South Perkasie Covered Bridge
Inspection Report

SUBMITTED TO:
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10. EXECUTIVE SUMMARY

Wood Research and Development (WRD) was commissioned by the Borough of Perkasie to inspect the historic South Perkasie Covered Bridge. This report summaries the findings of the inspection. The inspection of the Bridge included a visual inspection of all structural elements and the use of non-destructive test equipment to locate internal decay and to identify what elements will require repairs/replacement. The overall condition state rating (CSR) of the Bridge is **Very Poor** (CSR 4) to **Unsafe** condition (CSR 5) based on the extremely poor condition at the abutment bearing seats and temporarily shored condition of the bridge.

The Bridge has shifted approximately 10-feet toward the North and in doing so caused significant damage to the abutment stone walls and to the bottom chords and posts in these areas. The end segments of the bottom chords and the bottom segments of the posts in the four corners are to be replaced/restored.

The truss bottom chord splice connections will be assessed during the structural analysis and subsequently repaired or strengthened, as required.

The dowelled connections the lattice members make to the top and bottom chords will be assessed during the structural analysis and subsequently repaired or strengthened with additional fasteners, as required.

Several rafters and associated connections require repair. This requires careful design to ensure no loss in heritage value while ensuring the integrity of the envelope of the covered bridge. Further discussions will be arranged with the Borough of Perkasie to assess the most suitable solutions for restoration.

It is planned to anchor the bridge on new foundations to prevent lateral movement. This increases the demand for lateral stability of the structure. Many of the connections between the secondary components providing lateral stability and the surrounding structure are damaged. These members are to be replaced where damaged and their connections shall be reinforced as required based on the structural analyses.

Visual observations indicate the deck system partially lifted during the flood event. This likely caused yielding of the many vertical connections between decking layers and joists which has prevented the joists from returning to proper bearing on the transverse beams. It is recommended the decking be lifted to re-seat the joists and complete other required repairs without limited access. The deck boards can then planed as required and reinstalled to create a level surface without trip hazards.

11. COLLABORATIVE ORGANIZATION(S)/COMPANY(S): NAME(S) AND ADDRESS

12. SUPPLEMENTARY NOTES

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1. INTRODUCTION

Wood Research and Development (WRD) was commissioned by Borough of Perkasie to fully inspect all timber elements on the historical South Perkasie Covered Bridge (the "Bridge") in Pennsylvania. This in-depth bridge inspection and evaluation was to make assessment of all existing damage, deterioration, decay, including any additional items requiring repair of the Bridge components to fully restore the bridge for designated loading. This included all structural and nonstructural timber and non-timber bridge members components, bracing, sheathing, decking, roof system, shingles, connections, etc.

WRD possesses unique experience as timber engineers/specialists which enables us to carry out the inspection and make appropriate observations and repair recommendations. The inspection was conducted on October 29th, 2024, to November 2nd, 2024, by Professional Engineer Kim King P.E. and Level II Inspectors Clay Hoger and Anthony Davis. The inspection included a visual assessment and non-destructive testing of many timber elements of the Bridge. Additionally, core sample specimens were collected and analyzed by WRD's third-party accredited testing laboratory to determine wood species and establish the specific gravity and moisture content (SG/MC) via ASTM D2395/D4442. The inspection was only limited due to accessibility to some roof members (rafters) located at the roof top near the ridge. No demolition was carried out to access members that were not visible (although that included no significant elements). This report summarizes the findings of the inspection and provides a condition state rating (CSR) of the various components.

1.1 OBJECTIVES

The primary objective of the inspection was to conduct an in-depth inspection of the Bridge and all its timber elements, a condition assessment of all existing damage, deterioration, decay, including any additional items requiring repair of the bridge components. Also, WRD performed a structural assessment and historic evaluation to identify which components can be repaired and/or rehabilitated versus those that need to be removed and replaced. Part of this in-depth inspection was to evaluate the timber elements to determine the load-bearing capacity of the Bridge and its overall condition state of the total structure. The visual inspection was supported by non-

destructive inspection methods including physical measurements, moisture content readings, and compression wave technology testing to determine the presence of decay.

The inspection assessed the following:

- Confirm the member sizes and spacing.
- Review and estimate the timber grade (and where members were "off-grade").
- Observe all timber elements (roof shingles, roof members, siding, trusses, floor decking, lattices, top/bottom chord's, stringers, transverse beams, and all connections) for any damage and decay and record compression stress wave time (SWT) data periodically and at key locations.
- Collect assay samples for laboratory analysis to determine species and perform testing SG and MC.
- Record observations, including overall structure, notable structural element observations, damage, flaws, or decay, and the surrounding environmental conditions photographically.

The on-site inspection activities took place over a total of five working days. WRD is very familiar with field inspections and the safety measures and concerns associated with the same. This inspection included two trained Level II lead technicians (Clay Hoger and Anthony Davis), and professional engineer Kim King, P.E. All personnel had training for timber inspection, safety, and proper work practices. WRD provided all appropriate personnel protective equipment (PPE) including closed-toe leather shoes (steel toe as appropriate and required), high-vis apparel, safety glasses, gloves, and hard hats, as required. Safety regulations required by the state of Pennsylvania were followed.

WRD worked with available/leased ladders/lifts for access (note all our personnel are trained for safe operations at heights). All safety measures and strategies are defined in the WRD corporate safety plan.

The inspection findings presented by this report shall inform structural analyses of the Bridge components and connections, and subsequent restoration designs and methodologies. The purpose of the recommendations made by this report is not to nominate specific restoration design details but to introduce potential repair methodologies that could be implemented at an early stage in the

project so that these methodologies can be assessed by the client with respect to the aesthetics and heritage significance of the Bridge.

1.2 APPLICABLE STANDARDS

The future structural analysis of the Bridge shall be in accordance with the standard practice and methodologies outlined by the following documents:

- Minimum Design Loads and Associated Criteria for Bridges and Other Structures, ASCE/SEI 7-22.
- National Design Specifications (NDS) for Wood Construction NDS and its Supplement, 2018.
- AASHTO LRFD Bridge Design Specifications, LRFDBDS-9.

Other references for consideration include:

- Federal Highway Administration Covered Bridge Manual
- Guidelines for Rehabilitating Historic Covered Bridges

1.3 BRIDGE DESCRIPTION AND PROJECT BACKGROUND

Built in 1832, and moved in 1958, located now in Perkasie, Pennsylvania, the Bridge is a lattice truss type bridge, consisting of two lattice truss systems that support a roof and deck system. The roof system consists of main rafters in a truss configuration with collar ties and knee braces. Bays of secondary rafters and lateral cross braces exist between the main rafters. The deck system consists of transverse beams, lateral cross braces, longitudinal joists (stringers) and two layers of deck planks. The lattices are clad with wood siding and the roof has at least three layers of wood shakes (shingles) with no decking. A site plan view of the Bridge is presented in **Figure 1-1**.

Figure 1-1: Site plan view of the South Perkasie Covered Bridge.

In 2021, a major flood event occurred during the storm known as "Hurricane Ida", which forced the Bridge off its foundations. The Bridge shifted laterally approximately 10-feet to the North, as shown in **Figure 1-2**. This movement skewed the vertical alignment of the walls (trusses) of the Bridge and the deck lifted on the North side at Abutment 1. Following the flood event, work was completed to lift and stabilize the Bridge partially onto the existing foundations and partially onto temporary cribbing. Subsequently, the transverse beams and joists (stringers) were inspected by the local engineering firm, Gilmore & Associates, Inc (G&A). An inspection of the deck, superstructures (trusses), substructure, and architectural features remained outside the scope of G&A's inspection.

Figure 1-2: A view from Abutment 1 (top) and Abutment 2 (bottom) of the Bridge after the flood event.

1.4 METHODOLOGY & LIMITATIONS TO INVESTIGATION

The WRD inspection adopted visual assessments and the use of non-destructive test equipment to qualify and quantify the condition of the members and connections and to develop a condition state rating of the various components of the Bridge.

Mostly access to the timber elements was available at ground level, from the deck of the bridge, or with the use of ladders and rolling scaffolding. A manlift was used to conduct a visual inspection of the exterior and roofing (wood shake shingles). Access to the rafters by ladders was limited by the uneven surfaces on the deck planks (see **Figure 1-3**). However, these areas were accessible to visual inspection and several issues that require remediation were observed such as shrinkage checks, decay, connections not fully secure, and deterioration on the timber. NDT testing was not required. Access to the end trusses at Abutment 1 and 2 was also limited to visual observations (see **Figure 1-4** and **Figure 1-5**).

Figure 1-3: Roof rafters that were inaccessible for ladder use while doing the inspection.

Figure 1-4: Abutment 1 Truss rafters, could not access the end near wing walls.

Figure 1-5: Abutment 2 Truss rafters, could not access the end near wing walls.

The primary non-destructive test (NDT) method to quantify decay was the use of EPHOD® through compression stress wave technology as described below. This typically requires access to two opposite faces of a structural element, which was possible for most of the timber elements on the Bridge. However, access to opposite sides of the top and bottom chords, the primary structural elements of the Bridge, was limited in some locations by the following:

- The chords consist of multiple plies and the EPHOD® data is confounded when testing across more than a single element.
- Generally, there was no access to either the top and/or bottom faces of the top chords.
- In many locations, access to opposite faces was obstructed by other structural members and the siding.

Where inaccessible, testing was performed in adjacent locations on the beam longitudinally or alternative places around the cross section to get a thorough understanding of the bridge structural element condition.

1.5 NON-DESTRUCTIVE TEST EQUIPMENT

Electronic Pulse Highlight and Outline Diagnostic (EPHOD®) through compression stress wave technology was used by the inspectors to locate internal decay. This analysis consists of sending a compression stress wave through a medium (wood) and measuring the wave velocity. The stress wave is introduced into the material by striking it with a hammer or blunt object. When the stress wave is initiated by the hammer, an accurate timer is started by activating one half of the transducer pair called the “start”; when the through compression stress wave reaches a second half of the transducer pair called the “stop”, the timer is stopped. The distance between the transducer pair is measured as the “gauge length”, which is representative of the distance between the measured faces of the element. By measuring the gauge length and time, the average velocity of the stress wave can be measured. The modulus of elasticity (MOE, parallel or perpendicular to grain) and strength of the material are theoretically related to the velocity of the stress wave and the density (knowing other parameters such as species, specific gravity, relative moisture conditions, etc.). It is the measured velocity of the stress wave that indicates if decay is present in the wood.

When the through compression stress wave time (SWT) values (adjusted for gauge length, treatment, temperature, or other factors such as species that affect the SWT results) is below approximately 300 microseconds (µs), the element is in sound condition with little to no loss of SG. Stress wave times ranging 300-700-µs are not of concern for structural integrity at the time of testing but can indicate the onset of decay. Where stress wave times range from 700-1000-µs (shown in yellow for illustration purposes) the element can carry its own dead weight and an unknown live load at the localized area where the reading is taken. When the SWT values exceed 1000-µs (shown in red) the element is not capable of carrying its own dead weight at that localized area.

Readings more than 2200-µs are indicative of cavities within the element. When the values exceed 3300-µs, the element can no longer support its own dead load. The element can often be red with high SWT values and still be in place (and may even appear normal). This does not mean the element is sound and the SWT data is incorrect but other criteria are impacting the reading, such as fasteners and adjacent members which might be holding the element in place even though it is red (severely decayed) throughout.

Figure 1-6 shows the color scheme correlating to the SWT readings utilized in this report. Readings are recovered in a clock-like format to ensure no cavity or deteriorated timber was missed. Based on the small section sizes of the various members, and restricted access, readings were typically taken between 3 o'clock and 9 o'clock (3-9), and/or 6 o'clock and 12 o'clock (6-12). Because the beams were not accessible from the top or the back, readings were typically taken from 1 o'clock to 6 o'clock.

Figure 1-6 also shows some SWT configurations for cross section according to the clock strategy described above.

Figure 1-6: Stress wave time results key and configuration.

1.6 LABORATORY TESTING

During the inspection of the Bridge, the inspectors collected core samples from a bottom chord, middle chord and transverse beam. The samples were sent to the WRD independent third-party Testing Laboratory in Jefferson, OR (TL-193) for the purpose of confirming the timber species and assessing the as-received specific gravity and moisture content of the samples. All testing was performed in adherence to applicable ASTM standards under the supervision of the WRD laboratory supervisor. All equipment had previously been calibrated by third party calibration agencies according to WRD Laboratory ISO 17025 standards.

Specific gravity (SG) and moisture content (MC) were determined via ASTM D2395 and ASTM D4442, respectively. All SG/MC calculations were performed using oven dried samples.

1.7 CONDITION STATE RATING ANALYSIS

The condition state rating (CSR) system in **Table 1-1** has been developed by WRD, through timber inspection experience, to clearly describe the condition of the elements inspected. Each group of elements has been assigned a CSR, as presented in **Section 12**.

Table 1-1: Condition state rating descriptions.

Condition State Rating	Subjective Rating	Estimated Remaining Life Span		Description
1	Good	100%	80 Years	Elements are in like-new condition and free of defects.
2	Fair	80%	64 Years	Free of defects affecting structural performance, integrity, and durability. Deterioration of a minor nature in the protective coating and/or parent material is evident.
3	Poor	30%	24 Years	Defects affecting durability/serviceability which may require monitoring and/or remedial action or inspection by a structural engineer. Component or element shows marked and advancing deterioration including loss of protective coating and minor loss of section from the parent material is evident. Intervention is normally required.
4	Very Poor	5%	Up to 4 Years	Defects affecting the performance and structural integrity of the structure which require urgent action as determined by a detailed structural engineering inspection. A component or element shows advanced deterioration, loss of section from the parent material, signs of overstressing or evidence that it is acting differently to its intended design mode or function.
5	Unsafe	1%	Less Than 2 Years	The structure should be closed. Structural integrity is severely compromised, and the structure must be taken out of service until a structural engineer has inspected the structure and recommended the required remedial action.

2. WOOD AS A CONSTRUCTION MATERIAL

As bridge construction material, wood has some unique characteristics. An understanding of these properties is important when inspecting existing timber structures and for the effective design retrofits.

2.1 THE VARIABILITY OF WOOD

As an organic material, wood is subject to a high level of variability, dependent on species and growth conditions. All physical properties of wood can vary, including strength, stiffness, weight, and dimensions. Furthermore, wood is anisotropic, meaning the mechanical properties vary in the different directions the tree grows (longitudinal, radial, and tangential). Naturally occurring defects, such as knots, can also affect mechanical properties. In contrast to concrete and steel, the effect of temperature on wood is negligible, but it is highly affected by moisture and humidity which can lead dimensional changes and, in the extreme, can result in biological degradation over time.

2.2 MOISTURE CONTENT AND HYGROSCOPICITY

Wood is hygroscopic, meaning that it can absorb and expel moisture from and to its surroundings. Changes in MC can affect other physical properties, such as dimensions, strength, and susceptibility to decay. Wood tends toward an equilibrium moisture content (EMC) which depends on the surrounding exposure conditions (temperature and humidity) and is relatively independent of species. Every timber structure undergoes daily and seasonal fluctuations which means the EMC can only be estimated.

Within a structure, members which are sheltered from rain, exposed to sun, and exposed to airflow will tend to have a lower EMC. Research has shown (Tingley and Davis, 2020) that open deck bridges, for which the covered bridge elements are more typical (rather than completely enclosed elements), the EMC is expected to be low (approximately 15-17%).

Exposure to moisture by other means, such as directed rain flow and leaking water from roof systems, can increase the MC of the wood. At these areas the MC of the elements is likely to be high (above 20%), variable, and may exceed fiber saturation point (above 30%, see below) in extreme conditions. Below ground level elements (or submerged elements) are deprived of oxygen and will not typically decay.

2.3 MOISTURE INDUCED DIMENSIONAL CHANGE

Moisture in wood exists in two forms; the first is free water that is contained within the hollow cell cavities (lumina). Free water may be liquid, vapor, or ice, depending on the temperature. The second is bound water or water that is chemically linked with the cell walls through hydrogen bonding.

At low MC, most moisture is stored as bound water; as additional moisture is absorbed, it quickly bonds with the cellulose and hemicellulose which make up the cell walls. At higher MC, the cell walls become fully saturated, and additional moisture remains in the lumina as free water. The point at which the cell walls are saturated, but no free water exists, is known as the fiber saturation point (FSP). FSP commonly occurs between 26 and 30%.

Below FSP, reducing MC results in shrinkage of the wood while increasing MC results in swelling. This is a key consideration when detailing timber structures as it is necessary to allow the wood to shrink and swell as the MC fluctuates.

While the strength and stiffness of wood tends to increase with reducing MC, changes in EMC in the wood elements above ground and above water will result in negligible changes in strength and stiffness. At elevated MC (above 22%), decay can occur, which will reduce mechanical properties. More information on decay is presented in **Section 5**.

3. STRUCTURAL ELEMENTS AND MATERIALS

A summary of the various timber structural element sizes and species is presented in **Table 3-1**, which also includes approximate grades the timber elements of the Bridge. The species notated with asterisks (*) are inferred by laboratory analysis of a limited number of assay samples.

Table 3-1: South Perkasie Covered Bridge element summary.

Element	Size Classification	Nominal Size (in x in)	Actual Size (in x in)	Grade	Species
Siding	Boards	1 x(varies)	3/4 x (varies)	No. 2 or better	Eastern White Pine
Shake Shingles	N/A	Varies	Varies	N/A	Cedar*
Main Rafters	Timbers	5 x 7	4-1/2 x 6-1/2	No. 2 or better	Eastern White Pine*
Collar Ties	Dimension lumber	3 x 10	3 x 10	No. 2 or better	Eastern White Pine*
Knee Braces	Timbers	5 x 7	5 x 7	No. 2 or better	Eastern White Pine*
Secondary Rafters	Dimension lumber	3 x 4	2.5 x 3-1/2	No. 2 or better	Eastern White Pine*
Upper Cross Braces	Dimension lumber	4 x 6	3.75 x 6	No. 2 or better	Eastern White Pine*
Top Chords	Dimension lumber	3 x 12	3 x 12	No. 1	Coastal Douglas Fir*
Bottom Chords	Dimension lumber	3 x 12	3 x 11-7/8	No. 1	Coastal Douglas Fir
Middle Chords	Dimension lumber	3 x 12	3 x 11-7/8	No. 1	Eastern White Pine
Lattice Members	Dimension lumber	3 x 10	3 x 10	No. 1	Eastern White Pine*
Wingwall Posts	Post and Timber	6 x 8	6-1/2 x 7-1/2	No. 1	Coastal Douglas Fir*
Dowels	-	-	1-3/4	Unknown	White Oak
Transverse Beams	Post and Timber	12 x 10	Varies	No. 1	White Oak
Lower Cross Braces	Post and Timber	6 x 5	5-1/2 x 5	No. 1	Eastern White Pine*
Floor Joists (Stringers)	Post and Timber	6 x 5	5-1/2 x 5	No. 1	White Oak*
Joist Trimmer	Beam and Stringer	10 x 16	9-1/2 x 15	No. 1	White Oak*
Floor Decking	Dimension lumber	3 x (varies)	3 x (varies)	No. 2 or better	Eastern White Pine*

4. DESCRIPTION OF VISUAL DEFECTS

To interpret the findings of the inspection, an understanding of wood defects and wood deterioration is necessary. The information presented below introduces various issues, and the reader is encouraged to take note of how defects affect the timber structural elements and how wood deteriorates. Contact WRD for strategies on how to design and manage timber structures to best avoid deterioration.

4.1 SHRINKAGE CHECKS

Shrinkage checks form on the faces or ends of wood members because of internal stresses caused by shrinkage. The stresses are caused by outer portions of the wood drying more quickly than inner portions of the wood. Subsequently, the outer zones attempt to shrink more than the inner zones, resulting in tension perpendicular to grain stresses. Checks form in the outer zones to relieve these stresses at rays and ray lines. Shrinkage checks are especially common at the ends of members but may also form on the longitudinal faces. Shrinkage checks are discontinuous as opposed to shear cracks or splitting that is a continuous crack.

Shrinkage checks are often unavoidable in large solid sawn members such as shown in **Figure 4-1**. While this causes some strength reduction, shrinkage checks are expected and accounted for in the grading rules and design values for a given species and grade. Moderate checking is not considered a structural defect. However, checks may accelerate other forms of deterioration, especially if they collect water or break though the preservative-treatment layer of a member.

Shrinkage checks at connections can also affect structural performance of the connections. Where the check intercepts the fastener, the bolt hole is widened, and the fastener may no longer have adequate bearing against the wood. The now-oversized hole creates frictional forces with the remaining bearing area of the fastener leading to tension stress perpendicular to grain, causing the bolt hole to cleave. The result is that the shrinkage checking transforms into a crack and the fastener has lost capacity.

Figure 4-1: Example of moderate shrinkage checks in a transverse beam on the Bridge.

4.2 CRACKING AND SPLITTING

Continuous cracking is characterized by long continuous cracks which do not cross wood fibers. Cracking of this nature is a structural defect which reduces the capacity of the member. This form of cracking often results as a horizontal shear failure in beams where the demand shear stresses exceed the shear resistance of the member.

Splitting is also representative of long continuous cracks which do not cross wood fibers. Splits are often found propagating from dowels (connectors) located at the ends of timber members and can form due to overloading events, long term cleaving of the fastener hole, either due to improper or increasing hole to dowel ratio due to corrosion or shrinkage of the dowel, or the original placement of the connectors too close to the end of the member. The example in **Figure 4-2** shows the end splitting of a lower cross brace which has formed because the dowel was placed too close to the end of the tapered end of the brace.

Figure 4-2: End splitting at a lower cross brace at the end connection.

4.3 KNOTS AND SLOPE OF GRAIN

As noted above, wood is anisotropic and is weakest when loaded in tension perpendicular to grain. Under ideal conditions, wood members are loaded in such a way that stresses are primarily oriented parallel to the longitudinal axis. However, if the wood member was cut in such a way that the grain was not exactly parallel to the axis of the member, a portion of the axial stresses will be resolved across the grain. This is most critical when the sloping grain is in a tension zone, resulting in tension perpendicular to grain stress.

Sloping grain may occur globally, through a member, because of how it was sawn from the tree, or it may occur in localized areas because of natural defects or irregularities in the tree. A common cause of localized sloping grain is knots. The wood fibers in a tree trunk must divert around branches which may result in very steep sloping grain in a local area approximately twice the diameter of the knot itself.

Modern lumber grading rules typically include a limit for the maximum allowable slope of grain. This is typically expressed as a ratio of deviation from the longitudinal axis to distance along the longitudinal axis (e.g., 1:12 indicates 1-inch deviation from the axis in 12-inches of length). Different limits may apply to the average slope of grain and for localized sloping grain.

The strength in bending of a member is dramatically impacted by knot size in the higher tension stress zones of the member which causes larger slope of grain. The resolution of bending tension stresses into parallel to grain and perpendicular to grain leads to bending stress induced failures due to the larger stress levels in tension perpendicular to grain.

Knots like seen on **Figure 4-3** occur where branches are embedded within the trunk of a tree and sawn lumber is recovered from the trunk by passing a saw through the branch embedment location. Wood fibers that are found in the trunk of the tree are forced to divert around the knot which is comprised of wood fibers feeding the branch. In softwood trees, compression/reaction wood constitutes a large proportion of the branches. The wood making up the knot itself is typically denser, stronger, and harder than the surrounding tree; the strength reduction caused by knots is related to the grain deviations around the knot. Sloping grain around the knot creates potential tension stress perpendicular to grain, and discontinuities generate stress concentrations. Additionally, differential shrinkage may cause checks and cracks around the knot, and the knot displaces clear wood creating a reduced effective section.

Knots have the greatest impact on mechanical properties when they are stressed in tension. This includes the tension face of bending members, as well as axial tension members, such as cross braces. Knots in compression members are less critical in terms of creating a global system failure.

Grading rules limit the size of knots in the higher grades of wood. Knot size is typically expressed as a percentage or fraction related to either the width of the face on which they appear or the cross-sectional area they occupy. In some grading rules, the size of allowable knots varies according to their location in the member. For example, larger knots may be permitted at the vertical centerline or near the ends of a beam; these areas are less likely to be subjected to high tension stresses. For example, NLGA grade rules allow a larger diameter knot in the compression stress zone of the timber element. Even when grading rules do not differentiate, builders should be aware of knot locations and members should be oriented to keep knots out of tension zones.

Figure 4-3: Knot on bottom face of a transverse beam

5. WOOD DETERIORATION

Wood deteriorates for several reasons which adversely affect the wood properties. The two primary causes of deterioration in wood are biotic (living) agents and physical (nonliving) agents. The physical agents that may deteriorate wood include chemical agents (e.g., ferric degradation), ultraviolet light, erosion, or abrasion (e.g., wind, water, tire wear), and impact damage. Biotic agents include fungi, bacteria, insects, marine borers, and birds. Often, these agents compound each other, with one form of deterioration creating conditions that allow another form of deterioration to occur. For example, insects may attract woodpeckers, or vehicle tire wear may break through the preservative layer, allowing decay to proceed. Conversely, decay typically allows a primary breakdown of the wood minute structure, which in turn allows insects more freedom to invade the timber elements. This process is the typical cycle of life that works well in the forest but does not work well in timber structures and bridge.

5.1 WOOD DETERIORATION DUE TO BIOTIC AGENTS

Biotic, or living, organisms that attack wood include bacteria, fungi, insects, and marine borers. As living organisms, they require certain conditions for survival such as moisture, oxygen, temperature, and food, which is usually wood. When the basic necessary living conditions are available, biotic agents of wood deterioration are free to proliferate, but if any one of them is removed the wood is safe from further biotic attack.

5.2 FUNGAL DECAY

As described above, fungal colonies require certain conditions for survival, including appropriate levels of moisture, oxygen, and temperature, as well as a source of food (the wood itself). If any one of those conditions is removed, fungal decay is stopped.

Fungal decay is the most common form of wood deterioration and 82% of all timber structure degradation is due to fungal decay. When exposed to favorable levels of moisture, oxygen, and temperature, most types of wood become an attractive food source for a variety of decay-producing

fungi. The precise conditions vary according to the species of wood and the species of fungi, but some general rules apply.

Fungi requires moderate temperatures. Growth progresses most rapidly between 50°F and 95°F. Outside of this range, growth significantly slows; below 35°F or above 100°F, growth will cease. Moisture content (measured as a percentage of the dry weight of the wood) typically needs to be above 22% for fungal growth. Moisture content control is the best means of extending life for timber bridge structures. Lastly, there must be sufficient oxygen; if the wood is fully saturated with water, the oxygen supply (>21%) will be cut off, and fungal growth will stop. If any of these conditions are not met, fungal decay will cease. However, it is important to note that this typically does not kill the fungus. The fungus goes dormant but remains in the wood. As soon as the favorable conditions return, fungal growth and decay will resume.

Decay fungi may be generally classified into two categories by the appearance on the wood surface.

1. **Brown Rot |** Appears darker and can crack across the grain. Brown rot fungi attack the cellulose in the wood fibers. The brown color is due to the remaining lignin (the binder which holds the cellulose structure together), which is not consumed by the fungi. The wood tends to shrink, collapse, and crush easily. It may crack across the grain forming small chunks or cubes, which is a sign of advanced decay.
2. **White Rot |** Appears lighter in color and does not crack across the grain until severely degraded. In contrast to brown rot, white rot consumes both lignin and cellulose and leaves the surface appearing generally intact, but with little or no significant mechanical strength. The surface of the decayed wood tends to have a "white" appearance. Wood does not tend to crack, shrink, or collapse. It often feels soft or spongy.

Dry rot is a common type of decay fungi in which the wood becomes brown and crumbly (frass left over after the fungal colony has moved on) and has an apparent dry condition. However, dry rot is a misnomer, because the wood must have some moisture in it to decay, although it may become dry later. A few fungi have water-conducting strands (hyphae) which can carry water, usually from the soil or water sources near the wood, into the areas where the wood elements are

located. These elements are moistened and subsequently wood rots that would otherwise be dry and not decay.

Interior decay damage can occur even when some precaution has been taken. Surface treated wood material can form cracks, which extend beyond the treated surface into untreated core material. Water can also get into the core of "protected" wood by the fungi hyphae. In either case water enters the core material and provides the adequate conditions for decay fungi to live. It is known that as little as a 10% loss in SG due to decay can lead to a loss of 75% in bending strength and 80% in compression perpendicular to grain strength.

5.3 EFFECTS OF FUNGAL DECAY ON THE PROPERTIES OF WOOD

As decay-causing fungi attack wood, cellulose and/or lignin are removed from the material. This causes a reduction in SG and breaks down the integrity of the cellular structure. The reduced SG has a direct correlation to reductions in mechanical properties.

The primary effects of fungi attack on wood can be characterized by the following points (Bodig & Jayne, 1993):

- Change of color.
- Change of odor.
- Decreased weight.
- Decreased strength.
- Decreased stiffness.
- Increased hygroscopicity.
- Increased combustibility.
- Increased susceptibility to insect attack.

Fungal decay negatively impacts nearly all mechanical properties of wood. Bending strength is typically more affected than shear strength. Strength and stiffness may be significantly reduced even in the early stages of decay. Mechanical properties may be reduced by 10% before decay is detectable. By the time SG is reduced by 10%, strength losses may be up to 80%. At this stage,

decay is usually not visually detectable without magnification. By the time decay is visible to the naked eye, significant damage has already taken place.

There are no accepted methods for estimating the degree of strength-reduction based on visual assessment of decayed wood. If decay is visible to the naked eye, it is safest to assume that that portion of wood has no structural capacity.

A variety of non-destructive test (NDT) methods, including stress wave timing and resistance micro-drilling, may be utilized to determine the extent of incipient decay and thereby estimate its remaining strength. These methods typically measure one property of the wood, such as stiffness or hardness, which can be correlated to the decay-related reduction in SG. The reduced SG can then be correlated to reductions in other mechanical properties. These methods are often proprietary to certain NDT methods.

6. INSPECTION FINDINGS – ROOFING AND SIDING

The various defects identified by the WRD inspection are summarized below. Photographs have been provided to identify the visible defects.

6.1 ROOF TOP

The following describes general observations of the roof shingles (shakes):

- The entire surface of the roof is severely weathered with significant shrinkage and fungal growth across the roof. See **Figure 6-1**.
- There are three layers of wood (cedar possibly) shakes with no sub-sheathing. See **Figure 6-2**.
- The redwood tree on the North side overhangs the roof and some cupping under the tree was observed.
- Shaded areas are likely to hold more water. The top face is drier due to exposure to the sun and environmental conditions, resulting in the cupping of the upper layer of shakes. See **Figure 6-3**.
- Metal capping exists for the full length of ridge and is located under the upper layer of shakes. The capping is a 4x4-inch light steel angle. See **Figure 6-6**.

Figure 6-1: South side roof top of the Bridge with significant areas of fungal colonies present and shrinkage of the shakes.

Figure 6-2: Three layers of shakes with no sub-sheathing.

Figure 6-3: North side roof top of the Bridge with areas of cupping under the area shaded by the redwood tree. This area is likely to hold more water, but the upper layer of shakes is exposed and able to dry, resulting in cupping of the upper layer.

Figure 6-4: Severe weathering, shrinkage and fungal colonies across the roof.

Figure 6-5: Severe weathering, shrinkage and fungal colonies across the roof.

Figure 6-6: A 4x4-inch light-gauge steel cap exists for full length of ridge and located under the upper layer of shakes.

6.2 SIDING

The following describes the general observations of the siding:

North Side Siding Visual Observations

- Temporary plastic wrapping exists where boards are missing.
- 8 wing wall boards are missing.
- Missing a total of 282-inches of lower half of the boards. See **Figure 6-11** and **Figure 6-12**.
- Missing a total of 187-inches of full height boards.
- Northwest side end wing wall (Abutment 2) has section loss and decay on bottom of the boards. See **Figure 6-13**.

South Side Siding Visual Observations

- Missing boards at Post 8 at Abutment 2 on the South side. See **Figure 6-15** and **Figure 6-16**.
- South side has some section loss and deterioration on the bottom of the wing wall siding at Abutment 1. See **Figure 6-17**.

Abutment 2 Siding Visual Observations

- Abutment 2 North side front view of siding has some section loss and decay on bottom of siding. See **Figure 6-22**.
- Abutment 2 North side front view of the siding has some section loss and decay on the bottom of siding. See **Figure 6-23**.

North Side Wingwall at Abutment 1 Siding Visual Observations

- Abutment 1 North side wing wall has some section loss at the bottom. See **Figure 6-25**.

6.2.1 NORTH SIDE

Figure 6-7: Siding on North side.

Figure 6-8: Siding on Northeast side showing missing boards in multiple locations behind the temporary plastic wrapping.

Figure 6-9: Siding on Northeast side showing missing boards in multiple locations behind the temporary plastic wrapping.

Figure 6-10: Siding on the North side showing missing boards in multiple locations behind the temporary plastic wrapping.

Figure 6-11: Siding on Northwest side showing missing boards in multiple locations behind the temporary plastic wrapping.

Figure 6-12: Siding on the Northwest side showing missing boards in multiple locations behind the temporary plastic wrapping.

Figure 6-13: Siding on Northwest side end wing wall at Abutment 2 showing section loss and decay on bottom of boards.

6.2.1 SOUTH SIDE

Figure 6-14: Siding on the South side.

Figure 6-15: Missing boards at Post 8 at Abutment 2 on the South side.

Figure 6-16: Missing boards at Post 8 at Abutment 2 on the South side.

Figure 6-17: South side has some section loss and deterioration on the bottom of the wing wall siding at Abutment 1.

6.2.1 ABUTMENT 1

Figure 6-18: Abutment 1 front view of siding in fair condition.

Figure 6-19: Abutment 1 South side front view of siding in fair condition.

Figure 6-20: Abutment 1 North side front view of siding in fair condition.

6.2.1 ABUTMENT 2

Figure 6-21: Abutment 2 front view of siding.

Figure 6-22: Abutment 2 North side front view of siding. Some decay/section loss on bottom.

Figure 6-23: Abutment 2 South side front view of siding with some section loss and decay at the bottom.

6.2.2 ABUTMENT 1 WINGWALLS

Figure 6-24: Abutment 1 North side wing wall view of internal siding.

Figure 6-25: Abutment 1 North side wing wall with some section loss at the bottom.

Figure 6-26: Abutment 1 South side wing wall internal view of siding.

6.2.3 ABUTMENT 2 WINGWALLS

Figure 6-27: Abutment 2 South side wing wall internal view of siding.

Figure 6-28: Abutment 2 North side wing wall internal view of siding.

7. INSPECTION FINDINGS – ROOF STRUCTURE

7.1 ROOF TRUSSES

7.1.1 MAIN RAFTERS

The following describes general observations of the main rafters:

- The mortice and tenon joint at the apex is packed between main rafters **R2N-1** and **R2S-1** but tight.
- Main rafter **R2S-2** has some section loss at the bearing area of **KB-2S**.
- End splits exist at the top of **R2N-3** and **R2S-3**.
- The tenon between main rafters **R2N-4** and **R2S-4** is possibly broken as separation can be seen, but the steek spike is still in place.
- Main rafter **R2S-4** has some wane on the bottom edge facing Abutment 2 for a length of approximately 3-feet (wane is typically not a defect of structural concern).
- Main rafter **R2N-5** has end splits at the bottom.
- The dowel connecting main rafter **RN2-6** and knee brace **KB5-N** was replaced with bolts.
- **R2S-6** shows some deterioration on the bottom face.

7.1.2 KNEE BRACES AND COLLAR TIES

The following describes general observations of the knee braces and collar ties:

- Knee braces **KB1-N** and **KB1-S** are separated from the main rafters.
- Knee brace **KB2-N** has minor cleaving at the lower spike connectors to the lattice.
- Knee brace **KB2-S** is broken and separated from lattice at the lower dowel connection (**Figure 7-1**).
- Knee brace **KB3-N** is cleaved at the lower spike connectors to the lattice.
- Knee brace **KB3-S** has an end split at the upper dowel connection and is broken and separated from lattice and the main rafter.
- Collar tie **CT3** has a vertical end splice on the north side.
- Knee braces **KB3-N** and **KB3-S** are out of alignment with collar tie CT3.

- Knee brace **KB4-N** is cleaved at both ends and with broken segments (section loss) at the top edge on the AB1 side.
- Knee brace **KB4-S** is cleaved at the top dowel and has major damage at the bottom with ends splits and separation from the lattice (**Figure 7-3**).
- Collar tie **CT4** is cleaved at the bottom horizontal dowels and has separated from the main rafter on the south side by approximately 1.5 inches (**Figure 7-4**).
- Knee braces **KB4-N** and **KB4-S** are out of alignment with collar tie CT4.
- **KB5-N** is cleaved at the lower dowel.
- **KB5-S** is cleaved at the lower dowel with section loss below the dowel (**Figure 7-5**).
- Knee braces **KB5-N** and **KB5-S** are out of alignment with collar tie **CT5**.
- **KB6-N** is cleaved at the lower dowel.
- **KB6-S** is cleaved at the lower dowel. The upper dowel is located ½ the dowel diameter from the edge of the strut.
- Knee braces **KB6-N** and **KB6-S** are out of alignment with collar tie **CT6**.
- The collar tie to the Abutment 2 End Truss is visibly decayed at the bottom face on the south side.

Figure 7-1: Broken / cleaved dowel connection at knee brace KN2-S.

Figure 7-2: Knee braces KN3-N and KB3-S are out of alignment with CT3. KN3-S has separated from the main rafter R2N-3.

Figure 7-3: Cleaved and broken lower end of knee brace KN4-S.

Figure 7-4: Separation of CT4 from the main rafter on the south side.

Figure 7-5: KB5-S is cleaved at the lower dowel with section loss below the dowel.

7.1.3 UPPER CROSS BRACES

The following describes general observations of the upper cross braces:

- Upper cross brace **UCB6** has a split 2-inches from the middle. See **Figure 7-10**.
- Upper cross brace **UCB10** has a split 6-inches from CT-5 South side. See **Figure 7-13**.
- Cleaved ends exist to the following upper cross braces:
  - **UCB2** and **UCB8** on the North side.
  - **UCB1**, **UCB5**, **UCB6** and **UCB11** on the South side.
- End splits exist to the following upper cross braces:
  - **UCB8** on the North side.
  - **UCB8**, **UCB9** and **UCB10** on the South side.
- The following upper cross braces are separated from the collar ties:
  - **UCB10** on the North side.
  - **UCB1**, **UCB2**, **UCB6**, **UCB8** and **UCB10** on the South side.
- A summary of elevated SWT values for the upper cross braces is shown in **Figure 7-6**. Note that the SWT readings are generally low with only a few yellow readings.

