based upon an analysis of the framing that the foundation supports using accepted engineering practice. If the supported framing consists solely of simple span joists and beams, the load that the post must support is the tributary area of each deck times the uniform load of 110 psf.

TABLE 9.16: MAXIMUM LOAD CAPACITY FOR ROUND FOUNDATION (LBS.)

Pier Diameter (In.)	8	10	12	14	16	18
1500 psf Allowable Soil Bearing Pressure	520	820	1180	1600	2094	2,650
3000 psf Allowable Soil Bearing Pressure	1050	1640	2360	3210	4190	5,300

Pier Diameter (In.)	20	22	24	26	28	30
1500 psf Allowable Soil Bearing Pressure	3,270	3,960	4,710	5,530	6,410	7,360
3000 psf Allowable Soil Bearing Pressure	6,540	7,920	9,420	11,060	12,830	14,730

The Maximum Tributary Support Area for Round Foundation Table applies only to the support of decks comprised of simple span joists and beams. Simple span members are those that are supported at either end and are uniformly loaded between their ends. An illustration of the tributary area of a column or foundation is included in Section D, Drawing 8B. Where joists or beams are cantilevered, a separate analysis and design must be made of those members using accepted engineering practice and the provisions of the National Design Specification for Wood Construction of the American Forest and Paper Association, as well as the requirements of the Chicago Building Code.

TABLE 9.17: MAXIMUM TRIBUTARY SUPPORT AREA FOR ROUND FOUNDATION (SQ. FT.)

Pier Diameter (In.)	8	10	12	14	16	18
1500 psf Allowable Soil Bearing Pressure	4.8	7.4	10.7	14.6	19	24
3000 psf Allowable Soil Bearing Pressure	9.5	14.9	21.4	29.2	38.1	48

Pier Diameter (In.)	20	22	24	26	28	30
1500 psf Allowable Soil Bearing Pressure	30	36	43	50	58	67
3000 psf Allowable Soil Bearing Pressure	60	72	86	101	117	133

The Maximum Load Capacity for Square Footing Table applies to any configuration of framing. The required load must be based upon an analysis of the framing that the foundation supports using accepted engineering practice. If the supported framing consists solely of simple span joists and beams, the load that the post must support is the tributary area of each deck times the uniform load of 110 psf.

TABLE 9.18: MAXIMUM LOAD CAPACITY FOR SQUARE FOOTING (LBS.)

Footing Dimension (In.)	18	21	24	27	30	33	36
1500 psf Allowable Soil Bearing Pressure	3,380	4,590	6,000	7,590	9,380	11,340	13,500
3000 psf Allowable Soil Bearing Pressure	6,750	9,190	12,000	15,190	18,750	22,690	27,000

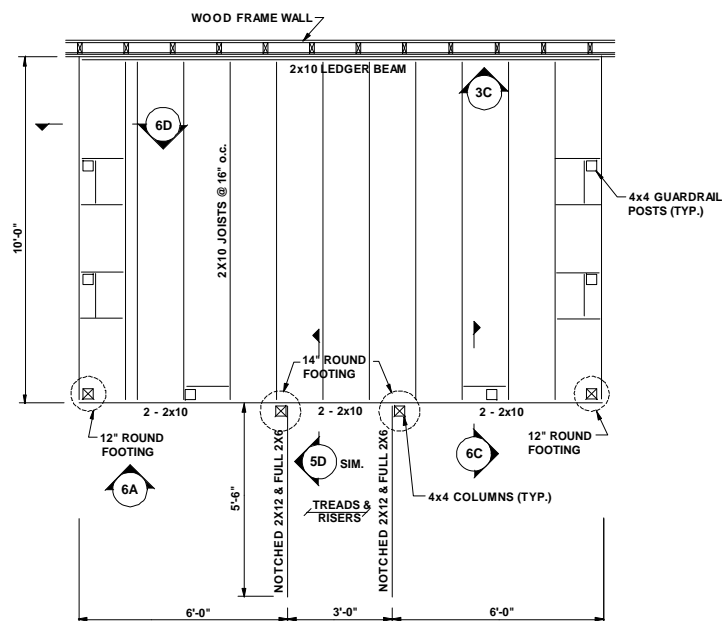
The Maximum Tributary Support Area for Square Footing Table applies only to the support of decks comprised of simple span joists and beams. Simple span members are those that are supported at either end and are uniformly loaded between their ends. An illustration of the tributary area of a column or foundation is included in Section D, Drawing 8B. Where joists or beams are cantilevered, a separate analysis and design must be made of those members using accepted engineering practice and the provisions of the National Design Specification for Wood Construction of the American Forest and Paper Association, as well as the requirements of the Chicago Building Code.

TABLE 9.19: MAXIMUM TRIBUTARY SUPPORT AREA FOR SQUARE FOOTING (SQ. FT.)

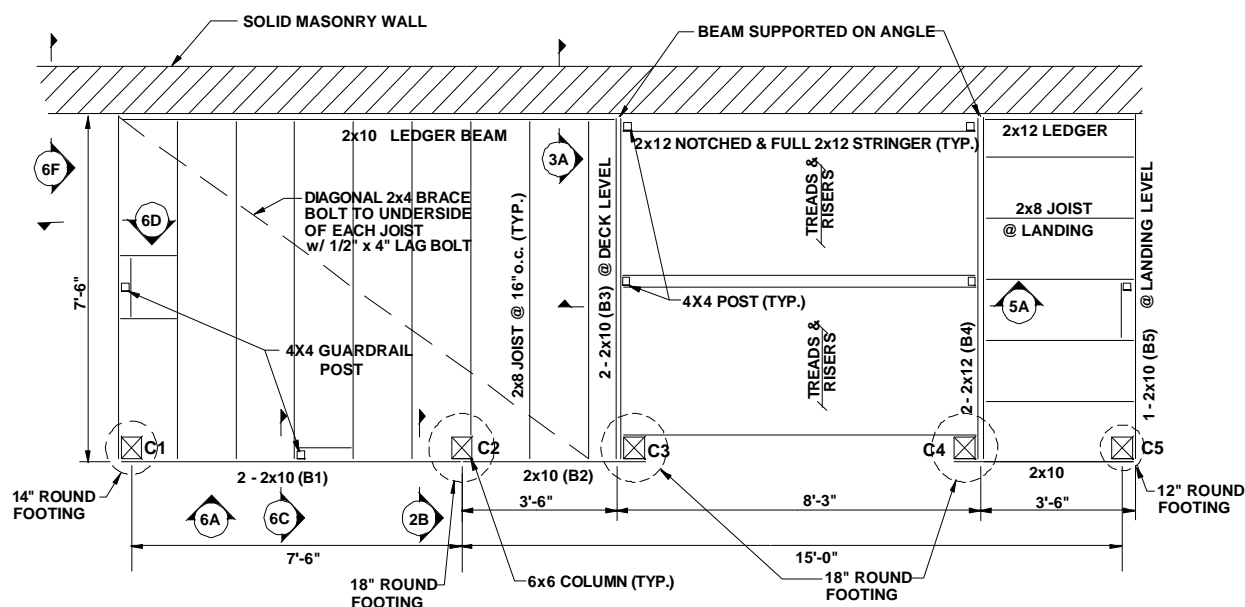
Footing Dimension (In.)	18	21	24	27	30	33	36
1500 psf Allowable Soil Bearing Pressure	31	42	55	69	85	103	123
3000 psf Allowable Soil Bearing Pressure	61	84	109	138	171	206	246

The following are two example designs using the details provided in Section D and the load tables provided in Section E. The examples are provided to illustrate the applicability of the details and use of the load tables. As the dimensions and configurations of decks and porches throughout the City of Chicago vary considerably, these examples cannot be considered as designs that can be used by the homeowner, contractor, architect or structural engineer without consideration of the actual conditions at each building. In essence, these example designs are intended only as a guide.

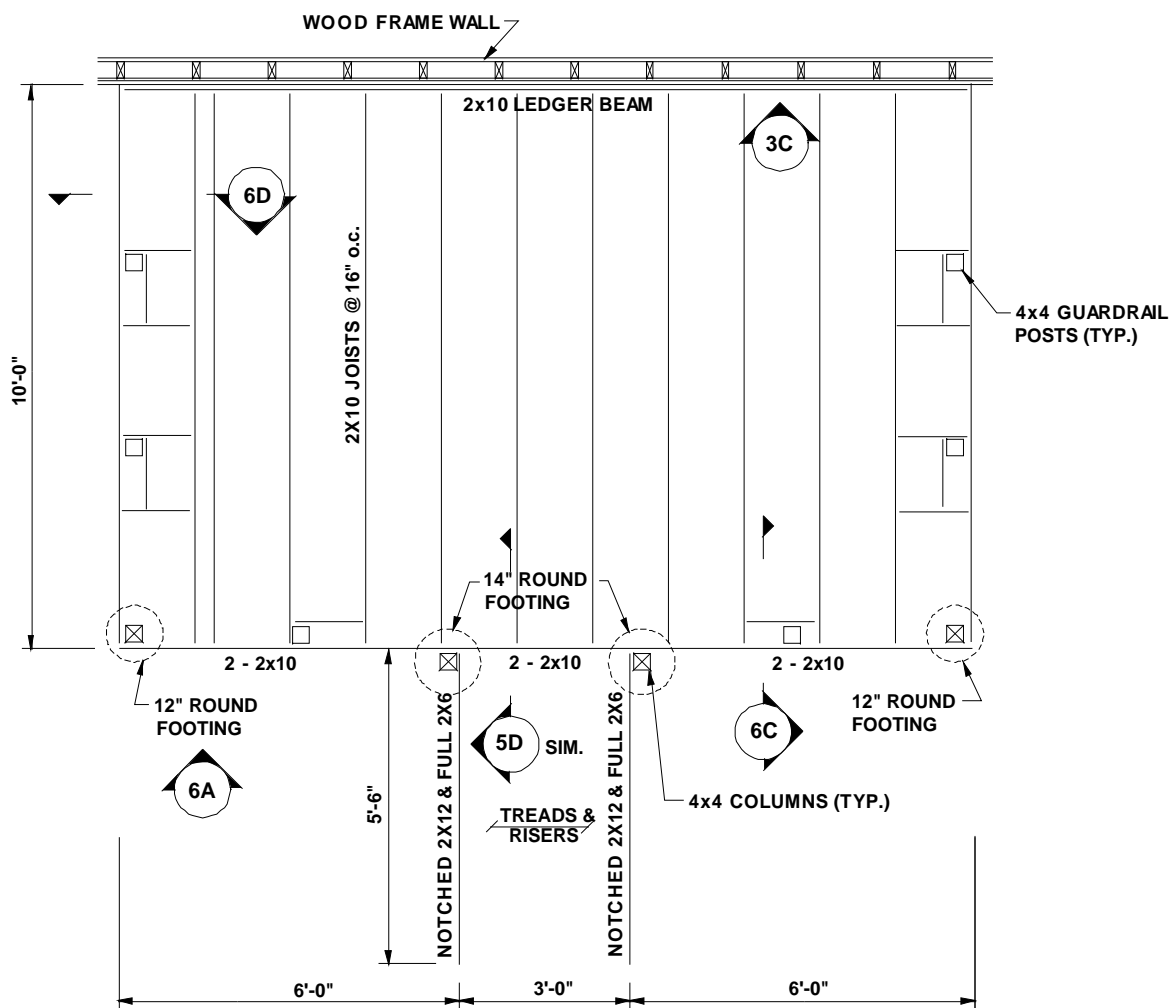
EXAMPLE 1: PORCH/DECK FRAMING PLAN



EXAMPLE 2: PORCH/DECK FRAMING PLAN



EXAMPLE 1: PORCH/DECK FRAMING PLAN



The first example design is for a single level deck located near grade. This example may be similar to a deck attached to the rear of a single family residence.

