5.0 CHAPTER 5 – ULTRASONIC TRUSS INSPECTIONS

5.1 INTRODUCTION AND BACKGROUND

Alberta Transportation's bridge system has approximately 340 sites with steel truss span types, for a total of approximately 450 truss spans. A truss is made up of individual straight members connected to form a series of adjoining triangles. The triangular shape of the truss is effective at carrying loads since the shape cannot be altered without changing the length of its sides.

The common types of truss bridges are:

- Through truss - the deck rests on the bottom chords and traffic goes under the upper bracings.
- Pony truss - similar to the through truss, but has much lower top chords and there are no upper bracings over the roadway.
- Deck truss - the deck is located on the top chords.

There are several geometrical configurations used in truss bridges, and these are outlined in more detail in Section 7.15 of the Level 1 BIM Inspection Manual.

Steel truss bridges in Alberta are generally quite old. The majority of these trusses were fabricated and erected in the 1920's, with some dating back to 1901. Approximately 75 trusses are located on major highways. The majority are on local and secondary highways that have lower traffic volumes. Many spans are nearing the end their useful life.

5.1.1 THE HISTORY OF ULTRASONIC TRUSS INSPECTIONS

The first round of ultrasonic inspections in Alberta began in the early 1970's. The majority of the trusses were inspected in a 3 to 4 year period. In 1983, a second round of inspections was initiated and all trusses in the province were subsequently inspected within a five-year period. Several fatigue-damaged members were identified during this round of inspections. The damaged members were subsequently replaced.

The results of these inspections triggered the need to have a regular Level 2 Ultrasonic Truss Inspection program.

Currently, the trusses on various highways are inspected on the following cycle:

Primary Highways	- every 4 years
Secondary Highways	- every 5 years
Local Roads	- every 6 years

For certain bridges, this cycle has been reduced to monitor known deficiencies.

5.2 GENERAL ULTRASONIC TESTING INFORMATION AND TRUSS BEHAVIOUR

Ultrasonic testing is a non-destructive test method that allows a skilled operator to detect the location and depth of defects in structural steel behind steel fasteners in truss connections. Ultrasonic testing uses high frequency sound waves to detect flaws in the steel. The ultrasonic frequency used is 2 MHz or an approximate velocity of 2900 m/s (9500 ft/s).

A portable ultrasonic wave generator produces the sound waves, which are transmitted by contact through an oscillating crystal into the steel. Sound waves are impeded by air, so a coupling fluid is used between the crystal and the steel to ensure proper sound wave transmission. Discontinuities in the steel reflect the high frequency waves back. Receiving pulses are then displayed on a cathode ray oscilloscope. The signal corresponds to the elapsed time between the initial sound transmission and the subsequent reception.

The depth, size, and nature of the defect in the steel is determined from the return signal on the oscilloscope. The ultrasonic machine generally uses 60º or 70º probes. Since the angle and velocity of the ultrasonic waves are known, the time for the signal to reflect back can be used to calculate the distance to the deficiency. Therefore, the location and depth of defects in the steel can be determined. In fact, oscilloscope calibration can allow the operator to make direct distance readings on the horizontal axis. The sensitivity is influenced by the sound frequency, design of the unit, instrumentation processing of the return signal on the oscilloscope and operator skill.

Fatigue damage in the steel truss members normally occurs at the connections or around bolt or rivet holes. Ultrasonic test equipment is able to detect fatigue cracks in the steel that are located under the head of the rivet or the bolt, and therefore cannot be seen. Past experience has shown that cracks that develop in tension members are generally initiated in the first line of rivets on the outer edge of the rivet group. The end rivet transmits a more than average shared load, causing it to exhibit fatigue stress. It continues from the rivet hole to the edge of the member, then to the edge of the leg and through the other leg.

5.3 TRUSS AND MEMBER IDENTIFICATION

When inspecting a truss, it is essential that a common method of identifying members and locations be used such that different inspectors and maintenance crews can ensure they are all referring to the same location. This can be as general as the span number or as detailed as the specific truss member. The standard methods used by Alberta Transportation are described in the following sections.

5.3.1 SPAN NUMBERING

Truss spans are numbered in the direction of increasing chainage, if known. If the direction of chainage is not known, then label the spans from west to east or from south to north. When numbering the spans, ensure that all spans are counted. This includes timber and concrete approach spans. See Figure 5.1.

5.3.2 TRUSS MEMBER NOTATION

Use truss notation to label all of the truss members. Truss notation always begins with L0 at the panel point on the far left when looking downstream. Then the remaining panel points are numbered L1, L2, and so on along the bottom chord connections as they increase in distance to the right, from L0. The top chord panel points are numbered in a similar fashion, but they begin with U1 on the left and continue with U2, U3, and so forth along the top chord connections. See Figure 5.1.

The panel points on both trusses, upstream and downstream (near and far) are numbered from left to right when facing downstream.