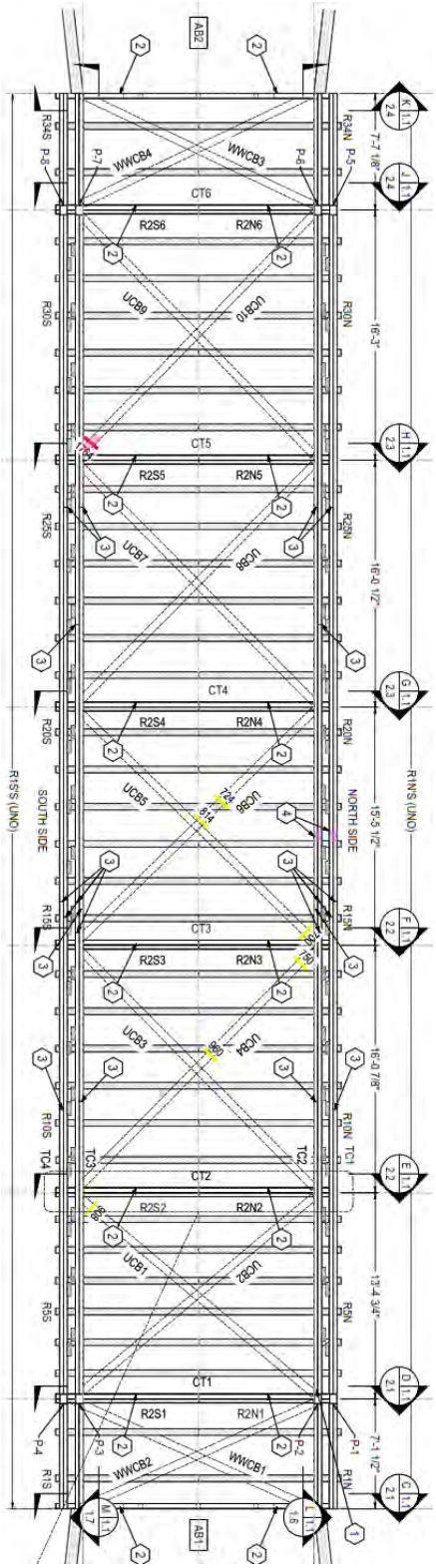


Figure 7-6: Summary of elevated SWT values on the Upper Cross Braces.

Figure 7-7: Wing wall upper cross braces WWCB1 and WWCB2 are in fair condition.

Figure 7-8: Upper cross braces UCB1 and UCB2 are in fair condition.

Figure 7-9: UCB3 / UCB4 in fair condition.

Figure 7-10: Upper cross braces UCB5 and UCB6 with a split 2-inches from middle of UCB6.

Figure 7-11: Upper cross braces UCB7 and UCB8 are in fair condition.

Figure 7-12: Upper cross braces UCB9 and UCB10. UCB9 is in fair condition.

Figure 7-13: Upper cross brace UCB10 has a split 6-inches from CT-5 on the South side.

Figure 7-14: Wing wall upper cross braces WWCB3 and WWCB4 are in fair condition.

7.2 SECONDARY RAFTERS

The following describes general observations of the secondary rafters:

- The dowel at the apex of **R1S-9** and **R1N-9** is not fully engaged. See **Figure 7-17**.
- **R1S-10** has a small split at end of rafter near ridge. See **Figure 7-17**.
- **R1N-14** has multiple knots in it. **R1N-15** – showing deterioration at end near ridge 2-3 feet length / **R1S-15** has some deterioration at end near ridge. See and **Figure 7-18**.
- **R1S-20** showing some shrinkage cracks on member. **R1N-20** has three knots on the member. **R1N-24** and **R1S-24** showing cracks / splits / deterioration at bottom surface. **R1S-25** showing some shrinkage cracks. See **Figure 7-19**.
- **R1S-25** showing severe shrinkage cracks on member. **R1N-24** showing cracks / splits / deterioration at bottom surface. **R1S-28** showing shrinkage checks / cracks / splits. See **Figure 7-20**.
- **R1N-32** shows some deterioration on the bottom surface. See **Figure 7-22**.
- Separation between secondary rafters at the Apex occurs at:
    - **R2-6**, **R2-7**, **R2-8**, **R2-9**, **R2-13**, **R2-14**, **R2-17**, **R2-24**, **R2-25** and **R2-30**.
- Wane exists on:
    - **R2-8N**, **R2-10N**, **R2-15N**, **R2-16N** and **R2-27S**.
- End splits and/or section loss at the top exists on:
    - **R2-8S**, **R2-14S**, **R2-16N**, **R2-17N**, **R2-18A**, **R2-21S**, **R2-24S** and **R2-29S**.

Figure 7-15: No access to Abutment 1 truss main rafters with limited visual accessibility. R1N & R1S appear to be in fair condition.

Figure 7-16: Arrow points to an abandoned wasp nests and spider webs between R-S2/R1N-2 near the apex. Insect nests are typically located near the apex of all rafters.

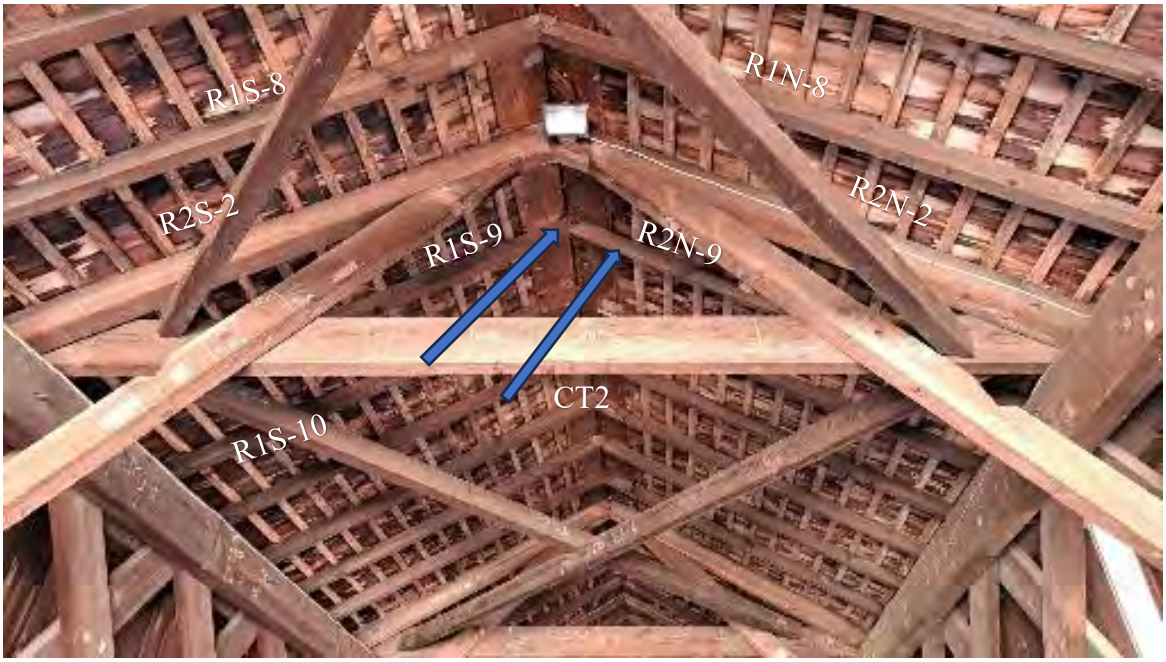


Figure 7-17: The dowel at the apex of R1S-9 / R1N-9 is not fully engaged. R1N-9 appears to have a smaller width compared to R1S-9. R1S-10 small split at end of rafter near ridge.

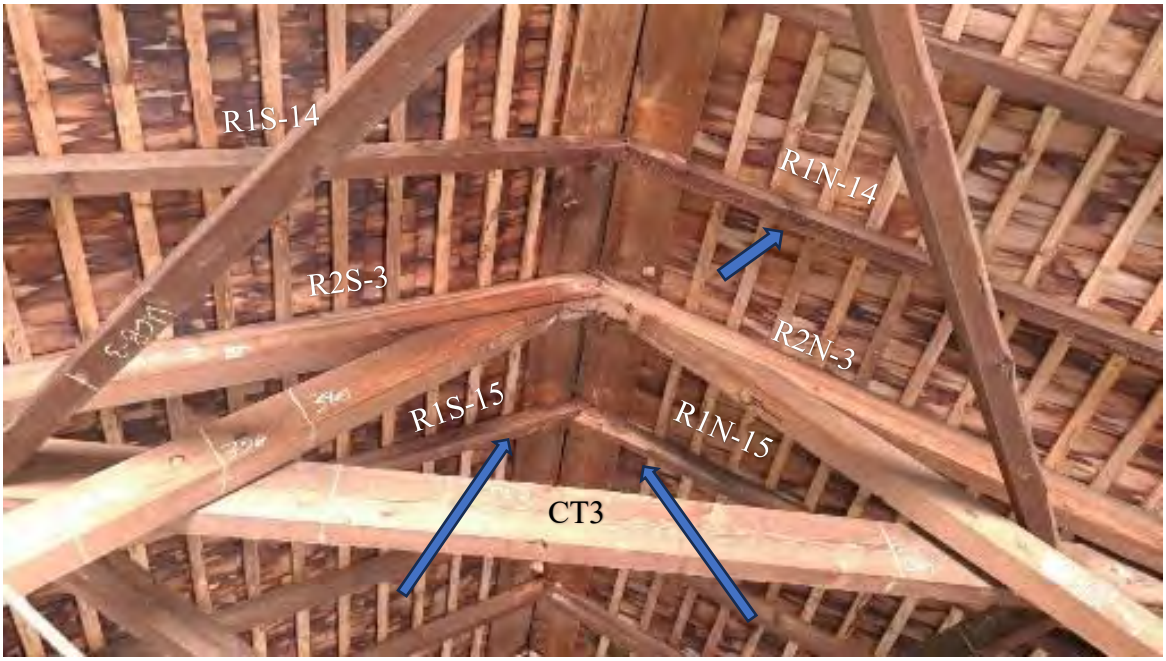


Figure 7-18: R1N-14 has multiple knots. R1N-15 shows deterioration at the top end near the apex that is 2-3-feet in length. R1S-15 has some deterioration near the apex.

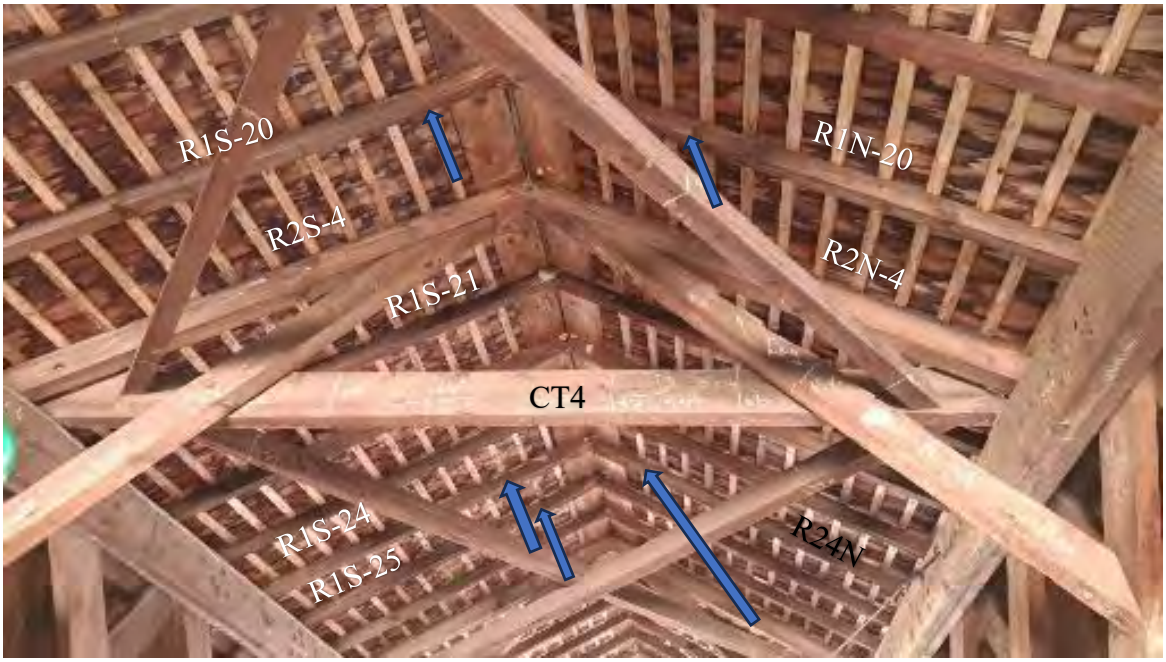


Figure 7-19: R1S-20 has some shrinkage checks. Three knots are seen on R1N-20. R1N-24 and R2S-24 have cracks, splits and deterioration at bottom surfaces. R1S-25 has some shrinkage checks.

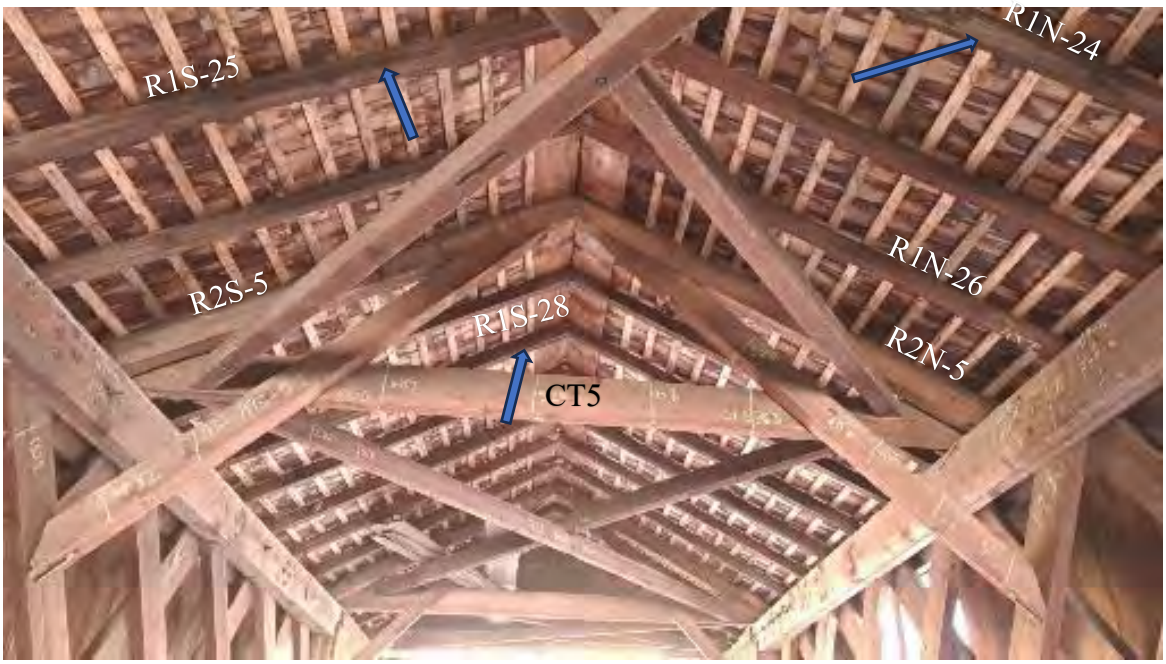


Figure 7-20: R1S-25 has severe shrinkage checks. R1N-24 has cracks, splits and deterioration at the bottom face. R1S-28 has shrinkage checks, cracks and splits.

Figure 7-21: AB2 truss end, rafters seem to be in fair condition.

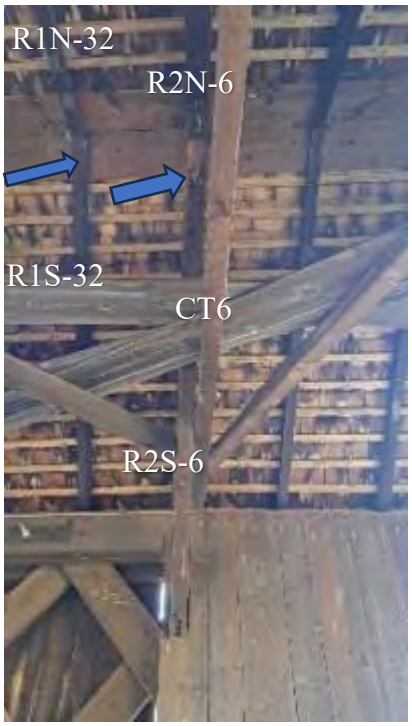


Figure 7-22: R2S-6 and R1N-32 are showing some deterioration on bottom surface.

8. INSPECTION FINDINGS – PRIMARY TRUSSES

8.1.1 TOP CHORDS

The following describes general observations of the top chords:

- Shrinkage checks exist at the dowels at Top Chord 2 Ply B (**TC2B**). See **Figure 8-1.**
- **TC2B** is cracked through the dowels located 33-feet from post P1. See **Figure 8-2.**
- **TC2B** is cleaved through a peg hole (peg is missing) above post P2 and at a peg hole located 10-inches from P2. See **Figure 8-11.**
- The crack in a small section on the bottom face of **TC1B** does not appear to extend to the top or through the member. See **Figure 8-6** and **Figure 8-9.**
- SWT data for the top chords is presented in **Figure 8-13**. Note that the SWT readings are generally low with only a few yellow readings.

Figure 8-1: Shrinkage checks on dowels to TC2B connection with lattice.

Figure 8-2:TC2B is crack through dowels located 33-feet from post P1.

Figure 8-3: TC2A splice location.

Figure 8-4: TC2A splice located 50-feet from post P1.

Figure 8-5: TC2A splice.

Figure 8-6: The crack in a small section on the bottom face of TC1B does not appear to extend to the top or through the member.

Figure 8-7: TC1B splice location.

Figure 8-8: TC1B splice located 20-feet from post P6.

Figure 8-9:Small crack on bottom face of TC1B.

Figure 8-10: Small crack on bottom face of TC1B.

Figure 8-11: TC2B is cleaved through a peg hole (no peg) above post P2 and at a peg hole located 10-inches from P2.

Figure 8-12: TC3A exhibits some shrinkage checks.

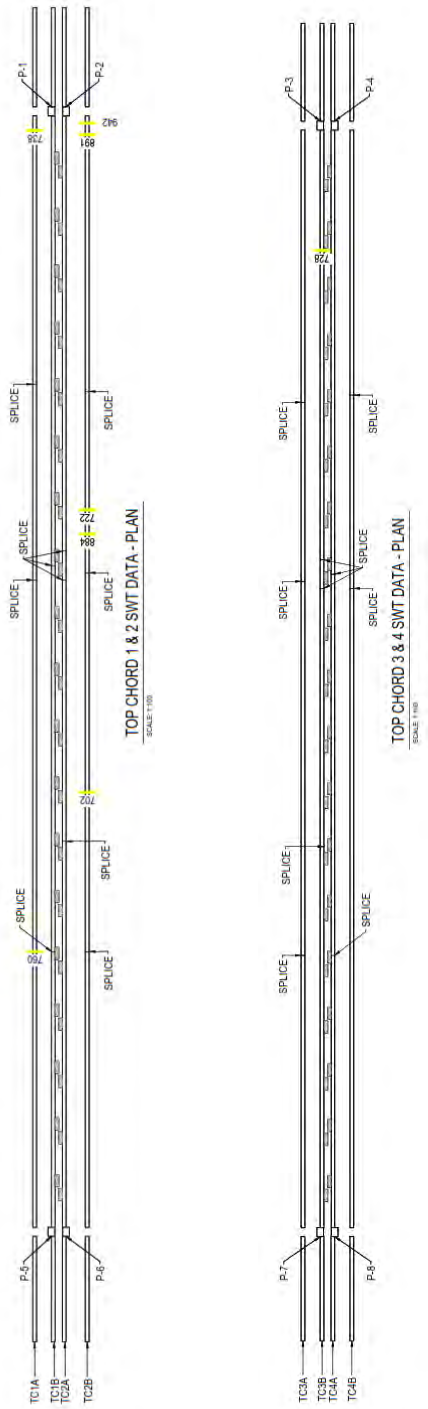


Figure 8-13: Summary of elevated SWT values on the top chords.

8.1.2 MIDDLE CHORDS

The following describes general observations of the middle chords:

- Middle Chord 1 (**MC1**) showing a splice location behind **MC2**. See **Figure 8-14.**
- **MC3** & **MC4** have decay 2-inches from Lattice 4 Member 7 **(L4-7).** See **Figure 8-19.**
- SWT data for the middle chords is presented in **Figure 8-23**. Note that the SWT readings are generally low with only a few yellow readings for chord 2 and 4; however, there are two high SWT readings (red) in chord 1 and a single high reading in chord 3.

8.1.2.1 North Side (MC1 & MC2)

Figure 8-14: Middle chord MC1 showing a splice location behind MC2.

Figure 8-15: Middle chords MC1 & MC2.

Figure 8-16: Middle chords MC1 & MC2.

Figure 8-17: Middle chords MC1 & MC2.

8.1.2.2 South Side (MC3 & MC4)

Figure 8-18: MC4 splice location behind lattice member LC4-5.

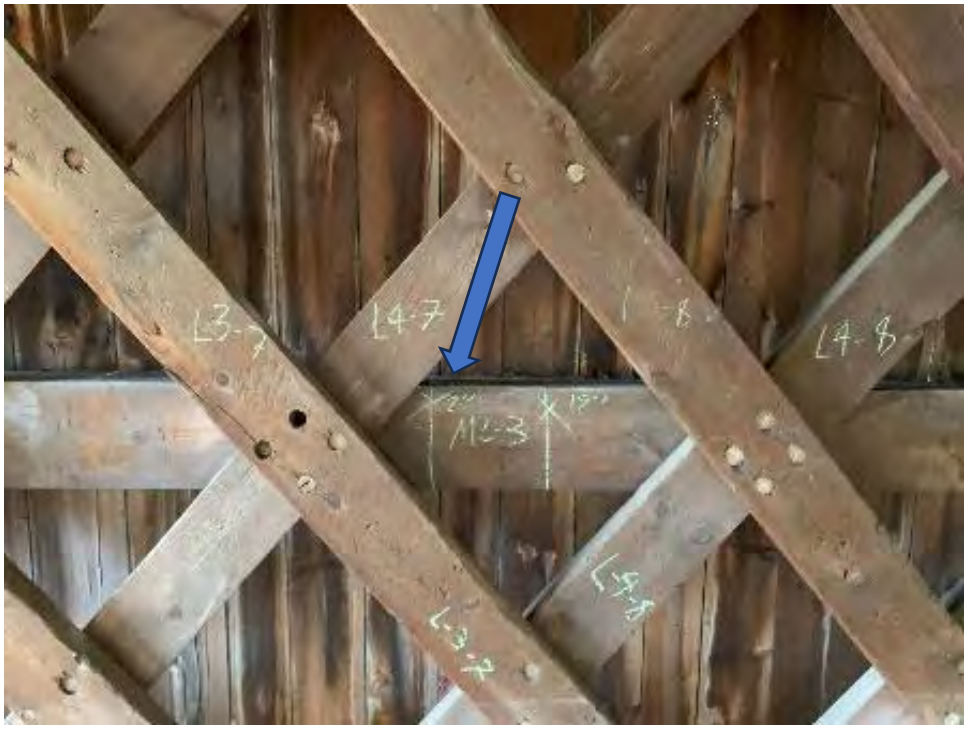


Figure 8-19: MC3 & MC4 has decay 2-inches from lattice member L4-7.

Figure 8-20: MC3 & MC4 splice location.

Figure 8-21: MC3 & MC4

Figure 8-22: MC3 splice location & MC4

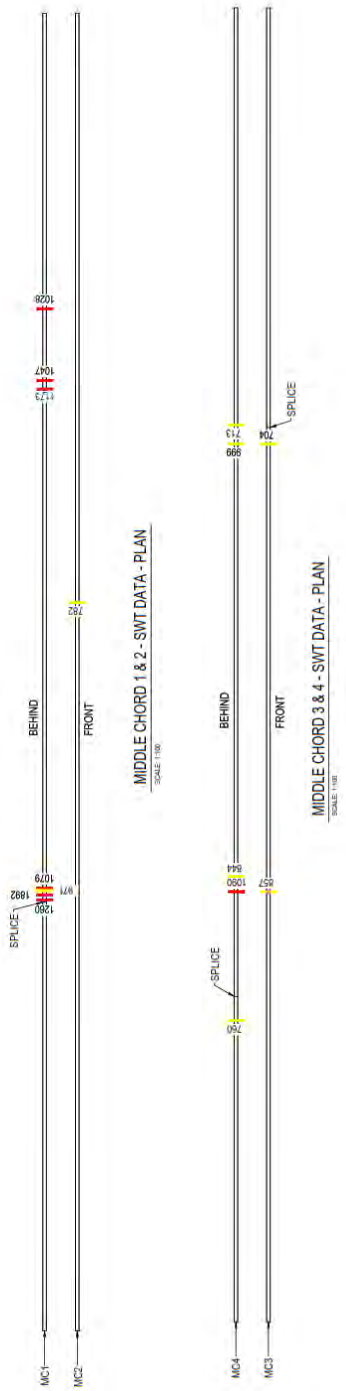


Figure 8-23: Summary of elevated SWT values on the Middle Chords.

8.1.3 BOTTOM CHORDS

8.1.3.1 At Abutment 1

The following describes general observations of the bottom chords at Abutment 1:

- The first 40-inches of bottom chord **BC1A** and **BC1B** from P1 have significant decay and 2-inches section loss on bottom faces. The bottom half of **BC1B** is decayed/crushed for the first 3-feet from P1. The next 5-feet of the bottom face is decayed/crushed. See **Figure 8-24**.
- The bottom third of **BC2A** is decayed with significant section loss for the first 39-inches from P2. The next 40-inches is crushed on the bottom face for a depth of 1-inch and extends over the cribbing. **BC2A** is spliced 49-inches from the end. Significant section loss exists for the first 6-inches of **BC2B** from P2. The next 3-feet is decayed for the bottom third. **BC2B** is spliced at 6-feet from P2. See **Figure 8-24**.
- **BC3A** is broken at a dowelled connection to the lattice members L3-1 and L4-4 and is spliced at 61-inches from the end. **Figure 8-25**.
- The bottom face of **BC3A** is crushed approximately 1/8-inch deep for the first 8-inches from P3. Segment A of **BC3A** is curving toward the south side at the splice with Segment B. The bottom face of **BC3B** is crushed for 12 to 13-inches from P3 and is spliced at 42-inches from the end. See **Figure 8-26**.
- The first 6.5-feet of the bottom third of **BC4A** from **P4** is decayed. The first 7-feet of the bottom third of **BC4B** from P4 is decayed. See **Figure 8-27** and **Figure 8-28**.

Figure 8-24: The first 40-inches of bottom chord BC1A and BC1B from Post P1 has significant decay and 2-inches section loss on bottom faces. The bottom half of BC1B is decayed/crushed for the first 3-feet from P1. The next 5-feet of the bottom face is decayed/crushed. The bottom third of BC2A is decayed with significant section loss for the first 39-inches from P2. The next 40-inches is crushed on the bottom face for a depth of 1-inch and extends over the cribbing. BC2A is spliced 49-inches from the end. Significant section loss exists for the first 6-inches of BC2B from P2. The next 3-feet is decayed for the bottom third. BC2B is spliced at 6-feet from P2.

Figure 8-25: BC3A is broken at a dowelled connection to the lattice members L3-1 and L4-4 and is spliced at 61-inches from the end.

Figure 8-26: The bottom face of BC3A is crushed by approximately 1/8-inch depth for 8-inches from P3. Segment A of BC3A is curving toward the south side at the splice with Segment B. The bottom face of BC3B is crushed for 12-13-inches from P3 and is spliced at 42-inches from the end.

Figure 8-27: The first 6 1/2-feet of the bottom third of BC4A from P4 is decayed. The first 7-feet of the bottom third of BC4B from P4 is decayed.

Figure 8-28: The first 7-feet of the bottom third of BC4B from P4 is decayed.

8.1.3.2 At Abutment 2

The following describes general observations of the bottom chords at Abutment 2:

- The first 28-inches of **BC1A** from P5 are missing. The next 24-inches of **BC1A** are decayed. See **Figure 8-29**, **Figure 8-30** and **Figure 8-31**.
- The first 3-feet of **BC1B** from P5 are missing. The next 12-inches of **BC1B** are decayed. See **Figure 8-29**, **Figure 8-30** and **Figure 8-31**.
- The first 12-inches of **BC2A** from P6 are missing. The next 2-feet are decayed. See **Figure 8-29**, **Figure 8-30** and **Figure 8-31**.
- The first 16-inches of **BC2A** from P6 are missing. The next 6-inches are decayed. See **Figure 8-29**, **Figure 8-30** and **Figure 8-31**.
- Approximately 80% of section loss exists for the first 10-inches of **BC3A** from **P5**. Segment 2 is cleaved with a split at 54-inches next to a lattice dowel joint. See **Figure 8-33**.
- The splice of **BC3B** is broken at 64-inches from P7. Large end split of second segment of BC2A from P7. See **Figure 8-34** and **Figure 8-36**.
- **BC4A** and **BC4B** are broken at 70-inches from P8. See **Figure 8-37**.

Figure 8-29: Significant decay and section loss to the AB2 ends of BC1 and BC2.

Figure 8-30: Significant decay and section loss to the AB2 ends of BC1 and BC2.

Figure 8-31: Significant decay and section loss to the AB2 ends of BC1 and BC2.

Figure 8-32: Significant decay and section loss to the AB2 ends of BC1 and BC2.

Figure 8-33: Approximately 80% of section loss exists for the first 10-inches of BC3A from P5. Segment 2 is cleaved with a split at 54-inches next to a lattice dowel joint.

Figure 8-34: The splice of BC3B is broken at 64-inches from P7.

Figure 8-35: Large end split of second segment of BC2A from P7.

Figure 8-36: The splice of BC3B is broken at 64-inches from P7.

Figure 8-37: BC4A and BC4B are broken at 70-inches from P8.

8.1.3.3 Other Observations of the Bottom Chords

The following describes other general observations of the bottom chords:

- Some shrinkage checks exist to Bottom Chord 2 Ply B (**BC2B**) through the dowel holes at lattice connection, which is also the splice between chord segments 2 & 3 (**BC2B-2** and **BC2B-3**). See **Figure 8-38**.
- Shrinkage checks exist through dowel holes of the BC3A splice. See **Figure 8-41**.
- **BC2B** is missing a dowel on the lattice connection with L1-22 and L2-19. Some shrinkage checks exist through other dowel holes. See **Figure 8-42**.
- Shrinkage checks exist through **BC2B** splices. See **Figure 8-42** and **Figure 8-43**.
- SWT data for the top chords is presented in **Figure 8-45**. Note there are a few yellow SWT readings and several red SWT readings on all chords.

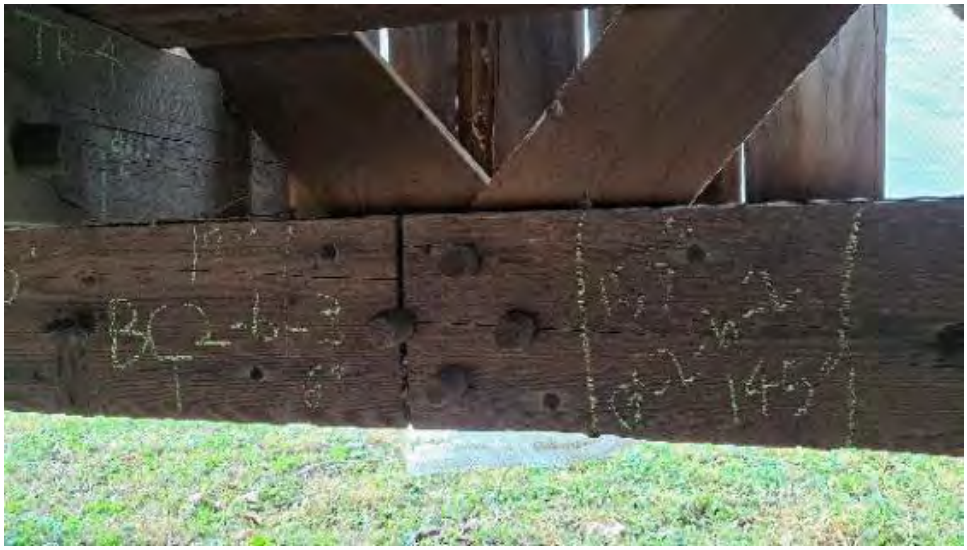


Figure 8-38 Some shrinkage checks exist to Bottom Chord 2 Ply B (BC2B) through the dowel holes at lattice connection, which is also the splice between chord segment 2 & 3 (BC2B-2 and BC2B-3).

Figure 8-39: BC2B is missing a dowel on the lattice connection with L1-22 and L2-19. Some shrinkage checks exist through other dowel holes.

Figure 8-40: BC3A Abutment 1 end with temporary cribbing under bottom chords.

Figure 8-41: Shrinkage checks exist through dowel holes of the BC3A splice.

Figure 8-42: Shrinkage checks exist through BC2B splices.

Figure 8-43: Shrinkage checks exist through BC2B splices.

Figure 8-44: BC3A splice between Segment 2 and Segment 3.

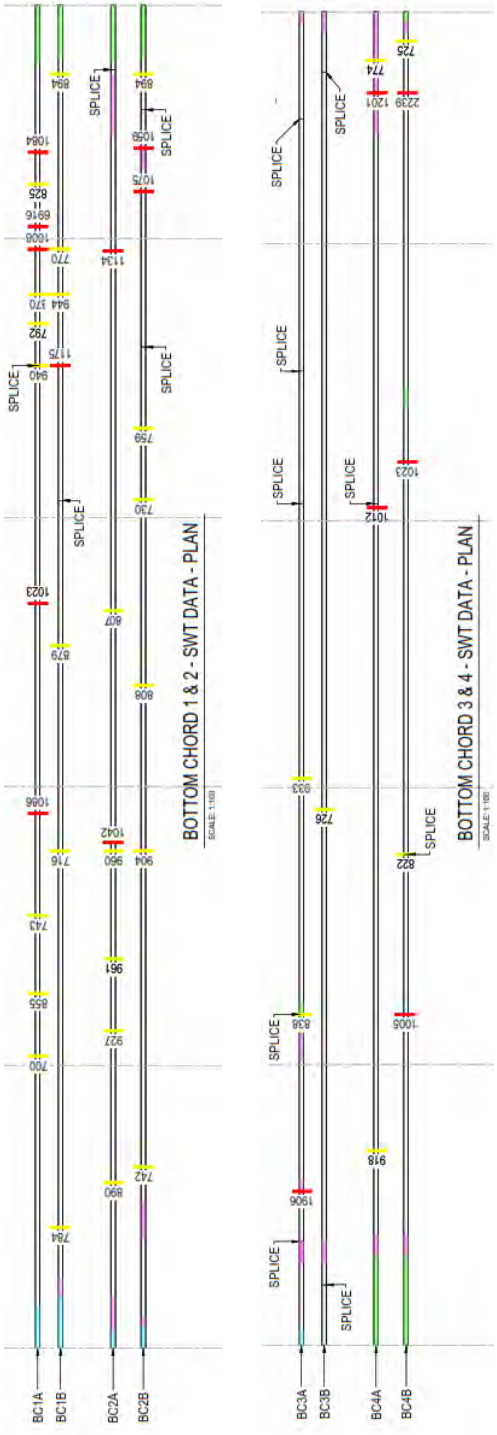


Figure 8-45: Summary of elevated SWT values on the bottom chords.

8.1.4 LATTICES

8.1.4.1 North Side (Lattice 1 & Lattice 2)

The following describes general observations of the North side lattices:

- Approximately 70% of all lattice members have end splits at the dowel connections at the top and bottom chords.
- SWT data for the Lattice 1 and Lattice 2 is presented in **Figure 8-46**. Note that the SWT readings are generally low with only a few yellow readings and a single red reading.
- Lattice 1 Member 4 (**L1-4**) is broken at the top from the bottom to top edge. A nail exists through the crack. See **Figure 8-47**, **Figure 8-48** and **Figure 8-49**.
- **L1-4** is split through a dowel hole with a Lattice 2 member. See **Figure 8-50**.
- Large shrinkage checks exist through **L1-10** just above the middle chord and extend to the dowelled connection with the top chord. See **Figure 8-51** and **Figure 8-52.**
- **L1-11** has old termite damage, circa 1993.
- Shrinkage checks exist to **L1-17** which extend from the dowelled connection with the top chord. See **Figure 8-53**.
- **L1-18** is cracked on its side and lower edge above the intersection with **L2-19**. See **Figure 8-54** and **Figure 8-55.**
- Shrinkage checks exist to **L1-20** which extend from the dowelled connection with the top chord. See **Figure 8-56**.
- A tension crack (24-inches long) has propagated from at a knot on the top face of **L1-20** below the middle chord. See **Figure 8-57.**
- **L2-1** has some deterioration and abrasion on the outer surface. See **Figure 8-58.**
- A large crack exists through Lattice 1 member at the connection with Lattice 2 member. See **Figure 8-59**.
- **L2-6** has some damage at the dowel connection to L1-5. See **Figure 8-60**.
- **L2-9** is cracked at the dowel connection to **L1-8**. See **Figure 8-61**, **Figure 8-62** and **Figure 8-63**.
- Dowels on **L2-11** were replaced, likely when the bridge was moved to its current site. See **Figure 8-64**.

- **L2-17** is cracked at the dowel connection to the middle chord and Lattice 1 member. See **Figure 8-65**.
- Several shrinkage checks exist to **L2-18**, including through two dowels through the middle chord and Lattice 1 member.
- **L2-20** has shrinkage checks through the dowelled connection to the middle chord and Lattice 2 member. See **Figure 8-66**.

