**Public Works Department**

**Bridge Asset Inventory Procedure**

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# BRIDGE ASSET INVENTORY PROCEDURE

## OVERVIEW

Bridge structures are a significant and increasingly important element of Overland Park's transportation infrastructure. New structures being built need to be added to the City's inventory while existing structures require inspection, load rating and maintenance. The upkeep of the data in the City's inventory requires coordination with the consultant hired for inspections, PW-Maintenance, PW-Engineering Project Managers, and the City's licensed engineer in charge of the bridge inspection program (hereinafter the City's Bridge Manager).

The procedures outlined in this document follow federal guidelines and state law. If at any time there appears to be a conflict between this document and state/federal law, the current law shall prevail.

## GENERAL DEFINITIONS

*BRIDGE* as defined by the NBIS is "a structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads, and having an opening measured along the center of the roadway of more than 20 feet between undercopings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it may also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening."

*GBA BRIDGE MASTER* is the computer program used to manage the database of bridge inventory, including inspections and maintenance.

*KANSAS BRIDGE INSPECTION STANDARDS (KBIS)* are additional requirements to the NBIS developed by KDOT.

*NATIONAL BRIDGE INSPECTION STANDARDS (NBIS)* published in the Code of Federal Regulations (23 CFR 650.3) are the federal regulations establishing requirements for inspection procedures, frequency of inspections, qualifications of personnel, inspection reports, and preparation and maintenance of a State bridge inventory. **The NBIS applies to all structures defined as bridges located on or over all public roads.**

*NATIONAL BRIDGE INVENTORY (NBI)* is the aggregation of structure inventory and appraisal data collected to fulfill the requirements of the NBIS.

*PONTIS* is the computer program used by KDOT for bridge management. Pontis is an AASHTOWARE product which is supplied to the City from KDOT at no cost.

*PUBLIC ROADS* are those roads available to the public for use regardless of the owner (i.e., a bridge on a private street in a subdivision that can be used by the general public is still subject to the NBIS).

*RECORDING AND CODING GUIDE FOR THE STRUCTURE INVENTORY AND APPRAISAL OF THE NATION'S BRIDGES* provides guidance for evaluating and coding specific bridge data.

*STRUCTURE INVENTORY AND APPRAISAL SHEET (SI&A)* is the graphic representation of the data recorded and stored for each NBI record in accordance with the "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges".

## NEW INVENTORY/BRIDGE REPAIR PROJECTS

*PRIOR TO PLAN APPROVAL*

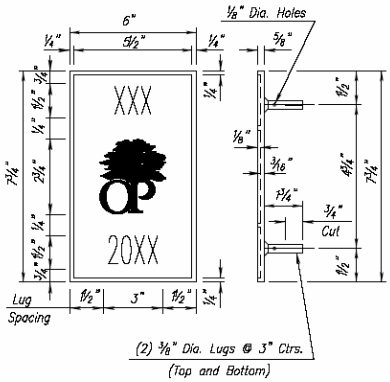
The Project Manager/Plan Reviewer shall obtain the information listed below from the Engineer prior to final construction approval on any new bridge project or bridge rehabilitation project that affects the waterway opening at the bridge. The City's Bridge Manager will review this information.

- "Hydraulic Assessment Checklist for Drainage Design"
  (Attachment A-English)
  A licensed professional engineer in the State of Kansas must seal this document and the supporting calculations. The scour analysis shall be performed in accordance with the current KDOT procedures. This checklist is available in both English and metric units and is located in the KDOT Bridge Manual as well as on KDOT's website.

In the event that the bridge is a new construction the City's Bridge Manager will provide a new bridge number to the Engineer and Project Manager/Plan Reviewer. Overland Park Bridge ID numbers are three digits long and appear at the end of the fifteen digit KDOT structure number. KDOT is responsible for assigning the first twelve digits.

Bridges that are being replaced as part of a project will also receive a new bridge number and the previous number will be retired. Files for retired numbers will be placed in the "Dead Bridge" file.

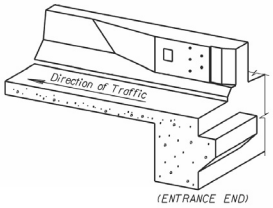
Existing bridges that are new to Overland Park due to annexation shall receive a new Overland Park bridge number like a newly constructed bridge. Inspection records from the previous owner will be added to the Overland Park inspection files.