EXAMPLE 1: PORCH/DECK DESCRIPTION

Number of Levels	Plan Dimension Parallel to Building	Plan Dimension Perpendicular to Building	Attachment to Wall	Edge Beam	Footing Type	Soil Allowable Bearing Pressure	Beam to Column Connection Type	Live Load Dead Load	Lumber Species and Grade
1	15'-0"	10'-0"	Bolted Wood Ledger to Building Framing	2 – 2x Lumber	Cylindrical	3000 psf	Steel Angle with Bolts – See Detail 2A	100 PSF 10 PSF	Southern Pine No. 2 or Better

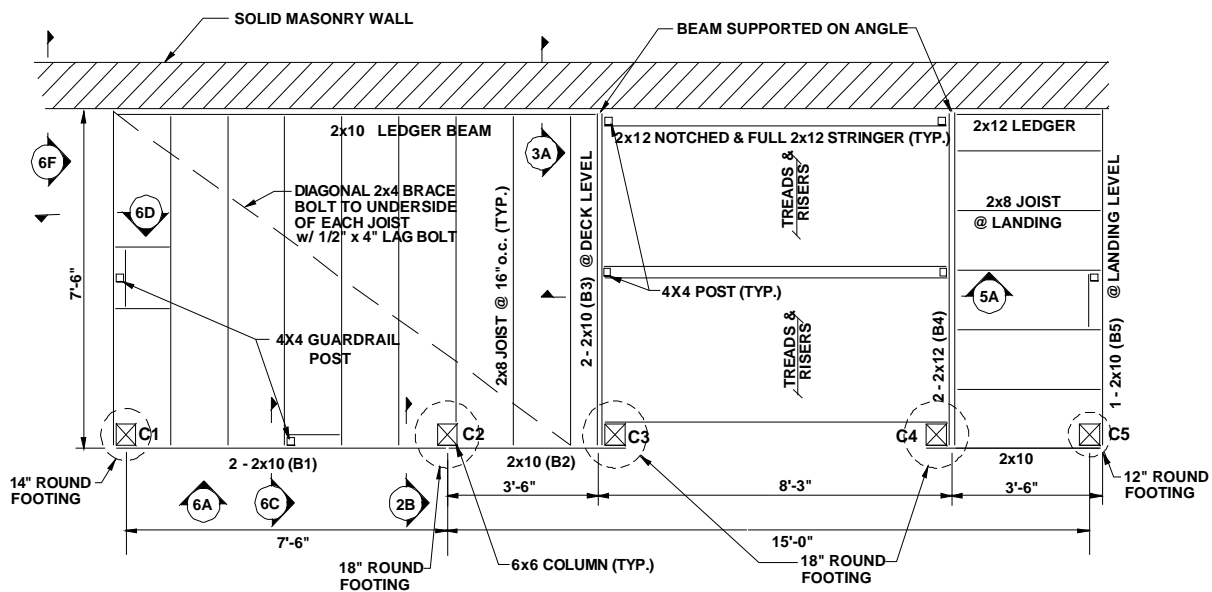
EXAMPLE 1: PORCH/DECK MEMBER DESIGN

Member / Connection	Span / Unbraced Length	Joist / Beam Spacing	Tributary Width or Tributary Area (See Drawings 8A – 8F)	Reference Table for member and bolt sizing	Max Span, Tributary Width or Area Shown in Table	Member Size or Bolt Size and Number	Remarks
Joists	10'-0"	16"	N/A	9.6	10'-9"	2x10	Simple Span
Edge Beam	6'-0"	N/A	10 ft./2 = 5 ft.	9.1	7'-4"	2 – 2x10	
Corner Column	6'-0"	N/A	(10 ft./2) x (6 ft./2) = 15 sq. ft.	9.11	88 sq. ft.	4x4	Single supported level
Center Column	6'-0"	N/A	(10 ft./2) x (6 ft. + 3 ft.)/2 + (5.5 ft./2) x (3 ft./2) = 26.6 sq. ft.	9.11	88 sq. ft.	4x4	Includes load from deck and stair stringer
Ledger Bolts	N/A	N/A	(10 ft.)/2 x 8 in. = 5 sq. ft.	9.15	1.4 sq. ft. per bolt	3 – 1/2" Lag Bolts @ 8 inches o.c.	Add blocking to stud wall to receive bolts between studs.
Beam Connection Bolts to Center Column	N/A	N/A	(10 ft./2) x (6 ft. + 3 ft.)/2 = 22.5 sq. ft.	9.13	12.2 sq. ft. per bolt for 4x4 post	2 – 3/4" Bolts	
Beam Connection Bolts to Corner Column	N/A	N/A	(10 ft.)/2 x (6 ft.)/2 = 15 sq. ft.	9.13	12.2 sq. ft. per bolt for 4x4 post	2 – 3/4" Bolts	
Stair Stringer	5'-6"	3'-0"	1.5 ft.	9.9	7'-2"	2x12 Notched and Full 2x6	Stair width = 3'-0"
Stair Stringer Connection to 4x4 Post	N/A	N/A	(5.5 ft.)/2 x (3 ft.)/2 = 4.13 sq. ft.	9.13	2.5 sq. ft. per bolt	2 – 1/2 inch bolts	Connection must carry one half of stringer load
Corner Foundation	N/A		(10 ft./2) x (6 ft./2) = 15 sq. ft.	9.17	21.4 sq. ft.	12 inches	
Center Foundation	N/A	N/A	(10 ft./2) x (6 ft. + 3 ft.)/2 + (5.5 ft./2) x (3 ft./2) = 26.6 sq. ft.	9.17	29.2 sq. ft.	14 inches	

NOTES:

- 1) The span is the distance between the supporting columns or beams. The unbraced length is the distance between the ground and the first level or between levels; whichever is greater.
- 2) The joist or beam spacing is the distance between adjacent joists or beams.

EXAMPLE 2: PORCH/DECK FRAMING PLAN



The second example design is for a two level rear porch and may be similar to that attached to the rear of a two story brick building.

EXAMPLE 2: PORCH/DECK DESCRIPTION

Number of Levels	Plan Dimension Parallel to Building	Plan Dimension Perpendicular to Building	Attachment to Wall	Edge Beam	Footing Type	Soil Allowable Bearing Pressure	Beam to Column Connection Type	Live Load Dead Load	Lumber Species and Grade
2	22'-6"	7'-6"	Bolted Wood Ledger to Masonry	2 – 2x Lumber	Cylindrical	3000 psf	Steel Angle with Bolts – See Detail 2A	100 PSF 10 PSF	Southern Pine No. 2 or Better

EXAMPLE 2: PORCH/DECK MEMBER DESIGN

Member / Connection	Span / Unbraced Length	Joist / Beam Spacing	Tributary Width or Tributary Area (See Drawings 8A – 8F)	Reference Table for member and bolt sizing	Max Span, Tributary Width or Area Shown in Table	Member Size or Bolt Size and Number	Remarks
Joists	7'-6"	16"	N/A	9.6	8'-4"	2x8	Simple Span
Edge Beam (B1)	7'-6"	N/A	Tributary Width: $(7.5 \text{ ft.})/2 = 3.75 \text{ ft.}$ (See Drawing 8C)	9.1	8'-2"	2 – 2x10	No. 2 Southern Pine
Edge Beam (B2)	3'-6"	N/A	Tributary Width: $(7.5 \text{ ft.})/2 = 3.75 \text{ ft.}$ (See Drawing 8C)	9.1	5'-9"	2x10	Member sized to match the width of beam B1.
Beam Supporting Top of Stair (B3)	7'-6"	N/A	Tributary Area: $(7.5 \text{ ft.} \times (1.33 \text{ ft.})/2) + (3 \text{ ft.} \times (8.25 \text{ ft.})/2) = 17.4 \text{ sq. ft.}$ (See Drawing 8E)	9.3	$(19 \text{ ft.} + 16 \text{ ft.})/2 = 17.5 \text{ sq. ft.}$	2 – 2x10	Tributary area includes deck and stair stringers. Determination of maximum span requires interpolation between 7 ft. and 8 ft.
Beam Supporting Bottom of Stair and Landing (B4)	7'-6"	N/A	Tributary Area: $(7.5 \text{ ft.} \times (3.5 \text{ ft.})/2) + (3 \text{ ft.} \times (8.25 \text{ ft.})/2) = 25.5 \text{ sq. ft.}$ (See Drawing 8D)	9.3	$(28 \text{ ft.} + 24 \text{ ft.})/2 = 26 \text{ sq. ft.}$ for No. 1 Southern Pine	2 – 2x12	Tributary area includes deck and stair stringers. Determination of maximum span requires interpolation between 7 ft. and 8 ft.
Edge Beam Supporting Landing (B5)	7'-6"	N/A	Tributary Width: $(3.5 \text{ ft.})/2 = 1.8 \text{ ft.}$ (Drawing 8C Similar)	9.1	8'-2" for 2 ft. tributary width	1 – 2x10	The edge beam supports one half of the landing and has a tributary width of one half of the landing.
Corner Column (C1)	11'-0"	N/A	Tributary Area: $2 \times (7.5 \text{ ft.}/2) \times (7.5 \text{ ft.}/2) = 28.1 \text{ sq. ft.}$ (See Drawing 8B)	9.11	$(30 \text{ sq. ft.} + 27 \text{ sq. ft.})/2 = 28.5 \text{ sq. ft.}$	4x4	Half of load from beam B1 for two supported levels
Interior Column (C2)	11'-0"	N/A	Tributary Area: $2 \times ((7.5 \text{ ft.}/2) \times (7.5 \text{ ft.} + 3.5 \text{ ft.})/2) = 41.25 \text{ sq. ft.}$ (See Drawing 8B)	9.11	$(100 \text{ sq. ft.} + 84 \text{ sq. ft.})/2 = 92 \text{ sq. ft.}$	6x6	Half of loads from beams B1 and B2 for two supported levels
Interior Column (C3)	11'-0"	N/A	Tributary Area: $2 \times ((7.5 \text{ ft.}/2) \times (3.5 \text{ ft.}/2) + (3 \text{ ft.} \times (8.25 \text{ ft.})/2)) = 37.88 \text{ sq. ft.}$	9.11	$(100 \text{ sq. ft.} + 84 \text{ sq. ft.})/2 = 92 \text{ sq. ft.}$	6x6	Half of loads from beams B2 & B3 for two supported levels