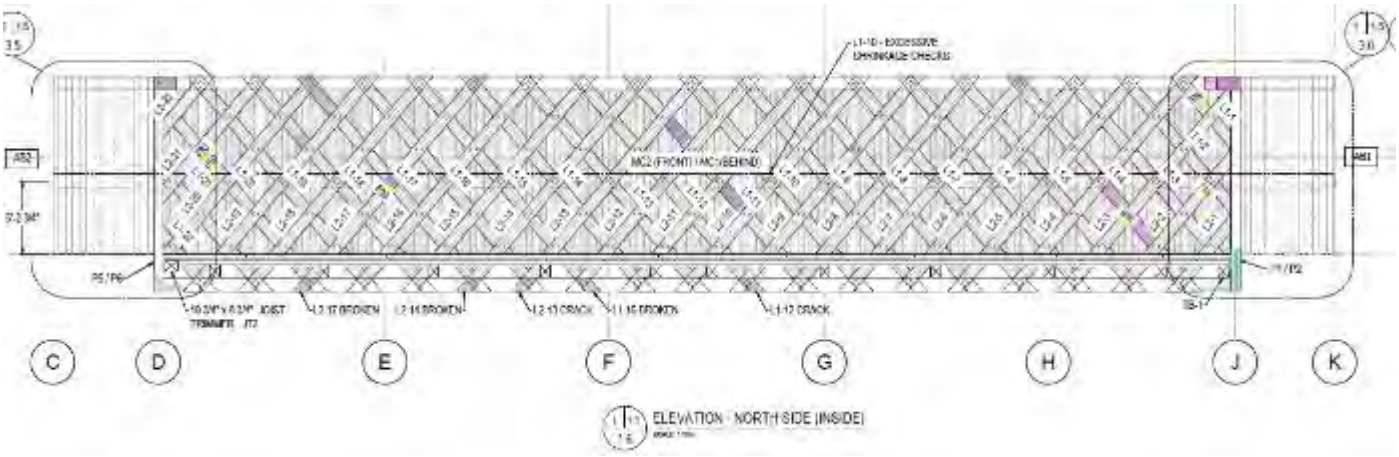


Figure 8-46: Summary of elevated SWT values on the Lattice 1 & 2 members.

Figure 8-47: L1-4 is broken at the bottom on the outer edge.

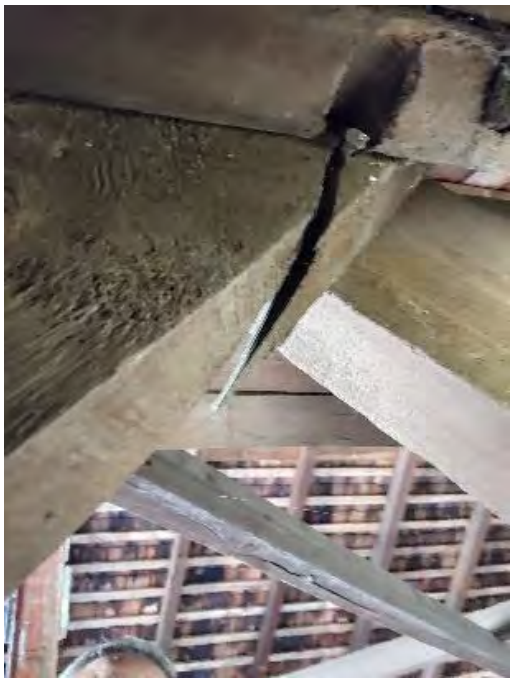


Figure 8-48: L1-4 is broken at the top from the bottom to top edge. A nail exists through the crack.

Figure 8-49: L1-4 top split on outer edge, nail is going through member on top.

Figure 8-50: L1-4 is split through a dowel hole with a Lattice 2 member.

Figure 8-51: Large shrinkage checks exist through L1-10 just above the middle chord.

Figure 8-52: Large shrinkage checks exist through L1-10 and extend to the dowelled connection with the top chord.

Figure 8-53:Shrinkage checks exist to L1-17 which extend from the dowelled connection with the top chord.

Figure 8-54: L1-18 is cracked on its side and lower edge above the intersection with L2-19.

Figure 8-55: L1-18 is cracked on its side and lower edge above the intersection with L2-19.

Figure 8-56: Shrinkage checks exist to L1-20 which extend from the dowelled connection with the top chord.

Figure 8-57: A tension crack (24-inches long) has propagated from at a knot on the top face of L1-20 below the middle chord.

Figure 8-58: L2-1 has some deterioration and abrasion on the outer surface.

Figure 8-59: A large crack exists through Lattice 1 member at the connection with Lattice 2 member.

Figure 8-60: L2-6 has some damage at the dowel connection to L1-5.

Figure 8-61: L2-9 is cracked at the dowel connection to L1-8.

Figure 8-62: L2-9 is cracked at the dowel connection to L1-8.

Figure 8-63: L2-9 is cracked at the dowel connection to L1-8.

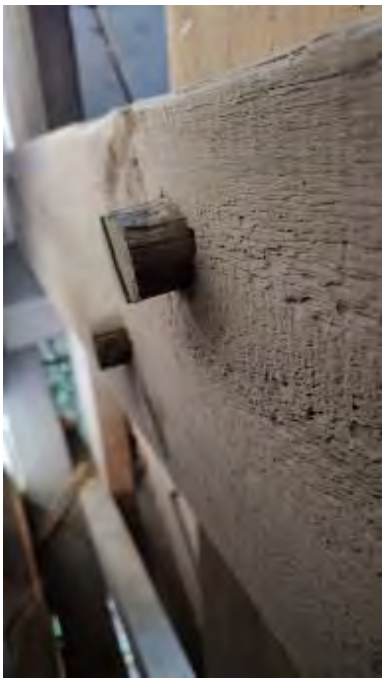


Figure 8-64: Dowels on L2-11 were replaced, likely when the bridge was moved to its current site (note they protrude about 1-inch).

Figure 8-65: L2-17 is cracked at the dowel connection to the middle chord and Lattice 1 member.

Figure 8-66: L2-20 has shrinkage checks through the dowelled connection to the middle chord and Lattice 1 member.

8.1.4.2 South Side (Lattice 3 & Lattice 4)

The following describes general observations of the South side lattices:

- Approximately 70% of all lattice members have end splits at the dowel connections at the top and bottom chords.
- SWT data for the Lattice 3 and Lattice 4 is presented in **Figure 8-67**. Note that the SWT readings are generally low with only a few yellow readings with two red readings near AB1 and one at the center of the bridge.
- **L3-1** has minor shrinkage checks near P3. The hole in the member appears to be for a dowel, but there is no reciprocal hole in the post. See **Figure 8-68**.
- **L3-2** has several cracks propagating from the dowelled connections to L4-2 & L4-3. See **Figure 8-69** and **Figure 8-70.**
- **L3-3** is cracked at the dowels with L4-1. See **Figure 8-71** and **Figure 8-72.**
- **L3-4** is cracked at the dowels to the middle chord. See **Figure 8-73.**
- **L3-6** is split from the dowel connection at the top chord. See **Figure 8-74** and **Figure 8-75.**
- **L3-7** is cracked at a dowel to L4-7 and the middle chord. The top dowel of this connection does not penetrate through L3-7. See **Figure 8-76.**
- **L3-9** is cracked through 1 row of dowels to the middle chord. See **Figure 8-77.**
- **L3-11** is cupping on longitudinal alignment on the inside face where pith is evident. See **Figure 8-78** and **Figure 8-79.**
- **L3-13** is cracked through 1 row of dowels at the middle chord and L4-13. See **Figure 8-80.**
- Dowel on L3-14 at L4-15 has insufficient distance to adjacent dowel and hole to be effective. See **Figure 8-81**.
- The bottom face of L4-11 is cracked. See **Figure 8-82**.
- **L3-16** is cracked below L4-18 towards the bottom. See **Figure 8-83.**
- L3-18 has end splits originating at both rows of dowels at the top chord. See **Figure 8-84** and **Figure 8-85.**
- **L3-19** is split by the temporary brace anchor, located approximately 6-feet from the bottom chord. **See Figure 8-86** and **Figure 8-87.**

- **L3-20** is cracked at 1 row of dowels at the middle chord and L4-20 connection. See **Figure 8-88.**
- **L3-21** is broken at the L4-21 connection to P7. See **Figure 8-89** and **Figure 8-90.**
- **L4-2** is cracked either side of the connection to L3-2 and with shrinkage checks through 1 row of dowels. See **Figure 8-91**, **Figure 8-92**, and **Figure 8-93.**
- **L4-4** has a notch 2/3 of its depth over a transverse beam. See **Figure 8-94.**
- **L4-5** is cracked through a dowel at the connection to L3-3. See **Figure 8-95** and **Figure 8-96.**
- **L4-7** is cracked through a row of dowels at the connection to L3-7. White rot is seen on **L3-7** above this connection. The top dowel does not penetrate through **L4-7**. See **Figure 8-97, Figure 8-98,** and **Figure 8-99.**
- **L4-12** is cracked through the bottom dowel at L3-11. See **Figure 8-100** and **Figure 8-101.**
- **L4-14** has pith at mid depth on the inside face. See **Figure 8-102.**
- **L4-16** has split extending from the dowels at the top chord. See **Figure 8-103** and **Figure 8-104.**
- **L4-17** is cleaved on both rows of dowels at the top chord. See **Figure 8-105.**
- L4-20 has split extending from the dowels at the top chord. See **Figure 8-106** and **Figure 8-108.**
- **L4-20** has split extending from the dowels at the bottom chord. See **Figure 8-108.**
- **L4-22** is broken at the deck level. See **Figure 8-109.**

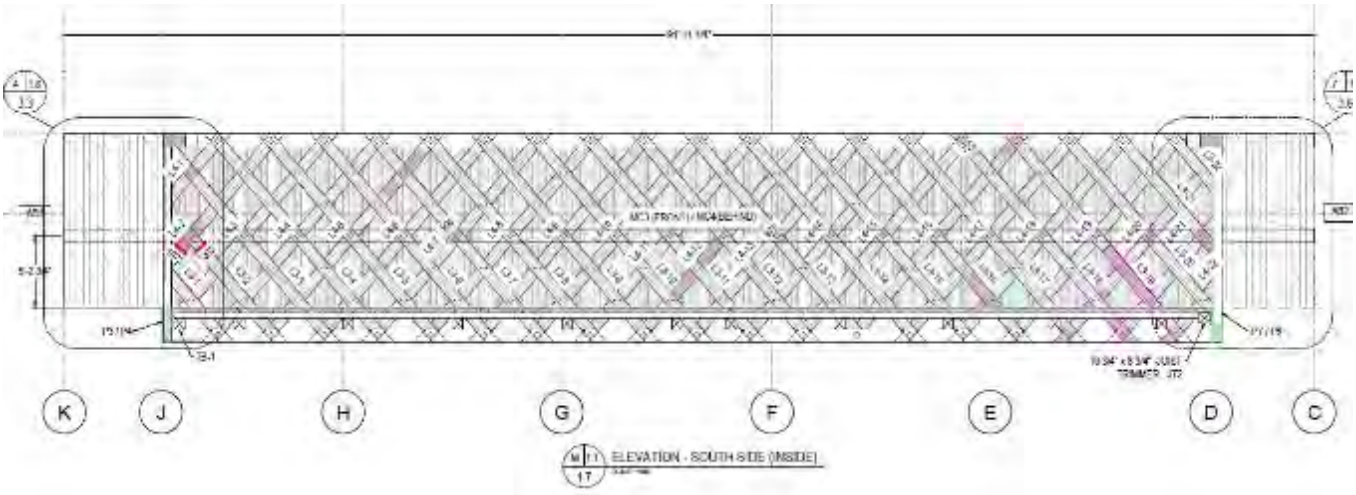


Figure 8-67: Summary of elevated SWT values on the Lattice 3 & 4 members.

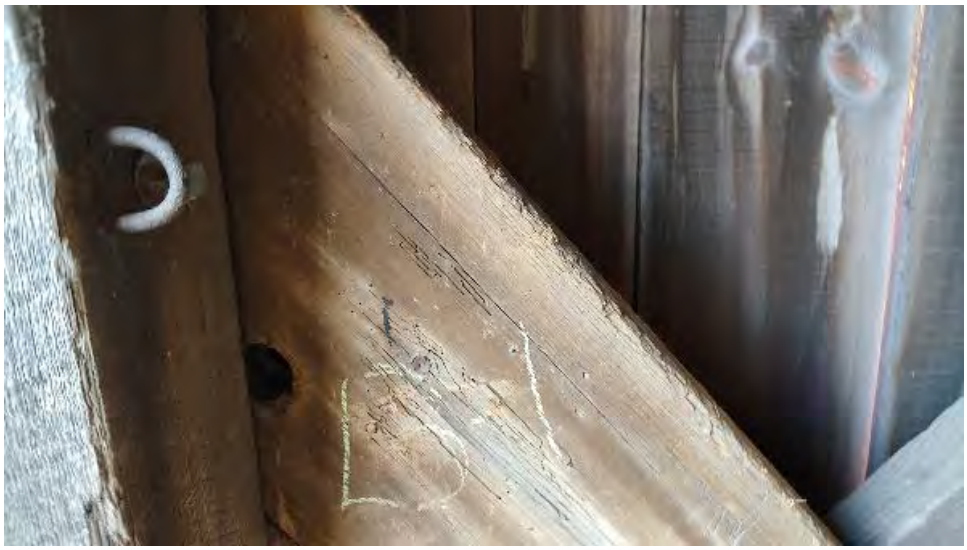


Figure 8-68: L3-1 has minor shrinkage checks near P3. The hole in the member appears to be for a dowel, but there is no reciprocal hole in the post.

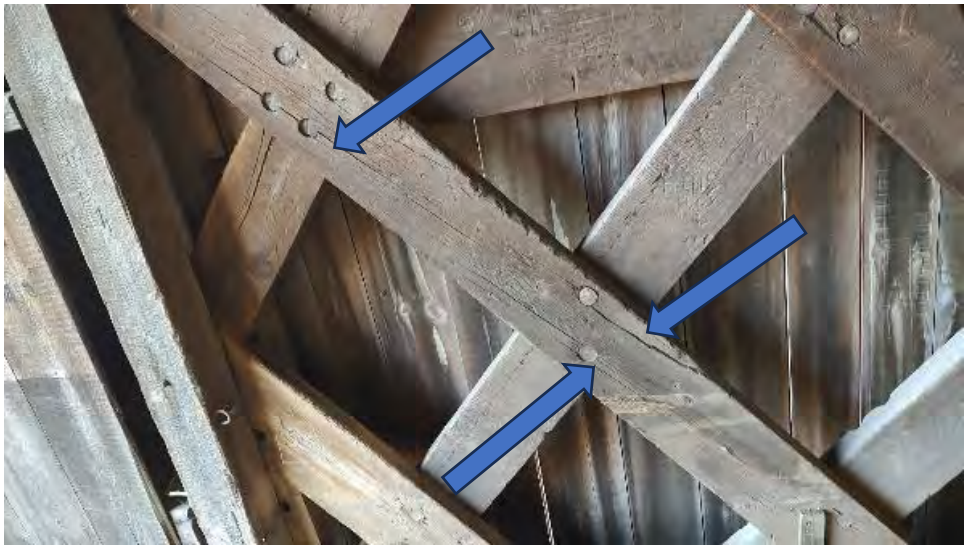


Figure 8-69: L3-2 has several cracks propagating from the dowelled connections to L4-2 & L4-3.

Figure 8-70: L3-2 has several cracks propagating from the dowelled connections to L4-2 & L4-3.

Figure 8-71: L3-3 is cracked at the dowels with L4-1 (note protruding dowels).

Figure 8-72: L3-3 is cracked at the dowels with L4-1.

Figure 8-73: L3-4 is cracked at the dowels to the middle chord.

Figure 8-74: L3-6 is split from the dowel connection at the top chord.

Figure 8-75: L3-6 is split from the dowel connection at the top chord.

Figure 8-76: L3-7 is cracked at a dowel to L4-7 and the middle chord. The top dowel of this connection does not penetrate through L3-7.

Figure 8-77: L3-9 is cracked through 1 row of dowels to the middle chord.

Figure 8-78: L3-11 is cupping on longitudinal alignment on the inside face where pith is evident.

Figure 8-79: L3-11 is cupping on longitudinal alignment on the inside face where pith is evident (note the short pith segment that is missing).

Figure 8-80: L3-13 is cracked through 1 row of dowels at the middle chord and L4-13.

Figure 8-81: Dowel on L3-14 at L4-15 has insufficient distance to adjacent dowel and hole to be effective.

Figure 8-82: The bottom face of L4-11 is cracked.

Figure 8-83: L3-16 is cracked below L4-18 towards the bottom.

Figure 8-84: L3-18 has end splits originating at both rows of dowels at the top chord.

Figure 8-85: L3-18 has end splits originating at both rows of dowels at the top chord.

Figure 8-86: L3-19 is split by the temporary brace anchor, located approximately 6-feet from the bottom chord.

Figure 8-87: L3-19 is split by the temporary brace anchor, located approximately 6-feet from the bottom chord.

Figure 8-88: L3-20 is cracked at 1 row of dowels at the middle chord and L4-20 connection.

Figure 8-89: L3-21 is broken at the L4-21 connection to P7.

Figure 8-90: L3-21 is broken at the L4-21 connection to P7.

Figure 8-91: L4-2 is cracked either side of the connection to L3-2 and with shrinkage checks through 1 row of dowels.

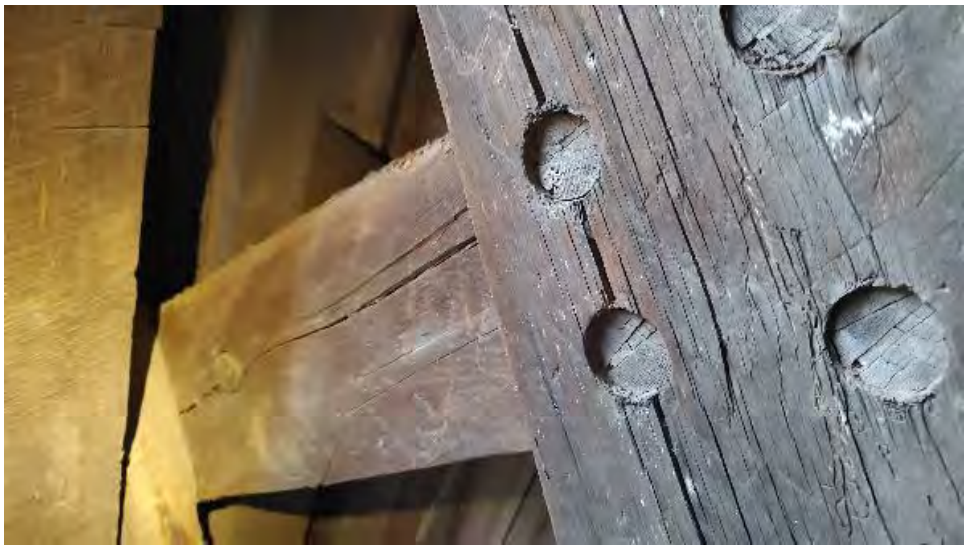


Figure 8-92: L4-2 is cracked either side of the connection to L3-2 and with shrinkage checks through 1 row of dowels.

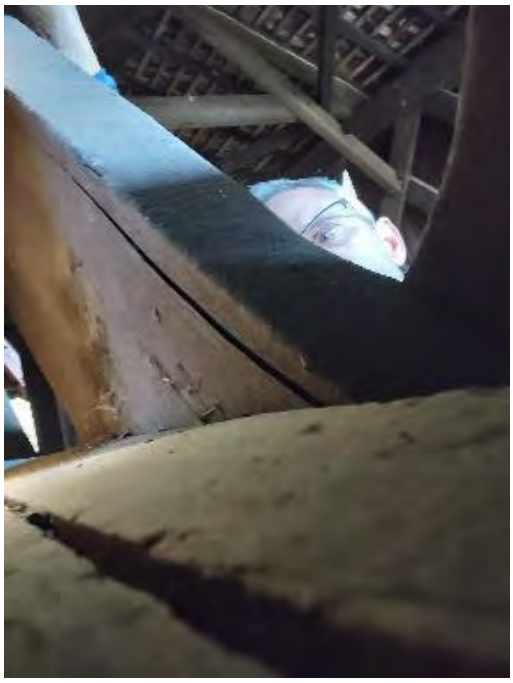


Figure 8-93: L4-2 is cracked either side of the connection to L3-2 and with shrinkage checks through 1 row of dowels.

Figure 8-94: L4-4 has a notch 2/3 of its depth over a transverse beam.

Figure 8-95: L4-5 is cracked through a dowel at the connection to L3-3.

Figure 8-96: 5 is cracked through a dowel at the connection to L3-3.

Figure 8-97: L4-7 is cracked through a row of dowels at the connection to L3-7. White surface fungi is seen on L3-7 above this connection. The top dowel does not penetrate through L4-7.

Figure 8-98: L4-7 is cracked through a row of dowels at the connection to L3-7. White surface fungi is seen on L3-7 above this connection. The top dowel does not penetrate through L4-7.

Figure 8-99: L4-7 is cracked through a row of dowels at the connection to L3-7. White surface fungi is seen on L3-7 above this connection. The top dowel does not penetrate through L4-7.

Figure 8-100: L4-12 is cracked through the bottom dowel at L3-11.

Figure 8-101: L4-12 is cracked through the bottom dowel at L3-11.

Figure 8-102: L4-14 has pith at mid depth on the inside face.

Figure 8-103: L4-16 has split extending from the dowels at the top chord.

Figure 8-104: L4-16 has split extending from the dowels at the top chord.

Figure 8-105: L4-17 is cleaved on both rows of dowels at the top chord.

Figure 8-106: L4-20 has split extending from the dowels at the top chord.

Figure 8-107: L4-20 has split extending from the dowels at the top chord.

Figure 8-108: L4-20 has split extending from the dowels at the bottom chord.

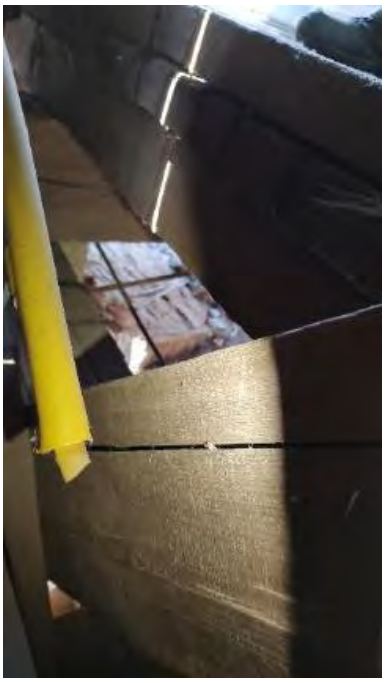


Figure 8-109: L4-22 is broken at the deck level.

8.1.5 POSTS AT WINGWALLS

The following describes general observations of the posts at the wing walls:

- Post **P1** is decayed and with termite damage for bottom 2-feet. **P2** is decayed, has insect damage and section loss for bottom 3-feet. The packer between P2 and the lattice member has decayed and section loss. See **Figure 8-110**.
- **Post 2** decay/insect damage/section loss 3-feet length. The packer has decay and section loss. See **Figure 8-111.**
- **P3** is in very poor condition with decay for 30-inches from the bottom. See **Figure 8-112.**
- **P4** is crushed for 6-inches from bottom. See **Figure 8-113.**
- **P5** has a 2x2.5" notch on the BC1A alignment. The bottom 12-inches are missing and the next 16-18- inches are decayed. See **Figure 8-114.**
- The bottom 16-inches of **P6** are missing and the next 10-inches are decayed. See **Figure 8-115.**

- The bottom 16-inches of **P7** are in very poor condition with decay. See **Figure 8-116.**
- The bottom 12-inches of **P8** are broken. There is a split up to 3-feet from the bottom and has disconnected from 2 dowels. The dowels are broken. See **Figure 8-117** and **Figure 8-118.**

Figure 8-110: Post P1 is decayed and with termite damage for bottom 2-feet. P2 is decayed and with insect damage and section loss for bottom 3-feet. The packer between P2 and the lattice member has decayed and section loss.

Figure 8-111: P2 is decayed with insect damage and section loss for bottom 3-feet.

Figure 8-112: P3 is in very poor condition with decay extending 30-inches from the bottom.

Figure 8-113: P4 is crushed for 6-inches from bottom.

Figure 8-114: P5 has a 2x2 1/2" notch on the BC1A alignment. The bottom 12-inches are missing and the next 16-18- inches are decayed.

Figure 8-115: The bottom 16-inches of P6 are missing and the next 10-inches are decayed.

Figure 8-116: The bottom 16-inches of P7 are in very poor condition with decay.

Figure 8-117: The bottom 12-inches of P8 are broken. There is a split up to 3-feet from the bottom and has disconnected from 2 dowels. The dowels are broken.

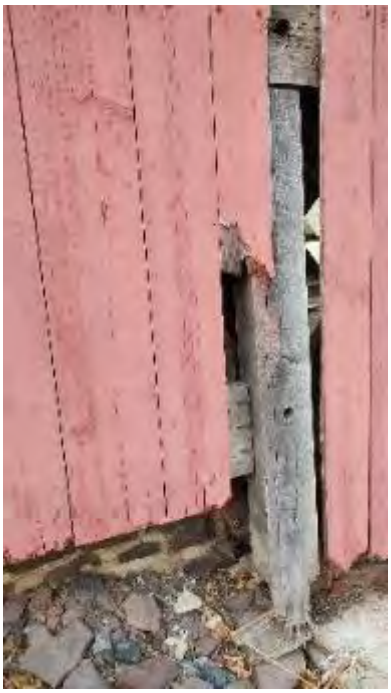


Figure 8-118: The bottom 12-inches of P8 are broken. There is a split up to 3-feet from the bottom and has disconnected from 2 dowels. The dowels are broken.

9. INSPECTION FINDINGS – DECK

9.1 FLOOR DECKING

The following describes general observations of the floor decking:

- A total of 9 spans of longitudinal planks overly a layer of transverse planks.
- All planks are nominal 3-inch thick with various widths.
- **Span 1 –** skewed 64-inches long on North side, 68-inches long on South side, total 15 planks, plank 1 (North) with 2 holes. See **Figure 9-2** and **Figure 9-3**.
- **Span 2 –** 88-inches long on North side, 94-inches long on South side, 16 planks, common hole in Plank 1 and 2. See **Figure 9-4** and **Figure 9-5**.
- **Span 3 –** 116-inches long on North side, 118-inches long on South side, total 17 planks, hole in Plank 2. See **Figure 9-6** and **Figure 9-8**. Termite damage was discovered to the underside of the transverse planks. See **Figure 9-7**.
- **Span 4 –** 110-inches long, Planks 1 and 2 are 6-inches shorter than other planks (Planks 1 and 2 of Span 5 are 6-inches longer), total 19 planks, a common hole in Planks 1 and 2. See **Figure 9-9**.
- **Span 5 –** 110.5-inches long on North side, 110-inches long on South side, Planks 1 and 2 are 116-inches long, total 18 planks, a common hole in Planks 1 and 2, half of plank 18 missing at Abutment 2 end, the Northwest corner is raised above Span 4 by 2.5-inches. See **Figure 9-10** and **Figure 9-12**.
- **Span 6 –** 115-inches long, total 18 planks but Plank is 18 missing, a common hole in Planks 1 and 2. See **Figure 9-14** and **Figure 9-15**.
- **Span 7 –** 120-inches long, total 19 planks, a common hole in Planks 1 and 2. See **Figure 9-16** and **Figure 9-17**.
- **Span 8 –** 120-inches long on North side, 117-inches long on South side, total 19 planks, two common holes in Planks 1 and 2. See **Figure 9-18** and **Figure 9-19**.
- **Span 9 –** 83.5-inches long on North side, 76-inches long on South side, total 22 planks, a hole in Plank 2. See **Figure 9-20** and **Figure 9-21**.

Figure 9-1: Top view of overall floor decking looking toward AB1.

Figure 9-2: Floor decking view from AB1. Span 1 has a slight skew.

Figure 9-3: Floor decking Span 1, with 2 holes in Plank 1 on the north side.

Figure 9-4: Floor decking Span 2, South side.

Figure 9-5: Floor decking Span 2 North side, with common hole in Plank 1 and 2.

Figure 9-6: Floor decking Span 3, South side.

Figure 9-7: Lower layer of decking of Span 3 with termite damage.

Figure 9-8: Floor decking Span 3, North side, with hole in Plank 2.

Figure 9-9: Floor decking Span 4, South side.

Figure 9-10: Floor decking Span 5, South side. Half of Plank is 18 missing.

Figure 9-11: Floor decking Span 5, South side. Half of Plank 18 is missing.

Figure 9-12: Floor decking Span 5, North side, with common hole in Planks 1 and 2.

Figure 9-13: The Northwest corner of floor decking Span 5 is raised above Span 4 by 2.5-inches.

Figure 9-14: Floor decking Span 6, South side, where Plank 18 is missing.

Figure 9-15: Floor decking Span 6, North side, with common hole in Planks 1 and 2.

Figure 9-16: Floor decking Span 7, South side.

Figure 9-17: Floor decking Span 7, North side, with common hole in Planks 1 and 2.

Figure 9-18: Floor decking Span 8, South side.

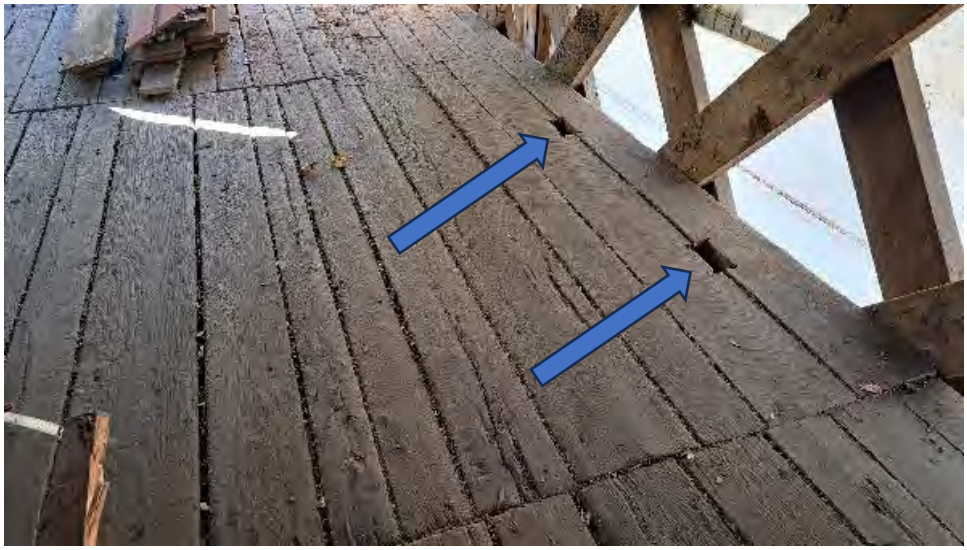


Figure 9-19: Floor decking Span 8, North side, with two common holes in Planks 1 and 2.

Figure 9-20: Floor decking Span 9, South side.

Figure 9-21: Floor decking Span 9, North side.

9.2 TRANSVERSE BEAMS

The following describes general observations of Transverse beams. SWT data for the transverse beams is presented in **Figure 9-22**. Note that transverse beams 3, 5, and 8 have red readings and several of the cross braces have elevated red readings.

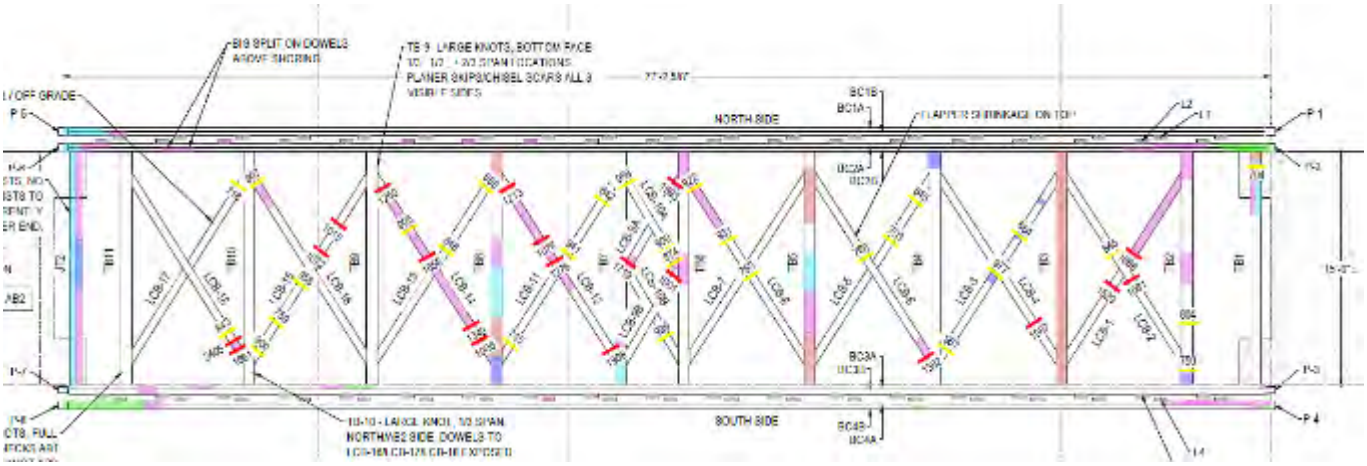


Figure 9-22: Summary of elevated SWT values on the transverse beams.

9.2.1 TRANSVERSE BEAM TB1

The following describes general observations of the transverse beam TB1:

- **TB1** has some section loss (old split) on Abutment 2 side, North end on bottom corner for 12-inches. See **Figure 9-23.**
- **TB1** on Abutment 1 side is decayed and section loss up to 2-inches deep. See **Figure 9-24.**
- **TB1** has a large shrinkage check originating from the South end, on Abutment 1 side which extends for 5 to 6 feet. See **Figure 9-25.**
- **TB1** is on a skew dictated by the original bridge site and has rotated or twisted up to 7 degrees on North end. See **Figure 9-26.**

Figure 9-23: TB1 has some section loss (old split) on Abutment 2 side, North end on bottom corner for 12-inches.

Figure 9-24: TB1 on Abutment 1 side is decayed and section loss up to 2-inches deep.

Figure 9-25: TB1 has a large shrinkage check originating from the South end, on Abutment 1 side which extends for 5 to 6 feet.

Figure 9-26: TB1 is on a skew as per original bridge site and has rotated or twisted up to 7 degrees on North end.

9.2.2 TRANSVERSE BEAM TB2

The following describes general observations of the transverse beam TB2:

- Significant shrinkage checking exists to **TB2**. See **Figure 9-27.**
- TB2 is broken, extending from the bottom face at mid span and caused by extreme slope of grain around a large knot on the side face. See **Figure 9-28**, **Figure 9-29**, and **Figure 9-30.**
- **TB2** has another large knot on the bottom AB2 edge near the northern end. See **Figure 9-31.**

Figure 9-27: Significant shrinkage checking exists to TB2.

Figure 9-28: TB2 is broken, extending from the bottom face at mid span and caused by extreme slope of grain around a large knot on the side face.

Figure 9-29: TB2 is broken, extending from the bottom face at mid span and caused by extreme slope of grain around a large knot on the side face.

Figure 9-30: TB2 is broken, extending from the bottom face at mid span and caused by extreme slope of grain around a large knot on the side face.

Figure 9-31: TB2 has another large knot on the bottom AB2 edge near the northern end.

9.2.3 TRANSVERSE BEAM TB3

The following describes general observations of the transverse beam TB3:

- **TB3** has large shrinkage checks on AB1 side that are up to 5/8-inches wide, for its full length. See **Figure 9-32**, **Figure 9-33**, and **Figure 9-34.**
- **TB3** is twisted up to 3 degrees and is on a skew 18-inches out of perpendicular alignment with the bottom chords. See **Figure 9-35.**

Figure 9-32: TB3 has large shrinkage checks on AB1 side that are up to 5/8-inches wide, for its full length.

Figure 9-33: TB3 has large shrinkage checks on AB1 side that are up to 5/8-inches wide, for its full length.

Figure 9-34: TB3 has large shrinkage checks on AB1 side that are up to 5/8-inches wide, for its full length.

Figure 9-35: TB3 is twisted up to 3 degrees and is on a skew 18-inches out of perpendicular alignment with the bottom chords.

9.2.4 TRANSVERSE BEAM TB4

The following describes general observations of the transverse beam TB4:

- All visible sides of **TB4** have planer skips or chisel scars. See **Figure 9-36,** and **Figure 9-37.**
- **TB4** has minor wane on the bottom AB2 edge at the North end. See **Figure 9-38.**

Figure 9-36: All visible sides of TB4 have planer skips or chisel scars.

Figure 9-37: All visible sides of TB4 have planer skips or chisel scars.

Figure 9-38: TB4 has minor wane on the bottom AB2 edge at the North end.

9.2.5 TRANSVERSE BEAM TB5

The following describes general observations of the transverse beam TB5:

- **TB5** has a slope of grain crack on the AB2 side at 1/3 span from the North end with some section loss in bottom face. Planer skips and chisel scars are on all visible sides. See **Figure 9-39** and **Figure 9-40.**
- **TB5** has planer skips and chisel scars on all visible sides. The North end is twisted 4 degrees and is lifting on the AB1 side from BC2. See **Figure 9-41** and **Figure 9-42.**

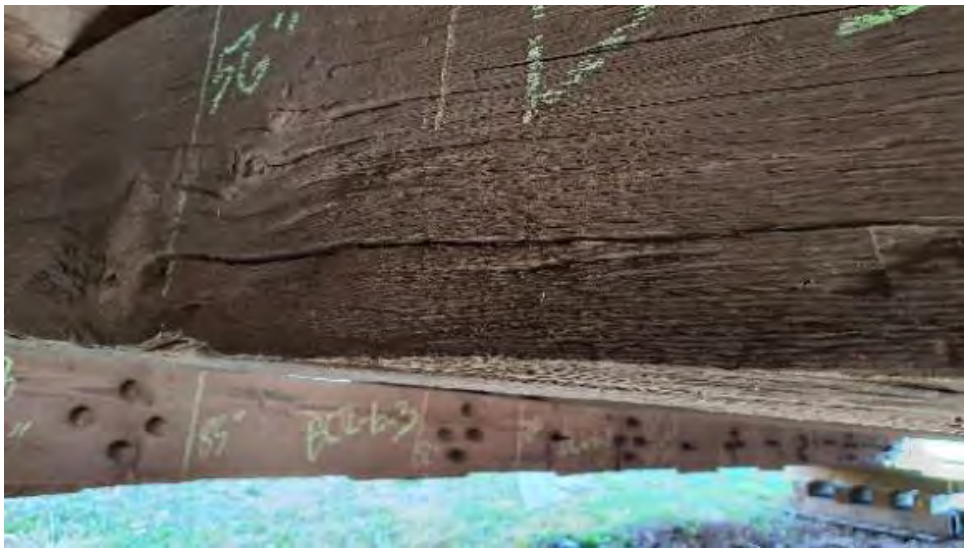


Figure 9-39: TB5 has a slope of grain crack on the AB2 side at 1/3 span from the North end with some section loss in bottom face.

