POLICY FOR NON-STATE SYSTEM BRIDGE INSPECTION PROGRAM

I INTRODUCTION

In 1968, the U.S. Congress passed legislation which was signed into law that required establishment of the National Bridge Inspection Standards (NBIS). These standards established a national policy for periodic safety inspection of all structures on public roads which are over 20 feet meeting the definition of a bridge. Later, Congress passed the "Surface Transportation Act of 1978" which established a formal funding mechanism for providing federal bridge funds to a state specifically for rehabilitation and replacement of bridges classified as deficient.

However, these federal funds were not provided without "strings" being attached. The new funding mechanisms were closely tied to a state's compliance with the bridge inventory and inspection requirements of the NBIS. If substantial areas of non-compliance to NBIS requirements are observed during compliance reviews by FHWA, federal funding sanctions may be imposed on the state or portion thereof.

Missouri's non-state bridge inspection program is intended to assist Missouri's local agencies in meeting the minimum requirements of the NBIS concerning the inventory and periodic safety inspections of bridges which are not on the state-maintained system. This is accomplished through an organized statewide inspection program which primarily utilizes state resources and personnel in partnership with the local agencies. As part of this partnership, the local agencies are expected to provide active assistance to the state towards the review of local bridges under their jurisdiction or in their region. In addition to the obvious benefits of improved safety for locally owned bridges, these efforts are also designed to ensure continued federal funding to the state and local agencies which is an integral part of compliance with the inventory and inspection requirements of the NBIS.

It should be mentioned that Missouri's local bridge inspection effort is only intended to provide a basic level of bridge safety inspection every 2 years which is necessary for compliance to minimum requirements of the NBIS. However, caution should be also expressed that an inspection only every two years may not be sufficient in all cases to provide adequate assurances to the local agency regarding the ongoing safety of bridges on their local public road system. This is because a local bridge inspection program such as Missouri's cannot realistically be all encompassing to address all safety needs in regard to bridges which are not under the direct operational or maintenance control of MoDOT.

The local inspection program is not intended to manage or replace the local agency's ongoing responsibility for the proper operation, maintenance, or periodic observation of bridges and structures under their local jurisdictional control. Frequently, situations are encountered where due to unknowns or changing conditions it may be in the best interest of the local agency to perform their own more frequent maintenance observations or

inspections of their bridges in addition to MoDOT's biennial inspections. Also, advice and recommendations from MoDOT are not intended to be a replacement for the professional advice of a qualified consulting engineer in regard to bridges on local public roads. On the contrary, it is strongly recommended that local agencies should, on an ongoing basis, seek the advice of qualified consultants in the event any questions or concerns exist with bridges under their local jurisdiction.

As an integral part of the local bridge inspection program, MoDOT makes an internal distribution of federal funds in various categories that may be applied to rehabilitation or replacement of local agency bridges.

For the purposes of MoDOT's administration of the local bridge inspection program, off-system bridges on the local public road system are normally assigned to the county where the bridge is located. Off-system bridges are generally understood to be on routes not on the "federal system." Off-system bridges will have a functional classification (NBI Item 26) of 08, 09, or 19. All others are considered on the federal aid system. Likewise, distribution of off-system bridge funds is based on this same group of non-federal aid system bridges. The county is expected to act as MoDOT's regional contact concerning all issues related to the NBIS compliance for any off-system bridges on their inventory or other aspects of MoDOT's federal aid programs for local agencies in their region.

Under this system, the county is generally expected to act as the primary contact and liaison between MoDOT or other entities that may be involved (i.e., special road districts, small rural municipalities, railroads, etc.) for all issues concerning "off-system" bridges on their particular county inventory. As a condition of continuing to receive federal funds under MoDOT's local bridge programs, the county is also expected to actively assist local political subdivisions in the planning and cooperation needed to address deficient bridges in the region. In the event of non-compliance by local political subdivisions, federal funds may be suspended for the particular county involved.