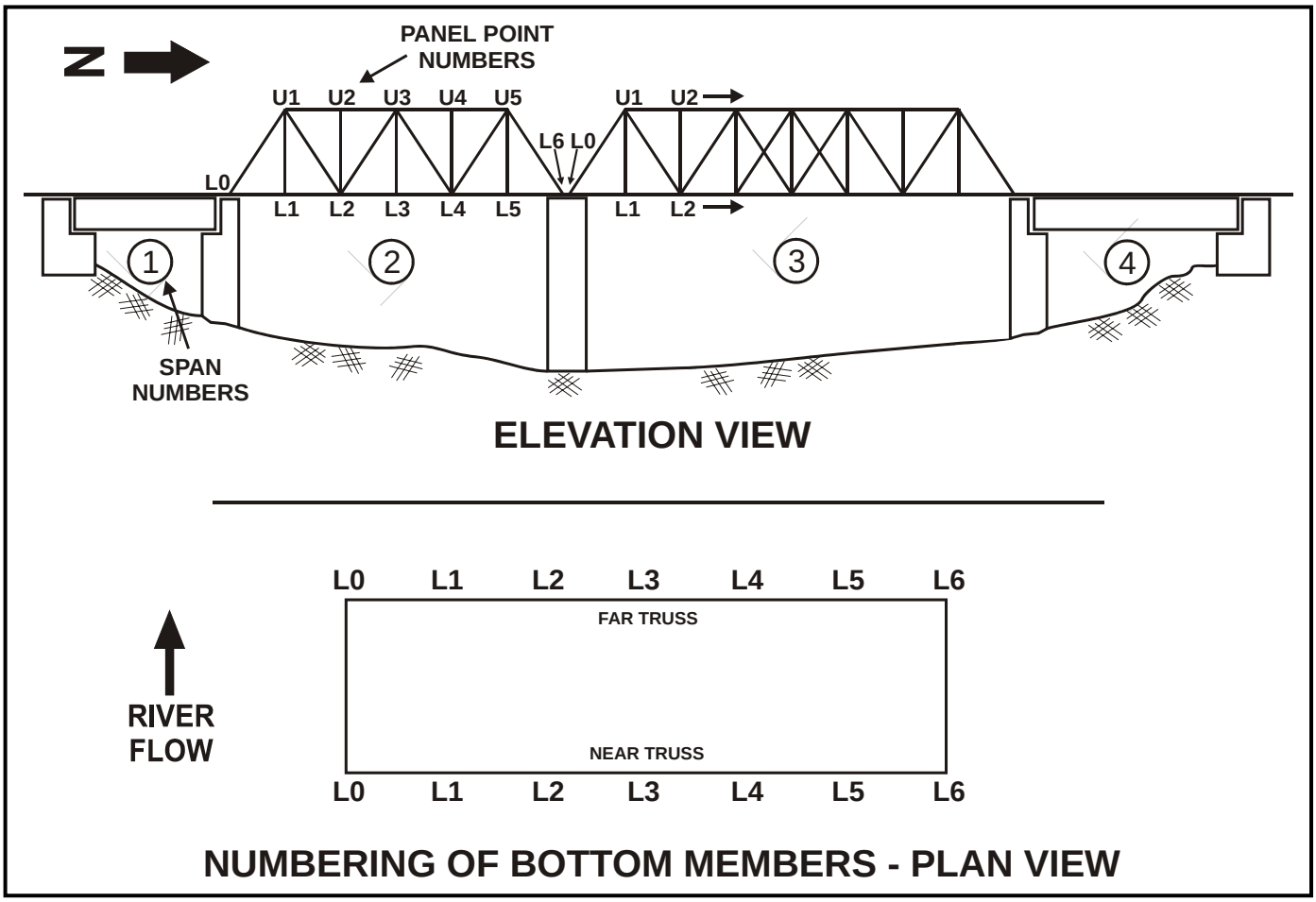

Figure 5.1 – Span and Member Numbering for Trusses

To describe members on a particular span, use the panel points at each end of the member such as U3-L4 or L4-L5. When additional clarification is required to describe whether the member is part of the near truss or the far truss, add an additional letter to the notation for the compass direction of the truss. In Figure 5.1, the near truss would be 'E' for 'east', and the far truss would be 'W' for 'west', for example U3-L4E or L4-L5W.

5.3.3 TRUSS MEMBER REFERENCES RELATIVE TO STEEL DESIGN DRAWINGS

When the inspector needs to reference steel members for replacement and fabrication, they must reference the members relative to the steel design drawings. When looking at a truss design, the truss is actually divided into two halves down the vertical centreline of the truss. There is a left side and a right side and these are a mirror image of each other.

It is important to correctly identify the proper member whether right or left. The members are identified as if the inspector is standing in the middle of the span and on the centreline of the road, facing an end. When the inspector is in this position, half of the truss will be on the inspector's left, the other half will be on the inspector's right. The right and left halves are very similar, but they are not identical. These halves are reversed. If the inspector, still standing in the middle of the span, was to turn 180º and face toward the opposite span end, the members currently on the inspector's left would be the same member types that were on the inspector's left when they were facing the other end. This is detailed in Figure 5.2 below.