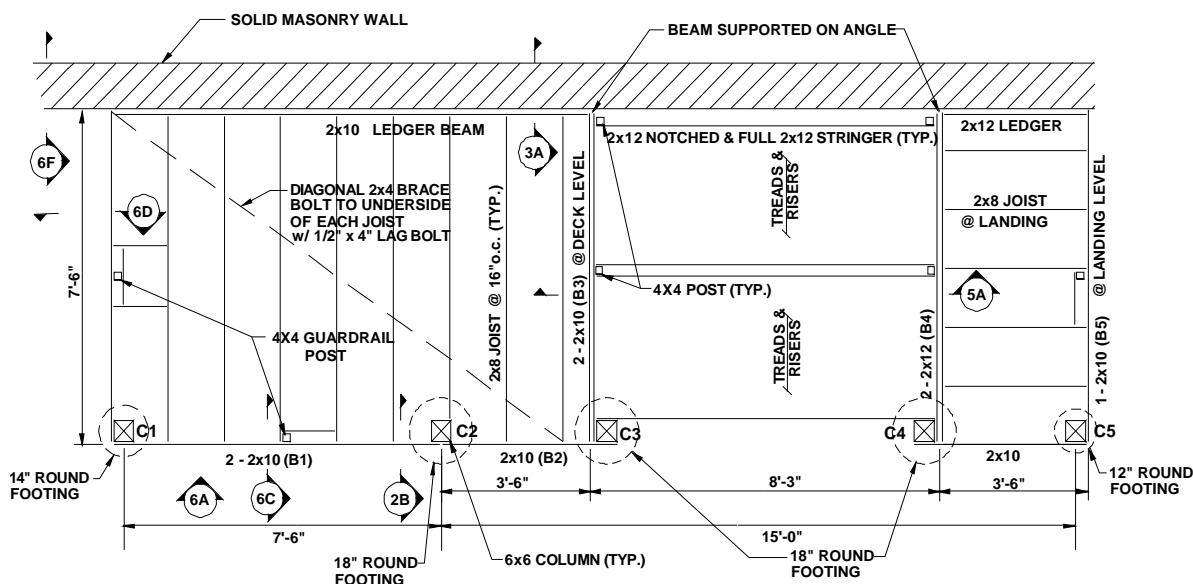
Interior Column (C4)	11'-0"	N/A	Tributary Area: $2 \times ((7.5 \text{ ft./2}) \times (3.5 \text{ ft./2}) + (3 \text{ ft.} \times (8.25 \text{ ft./2}))) = 37.88 \text{ sq. ft.}$	9.11	$(100 \text{ sq. ft.} + 84 \text{ sq. ft.})/2 = 92 \text{ sq. ft.}$	6x6	Half of load from beam B4 for two supported levels.
Corner Column at Landing (C5)	11'-0"	N/A	Tributary Area: $2 \times ((3.5 \text{ ft./2}) \times (7.5 \text{ ft./2})) = 13.13 \text{ sq. ft.}$ (See Drawing 8B)	9.11	$(30 \text{ sq. ft.} + 27 \text{ sq. ft.})/2 = 28.5 \text{ sq. ft.}$	4x4	25% of landing load for two supported levels
Ledger Bolts Embedded In Masonry	N/A	N/A	Tributary Area: $(7.5 \text{ ft./2}) \times 8 \text{ in.} = 2.51 \text{ sq. ft.}$ (See Drawing 8A)	9.13	2.6 sq. ft. per bolt	½" Bolt @ 8 inches on center	Bolts spaced at 8 inches on center or 2 @ 16 inches on center
Beam B1 Connection Bolts to Corner Column C1	N/A	N/A	Tributary Area: $(7.5 \text{ ft./2}) \times (7.5 \text{ ft./2}) = 14.1 \text{ sq. ft.}$	9.13	9.1 sq. ft. per bolt for 4x4 post	2 – 5/8 in. Bolts and Steel Angle	Half of load from beam B1
Beams B1 and B2 Connection Bolts to Interior Column C2	N/A	N/A	Tributary Area: $(7.5 \text{ ft./2}) \times (7.5 \text{ ft.} + 3.5 \text{ ft.})/2 = 20.63 \text{ sq. ft.}$	9.13	12.3 sq. ft. per bolt for 6x6 post	2 – 3/4 in. Bolts and Steel Angle	Half of load from beams B1 and B2
Beam B2 Connection Bolts to Interior Column C3	N/A	N/A	Tributary Area: $(7.5 \text{ ft./2}) \times (3.5 \text{ ft./2}) = 6.56 \text{ sq. ft.}$	9.13	3.6 sq. ft. per bolt for 6x6 post	2 – 5/8 in. Bolts	Half of load from beam B2
Beam B3 Connection Bolts to Interior Column C3	N/A	N/A	Tributary Area: $(7.5 \text{ ft./2}) \times (1.33 \text{ ft./2}) + (3 \text{ ft.} \times (8.25 \text{ ft./2})) = 17.4 \text{ sq. ft.}$ (See Drawing 8E)	9.13	12.3 sq. ft. per bolt for 6x6 post	2 – 3/4 in. Bolts and Steel Angle	Load from edge of deck and one half of stair load
Beam B3 Connection Bracket to Ledger Beam	N/A	N/A	Tributary Area: $(7.5 \text{ ft./2}) \times (1.33 \text{ ft./2}) + (3 \text{ ft.} \times (8.25 \text{ ft./2}) \times 110 \text{ psf} = 1,914 \text{ lbs.}$	N/A	N/A	N/A	Provide a beam hanger bracket that is adequate to support the load listed and bolt bracket to wall.
Beam B4 Connection Bolts to Interior Column C4	N/A	N/A	Tributary Area: $(7.5 \text{ ft./2}) \times (3.5 \text{ ft./2}) + 3 \text{ ft.} \times (8.25 \text{ ft./2}) = 18.94 \text{ sq. ft.}$	9.13	12.3 sq. ft. per bolt for 6x6 post	2 – 3/4 in. Bolts and Steel Angle	
Beam B4 Connection Bracket to Ledger Beam	N/A	N/A	Tributary Area: $(7.5 \text{ ft./2}) \times (3.5 \text{ ft./2}) + 3 \text{ ft.} \times (8.25 \text{ ft./2}) \times 110 \text{ psf} = 2,083 \text{ lbs}$	N/A	N/A	N/A	Provide a beam hanger bracket that is adequate to support the load listed and bolt bracket to wall.
Beam B5 Connection Bolts to Corner Column (C5)	N/A	N/A	Tributary Area: $(3.5 \text{ ft./2}) \times (7.5 \text{ ft./2}) = 6.56 \text{ sq. ft.}$	9.13	3.6 sq. ft. per bolt for 4x4 post	2 – 5/8 in. Bolts	
Stair Stringer	8'-3"	3'-0"	Tributary Width: 1.5 ft.	9.9	12'-1"	Notched 2x12 and Full 2x12	Stair width = 3'-0"
Stair Stringer Connection to 4x4 Post	N/A	N/A	Tributary Area: $(8.25 \text{ ft./2}) \times (3 \text{ ft./2}) = 6.2 \text{ sq. ft.}$	9.13	3.6 sq. ft. per bolt	2 – 5/8" Bolts	

Corner Foundation (C1)	N/A	N/A	Tributary Area: $2 \times (7.5 \text{ ft./2}) \times (7.5 \text{ ft./2}) = 28.2 \text{ sq. ft.}$	9.17	29.2 sq. ft.	14 inches	
Interior Foundation (C2)	N/A	N/A	Tributary Area: $2 \times (7.5 \text{ ft./2}) \times (7.5 \text{ ft.} + 3.5 \text{ ft.})/2 = 41.25 \text{ ft.}$ (See Drawing 8B)	9.17	48 sq. ft.	18 inches	
Interior Foundation (C3)	N/A	N/A	Tributary Area: $2 \times ((7.5 \text{ ft./2}) \times (3.5 \text{ ft./2}) + (3 \text{ ft.} \times (8.25 \text{ ft./2}))) = 37.88 \text{ sq. ft.}$	9.17	48 sq. ft.	18 inches	
Interior Foundation (C4)	N/A	N/A	Tributary Area: $2 \times ((7.5 \text{ ft./2}) \times (3.5 \text{ ft./2}) + (3 \text{ ft.} \times (8.25 \text{ ft./2}))) = 37.88 \text{ sq. ft.}$	9.17	48 sq. ft.	18 inches	
Corner Foundation (C5)	N/A	N/A	Tributary Area: $2 \times (3.5 \text{ ft./2}) \times (7.5 \text{ ft./2}) = 13.13 \text{ sq. ft.}$	9.17	14.9 sq. ft.	10 inches	Use a minimum 12 inch diameter footing

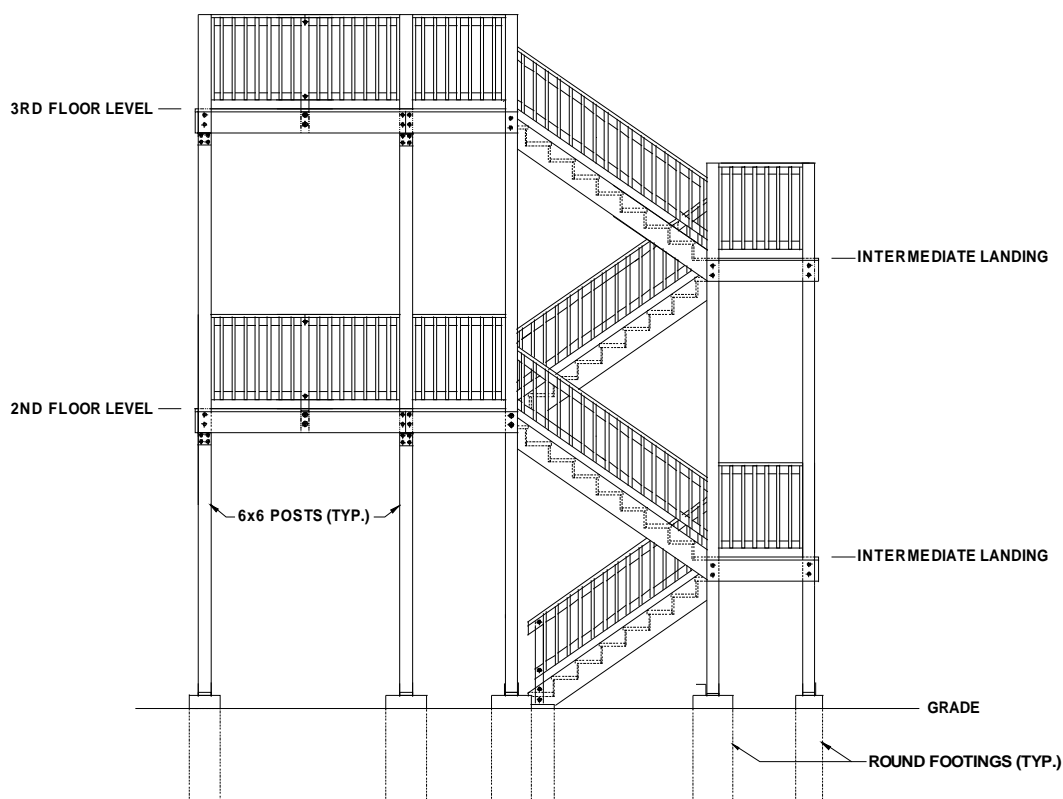
NOTES:

1)	The span is the distance between the supporting columns or beams. The column unbraced length is the distance between the ground and the first level or between levels; whichever is greater.
2)	The joist or beam spacing is the distance between adjacent joists or beams.