In major urban areas, the regional contact for a particular bridge is largely determined by the district in accordance with their regional transportation system. For non-responsiveness involving "on-federal" system bridges in the major urban areas, the MPO involved may be contacted by MoDOT to suspend federal funds to the particular municipality, jurisdiction, or other entity that may be involved.

II PROGRAM REQUIREMENTS

1) Qualifications of Inspectors

All locally owned bridges shall be inspected with a team consisting of a team leader and a representative of the local bridge owner in accordance with the current edition of MoDOT's Bridge Inspection Rating Manual. Except in cases of a local agency performing their own inspections using a consultant or their own forces, the team leader will be a MoDOT district employee. The team leader must be present at the

bridge site during the inspections and possess one of the following minimum qualifications.

Be a registered professional engineer with a minimum of four years of bridge-related experience.

or

Be eligible for registration with an EIT and a minimum of 4 years of bridge-related experience.

or

Be certified as a Level III or IV Bridge Safety Inspector under the NICET program. Requires five years of bridge safety inspection experience.

or

Have a minimum of five years' experience in bridge inspection and have passed a comprehensive two-week training course on bridge inspection based on the "Bridge Inspector's Training Manual."

Bridge-related experience can be bridge design, bridge construction, or bridge maintenance.

Bridge construction inspection is not equivalent to bridge safety inspection.

Bridge inspection could include bridge construction inspection under the last qualification method. Prior experience in bridge safety inspection is desirable.

Inspectors performing comprehensive fracture critical inspections shall have attended a NHI course on Inspection of Fracture Critical Bridges.

Credentials of individuals serving in the capacity of inspection team leader shall be submitted to the Bridge Division with the district's letter of request. Upon determining the individual reasonably meets the minimum qualifications, the Bridge Division will issue a team leader registration/identification number. This registration number is to be entered in the inspection report for each bridge inspected under the team leader's direct supervision.

The team leader may be assisted by other additional assistants or inspectors who shall be under the direct supervision of the team leader at the site. The additional inspectors to assist the team leader may possess one of the minimum qualifications listed for a team leader, or other type of reasonable qualifications depending on the type of work assignment involved.

2) District Inspection Coordinators

MoDOT districts are expected to appoint and maintain a qualified contact person to act as the district's coordinator regarding the non-state inspection efforts. The individual in this role will coordinate and internally direct the inspection program efforts within the district to ensure ongoing success in accordance with program requirements for the non-state bridge inspection efforts within the district. The contact person will also be expected to coordinate with any of the local agencies in the region enclosed within the district's boundaries for all aspects of the local bridge inventory and inspection program requirements.

This role is normally assumed by the district's Non-State Bridge Engineer or equivalent position.

If the district elects to utilize a contact person other than an individual qualified as a bridge inspection team leader, this individual must possess one of the minimum qualifications listed for a team leader.

3) Inspections

a) Routine Inspections

The following description provides a brief outline of program expectations for the routine biennial inspections. Further clarification, details and instructions will be provided on an annual basis in the form of "Inspection Highlights," if needed.

Routine inspections are required biennially (every two years). Initiating, performing, and following up on more frequent inspections are considered to be the sole responsibility of the local agency or bridge owner. The recommendation to inspect the bridge on a more frequent basis may originate from MoDOT, consultants, or other sources. Local agencies are also free to initiate more frequent safety inspections of their own bridges at their option and expense.

Regularly scheduled biennial routine inspections generally consist of visual observations and/or measurements needed to determine the functional condition of the bridge. In addition to identifying any changes from previously archived inspection and Structural Inventory and Appraisal (SI&A) information, the inspection team leader is expected to provide a meaningful assessment concerning the structures ability to continue to satisfy it's present service requirements. These routine inspections are generally performed from the deck, ground, and/or water level.

Inspection of underwater portions of the structure to evaluate scour by wading and probing is expected to be accomplished during the routine inspection cycle. The district will need to schedule these inspections during periods of low flow to meet the requirements that this portion of the inspection will be accomplished so as not to exceed a 5-year interval. The normal expectation is that wading and probing

will be performed as part of the routine inspection where the water depth is 5 feet or less, provided no unusual hazards to the inspector exist.