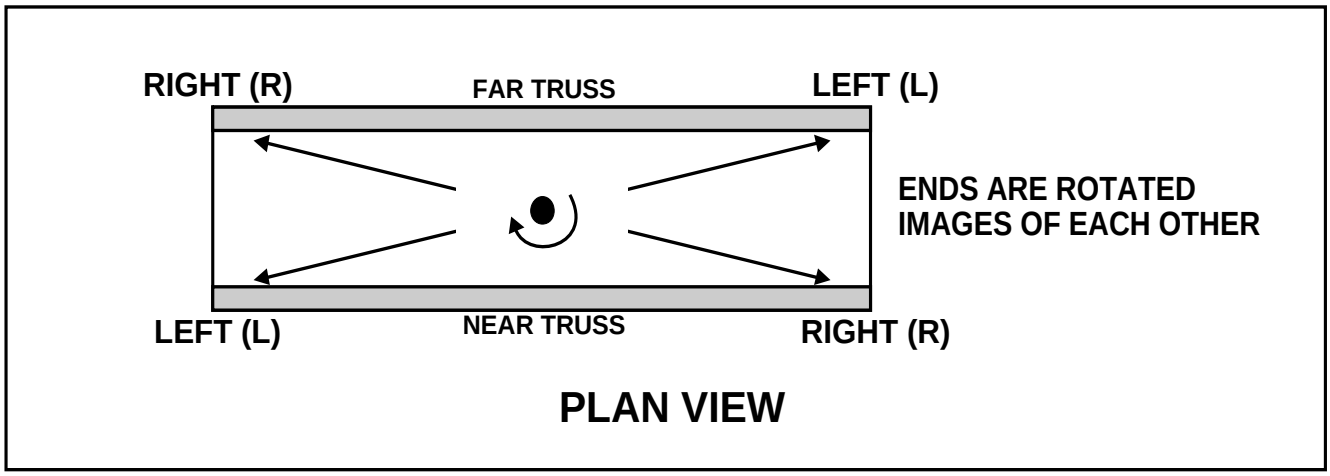

Figure 5.2 – Member Notation Relative to Steel Design Drawings

5.3.4 BRIDGE FILE NUMBER

Every bridge and culvert in the Alberta Transportation inventory has a unique five-digit number that identifies a specific bridge site.

5.3.5 TRUSS IDENTIFICATION NUMBER ('A' NUMBER)

All existing steel truss spans have a unique identification number. The format of the number is:

Axxxx-yy

The Truss Identification Number begins with an 'A' and is followed by a four-digit number in the form of 'xxxx'. This four-digit number represents a specific steel design configuration from a master Alberta Transportation list, such as truss type, truss dimensions, or span lengths. A hyphen and a two-digit number follow this four-digit number. The two-digit number (yy) is a sequential number that identifies the specific bridge that has that

configuration. Thus, if there are truss bridges or spans that are exactly the same, the first span of the first bridge would be A0034-01 and the next span would be A0034-02, and so on. Another site with the exact same span configuration would be the next sequential number, A0034-03. Each steel bridge span can be referenced by this unique Truss Identification Number.

This same number can also be found near the top of Page 2 on the BIM Level 1 Inspection forms for steel bridges.

5.4 PREPARATION FOR LEVEL 2 TRUSS INSPECTIONS

Careful planning and preparation is essential for a safe and effective bridge inspection. Prior to any Level 2 truss inspection, the inspector should ensure they have prepared by reviewing the following documentation:

- Ultrasonic inspection forms, truss line diagrams, and truss drawings. Ensure the line diagrams have the proper number of panels for the specific truss to be inspected. Be sure to check if a unique form has been created for that particular structure.
- The Level 1 BIM Inspection form.
- The bridge correspondence files.
- Printed hard copies of computer data for previously reported damage to truss members and any special monitoring information.

Further, the inspector should insure they have the following equipment required for Level 2 truss inspections:

- Inspection tools and equipment as outlined in Section 3.2 of the Level 1 BIM Inspection Manual, including a camera, scrapers, brushes, a mirror, wrenches, and an assortment of high tensile bolts.
- An ultrasonic machine with 60º or 70º probes. Also include straight probes for corrosion measurements. Bring spare probes and extra leads.
- A sufficient supply of water-soluble coupling fluid.
- At least one extra battery and a charging unit.
- Personal protective equipment (PPE) including safety harness and lanyard, safety lines, safety vests, coveralls, hardhats, and CSA approved footwear.
- Approved traffic accommodation strategy and appropriate signs.
- A ‘snooper’ truck may be required for deck trusses while an aerial truck is likely necessary for through trusses.