Figure 9-40: TB5 has a slope of grain crack on the AB2 side at 1/3 span from the North end with some section loss in bottom face. Planer skips and chisel scars are on all visible sides.

Figure 9-41: TB5 has planer skips and chisel scars on all visible sides. The North end is twisted 4 degrees and is lifting on the AB1 side from BC2.

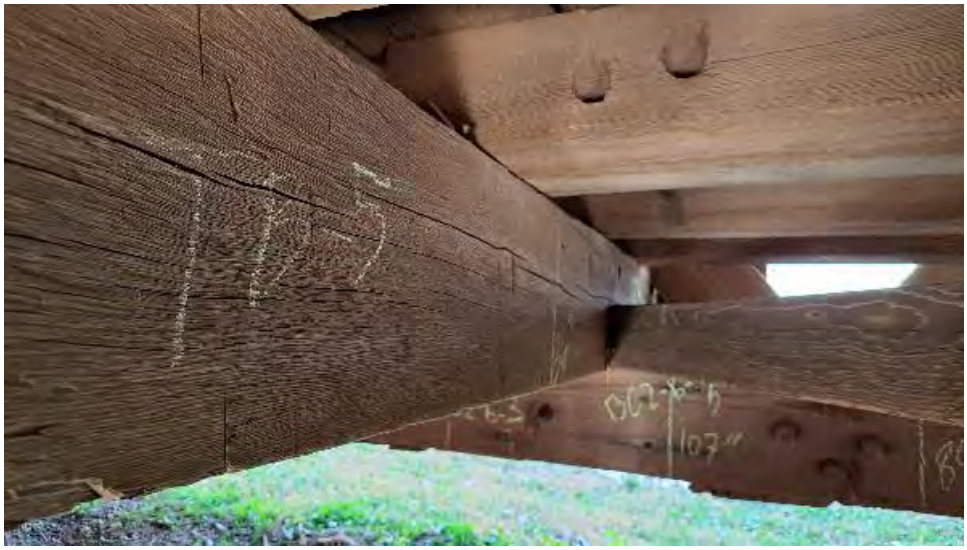


Figure 9-42: TB5 has planer skips and chisel scars on all visible sides. The North end is twisted 4 degrees and is lifting on the AB1 side from BC2.

9.2.6 TRANSVERSE BEAM TB6

The following describes general observations of the transverse beam TB6:

- **TB6** has a large knot on the AB2 side and a vertical crack approximately 20-inches from the North end. See **Figure 9-43.**
- **TB6** has large shrinkage checks on AB1 side, up to 2-inches deep and 1/2-inch wide. See **Figure 9-44** and **Figure 9-45.**

Figure 9-43: TB6 has a large knot on the AB2 side and a vertical crack approximately 20-inches from the North end.

Figure 9-44: TB6 has large shrinkage checks on AB1 side, up to 2-inches deep and 1/2-inch wide.

Figure 9-45: TB6 has large shrinkage checks on AB1 side, up to 2-inches deep and 1/2-inch wide.

9.2.7 TRANSVERSE BEAM TB7

The following describes general observations of the transverse beam TB7:

- **TB7** has planer skips and chisel scars on the AB1 side. See **Figure 9-46.**
- **TB7** has a large knot on the AB1 side. Section loss exists above BC3A resulting from the old slope of grain cracks. See **Figure 9-47.**
- **TB7** has planer skips, chisel scars and a large knot on the AB2 side, to the lower edge at 1/3 span location from the North end. **See Figure 9-48.**

Figure 9-46: TB7 has planer skips and chisel scars on the AB1 side.

Figure 9-47: TB7 has a large knot on the AB1 side. Section loss exists above BC3A resulting from the old slope of grain cracks.

Figure 9-48: TB7 has planer skips, chisel scars and a large knot on the AB2 side, to the lower edge at 1/3 span location from the North end.

9.2.8 TRANSVERSE BEAM TB8

The following describes general observations of the transverse beam TB8:

- **TB8** has planer skips and chisel scars on all visible sides with some minor shrinkage checking. See **Figure 9-49**, **Figure 9-50**, **Figure 9-51**, and **Figure 9-52.**
- **TB8** Small knot with minor section loss due to old slope of grain cracks on bottom face at mid span. A small knot with minor section loss due to old slope of grain cracks exist on the bottom face at mid span. See **Figure 9-51.**
- **TB8** is twisted at the North end by 2-inches and has lifted off BC2 on the AB2 side. See **Figure 9-53.**

Figure 9-49: TB8 has planer skips and chisel scars on all visible sides with some minor shrinkage checking.

Figure 9-50: TB8 has planer skips and chisel scars on all visible sides with some minor shrinkage checking.

Figure 9-51: TB8 has planer skips and chisel scars on all visible sides with some minor shrinkage checking.

Figure 9-52: A small knot with minor section loss due to old slope of grain cracks exist on the bottom face at mid span.

Figure 9-53: TB8 is twisted at the North end by 2-inches and has lifted off BC2 on the AB2 side.

9.2.9 TRANSVERSE BEAM TB9

The following describes general observations of the transverse beam TB9:

- **TB9** has shrinkage checks 2-inches deep and 3/8-inches wide on the AB1 side at the North end. See **Figure 9-54**, **Figure 9-55**, and **Figure 9-56.**
- **TB9** has large knots on the bottom face at 1/3, 1/2, and 2/3 span locations. Planer skips and chisel scars exist on all visible sides. Shrinkage checks exist on the bottom face. See **Figure 9-57** and **Figure 9-58.**

Figure 9-54: TB9 has shrinkage checks 2-inches deep and 3/8-inches wide on the AB1 side at the North end.

Figure 9-55: TB9 has shrinkage checks 2-inches deep and 3/8-inches wide on the AB1 side at the North end.

Figure 9-56: TB9 has shrinkage checks 2-inches deep and 3/8-inches wide on the AB1 side at the North end.

Figure 9-57: TB9 has large knots on the bottom face at 1/3, 1/2, and 2/3 span locations. Planer skips and chisel scars exist on all visible sides. Shrinkage checks exist on the bottom face.

Figure 9-58: TB9 has large knots on the bottom face at 1/3, 1/2, and 2/3 span locations. Planer skips and chisel scars exist on all visible sides. Shrinkage checks exist on the bottom face.

9.2.10 TRANSVERSE BEAM TB10

The following describes general observations of the transverse beam TB10:

- **TB10** has shrinkage checks 2-inches deep and 3/8-inches wide on the AB1 side, North end. See **Figure 9-59, Figure 9-60,** and **Figure 9-61.**
- **TB10** has a large knot to the bottom AB2 edge at 1/3 span location from the North end. See **Figure 9-62.**

Figure 9-59: TB10 has shrinkage checks 2-inches deep and 3/8-inches wide on the AB1 side, North end.

Figure 9-60: TB10 has shrinkage checks 2-inches deep and 3/8-inches wide on the AB1 side, North end.

Figure 9-61: TB10 has shrinkage checks 2-inches deep and 3/8-inches wide on the AB1 side, North end.

Figure 9-62: TB10 has a large knot to the bottom AB2 edge at 1/3 span location from the North end.

9.2.11 TRANSVERSE BEAM TB11

The following describes general observations of the transverse beam TB11:

- **TB11** has full length shrinkage checks on the AB1 side that are 1 inch deep. See **Figure 9-63** and **Figure 9-64.**
- **TB11** has a large knot on the bottom AB2 edge, approximately 12-inches from the North end. See **Figure 9-65.**

Figure 9-63: TB11 has full length shrinkage checks on the AB1 side that are 1 inch deep.

Figure 9-64: TB11 has full length shrinkage checks on the AB1 side that are 1 inch deep.

Figure 9-65: TB11 has a large knot on the bottom AB2 edge, approximately 12-inches from the North end.

9.2.12 JOIST TRIMMER JT2

Note, it is possible that the original transverse beam TB12 at Abutment 2 was lost during the flood event. The joist trimmer JT2 is in the same plane as the joists but without connections supporting the joists. It is likely TB12 once supported the joists and JT2 was installed to trim the joists; thus, the trimmer provided a continuous edge to receive vehicle loads rather than directly by the deck planks.

At Abutment 1, transverse beam TB1 exists and provides direct bearing of the joists at that end of the Bridge. The joist trimmer at AB1 ("JT1") appears to be dimension lumber on edge, rather than to be the JT2 post and timber size classification.

The following general observations of the JT2were made:

- **JT2** has wane at the mid span on the lower AB2 edge. See **Figure 9-66.**
- **JT2** is severely decayed and with section loss on bottom face. A 3-inch-deep cavity exists on the bottom face. **JT2** is not currently supported at either end. See **Figure 9-67** and **Figure 9-68.**

Figure 9-66: JT2 has wane at the mid span on the lower AB2 edge.

Figure 9-67: JT2 is severely decayed and with section loss on bottom face. A 3-inch-deep cavity exists on the bottom face. JT2 is not currently supported at either end.

Figure 9-68: JT2 is severely decayed and with section loss on bottom face. A 3-inch-deep cavity exists on the bottom face. JT2 is not currently supported at either end.

9.3 FLOOR JOISTS

The following describes general observations of the floor joists. A summary of identified defects of the floor joists (stringers) is presented in **Figure 9-69**.

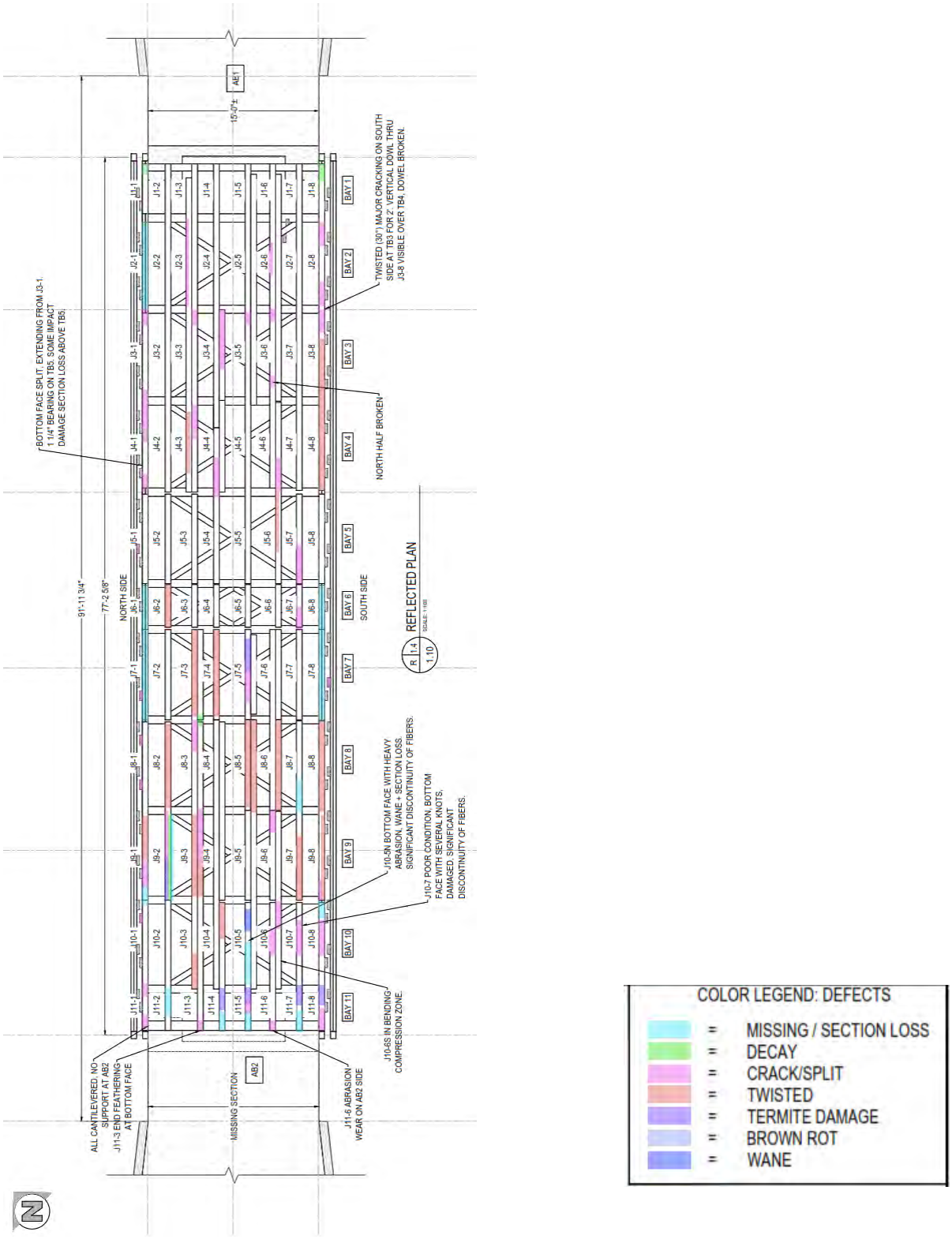


Figure 9-69: Summary of visual inspection on the joists.

9.3.1 JOISTS OF SPAN 1

The following describes general observations of the floor joists of Span 1:

- Joist **(J1-1)** has some large knots. See **Figure 9-70.**
- **J1-1** is decayed on the bottom face at the bearing over TB1. See **Figure 9-71.**
- **J1-1** has reduced bearing over TB2. See **Figure 9-72.**
- **J1-2** is not bearing on TB1. **See Figure 9-73.**
- **J1-3** is a double member with both plies continuous with J2-3. See **Figure 9-74.**
- **J1-3-N** does not extend to TB1. J1-3-S is packed over TB1. See **Figure 9-75**.
- **J1-4** is packed above TB1. See **Figure 9-78.**
- **J1-5** is a double-ply member with both continuous with J2-5. J2-5-S is short of TB1. See **Figure 9-79.**
- **J1-5-N** is wedged above TB1 but is not in contact with TB1 or TB2. See **Figure 9-80** and **Figure 9-81.**
- **J1-6** is a double-ply member, both continuous with J2-6, J1-6-S is short of TB1. See **Figure 9-82.**
- **J1-6-N** is packed above TB1 but is resting on its South edge only over TB2. See **Figure 9-83** and **Figure 9-84.**
- **J1-7** only bears on the South edge over TB1. See **Figure 9-86.**
- **J1-7** does not bear onto TB2. See **Figure 9-87.**
- **J1-8** has decay and section loss to the bottom face for 18-inches from the AB1 end. See **Figure 9-88.**
- **J1-8** is continuous with J2-8 but is not bearing on TB2. See **Figure 9-89.**

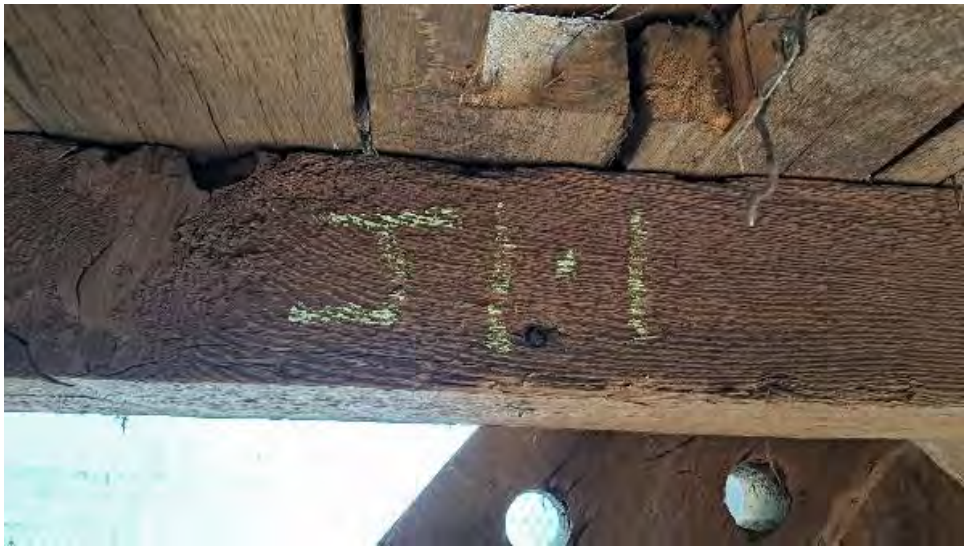


Figure 9-70: Joist J1-1 has some large knots.

Figure 9-71: J1-1 is decayed on the bottom face at the bearing over TB1.

Figure 9-72: J1-1 has reduced bearing over TB2.

Figure 9-73: J1-2 is not bearing on TB1.

Figure 9-74: J1-3 is a double member with both plies continuous with J2-3.

Figure 9-75: J1-3-N does not extend to TB1. J1-3-S is packed over TB1.

Figure 9-76: J1-4 is in fair condition.

Figure 9-77: J1-4 is in fair condition.

Figure 9-78: J1-4 is packed above TB1.

Figure 9-79: J1-5 is a double-ply member with both continuous with J2-5. J2-5-S is short of TB1.

Figure 9-80: J1-5-N is wedged above TB1 but is not in contact with TB1 or TB2.

Figure 9-81: J1-5-N is wedged above TB1 but is not in contact with TB1 or TB2.

Figure 9-82: J1-6 is a double-ply member, both continuous with J2-6, J1-6-S is short of TB1.

Figure 9-83: J1-6-N is packed above TB1 but is resting on its South edge only over TB2.

Figure 9-84: J1-6-N is only bearing on the South edge over TB2.

Figure 9-85: J1-7 is in fair condition and is continuous with J2-7.

Figure 9-86: J1-7 only bears on South edge over TB1.

Figure 9-87: J1-7 does not bear onto TB2.

Figure 9-88: J1-8 has decay and section loss to the bottom face for 18-inches from the AB1 end.

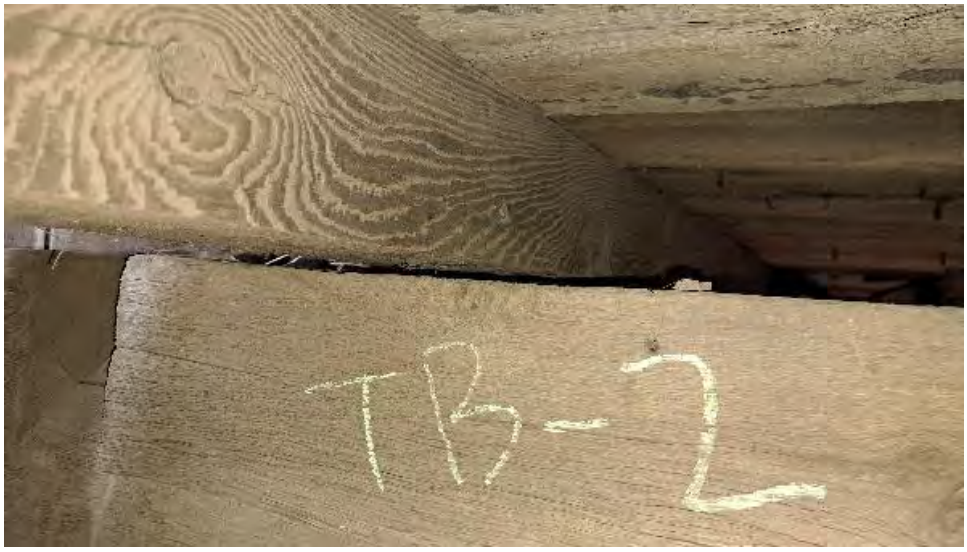


Figure 9-89: J1-8 is continuous with J2-8 but is not bearing on TB2.

9.3.2 JOISTS OF SPAN 2

The following describes general observations of the floor joists of Span 2

- **J2-1** is missing. See **Figure 9-90** and **Figure 9-91.**
- **J2-2** is not bearing on TB3. See **Figure 9-93.**
- **J2-3-N** has a large split on the North side which extends from the lower corner at TB2 to approximately 12-inches from TB3 at 1/3 from the top edge. See **Figure 9-95** and **Figure 9-96.**
- **J2-4** bearing only on its South edge over TB3 with less than 1-inch twist. See **Figure 9-98.**
- **J2-5-N** is not bearing over TB1. See **Figure 9-100.**
- **J2-6-N** has a vertical slope of grain crack to bottom face around a knot. See **Figure 9-102.**
- **J2-6-N** is bearing on TB3 on its South edge only. It is not twisted but is not a square section. See **Figure 9-103.**
- **J2-7** is not bearing on TB2. See **Figure 9-106.**
- **J2-8** has vertical cracks to the bottom face, extending to the North side. See **Figure 9-107**, **Figure 9-108** and **Figure 9-109.**
- **J2-8** has section loss and is split on the bottom South edge for 24-inches from TB3. See **Figure 9-110.**

Figure 9-90: J2-1 is missing.

Figure 9-91: J2-1 is missing.

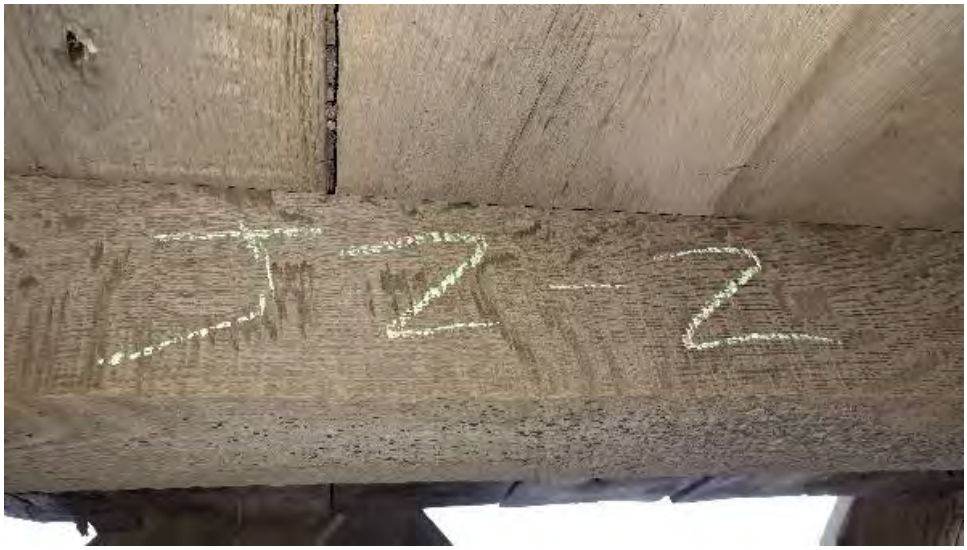


Figure 9-92: J2-2 is in fair condition.

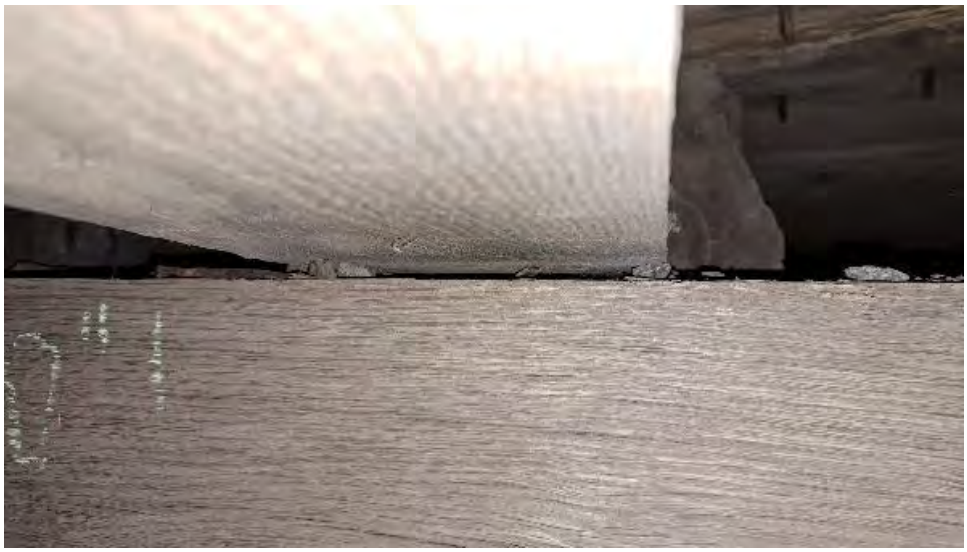


Figure 9-93: J2-2 is not bearing on TB3.

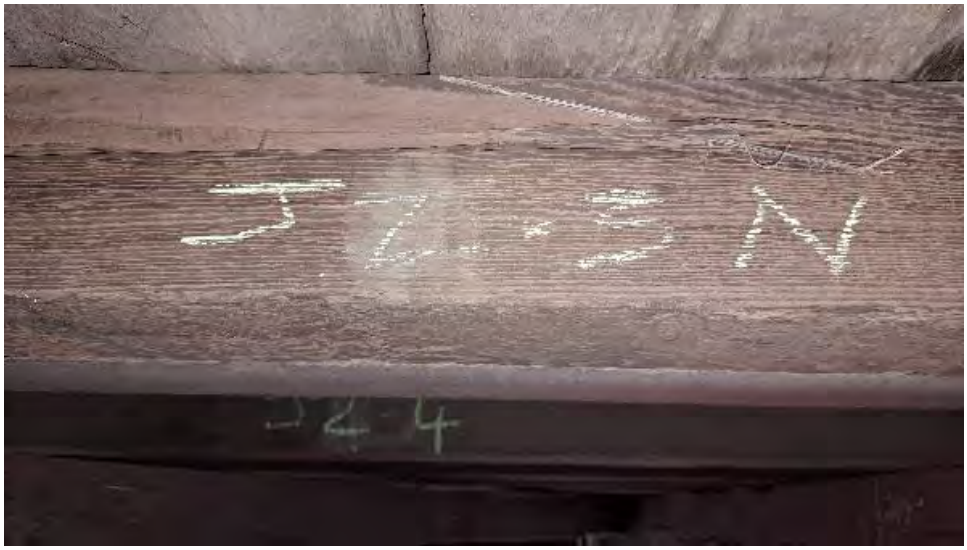


Figure 9-94: J2-3 is a double member.

Figure 9-95: J2-3-N has a large split on the North side which extends from the lower corner at TB2 to approximately 12-inches from TB3 at 1/3 from the top edge.

Figure 9-96: J2-3-N has a large split on the North side which extends from the lower corner at TB2 to approximately 12-inches from TB3 at 1/3 from the top edge.

Figure 9-97: J2-4 is in fair condition.

Figure 9-98: J2-4 bearing only on its South edge over TB3 with less than 1-inch twist.

Figure 9-99: J2-5 is a double member.

Figure 9-100: J2-5-N is not bearing over TB1.

Figure 9-101: J2-6-N is a double member.

Figure 9-102: J2-6-N has a vertical slope of grain crack to bottom face around a knot.

Figure 9-103: J2-6-N is bearing on TB3 on its South edge only. It is not twisted but is not a square section.

Figure 9-104: J2-7 is in fair condition.

Figure 9-105: J2-7 is in fair condition.

Figure 9-106: J2-7 is not bearing on TB2.

Figure 9-107: J2-8 has vertical cracks to the bottom face, extending to the North side.

Figure 9-108: J2-8 has vertical cracks to the bottom face, extending to the North side.

Figure 9-109: J2-8 has vertical cracks to the bottom face, extending to the North side.

Figure 9-110: J2-8 has section loss and is split on the bottom South edge for 24-inches from TB3.

9.3.1 JOISTS OF SPAN 3

The following describes general observations of the floor joists of Span 3:

- **J3-1** has bottom face vertical splits. See **Figure 9-111.**
- **J3-1** has large cracks on the South side over TB4 and is continuous with J4-1. See **Figure 9-112.**
- **J3-2** has some wane on the bottom South edge. See **Figure 9-113.**
- **J3-2** is continuous with J4-2 with some wane on bottom South edge. **J3-2** is not bearing on TB4. See **Figure 9-114.**
- **J3-3-N** bears on **TB4** on its South edge only. See **Figure 9-116.**
- **J3-3-S** has wane and section loss on its South edge at TB3. See **Figure 9-117.**
- **J3-4-S** has a large split at the TB3 end on its South edge for 3-feet length. See **Figure 9-119.**
- **J3-5-S** is continuous with J4-5. There is no bearing on either ply of J3-5. See **Figure 9-120.**
- **J3-5-S** does not bear on TB3. See **Figure 9-121**.
- **J3-6-S** has knot holes at the bottom face at mid span. See **Figure 9-122.**

- **J3-6-N** has a large end split at TB3 end. The North half is broken. See **Figure 9-123** and **Figure 9-124.**
- **J3-6-N** is not bearing on TB4. See **Figure 9-125**.
- **J3-8** has twisted 30 degrees. See **Figure 9-128.**
- **J3-8** is penetrated by a vertical broken dowel over TB4. See **Figure 9-129** and **Figure 9-130**.
- **J3-8** has major cracking on the South side at TB3 for 2-feet length. See **Figure 9-131**.

Figure 9-111: J3-1 has bottom face vertical splits.

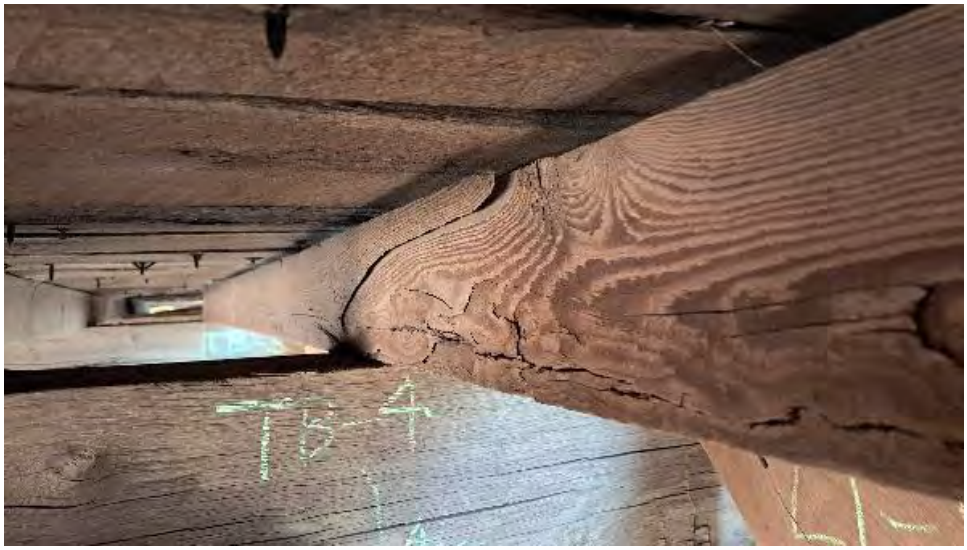


Figure 9-112: J3-1 has large cracks on the South side over TB4 and is continuous with J4-1.

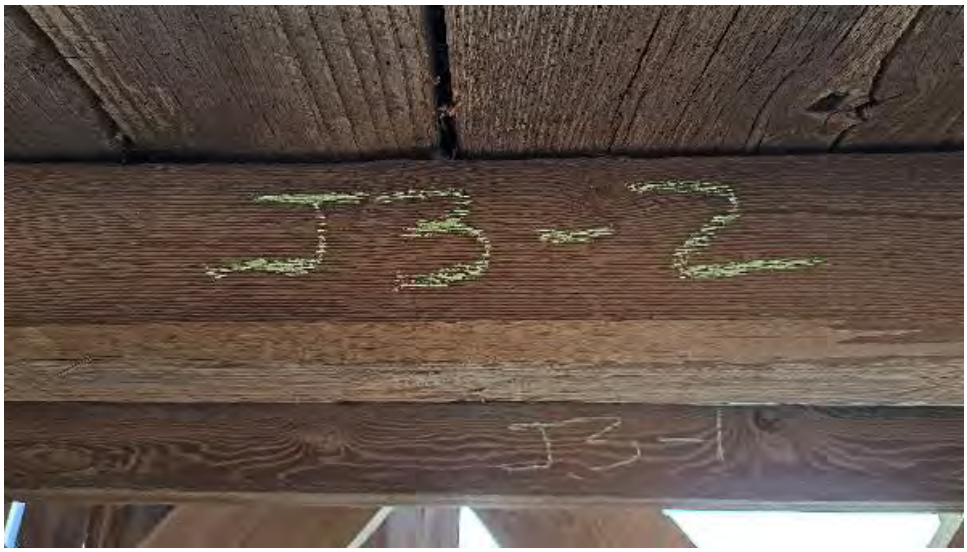


Figure 9-113: J3-2 has some wane on bottom South edge.

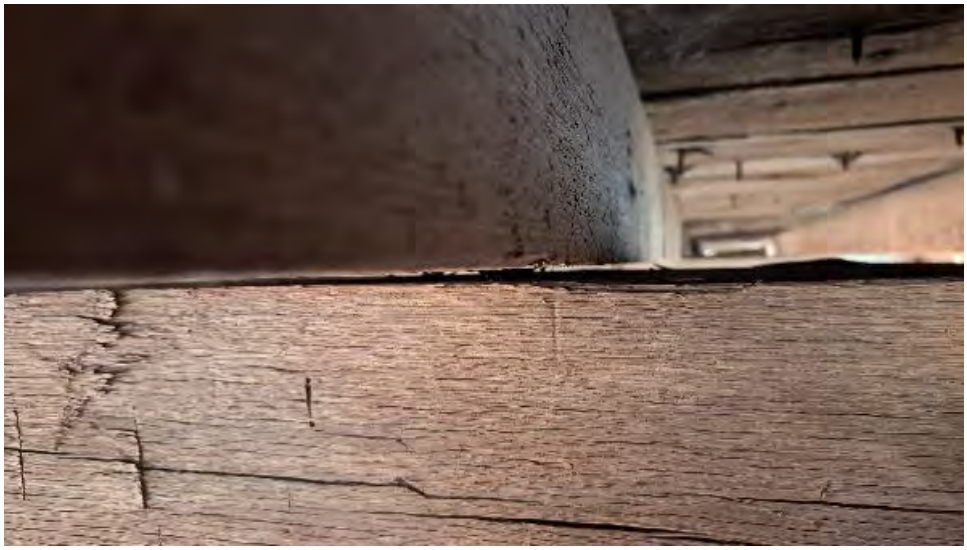


Figure 9-114: J3-2 is continuous with J4-2 with some wane on bottom South edge. J3-2 is not bearing on TB4.

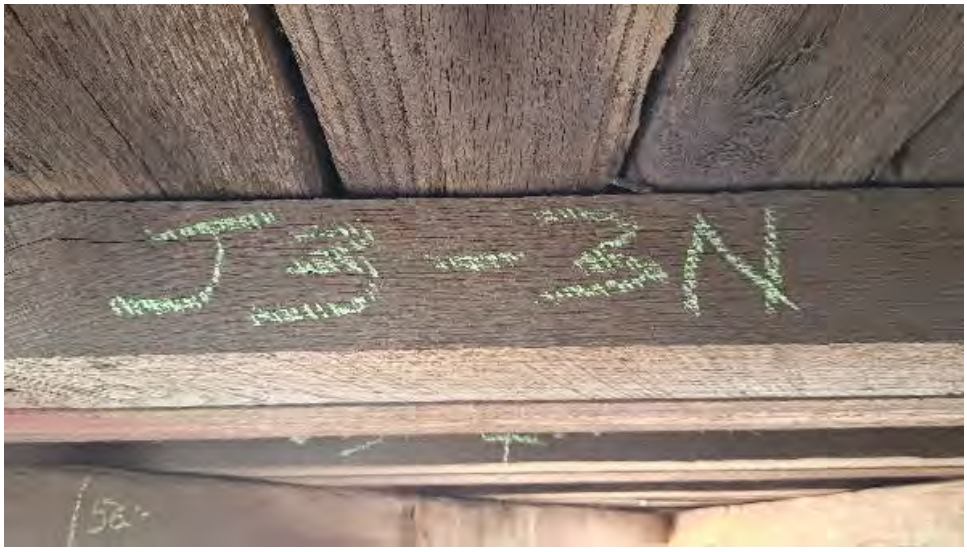


Figure 9-115: J3-3-N is continuous with J4-3.

Figure 9-116: J3-3-N bears on TB4 on its South edge only.

Figure 9-117: J3-3-S has wane and section loss on its South edge at TB3.

Figure 9-118: J3-4-N is continuous with J4-4.

Figure 9-119: J3-4-S has a large split at the TB3 end on its South edge for 3-feet length.

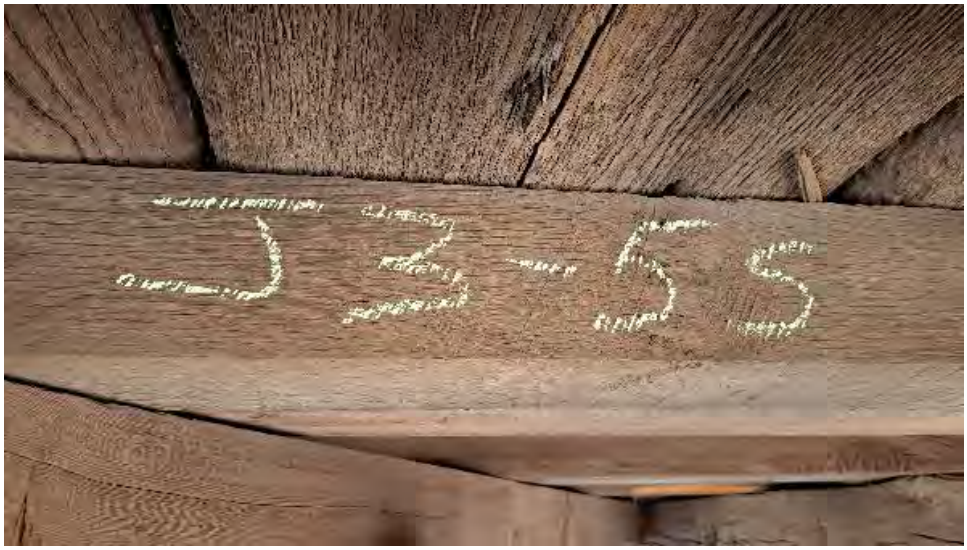


Figure 9-120: J3-5-S is continuous with J4-5. There is no bearing on either ply of J3-5.

Figure 9-121: J3-5-S does not bear on TB3.

Figure 9-122: J3-6-S has knot holes to bottom face at mid span.

Figure 9-123: J3-6-N has a large end split at TB3 end. The North half is broken.

Figure 9-124: J3-6-N has a large end split at TB3 end. The North half is broken.

Figure 9-125: J3-6-N is not bearing on TB4.

Figure 9-126: J3-7 is in fair condition.

Figure 9-127: Joist J3-7 is continuous with J4-7.

Figure 9-128: J3-8 has twisted 30 degrees.