Scour evaluations for local agency bridges will consist of observing existing conditions and probing for signs of undermining and will not normally involve a calculated scour analysis. If wading and probing needs to be delayed at a particular bridge due to water depth or site conditions, the work will need to be rescheduled by the district; and a supplementary submittal of the revised scour appraisal ratings will need to be provided no later than five months following the end of the current inspection cycle.

Routine inspections of bridges containing fracture critical details shall also include a visual inspection of the "Most Fracture Critical Member." This member is defined as the fracture critical tension members that are most likely to cause collapse of the bridge (or significant portions). Comprehensive fracture critical inspections using an outside consultant shall be performed only upon recommendation and justification provided by the district with the approval of the Bridge Division. Fracture critical details are required to be inspected every two years and as appropriate can be addressed either as a "Most Fracture Critical" level inspection or as a Comprehensive Fracture Critical Inspection.

For the convenience of the inspectors, MoDOT has made available a computerized inspection form (BOSI) and various other inspection aids and forms. However, this does not necessarily mean that the scope of the safety inspections is limited to filling out these forms. In order for the inspector to be able to meet the expectations of the inspection program, additional exhibits or data may need to be provided to fully assess the serviceability of bridges in non-routine situations.

As part of the routine inspections, the team leader should generally review the existing SI&A information to "flag" NBI data items that need to be corrected in the archived information that have recently occurred or were not reported during previous inspections. Typical items that need periodic updating are ADT and functional classifications. Other data such as bridge type, number of spans, etc. should also be reviewed. The Bridge Division can furnish copies of existing SI&A information for complete counties upon request. Changes to existing SI&A information that can't be changed electronically in BOSI by the inspector can be recommended either by cover letter or in the BOSI Comment area.

b) Comprehensive Fracture Critical Inspections

Comprehensive fracture critical inspections shall consist of a close visual (inspector's eyes at 24" or less) inspection, possibly with the use of dye penetrants, magnetic particles or ultrasonic techniques, after cleaning these members with water blasting. The scope and justification for the inspections will be recommended by the inspector during the routine inspection with approval of

the Bridge Division. These inspections are to be performed by a consultant as part of a statewide program. The MoDOT district involved is responsible to secure the local 20% share of the consultant's cost.

c) Special Underwater Diving Inspections

Underwater diving inspections shall be recommended by the inspector for instances that are beyond the normal expectations for wading and probing. These special inspections are performed for the locations where needed at a minimum of every five years by a consultant as part of a statewide program. Qualified commercial divers or engineer/divers are required. The scope of work for the special inspections shall be developed by the inspector during the routine inspection. The MoDOT district involved is responsible to secure the local 20% share of the inspection cost.

d) Pin and Hanger Connections

Special inspections for pin connections or pin and hanger connections can be recommended and considered to be included in the statewide comprehensive fracture critical contract in situations where concerns by the inspector or local agency may exist.

e) Inventory Inspections

Inventory inspections are required and consist of the initial inspection after a bridge is built or rehabilitated, and will also involve collection of SI&A data, and load rating data. Inventory inspections shall be performed by qualified team leaders. This work will also involve inventory of bridges within the district or local jurisdiction not being inspected in the current inspection cycle.

f) Timelines

Inspection reports shall be submitted in a timely manner as follows:

Routine Inspections:	Districts to submit reports on 75% of counties to Bridge Division by May 1; all by August 1. Local agencies to submit report by May 1 of the inspection cycle year. (See Map on 3.38 for required year.)
Fracture Critical and Underwater Inspections:	60 days from day of inspection to receipt in Bridge Division
Inventory Inspection: (New or rehabbed bridges built without federal funds)	4 months from day bridge is open to traffic until receipt in Bridge Division

g) Documentation of Value of Local Participation (Routine Inspections)

Districts are required to document the value of the active assistance towards the off-system routine inspections which are provided by representatives of the local agencies. The value of other types of contributions such as vehicles or equipment provided by the local agency also needs to be documented. At the completion of each inspection cycle for a county, the district shall provide a report with backup cost documentation to Business & Benefits Support, with a copy of the transmittal letter indicating a total value to the Bridge Division. This information is for the purpose of establishing the value of the local contributions towards the 20% non-federal share of MoDOT's inspection program costs.