5.5 GENERAL SAFETY PRECAUTIONS

The inspector and any assistants or crew members must maintain strict safety practices and be alert at all times when completing any truss inspection. The following general practices should be followed:

- Work site safety. Safety is the top priority.
- Be courteous and show proper etiquette towards the traveling public at all times.
- Perform a hazard assessment for each site and review the responsibilities of each of the workers.
- Set-up an approved traffic accommodation signing at each site before commencing with inspection.
- Wear a fall protection harness where there is a potential of falling more than 3.5 m or where the possibility of drowning exists.
- Install fall arrest lines where worksite access is beyond limits of only a harness and its lanyard.
- Personal protective equipment (PPE) such as hardhats, safety vests, gloves, and steel-toed safety boots must be used when at the bridge site.

A list of general site safety precautions is found in Section 3.3 of the Level 1 BIM Inspection Manual.

5.6 VISUAL INSPECTION

The visual inspection is important in assessing the condition of the elements of a truss bridge. Visual inspection items are listed below:

- Check the truss designation sign, the 'A' number, on the truss and record it on the inspection forms. Also locate, verify and record the bridge file number.
- Number all verticals with a lumber crayon, away from the traffic side of the member. This will help to orient the inspector while moving along the truss during inspection.
- Determine if the bearings are expansion or fixed bearings at each end of the span. Examine the bearings for signs that they are functioning and record the temperature and the position of the expansion bearings.
- Complete a BIM Level 1 inspection.
- Visually inspect all connections and members. Check connections for cracks, missing or loose bolts or rivets. Check the members for distortions.
- Note any strain indications and follow these up with an ultrasonic inspection.
- Note any collision damage and follow up with ultrasonic inspection on the distorted members and any members with common connections. Measure and record deformations and photograph the damage. Refer to Figure 5.3.
- Record any delaminations, scabs, gouges and elongated holes.
- Check any welds. However, trusses were generally built before weldable steel.
- Check floor beams and bottom laterals while on the bottom chord. Record any high water damage to the bottom chord and bottom laterals. Record any distortions. Check floor beam copes for cracks.
- Check the condition of the subdeck.

- Record the cleanliness of the bottom chord and bearings such as for gravel or dirt build-up.
- Record any corrosion and follow-up with ultrasonic testing to determine the degree of pitting and section loss. Document the test results.
- Note the condition of the paint in the protected area, the splash zone and the top chord.
- Check the connections at the top chord.
- Check the portals and sway bracing for high load damages. Record the extent of any distortions and follow-up with an ultrasonic inspection of the connections of damaged members and members with common connections.
- Check verticals and top chords for buckling characteristics while checking upper connections. Pony trusses are prone to out of plane bending in the top chord due to heavy loads. Measure and report any sweep - determine if the trusses were erected or strengthened in a questionable manner, or if the trusses are bending due to overloads. Photograph bending for future comparison.
- Check the bottom chords, bottom lateral bracing, floor beams, stringers and subdeck from the ground. Note any high water damage to bottom chords and bottom laterals. Check stringers and floor sags and cracks, and view the subdeck for indications of decay.
- Identify member connections that have been previously noted for monitoring by ultrasonic testing, such as rough holes.
- Check railing connections to the truss.
- Check the clearance of through trusses and verify posting.
- Check and record the condition of the strip deck and wheel guards.
- Photograph all problem items.

The inspector shall identify any additional testing that is required for the ultrasonic technician.

5.7 ULTRASONIC INSPECTION

The following general guidelines should be used when completing the ultrasonic inspection:

- Ensure that any coupling fluids that are used for testing are water-soluble.
- Check the following members:
    - Bottom chords adjacent to the bearings.
    - Both ends of all hanger members.
    - Both ends of all tension diagonals.
    - The cross connections of all diagonals and truss struts.
    - Any welds in main members.
    - Bottom chord and bottom lateral bracing members that have distortions due to high water.

- Both ends of any members showing accident damage and all common member connections. Measure and record deformations and take photographs of the damage. For example in Figure 5.3, if U3-L4W has collision distortion, ultrasonic inspection is required on all members that connect at U3, including the vertical, U3-L3 which is a compression member, U4-L4 at L4 which is a compression member, U5-L4, and any struts that are connected to the diagonal.