Figure 9-129: J3-8 is penetrated by a vertical broken dowel over TB4.

Figure 9-130: J3-8 is penetrated by a vertical broken dowel over TB4.

Figure 9-131: J3-8 has major cracking on the South side at TB3 for 2-feet length.

9.3.2 JOISTS OF SPAN 4

The following describes general observations of the floor joists of Span 4:

- **J4-1** has a bottom face split extending from TB4. See **Figure 9-132** and **Figure 9-133**.
- **J4-1** has 1.25-inch bearing on TB5. Some impact damage and section loss exist above TB5. See **Figure 9-134**.
- **J4-2** only bears on the North edge at TB5. See **Figure 9-135** and **Figure 9-136**.
- **J4-3-N** only bears on the South edge at TB5 as it is twisted 3 degrees. See **Figure 9-137**.
- **J4-3-N** has section loss of pith from bottom face at mid span. See **Figure 9-138**.
- **J4-3-S** has a vertical crack on the bottom face extending from TB4 for 3-feet. See **Figure 9-139**.
- **J4-4-S** has section loss on the bottom edge and does not bear onto TB5. See **Figure 9-140**.
- **J4-5-N** has a large on the bottom face at mid span but with no associated damage. See **Figure 9-141**.
- **J4-6-S** has a short end split due to cleaving of skew nail to TB5. See **Figure 9-142** and **Figure 9-143**.
- **J4-7** has two knot holes to the bottom South edge at mid span. See **Figure 9-144**.
- **J4-8** is twisted 30 degrees. See **Figure 9-145** and **Figure 9-146**.

Figure 9-132: J4-1 has a bottom face split extending from TB4.

Figure 9-133: J4-1 has a bottom face split extending from TB4.

Figure 9-134: J4-1 has 1.25-inch bearing on TB5. Some impact damage and section loss exist above TB5.

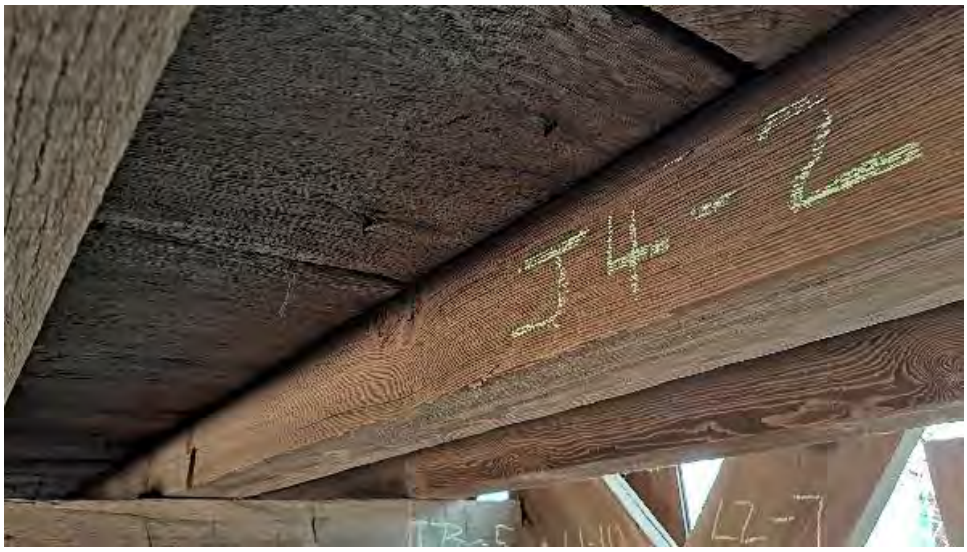


Figure 9-135: J4-2 only bears on the North edge at TB5.

Figure 9-136: J4-2 only bears on the North edge at TB5.

Figure 9-137: J4-3-N only bears on the South edge at TB5 as it is twisted 3 degrees.

Figure 9-138: J4-3-N has section loss of pith from bottom face at mid span.

Figure 9-139: J4-3-S has a vertical crack on the bottom face extending from TB4 for 3-feet.

Figure 9-140: J4-4-S has section loss on the bottom edge and does not bear onto TB5.

Figure 9-141: J4-5-N has a large on the bottom face at mid span but with no associated damage.

Figure 9-142: J4-6-S has a short end split due to cleaving of skew nail to TB5.

Figure 9-143: J4-6-S has a short end split due to cleaving of skew nail to TB5.

Figure 9-144: J4-7 has two knot holes to the bottom South edge at mid span.

Figure 9-145: J4-8 is twisted 30 degrees.

Figure 9-146: J4-8 is twisted 30 degrees.

9.3.3 JOISTS OF SPAN 5

The following describes general observations of the floor joists of Span 5:

- **J5-1** is not bearing on TB4. See **Figure 9-147**.
- **J5-1** is not bearing on TB5. See **Figure 9-148**.
- **J5-1** has abrasion damage to its North edge. See **Figure 9-149**.
- **J5-2** has partial bearing on a packer over TB6. See **Figure 9-150**.
- **J5-3** is not bearing on TB6. See **Figure 9-152**.
- **J5-4** is not bearing on TB5. See **Figure 9-154**.
- **J5-5** is bearing on its South edge over TB5 only. See **Figure 9-156** and **Figure 9-157.**
- **J5-5** is not bearing over TB6. See **Figure 9-158**.
- **J5-6** is twisted 9 degrees over TB5 with no bearing over TB5 or TB6. See **Figure 9-159** and **Figure 9-160**.
- **J5-7** is not bearing on TB5. See **Figure 9-161**.
- **J5-7** is cracked for 3-feet length on North side from TB6. **J5-7** is not bearing on TB6. See **Figure 9-162.**
- **J5-8** is twisted 27 degrees. See **Figure 9-163** and **Figure 9-164**.
- **J5-8** is crushed on its top North edge for 2-feet from TB6. See **Figure 9-165.**

Figure 9-147: J5-1 is not bearing on TB4.

Figure 9-148: J5-1 is not bearing on TB5.

Figure 9-149: J5-1 has abrasion damage to its North edge.

Figure 9-150: J5-2 has partial bearing on a packer over TB6.

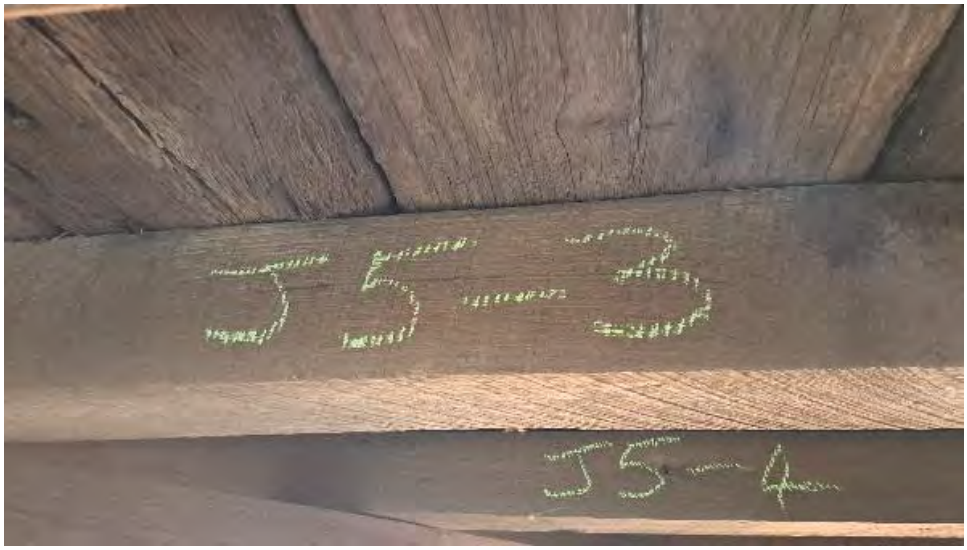


Figure 9-151: J5-3 is continuous with J6-3N.

Figure 9-152: J5-3 is not bearing on TB6.

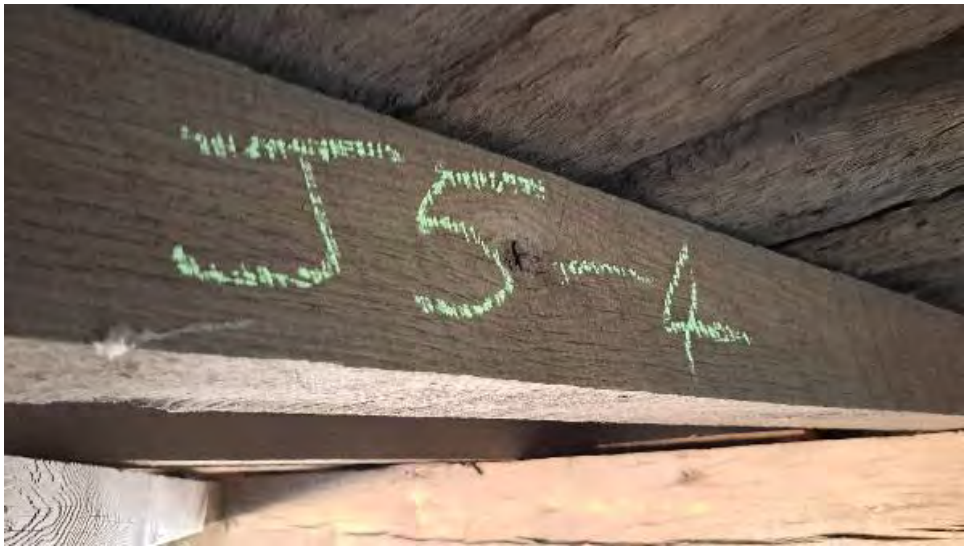


Figure 9-153: J5-4 is continuous with J6-4.

Figure 9-154: J5-4 is not bearing on TB5.

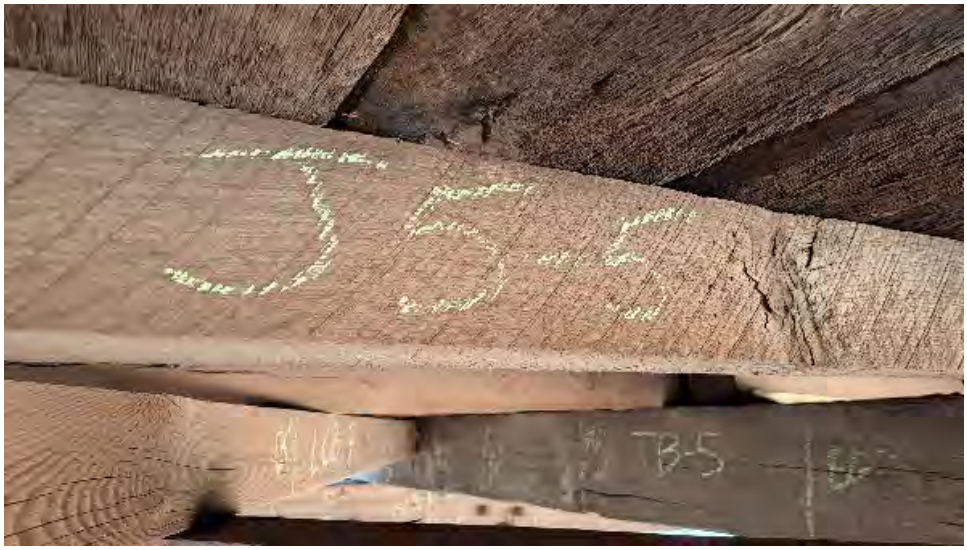


Figure 9-155: J5-5 is continuous with J6-5.

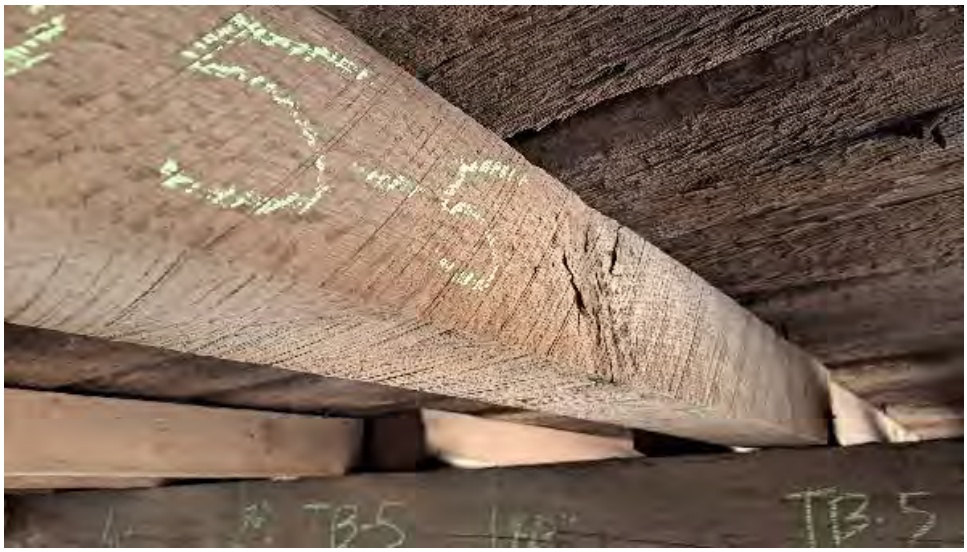


Figure 9-156: J5-5 is only bearing on the South edge over TB5.

Figure 9-157: J5-5 is only bearing on the South edge over TB5.

Figure 9-158: J5-5 is not bearing over TB6.

Figure 9-159: J5-6 is twisted 9 degrees over TB5 with no bearing over TB5 or TB6.

Figure 9-160: J5-6 is twisted 9 degrees over TB5 with no bearing over TB5 or TB6.

Figure 9-161: J5-7 is not bearing on TB5.

Figure 9-162: J5-7 is cracked for 3-feet length on the North side from TB6. J5-7 is not bearing on TB6.

Figure 9-163: J5-8 is twisted 27 degrees.

Figure 9-164: J5-8 is twisted 27 degrees.

Figure 9-165: J5-8 is crushed on its top North edge for 2-feet from TB6.

9.3.4 JOISTS OF SPAN 6

The following describes general observations of the floor joists of Span 6:

- **J6-1** is missing. See **Figure 9-166**.
- **J6-2** is partial bearing on its South edge at TB7. J6-2 is twisted by 8 degrees. See **Figure 9-167**.
- **J6-2** has partial bearing on a packer at TB7. See **Figure 9-168**.
- **J6-3N** is not bearing on TB6 or TB7. See **Figure 9-169**.
- **J6-4** is not bearing on TB6 or TB7. See **Figure 9-170**.
- **J6-5** is not bearing on TB6 or TB7. See Figure 9-171 and **Figure 9-172**.
- **J6-6** is not bearing on TB6 or TB7. See **Figure 9-173**.
- **J6-7** has up to 1/2 cross section loss over TB6 and with several end splits at TB7. See **Figure 9-174** and **Figure 9-175**.
- **J6-8** is missing. See **Figure 9-177**.

Figure 9-166: J6-1 is missing.

Figure 9-167: J6-2 is partial bearing on its South edge at TB7. J6-2 is twisted by 8 degrees.

Figure 9-168: J6-2 has partial bearing on a packer at TB6.

Figure 9-169: J6-3N is not bearing on TB6 or TB7.

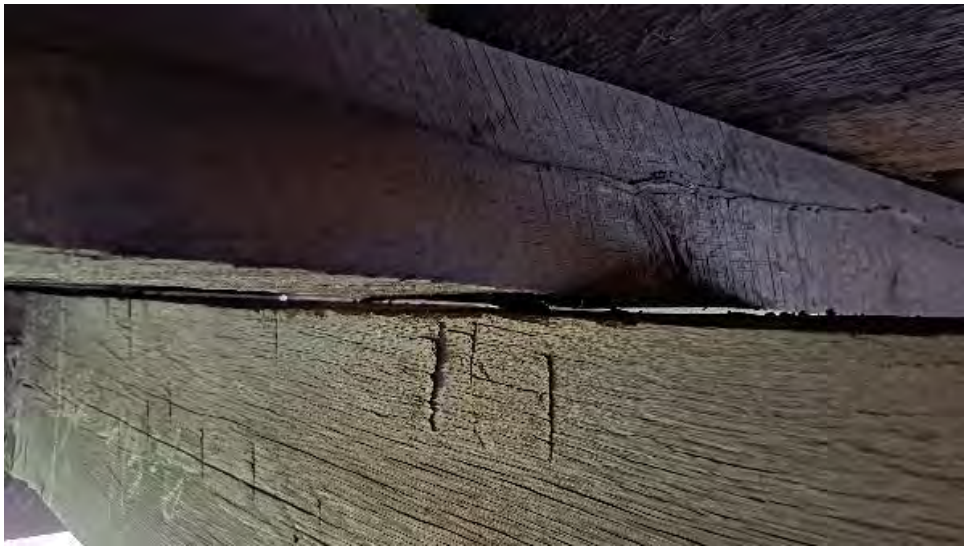


Figure 9-170: J6-4 is not bearing on TB6 or TB7.

Figure 9-171: J6-5 is not bearing on TB6 or TB7.

Figure 9-172: J6-5 does not bear on TB6 or TB7.

Figure 9-173: J6-6 is not bearing on TB6 or TB7.

Figure 9-174: J6-7 has up to 1/2 cross section loss over TB6 and with several end splits at TB7.

Figure 9-175: J6-7 has up to 1/2 cross section loss over TB6 and with several end splits at TB7.

Figure 9-176: J6-7 has up to 1/2 cross section loss over TB6 and with several end splits at TB7.

Figure 9-177: J6-8 is missing.

9.3.5 JOISTS OF SPAN 7

The following describes general observations of the floor joists of Span 7:

- **J7-1** is missing. See **Figure 9-178**.
- **J7-2** is not bearing on TB7. See **Figure 9-179**.
- **Joist J7-3-N** is continuous with J8-3N and is twisted 8 degrees. See **Figure 9-180**.
- **J7-3-N** is not bearing on TB7. See **Figure 9-181**.
- **J7-3-N** is only bearing on the South edge over TB8. **J7-3-S** is not bearing on TB8. See **Figure 9-182**.
- **J7-4** is twisted 8 degrees. See **Figure 9-183**.
- **J7-4** is only bearing on the South edge at TB7. See **Figure 9-184**.
- **J7-4** is only bearing on the South edge at TB8. See **Figure 9-185**.
- **J7-5-N** has partial bearing on packers at TB7 and TB8. See **Figure 9-187**.
- **J7-5-S** is not supported at TB7 or TB8. Old termite damage exists with pockets that have led to cracking at mid span. See **Figure 9-188**.
- **J7-6-S** is not bearing over TB7. See **Figure 9-189**.
- **J7-6-S** has some cracking on the South side near TB7 and is not bearing on TB7. See **Figure 9-190**.
- **J7-7** does not bear onto transverse beams at either end. See **Figure 9-191**.
- **J7-8** is missing. See **Figure 9-192**.

Figure 9-178: J7-1 is missing.

Figure 9-179: J7-2 is not bearing on TB7.

Figure 9-180: J7-3-N is continuous with J8-3N and is twisted 8 degrees.

Figure 9-181: J7-3-N is not bearing on TB7.

Figure 9-182: J7-3-N is only bearing on the South edge over TB8. J7-3-S is not bearing on TB8.

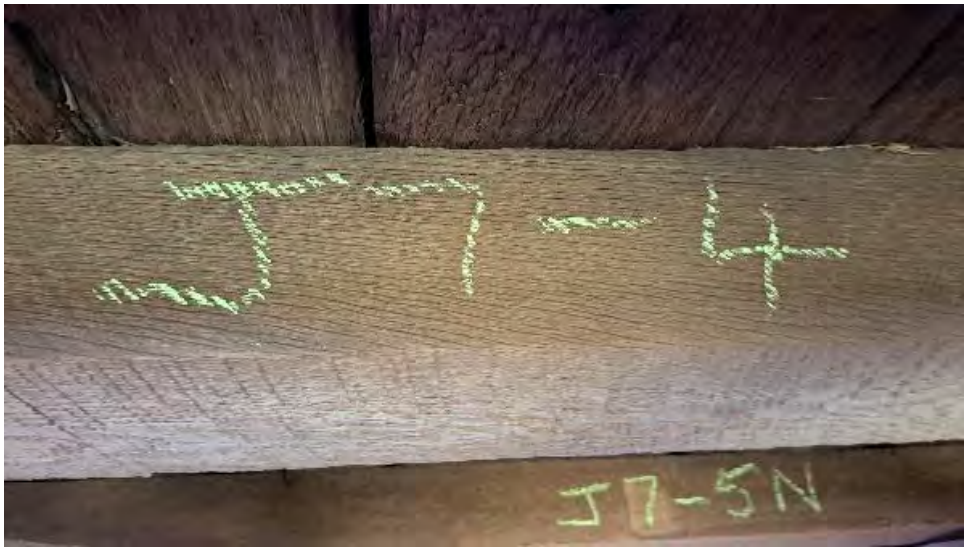


Figure 9-183: J7-4 is twisted 8 degrees.

Figure 9-184: J7-4 is only bearing on the South edge at TB7.

Figure 9-185: J7-4 is only bearing on the South edge at TB8

Figure 9-186: J7-5-N is continuous with J8-5.

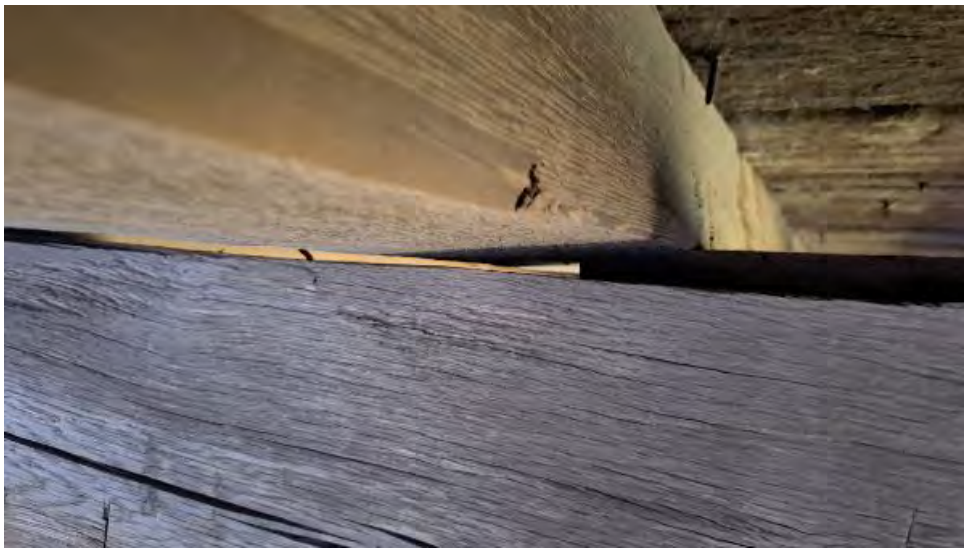


Figure 9-187: J7-5-N has partial bearing on packers at TB7 and TB8

Figure 9-188: J7-5-N partial bearing on packer at TB7 & TB8. J7-5-S is not supported at TB7 or TB8. Old termite damage exists with pockets that have led to cracking at mid span.

Figure 9-189: J7-6-S is not bearing over TB7.

Figure 9-190: J7-6-S has some cracking on the South side near TB7 and is not bearing on TB7.

Figure 9-191: J7-7 does not bear onto transverse beams at either end.

Figure 9-192: J7-8 is missing.

9.3.6 JOISTS OF SPAN 8

The following describes general observations of the floor joists of Span 8:

- **J8-1** has a bearing length of 1.5-inches on TB8. See **Figure 9-194**.
- **J8-1** is not bearing on TB9. See **Figure 9-195**.
- **J8-2** is continuous with J9-2 and has minor twist. See **Figure 9-196**.
- **J8-2** more bearing on LCB13 than on TB8. See **Figure 9-197**.
- **J8-3S** has decay and section loss at its bearing over TB8. See **Figure 9-198** and **Figure 9-199**.
- **J8-4-S** is not bearing over TB8. See **Figure 9-201**.
- **J8-4-N** is not bearing on TB9. See **Figure 9-202**.
- **J8-5-S** is not bearing on TB8. See **Figure 9-203**.
- **J8-5-N** has partial bearing on a packer on TB8 and is twisted 6 degrees. See **Figure 9-204**.
- **J8-5-N** was partially packed over TB9 but now with section loss and only partially baring on TB9. See **Figure 9-205** and **Figure 9-206**.
- **J8-5-S** is twisted 5 degrees over TB9 and bearing on its North edge only. See **Figure 9-207**.

- Both plies of **J8-6** are not bearing on TB8 or TB9. **J8-6-S** is slightly twisted. See **Figure 9-208**.
- **J8-7** is not bearing over TB9. See **Figure 9-210**.
- **J8-7** has section loss on the top North end corner. See **Figure 9-211**.
- **J8-8** is twisted about 17 degrees and packed over TB8. The packer is crushed. See **Figure 9-212** and **Figure 9-213**.
- **J8-8** has twisted about 15 degrees at TB9, resulting in crushing of the TB9 and J8-8 interface. See **Figure 9-214** and **Figure 9-215**.

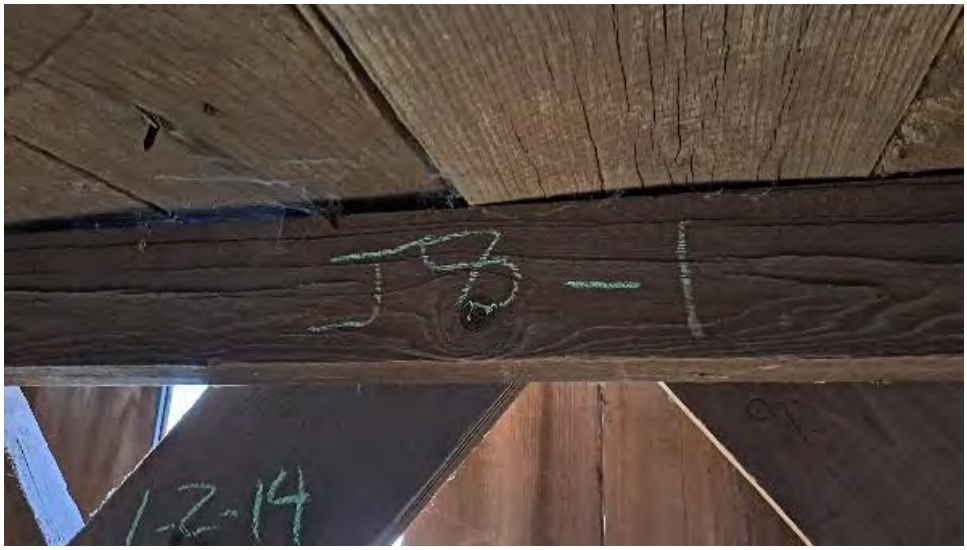


Figure 9-193: J8-1 is continuous with J9-1.

Figure 9-194: J8-1 has a bearing length of 1.5-inches on TB8.

Figure 9-195: J8-1 is not bearing on TB9.

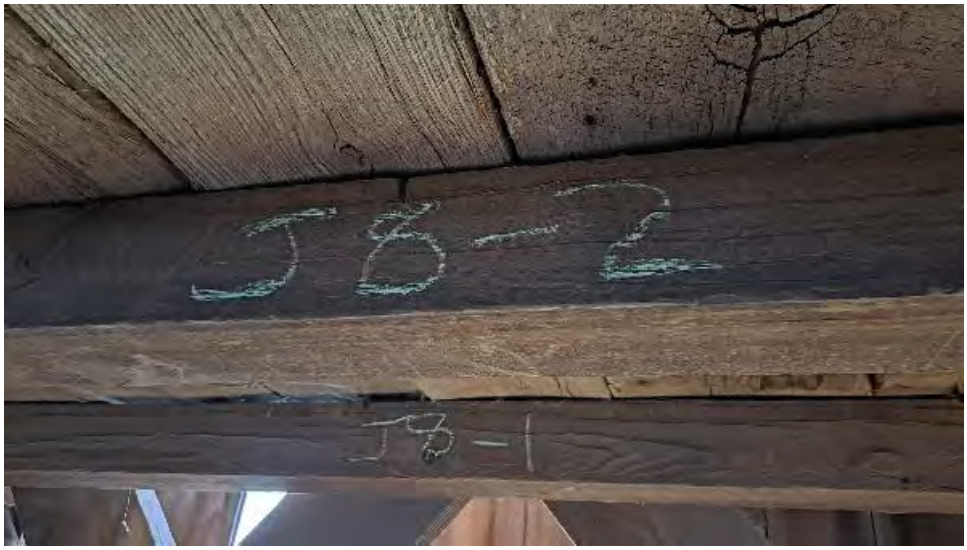


Figure 9-196: J8-2 is continuous with J9-2 and has minor twist.

Figure 9-197: J8-2 has more bearing on (LCB13 than on TB8.

Figure 9-198: J8-3S has decay and section loss at its bearing over TB8.

Figure 9-199: J8-3S has decay and section loss at its bearing over TB8.

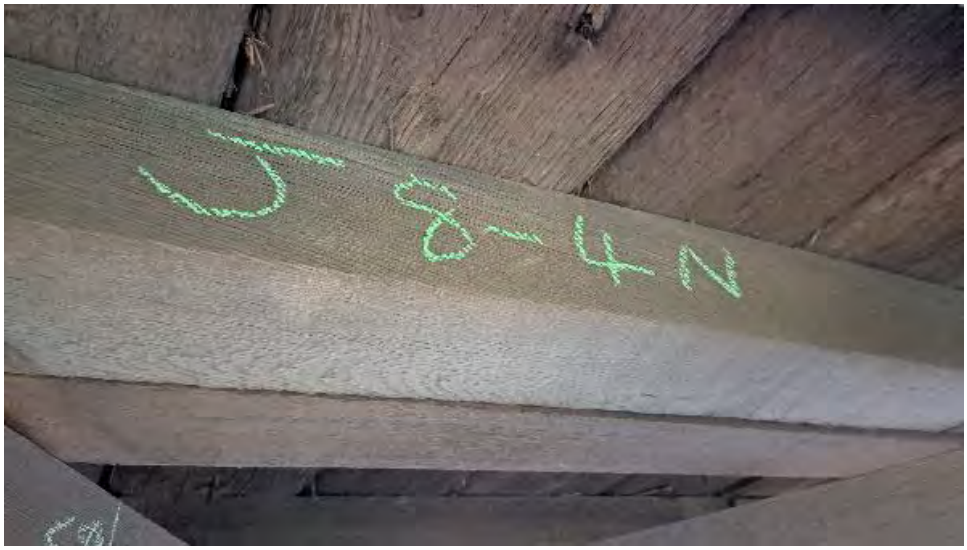


Figure 9-200: J8-4-N is continuous with J9-4-S.

Figure 9-201: J8-4-S is not bearing over TB8.

Figure 9-202: J8-4-N is not bearing on TB9.

Figure 9-203: J8-5-S is not bearing on TB8.

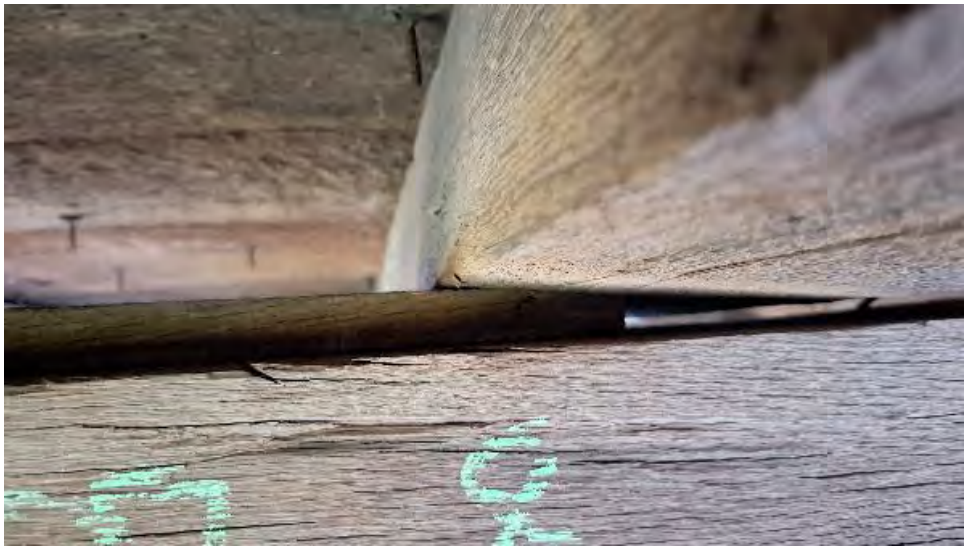


Figure 9-204: J8-5-N has partial bearing on a packer on TB8 and is twisted 6 degrees.

Figure 9-205: J8-5-N was partially packed over TB9 but now with section loss and only partially baring on TB9.

Figure 9-206: J8-5-N was partially packed over TB9 but now with section loss and only partially baring on TB9.

Figure 9-207: J8-5-S is twisted 5 degrees over TB9 and bearing on its North edge only.

Figure 9-208: Both plies of J8-6 are not bearing on TB8 or TB9. J8-6-S is slightly twisted.

Figure 9-209: J8-7 is continuous with J9-7.

Figure 9-210: J8-7 is not bearing over TB9.

Figure 9-211: J8-7 has section loss on the top North end corner.

Figure 9-212: J8-8 is twisted about 17 degrees.

Figure 9-213: J8-8 is twisted about 17 degrees and packed over TB8. The packer is crushed.

Figure 9-214: J8-8 has twisted about 15 degrees at TB9, resulting in crushing of the TB9 and J8-8 interface.

Figure 9-215: J8-8 has twisted about 15 degrees at TB9, resulting in crushing of the TB9 and J8-8 interface.

9.3.7 JOISTS OF SPAN 9

The following describes general observations of the floor joists of Span 9:

- **J9-1** has a vertical end split from TB10 (24-inches long) and is twisted 4 degrees at the TB10 end, possibly due to the end split and uneven bearing surface. Bearing only on the North edge at TB9. See **Figure 9-216** and **Figure 9-217**.
- **J9-1** has section loss at the bearing surface of TB10 end. See **Figure 9-218.**
- **J9-2** is decayed on the South side face resulting in splits and section loss with possible internal termite damage for approximately 1/3 width, in very poor condition. See **Figure 9-219** and **Figure 9-220**.
- **J9-3-N** has minor twisting with no bearing on TB10. See **Figure 9-221**.
- **J9-3-S** is cracked from the bearing over TB9 to 1/3 span. See **Figure 9-222**.
- **J9-3-S** has minor twisting over TB10 due to sloped bearing surface of TB10. See **Figure 9-223**.
- **J9-4-N** is not bearing on TB10 due to wane on AB1 edge of TB10. See **Figure 9-224**.
- **J9-4-S** is bearing on TB10 for a length of ½-inches due to wane on AB1 edge of TB10. See **Figure 9-225**.
- **J9-5-S** is not bearing on TB10. See **Figure 9-226**.
- **J9-6-N** and **J9-6-S** are not bearing onto TB9. See **Figure 9-227**.
- **J9-6-N** has large wane (2.5-inches deep and 2-inches wide) on top North edge of from TB9 to mid span.
- **J9-6N** has two vertical end splits, 12-inches length.
- **J9-6-S** is not bearing onto TB9. See **Figure 9-228**.
- **J9-7** is not bearing over TB9. See **Figure 9-229**.
- **J9-7** is bearing on its North edge onto TB10 due to twisting of 6 degrees. See **Figure 9-230**.
- **J9-8** is twisted 12 degrees at TB9 end. See **Figure 9-231**.
- **J9-8** has end splitting showing its South side only at TB10 end that is 4-feet long. J9-8 is likely cracked on its top surface. There is an end split 8-inches long on its North face from TB10. See **Figure 9-232** and **Figure 9-233**.

Figure 9-216: J9-1 has a vertical end split from TB10 (24-inches long) and is twisted 4 degrees at the TB10 end, possibly due to the end split and uneven bearing surface. Bearing only on the North edge at TB9.

Figure 9-217: J9-1 has a vertical end split from TB10 (24-inches long) and is twisted 4 degrees at the TB10 end, possibly due to the end split and uneven bearing surface. Bearing on the North edge at TB9 only.

Figure 9-218: J9-1 has section loss at the bearing surface of TB10 end.

Figure 9-219: J9-2 is decayed on the South side face resulting in splits and section loss with possible internal termite damage for approximately 1/3 width, in very poor condition.

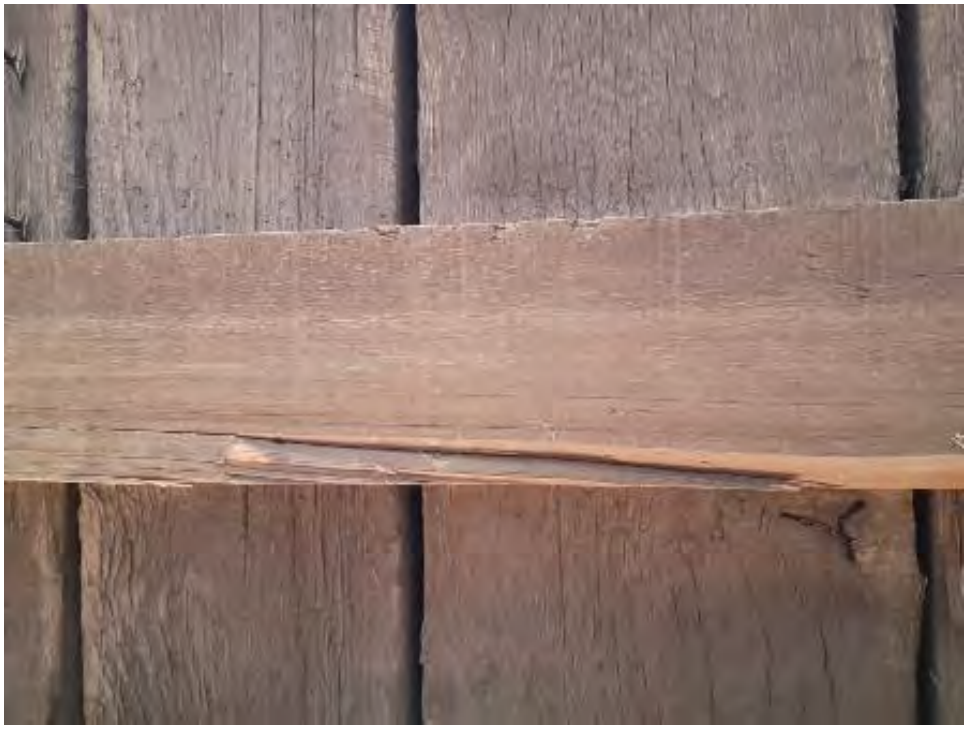


Figure 9-220: J9-2 is decayed on the South face resulting in splits and section loss with possible internal termite damage for approximately 1/3 width, in very poor condition.