EXAMPLE 2: PORCH/DECK FRAMING PLAN



EXAMPLE 2: ELEVATION



This checklist is used by DOB Building Inspectors in evaluating a porch or deck. This checklist should also be utilized by homeowners and licensed design professionals to assess the overall condition of an existing porch. This checklist can further be used as a final punch list for the construction of a new porch.

BUILDING INFORMATION:

BUILDING ADDRESS:

INSPECTION DATE:

DOB INSPECTOR:

PORCH / DECK LOCATION:

FRONT

REAR

SIDE

COMMENTS

☐
☐
☐

PORCH / DECK MATERIALS:

WOOD

STEEL

OTHER:

COMMENTS

☐
☐
☐

PORCH / DECK ACCESSIBLE:

YES

NO

OTHER:

COMMENTS

☐
☐
☐

NUMBER OF LEVELS:

1

2

3

COMMENTS

☐
☐
☐

4

5

OTHER:

☐
☐
☐

SOURCE OF INSPECTION:

PERMIT

311

COURT

COMMENTS

☐
☐
☐

AH

ANNUAL

OTHER:

☐
☐
☐

FOUNDATIONS:

Foundations provide support for columns and their associated loads. They must be designed to withstand the porch or deck live, dead and wind loads. The bearing area of foundations against the soil must be adequate to transfer the required loads without exceeding the allowable soil bearing pressure. Foundations cannot consist of concrete blocks, sidewalks or driveways and must extend at least 42 inches below grade. Columns must be positively attached to their foundations. (See Section E Load Tables 9.16 and 9.18 for round and square foundation capacity respectively.)

Sufficient	Deficient	Deficiency Category	Comments
<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	No Foundation	
	<input type="checkbox"/>	Improper Foundation	
	<input type="checkbox"/>	On Sidewalk	
	<input type="checkbox"/>	Cracked or Settled	

LEDGERS:

Ledger beams are rigidly attached to building exterior walls and provide support for joists or other beams. Ledger beams provide support not only for gravity (vertical) loads but can also provide transfer of lateral loads for stability for the entire deck structure. Wood or steel ledger beams are most commonly bolted to brick, concrete block or wood frame walls. Ledger beams cannot be supported on brick veneers or building sheathing. (See Section E Load Tables 9.12 and 9.14 for the capacity of bolts that can be used for ledger attachment.)

Sufficient	Deficient	Deficiency Category	Comments
<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	Undersized Ledger: 2x4 or smaller than the deck joists	
	<input type="checkbox"/>	Inadequate size, number, spacing or placement of bolted connections	
	<input type="checkbox"/>	Substantial lumber damage or rot	
	<input type="checkbox"/>	Excessive gap between ledger and wall	

JOISTS:

Joists span between beams or beams and walls and are uniformly spaced. Typical wood joist spacing is 16 inches on center. Joists can bear on top of beams or frame into the sides of beams using joist hangers. Where joists bear on top of beams, they must be adequately attached to prevent lateral displacement. (See Section E Load Table 9.7 for the maximum span of joists based upon 100 psf live load and 10 psf dead load.)

Sufficient	Deficient	Deficiency Category	Comments
<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	Joists undersized	
	<input type="checkbox"/>	Inadequate connections – no joist hangers, toe nailed, roofing nails used for joist hanger connections	
	<input type="checkbox"/>	Joists substantially damaged or rotted	

BEAMS:

Beams are horizontal members used to transfer or carry loads from one structural element to another. Beams frame into other beams, columns or building walls to support joists, landings or stair stringers. Beams that bear in pockets in masonry walls at one end must be tied to those walls to prevent lateral displacement. Beams that frame into columns must have adequate connections to support vertical or gravity loads. The connections can consist of bolts, notches in posts, steel angles or a combination of these elements. Beams must be attached to columns to avoid lateral separation. (See Section E Load Tables 9.1 and 9.2 for the load capacity of beams for various spans.)

Sufficient	Deficient	Deficiency Category	Comments
<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	Beam pocketed over window/door frame with no visible lintel	
	<input type="checkbox"/>	Deficient or inadequate beam pocket connection or pocket open	
	<input type="checkbox"/>	Deficient beam to column connection; light gage metal banding or strap	
	<input type="checkbox"/>	Substantially damaged, rotted or over-notched	
	<input type="checkbox"/>	Beam undersized for span	

COLUMNS:

Columns are vertical members that provide support for the porch or deck structure and must be supported by foundations. Wood columns are also known as posts. Columns can be spliced to achieve the required length, but the splices must be adequate to transfer the required vertical load without buckling laterally. Splices for wood posts can consist of bolted half laps or steel splice plates. Where a post is notched to receive a beam, the remaining cross section must be adequate to support the required vertical load. (See Section E Load Table 9.10 for column or post maximum axial loads for various unbraced lengths.)

Sufficient	Deficient	Deficiency Category	Comments
<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	Deficient splice connection; improper design	
	<input type="checkbox"/>	Undersized column	
	<input type="checkbox"/>	Substantially damaged, bowed, rotted or over-notched (more than 1-1/2 inches of column width)	

DECKING:

Deck boards form the walking surface of porches and decks. They are typically nailed or screwed to joists and/or beams. Wood decking can consist of either tongue and groove or individually spaced boards.

Sufficient	Deficient	Deficiency Category	Comments
<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	Missing, rotted or severely damaged	
	<input type="checkbox"/>	Improper material	

RAILINGS:

Railings, also known as guards or guardrails, are required around the perimeter of a deck when its surface is two feet or more above grade. Guardrails are distinct from stair handrails. A guard or guardrail must be 42 inches high while a stair guard or handrail must be between 34 and 38 inches high. The clear spacing between balusters shall be no more than 4 Inches. When horizontal or vertical loads are applied to the guard or railing, it should not noticeably move or deflect. (See proposed guard details in Section D6 and stair guards in Section D5.)

Sufficient	Deficient	Deficiency Category	Comments
<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	Improper height or design	
	<input type="checkbox"/>	Loose or damaged members	
	<input type="checkbox"/>	Excessive spacing between balusters	
	<input type="checkbox"/>	Guard or railing noticeably deflects under load	

STAIRS:

Stairs consist of stringers, treads and risers. The stringers are at the sides of the stairs and span from level to level and support the treads. Even though the stringers are sloped, they are beams. (Where a wood stringer is notched to receive the treads and risers, overcutting is not allowed.)

The treads are the narrow evenly spaced horizontal platforms that the user steps upon to ascend or descend from one level to another. The treads must be at least 10-1/2 inches in width and well attached to the stringers. (Note that a 2x10 wood board is not wide enough to form a tread.) The risers are boards or other material that close the vertical space between the treads. The width of the treads and height of the risers must be dimensionally consistent and not vary within any flight of stairs. A flight of stairs can not exceed a total rise of 12 feet.

Stairs must be capable of supporting a uniform live load of 100 pounds per square foot (psf) and a concentrated load of 400 pounds applied on a tread; but not simultaneously. (See Section E Load Table 9.9 for stair stringer maximum spans given several different stair widths.)

Sufficient	Deficient	Deficiency Category	Comments
<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	Improper stringer design or connections	
	<input type="checkbox"/>	Severe rot or damage	
	<input type="checkbox"/>	Inadequate stair width	
	<input type="checkbox"/>	Excessive stringer length or span	
	<input type="checkbox"/>	Overcutting of stair stringers	

NEW CONSTRUCTION:

Unless a variance is allowed by the Zoning Department, all new porches must be constructed at least six feet from the side property line.

Sufficient	Deficient	Deficiency Category	Comments
<input type="checkbox"/>	<input type="checkbox"/>		
	<input type="checkbox"/>	Rebuild or replace porch 6' or greater from property line	

OTHER VIOLATIONS:

Additional Action Items Required: Porches that are in a deteriorated or unsatisfactory condition and can only be used for emergency exiting must be posted with a sign stating "This Porch is in a Dangerous and Hazardous Condition". Signs must be placed at or near exit doors, to make occupants of all units that have access to the porch aware of the condition.

Deficient <input type="checkbox"/>	Deficiency Category	Comments
<input type="checkbox"/>	Replace dilapidated and dangerous porch. See Section H for requirements for porch or deck where over 50% of components require repair or replacement.	
<input type="checkbox"/>	Obtain permit before performing work. See Section H for repair or replacement level of compliance.	
<input type="checkbox"/>	Posted "Dangerous & Hazardous Condition": See Section H for Level 3 requirements for porch or deck repair or replacement.	

THIS PAGE LEFT INTENTIONALLY BLANK

This section utilizes the information within these Porch Design & Construction Guidelines to establish a consistent understanding of what is required when addressing violations, making repairs or construction of a new porch. This section evaluates the level of compliance required for existing porches based on the percent of work needed. The following steps detail the Porch Evaluation Process:

1	General Requirements For All Repairs	2	Compliance Statement	3	Understanding Compliance Requirements	4	Determine Repair / Replacement Level of Compliance	5	Review Building Code Summary
	Review the requirements of the Chicago Building Code for porches.		Verify that the information in this section is as complete and accurate as possible based on your knowledge of the porch project		Understand the calculations used to derive the level of compliance in Step 4.		Calculate the percent of required repairs based upon the observed deficiencies and any deficiencies listed in building code violations. The percent of required repairs will determine the level of compliance.		Review the Building Code Summary Table based on the level of compliance determined from the calculation in Step 4.