BRIDGE NUMBER PLATE
( 1 Required)
(See Construction Layout for Location)

As part of the construction project a plaque shall be installed designating the Overland Park structure number. For box culverts meeting the definition of a bridge, the plaque shall be placed in the North West inside barrel corner. Bridges shall have the plaque placed on the inside

face of the approach corral rail for southbound traffic on north/south bridges and on the inside face of the approach corral rail for westbound traffic on east/west bridges. For bridges carrying traffic in one direction only, the plaque shall be placed on the inside face of the approach corral rail as shown.




*COMPLETION OF CONSTRUCTION*

The Project Manager/Plan Reviewer shall obtain the information listed below from the Engineer upon completion of the bridge construction. This information shall be submitted to the City's Bridge Manager to create a new bridge file and add the new information to GBA Bridge Master.

- A "half-size" set of plans, hard copy and in Adobe pdf format.

- SI&A information as required by FHWA and KDOT, by completion of the SI&A sheet (Attachment B). Please note that Attachment B is in English units. If the bridge was designed and detailed in metric, the information shall be supplied in metric units.

- Supporting load rating information. Where possible the computer program "BRASS" shall be utilized for the load ratings. Ratings shall be performed in accordance with procedures outlined in this document. The supporting load rating calculations must be provided in written form and sealed by a licensed professional engineer in the State of Kansas. Also, the computer data files and output files must be provided in both electronic and hard copy forms. Attachment C is the City's form to show the results of the calculations.

- Digital photos of the upstream and downstream elevations of the structure and the channel, both roadway approaches and the superstructure elements from the underside of the bridge.

This information shall be provided to the City's Bridge Manager within 90 calendar days of the opening of the bridge to the traveling public for subsequent submittal to KDOT within 180 days of the opening per KDOT requirements. Attachment F shall be submitted to KDOT along with the electronic copy of the revised PONTIS file and a letter of explanation for adding/removing a bridge from the inventory once the City's Bridge Manager has reviewed and approved the submittal.

## LOAD POSTING OF BRIDGES

*LOAD RATING*

Load rating of the City's bridges shall be performed as described in the current version of the AASHTO "Manual for Condition Evaluation of Bridges" using the Load Factor Method. As-built construction plans and consideration for the extent of deterioration of the structure should be considered when determining its capacity. A comparison of the live load capacity of a member to the applied rating truck load will yield a rating for both the Inventory and Operating levels, defined as follows:

*Inventory Rating:* The load level that can safely utilize an existing structure for an indefinite period of time.

*Operating Rating:* The absolute maximum permissible load level to which the structure may be subjected. This is sometimes referred to as the "permit" level.

The City's bridges will be rated using KDOT load rating/posting trucks as shown in Attachment D, except for the permit vehicles. Calculations will be performed to establish Inventory and Operating Ratings for each of these load rating trucks and will be compiled on the City's form (Attachment C). This form shall be signed and sealed by a licensed professional engineer in the State of Kansas.

*LOAD POSTING*

A bridge that cannot carry a minimum live load of 3 tons must be closed to traffic. Bridges with an operating rating less than the maximum legal load must be posted. Other than these requirements, there are no specific requirements from AASHTO, FHWA, or KDOT on how to load post bridges. However, each entity expresses a guideline to be used by the bridge owner:

*AASHTO "Manual for Condition Evaluation of Bridges":*

"Weight limitations for the posted structure should conform to local regulations or policy within the limits established by this Manual. A bridge should be capable of carrying a minimum live load weight of three tons at Inventory or Operating level."

"A bridge owner may close a structure at any posting threshold, but bridges not capable of carrying a minimum gross live load weight of three tons must be closed."

*FHWA "Recording and Coding Guide for the Structure Inventory and Appraisal of the Nation's Bridges":*

> "Although posting a bridge for load-carrying capacity is required only when the maximum legal load exceeds the operating rating, highway agencies may choose to post at a lower level."

*KDOT Bridge Manual:*

> "It is up to the local authority to post the bridge at an appropriate level, based on engineering judgment and/or the recommendation of their Consultant, and to extend the life of the structure.
> The posting level must be less than or equal to the Operating rating. The public authority responsible for inspection and maintenance of the structure has the authority to post anywhere within this range. It may not be prudent nor advisable to commonly post near the operating rating. A common level of posting is at approximately midway between inventory and operating rating. On a steel structure this would be about 65% of the yield stress in the steel.
> It is recommended that each city or county develop a posting or signing policy to be consistent in their signing if they have not already done so."

It is the general policy of the City of Overland Park to post bridges (as defined by NBIS) as shown in TABLE I. Current city truck routes can be found in Ordinance No. TR-2107.