Figure 9-221: J9-3-N minor twisting with no bearing on TB10.

Figure 9-222: J9-3-S is cracked from the bearing over TB9 to 1/3 span.

Figure 9-223: J9-3-S has minor twisting over TB10 due to sloped bearing surface of TB10.

Figure 9-224: J9-4-N is not bearing on TB10 due to wane on AB1 edge of TB10.

Figure 9-225: J9-4-S is bearing on TB10 for a length of ½-inches due to wane on AB1 edge of TB10.

Figure 9-226: J9-5-S is not bearing on TB10.

Figure 9-227: J9-6-N and J9-6-S are not bearing onto TB9.

Figure 9-228: J9-6-S is not bearing onto TB9.

Figure 9-229: J9-7 is not bearing onto TB9.

Figure 9-230: J9-7 is bearing on its North edge onto TB10 due to twisting of 6 degrees.

Figure 9-231: J9-8 twisted 12 degrees at TB9 end.

Figure 9-232: J9-8 has end splitting showing its South side only at TB10 end that is 4-feet long. J9-8 is likely cracked on its top surface. There is an end split 8-inches long on its North face from TB10.

Figure 9-233: J9-8 has end splitting showing its South side only at TB10 end that is 4-feet long. J9-8 is likely cracked on its top surface. There is an end split 8-inches long on its North face from TB10.

9.3.8 JOISTS OF SPAN 10

The following describes general observations of the floor joists of Span 10:

- **J10-1** is not bearing on TB10. See **Figure 9-234**.
- Wane exists on the North bottom edge of J10-1 for 3-feet from TB11 with approximately 1x1-inch section loss. See **Figure 9-235**.
- **J10-2** has wane on South corner over TB10, reducing bearing width to 4.75-inches. See **Figure 9-236**.
- **J10-3-N** is twisted at the TB11 end, with a cupped bottom face and bearing on its South edge only. See **Figure 9-237**.
- **J10-4-S** is bearing on its South edge only at TB10 with a 5-degree twist. See Figure 9-238**.**
- **J10-5-N** has heavy abrasion/section loss to bottom face with significant discontinuity of fiber. See Figure 9-239 and Figure 9-240**.**
- Both plies of **J10-6** have large knots on their bottom face. See **Figure 9-241**.
- **J10-6-N** has a knot on its bottom face at mid span that is split and is bearing on its South edge only at TB10. See **Figure 9-242**.
- **J10-7** has several knots on its bottom face with significant discontinuity of fibers due to abrasion.
- **J10-7** has a large knot on its North side face near midspan which has led to slope of grain cracking See **Figure 9-244**.
- **J10-8** has a large knot and cracks on its bottom and North side face at mid span. See **Figure 9-245**.
- **J10-8** has section loss at its bearing surface over TB10 and at the top South edge over TB10. See **Figure 9-246.**

Figure 9-234: J10-1 is not bearing on TB10. Wane exists on its North bottom edge for 3-feet from TB11.

Figure 9-235: Wane exists on the North bottom edge of J10-1 for 3-feet from TB11 with approximately 1x1-inch section loss.

Figure 9-236: J10-2 has wane on South corner over TB10, reducing bearing width to 4.75-inches.

Figure 9-237: J10-3-N is twisted at the TB11 end, with a cupped bottom face and bearing on its South edge only.

Figure 9-238: J10-4-S is bearing on its South edge only at TB10 with a 5-degree twist.

Figure 9-239: J10-5-N has heavy abrasion/section loss to bottom face with significant discontinuity of fiber.

Figure 9-240: J10-5-N has heavy abrasion/section loss to bottom face with significant discontinuity of fiber.

Figure 9-241: Both plies of J10-6 have large knots on their bottom face.

Figure 9-242: J10-6-N has a knot on its bottom face at mid span that is split and is bearing on its South edge only at TB10.

Figure 9-243: J10-7 bottom face with several knots, significant discontinuity of fibers.

Figure 9-244: J10-7 has a large knot on its North side face near midspan which has led to slope of grain cracking.

Figure 9-245: J10-8 has a large knot and cracks on its bottom and North side face at mid span.

Figure 9-246: J10-8 has section loss at its bearing surface over TB10 and at the top South edge over TB10.

9.3.9 JOISTS OF SPAN 11

The following describes general observations of the floor joists of Span 11:

- **J11-1** has a vertical split 16-inches long at the AB2 end, with some additional minor splitting at its top South edge. See **Figure 9-247**.
- **J11-2** has a large knot on the South face at mid span, likely extending to the top face with some section loss from slope of grain cracking and wane. See **Figure 9-248** and **Figure 9-249**.
- **J11-3** has feathering at the bottom face at AB2 end. See **Figure 9-250** and **Figure 9-251**.
- **J11-4** has some termite damage with major section loss at the bottom face at the AB2 end. See **Figure 9-252**, **Figure 9-253**, and **Figure 9-254**.
- **J11-5** has some termite damage and some section loss at bottom and South faces at the AB2 end. See **Figure 9-255**.
- **J11-5** has an end split on the South face that is 20-inches long. See **Figure 9-256**.
- **J11-6** has wane on the top North edge from TB11 to midspan. See **Figure 9-257**.
- **J11-6** has abrasion wear at the AB2 end. See **Figure 9-258**.

- **J11-7** has termite damage to the bottom and South faces with significant section loss. See **Figure 9-259**.
- **J11-8** termite damage to bottom end South faces for most of the length with some minor cracking and damage. See **Figure 9-260**, **Figure 9-261**, **Figure 9-262**, and **Figure 9-263**.

Figure 9-247: J11-1 has a vertical split 16-inches long at the AB2 end, with some additional minor splitting at its top South edge.

Figure 9-248: J11-2 has a large knot on the South face at mid span, likely extending to the top face with some section loss from slope of grain cracking and wane.

Figure 9-249: J11-2 has a large knot on the South face at mid span, likely extending to the top face with some section loss from slope of grain cracking and wane.

Figure 9-250: J11-3 has feathering at the bottom face at AB2 end.

Figure 9-251: J11-3 has feathering at the bottom face at AB2 end.

Figure 9-252: J11-4 has some termite damage with major section loss at the bottom face at the AB2 end.

Figure 9-253: J11-4 has some termite damage with major section loss at the bottom face at the AB2 end.

Figure 9-254: J11-4 has some termite damage with major section loss at the bottom face at the AB2 end.

Figure 9-255: J11-5 has some termite damage and some section loss at bottom and South faces at the AB2 end.

Figure 9-256: J11-5 has an end split on the South face that is 20-inches long.

Figure 9-257: J11-6 has wane on the top North edge from TB11 to midspan.

Figure 9-258: J11-6 has abrasion wear at the AB2 end.

Figure 9-259: J11-7 has termite damage to the bottom and South faces with significant section loss.

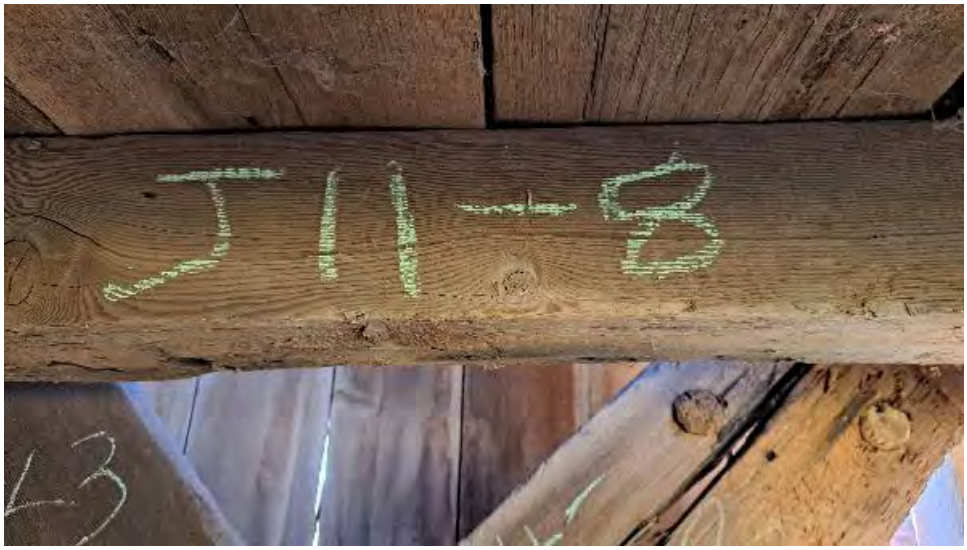


Figure 9-260: J11-8 termite damage to bottom and South faces for most of the length with some minor cracking and damage.

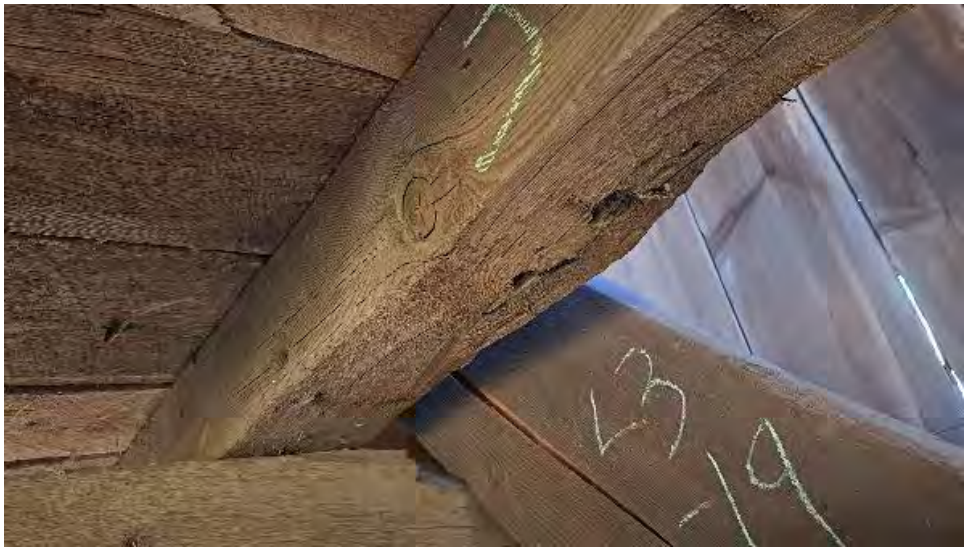


Figure 9-261: Joist J11-8 termite damage to bottom and South faces for most of the length with some minor cracking and damage.

Figure 9-262: Joist J11-8 termite damage to bottom and South faces for most of the length with some minor cracking and damage.

Figure 9-263: termite damage to bottom and South faces for most of the length with some minor cracking and damage.

9.4 LOWER CROSS BRACES

The following describes general observations of the lower cross braces. A summary of defects is presented in **Figure 9-264**.

The following describes general observations of the lower cross braces:

- Lower Cross Brace 1 **(LCB-1)** has some large shrinkage checks on the side face. See **Figure 9-265**.
- The **LCB-1** dowel connection to TB2 is destroyed with end split extending to mid span. See **Figure 9-266**.
- **LCB-1** has end split extending to mid span. See **Figure 9-267**.
- **LCB-2** has some wane on its North side at midspan. See **Figure 9-268** and **Figure 9-269**.
- **LCB-3** has some wane on its top edge facing AB2 with some slope of grain cracking. See **Figure 9-270**.
- The **LCB-3** dowel and spikes at TB3 have cleaved. See **Figure 9-271**.
- The **LCB-3** dowel and spikes at TB4 have cleaved. See **Figure 9-272.**
- The dowel connection of **LCB-4** to TB4 has been reinforced with 5 spikes, with cleaving on 3 spikes. See **Figure 9-273**.
- **LCB-5** is cleaved on the dowel to TB5. See **Figure 9-274.**
- **LCB-6** is cleaved on the dowel to TB4. See **Figure 9-275**.
- **LCB-6** has some minor end splits through the dowelled connection to TB4. See **Figure 9-276**.
- **LCB-7** is cleaved on the dowel to TB6. See **Figure 9-277**.
- **LCB-8** is cleaved on the dowel to TB6. See **Figure 9-278**.
- **LCB-9-A** is cleaved on the dowel to TB6. See **Figure 9-279**.
- **LCB-9-A** is separated from TB6. See **Figure 9-280**.

- **LCB-9-B** is separated from TB7. See **Figure 9-281**.
- **LCB-10-A** is separated from TB6. See **Figure 9-282**.
- **LCB-12** has an end split on its bottom face at TB7 end. See **Figure 9-283**.
- **LCB-12** is an end split on its AB1 side face at TB7 end. See **Figure 9-284**.
- **LCB-13** is cleaved on the dowel and spikes to TB9. See **Figure 9-285**.
- **LCB-14** has minor cleaving of the dowel and spikes to TB9. See **Figure 9-286**.
- **LCB-14** has a large knot on the AB1 side that has led to slope of grain cracking. See **Figure 9-287** and **Figure 9-288**.
- **LCB-15** is separated from TB10. See **Figure 9-289**.
- **LCB-16** is cleaved on the dowel to TB10. See **Figure 9-289**.
- **LCB-16** is cleaved on the dowel to TB10, resulting in a 2-foot long crack. See **Figure 9-290**.
- **LCB-16** is separated from TB 10 by approximately 1-inch. See **Figure 9-291**.
- **LCB-16** cleaving at end towards **TB9** through dowel, shrinkage check through dowel, Abutment 2 face with section loss due to checks/cracking on slope of grain**.**
- **LCB-17** has minor cleaving on a spike to TB-11. See **Figure 9-292**.
- **LCB-17** is separated from TB11. See **Figure 9-293**.
- **LCB-17** has large knots and is considered off-grade.
- **LCB-18** is separated from TB11. See **Figure 9-294**.
- **LCB-18** has major cracking and cleaving of dowel to TB10. The crack is 2-feet long and is on the AB2 face and meets vertical end crack seen on the bottom face. See **Figure 9-295** and **Figure 9-296**.

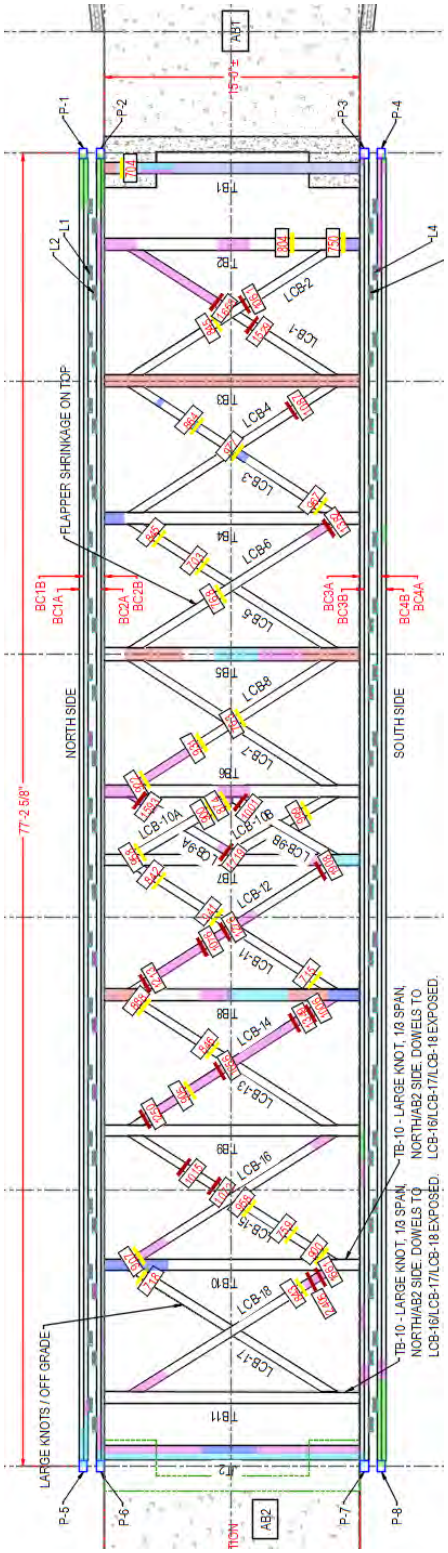


Figure 9-264: Summary of elevated SWT values on the lower cross braces.

Figure 9-265: LCB-1 has some large shrinkage checks on the side face.

Figure 9-266: The LCB-1 dowel connection to TB2 is destroyed with end split extending to mid span.

Figure 9-267: LCB-1 has end split extending to mid span.

Figure 9-268: LCB-2 has some wane on the North side at midspan.

Figure 9-269: LCB-2 has some wane on its North side at midspan.

Figure 9-270: LCB-3 has some wane on its top edge facing AB2 with some slope of grain cracking.

Figure 9-271: The LCB-4 dowel and spikes to TB3 have cleaved.

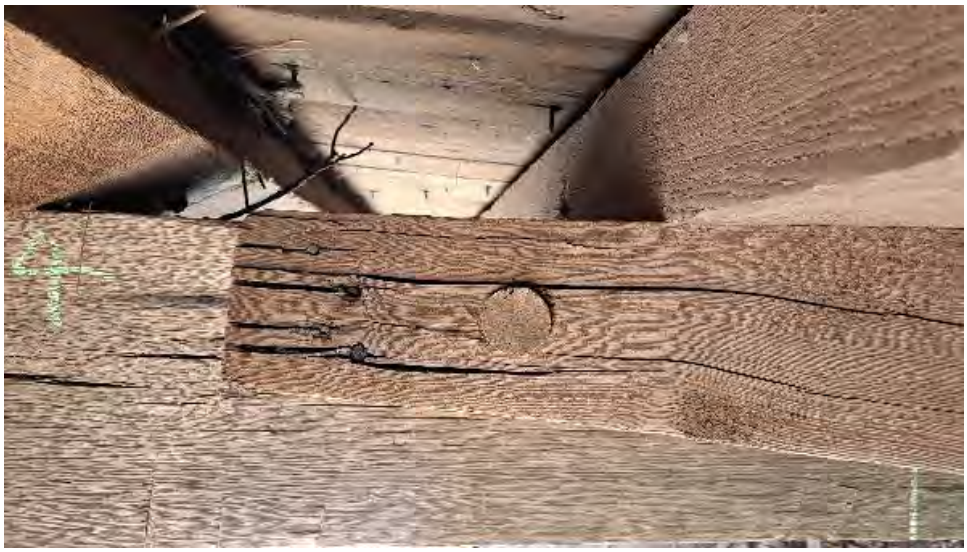


Figure 9-272: The LCB-3 dowel and spikes at TB4 have cleaved.

Figure 9-273: The doweled connection of LCB-4 to TB4 has been reinforced with 5 spikes, with cleaving on 3 spikes.

Figure 9-274: LCB-5 has cleaved on the dowel to TB5.

Figure 9-275: LCB-6 has cleaved on the dowel to TB4.

Figure 9-276: LCB-6 has some minor end splits through the dowelled connection to TB4.

Figure 9-277: LCB-7 has cleaved on the dowel to TB6.

Figure 9-278: LCB-8 has cleaved on the dowel to TB6.

Figure 9-279: LCB-9-A has cleaved on the dowel to TB6.

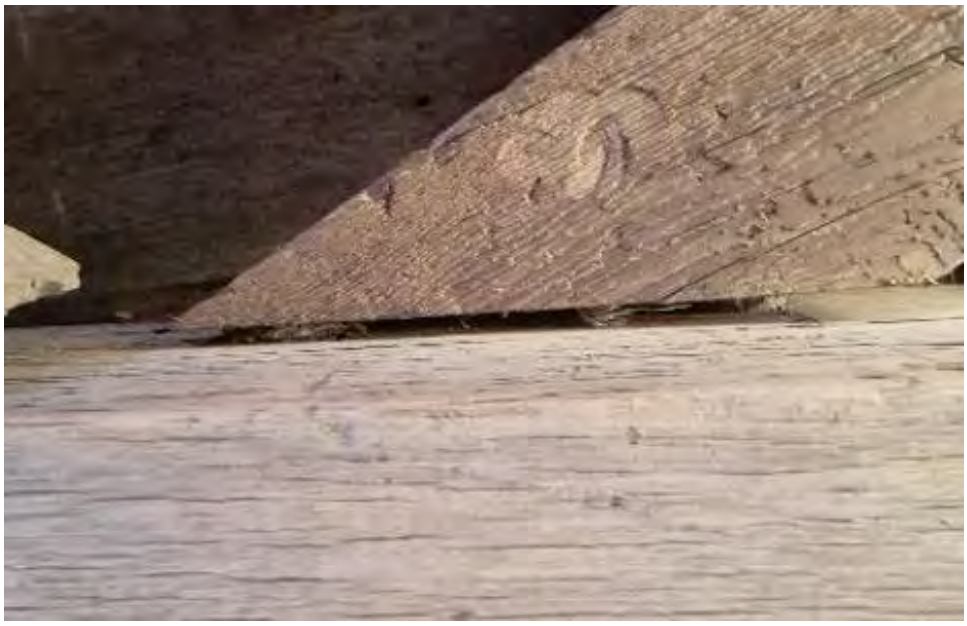


Figure 9-280: LCB-9-A is separated from TB6.

Figure 9-281: LCB-9-B is separated from TB7.

Figure 9-282: LCB-10-A is separated from TB6.

Figure 9-283: LCB-12 has an end split on its bottom face at TB7 end.

Figure 9-284: LCB-12 has an end split on its AB1 side face at TB7 end.

Figure 9-285: LCB-13 has cleaved on the dowel and spikes to TB9.

Figure 9-286: LCB-14 has minor cleaving of the dowel and spikes to TB9.

Figure 9-287: LCB-14 has a large knot on the AB1 side that has led to slope of grain cracking.

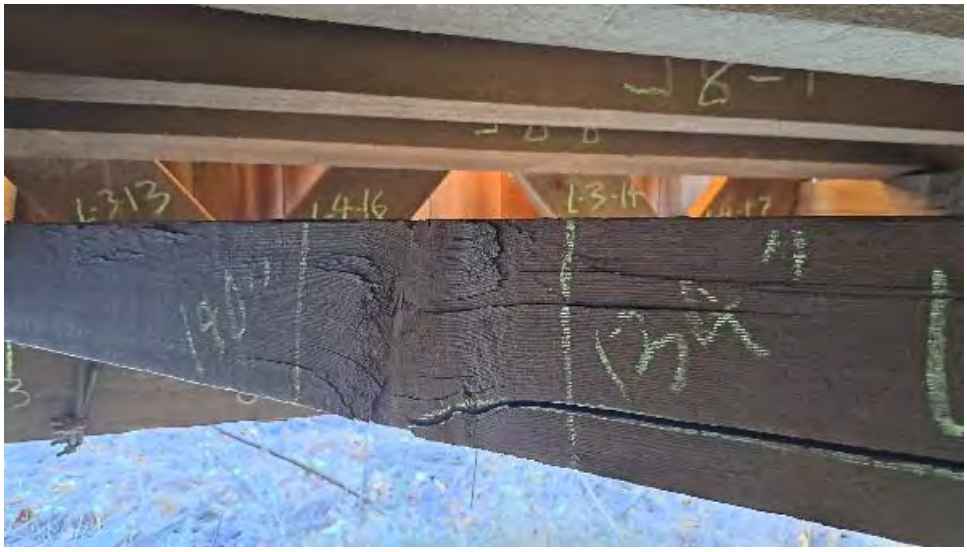


Figure 9-288: LCB-14 has a large knot on the AB1 side that has led to slope of grain cracking.

Figure 9-289: LCB-15 is separated from TB10.

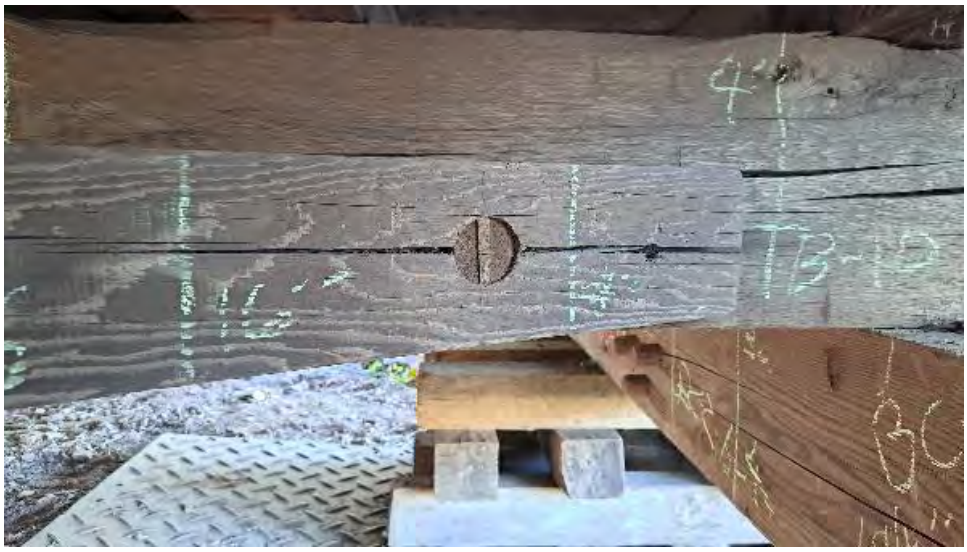


Figure 9-290: LCB-16 has cleaved on the dowel to TB10, resulting in a 2-foot long crack.

Figure 9-291: LCB-16 is separated from TB 10 by approximately 1-inch.

Figure 9-292: LCB-17 has minor cleaving on a spike to TB-11.

Figure 9-293: LCB-17 is separated from TB11.

Figure 9-294: LCB-18 is separated from TB11.

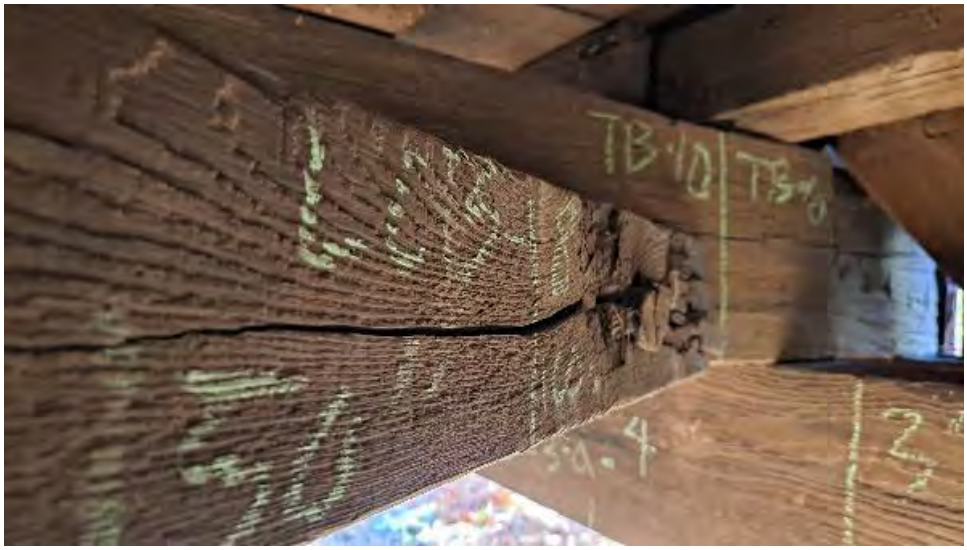


Figure 9-295: LCB-18 has major cracking and cleaving of dowel to TB10. The crack is 2-feet long and is on the AB2 face and meets vertical end crack seen on the bottom face.

Figure 9-296: LCB-18 major cracking / cleaving of dowel at TB-10. Crack 2-feet long on Abutment 2 face, meets vertical crack on bottom face.

10. INSPECTION FINDINGS – ABUTMENTS

10.1.1 ABUTMENT 1

The following describes general observations of the Abutment 1 (AB1):

- The North side of AB1 has approximately 10-foot of stone wall that is dislodged. Backfilling and asphalt has surface damage. See **Figure 10-1**, **Figure 10-2** and **Figure 10-3**.
- Concrete masonry wall segments have been dislodged at AB1. These may have formed the breastwall between the backfill and the timber deck. See **Figure 10-4**.
- The mass concrete foundation at AB1 appears to be undamaged. See **Figure 10-6** and **Figure 10-5**.
- A view of the AB1 approach indicates the bridge has moved approximately 10-feet toward the North. See **Figure 10-7**.
- Less damage has occurred to the South side stone wall of AB1. The top course of stone is missing for the length of the wing wall. See **Figure 10-8** and **Figure 10-9**.
- The backfilling at AB1 has receded and the asphalt surface is damaged for the full width of AB1. See **Figure 10-10** and **Figure 10-11**.
- The receded backfill and segments of the asphalt surface are scattered against the mass concrete foundation of AB1. See **Figure 10-12**.

Figure 10-1: The North side of AB1 has an approximately 10-foot length of stone wall dislodged. Backfilling has receded and the asphalt surface is damaged.

Figure 10-2: The North side of AB1 has approximately 10-foot of stone wall that is dislodged. Backfilling has receded and asphalt surface is damaged.

Figure 10-3: The North side of AB1 has approximately 10-foot of stone wall that is dislodged. Backfilling has receded and asphalt surface is damaged.

Figure 10-4: Concrete masonry wall segments have been dislodged at AB1. These may have formed the breastwall between the backfill and the timber deck.

Figure 10-5: Concrete masonry wall segments have been dislodged at AB1. These may have formed the breastwall between the backfill and the timber deck.

Figure 10-6: The mass concrete foundation at Ab1 appears to be undamaged.

Figure 10-7: A view of the AB1 approach indicates the bridge has moved approximately 10-feet toward the North.

Figure 10-8: Less damage has occurred to the South side stone wall of AB1.

Figure 10-9: The top course of stone is missing from the South side of AB1 for the length of the wing wall.

Figure 10-10: The backfilling at AB1 has receded and the asphalt surface is damaged for the full width of AB1.

Figure 10-11: The backfilling at AB1 has receded and the asphalt surface is damaged for the full width of AB1.

Figure 10-12: The receded backfill and segments of the asphalt surface are scattered against the mass concrete foundation of AB1.

10.1.1 ABUTMENT 2

The following describes general observations of the Abutment 2 (AB2):

- The top course of stone is missing for the length of the wing wall at the South side of AB2. Backfilling and asphalt surface are damaged. See **Figure 10-13**.
- The backfilling at AB2 has receded and the asphalt surface is damaged for the full width of AB2. Significant debris exists over the approach. Loose timber elements are stockpiled at AB2. See **Figure 10-14** and **Figure 10-15**.
- The remaining asphalt at AB2 is in poor condition. See **Figure 10-16**.
- The mass concrete foundation at AB2 appears to be undamaged. See **Figure 10-17** and **Figure 10-18**.
- The stone wall on the North side of AB2 is in generally good condition away from the original wing wall position. See **Figure 10-19** and **Figure 10-20**.
- The North side of AB1 has approximately 10-foot of stone wall that is destroyed for approximately half of its height. See **Figure 10-21** and **Figure 10-22**.
- Concrete masonry wall segments have been dislodged at AB2. These may have formed the breastwall between the backfill and the timber deck. See **Figure 10-23** and **Figure 10-24**.

Figure 10-13: The top course of stone is missing for the length of the wing wall at the South side of AB2.

Figure 10-14: The backfilling at AB2 has receded and the asphalt surface is damaged for the full width of AB2. Significant debris exists over the approach.

Figure 10-15: The backfilling at AB2 has receded and the asphalt surface is damaged for the full width of AB2. Significant debris exists over the approach. Loose timber elements are stockpiled at AB2.

Figure 10-16: The remaining asphalt at AB2 is in poor condition. Loose timber elements are stockpiled at AB2.

Figure 10-17: The mass concrete foundation at AB2 appears to be undamaged.

Figure 10-18: The mass concrete foundation at AB2 appears to be undamaged.

Figure 10-19: The stone wall on the North side of AB2 is in generally good condition away from the original wing wall position.

Figure 10-20: The stone wall on the North side of AB2 is in generally good condition away from the original wing wall position. Loose timber elements are stockpiled at AB2.

Figure 10-21: The North side of AB2 has approximate 10-foot length of stone wall destroyed for approximately half of its height.

Figure 10-22: The North side of AB2 has approximate 10-foot length of stone wall destroyed for approximately half of its height.

Figure 10-23: Concrete masonry wall segments have been dislodged at AB2. These may have formed the breastwall between the backfill and the timber deck,

Figure 10-24: Concrete masonry wall segments have been dislodged at AB1. These may have formed the breastwall between the backfill and the timber deck.

11. LABORATORY TEST RESULTS

During the analysis of collected core samples, WRD Laboratory technicians considered a combination of characteristics present in the samples to identify the species and their origins as presented in **Table 11-1**. The full third-party laboratory results are included in **Appendix B**. The results of specific gravity testing of the samples support the results of SWT testing and match the expected values for of the identified species (Bodig and Jayne, 1982).

Table 11-1: Summary of laboratory results for species identification.

Core Sample	Collection Location	Species	Average Specific Gravity
1	Bottom Chord BC2-a	Coastal Douglas fir (*Pseudotsuga menziesii*)	0.53
2	Transverse Beam TB4	White Oak (*Quercus alba*)	0.70
3	Middle Chord MC3	Eastern White pine (*Pinus strobus*)	0.30
-	Dowel	White Oak (*Quercus alba*)	-
-	Siding	Eastern White pine (*Pinus strobus*)	-

12. CONDITION STATE RATINGS

Based on the findings described above, the CSR ratings for the timber elements at the Bridge are summarized in **Table 6-1**. These ratings exclude consideration of the structural connections. It should be noted that these ratings are based on the findings within the limitations of the inspection. Issues may exist that were not be identified, such as the top of roof rafters and trusses at AB1 and AB2 side near the wing walls.

Most of the timber elements of the Bridge are in **Fair** to **Poor** condition (CSR 2) to (CSR 3) and could remain in service for many years.

Generally, the bottom chords are also in fair condition (CSR 2); however, the end segments of the bottom chords are in an **Unsafe** condition (CSR 5) due to missing or broken segments and decay. Similarly, the wing wall posts are in fair condition (CSR 2) above the deck but are in an **Unsafe** condition (CSR 5) where they meet the bottom chords.

The top chords are generally in **Fair** to **Poor** condition (CSR 2) to (CSR 3) but access to investigate the outer plies of the top chord was limited meaning some more severe condition is possible. However, it is noteworthy that these elements are protected by the walls and roof; thus, decay is unlikely.

The middle chords are generally in **Fair** condition (CSR 2), but some decay is present, prompting a reduced rating of **Poor** condition (CSR 3).

For the elements in the **Unsafe** condition (CSR 5), these deficiencies should be addressed before the damage/decay progresses, resulting in more expensive. The overall CSR rating of the Bridge is **Very Poor** (CSR 4) to **Unsafe** condition (CSR 5) based on the extremely poor condition at the abutment bearing seats and temporarily shored condition of the bridge.

Table 6-1: Summary of Condition State Ratings for element groups.

Location	Condition State Rating
Roof Top (Shakes)	2-3 (Fair – Poor)
Siding	3-4 (Poor – Very Poor)
Main Rafters	2-3 (Fair – Poor)
Secondary Rafters	2-3 (Fair – Poor)
Upper Cross Braces	2-3 (Fair – Poor)
Top Chords	2-3 (Fair – Poor)
Middle Chords	2-3 (Fair – Poor)
Bottom Chords	2-5 (Fair – Unsafe)
Lattice Members	2-3 (Fair – Poor)
Wingwall Posts	2-5 (Fair – Unsafe)
Dowels	2 (Fair), generally Some are 5 (Unsafe)
Floor Decking	2-3 (Fair – Poor)
Transverse Beams	2-4 (Fair – Very Poor)
Floor Joists (Stringers)	2-3 (Fair – Poor)
Lower Cross Braces	2-3 (Fair – Poor)
Abutment Stone Walls	2-5 (Fair – Unsafe)
Approach Wear Surface	3-4 (Poor – Very Poor)

13. DISCUSSION AND RECOMMENDATIONS

Many of the bridge members and connections are in poor to unsafe condition. Note that many of these members and connections that have decay or minor to moderate damage may still have the residual capacity to support the current pedestrian load demand. Thus, before specific repair recommendations are made, structural analyses shall be conducted to determine what members and connections require repair and if any members and connections can continue to perform in their current conditions without the need for repairs and support the proposed pedestrian loads, rather than the heavier truck loads that the Bridge originally supported.

Several possible repair strategies are available. The adoption of high strength fiber reinforcements is available, such as Retroshear® Panels and Retroten® Reinforcements to restore and enhance timber member shear capacity and flexural capacity, respectively. These types of tactical repairs can be performed to members in situ without the costly need to replace the members. Retroshear® Panels are also useful to reinforce structural connections between timber members. Technical notes on these products are included in **Appendix C**. It is recognized that the Bridge holds significant heritage value, and care must be given to the design of repairs to ensure the heritage character is not diminished. Retroshear® Panels and Retroten® Reinforcements are typically visibly obvious so they may need to be confined to areas that are not visible. However, these types of localized repairs serve to preserve the original timber elements to the greatest extent possible. If necessary to maintain aesthetic heritage value, certain members may require replacement.

The areas of biggest concern are the four corners where the wing walls meet the main structure and the bridge bears on the foundations . In these areas, the bottom chords and lower portion of the posts are missing or in unsafe condition. Replacement of these sections or portions of the these members is the likely solution.

The future structural analyses will include assessment of the truss bottom chord and the splice connections between their various segments. The truss bottom chords are primary tension elements. It is paramount to ensure the splice connections are structurally adequate for the bridge to adequately span between the abutments.

The truss top chords are compression elements that counter the tension in the bottom chords. Compression failure in wood is typically plastic, rather than brash tension failure; therefore, of less concern than the bottom chords. The top chords must maintain the connections they make with the lattice elements, which permit the top and bottom chords to act as a moment couple system, providing both strength and stiffness. While almost all dowels appear to be in fair condition, many of the lattice elements are cleaved at the dowel connections to the top and bottom chords. Structural analyses are required to confirm if these connections are adequate to support the proposed pedestrian loads in their current condition If deemed inadequate, the dowelled connections will require reinforcement, likely by wood screws. The same is required of the many connections the lattices make to the bottom chords. The wood screws can be driven from the inside face, but these will be visible at the top chord. Alternatively, the siding could be removed so that the new woods screws can be installed from the exterior and remain concealed.