BUILDING INFORMATION

BUILDING ADDRESS:

STEP 1: GENERAL REQUIREMENTS FOR ALL REPAIRS

COMPLIANCE OF THE FOLLOWING IS REQUIRED FOR ALL EXISTING COMPONENTS OF DECKS AND PORCHES:

CHAPTER 13-196 EXISTING BUILDINGS MINIMUM REQUIREMENTS: 34(13-196-570) Stairways and Porches – Maintenance

- (A) Every flight of stairs and every porch floor shall be free of holes, grooves, and cracks, which are large enough to constitute possible accidents hazards.
- (B) Every stairwell and every flight of stairs, which is more than two risers high, shall have rails not less than two and one-half feet high, measured vertically from the nose of the tread to the top of the rail; and every porch which is more than two risers high shall have rails not less than three and one-half feet above the floor of the porch.
- (C) Every rail and balustrade is firmly fastened and is maintained in good condition.
- (D) No flight of stairs shall have settled more than one inch out of its intended position or have pulled away from supporting or adjacent structures.
- (E) No flight of stairs shall have rotting, loose or deteriorating supports.
- (F) The riser height and the tread width of each flight of stairs shall be uniform.
- (G) Every stair tread shall be sound and be securely fastened in a substantially level position.
- (H) Every stair tread shall be strong enough to bear a concentrated load of at least 400 pounds without danger of breaking.
- (I) Every porch shall have a sound floor
- (J) No porch shall have rotting, loose or deteriorating supports.

STEP 2: COMPLIANCE STATEMENT

As Homeowner, Licensed Architect or Engineer of Record, I certify that to the best of my knowledge and belief the repairs for this project listed above fully comply with the requirements of Chicago Building Code and the Porch Design & Construction Guidelines.

PRINT:		DATE:	
SIGNED:		LICENSE NO.:	
EMAIL:		PHONE:	

STEP 3: DETERMINE COMPLIANCE REQUIREMENTS

COMPLIANCE IS BASED ON THE RATIO OF WORK REQUIRED FOR EACH COMPONENT DETERMINED BY THE FOLLOWING AND MULTIPLIED BY THE MULTIPLIER PROVIDED IN THE TABLE OF STEP 4.

COLUMNS:	Number of Columns Requiring Replacement Divided by the Total Number of Columns x No. of Porch Levels, Including Column Splices and Base Connections.
BEAMS:	Lineal Feet (LF) of Beams Requiring Replacement Divided by the Total Lineal Feet of Beams in the Porch Decks and Stair Landings.
BEAM-COLUMN CONNECTIONS:	The Number of Beam-Column Connections Requiring Replacement Divided by the Total Number of Beam-Column Connections Including Stair Landings.
JOISTS:	Lineal Feet (LF) of Joists Requiring Replacement Divided by the Total Lineal Feet of Joists in the Porch Decks and Stair Landings, Including Joist Hangers or Connections.
DECKING:	Square Feet (SQ FT) of Deck Area Requiring Replacement Divided by the Total Deck Area Including Stair Landings.
FOOTINGS:	Number of Footings Requiring Replacement Divided by the Total Number of Footings.
STAIR STRINGERS:	Number of Stringers Requiring Replacement Divided by the Total Number of Stair Stringers, Including Connections.
STAIR TREADS AND RISERS:	Number of Stair Treads Requiring Replacement Divided by the Total Number of Stair Treads.
GUARDS & STAIR GUARDS:	Lineal Feet (LF) of Guards and Stair Guards Requiring Replacement Divided by Total Lineal Feet of Guards and Stair Guards.
LEDGER & LEDGER CONNECTIONS:	Lineal Feet (LF) of Ledger Beam, Including Bolts, Requiring Replacement Divided by the Total Lineal Feet of Ledger Beams.
LATERAL BRACING:	Lateral Bracing System Provided ("1" yes or "0" no) Divided by the Lateral Bracing System Required ("1" yes or "0" no). (The need for a lateral bracing system during inspection is determined by whether the structure is out-of-plumb or observed lateral displacement, vibration and/or shaking occurs during use.)

THE LEVEL OF COMPLIANCE FOR THE ENTIRE PORCH IS DETERMINED BY THE SUM OF THE PERCENTAGE OF WORK FOR EVERY COMPONENT REQUIRING REPAIR.

LESS THAN 25%	=	LEVEL 1:	Repair and/or replace individual components as required
50% OR LESS	=	LEVEL 2:	Repair and/or replace individual components as required and upgrade all handrails, stairs and exit paths to current building code requirements.
MORE THAN 50%	=	LEVEL 3:	Repair and/or replace all components to meet current building code requirements.

STEP 4: DETERMINE REPAIR / REPLACEMENT LEVEL OF COMPLIANCE

CALCULATE THE RATIO OF REPAIR REQUIRED FOR EACH COMPONENT AND MULTIPLY THAT VALUE BY THE MULTIPLIER LISTED IN THE TABLE. THE LEVEL OF COMPLIANCE FOR THE ENTIRE PORCH IS DETERMINED BY THE SUM OF THE PERCENTAGE OF WORK FOR EVERY COMPONENT REQUIRING REPAIR.

Member / Component	No. of Unit(s) To be Repaired		UNIT	/	No. of Unit(s) For Entire Deck / Porch		UNIT	MULTIPLIER		WEIGHTED PERCENTAGE OF REPAIR WORK
	No.				No.					
Columns		QTY	/			QTY	X	12	=	
Beams		LF	/			LF	X	12	=	
Beam-Column Connections		QTY	/			QTY	X	12	=	
Joists		LF	/			LF	X	10	=	
Decking		SQ FT	/			SQ FT	X	9	=	
Footings		QTY	/			QTY	X	12	=	
Stair Stringers		Stringer(s)	/			Stringer(s)	X	9	=	
Stair Treads & Risers		Treads	/			Treads	X	5	=	
Guards & Stair Guards		LF	/			LF	X	12	=	
Ledger & Ledger Connection		LF	/			LF	X	5	=	
Lateral Bracing		QTY	/			QTY	X	2	=	
Sum of all Components (% of Total Porch Structure Requiring Repair Work)									=	
% of Total: Less Than 25%									=	LEVEL 1
% of Total: Less Than or Equal to 50%									=	LEVEL 2
% of Total: More Than 50%									=	LEVEL 3



STEP 5: REVIEW BUILDING CODE SUMMARY

CODE REQUIREMENTS PER LEVEL OF COMPLIANCE:	LEVEL 1	LEVEL 2	LEVEL 3	NEW CONST'R
BALCONIES, DESIGN LOAD: 100 LBS / SQ FT Live Load – 16(13-52-090)			X	X
DECKS, DESIGN LOAD: 100 LBS / SQ FT Live Load – 16(13-52-090)			X	X
DECKS, DESIGN LOADS: Existing Residential - Built Prior to 2003 – Area Other than Exit Path, 40 LBS / SQ FT LIVE LOAD	X	X		
GUARDS / STAIR GUARDS, DESIGN LOAD: Built After 2003 - 200 LBS Concentrated Load Anywhere Along Top Rail – 16(13-52-100)			X	X
GUARDS / STAIR GUARDS, DESIGN LOAD: 50 LBS / LF Uniform Live Load On Top Rail – 16(13-52-100)	X	X	X	X
PORCHES, DESIGN LOADS: 100 LBS / SQ FT LIVE LOAD – 16(13-52-090)			X	X
PORCHES, DESIGN LOADS: Existing Residential - Built Prior to 2003 – Area Other than Exit Path, 40 LBS / SQFT LIVE LOAD	X	X		
EXIT / STAIRS, DESIGN LOAD: 100 LBS / SQ FT LIVE LOAD – 16(13-52-090)	X	X	X	X
STAIRS, DESIGN LOAD: 400 LBS / PER TREAD LIVE LOAD – 34(13-196-570)	X	X	X	X
DECKS, REQUIREMENTS: Less than Five (5) Feet Under Supports, Lattice or Wire Mesh Skirting – 7(15-8-321)	X	X	X	X
DECKS, REQUIREMENTS: Not Less Than Six (6) Feet From Lot Line, Six (6) Feet From Another Structure & No Maximum Area – 7(15-8-321)				X
DECKS, REQUIREMENTS: Not Less Than Three (3) Feet From Lot Line, Six (6) Feet From Another Structure & 400 SQ FT Maximum – 7(15-8-321)				X
DECKS, REQUIREMENTS: Deck Setback At Exterior Wall, When There Is A Two (2) Hour Noncombustible Parapet Wall At Least Three (3) Feet High And The Deck Covers Less Than 33% of Roof Area – 7(15-8-321)		X	X	X
DECKS, REQUIREMENTS: Zero (0) Feet Setback When Laid Directly on Ground with No Air Spaces – 7(15-8-321)				X
PORCHES, REQUIREMENTS: Combustible Wood, Not Less Than Six (6) Feet From Property Line – 7(15-8-320)			X	X
PORCHES, REQUIREMENTS: Enclosure, No Rating, Greater Than Six (6) Feet From Interior Lot Line – 34(13-200-260)		X	X	X
PORCHES, REQUIREMENTS: Enclosure, One (1) Hour, Greater Than Three (3) Feet From Interior Lot Line – 34(13-200-260)		X	X	X
PORCHES, REQUIREMENTS: Enclosure, Two (2) Hours, Less Than Three (3) Feet From Interior Lot Line – 6(13-60-100)		X	X	X
PORCHES, REQUIREMENTS: Existing, Not Exceeding Three (3) Stories, May Extend to Roof Regardless of Setbacks – 7(15-300-260)		X	X	X