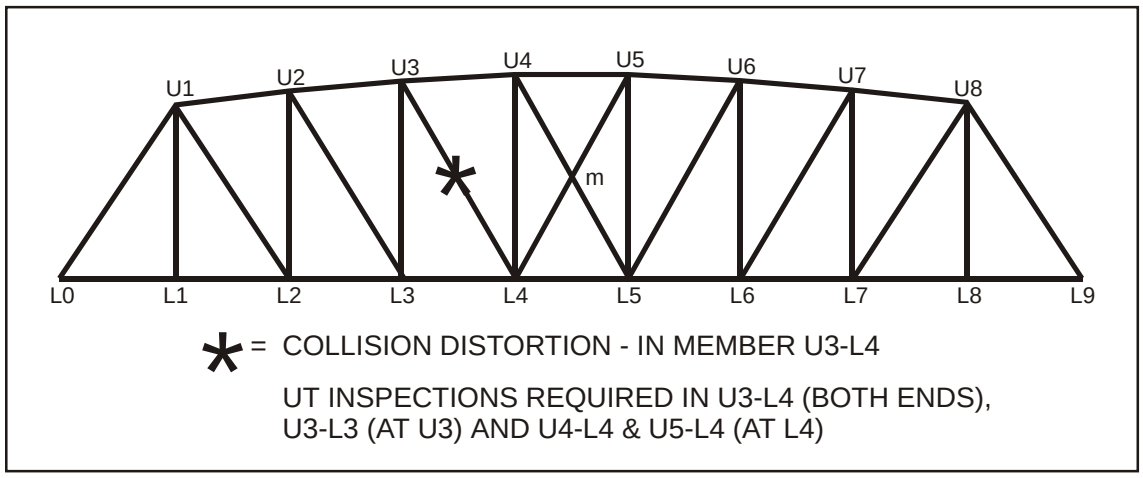

Figure 5.3 – Example: Ultrasonic Testing For Members with Collision Distortion

- Report all test results that indicate rough holes exist in a connection, and verify when possible.
- Record all ultrasonic work on the forms provided. Refer to Section 5.8.
- Mark all members that have definite cracks with a permanent mark. This mark should not be too large, nor should it be visible to traffic.
- Determine the cause of cracking whenever possible. The majority of cracks on truss members are due to fatigue or accident damage.
- Report and define the extent of corrosion damage. The extent of corrosion pitting or section loss must be investigated and recorded.

5.8 REPORTING - THE LEVEL 2 TRUSS INSPECTION FORMS

Specific forms have been designed for the different types of trusses and trusses with different numbers and configurations of members. There are currently over 100 different forms available, and the inspector should ensure that they have the correct form for the truss they are inspecting. The forms all have the same basic layout and are completed in the same way. Truss inspection forms are available from the Department.

5.8.1 THE TRUSS DIAGRAM

There is a truss diagram at the top of the first page of the inspection forms for each truss. This diagram should match the actual truss configuration of the bridge being inspected. If the diagram is correct, then the inspector knows that the form will have the proper numbers for

the members making up the truss. The diagram also shows the naming convention. An example of a truss diagram is shown in Figure 5.4.

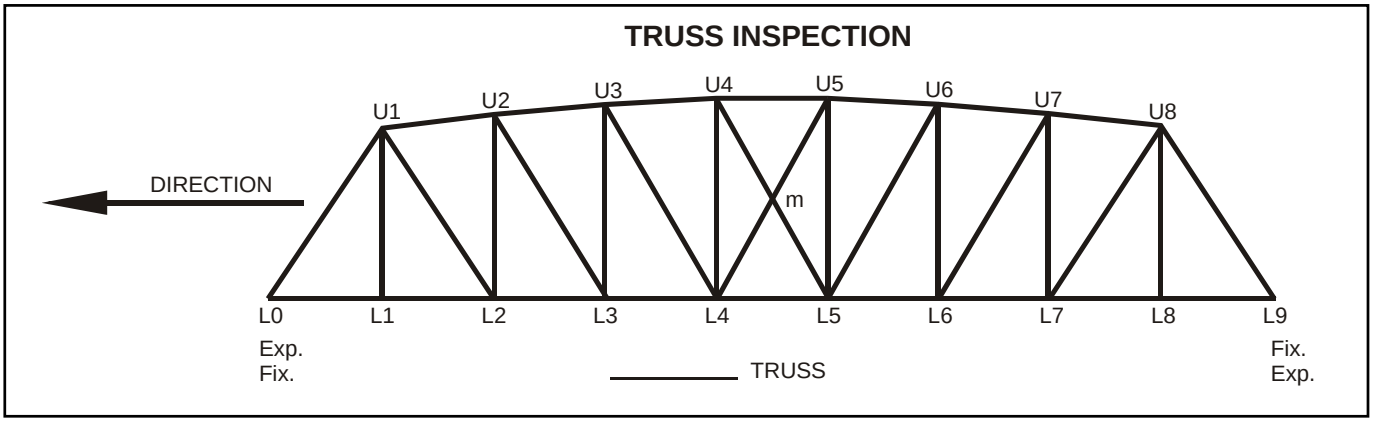

Figure 5.4 – Sample Truss Diagram from Top of Inspection Form

5.8.1.1 Direction

At the left side of the diagram at the top of the page is an arrow that points to the left edge of the page with the word 'Direction' above it. The inspector is to record the direction or end of the bridge where the L0 connection is located. This truss member notation is as defined in Section 5.3.2. The inspector can also record the nearest town or other landmark in addition to the direction as applicable.

5.8.1.2 Fixed or Expansion Bearings

There are the words 'Fix' and 'Exp' at each end of the span, immediately under the truss diagram. The inspector is to circle the type of joint that is present at each end of the span. Be sure to record whether the bearings are fixed or expansion bearings at both ends of every span.

5.8.1.3 Truss Description (_____ TRUSS)

Truss bridges have two trusses per span, one on each side of the roadway. The _____ TRUSS blank that is centred and directly under the truss diagram is for the inspector to record which of the two trusses is being inspected. Valid descriptions are a geographic description of the truss, such as north truss or south truss, and the direction of flow, such as 'South/downstream TRUSS'.