The roof rafters make structural connections with the roof battens from above. While vertical fasteners originating on the top surface of timber members should be avoided to reduce the likelihood of water infiltration following the fasteners that results in decay (due to elevated moisture content), this connection type is typical of this form of construction. Where the rafters require rehabilitation, replacement of the rafters would require new connections between the existing roof battens and the new rafters. This could be accomplished by light-gauge metal brackets and horizontal fasteners; however, this option would be more visible and potentially reduce heritage value. Currently, it is not deemed necessary to replace all layers of roof shingles (shakes); however, accessing the tops of the roof battens to install new fasteners into new rafters is not practical. Those rafters that require rehabilitation could receive high strength fiber reinforcements or possibly have “sister” elements or new rafters installed adjacent to the existing with horizontal connections between the new and existing rafters. Further discussions will be initiated WRD and the Borough of Perkasie to discuss suitable solutions.

The lateral stability of the Bridge shall be assessed in the structural analyses. The dowelled connections between the secondary members that provide rigidity to the Bridge (the knee braces, collar ties and upper and lower cross braces) and the surrounding structure are damaged, cleaved or no longer aligned. The significant damage to these connections could result in instability if not

total collapse in the absence of the temporary shoring and cable connections on the Bridge. Once the Bridge is placed back on the foundation and properly anchored, it will be necessary to restore and possibly enhance these connections and stability elements to ensure long-term lateral stability when the bridge is loaded laterally.

Many of the floor joists are no longer supported by the transverse beams. Some have twisted, resulting in only partial bearing onto the transverse beams, some are missing altogether. Visual observations indicate that the deck system was partially lifted (especially on the South side) during the floor event due to buoyancy. It is estimated that the lifting of the deck system compromised many of the spikes or anchors that exist between the two layers of decking boards and the joists. From a strength perspective, the deck system requires little work. However, to maintain long-term serviceability of the deck system, it is recommended the decking boards be lifted so that the joists can be re-seated on the transverse beams. Rehabilitation work on the transverse beams, lower cross braces, and joists could be completed from above without access limited by the decking boards. Once the joists are leveled, the deck boards can be replaced and leveled, eliminating the many trip hazards that currently exist. During the leveling of the deck boards, they could be planed to refresh their surface for aesthetic purposes.

A summary of general repair recommendations is presented in **Table 7-1**.

Table 7-1: Summary of repair recommendations.

Bridge Component	Description of Repair
Roof Shakes	Remove at least one layer and replace.
Siding	Reinstall loose and misaligned siding boards and replace missing siding boards.
Main Rafters	Sister with new timber elements or repair with Retroshear® Panels and Retroten® Reinforcements as required.
Secondary Rafters	Sister with new timber elements or repair with Retroshear® Panels and Retroten® Reinforcements as required.
Knee Braces	Replace broken and cleaved knee braces.
Collar Ties	Replace broken and cleaved collar ties.
Upper Cross Braces	Replace broken and cleaved cross braces.
Top Chords	Repair connections (using fastener and/or high-strength fiber) as required by future structural analysis.
Middle Chords	Repair connections (using fastener and/or high-strength fiber) as required by future structural analysis.
Bottom Chords	Repair connections (using fastener and/or high-strength fiber) as required by future structural analysis.
Lattice Members	Repair connections (using fastener and/or high-strength fiber) as required by future structural analysis.
Posts at Wingwalls	Amputate poor segments and post with new segments designed to support and transfer load to existing elements.
Floor Decking	Lift decking boards to re-seat joists then replace decking and plane as necessary.
Transverse Beams	Repair with Retroshear® Panels and Retroten® Reinforcements as required.
Floor Joists	Reseat joists to ensure they are level. Repair with Retroshear® Panels and Retroten® Reinforcements as required (possibly sister or replace in a few isolated cases).
Lower Cross Braces	Repair with Retroshear® Panels and Retroten® Reinforcements as required (possibly replace in a few isolated cases).
Foundations	New foundations are proposed.
Approach stone walls	Reconstruct damaged zones or rebuild walls using similar new or existing stones and repoint grout as required.
Approach breastwalls	Remove CMU walls and incorporate new breastwall into the new foundation at both ends.
Approach wear surface	Demolish damaged surface, replace and compact receded backfill, and install new wear surface.

14. CONCLUSION

Wood Research and Development (WRD) was commissioned by the Borough of Perkasie to inspect the historic South Perkasie Covered Bridge in the overall process of restoring the Bridge. This report summaries the findings of the inspection. The inspection of the Bridge included a visual inspection of all structural elements and the use of non-destructive test equipment to locate internal decay and to identify elements that will require repairs/replacement. The overall condition state rating (CSR) of the Bridge is **Very Poor** (CSR 4) to **Unsafe** condition (CSR 5) based on the extremely poor condition at the abutment bearing seats and temporarily shored condition of the bridge.

The key recommendations for this inspection are as follows:

- The Bridge has shifted approximately 10-feet toward the North and in doing so caused significant damage to the abutment stone walls and to the bottom chords and posts in these areas. The damaged or missing end segments of the bottom chords and the bottom segments of the posts in the four corners are to be replaced.
- The truss bottom chord splice connections are to be assessed during the structural analysis and repaired or strengthened as required.
- The dowelled connections the lattice members make to the top and bottom chords are to be assessed during the analyses and reinforced at the connections as required.
- Several rafters and associated connections require repair. This requires careful design to ensure no loss in heritage value while ensuring the integrity of the envelope of the covered bridge. Further discussions will be arranged with the Borough of Perkasie to assess the most suitable solutions for restoration.
- It is planned to anchor the bridge on new foundations to prevent lateral movement. This increases the demand for lateral stability of the structure. Many of the connections between the secondary components providing lateral stability and the surrounding structure are damaged. These members are to be replaced where damaged and their connections to be reinforced and strengthened as required based on the structural analyses.

- Observations indicate the deck system partially lifted during the flood event. This has likely caused yielding of the many vertical connections between decking layers and joists. This movement and compromise of connections has prevented the joists from returning to proper bearing on the transverse beams. It is recommended the decking be lifted to re-seat the joists properly and perform other required repairs without limited access caused by the deck. The existing deck boards can be planed as required and reinstalled after the joists are restored to create a level surface without trip hazards.

15. REFERENCES

Bodig, J, & Jayne, BA, 1993, *Mechanics of Wood and Wood Composites*, Krieger Publishing Co, Malabar, FL.

Tingley, D, & Davis, R, 2020, *Timber Bridge Moisture Content Report, Comparison of Moisture Content vs Specific Gravity for Hardwood and Softwood in Timber Bridges*, Wood Research and Development, Lower Cape, NB.

16. APPENDIX A – SWT DATA

16.1 TOP CHORDS

Location | Number :		Side		North	Length :								
Sub-Location | # or Letter :					Height :	12	inches						
Component | Number :		Top Chord		1-a	Width :	3	inches						
		N/A			Visual Condition								
		Solid Sawn											
		Rectangular											
Location (feet) :		1	5.3	10.83	17	21.5	31	35	41	50			
		-	-	-	-								
1/11	Adjusted	-	-	-	-	-	-	-	-	-			
6/12	Adjusted	738	407	357	392	439	378	450	471	481			
2/8	Adjusted	-	-	-	-	-	-	-	-	-			
3/9	Adjusted	-	-	-	-	-	-	-	-	-			
4/10	Adjusted	-	-	-	-	-	-	-	-	-			
5/7	Adjusted	-	-	-	-	-	-	-	-	-			
Comments :		FROM P1 - HOW FAR?											

Location | Number :		Side		North	Length :								
Sub-Location | # or Letter :					Height :	12	inches						
Component | Number :		Top Chord		1-a	Width :	3	inches						
		N/A			Visual Condition								
		Solid Sawn											
		Rectangular											
Location (feet) :		19	1 - P1	1 - P6	-	-	-	-	-	-			
		-	-	-	-								
1/11	Adjusted	-	-	-	-	-	-	-	-	-			
6/12	Adjusted	760	601	496	-	-	-	-	-	-			
2/8	Adjusted	-	-	-	-	-	-	-	-	-			
3/9	Adjusted	-	-	-	-	-	-	-	-	-			
4/10	Adjusted	-	-	-	-	-	-	-	-	-			
5/7	Adjusted	-	-	-	-	-	-	-	-	-			
Comments :		FROM P6											
		1 - P1 = 12" TO P1 / 1 - P6 = 12" TOP P6											

Location | Number :		Side		North	Length :								
Sub-Location | # or Letter :					Height :	11.5	inches						
Component | Number :		Top Chord		1-b	Width :	3	inches						
		N/A			Visual Condition								
		Solid Sawn											
		Rectangular											
Location (feet) :		1	5.3	10.83	17	21.5	31	35	41	50			
		-	-	-	-								
1/11	Adjusted	-	-	-	-	-	-	-	-	-			
6/12	Adjusted	403	394	521	457	465	425	390	382	368			
2/8	Adjusted	-	-	-	-	-	-	-	-	-			
3/9	Adjusted	-	-	-	-	-	-	-	-	-			
4/10	Adjusted	-	-	-	-	-	-	-	-	-			
5/7	Adjusted	-	-	-	-	-	-	-	-	-			
Comments :		FROM P1											
		31' = BEFORE 11" / AFTER 11 1/2"											

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		19	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	542	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		FROM P6					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		2-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-24")	(-4")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	563	505	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		'(-24") = FROM CT-3					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		2-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-12")	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	534	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		'(-12") = FROM CT-4					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		2-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(+12")	(+24")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	513	643	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		'(+12") = FROM CT-4					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		2-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-40")	(-30")	(-15")	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	367	527	496	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		'(-40") = FROM CT-5					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.5	inches
Component | Number :		Top Chord		2-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	315	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		FROM P2					

Location | Number :		Side		North	Length :				
Sub-Location | # or Letter :					Height :	12	inches		
Component | Number :		Top Chord		2-a	Width :	3	inches		
		N/A			Visual Condition				
		Solid Sawn							
		Rectangular							
Location (feet) :		5.3	10.83	17	21.5	31	35	41	50
		-	-	-	-				
1/11	Adjusted	-	-	-	-	-	-	-	-
6/12	Adjusted	343	380	405	412	454	394	429	466
2/8	Adjusted	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-
Comments :		FROM P1							
		21.5' = NEAR PEGS							

Location | Number :		Side		North	Length :				
Sub-Location | # or Letter :					Height :	12	inches		
Component | Number :		Top Chord		2-a	Width :	3	inches		
		N/A			Visual Condition				
		Solid Sawn							
		Rectangular							
Location (feet) :		19	-	-	-	-	-	-	-
		-	-	-	-				
1/11	Adjusted	-	-	-	-	-	-	-	-
6/12	Adjusted	369	-	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-
Comments :		FROM P6							

Location | Number :		Side		North	Length :				
Sub-Location | # or Letter :					Height :	12	inches		
Component | Number :		Top Chord		2-b	Width :	3	inches		
		N/A			Visual Condition				
		Solid Sawn							
		Rectangular							
Location (feet) :		(-24")	(-4")	-	-	-	-	-	-
		-	-	-	-				
1/11	Adjusted	-	-	-	-	-	-	-	-
6/12	Adjusted	722	884	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-
Comments :		'(-24") = FROM CT-3							

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		2-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	519	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" = FROM CT-3					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		2-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	2	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	492	702	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" = FROM CT-4					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		2-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-40")	(-30")	(-15")	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	467	402	411	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-40)" = FROM CT-5					

Location | Number :		Side		North	Length :					
Sub-Location | # or Letter :					Height :	11.25	inches			
Component | Number :		Top Chord		2-b	Width :	3	inches			
		N/A			Visual Condition					
		Solid Sawn								
		Rectangular								
Location (feet) :		0.5	1.3	2.5	-	-	-	-	-	-
		-	-	-	-					
1/11	Adjusted	-	-	-	-	-	-	-	-	-
6/12	Adjusted	942	891	428	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-
Comments :		FROM P2								
		6" = CLEAVE @ PEG / 16" = CLEAVE @ PEG / 30" = BEYOND CLEAVE								

Location | Number :		Side		North	Length :					
Sub-Location | # or Letter :					Height :	12	inches			
Component | Number :		Top Chord		2-b	Width :	3	inches			
		N/A			Visual Condition					
		Solid Sawn								
		Rectangular								
Location (feet) :		5.3	10.83	17	21.5	31 "B"	31 "A"	35	41	50
		-	-	-	-					
1/11	Adjusted	-	-	-	-	-	-	-	-	-
6/12	Adjusted	402	373	363	434	521	410	366	389	388
2/8	Adjusted	-	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-
Comments :		FROM P1								
		31 B = BEFORE SPLICE / 31 A = AFTER SPLICE								

Location | Number :		Side		North	Length :					
Sub-Location | # or Letter :					Height :	12	inches			
Component | Number :		Top Chord		2-b	Width :	3	inches			
		N/A			Visual Condition					
		Solid Sawn								
		Rectangular								
Location (feet) :		19	-	-	-	-	-	-	-	-
		-	-	-	-					
1/11	Adjusted	-	-	-	-	-	-	-	-	-
6/12	Adjusted	334	-	-	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-	-
Comments :		FROM P6								

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		3-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-12")	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	371	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		'(-12") = FROM CT-4-S					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		3-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		L-2-21	L-1-18	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	482	456	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		ABOVE L-2-21					
		ABOVE L-1-18					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		3-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		SR-6/7	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	447	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		B/T = SR-6/7					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		3-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-12")	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	690	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-12") = FROM CT-5					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		3-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		5.41	6.25	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	474	357	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		65" = FROM CT-2					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		3-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		L-2-21	L-1-18	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	486	587	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		ABOVE L-2-21					
		ABOVE L-1-18					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		3-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		SR-6/7	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	728	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		B/T = SR-6/7					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		3-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-12")	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	431	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-12") FROM CT-4-S					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Top Chord		3-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-12")	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	624	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-12") FROM CT-5					

16.1 MIDDLE CHORDS

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Middle Chord		1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		L-1-5	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1028	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		BEHIND L-1-5					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Middle Chord		1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1.16	2	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1079	1260	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		+14" = FROM L-1-15					
		+24" = FROM L-1-15					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Middle Chord		1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	1.6	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1047	1173	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		+12" = FROM L-1-6					
		+20" = FROM L-1-6					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Middle Chord		1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	1.6	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	646	608	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		+12" = FROM L-1-7					
		+20" = FROM L-1-7					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Middle Chord		1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.83	1.25	1.66	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	630	520	525	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		+10" = FROM L-1-10					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Middle Chord		1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1.25	1.66	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	971	1892	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		+15" = SPLICE HERE FROM L-1-15					
		'+20" = SPLICE HERE FROM L-1-15					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Middle Chord		2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.83	1.25	1.66	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	782	511	529	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		+10" = FROM L-1-10					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Middle Chord		3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(+2")	(+15")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	857	543	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		+2" = *DECAY* FROM L-4-7					
		'+15" = FROM L-4-7					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Middle Chord		3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(+2")	(+18")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	704	621	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		+2" = FROM L-4-15					
		'+18" = FROM L-4-15 (SPLICE)					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Middle Chord		3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		A	B	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	507	579	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		READINGS AT AB2 END					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Middle Chord		4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		L-4/5	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	760	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		L-4/5 = SPLICE HERE - BEHIND L-4-5					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Middle Chord		4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		'(+2")	(+15")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1090	844	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		FROM L-4-7					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Middle Chord		4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		'(+2")	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	656	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		FROM L-4-11					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Middle Chord		4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		'(+2")	'(+18")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	999	713	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

16.2 BOTTOM CHORDS

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		6.6	4.58	0.25	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	700	365	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		AB2 SIDE / 80" = CAN'T REACH					
		80" = FROM TB-10 / 55" = FROM TB-10					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	3.83	0.25	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	419	398	316	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		84" = FROM TB-9					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.16	2.5	0.25	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	855	662	743	459	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		84" = FROM TB-8					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		6.75	4.58	0.3	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	465	1086	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		81" = FROM TB-7					
		WORKING BACK FROM AB2					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.3	3	-	-	-	-
		-	-	-			
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	412	425	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		36" = FROM TB-6					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.58	0.5	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	468	1023	447	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		84" = FROM TB-5					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.58	2.91	0.3	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	475	418	407	509	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		84" = FROM TB-4					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.58	2.91	0.3	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	940	792	870	1608	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		84" = FROM TB-3 (SPLICE HERE)					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.58	2.75	0.4	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	6916	825	1084	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		84" = FROM TB-2					
		5" = NO ACCESS					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		6.6	4.58	0.25	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	784	678	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		AB2 SIDE / 80" = CAN'T REACH					
		80" = FROM TB-10 / 55" = FROM TB-10					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	3.83	0.25	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	410	476	538	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		AB2 SIDE					
		84" = FROM TB-9					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.16	2.5	0.25	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	606	431	343	354	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		AB2 SIDE					
		84" = FROM TB-8					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		6.75	4.58	0.3	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	358	716	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		AB2 SIDE					
		81" = FROM TB-7					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.3	3	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	471	470	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							
		36" = FROM TB-6					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.58	0.5	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	580	879	612	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							
		84" = FROM TB-5					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.58	2.91	0.3	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	453	499	495	697	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		55" = FROM TB-4					
		84" = SPLICE HERE					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.58	2.91	0.3	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1175	698	944	770	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							
		84" = FROM TB-3					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		1-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7	4.58	2.75	0.41	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	551	508	894	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		84" = FROM TB-1					
		5" = NO ACCESS					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.5	inches
Component | Number :		Bottom Chord		2-b-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		AB1 E	1.6	3.91	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	554	334	279	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		AB1 E = AT AB1 END					
		20" = DECAY AT BOTTOM					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.75	inches
Component | Number :		Bottom Chord		2-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	2.5	5	6.6	8.3	10
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	572	1059	1075	527	536	620
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" = 12" FROM END / 80" = NEAR TB3					
		30" = SPLIT FROM CONNECTION					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		2-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.41	2.5	5	6.6	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	658	759	472	730	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		5"= PAST TB-4 30" = NEAR DOWELS AND LATTICE					
		80" = SOME FASTENERS AROUND FERRIC / BEFORE TB-5					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		2-b-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.3	1.08	2.25	5	6.25	6.75
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	466	407	382	660	525	904
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		4" = FROM TB-7					
		60" = DOWEL/LATTICE CONNECTION (LATTICE BROKEN L-1-15)					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		2-b-4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	1.1	2.16	3.5	4.83	6.6
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	673	742	643	476	492	429
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-10 / 80" = BEFORE TB-11					
		BIG SPLIT AT DOWELS / ABOVE SHORING @ 42" / 58"					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		2-b-4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	1.1	2.25	4.16	5	6.25
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	367	516	444	527	635	490
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-8 / 60" = BIG SHRINKAGE TO DOWEL					
		84"= BEFORE TB-9					

Location | Number :		Side		North	Length :				
Sub-Location | # or Letter :					Height :	12	inches		
Component | Number :		Bottom Chord		2-a-4	Width :	3.125	inches		
		N/A			Visual Condition				
		Solid Sawn							
		Rectangular							
Location (feet) :		0.25	1.1	2.16	3.5	4.83	6.6	3"	14"
1/11	Adjusted	-	-	-	-	-	-	-	-
6/12	Adjusted	513	627	507	373	539	445	449	890
2/8	Adjusted	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-
Comments :		3" = FROM TB-10 / 14"= NEAR BROKEN L2-17							
		ABOVE SHORING @ 42" / 58" /80" = BEFORE TB-11							

Location | Number :		Side		North	Length :				
Sub-Location | # or Letter :					Height :	11.825	inches		
Component | Number :		Bottom Chord		2-a-3	Width :	2.825	inches		
		N/A			Visual Condition				
		Solid Sawn							
		Rectangular							
Location (feet) :		0.25	1.1	2.25	4.16	5	6.25	7	.25 *
1/11	Adjusted	-	-	-	-	-	-	-	-
6/12	Adjusted	425	415	481	526	961	571	503	-
2/8	Adjusted	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-
Comments :		3" = FROM TB-8 / 14" = L2-13 CRACKED							
		60" = L2-14 BROKEN AT CONNECTION							

Location | Number :		Side		North	Length :				
Sub-Location | # or Letter :					Height :	12	inches		
Component | Number :		Bottom Chord		2-b-4	Width :	3	inches		
		N/A			Visual Condition				
		Solid Sawn							
		Rectangular							
Location (feet) :		0.25	1.1	2.16	3.83	5.16	6.25	7	-
1/11	Adjusted	-	-	-	-	-	-	-	-
6/12	Adjusted	453	471	527	560	533	637	511	-
2/8	Adjusted	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-
Comments :		3" = FROM TB-9 / 75" = SHRINKAGE AT CONNECTION BEFORE TB-10							
		84"= BEFORE TB-10							

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		2-a-4	Width :	3.125	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1.16	2.16	3.83	5.16	6.25	7
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	927	472	426	542	486	520
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		14" = FROM TB-9 / 84"= AT TB-10					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		2-b-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.3	1.25	3	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	478	808	343	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		4" = FROM TB-6					
		15" = NEAR DOWELS					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		2-a-3	Width :	3.125	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.3	1.25	3	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	448	507	435	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		4" = FROM TB-6					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		2-a-3	Width :	3.125	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.3	1.08	2.25	5	6.25	6.75
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	465	450	530	657	1042	960
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		4" = FROM TB-7					
		60" = DOWEL/LATTICE CONNECTION (LATTICE BROKEN L-1-15)					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		2-a-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.41	2.5	4.16	6.6	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1134	663	549	690	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		.41'= 5" FROM TB3					
		80" = NEAR TB4					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		2-b-3	Width :	2.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	1	2.5	4.3	7.08	8.91
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	367	465	481	473	478	472
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		.5' = 6" FROM END (AB1 SIDE)					
		12" = BEFORE TB-4					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		2-b-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	1.16	2.5	5	7	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	455	478	525	549	424	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		.5 = 6" PASSED TB-5					
		84" = BEFORE TB-6					

Location | Number :		Side		North	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		2-a-3	Width :	3.125	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	1.16	2.5	5	7	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	409	483	480	807	497	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		.5 = 6" PASSED TB-5					
		60" = AT CONNECTION, LATTICE CRACKED					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.625	inches
Component | Number :		Bottom Chord		3-a-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	1.6	3.5	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	393	354	283	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" = FROM TB-1					
		42" = NEAR TB-2					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		3-a-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.91	4.25	6.6	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	312	321	272	406	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-4					
		80" = SPLICE AT TB-5					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		3-a-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	1.3	2.5	4.08	5	7.08
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	303	333	355	253	524	291
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-3					
		85" = SPLICE AT TB-4					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		3-a-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	1.3	2.6	4.41	7.08	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	427	367	349	341	348	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" = FROM TB-2 (NEW SPLICE)					
		85" = BEFORE TB-3					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		3-a-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	838	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3"= TB-9 (SPILCE HERE) *DECAY?					
		AFTER 32" LARGE SPLIT VISIBLE BC3-A					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-a-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	421	463	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3"= TB-6					
		30" = BEFORE TB-7					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-a-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.3	6.91	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	432	933	449	445	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3"= FROM TB-7					
		83" = BEFORE TB-8					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-a-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.3	6.91	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	388	474	476	492	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3"= FROM TB-5					
		82" = BEFORE TB-6					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		3-a-4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		2.5	4.3	7	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	418	456	506	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		30"= TB-9 / 84" = BEFORE TB-10					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		3-a-4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.6	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	475	1906	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-10					
		32" = BIG SPLIT					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.3	7	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	596	442	407	407	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.6	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	426	513	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-b-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	1.6	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	307	314	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" = FROM TB-1					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.625	inches
Component | Number :		Bottom Chord		3-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		3.5	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	478	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		72" = FROM TB-1					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.625	inches
Component | Number :		Bottom Chord		3-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	1.3	2.5	4.08	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	522	608	425	605	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		49" = SPLICE HERE					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.625	inches
Component | Number :		Bottom Chord		3-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	1.3	2.6	4.41	7.08	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	443	524	488	531	495	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" = TB-2					
		85" = BEFORE TB-3					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-b-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	610	461	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-b-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.3	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	499	499	726	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = TB-7					
		52" = NEAR LATTICE CONNECTION					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-b-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.91	4.25	6.6	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	416	421	517	429	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-b-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.5	6.83	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	568	423	524	565	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		3-b-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		5	7.08	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	358	442	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-a	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	342	462	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		4-a-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	1.6	3.5	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	619	774	1201	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6"= TB-1					
		42" = BROKEN BEFORE TB-2					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		4-a-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	2.6	4.41	7.08	1.3	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	484	390	456	378	463	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		.05' = 6" FROM TB-2					
		85" = BEFORE TB-3					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		4-a-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.3	6.91	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	467	388	483	1012	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-4					
		80" = SPLICE AT TB-5					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		4-a-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	1.3	2.5	4.08	5	7.08
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	409	511	468	404	571	453
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-a-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.3	7	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1005	352	320	341	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = NEAR CONNECTIONS (FERRIC)					
		AFTER 32" LARGE SPLIT VISIBLE BC3-A					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-a-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	548	499	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-a-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.3	6.91	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	577	563	502	566	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-7					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-a-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.5	6.6	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	509	523	493	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		80" = CANT ACCESS					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-b	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	918	338	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-10					
		AFTER 32" LARGE SPLIT VISIBLE BC3-A					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		4-b-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	1.3	2.5	4.08	5	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	467	489	513	576	501	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		60" = SPLICE HERE					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		4-b-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	1.3	2.5	4.08	5	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	467	489	513	475	501	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		60" = SPLICE HERE					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		4-b-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	2.6	4.41	7.08	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	574	441	593	406	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" = FROM TB-2					
		85" = BEFORE TB-3					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	11.825	inches
Component | Number :		Bottom Chord		4-b-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	1.6	3.5	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	725	654	2239	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" = FROM TB-1					
		42" = PRE TB-2					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.3	7	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	613	435	459	481	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-9					
		84" = BEFORE TB-10					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	531	495	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		30" = BEFORE TB-7					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.91	4.25	6.6	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	530	451	489	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-5					
		80" = CANT ACCESS (BEFORE TB-6)					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.5	4.3	6.91	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	549	575	623	822	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = FROM TB-7					
		83" = CANT SEE TO HIT WELL @ SPLICE					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.25	2.91	4.25	6.6	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	583	632	1023	460	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3" = SOME DECAY ON TOP					
		51" = BAD HERE					

Location | Number :		Side		South	Length :		
Sub-Location | # or Letter :					Height :	12	inches
Component | Number :		Bottom Chord		4-b-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		7.08	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	443	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		85" = FROM TB-3 (BEFORE TB-4)					

16.3 LATTICE MEMBERS

Location | Number :		Side		2	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	10	inches
Component | Number :		Lattice		1-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.1	1.3	2	5	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	839	592	558	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	608	572	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		1.3' = 16" FROM TOP OF MEMBER					

Location | Number :		Side		2	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	10	inches
Component | Number :		Lattice		1-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.1	2	5	8	11	12
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	485	569	437	485	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		2	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	9.5	inches
Component | Number :		Lattice		1-3	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.1	2	5	8	11	13.66
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	352	403	335	345	350
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Side		2	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	9.5	inches
Component | Number :		Lattice		1-4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.1	1.83	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	450	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		LARGE CRACK RUNNING FROM -20" TO END OF MEMBER BOTTOM					
		1.83' = 22" FROM BOTTOM OF MEMBER					

Location | Number :		Side		2	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	10.125	inches
Component | Number :		Lattice		1-20	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	2	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	859	883	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(+12") = FROM L-2-19 CONNECTION					
		(+24") = SPLIT					

Location | Number :		Side		1	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	10	inches
Component | Number :		Lattice		2-1	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.1	1.66	2	3	5	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	569	552	590	610	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	432	332	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		1.66' = 20" FROM FROM BOTTOM OF MEMBER					

Location | Number :		Side		1	Length :	13.00	feet	
Sub-Location | # or Letter :					Height :	9.75	inches	
Component | Number :		Lattice		2-2	Width :	3.125	inches	
		N/A			Visual Condition			
		Solid Sawn						
		Rectangular						
Location (feet) :		0.1	1	2	4	5	7	-
1/11	Adjusted	-	-	-	-	-	-	-
6/12	Adjusted	-	510	546	508	554	518	-
2/8	Adjusted	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	756	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-
Comments :		MINOR SHRINKAGE CRACKS						
		14" = FROM GATE-MEMBER / 12" = CONTINUES BEHIND, NO ACCESS						

Location | Number :		Side		1	Length :	13.00	feet	
Sub-Location | # or Letter :					Height :	10	inches	
Component | Number :		Lattice		2-3	Width :	3	inches	
		N/A			Visual Condition			
		Solid Sawn						
		Rectangular						
Location (feet) :		0.1	1	3	6	9	12	13
1/11	Adjusted	-	-	-	-	-	-	-
6/12	Adjusted	-	509	602	451	502	467	541
2/8	Adjusted	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	916	-
4/10	Adjusted	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-
Comments :		12" = FROM LOWER CONNECTED TOP CHORD						
		SHRINKAGE CRACKS / RESIDUE + LOOKS BAD						

Location | Number :		Side		1	Length :	13.00	feet	
Sub-Location | # or Letter :					Height :	10	inches	
Component | Number :		Lattice		2-4	Width :	3	inches	
		N/A			Visual Condition			
		Solid Sawn						
		Rectangular						
Location (feet) :		0.1	2	3.3	5	8	11	14
1/11	Adjusted	-	-	-	-	-	-	-
6/12	Adjusted	-	664	538	504	563	584	656
2/8	Adjusted	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-
Comments :		24" = FROM TOP OF MEMBER						

Location | Number :		Side		1	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	10.125	inches
Component | Number :		Lattice		2-4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-3")	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-3"= FROM L-1-4 MC CONNECT)					

Location | Number :		Side		2	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	10	inches
Component | Number :		Lattice		2-17	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.1	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	839	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		SPLIT AT MIDDLE CONNECTION					

Location | Number :		Side		1	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	9.75	inches
Component | Number :		Lattice		3-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	3.3	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	619	1302	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" = FROM P-3					
		40" FROM P-3					

Location | Number :		Side		1	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	10.125	inches
Component | Number :		Lattice		3-7	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-3")	(+3")	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	996	478	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-3") = FROM L-4-7 CONNECTION *SPLIT*					
		(+3")= FROM L-4-7 CONNECTION					

Location | Number :		Side		1	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	10.125	inches
Component | Number :		Lattice		3-13	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		MID	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	975	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(SPLIT) AT MC - CONNECTION W/ L-4-13					

Location | Number :		Side		1	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	10.125	inches
Component | Number :		Lattice		3-18	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-2")	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	722	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-2") FROM TC-3 / SPLIT					

Location | Number :		Side		1	Length :	13.00	feet
Sub-Location | # or Letter :					Height :	9.825	inches
Component | Number :		Lattice		4-2	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1.5	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1072	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		18" = FROM P-3 / SPLIT					

16.4 TRANSVERSE BEAMS

Location | Number :					**Length :**	12.75	feet
Sub-Location | # or Letter :					**Height :**	11.5	inches
Component | Number :		**Transverse Beam**		**1**	**Width :**	7.5	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**0.05**	**1**	**3**	**6**	**7.5**	**11**
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	431	373	397	382	384
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	483	704	568	331	666	544
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**6" = FROM NORTH SIDE / 12" = BROWN ROT OUTSIDE FACE**					
		36" = BROWN ROT OUTSIDE FACE / 72" = BROWN ROT OUTSIDE FACE					

Location | Number :					**Length :**	12.75	feet
Sub-Location | # or Letter :					**Height :**	10.5	inches
Component | Number :		**Transverse Beam**		**2**	**Width :**	8.75	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**0.1**	**2**	**4**	**11**	**14**	**-**
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	-	439	365	631	421	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	387	341	804	750	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**TB2 LARGER THAN TB1, TERMITE HOLES, SIMPLE TENSION FAILUARE AT CL**					
		24" FROM END = SHRINKAGE, 132"=SHRINKAGE 168" TERMITE EVIDENCE					

Location | Number :					**Length :**	12.75	feet
Sub-Location | # or Letter :					**Height :**	10.75	inches
Component | Number :		**Transverse Beam**		**3**	**Width :**	8.375	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**0.025 N**	**2.5**	**5.83**	**8.33**	**0.025 S**	**-**
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	470	463	640	583	468	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	527	340	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**LARGE SHRINKAGE CRACKS DOWN WHOLE BEAM 3/9**					

Location | Number :					Length :	12.75	feet
Sub-Location | # or Letter :					Height :	10.75	inches
Component | Number :		Transverse Beam		4	Width :	8.75	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		.3 N	3	7	11	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	595	358	413	486	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	396	453	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		4" = FROM NORTH SPAN - SHRINKAGE					

Location | Number :					Length :	12.75	feet
Sub-Location | # or Letter :					Height :	10.5	inches
Component | Number :		Transverse Beam		5	Width :	8.75	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	3	4.6	6.6	9.16	S END
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	346	337	401	374	418	430
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	402	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		4" = FROM NORTH SPAN - SHRINKAGE					
		LARGE FLAPPER MISSING ON BOTH					

Location | Number :					Length :	12.75	feet
Sub-Location | # or Letter :					Height :	10.75	inches
Component | Number :		Transverse Beam		6	Width :	8.25	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.41	3	7	8.3	0.25 S	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	412	358	417	461	441	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		.41 = 5" FROM N SPAN / SHRINKAGE AT 36"					
		84" = BETWEEN LCB'S					

Location | Number :					Length :	12.75	feet	
Sub-Location | # or Letter :					Height :	10.625	inches	
Component | Number :		Transverse Beam		7	Width :	8.825	inches	
		N/A			Visual Condition			
		Solid Sawn						
		Rectangular						
Location (feet) :		0.3	1.3	2.91	6	(-2")	-	-
1/11	Adjusted	-	-	-	-	-	-	-
6/12	Adjusted	455	-	363	431	364	-	-
2/8	Adjusted	-	-	-	-	-	-	-
3/9	Adjusted	-	621	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-
Comments :		4" = FROM N. SPAN UNDER LCB-11						
		(-2:") = FROM S.END						

Location | Number :					Length :	12.75	feet	
Sub-Location | # or Letter :					Height :	10.625	inches	
Component | Number :		Transverse Beam		8	Width :	8.825	inches	
		N/A			Visual Condition			
		Solid Sawn						
		Rectangular						
Location (feet) :		0.3	2.83	6.6	10.8	(-.25)	-	-
1/11	Adjusted	-	-	-	-	-	-	-
6/12	Adjusted	302	305	329	420	354	-	-
2/8	Adjusted	-	-	-	-	-	-	-
3/9	Adjusted	382	292	-	-	378	-	-
4/10	Adjusted	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-
Comments :		.3= 4" FROM N SPAN						
		34" = SHRINKAGE (MINOR) / 80" = SHIM ON TOP UNDER JOIST COMMON						

Location | Number :					Length :	12.75	feet	
Sub-Location | # or Letter :					Height :	10.75	inches	
Component | Number :		Transverse Beam		9	Width :	8.625	inches	
		N/A			Visual Condition			
		Solid Sawn						
		Rectangular						
Location (feet) :		0.3	2.16	4.16	6.5	6.6	9	S END
1/11	Adjusted	-	-	-	-	-	-	-
6/12	Adjusted	339	292	333	330	344	374	352
2/8	Adjusted	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-
Comments :		.3 = 4" FROM N SPAN (CHORD 2)						
		78" = SHIM UNDER JOIST (COMMON)						

Location | Number :					Length :	12.75	feet	
Sub-Location | # or Letter :					Height :	11	inches	
Component | Number :		Transverse Beam		10	Width :	8.5	inches	
		N/A			Visual Condition			
		Solid Sawn						
		Rectangular						
Location (feet) :		0.3	2.5	4.58	6.6	8.75	10.8	S END
1/11	Adjusted	-	-	-	-	-	-	-
6/12	Adjusted	380	254	313	288	313	343	303
2/8	Adjusted	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	291	-
4/10	Adjusted	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-
Comments :		4" = FROM N SPAN (CHORD 2)						
		30" = WANE ON TOP - SHRINKAGE						

Location | Number :					Length :	12.75	feet	
Sub-Location | # or Letter :					Height :	10.825	inches	
Component | Number :		Transverse Beam		11	Width :	8.5	inches	
		N/A			Visual Condition			
		Solid Sawn						
		Rectangular						
Location (feet) :		0.25	2.5	6.6	9.16	.25 S S	-	-
1/11	Adjusted	-	-	-	-	-	-	-
6/12	Adjusted	409	298	369	315	447	-	-
2/8	Adjusted	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	353	-	-
4/10	Adjusted	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-
Comments :		3" = FROM N SPAN						
		3" S S = SOUTH SIDE (CHORD 3)						

16.5 LOWER CROSS BRACES

Location | Number :		Bay		2	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		1	Width :	5.75	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		6	8.3	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1668	1529	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	758	680	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		SPLIT FROM NORTH END RUNNING 80" @ 3/9					
		LARGE SHRINKAGE FROM SOUTH END RUNNING 80"					

Location | Number :		Bay		2	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		2	Width :	5.5	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		6	8	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	845	1061	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Bay		3	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		3	Width :	6	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		2	4.66	7.5	1FT S END	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	641	864	977	967	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		24", 54" = WANE HERE / 90" = WANE ON TOP					

Location | Number :		Bay		3	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		4	Width :	6	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		2	4	3' S End	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	523	641	1087	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		TERMITES IN DECK ABOVE					

Location | Number :		Bay		4	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		5	Width :	5.75	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		2	5	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	845	703	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :							

Location | Number :		Bay		4	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		6	Width :	6	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		2	6.3	.5 S END	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	679	768	1382	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		FLAPPER ON TOP / FLAPPER SHRINKAGE					
		6" FROM SOUTH END = SPLITS FROM END @ 3/9					

Location | Number :		Bay		5	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		7	Width :	6	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	5.3	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	682	406	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" = FROM N END					

Location | Number :		Bay		5	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		8	Width :	5.5	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	1.3	5	6.6 S ED	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	922	576	931	763	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	718	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" = FROM N END					
		60" = FROM N END, SPLIT FROM CONNECTION					

Location | Number :		Bay		6	Length :	10.00	feet
Sub-Location | # or Letter :					Height :	5.25	inches
Component | Number :		Lower Cross Brace		9A	Width :	5.75	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		TB-6	TB-7	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1593	1719	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		TERMITES @ TB-6 CONNECT (SPLIT)					
		SPLITS @ TB-7 CONNECT (*RED)					

Location | Number :		Bay		6	Length :	10.00	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		9B	Width :	6	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	TB-6	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	634	1001	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" = FROM S END					
		KNOTS @ TB-6 CONNECTION					