The Public Works Department retains the right to vary from this established policy for specific situations as may be considered on a case by case basis. These special cases may be situations where unusual circumstances or considerations are present such as special truck configurations, limited access requirements, traffic volume and speeds, the likelihood of overweight vehicles and the enforceability of a weight posting.

| **Rating Condition** | | | | | **Posting Policy** | |
|---|---|---|---|---|---|---|
| | | | | | Truck Route | Non-Truck Route |
| Inventory Rating | < | Operating Rating | < | 3 TONS | Bridge Closed | Bridge Closed |
| Posting Truck Weight * | < | Inventory Rating | < | Operating Rating | No Posting Required | No Posting Required |
| Inventory Rating | < | Posting Truck Weight | < | Operating Rating | Average of IR and OR ** | No Posting Required |
| Inventory Rating | < | Operating Rating | < | Posting Truck Weight | Inventory Rating | Average of IR and OR |

* The posting weight of the trucks is shown in Attachment E.
** If average exceeds posting truck weight, no posting required.

**TABLE I**

There will be instances where plans are not available and a concrete bridge cannot be rated using calculations. According to AASHTO, "a concrete bridge need not be posted for restricted loading when it has been carrying normal traffic for an appreciable length of time and shows no distress. The general rule may apply to bridges for which details of the reinforcement are not known."

It shall be the established policy of the City of Overland Park that in concrete bridges where the details of reinforcing are not known, posting shall be at the level as recommended by the City's Bridge Manager. In general, if the bridge is not currently posted, has been carrying normal traffic for an appreciable length of time and shows no signs of distress, the bridge need not be posted for load restrictions. If the bridge is currently posted, the posting need not change unless distress or deterioration becomes evident that warrants reduced load capacity.

*SIGNING*

Similar to the lack of criteria for load posting levels, there are no established guidelines for weight limit signs to use for a specific structure.

The weight limit sign adopted for use by the City, in accordance with the FHWA "Manual on Uniform Control Devices" (MUTCD), is the three-vehicle gross weight sign, R12-5. The R12-5 goes into detail by defining total weight of the vehicle for three basic truck configurations. There is a simpler one-vehicle sign, R 12-1, which may be used in special circumstances.

R12-1

R12-5

The use of these signs does not attempt to sign for trucks utilizing the maximum axle weights established by the State of Kansas. It is based on the truck loading configurations of the KDOT Load Rating/Posting Truck (Attachment D).

When using the R 12-5 sign, the weights to be shown shall be determined as follows:

*SINGLE TRUCK: H Truck and Type 3 Truck*

R12-5

- Determine necessary rating for the H Truck and the Type 3 Truck using TABLE I.
- If both trucks are lower than their posting truck weight, use the lowest of the two ratings on the sign.
- If only one truck is lower than their posting truck weight, use the non-compliant rating, provided that the non-compliant weight is lower than the operating rating of the other vehicle. At no time should the posted weight exceed either of the vehicles operating ratings.

Example 1 on a Non-Truck Route:

| Truck | Posting Truck Weight | Inventory Rating | Operating Rating | Individual Truck Rating | Signed Posting |
|---|---|---|---|---|---|
| H Truck | 12.5 | 8 | 13 | None Required | 13 |
| Type 3 Truck | 25 | 14 | 24 | 19 | |

Example 2 on a Truck Route:

| Truck | Posting Truck Weight | Inventory Rating | Operating Rating | Individual Truck Rating | Signed Posting |
|---|---|---|---|---|---|
| H Truck | 12.5 | 8 | 13 | 10 | 10 |
| Type 3 Truck | 25 | 14 | 24 | 14 | |

Note: The policy is less tolerant on truck routes.

*TRACTOR SEMI-TRAILER: HS Truck and Type 3S2 Truck*

- Follow the same procedure as for the single truck, using the HS Truck and the Type 3S2 Truck.

R12-5

*TRAILER COMBINATION VEHICLES: Type 3-3 Truck*

- There is only vehicle in this class that needs to be analyzed. Determine the ratings and any necessary postings using the Type 3-3 Truck.

R12-5

Where posting is proposed for a bridge where proper load rating calculation cannot be performed because the details of the reinforcement are not known, the City has the option of using the single-vehicle gross weight sign (R12-1).

**INSPECTION**

In general, bridges (as defined by the NBIS) in the City of Overland Park are inspected on a 24 month cycle. In addition, the driving surfaces, barriers and sidewalks of those bridges owned by KDOT with a deck maintained by the City of Overland Park will be inspected to ensure needed repairs are reported to the proper authority. KDOT will supply, on request, the latest inspection records and SI&A sheets for these bridges to the City. The City's Bridge Manager will be responsible for requesting this information to coordinate maintenance activities.