5.8.2 FOOTER INFORMATION

Typical Level 2 forms have descriptive information about the bridge or culvert in the header information at the top of the first page. The Level 2 truss inspection forms have general descriptive information about the bridge in the footer of the forms. A truss inspection form footer is shown in Figure 5.5.

BRIDGE NAME: ---------- SPAN NO. ---------- OF --------- DATE---------- FILE ----------

TRUSS IDENT: A---------- _ PANEL TRUSS ---------- FT./M. SPAN, INSPECTOR:---------- PAGE: 1

Figure 5.5 – Truss Inspection Form Footer information

5.8.2.1 Bridge Name

Use the established name of the bridge if it exists and is commonly known. Otherwise, describe the bridge by the nearest town, the highway number and the river or watercourse that it crosses.

5.8.2.2 Span Number (SPAN NO. ___ OF ___)

The inspector records the span number that is currently being inspected and the total number of spans in this field. Refer to Section 5.3.1 for additional information on span numbering.

5.8.2.3 Inspection Date (DATE)

Record the date of the Level 2 truss inspection.

5.8.2.4 Bridge File Number (FILE)

Enter the five-digit bridge file number.

5.8.2.5 Truss Identification Number (TRUSS IDENT: A_____)

The inspector is to record the unique Truss Identification ‘A’ Number for the truss in this field. Verify this value by confirming the same identification number appears on the truss designation sign mounted on the truss. The truss identification number is described in Section 5.3.5. If the truss identification plaque is missing, recommend a replacement.

5.8.2.6 Number of Truss Panels

If the inspector has the correct form, the number of panels the truss has will already be on the form in the footer. For example, the form would show ‘9 PANEL TRUSS’. Verify that this truss panel information is correct when on site.

5.8.2.7 Span Length (_____ FT./M. SPAN)

Record the length of the truss span that is being inspected in feet or metres. Cross out the system of measurement that is not used. Therefore, if the value recorded is 50 ft, be sure to cross out the ‘m’ for metres to avoid confusion. Original truss records are all in imperial units of measurement.

5.8.2.8 Inspector

The inspector is to record their name in this field.

5.8.3 THE BODY OF THE LEVEL 2 TRUSS INSPECTION FORMS

The truss inspection forms are specific to the particular span that is being inspected and the information is recorded on several pages for each side of each truss span. All of the Level 2 forms for the different truss configurations have a similar format, and include fields for every truss member. The Main Body of the truss inspection form is shown in Figure 5.6.

MEMBER		ULTRASONIC INS.						OTHER ITEMS	MEMBER	
		A END			B END					
A END	B END	No Crack	Crack Under Rivet Head	Crack Beyond Rivet Head	No Crack	Crack Under Rivet Head	Crack Beyond Rivet Head		Acceptable Member	Reject Member
TOP CHORD										
L0 - U1										
U1 - U2		ROWS CONTINUE, SHOWING EVERY TRUSS MEMBER . . .								
U2 - U3										

Figure 5.6 – Main Body of Truss Inspection Forms

5.8.3.1 Member, A End and B End

Each row in the body of the form is for a separate truss member. The member designations are already on the forms, and they correspond to the picture at the top of the form. This field also defines one end of the member as the 'A End' and the other as the 'B End'. Similar member types are grouped together on the forms, such as Top Chord, Verticals, and Diagonals as shown in Figure 5.6.

5.8.3.2 Ultrasonic Inspections, A End and B End

There are three columns for each end of the members: No Crack, Crack Under Rivet Head, and Crack Beyond Rivet Head. The inspector shall put an 'X' in the column that applies for all member ends that received an ultrasonic inspection. The 'Other Items' field can be used for further clarification.

5.8.3.3 Other Items

This is a comment field where the inspector notes any additional, relevant information for the specific member. The inspector is not required to comment on all members, just when there are noteworthy observations. Comments may pertain to visual or ultrasonic inspections. Refer to General Reporting Notes in Section 5.8.4 for more information.

5.8.3.4 Accept/Reject Member

The inspector must either accept or reject each member of the truss based on the visual inspection. Place an 'X' in one of the two columns for *all* members. Every truss member row should have an 'X' in one of the right hand columns.

5.8.4 GENERAL REPORTING NOTES

Report the results of testing on field inspection sheets specific to the truss design characteristics, as described in the previous sections. Record the following:

- Truss design number and bridge file number.
- The structure name or location and stream.
- The span number and the truss (e.g. south truss is downstream, span 1).
- The inspector's name and date inspected.
- Whether the bearings are fixed or expansion at each end of the span.
- The extent of corrosion.
- Any rough holes; be specific.
- All ultrasonic work. Check off only the connections that are tested.
- All noteworthy observations of members.
- Whether each member is accepted or rejected.