STEP 5: REVIEW BUILDING CODE SUMMARY

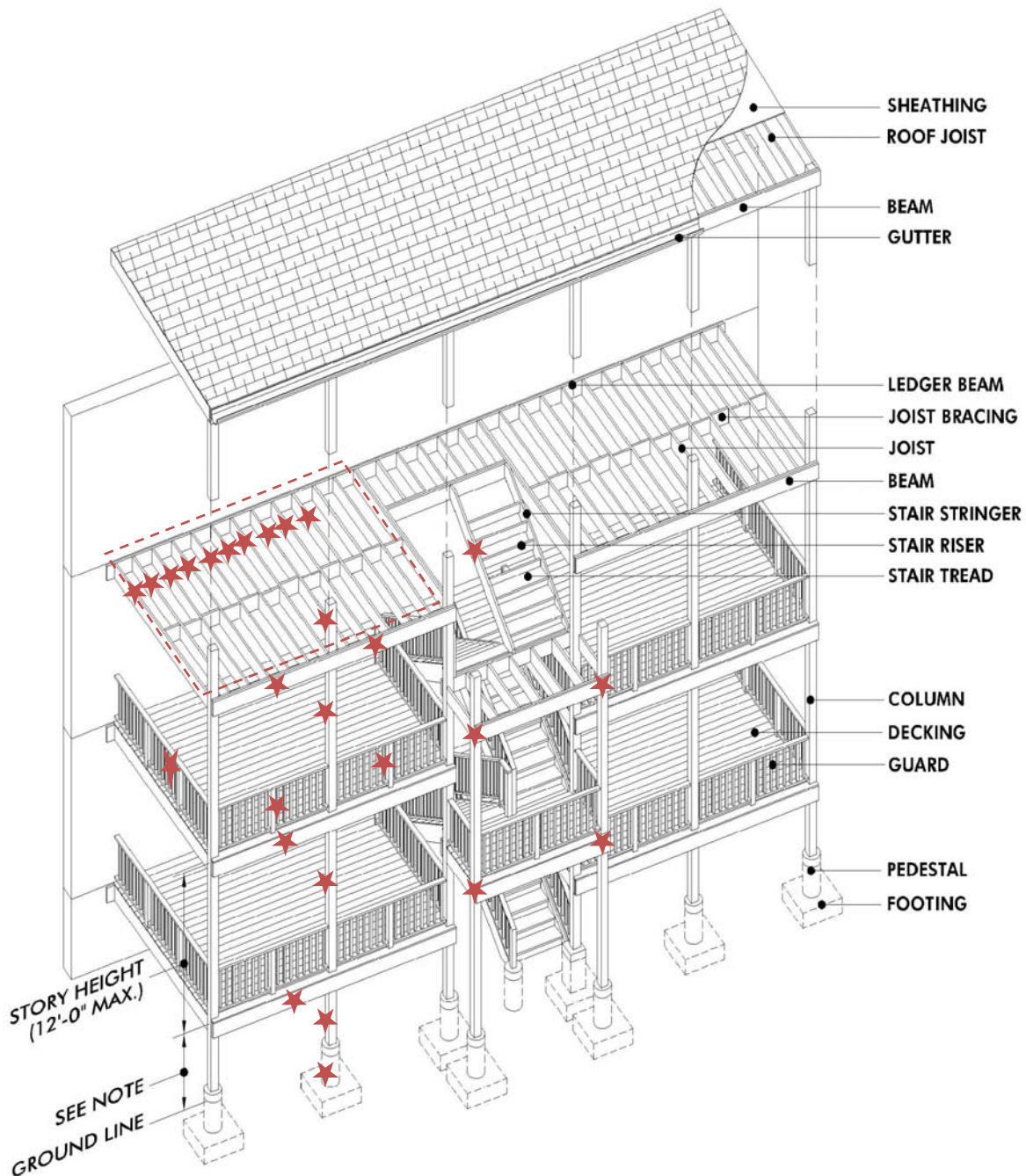
CODE REQUIREMENTS PER LEVEL OF COMPLIANCE:	LEVEL 1	LEVEL 2	LEVEL 3	NEW CONST'R
PORCHES, REQUIREMENTS: Existing, Not to Exceed Four (4) Stories in Height When Rebuilding – 7(15-8-320)				X
PORCHES, REQUIREMENTS: One-Hour Rated Side Walls, Not Less Than Three (3) Feet From Property Line – 7(15-8-320)				X
PORCHES, REQUIREMENTS: Not Less Than One (1) Foot From Lot Line, Six (6) Feet From Another Structure & 50 SQ FT Maximum - 7(15-8-323)	X	X	X	X
PORCHES, REQUIREMENTS: Not to Exceed Three (3) Stories in Height – 7(15-8-320)				X
PORCHES, REQUIREMENTS: Shall Not Project More Than Ten (10) Feet from Building Or Exceed 150 SQ FT Per Dwelling Unit – 7(15-8-320)				X
PORCHES, REQUIREMENTS: When Fronts Entirely on Street, 200 (SQ FT) Square Feet Maximum – 7(15-8-320)	X	X	X	X
GUARDS, REQUIREMENTS: Built After 2003 - Openings, Shall Not Let (8) Inch Diameter Sphere Pass between Balustrades at 34 Inches to 42 Inches High – 33(13-124-335)		X	X	X
GUARDS, REQUIREMENTS: Built After 2003 - Openings, Shall Not Let Four (4) Inch Diameter Sphere Pass between Balustrades at Less than 34 Inches High – 33(13-124-335)		X	X	X
STAIR GUARDS, REQUIREMENTS: Built After 2003 - Openings, Shall Not Let Six (6) Inch Sphere Pass Through Triangular Opening Between Riser and Tread and Bottom Rail, Shall Not Let Four (4) Inch Diameter Sphere Pass between Balustrades – 33(13-124-335)		X	X	X
GUARDS, REQUIREMENTS: 42 Inches Minimum Height – 34(13-196-570) & 33(13-124-330)		X	X	X
GUARDS & STAIR GUARDS, REQUIREMENTS: Guards or Handrails Shall Not Have Ladder Effect – 33(13-124-335)	X	X	X	X
STAIR GUARDS, REQUIREMENTS: Stair Guards or Handrails Shall Not Be Less Than 34 Inches or Greater Than 38 Inches, Measured Vertically From Stair Noising – 10(13-160-320)	X	X	X	X
GUARDS, WHEN REQUIRED: Elevations Greater than Two (2) Feet Above Grade – 33(13-124-320)	X	X	X	X
GUARDS, WHEN REQUIRED: Open Areaways Exceeding Three (3) Feet in Depth – 33(13-24-320)		X	X	X
EXTERIOR STAIRS, REQUIREMENTS: Shall be Adequately Lighted by Electricity – 10(13-160-660)	X	X	X	X
EXTERIOR STAIRS, REQUIREMENTS: Shall Not Exceed 50% of the Required Vertical Exits – 10(13-160-040)	X	X	X	X
EXTERIOR STAIRS, REQUIREMENTS: Shall Not Exceed Thirty (30) Feet in Vertical Distance to the Highest Floor Served – 10(13-160-040)				X



STEP 5: REVIEW BUILDING CODE SUMMARY

CODE REQUIREMENTS PER LEVEL OF COMPLIANCE:	LEVEL 1	LEVEL 2	LEVEL 3	NEW CONST'R
EXTERIOR STAIRS, REQUIREMENTS: Solid Risers Are Not Required, Except that a Four (4) Inch Diameter Sphere Shall Not Pass Between the Treads – 10(13-160-590) & 33(13-124-335)	X	X	X	X
EXTERIOR STAIRS, REQUIREMENTS: Treads & Landings Shall Be Solid, Except for Openings for Drainage - 10(13-160-590)		X	X	X
STAIRS, REQUIREMENTS: 44 Inches Wide, 36 Inches Wide for Occupancies Other than Institutional Less than 50 Persons – 10(13-160-220)				X
STAIRS, REQUIREMENTS: 44 Inches Wide, 36 Inches Wide in Residential Occupancies When Serving Only One Dwelling Unit. – 10(13-160-220)				X
STAIRS, REQUIREMENTS: 9 Inches Minimum Tread Depth Exclusive of Nosing or 10 Inches Tread Depth Including Nosing – 10(13-160-300)		X	X	X
STAIRS, REQUIREMENTS: Doors Swinging Into Exit Landing Shall Maintain 75% of Required Exit Width Beyond Door Edge When Open – 10(13-160-200)		X	X	X
STAIRS, REQUIREMENTS: Eight (8) Inches Maximum Riser Height – 10(13-160-300)		X	X	X
STAIRS, REQUIREMENTS: Handrails May Project Four (4) Inches on Each Side into Stair Width		X	X	X
STAIRS, REQUIREMENTS: Height of Two (2) Risers Plus One (1) Tread Shall Be Greater Than 24 Inches or Less Than 27 Inches – 10(13-160-300)		X	X	X
STAIRS, REQUIREMENTS: Landings, Equal to Width of Stairs or Four (4') Feet Wide Maximum – 10(13-160-310)		X	X	X
STAIRS, REQUIREMENTS: No Flight Shall Have Less Than Two (2) Risers – 10(13-160-310)		X	X	X
STAIRS, REQUIREMENTS: Seven (7) Feet Minimum Headroom, Residential Occupancies		X	X	X
STAIRS, REQUIREMENTS: Six (6) Feet Eight (8) Inches Minimum Headroom, Residential Occupancies		X	X	X
STAIRS, REQUIREMENTS: Winders Permitted in Residential Occupancies with Two (2) Dwelling Units or Less – 10(13-160-300)				X
STAIRS, REQUIREMENTS: Winders, Treads Shall be Nine (9) Inches Wide or Greater at 18 Inches From Inside Railing - 10(13-160-300)		X	X	X

PORCH EVALUATION EXAMPLE



THE ILLUSTRATED PORCH HAS BEEN EXAMINED FOR THE ADEQUACY OF MEMBER SIZES AND DETERIORATION AND FOUND TO HAVE A NUMBER OF DEFICIENT MEMBERS. THE DEFICIENT MEMBERS ARE MARKED WITH A STAR. IN PLAN, THE PORCH EXTENDS 8'-0" FROM THE BUILDING WALL AND THE COLUMNS ARE SPACED AT 7'-6" o.c. THE INTERMEDIATE STAIR LANDING IS 7'-6" x 3'-6". EVALUATE THE PORCH USING THE TABLE IN STEP 4. DISREGARD THE ROOF STRUCTURE.

STEP 4: DETERMINE REPAIR / REPLACEMENT LEVEL OF COMPLIANCE

CALCULATE THE RATIO OF REPAIR REQUIRED FOR EACH COMPONENT AND MULTIPLY THAT VALUE BY THE MULTIPLIER LISTED IN THE TABLE. THE LEVEL OF COMPLIANCE FOR THE ENTIRE PORCH IS DETERMINED BY THE SUM OF THE PERCENTAGE OF WORK FOR EVERY COMPONENT REQUIRING REPAIR.

Member / Component	No. of Unit(s) To be Repaired		No. of Unit(s) For Entire Deck / Porch						WEIGHTED PERCENTAGE OF REPAIR WORK	
	No.	UNIT	No.	UNIT	MULTIPLIER					
Columns	4	QTY	/	24 + 4 = 28	QTY	X	12	=	0.143 x 12 = 1.71	
Beams	4 x 7.5 ft. = lin. 30 ft.	LF	/	19 x 7.5 ft. + 6 x 8 ft. = 190.5 lin. ft.	LF	X	12	=	0.157 x 12 = 1.88	
Beam-Column Connections	4	QTY	/	26	QTY	X	12	=	0.154 x 12 = 1.85	
Joists	10 x 8 ft. = 80 ft.	LF	/	6 x 12 x 8 ft. + 3 x 5 x 3.5 ft. + 2 x 7 x 3.5 ft. = 677.5 lin. ft	LF	X	10	=	0.118 x 10 = 1.18	
Decking	8 ft. x 15 ft. = 120 sq. ft.	SQ FT	/	6 x 8 ft. x 15 ft. + 5 x 3.5 ft. x 7.5 ft. = 851.25 sq. ft.	SQ FT	X	9	=	0.141 x 9 = 1.13	
Footings	1	QTY	/	8	QTY	X	12	=	0.125 x 12 = 1.5	
Stair Stringers	1	Stringer(s)	/	10	Stringer(s)	X	9	=	0.1 x 9 = 0.9	
Stair Treads & Risers	9	Treads	/	9 x 5 = 45	Treads	X	5	=	0.2 x 5 = 1	
Guards & Stair Guards	8 ft. + 15 ft. = 23 lin. ft.	LF	/	6 x 8 ft. + 10 x 4.5 ft + 14 x 7.5 ft. + 4 x 3.5 ft. + 6 x 4.5 ft. = 239 lin. ft.	LF	X	12	=	0.096 x 12 = 1.15	
Ledger & Ledger Connection	0	LF	/	3 x 5 x 7.5 ft. = 112.5 lin. ft.	LF	X	5	=	0	
Lateral Bracing	1	QTY	/	1	QTY	X	2	=	1 x 2 = 2	
Sum of all Components (% of Total Porch Structure Requiring Repair Work)									=	14.3
% of Total: Less Than 25%									=	LEVEL 1
% of Total: Less Than or Equal to 50%									=	LEVEL 2
% of Total: More Than 50%									=	LEVEL 3

Whether a building owner has to build a new porch or make repairs to an existing wood porch, exterior stairway, balcony or deck, the following steps should be taken:

- | | | | | | | | | | |
|----------|-------------------------|----------|---|----------|---------------------------|----------|----------------------------|----------|---|
| 1 | PORCH EVALUATION | 2 | SELECT A DESIGN PROFESSIONAL (IF APPLICABLE) | 3 | APPLY FOR A PERMIT | 4 | SELECT A CONTRACTOR | 5 | REQUEST INSPECTIONS & PROJECT CLOSEOUT |
|----------|-------------------------|----------|---|----------|---------------------------|----------|----------------------------|----------|---|

STEP 1: PORCH EVALUATION

PORCH EVALUATION

For existing porches, use the Porch Evaluation Section and the Porch Checklist Section to assess the current condition of the porch and establish what repairs are required. After the condition of the porch has been assessed and the required work is determined, the appropriate DOB building permit program can be determined. Regardless of whether an existing porch is being repaired or a new porch is being constructed, the Porch Checklist Section can be used to assess whether the construction work meets the Chicago Building Code and DOB requirements. Meeting these requirements will ensure that the project will pass the DOB inspections. In general, this Section provides guidance for a successful porch project.