Smaller box culverts are inspected by Public Works Maintenance.

Concrete bridges for which details of the reinforcement are not known will be identified and inspected on a 12 month cycle. According to AASHTO "until such time as the bridge is either strengthened or replaced, it should be inspected at frequent intervals for signs of distress." Other bridges with deficiencies that warrant more frequent inspections shall be inspected as directed by the City's Bridge Manager.

The required inspections are completed by qualified personnel and are performed in accordance with the AASHTO "Manual for Condition Evaluation of Bridges", current edition to comply with the NBIS. After each field inspection, a SI&A sheet is filled out with the results of the inspection. The field inspection should produce recommended maintenance activities for each bridge. These recommendations are then used to prioritize maintenance tasks over the following two years.

The City's Bridge Manager ensures that all individual paper files and master lists are updated. KDOT receives an electronic version of the data in PONTIS. Other information required by the KBIS to be kept on file and submitted to KDOT includes a map of the bridges new to the inventory, a master list of bridges requiring fracture critical, underwater or other special inspections, and a master list of abutment and pier foundation types. KDOT will send the City an updated database and this information is then inserted into GBA Bridge Master.

**FILES**

Each bridge under authority of the City of Overland Park has a bridge file on record in the Department of Public Works as well as an electronic file in GBA Bridge Master.

There are four sets of bridge types:

| | | |
|---|---|---|
| 1) | Bridges owned and maintained by OP | XXX |
| 2) | Bridges owned by KDOT, deck maintained by OP | 8XXX |
| 3) | Pedestrian bridges owned and maintained by OP Public Works | 9XXX |
| 4) | Pedestrian bridges owned and maintained by OP Parks and Rec | 7XXX |

Each bridge has a paper file with the following information, if available:

- SI&A sheet with Bridge Inspection Information and Photos
- Plan Drawings
- Load Rating Calculations
- Hydraulic Assessment Checklist
- Repairs/Maintenance Items

Electronically the files for inspections are stored in K:\Operations\Bridge\Bridge Inspection and are sorted by the year of inspection. The electronic copies of the bridge plans and hydraulic assessments are stored in K:\Operations\Bridge\Bridge Plans along with any load ratings older than 1998.

The SI&A sheets are brought into GBA Bridge Master through Access and SQL commands and make up the body of the main bridge file in GBA Bridge Master.

Electronic files are attached in GBA with the following conventions:
Main Bridge File:

| | |
|---|---|
| Load Rating | Load_Rating_YEAR_OPID |
| Plans | Bridge_Plans_OPID |
| Plans for Rehabs | Bridge_Plans_REHABTYPE_YEAR_OPID |
| Hydraulic Assessment Checklist | Hydraulic_Assessment_OPID |

Inspection files are attached to the individual inspection record:

| | |
|---|---|
| Inspection Form | Inspection_YEAR_OPID |
| Photos | Photos_YEAR_OPID |

The City's Bridge Manager is responsible for updating the files and GBA Bridge Master.

Attachment A

## I. GENERAL INFORMATION

Structure Identification:_____
Designer:_____
_____
Date:_____

**KDOT PROJECT NO:** _____ **ROUTE:** _____ **COUNTY:** _____
**STREAM NAME:** _____
**DRAINAGE AREA:** _____
**LEGAL DESCRIPTION:** _____
**LOCATION:** _____
_____

**EXISTING BRIDGE:**
NUMBER: _____
BRIDGE TYPE: _____
_____
_____
_____
BRIDGE LENGTH: _____
_____
SUFFICIENCY: _____ LOAD POSTING: _____
YEAR BUILT: _____
YEAR MODIFIED: _____
_____
_____

**NATIONAL HIGHWAY SYSTEM:** _____
**FUNTIONAL CLASSIFICATION:** _____
**STP CLASSIFICATION:** _____
**TRAFFIC:** _____
_____