Also identify the following:

- All cracks and all members with distortion. Record and draw information on the line diagrams for each applicable span as described in Section 5.9.
- Any recommendations to straighten or replace specific members.
- The steel plan identification for all cracked or distorted members. This is the 'A' drawing mark number for the member and the reference drawing number. Be specific, as in U1-L2W, D1R, for example. Top and bottom gussets marks 'pa' and 'dc' are not required.
- The cause of cracking. Most cracks in members are due to fatigue or accident damage; try to determine the cause.

Items requiring immediate attention shall be reported to the project coordinator and the appropriate Bridge Manager as soon as possible.

5.9 REPORTING – THE LINE DIAGRAM

An additional item that inspectors should have is a line diagram of the truss. This diagram depicts all members, including the top and bottom members as well as the bracing that connects the two trusses for the span. Figure 5.7 is a sample line diagram, complete with inspector's remarks.

The inspector is to show all members that require maintenance, straightening or replacement on the line diagram. A common approach is to highlight or colour the members and connections that require attention on the diagram. Generally, green is used for members that require straightening and red is used to denote members that should be replaced. Regardless of the colours used, a legend defining the colours is included on all line drawings.

The inspector shall give all details necessary for straightening and replacing members on the line diagram. This includes all information that describes the member, and references the member back to a specific shop drawing. When members require replacement, the inspector also decides which gussets should be replaced with the member and which should be reused. This is all to be noted in the 'Remarks' section of the line diagram.

Any other features that are on the shop drawings but no longer apply to the member that requires replacement are also identified. For example, the inspector would note that holes for the lattice rail are not required on a replacement member when the lattice rail at the site has been replaced by flexbeam. In this case, the lattice rail would not be required even though the shop drawings show lattice rail holes in the member. Also note any holes that are required in the member and if they are to be drilled in the field. Be aware that the original portal bracing members may no longer be applicable due to modifications in most trusses - ensure the correct drawing number is provided.