STEP 2: SELECT A DESIGN PROFESSIONAL / PREPARE BLUEPRINTS

SELECT A DESIGN PROFESSIONAL:

The design professional that is selected must to be licensed in the State of Illinois. They must either be a licensed Architect or Structural Engineer to create drawings for a project in the City of Chicago.

To find a suitable design professional, one of the following professional associations can be contacted for recommendations. In addition, the Internet or the telephone directory can be used.

- Association of Licensed Architects (ALA) (847) 382-0630
- American Institute of Architects Chicago (AIA Chicago) (312) 670-7770
- Structural Engineers Association of Illinois (SEAOL) (312) 372-4198

After finding several likely candidates, interview the design professionals. During the interviews with potential design professionals, obtain information regarding other similar projects that they have done. In addition, obtain references that can be contacted to confirm the adequacy of the services provided on these other projects. In addition, if possible, view these projects.

To obtain costs for the design of the porch, request that each architect or structural engineer submit a proposal for their services. Their proposals should be detailed and include their fees for each phase or aspect of their work. In general, experienced design professionals should be able to provide a flat or fixed fee for all of their services. If, however, they are being requested to investigate the condition of the porch for repair, their services may be provided on an hourly basis. If the agreement is to be based upon an hourly fee, a not-to-exceed value should be provided. Their proposals should also include a time of completion for their services.

The owner's agreement or contract with the design professional should also include a payment schedule or some provision regarding when payment will be made. The owner may want to provide a single payment when the building permit is issued, but the design professional may also want to be assured that they will be paid for their services and be paid in a timely manner.

Additional drawings or information may be required by the DOB during the permit review process. The agreement with the design professional should define whether there will be an additional fee for complying with the DOB request, or whether the design professional will do the additional work at no additional cost to his client.

In essence, the owner may want to request that the design professional agree that the drawings and calculations prepared by them are adequate to comply with the requirements of the CBC and the DOB and that no additional fees will be charged to comply with any DOB request for more information. On the other hand, the design professional cannot be expected to anticipate every request from the Building or Zoning Departments.

PREPARE DRAWINGS (AND CALCULATIONS):

The instruments of service of the architect or structural engineer are drawings and, in some instances, calculations. The drawings are to include framing plans, details, material specifications, design loads, and notes that are sufficient to describe what the repair or new work is to consist of. The details on the drawings must be cross referenced to framing plans. The description of the work must be sufficient to obtain a building permit and provide the contractor with a clear understanding of what work needs to be completed. Depending upon the condition of the porch, calculations may also be necessary to determine the structural capacity of the structure. The submittal of drawings must be accompanied by photographs of the existing porch conditions.

If the project includes porch repairs, the drawings need to show how to correct the existing defects in detail. Some of those defects may be listed in a violation notice from the Department of Buildings. The violation notice may not, however, include all of the defects or deficiencies that exist on the porch structure. Therefore, the design professional must examine and analyze the entire porch structure for its compliance with the CBC. They must show all of the work required to repair the porch or create compliance with the CBC on the drawings submitted for permit.

Illustrations of the graphic information that should be shown on the drawings are included in SECTION D: DRAWINGS and SECTION F: EXAMPLE DESIGN.

Three (3) sets of drawings should be printed for submission to the City of Chicago Department of Buildings. Sets should be distributed in the following manner, one (1) set each:

- Contractor's record and working plans to be kept at the job site
- Record copy for the Department of Buildings
- Building owners records

			PERMIT PROCESS			
REQUIRED INFORMATION: PER PORCH TYPE & PERMIT PROGRAM			EPP	EPP	SPR	SPR
			NO PLANS	DETAILS	LICENSED STAMPED PLANS	HOMEOWNERS ASSISTANCE
LEVEL 1 & 2: REPAIRS:	1 or 2 STORY PORCH: ANY NUMBER DUs Less than six (6) feet from grade to first floor	LEVEL 1: Repairs	X			
	1 STORY FRONT PORCH: 200 SQ FT OR LESS Less than six (6) feet from grade to first floor	LEVEL 2: Repairs		X		
	1 STORY DECK: 450 SQ FT OR LESS Less than six (6) feet from grade to first floor	LEVEL 1 & 2: Repairs	X			
	ENTRY PORCH / DECK: 50 SQ FT OR LESS Less than six (6) feet from grade to first floor	LEVEL 1: Repairs	X			
	1 or 2 STORY PORCH: ANY NUMBER DUs Greater than six (6) feet from grade to first floor	LEVEL 2: Repairs			X	
	3 STORY PORCH: ANY NUMBER DUs Regardless of Distance from grade to first floor					
LEVEL 3: REPAIRS / REPLACEMENT & NEW CONSTRUCTION:	ROOF / GARAGE ROOF DECK: ANY NUMBER DUs					
	1 STORY FRONT PORCH: 200 SQ FT OR LESS Less than six (6) feet from grade to first floor	LEVEL 3: Repairs Replacement & New Construction		X	X	
	1 STORY DECK: 450 SQ FT OR LESS Less than six (6) feet from grade to first floor					
	ENTRY PORCH / DECK: 50 SQ FT OR LESS Less than six (6) feet from grade to first floor					
	1 or 2 STORY PORCH: 2 DUs OR LESS Less than six (6) feet from grade to first floor	LEVEL 3: Repairs Replacement & New Construction			X	X
	1 or 2 STORY PORCH: MORE THAN 2 DUs Regardless of Distance from grade to first floor	LEVEL 3: Repairs Replacement & New Construction			X	
	3 STORY PORCH: ANY NUMBER DUs Regardless of Distance from grade to first floor					
	ROOF / GARAGE ROOF DECK: ANY NUMBER DUs					

Easy Permit Process, No Plans: The Easy Permit Process, with no plans (or drawings), allows homeowners and licensed contractors to obtain a porch or deck permit to make repairs to existing porches, without drawings although photographs of existing conditions are required. Through this program an applicant is able to obtain a permit the same day if all of the required documentation is submitted upon application for the permit.

Easy Permit Process, Details: The Easy Permit Process, using the details included in these Guidelines, allows homeowners, buildings owners, and licensed contractors to obtain a porch or deck permit by providing a site plan/framing plan generated by the applicant in conjunction with the details & sections provided in SECTION D: DRAWINGS. This permit process is intended for repairs, replacement or new construction for a limited number of porch types. To obtain a permit, prepare or complete the documents listed herein and then schedule an appointment with a DOB Project Manager (PM). Upon submittal of the documents and photographs of existing conditions, the PM will review the information to assess compliance with the program. Through this program an applicant can receive a permit the same day for most applications. If further review is required, the DOB Project Manager will make that review within 1-2 weeks and the applicant will be contacted when the permit is ready for pick-up.

Standard Plan Review, Licensed Stamped Plans: The Standard Plan Review Process, with plans stamped by a licensed design professional, allows a qualified owner's representative to apply for a porch or deck permit. After drawings are prepared by a structural engineer or architect, they are submitted with photographs of existing conditions, as a part of the permit application. A meeting is scheduled with a project manager and the permit application is submitted. The application and related documents are reviewed by the project manager as a "desk review." If necessary, "corrections" will be issued and the documents must then be modified by the design professional. After the "corrections" are addressed, the design professional must schedule a second review meeting with the project manager. If the "corrections" have been correctly addressed, the project manager will process the permit within 1 to 2 weeks. The applicant will then be contacted to pick-up the permit.

Standard Plan Review, Homeowner Assistance: This Standard Plan Review process includes the use of the Homeowner Assistance program to obtain porch or deck permits. To obtain a permit, a site plan/framing plan must be created by the applicant and used in conjunction with the details & sections provided in SECTION D: DRAWINGS. Using this process, permits can be obtained for repairs, replacement or new construction for a limited number of porch types. To initiate the process, an appointment must be made with a project manager. At that appointment, the application and related documents, including photographs of existing conditions, are submitted to and reviewed by the project manager. If the project manager determines that additional information is required or that changes must be made, written "corrections" will be issued. The homeowner will then be responsible for addressing the "corrections" and scheduling another meeting with the project manager. When the "corrections" have been completely addressed, the DOB project manager will process the permit within 1 to 2 weeks and the homeowner will be contacted when the permit is ready for pick-up.