**DETOUR:** _____
_____
_____

**ENVIRONMENTAL ISSUES:** _____
_____
_____
_____
_____

Attachment A

## II. HYDROLOGY

Structure Identification:_____
Designer: _____
_____
Date: _____

**DRAINAGE AREA:** _____

**WATERSHED DESCRIPTION:** _____

**BASIN PARAMETERS:** _____

**RAINFALL:** _____

_____ _____
_____ _____
_____ _____

**DESIGN FLOWS:** _____

Q2 = _____ Q10 = _____
Q25 = _____ Q50 = _____
Q100 = _____ Q500 = _____

Attachment A

## III. HYDRAULICS

Structure Identification:_____
Designer:_____
_____
Date: _____

**DRAINAGE AREA:** _____

**PROPOSED BRIDGE:**
Bridge Number: _____
Description: _____

Bridge Length: _____

**RISK:** _____

**HISTORIC HIGHWATER:** _____

**HYDRAULIC CONTROLS:** _____

Attachment A

## III. HYDRAULICS

Structure Identification:_____
Designer:_____
_____
Date: _____

**WSE SUMMARY:**

| (at BACKWATER LOCATION) | Unrestricted Rating. ("Natural") WSE) | Exist Bridge Rating (WSE) | Exist Bridge Backwater (in Ft.) | Proposed Bridge Rating (WSE) | Proposed Bridge Backwater (in Ft.) | **Change in Backwater** (in Ft.) |
|---|---|---|---|---|---|---|
| Q2 | | | | | | |
| Q10 | | | | | | |
| Q25 | | | | | | |
| Q50 | | | | | | |
| Q100 | | | | | | |

**WSE SUMMARY:**
**(at STRUCTURE LOCATION)**

| | Existing Struct. (TO = _____) | | Prop.Structure (TO = _____) | |
|---|---|---|---|---|
| | Elevation | Clearance | Elevation | Clearance |
| Q25 | | | | |
| Q50 | | | | |
| Q100 | | | | |

**SITE DATA SUMMARY:**

Reach (valley-stream) Slope: _____

Exist. TO: _____ Exist. Overtopping Elev: _____
Proposed TO: _____ Proposed Overtop Elev: _____
Change in TO: _____ Change in Overtop: _____

Exist. Headroom: _____ (Streambed to Crown Grd)
Exist. Superstruct. Depth: _____
Prop. Superstruct. Depth: _____
Proposed Freeboard (Low Steel - Overtopping El.): _____

Exist. Waterway (smaller of total waterway or Q100 waterway): _____
Prop. Bridge Waterway at same Elevation: _____

**FREQUENCY SUMMARY:**

What is the frequency for the desired level of service, considering traffic count and type of highway? _____

Existing Overtop Frequency: _____
Proposed Ovrtop Frequency: _____
Frequency to Subgrade Elev: _____
Contact w/ 'low steel' (TO): _____

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Attachment A

## IV STREAM STABILITY and SCOUR

Structure Identification:_____
Designer:_____
_____
Date: _____

**GENERAL INFORMATION:**

Stream Name: _____
Drainage Area: _____
Conveyance Distribution
at Approach Section (Q100): Left Overbank _____ Main Channel _____ Right Overbank _____

Contraction Ratio:_____ (Bridge length over Q100 Flood Plain width)
Proposed Bridge "Set-Back" from Lt. Channel: _____
Rt. Channel: _____

**VELOCITY SUMMARY:**

| | Unrestricted ('Natural) Velocity | Exist Bridge Velocity | Proposed Bridge Velocity | Change in Velocity |
|---|---|---|---|---|
| Q2 | _____ | _____ | _____ | _____ |
| Q10 | _____ | _____ | _____ | _____ |
| Q100 | _____ | _____ | _____ | _____ |

**SCOUR:** (Open Span) Scour Discharge: QOT: _____ Q100: _____ Q500: _____
Degradation Estimate: _____ ft.

| Contraction Scour: | Pier Scour: | Abutment Scour: |
|---|---|---|
| Q Service: _____ ft. | Q Service: _____ ft. | Q Service: _____ ft. |
| Q500: _____ ft. | Q500: _____ ft. | Q500: _____ ft. |

Stream Force:

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Rev. 12/7/05

Attachment A

## IV STREAM STABILITY and SCOUR

Structure Identification:_____
Designer:_____
_____
Date: _____

**SCOUR:** (Culvert) Exit Scour Q100: _____ft. Entrance Scour Q100: _____ft.

**TALLEST COTTONWOOD UPSTREAM REACH:**

**RECOMMENDED COUNTERMEASURES:**

**STREAM STABILITY:**

Channel Change: (Stream Work)

Bed/Bank Material:

Channel Description:

Rosgens Stream Class:

Degradation/Aggrgte:

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Attachment A

## V. LIST OF ATTACHMENTS AND LOOSE ENDS

Structure Identification:_____
Designer:_____
_____
Date: _____

List of Attachments:

Comments, Special Notations:

ATTACHMENT B

# Structure Inventory and Appraisal Sheet

NATIONAL BRIDGE INVENTORY - - - - - - - STRUCTURE INVENTORY AND APPRAISAL 10/15/94

********** IDENTIFICATION **********
(1) STATE NAME - _____ CODE ___
(8) STRUCTURE NUMBER #_____
(5) INVENTORY ROUTE (ON/UNDER) - ____ = _____
(2) HIGHWAY AGENCY DISTRICT __
(3) COUNTY CODE ___ (4) PLACE CODE _____
(6) FEATURES INTERSECTED - _____
(7) FACILITY CARRIED - _____
(9) LOCATION - _____
(11) MILEPOINT/KILOMETERPOINT ____.__
(12) BASE HIGHWAY NETWORK - _____ CODE _
(13) LRS INVENTORY ROUTE & SUBROUTE #_____
(16) LATITUDE __ DEG __ MIN __.__ SEC
(17) LONGITUDE __ DEG __ MIN __.__ SEC
(98) BORDER BRIDGE STATE CODE ___ % SHARE __ %
(99) BORDER BRIDGE STRUCTURE NO. #_____

********** STRUCTURE TYPE AND MATERIAL *********
(43) STRUCTURE TYPE MAIN: MATERIAL - _____
TYPE - _____ CODE ___
(44) STRUCTURE TYPE APPR: MATERIAL - _____
TYPE - _____ CODE ___
(45) NUMBER OF SPANS IN MAIN UNIT ___
(46) NUMBER OF APPROACH SPANS ___
(107) DECK STRUCTURE TYPE - _____ CODE _
(108) WEARING SURFACE / PROTECTIVE SYSTEM:
A) TYPE OF WEARING SURFACE - _____ CODE _
B) TYPE OF MEMBRANE - _____ CODE _
C) TYPE OF DECK PROTECTION - _____ CODE _

********** AGE AND SERVICE **********
(27) YEAR BUILT ____
(106) YEAR RECONSTRUCTED ____
(42) TYPE OF SERVICE: ON - _____
UNDER - _____ CODE __
(28) LANES: ON STRUCTURE __ UNDER STRUCTURE __
(29) AVERAGE DAILY TRAFFIC _____
(30) YEAR OF ADT ____ (109) TRUCK ADT __ %
(19) BYPASS, DETOUR LENGTH ___ KM

********** GEOMETRIC DATA **********
(48) LENGTH OF MAXIMUM SPAN ____.__ M
(49) STRUCTURE LENGTH ____.__ M
(50) CURB OR SIDEWALK: LEFT __.__ M RIGHT __.__ M
(51) BRIDGE ROADWAY WIDTH CURB TO CURB ___.__ M
(52) DECK WIDTH OUT TO OUT ___.__ M
(32) APPROACH ROADWAY WIDTH (W/SHOULDERS) ___.__ M
(33) BRIDGE MEDIAN - _____ CODE _
(34) SKEW __ DEG (35) STRUCTURE FLARED ___
(10) INVENTORY ROUTE MIN VERT CLEAR __.__ M
(47) INVENTORY ROUTE TOTAL HORIZ CLEAR __.__ M
(53) MIN VERT CLEAR OVER BRIDGE RDWY __.__ M
(54) MIN VERT UNDERCLEAR REF - _____ __.__ M
(55) MIN LAT UNDERCLEAR RT REF - _____ __.__ M
(56) MIN LAT UNDERCLEAR LT __.__ M

********** NAVIGATION DATA **********
(38) NAVIGATION CONTROL - _____ CODE _
(111) PIER PROTECTION - _____ CODE _
(39) NAVIGATION VERTICAL CLEARANCE __.__ M
(116) VERT-LIFT BRIDGE NAV MIN VERT CLEAR __.__ M
(40) NAVIGATION HORIZONTAL CLEARANCE ___.__ M

**********

SUFFICIENCY RATING = ___.__
STATUS = _____

********** CLASSIFICATION ********** CODE
(112) NBIS BRIDGE LENGTH - ___
(104) HIGHWAY SYSTEM - _____ _
(26) FUNCTIONAL CLASS - _____ __
(100) DEFENSE HIGHWAY - _____ _
(101) PARALLEL STRUCTURE - _____ _
(102) DIRECTION OF TRAFFIC - _____ _
(103) TEMPORARY STRUCTURE - _____ _
(105) FEDERAL LANDS HIGHWAYS - _____ _
(110) DESIGNATED NATIONAL NETWORK - _____ _
(20) TOLL - _____ _
(21) MAINTAIN - _____ __
(22) OWNER - _____ __
(37) HISTORICAL SIGNIFICANCE - _____ _

********** CONDITION ********** CODE
(58) DECK _
(59) SUPERSTRUCTURE _
(60) SUBSTRUCTURE _
(61) CHANNEL & CHANNEL PROTECTION _
(62) CULVERTS _