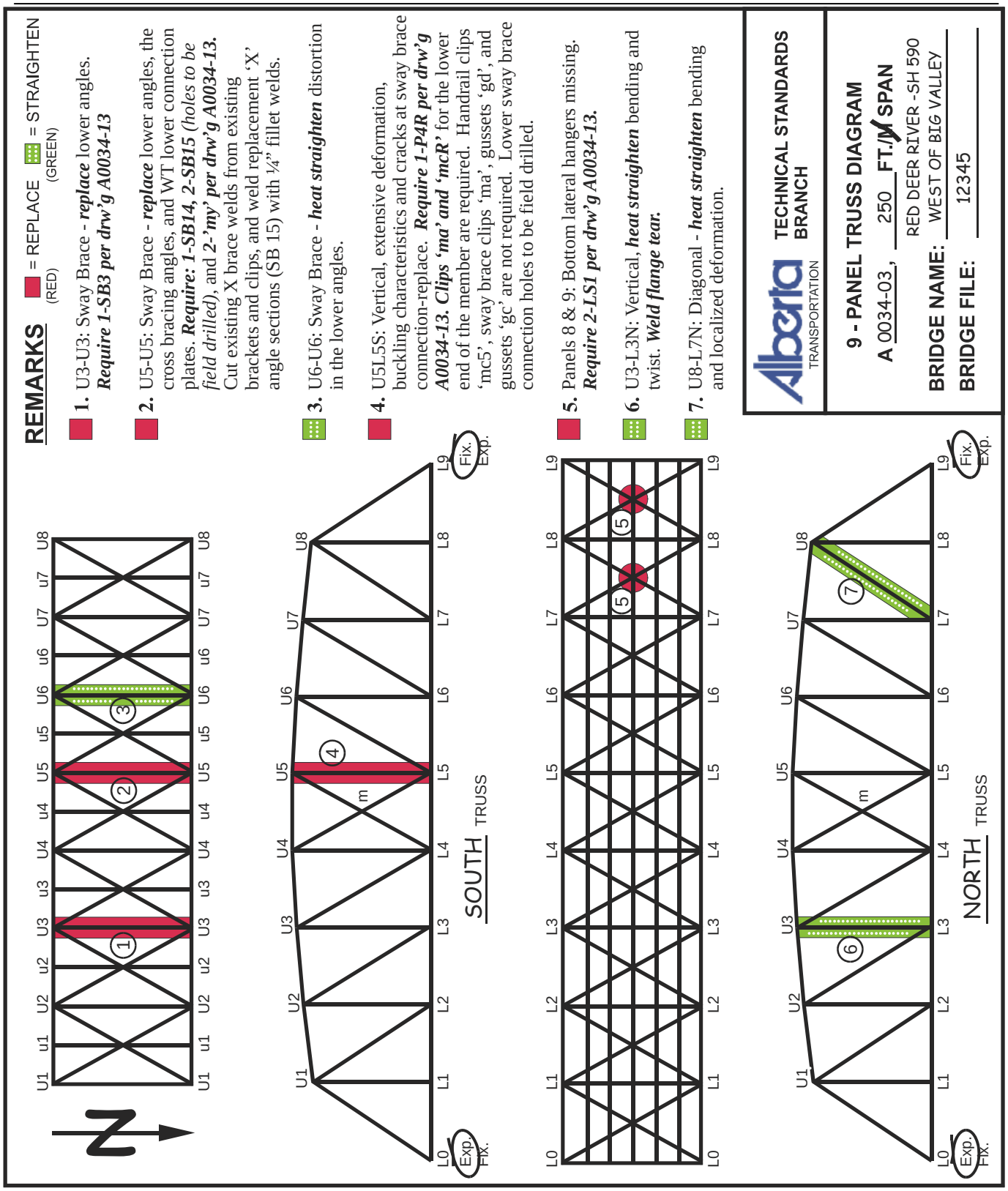

Figure 5.7 – Sample of Completed Line Diagram

5.10 INSPECTION SUMMARY AND RECOMMENDATIONS SHEETS

Ultrasonic Truss Inspection summary sheets are completed for each site that is inspected. The inspector completes the summary sheets after the inspection is done. The purpose of the sheets is for the inspector to report items that require attention and recommend solutions. The Department will decide which items will be completed and when they will be completed after the inspection report has been submitted.

The summary sheets and recommendations are based on the full inspection of the bridge, and not just the ultrasonic inspection and the inspection of the truss spans. The summary sheets provide information on recommended maintenance.

5.10.1 HEADER INFORMATION

Level 2 forms also have descriptive information about the bridge or culvert in the header information at the top of the first page. This truss inspection header is shown in Figure 5.8.

ULTRASONIC TRUSS INSPECTION

File: _____

Bridge Name: _____

Truss Ident. No's.: _____

Inspection Date: _____

Figure 5.8 – Truss Inspection Summary Form, Header Information

5.10.1.1 File

This is the bridge file number as previously described in Section 5.3.4. It is also recorded at the top of any additional summary sheets.

5.10.1.2 Bridge Name

The bridge name, as defined in Section 5.8.2.1.

5.10.1.3 Truss Identification Numbers (Truss Ident. No's.)

List all of the truss identification numbers that apply to the bridge as defined in Section 5.3.5.

5.10.1.4 Inspection Date

Record the date or dates that the bridge was inspected.

5.10.2 RECOMMENDATIONS ARISING FROM INSPECTION

This is the main body of the summary sheets, and is shown in Figure 5.9.

DATE: _____

Recommendations Arising From Inspection

TRUSS IDENT.	PROBLEM ITEM	RECOMMENDATION	PAGE REF.	AUTHORIZED/ REMARKS
	ROWS CONTINUE…			

Attn: Bridge Manager DATE: _____

Please return this form to the Technical Standards Branch, Edmonton, when report has been filed or when materials have been ordered.

Figure 5.9 – Truss Inspection Summary Form, Main Body

5.10.2.1 Truss Identification (Truss Ident.)

Identify the truss that has a problem. This is typically the truss identification number, span number, and specific truss location, such as 'A0139-03, Span 2 of 4 (west)'. For general problems, the area would be identified in this field, such as 'deck' or 'abutments'.

5.10.2.2 Problem Item

A brief description of the problem item. This may be a general problem, such as washing or replacing wheel guards or this may be a problem specific to a particular member. If referring to a specific member, it should be identified in this field. For example, a problem with a specific member may be noted as: U2-U2 sway bracing has 50 mm bending.

5.10.2.3 Recommendation

List the recommended action for the member. This recommended action could be 'no action', heat straighten the member, replace the member, or even paint or wash the truss.

5.10.2.4 Page Reference (Page Ref.)

Record all page numbers of photographs in the inspection report that illustrate details.

5.10.2.5 Authorized/Remarks

This field is not to be completed by the inspector. The Department will review the comments and recommendations made by the inspector and record their authorization or comments in this field after the final inspection report has been submitted to the Department.

5.10.2.6 Date

The date field located above the 'Recommendations Arising From Inspection' table is for the department to record the date that the problem items were reviewed or authorized.

The date field located below the 'Recommendations Arising From Inspection' table is for the Bridge Manager to record the date that the recommendations and the Department's remarks and authorizations were reviewed.

5.10.2.7 General Comments

The inspector may add general comments relating to the truss condition and why the inspection was necessary. These can be recorded in the area directly above the 'Recommendations Arising From Inspection' title. The inspector may take as much room as necessary for these comments when using an electronic copy of the form.

A continuation form is to be used if the inspector requires additional sheets for the 'Recommendations Arising from Inspection' table.

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DO NOT
SEPARATE

ULTRASONIC TRUSS INSPECTION

File: _____

Bridge Name: _____

Truss Ident. No's.: _____

Inspection Date: _____

DATE: _____

Recommendations Arising From Inspection

TRUSS IDENT.	PROBLEM ITEM	RECOMMENDATION	PAGE REF.	AUTHORIZED/ REMARKS

Attn: Bridge Manager DATE: _____

Please return this form to the Technical Standards Branch, Edmonton, when report has been filed or when materials have been ordered.

FILE: ______

Recommendations Arising From Inspection

TRUSS IDENT.	PROBLEM ITEM	RECOMMENDATION	PAGE REF.	AUTHORIZED/ REMARKS