	PERMIT PROCESS			
REQUIRED INFORMATION: PER PORCH TYPE & PERMIT PROGRAM	EPP	EPP	SPR	SPR
	NO PLANS	DETAILS	LICENSED STAMPED PLANS	HOMEOWNERS ASSISTANCE
DOCUMENTS: Plat of Survey	X	X	X	X
DOCUMENTS: Easy Permit Application	X	X	N/A	N/A
DOCUMENTS: Homeowner Site Plan / Framing Plan	N/A	N/A	N/A	X
DOCUMENTS: Building Permit Application	N/A	N/A	X	X
DOCUMENTS: Electrical Permit Application (If Applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
DOCUMENTS: Excavation Certificate, Insurance & Notifications to Adjacent Owners	N/A	N/A	<input type="checkbox"/>	<input type="checkbox"/>
DOCUMENTS: Certificate of Primary Residence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
DOCUMENTS: Certificate of Responsibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
PICTURES: Existing Conditions - Overall Area	X	X	X	X
PICTURES: Areas to be Repaired - Close-Ups	X	X	X	X
PLANS: Site Plan	N/A	X	X	X
PLANS: Framing Plans	N/A	N/A	X	X
PLANS: Project Specific – Sections & Details	N/A	N/A	X	N/A
PLANS: Porch Design & Construction Guidelines – Sections & Details	N/A	X	N/A	X
CONTRACTORS: General Contractor, Licensed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CONTRACTORS: General Contractor, Owner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CONTRACTORS: Mason (Concrete), Owner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CONTRACTORS: Mason (Concrete), Licensed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CONTRACTORS: Electrical, Licensed (If Applicable)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**ALWAYS REQUIRED:
BASED ON PERMIT PROGRAM**

X

**MAY BE REQUIRED:
BASED ON PERMIT PROGRAM**

☐

**NOT APPLICABLE:
BASED ON PERMIT PROGRAM**

N/A

STEP 3: APPLY FOR A PERMIT

1 Permit Process & Office Locations

STEP 1

Permit Process

- ☐ Easy Permit Process:
 - No Plans
 - w / Details
- ☐ Standard Plan Review
 - Homeowners Assistance
 - Licensed Stamped Plans

OFFICE LOCATIONS

Department of Buildings

121 N. La Salle - Rm. 900
Monday through Friday
8:30am to 4:30pm
All Programs

North / Addison Office

2550 W. Addison Street
312.742.2560
Tuesday & Wednesday
8:30am to 4:30pm
Prescriptive Porch &
Homeowner Assistance Only

Southwest / Kedzie Office

4770 S. Kedzie Ave.
312.745.4240
Tuesday & Wednesday
8:30am to 4:30pm
Prescriptive Porch &
Homeowner Assistance Only

Central / 95th Street Office

2006 E. 95th Street
312.745.0995
Tuesday & Wednesday
8:30am to 4:30pm
Prescriptive Porch &
Homeowner Assistance Only

2 Permit Intake Review Meeting

STEP 2A

Schedule Intake Meeting

- ☐ Applicant schedules intake appointment online at www.cityofchicago.org/buildings
- ☐ Architect / expeditor creates building permit application online at DOB website.

STEP 2B

Intake Appointment Meeting

- ☐ Zoning Review
- ☐ Identify code violations & stop work orders
- ☐ Review photographs of existing conditions and plans for completeness & process application in computer.

3 Other Department Reviews

STEP 3A

Landmarks Commission Review (As Required) (Before DOB Reviews, If Applicable @ 33 N. La Salle - 16th Floor)

- ☐ Landmark Buildings & Landmark Districts

STEP 3B

Department of Planning & Development (As Required) (Before DOB Reviews, If Applicable @ 121 N. La Salle 7th Floor)

- ☐ Lakefront Protection District
- ☐ Plan Developments: -Short Form Review

4 Technical Reviews

STEP 4

EASY PERMIT PROCESS (No Plans)

- ☐ Same Day Permit Issued w/o Plans and all required documents submitted in proper form.

EASY PERMIT PROCESS (Details)

- ☐ Same day permit issued with applicant generated site plan, framing plan, and details from Porch Design & Construction Guidelines with all required documents submitted in proper form.

STANDARD PLAN REVIEW (Homeowner Assistance)

- ☐ Same day permit issued with owner generated site plan, framing plan, and details from Porch Design & Construction Guidelines with all required documents submitted in proper form. Assistance provided to homeowner by DOB Project Manager at intake appointment

STANDARD PLAN REVIEW (Licensed Stamped Plans)

- ☐ Same day desk reviews by DOB Project Manager at intake appointment
 - Architecture
 - Electrical
 - Structural Review

5 Technical Reviews & Plan Compliance

STEP 5A

Plan Review Corrections

- ☐ Corrections issued in writing by DOB Project Manager
- ☐ Corrections shall be made by Architect, Engineer of Record or Homeowner

STEP 5B

Code Variance (If Applicable)

- ☐ Building Board of Appeals
- ☐ Administrative Relief Request
- ☐ Standards & Tests

STEP 5C

2nd Appointment

- ☐ Applicant schedules appointment online at www.cityofchicago.org/buildings

6 Final Review

STEP 6A

Department of Zoning Approval (Must be obtained by applicant in-order to proceed)

- ☐ Stamps & signature on plans and application

STEP 6B

2nd Appointment Final Review by Project Manager

- ☐ Permit documents & plans submitted to PM
- ☐ Review documents for approvals & completeness
- ☐ Comply corrections identified at intake meeting
- ☐ Tabulates fees
- ☐ Verify final corrections & plan compliance
- ☐ Stamp approved drawings

7 Permit Issuance

STEP 7A

Permit Issuance

- ☐ Pay for permit at Revenue window
- ☐ Provide Proof-of-Payment to Pick-up plans & Permit from Project Manager

STEP 7B

Field Inspections

- ☐ Request Inspection as required online at www.cityofchicago.org/buildings

**STEP 4: SELECT A CONTRACTOR****SELECT A CONTRACTOR:**

The contractor must complete the project in a timely manner and in conformance with the design prepared by the architect or structural engineer. The contractor must start the project when agreed and pursue it to completion without interruption. The contractor must not “redesign” the porch in the course of completing the work.

To initially find a contractor, search using the Internet, telephone director or industry resources. Interview several perspective contractors and determine their experience with similar projects. Request a list of similar projects and owners and then contact those owners and examine their projects. Ask the perspective contractors to provide bids based upon the drawings that have been prepared by the architect or structural engineer. Given a complete set of drawings, the contractors should be able to provide fixed prices for the entire project. There should be no need for a time and material agreement with a contractor.

Your agreement with the contractor should define the method and schedule of payment. Payment for the project should occur as the work is being completed. A large initial payment should not be necessary and is not desirable. As the owner, you do not want payments to exceed the value of the work in place. On the other hand, the contractor wants to ensure that he will be paid and be paid in a timely manner. Therefore, payment at certain milestones in the project is most desirable. Final payment should occur when the project passes final inspection and the permit is signed by the building inspector.

STEP 5: REQUEST INSPECTIONS & PROJECT CLOSEOUT**REQUEST INSPECTIONS:**

An owner or a contractor can request that a porch inspection be scheduled.

Where work on a porch is required to address violations, call the Department of Building at (312) 743-7200 to find out which district supervisor in the Conservation Bureau is responsible for the area where the building is located. Obtain the name and phone number of the supervisor for future correspondence. At each of the following milestones, call the supervisor to request an inspection:

- Foundation Inspection: Before placing concrete
- Intermediate Inspection: Review of work in progress
- Final Inspection: After all the work is completed.

For new construction of porches only, the DOB will accept photographic evidence of the adequacy of the foundation(s). Each photograph must include a placard indicating at what address and where on the site the foundation was constructed. **The photographs must show a sufficiently large portion of the site to prove that it is at the correct address. The photographs must show sufficient detail to prove that the reinforcement steel and dimensions are correct.**

For new construction of porches, the request for Intermediate and Final Inspections should be made online at www.cityofchicago.org/buildings.

It is recommended that the building owner be present during all inspections and that they take part in meetings between the building inspectors and contractor. This involvement in the project will provide the owner with first-hand knowledge of the progress of the work and any issues regarding the project.

PROJECT CLOSEOUT:

It is very important to have the building permit signed (on the back side) during the intermediate inspections. This provides a record of the approval of the various project phases.

After the project passes the final inspection and the permit is signed, the building owner should keep the original permit as a written record and proof that:

- The design and execution of the work has followed agreed upon and accepted procedures.
- The project has been inspected by the Department of Buildings.
- The work on the building (or porch) has been reviewed by the Department of Buildings.

THIS PAGE LEFT INTENTIONALLY BLANK

These frequently asked questions relate to the design and construction of porches and decks.

HOW DO I KNOW IF MY PORCH IS SAFE? The City has a number of resources available for owners or tenants to inspect their porches. Use the Porch Checklist in SECTION G: to evaluate the current condition your porch.

MY PORCH LOOKS UNSAFE, WHAT CAN I DO? If you are a building owner, simply dial 3-1-1 and tell the operator you would like an "owner-requested" porch inspection at your property. Please leave a contact name and phone number with the 311 operator.

If you are a tenant and notice any questionable conditions, make a note of the specifics and inform your landlord/property owner. If they fail to act immediately to remedy the problem(s), call 3-1-1 to request an inspection by a Building Inspector.

AN INSPECTOR RECENTLY INSPECTED MY PORCH, WHAT IS HE LOOKING FOR? Building Inspectors perform porch and deck inspections using the list provided in SECTION G, Porch Checklist. Inspectors inspect all elements of the porch, including joists, beams, columns, stairs, hand/guard rails, ledger boards, connections, and footings.

WHERE CAN I FIND A LICENSED STRUCTURAL ENGINEER OR ARCHITECT? Referrals for names of professionals who perform work on porches can be obtained through either the American Institute of Architects (AIA) Chicago Chapter at 312/670-7770, Association of Licensed Architects (ALA) at 847/382-0630 or the Structural Engineers Association of Illinois (SEAOI) at 312/372-4198. The City cannot provide recommendations.

WHY CAN'T THE CITY RECOMMEND A STRUCTURAL ENGINEER OR ARCHITECT? It is a conflict of interest for the City to recommend licensed professionals. If the City provides recommendations, it could be construed as favoritism. For this reason the Department of Buildings will not provide recommendations; please contact SEAOI, ALA or AIA to obtain referrals.

HOW DO I KNOW IF I'VE FOUND A GOOD STRUCTURAL ENGINEER OR ARCHITECT? Familiarize yourself with the information contained in these Guidelines so that you can discuss specific issues with the design professional. Ask for references and determine if the professional has completed similar work in the City of Chicago. Ask for a proposal for services that clearly defines what the design professional is to do.

WHO CAN USE THE PORCH DESIGN & CONSTRUCTION GUIDELINES? These Guidelines are intended for use by homeowners, building owners, architects, structural engineers and contractors. Refer to SECTION H: Porch Evaluation and SECTION I: Porch Process to obtain an overall understanding of the Porch Design & Construction Guidelines

I HAVE QUESTIONS ABOUT PERMITS, WHERE CAN I FIND THE ANSWERS? The Department of Buildings can answer questions related to permits and the permitting processes.

WHICH SECTIONS OF THE CHICAGO BUILDING CODE PERTAIN TO PORCHES? Refer to SECTION C: Building Codes for requirements relating to porches and decks. Also refer to the current Chicago Building Code for a complete list of requirements. The Chicago Building Code is accessible online, free of charge, at <http://www.amlegal.com/>.

DOES THE CITY OFFER ASSISTANCE FOR THE REPAIR OF PORCHES? These Porch Design and Construction Guidelines were created to provide assistance in recognizing and correcting common deficiencies without necessarily having to hire an Architect or Structural Engineer.

WHY MUST PORCHES BE DESIGNED FOR 100PSF LIVE LOAD; THAT SEEMS TOO HIGH? The Code has always been very specific that all exit ways must be designed for 100psf live load. Since porches and decks are generally the second means of exit from a building, specifically stating that the live load requirement is 100psf is only a clarification.

T HIS **P** AGE **L** EFT **I** NTENTIONALLY **B** LANK