********** LOAD RATING AND POSTING ******** CODE
(31) DESIGN LOAD - _____ OR _____ _
(63) OPERATING RATING METHOD - _____ _
(64) OPERATING RATING - _____ __.__
(65) INVENTORY RATING METHOD - _____ _
(66) INVENTORY RATING - _____ __.__
(70) BRIDGE POSTING - _____ _
(41) STRUCTURE OPEN, POSTED OR CLOSED - _
DESCRIPTION - _____

********** APPRAISAL ********** CODE
(67) STRUCTURAL EVALUATION _
(68) DECK GEOMETRY _
(69) UNDERCLEARANCES, VERTICAL & HORIZONTAL _
(71) WATERWAY ADEQUACY _
(72) APPROACH ROADWAY ALIGNMENT _
(36) TRAFFIC SAFETY FEATURES ____
(113) SCOUR CRITICAL BRIDGES _

********** PROPOSED IMPROVEMENTS **********
(75) TYPE OF WORK - _____ CODE ___
(76) LENGTH OF STRUCTURE IMPROVEMENT ____.__ M
(94) BRIDGE IMPROVEMENT COST $___,___,000
(95) ROADWAY IMPROVEMENT COST $___,___,000
(96) TOTAL PROJECT COST $___,___,000
(97) YEAR OF IMPROVEMENT COST ESTIMATE ____
(114) FUTURE ADT _____
(115) YEAR OF FUTURE ADT ____

********** INSPECTIONS **********
(90) INSPECTION DATE __/__ (91) FREQUENCY __ MO
(92) CRITICAL FEATURE INSPECTION: (93) CFI DATE
A) FRACTURE CRIT DETAIL - ___ - __ MO A) __/__
B) UNDERWATER INSP - ___ - __ MO B) __/__
C) OTHER SPECIAL INSP - ___ - __ MO C) __/__

ATTACHMENT C

# OVERLAND PARK BRIDGE RATING

( 20__ )