Location | Number :		Bay		6	Length :	10.00	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		10A	Width :	6	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		TB-6	TB-7	1FT	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	874	958	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	900	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		LOOSE DOWEL @ TB-6					
		1FT = FROM SOUTH END / SPLIT AT 12/6					

Location | Number :		Bay		6	Length :	10.00	feet
Sub-Location | # or Letter :					Height :	5.25	inches
Component | Number :		Lower Cross Brace		10B	Width :	6	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		2	6	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	999	661	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		24" = FROM S END					
		6FT = FROM S END					

Location | Number :		Bay		7	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		11	Width :	5.75	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		2	6	(-12")	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	842	941	715	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		24" = FROM N.END					
		(-12") = FROM S END					

Location | Number :		Bay		7	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	4.75	inches
Component | Number :		Lower Cross Brace		12	Width :	6	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	5	6.6	(-1')	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1213	1076	1276	1458	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	1908	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		LARGE SPLIT / FLAPPER MIDWAY BOTTOM					
		12" = SPLIT BOTTOM / 12" FROM N.SIDE					

Location | Number :		Bay		8	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	4.825	inches
Component | Number :		Lower Cross Brace		13	Width :	5.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	5.75	(-1)	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	888	846	577	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" = FROM TB-8					
		(-12") = FROM TB-9					

Location | Number :		Bay		8	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		14	Width :	5.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	4.16	6.25	11.1	11.6	12.91
		-	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1250	905	1656	1349	1006	1032
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	760	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" = SPLIT FROM CONNECT (12" FROM INSIDE N SIDE) TB9 CONNECT					
		12" = SPLITS AT CONNECTION TO TB-9 / 50" = SPLITS FROM HERE TO (-)36" S END / 75" = LONG SPLIT RUNS 69" DOWN 3/9					

Location | Number :		Bay		9	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	4.825	inches
Component | Number :		Lower Cross Brace		15	Width :	5.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	3.75	5.83	8.3	10.8	TB-10 C
		-	-	-	-	-	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	530	1015	1072	958	759	900
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	632	956	-	773	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		TB-10 C = AT TB-10 CONNECTION					
		12" = FROM N.END (TB-9) / MINOR SHRINKAGE DON'T SEE ANY CRACKS BUT KIND OF HIGH					

Location | Number :		Bay		9	Length :	16.50	feet
Sub-Location | # or Letter :					Height :	5	inches
Component | Number :		Lower Cross Brace		16	Width :	5.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.33	1.3	4.16	8.33	AT TB9	-
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	907	540	295	516	434	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		4" FROM TB-10					
		SPLIT @ TB-10 CONNECT					

Location | Number :		Bay		10	Length :	16.50	feet		
Sub-Location | # or Letter :					Height :	5	inches		
Component | Number :		Lower Cross Brace		17	Width :	5.825	inches		
		N/A			Visual Condition				
		Solid Sawn							
		Rectangular							
Location (feet) :		1	3.75	6.7	10.8	-	-	-	-
		-	-	-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-	-	-
6/12	Adjusted	718	482	535	482	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-	-	-
3/9	Adjusted	616	-	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-
Comments :		12" = FROM TB-10 / CONNEC TO TB-10 LOOSE (0.5")							
		45" = LARGE KNOTS - OFF GRADE							

Location | Number :		Bay		10	Length :	16.50	feet		
Sub-Location | # or Letter :					Height :	4.825	inches		
Component | Number :		Lower Cross Brace		18	Width :	6.125	inches		
		N/A			Visual Condition				
		Solid Sawn							
		Rectangular							
Location (feet) :		0.6	1.3	4.16	5.83	8.3	12.5	13.3	AT TB10
		-	-	-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-	-	-
6/12	Adjusted	443	453	478	649	435	843	2405	1661
2/8	Adjusted	-	-	-	-	-	-	-	-
3/9	Adjusted	-	-	-	525	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-	-	-
Comments :		.6'= 8" FROM TB-11							
		150" = SPLIT FROM CONNECT ENDS							

16.6 TRUSS COLLAR TIES

Location | Number :					**Length :**	12.75	feet
Sub-Location | # or Letter :					**Height :**	10	inches
Component | Number :		**Collar Tie**		**2**	**Width :**	3	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**1.16**	**3.3**	**4.58**	**-**	**-**	**-**
		-	**-**	**-**	**-**		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	515	612	582	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**14" FROM MR-2-N / 40" FROM MR-2-N**					
		55" FROM MR-2-N					

Location | Number :					**Length :**	12.75	feet
Sub-Location | # or Letter :					**Height :**	10	inches
Component | Number :		**Collar Tie**		**3**	**Width :**	3	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**0.5**	**-**	**-**	**-**	**-**	**-**
		-	**-**	**-**	**-**		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	342	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**6" FROM KB-3-N**					

Location | Number :					**Length :**	12.75	feet
Sub-Location | # or Letter :					**Height :**	10	inches
Component | Number :		**Collar Tie**		**3**	**Width :**	3	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**(-12")**	**(-24")**	**-**	**-**	**-**	**-**
		-	**-**	**-**	**-**		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	440	631	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**(-12") = FROM KB-3-N**					

Location | Number :					Length :	12.75	feet
Sub-Location | # or Letter :					Height :	10	inches
Component | Number :		Collar Tie		4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(+10")	(+24")	(+30")	(+50")	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	834	640	552	560	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-10") FROM KB-4-N					

Location | Number :					Length :	12.75	feet
Sub-Location | # or Letter :					Height :	10	inches
Component | Number :		Collar Tie		4	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-12")	(-30")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	700	792	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-12") FROM KB-4-S					

Location | Number :					Length :	12.75	feet
Sub-Location | # or Letter :					Height :	10	inches
Component | Number :		Collar Tie		5	Width :	3	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	2.5	5	(-0.5')	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	442	502	456	486	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" FROM KB-5-N					
		(-6") FROM KB-5-S					

16.7 TRUSS KNEE BRACES

Location | Number :					**Length :**	~10	feet
Sub-Location | # or Letter :					**Height :**	7	inches
Component | Number :		**Knee Brace**		**2-N**	**Width :**	5	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**2**	**5**	**-**	**-**	**-**	**-**
		-	**-**	**-**	**-**		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	927	691	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**2' = from L-2-6 CONNECT**					
		6' = from L-2-6 CONNECT					

Location | Number :					**Length :**	~10	feet
Sub-Location | # or Letter :					**Height :**	7	inches
Component | Number :		**Knee Brace**		**2-S**	**Width :**	4.825	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**3.75**	**4.58**	**-**	**-**	**-**	**-**
		-	**-**	**-**	**-**		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1173	969	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**45"FROM L-3-6 CONNECT**					

Location | Number :					**Length :**	~10	feet
Sub-Location | # or Letter :					**Height :**	7	inches
Component | Number :		**Knee Brace**		**3-S**	**Width :**	4.825	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**3**	**4**	**5**	**6**	**-**	**-**
		-	**-**	**-**	**-**		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	687	672	610	593	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**36"FROM L-3-10**					

Location | Number :					Length :	~10	feet
Sub-Location | # or Letter :					Height :	7	inches
Component | Number :		Knee Brace		3-N	Width :	4.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1.25	2.5	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	847	1063	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		15" FROM L-2-10					

Location | Number :					Length :	~10	feet
Sub-Location | # or Letter :					Height :	7	inches
Component | Number :		Knee Brace		4-N	Width :	5	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	2.5	AT CT-4	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1013	1011	682	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" FROM L-2-1					
		AT CT-4 CONNECT					

Location | Number :					Length :	~10	feet
Sub-Location | # or Letter :					Height :	7	inches
Component | Number :		Knee Brace		4-S	Width :	5	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	3	AT CT-4	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	891	785	730	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" FROM L-2-14					
		AT CT-4-S CONNECT					

Location | Number :					**Length :**	~10	feet
Sub-Location | # or Letter :					**Height :**	7	inches
Component | Number :		**Knee Brace**		**5-N**	**Width :**	5	inches
		N/A			**Visual Condition**		
		Solid Sawn					
		Rectangular					
Location (feet) :		**1**	**3**	**-**	**-**	**-**	**-**
		-	**-**	**-**	**-**		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	826	722	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		**FROM L-3-18**					

16.8 SECONDARY RAFTERS

Location | Number :		Bay		1	Length :	12.19	feet
Sub-Location | # or Letter :					Height :	2.5	inches
Component | Number :		SR		6-S	Width :	3.5	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		12"	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	826	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" FROM TC					

Location | Number :		Bay		7	Length :	12.19	feet
Sub-Location | # or Letter :					Height :	2.5	inches
Component | Number :		SR		7-S	Width :	3.5	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		12"	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1373	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" FROM TC					

16.9 UPPER CROSS BRACES

Location | Number :		Bay		1	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		1	Width :	3.75	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	908	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" FROM CT-2					

Location | Number :		Bay		2	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		3	Width :	3.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-6")	(+6")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	440	604	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-6") FROM CENTER					
		(+6") FROM CENTER					

Location | Number :		Bay		2	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		4	Width :	3.75	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-12")	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	960	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-12") FROM CENTER					

Location | Number :		Bay		2	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		4	Width :	3.75	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-12")	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	750	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-12") FROM CT-3					

Location | Number :		Bay		3	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		5	Width :	3.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	2	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	700	526	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" FROM CT-3					

Location | Number :		Bay		3	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		5	Width :	3.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	3	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	560	652	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		12" = PAST CENTER					

Location | Number :		Bay		3	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		5	Width :	3.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-12")	-	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	518	-	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-12") FROM CT4-5					

Location | Number :		Bay		3	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		6	Width :	3.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-24")	(-2")	(+2")	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	724	814	516	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-24") MIDDLE / '(-2") MIDDLE / (+2") MIDDLE					
		SPLIT AT (-2") MIDDLE					

Location | Number :		Bay		3	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		6	Width :	3.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		(-72")	(-12")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	642	690	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		(-72") FROM CT-4-N					
		(-12") FROM CT-4-N					

Location | Number :		Bay		4	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		7	Width :	3.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		3	(-12")	-	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	694	644	-	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		3' FROM CT-4					
		(-12") FROM CT-5					

Location | Number :		Bay		4	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		8	Width :	3.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		1	2	(-12")	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	688	542	658	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		1' FROM CT-4					
		(-12") FROM CT-5					

Location | Number :		Bay		5	Length :	21.00	feet
Sub-Location | # or Letter :					Height :	6	inches
Component | Number :		Upper Cross Brace		10	Width :	3.825	inches
		N/A			Visual Condition		
		Solid Sawn					
		Rectangular					
Location (feet) :		0.5	2	3	-	-	-
		-	-	-	-		
1/11	Adjusted	-	-	-	-	-	-
6/12	Adjusted	1764	560	632	-	-	-
2/8	Adjusted	-	-	-	-	-	-
3/9	Adjusted	-	-	-	-	-	-
4/10	Adjusted	-	-	-	-	-	-
5/7	Adjusted	-	-	-	-	-	-
Comments :		6" FROM CT-5- SOUTH (SPLIT AT 6")					

17. APPENDIX B – THIRD PARTY LABORATORY REPORT

17.1 INTRODUCTION

Wood Research and Development (WRD) Inspectors completed an inspection of the bridge located in Perkasie, Pennsylvania. During the inspection, the technicians collected 3 core samples from structural elements along with 3 additional samples from other elements. The samples were sent to the WRD independent 3rd-party Testing Laboratory in Jefferson, OR (TL-193) for the purposes of confirming the timber species and assessing the as-received Specific Gravity (SG) and Moisture Content (MC). The results of these analyses are presented herein.

17.2 METHODOLOGY AND EQUIPMENT

Table 17-1 and **Table 17-2** summarize the test methods and measuring equipment for the testing of the collected core samples. All testing was performed in adherence to applicable ASTM standards under the supervision of the WRD laboratory supervisor at WRD's IAS certified, TL-193 testing facility in Jefferson, OR. All equipment has been calibrated by third party calibration agencies according to WRD Laboratory ISO 17025 standards. The results of testing presented in this report apply only directly to the samples tested.

Table 17-1: Summary of test methods used, and attributes being tested

Test Method	Description/Purpose
ASTM D2395	Specific Gravity
ASTM D442	Moisture Content
Microscopic Anatomy	Species Identification

Table 17-2: Summary of calibrated testing equipment.

WRD Number	Description
WRD 201	Psychrometer
WRD 206	6” Digital Calipers
WRD 210	Gram Scale
WRD 001	Electric Drying Oven

17.3 WOOD SPECIES IDENTIFICATION BY CELLULAR FEATURES

Upon analysis of the collected core samples, WRD Laboratory technicians determined that all 3 core samples were all different species.

Core Sample 1 – Coastal Douglas fir (*Pseudotsuga menziesii*) (CDF).

The following combination of cellular characteristics, unique to Coastal Douglas Fir, was observed:

- The presence of horizontal resin canals.
- Ray parenchyma exhibiting cross-field pitting in the form of small pits of varying number.
- The presence of longitudinal tracheids with significant spiral thickenings.
- The presence of non-aspirated, bordered pits.

CDF features are shown in **Figure 17-1**.

Core Sample 2 and Dowel – White Oak (*Quercus alba*).

A wood-ring porous vessel arrangement.

- Simple Perforation Plates and abundant tyloses.
- Intervessel pitting in the alternate arrangement.
- The presence of conspicuous broad rays.

White Oak features are shown in **Figure 17-2** and **Figure 17-3**.

Core Sample 3 – Eastern White pine (*Pinus strobus*).

The following combination of cellular characteristics, unique to Eastern white pine, was observed:

- The presence of horizontal resin canals.
- Ray parenchyma exhibiting cross-field pitting in the form of large window-like pits with 1-2 pits per cross-field.
- Distinct growth rings with a gradual earlywood/latewood transition.
- The presence of exclusively uniseriate rays.

Eastern White pine features are shown in **Figure 17-4**, **Figure 17-5** and **Figure 17-6**.

Timber Species Identification Form

Project Name :	Perkasie Covered Bridge
Project Number :	#9101S
Specimen Number :	Sample 1
Specimen Location :	Bottom Chord 2
Date :	27-Nov-24

Species Identification Results			
Common Name :	Coastal Douglas fir		
Scientific Name :	*Pseudotsuga menziesii*		
Analyzed by :	AD	CM	

Figure A: Transverse View 1 | Observation of the Transverse face demonstrates the presence of longitudinal resin canals.

Figure B: Radial View 1 | Observation of the Radial face found cross-field pitting in the form of small pits of variable number.

Figure C: Radial View 2| Additional analysis of the Radial face shows tracheids with abundant spireal thickenings, indicative of Douglas fir.

Figure D: Radial View 3 | Further examination of the Radial face found non-aspirated bordered pits, suggesting the coastal variety.

Figure 17-1: Microscopy images of the cellular features used to identify Core Sample 1, Coastal Douglas fir.

Timber Species Identification Form

Project Name :	Perkasie Covered Bridge
Project Number :	#9101S
Specimen Number :	Sample 2
Specimen Location :	Transverse Beam 4
Date :	2-Dec-24

Species Identification Results			
Common Name :	White Oak		
Scientific Name :	*Quercus alba*		
Analyzed by :	AD	DT	

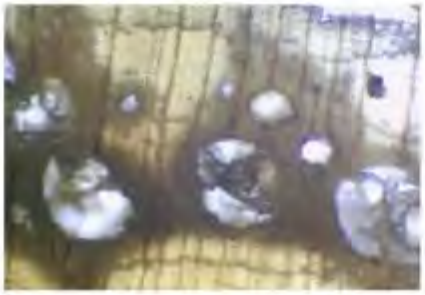


Figure A: Transverse View 1 | Observation of the Transverse face demonstrates wood-ring porous vessel arrangement where size of pores abruptly changes.

Figure B: Radial View 1 | Observation of the Radial face shows simple perforation plates.

Figure C: Radial View 2| Additional analysis of the Radial face shows intervessel pitting in the alternate arrangement

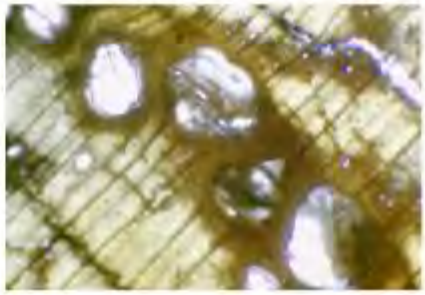


Figure D: Transverse View 2 | Further examination of the Transverse face identifies the presence of conspicuous broad rays.

Figure 17-2: Microscopy images of cellular features used to identify Core Sample 2, White Oak.

Timber Species Identification Form

Project Name :	Perkasie Covered Bridge
Project Number :	#9101S
Specimen Number :	N/A
Specimen Location :	Dowel Connection
Date :	2-Dec-24

Species Identification Result:			
Common Name :	White Oak		
Scientific Name :	*Quercus alba*		
Analyzed by :	AD	DT	

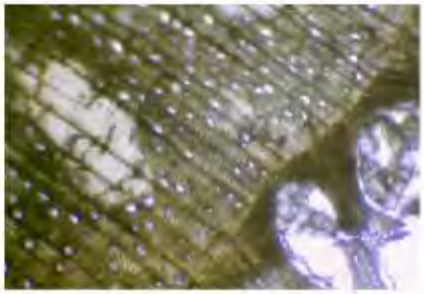


Figure A: Transverse View 1 | Observation of the Transverse face demonstrates wood-ring porous vessel arrangement where size of pores abruptly changes.

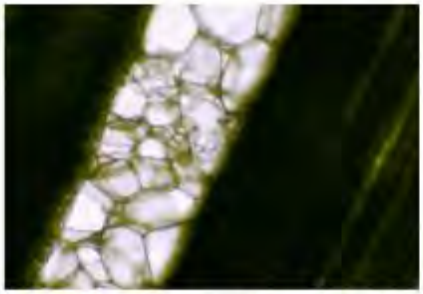


Figure B: Radial View 1 | Observation of the Radial face shows vessels with abundant tyloses.

Figure C: Radial View 2| Additional analysis of the Radial face shows intervessel pitting in the alternate arrangement.

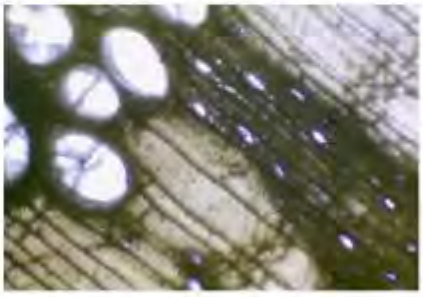


Figure D: Transverse View 2 | Further examination of the Transverse face identifies the presence of conspicuous broad rays.

Figure 17-3: Microscopy images of the cellular features used to identify Dowel sample, White Oak.

Timber Species Identification Form

Project Name :	Perkasie Covered Bridge
Project Number :	#9101S
Specimen Number :	Sample 3
Specimen Location :	Middle Chord 3
Date :	27-Nov-24

Species Identification Results		
Common Name :	Eastern White pine	
Scientific Name :	*Pinus strobus*	
Analyzed by :	AD	CM

Figure A: Tangential View 1 | Observation of the Tangential face demonstrates the presence of horizontal resin canals.

Figure B: Radial View 1 | Observation of the Radial face found ray parenchyma cross-field pitting in the form of large window-like pits with 1-2 per cross-field.

Figure C: Transverse View 1| Additional analysis of the Transverse face shows distinct growth rings with a gradualEW/LW transition.

Figure D: Tangential View 2 | Further examination of the Tangential face shows the presnece of exclusively uniseriate rays.

Figure 17-4: Microscopy images of the cellular features used to identify Core Sample 3, Eastern White pine.

Timber Species Identification Form

Project Name :	Perkasie Covered Bridge
Project Number :	#91015
Specimen Number :	N/A
Specimen Location :	Lattice 3-11
Date :	27-Nov-24

Species Identification Results			
Common Name :	Eastern White pine		
Scientific Name :	*Pinus strobus*		
Analyzed by :	AD	CM	

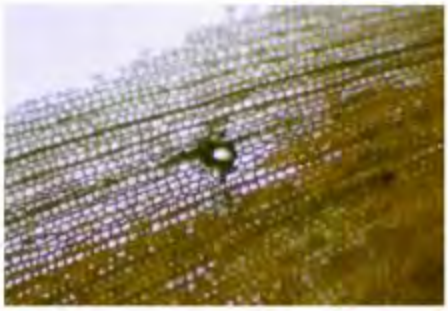


Figure A: Transverse View 1 | Observation of the Transverse face demonstrates the presence of longitudinal resin canals.

Figure B: Radial View 1 | Observation of the Radial face found ray parenchyma cross-field pitting in the form of large window-like pits with 1-2 per cross-field.

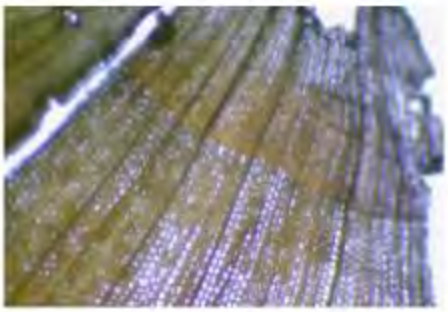


Figure C: Transverse View 2| Additional analysis of the Transverse face shows distinct growth rings with a gradual EW/LW transition.

Figure D: Tangential View 1 | Analysis of the tangential face demonstrates exclusively uniseriate rays.

Figure 17-5: Microscopy images of cellular features used to identify Lattice 3-11 sample, Eastern White pine.

Timber Species Identification Form

Project Name :	Perkasie Covered Bridge
Project Number :	#9101S
Specimen Number :	N/A
Specimen Location :	Siding
Date :	27-Nov-24

Species Identification Results			
Common Name :	Eastern White pine		
Scientific Name :	*Pinus strobus*		
Analyzed by :	AD	CM	

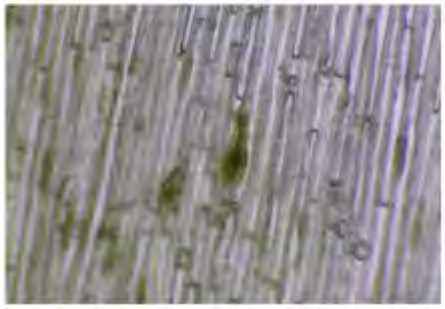


Figure A: Tangential View 1 | Observation of the Tangential face demonstrates the presence of horizontal resin canals.

Figure B: Radial View 1 | Observation of the Radial face found ray parenchyma cross-field pitting in the form of large window-like pits with 1-2 per cross-field.

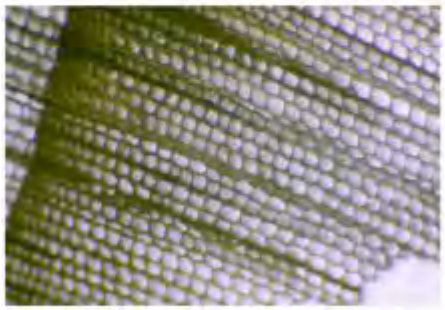


Figure C: Transverse View 1| Additional analysis of the Transverse face shows distinct growth rings with a gradual EW/LW transition.

Figure D: Radial View 2 | Further examination of the Radial face demonstrates ray tracheids with smooth cell walls.

Figure 17-6: Microscopy images of the cellular features used to identify Siding sample, Eastern White pine.

17.4 TESTING RESULTS

Specific gravity and moisture content (SG/MC) were determined via ASTM D2395 and D4442, respectively. All SG/MC calculations were performed using oven dried samples. The results of these standardized tests are presented in **Table 17-3**. The overall SG of the samples was 0.55 and the overall MC was 13%.

Specimens from Core Sample 1 exhibited an average specific gravity of 0.53 and an average moisture content of 14%. The average SG of Sample 1 falls within the expected range for CDF.

Specimens from Core Sample 2 exhibited an average specific gravity of 0.70 and an average moisture content of 15%. This high SG supported the findings that the species of this member was the hardwood, White Oak.

Specimens from Core Sample 3 exhibited an average specific gravity of 0.30 and an average moisture content of 11%. The observed SG was comparable, but slightly lower to the published values for Eastern White pine (0.35) (Bodig & Jayne, 1982). It is possible that this is caused by decay.

Table 17-3: Results of Specific Gravity and Moisture Content tests

Moisture Content -- ASTM D 4442(Method B Oven drying secondary)

Specific Gravity ASTM D 2395(Method E) / ASTM D 2395 (Method B)

			Measuring Equipment	Equip ID	Cali. Due		Oven Temperature :	217.0° F
Project Number :	9101S		Length measurement WRD#	206	Mar-24		Lab Temperature :	55.0° F
Start Date for Tests :	11/11/2024		Weight measurement WRD #:	123	Mar-24		Relative Humidity (RH) :	63.0%
End Date for Tests :	11/17/2024		Relative humidity measurement WRD #:	182	Mar-24			
Reviewed by:	AD		Temperature measurement WRD #:	1	Mar-24		Increment Bore Diamter :	0.2 in
Recorded by :	AD							

SPECIFIC GRAVITY	The overall value of the SPECIFIC GRAVITY was determined to be 0.555 based on the tests of 12 specimens conducted in accordance with Specific Gravity ASTM D 2395(Method E) / ASTM D 2395 (Method B). The expanded uncertainty of ±0.159 is based on a coverage factor of 1.98 (95% confidence) calculated in accordance with the GUM.
MOISTURE CONTENT	The overall value of the MOISTURE CONTENT was determined to be 13% based on the tests of 12 specimens conducted in accordance with Moisture Content -- ASTM D 4442(Method B Oven drying secondary). The expanded uncertainty of ±12% is based on a coverage factor of 1.96 (95% confidence) calculated in accordance with the GUM.

						Increment Cores Method E					
			11/11/2024 14:00	Measurement Method E		11/13/2024 8:00	11/13/2024 11:30	-			
Specimen Location	SWT Reading	ID	Initial Weight (grams)	Initial Length (inches)	Final Length (inches)	Weight (grams)	Weight (grams)	Weight (grams)	Final Volume (in^3)	Calculated Moisture Content	Specific Gravity
BC-2, 35" from TB-3	0	S1-O1	0.356	0.956	1.085	0.314	0.312	-	0.034	14%	0.52
		S1-I1	0.251	0.706	0.706	0.221	0.222	-	0.022	14%	0.55
		S1-I2	0.164	0.450	0.448	0.145	0.143	-	0.014	15%	0.48
		S1-O2	0.332	0.830	0.841	0.298	0.295	-	0.026	13%	0.59
TB-4, 4.5" from BC-2-b	0	S2-O1	0.486	1.216	1.349	0.427	0.427	-	0.042	14%	0.53
		S2-I1	0.561	1.442	1.391	0.493	0.490	-	0.044	14%	0.61
		S2-I2	0.459	0.983	0.983	0.415	0.407	-	0.031	13%	0.81
		S2-O2	0.290	0.809	0.735	0.263	0.247	-	0.023	17%	0.82
MC-3, between L4-20 and L3-21	0	S3-O1	0.205	1.068	1.032	0.189	0.189	-	0.032	8%	0.32
		S3-I1	0.151	0.683	0.701	0.137	0.137	-	0.022	10%	0.27
		S3-I2	0.240	0.958	1.012	0.215	0.215	-	0.032	12%	0.31
		S3-O2	0.099	0.585	0.594	0.088	0.090	-	0.019	13%	0.29
Notes / Comments :	-- The yellow fields under 'Increment Cores Method E' contain date and times of readings.								Average	13%	**0.55**
									Std. Dev	2%	**0.16**
									Median	13%	0.61
									Robust C.O.V	11%	31%

17.5 COMPARISON OF TESTING RESULTS TO SWT DATA

Core Sample 1 – Bottom Chord BC2-A, 6/12, SG=0.53, Adjusted SWT = 549µs (White)

Core Sample 1 was taken from bottom chord BC2-A, 35-inches from transverse beam TB3. The average SG across Sample 1 cores was found to be 0.53 and the adjusted SWT was 549µs indicating a white zone. The results of SG testing are in strong agreement with the results of SWT and match with expected values for Coastal Douglas Fir in fair condition.

Core Sample 2 – Transverse Beam TB4, 6/12, SG=0.70, Adjusted SWT = 413µs (White)

Core Sample 2 was taken from transverse beam TB4, 45-inches from bottom chord BC2-B. The average SG across Sample 2 cores was found to be 0.70 and the adjusted SWT was 413µs indicating a white zone. This designation is supported by the results of testing that showed the SG is high and matches closely with expected value for healthy hardwood white oak.

Core Sample 3 – Middle Chord MC3, 6/12, SG=0.30, Adjusted SWT = 857µs (Yellow)

Core Sample 3 was taken from middle chord MC3, between lattice L4-20 and lattice L3-21. The average SG across Sample 3 cores was found to be 0.30 and the adjusted SWT was 857µs indicating a yellow zone. The elevated SWT value agrees with the results of a lower SG, caused by decay.

17.6 CONCLUSION

Microscopic analysis of anatomical features was used to identify the species of 3 wood samples collected from the South Perkasie Covered Bridge located in Perkasie, Pennsylvania.

WRD laboratory technicians analyzed 3 core samples with which to determine specific gravity and moisture content at their TL-193 accredited laboratory facility in Jefferson, OR. The processing results determined that each sample was a different species, Coastal Douglas fir, Eastern White pine and White Oak.

A suite of non-destructive SWT tests were performed by qualified WRD field technicians, which corresponded to the locations of samples analyzed at the WRD laboratory facility. Samples 1 and 2 were found to be in fair condition as indicated by their "White" designation. Sample 3 was found to have elevated readings as indicated by the "Yellow" designation, which suggests some potential for fungal decay progression.

The results of testing presented in this report apply only directly to the samples tested. All samples were tested in WRD's TL 193 accredited laboratory in "as-received" condition. This report may only be reproduced in its' full context. All testing reported conformed to all relevant ASTM, ISO, and IAS requirements. Thank you for your confidence in the WRD Testing Laboratory for your wood testing and identification needs.

17.7 REFERENCES

Bodig, J., & Jayne, B. A. (1982). *Mechanics of Wood and Wood Composites.* New York: Van Nostrand Reinhold Company Inc.

InsideWood. 2004-onwards. Published on the Internet. http://insidewood.lib.ncsu.edu/search [11 July 2022].

Wheeler, E.A. 2011. InsideWood - a web resource for hardwood anatomy. IAWA Journal 32 (2): 199-211.

18. APPENDIX C – TECHNICAL NOTES ON POSSIBLE REPAIR STRATEGIES

Attached Files:

Retroshear_tech_note.pdf

Retroten_tech_note.pdf

Advanced Research, Ltd.
19144 Molalla Avenue
PO BOX 1705
Oregon City, OR 97045

Retroshear™ Panels

Description & Use

Retroshear™ panels are high strength fiber reinforced plywood panels used to increase the strength of failed or failing structural wood. Retroshear™ panels are fixed to the parent wood material with structural laminating epoxy[1] to form a full composite with the parent. Specific uses include:

- Repair of shear deficiencies or cracking
- Repair of delamination of glued-laminated timber
- Enhanced resistance to horizontal shear forces
- Bridge decayed zones.
- Internal use or treated for external use.

Retroshear™ Specifications

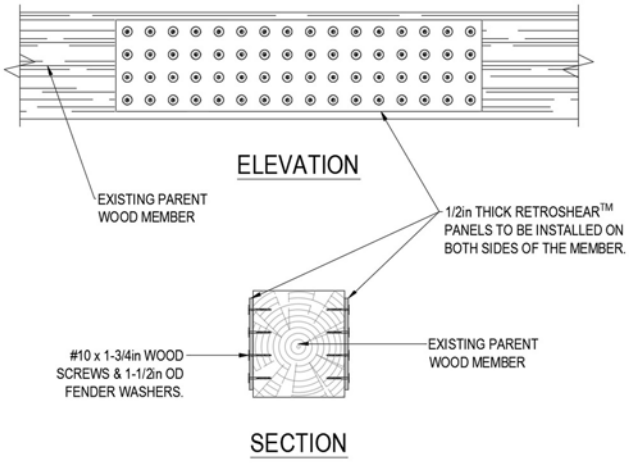
- 48-inch x 12-inch x 1/2-inch, typical Retroshear™ panel size.
- Douglas-fir structural plywood to PS 1-19.
- Retrobond™ epoxy.
- Allowable horizontal shear strength, F_v = 3600-psi per 1-inch thickness.
- When required, treated with oil-borne preservative to maintain bonding to the wood cell wall during cyclic moisture conditions.
- Manufacturing quality control to AITC 200-2009 and IAS third-party inspection (AA-644) and testing (TL-193).

Retroshear™ panels as shear reinforcements for railway stringers.

Typical Installation Procedure

The Retroshear™ panels coated with epoxy and screwed in place to close the glue line and cure the epoxy by pressure. The work is to be supervised by certified Level II Technicians[2]. Always install Retroshear™ panels on both sides of the parent wood member. The general installation procedures are as follows:

- Obtain engineering design and specifications from the Engineer of Record (EOR).
- Confirm the moisture content of the existing wood is less than 20%.
- Finish-plane the surface of the existing wood member, do not sand. Level II Technicians are to monitor quality and planing scour.
- Mix epoxy to engineered specifications.
- Spread mixed epoxy on both glue faces (Retroshear™ and parent wood).
- Place Retroshear™ on parent wood and install #10 wood screws, 1-3/4-inch long, with 1-1/2-inch outside diameter (OD) fender washers at pre-drilled hole locations on Retroshear™ panel. Pilot holes in parent wood are not required. Level II Technicians to monitor epoxy squeeze-out.
- Wood screws can be removed after expoy is cured (if desired).



Typical Retroshear™ panel installation.

Notes:

1. Epoxy to be used is Retrobond™, consisting of Retrobond™ 277B, 275B or 273B hardener with Retrobond™ 175A resin, or as directed by EOR.
2. Technicians to have successfully completed a *Level II Inspection, Maintenance, Restoration and Design Certification Course*, or equivalent.

Retroshear™ panels to repair delaminated glulam timber beam.

U.S. Trademark RN 4197347
Canadian Trademark 1560899
International Class 19: Composite panel of non-metallic materials for use in buildings

Advanced Research, Ltd.
19144 Molalla Avenue
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Oregon City, OR 97045

Retroten & Retrolam Upgrade

Description & Use

Retroten and Retrolam are wood retrofits for the reinforcement of insitu wood members in both internal and external applications. Retroten adopts the use of FiRP® technology to reinforce the parent member with high strength fiber by pre-laminating the fiber to a wood laminate (the Retrolam). The Retroten is then field laminated to the wood member with structural laminating epoxy[1].

The use of the high strength fiber enhances the parent wood member resistance to bending (and tension) stresses. Retroten can also be used to repair broken wood members where bending or tension failure has occurred. Where less severe retrofit is required, a Retrolam can be used without the high strength fiber.

Advantages of Retroten

- Made to order to suit specific applications to meet demand loads and to suit the insitu wood member size.
- The gluing of the high strength fiber to the parent wood material ensures a full composite section is formed, which allows full stress distribution between the components. Bolted steel plate retrofits or screwed/bolted wood retrofits cannot achieve this.
- The coefficient of thermal expansion is compatible with wood, so no differential seasonal expansion occurs, unlike steel retrofits.
- No differential expansion between wood and the repair as the wood shrinks or expands with changing moisture content.
- Where deficiencies in stiffness exist, a Retrolam can be installed between the parent wood member and the Retroten to enhance both the strength and the stiffness of the member.
- Improved durability for external member as the Retroten and Retrolam can be treated with oil-borne preservative to maintain bonding to the wood cell wall during cyclic moisture conditions.

Retroten Specifications

- L1 Douglas-fir lamination to ANSI/APA 117, typical.
- Retrobond™ epoxy.
- Design of Retroten to ICC ES Legacy Report PFC-6046.
- Manufacturing quality control to AITC 200-2009 and IAS third-party inspection (AA-644) and testing (TL-193).

Treated Retroten installed on a series of bridge stringers.

Typical Installation Procedure

The Retroten and Retrolam are coated with epoxy and then lag screwed in place to close the glueline and cure the epoxy by pressure. The work is to be supervised by certified Level II Technicians[2]. The general installation procedures are as follows:

- Obtain engineering design and specifications from the Engineer of Record (EOR).
- Confirm the moisture content of the existing wood is less than 20%.
- Remove all existing vertical through-bolts and other conflicting elements as directed by the EOR.
- Finish-plane the surface of the existing wood member, do not sand. Level II Technicians are to monitor quality and planing scour.
- Dry-fit the retrofit and use as template to drill pilot holes in parent wood member, work from center to ends.
- Cross-sand the high strength fiber (Retroten only).
- Mix epoxy to engineered specifications.
- Spread mixed epoxy on both glue faces (Retroten fiber or Retrolam and parent wood).
- Place retrofit on parent wood and install lag screws and washers at pre-drilled hole locations on retrofit.
- Tighten the lag screws to the specified torque, work from center to ends. Retorque as specified by EOR.
- Level II Technicians to monitor epoxy squeeze-out.

Glulam girder with Retroten and multiple Retrolams for strength and stiffness improvement.

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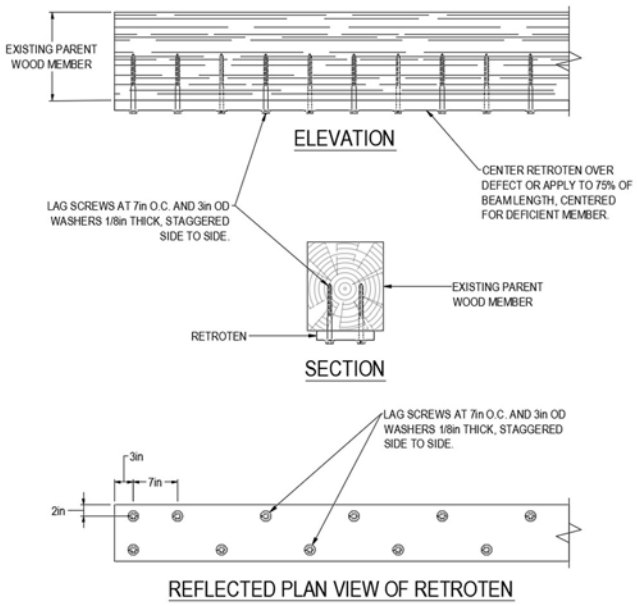

Typical Retroten installation details.

Notes:

1. Epoxy to be used is Retrobond™, consisting of Retrobond™ 277B, 275B or 273B hardener with Retrobond™ 175A resin, or as directed by EOR.
2. Technicians to have successfully completed a *Level II Inspection, Maintenance, Restoration and Design Certification Course*, or equivalent.