BRIDGE NO. _____

Facility Carried: _____

Location: _____

**ANALYSIS LOADING** **RATING METHOD**

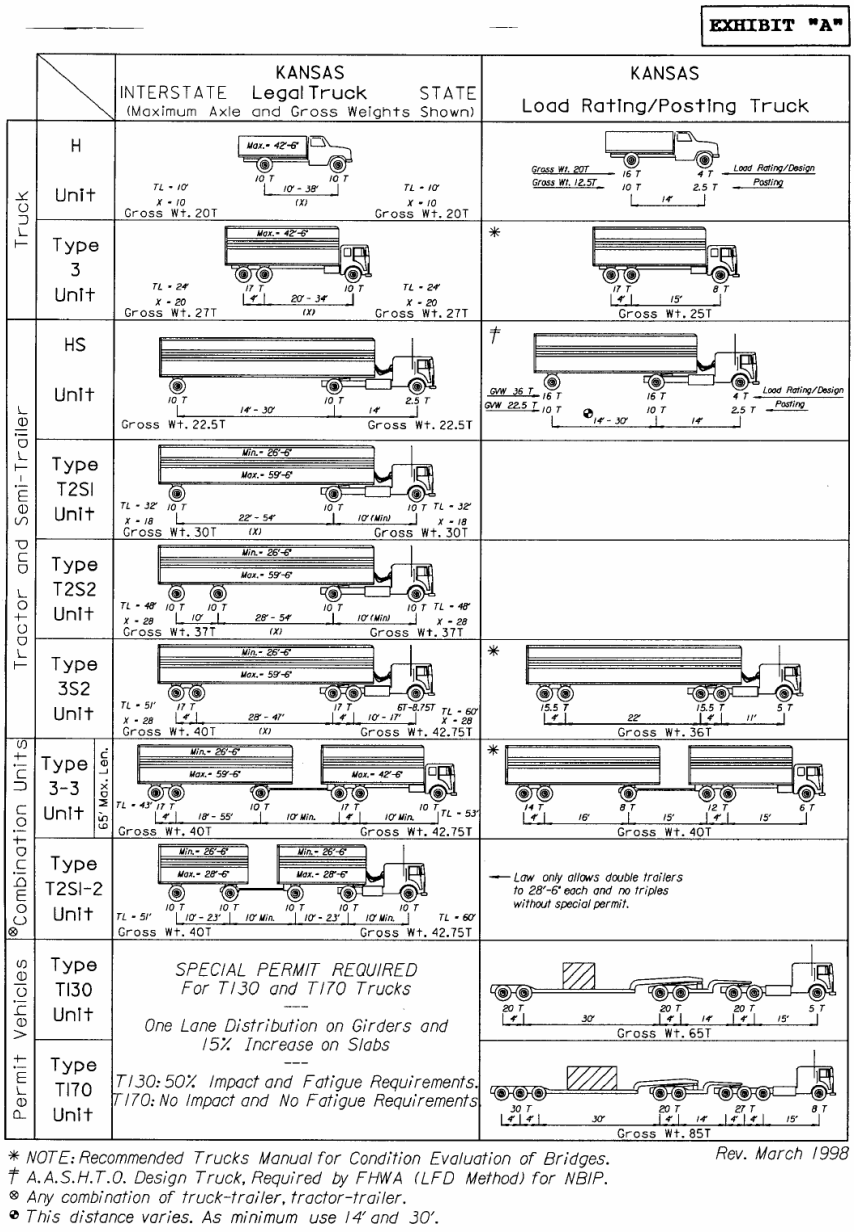
**REMARKS:**

**TRUCK ROUTE:** ☐ Yes ☐ No

| RATING SUMMARY | | | |
|---|---|---|---|
| TRUCK | INVENTORY RATING (TONS) | OPERATING RATING (TONS) | RECOMMENDED POSTING (TONS) |
| AASHTO HS20-44 (REPORTED ON SI&A) | | | **N/A** |
| KANSAS H<br>Rating Truck Weight: 20 Tons<br>Posting Truck Weight: 12.5 Tons | | | |
| KANSAS TYPE 3<br>Total Weight: 25 Tons | | | |
| KANSAS HS<br>Rating Truck Weight: 36 Tons<br>Posting Truck Weight: 22.5 Tons | | | |
| KANSAS TYPE 3S2<br>Total Weight: 36 Tons | | | |
| KANSAS TYPE 3-3<br>Total Weight: 40 Tons | | | |

Signature and Seal

**Figure 4.11.1.2 Legal and Load Rating Trucks - (Exhibit "A")**




Rev. March 1998

* NOTE: Recommended Trucks Manual for Condition Evaluation of Bridges.
† A.A.S.H.T.O. Design Truck, Required by FHWA (LFD Method) for NBIP.
⊗ Any combination of truck-trailer, tractor-trailer.
◒ This distance varies. As minimum use 14' and 30'.

## 4.3 "Rating" Trucks

Bridge capacity is dependent upon bridge geometry, material, condition, structure type, etc. As related to trucks, a bridge's capacity depends not only upon the gross vehicle weight, but also upon the number and spacing of the axles and the distribution of load between the axles. Since it is not practical to rate a bridge for the countless number of axle configurations possible, Kansas' state highway bridges are rated for seven standard vehicles which are representative of the actual vehicles on the highways. County and city bridges need not be rated for the T130 and T170 vehicles.

"Rating" trucks are the standard truck configurations used by KDOT for the rating and posting of bridges and short span structures. The standard trucks are the "H", which is a design truck; the "T-3", "T3S2", and "T3-3", which are recommended by AASHTO; the "HS", which is required by FHWA; and the "T130" and "T170" used for special permits on State Highways. See Exhibit "A".

To maintain consistency on the local and state system bridges, all bridges should be rated for the same trucks.

"Rating" trucks are divided into four categories:

| | Max. Gross Wt. | Posting Wt. |
|---|---|---|
| Single Truck: | | |
| H Unit | 20.0 tons | 12.5 tons |
| Type 3 Unit | 25.0 tons | 25.0 tons |
| Truck-Tractor Semi-Trailer: | | |
| HS Unit | 36.0 tons | 22.5 tons |
| Type 3S2 Unit | 36.0 tons | 36.0 tons |
| Truck-Trailer: | | |
| Type 3-3 Unit | 40.0 tons | 40.0 tons |
| Permit: | | |
| Type T130 Unit | 65.0 tons | --- |
| Type T170 Unit | 85.0 tons | --- |

Exhibit "A" outlines the standard trucks used in the rating of Bridges in Kansas and it also shows the Kansas "Legal" trucks used as an aide in posting. Beyond the standard load rating trucks, other legal truck configuration may be used for analysis for posting purposes. Any legal truck configuration shown in Figure 4.11.1.2 (page 4-27), that causes a higher stress level on a specific structure shall be used for posting.

ATTACHMENT F

**Bienniel Bridge Inspection Submittal**

(County/City)_____

This form should be completed and attached to the S I & A Forms, updates or floppy disks when they are submitted to the Bureau of Local Projects for updating of bridge inspection records.

Inspection Performed by _____Date_____

Load Ratings Performed by _____Date_____

Office Review Performed by _____Date_____

The Engineer in charge of the inspection group should sign and seal below.

_____
(signature)

(SEAL)