In the event the local agency is unable (due to unforeseen circumstances) to provide the required local representative to accompany MoDOT's team leader on the routine inspections the county will be required to provide their local 20% share of the inspection cost either in the form of cash or soft match credit transferred before the start of the inspections (this also may include a reduction in BRO Balance). If a county wishes to provide their 20% share of the inspection costs as soft match credit or BRO balance reduction, the district will need to contact Resource Management to arrange for the funds transfer prior to the beginning of inspections. However, this approach is not intended to be routinely used as a substitute for the normal MoDOT program requirement for the local agency to provide a representative to actively assist the MoDOT team leader.

Where local agencies provide the required active assistance through providing the representative, MoDOT will continue with its historical commitment to provide part of the matching funds for the local share of the routine inspection cost in the event the local participation does not equal 20% of the inspection cost. However, this policy is subject to review in the future if substantial changes would occur in the program which would result in significant cost increases for MoDOT.

h) Local Agencies that Perform Their Own NBIS Inspections

The process described above in paragraph g) does not apply to counties and larger cities in metropolitan areas that perform their own NBI inspections without assistance from MoDOT. Local jurisdictions may perform their own NBIS inspections provided a satisfactory inspection plan is submitted to the district annually for compliance review and approval by the Bridge Division prior to the work being done.

Local jurisdictions that plan to perform their NBIS inspections using their own qualified engineer and technical employees are eligible to be reimbursed for 80% of the cost of NBIS inspections. The scope of work for inspections beyond that required to meet the minimum requirements for NBIS inspections is not considered reimbursable to local agencies. If the local jurisdiction will be

primarily only inspecting bridges located off of the federal-aid system, consideration can be given to funding 100% of the NBIS inspection costs where the local agency provides soft-match credit for 20% of the total costs. If reimbursement is expected, the inspection plan should be submitted well in advance of the upcoming inspection cycle so that the appropriate accounts can be set up and the necessary federal funds obligated.

Local jurisdictions may select their own consultant to perform NBIS inspections, but in these cases the local jurisdiction is considered to be responsible for 100% of the cost. However, for major jurisdictions inspecting bridges primarily on the federal-aid system within the boundaries of a Metropolitan Planning Organization (MPO), consideration may be given to partial reimbursement of these inspection costs. In these cases, the level of reimbursement will generally be limited to 80% of the estimated district average per bridge cost for non-state bridge inspections performed by state personnel.

Districts are not required to submit a formal inspection plan. However, districts shall include bridges not inspected by the local agency under this section in their district's routine bridge inspection program.

i) Unusual Events

Inspections outside of the routine schedule that may be needed after flooding, earthquakes or similar events are considered to be responsibility of the local agency or bridge owner. For these types of needs and services, the local agency should engage a qualified consultant at their own expense.

j) Sources of 20% Local Cost Share for Special Inspections

If a local agency, inspection consultant, or district's inspector recommends special inspections for inclusion in a statewide contract (such as comprehensive fracture critical or underwater diving inspection) the district involved is considered to be responsible to secure the local 20% share of the cost from the local agency.

For bridges located on routes off of the federal-aid system of highways, the local share can be provided either in hard cash or available soft match credit. Combinations of cash and soft match credit may also be used on the off-system. If a county does not have soft match credit available, the county involved has the option to make a request to another county to donate sufficient credit for the local share of the inspection. However, if this credit transfer has not been accomplished prior to the statewide contracts being placed on the MHTC Commission agenda, the county is expected to provide cash.

If a county already has available soft match credit to cover their 20% share of the estimated cost of special inspections, this will be automatically obligated for

inspection use unless prior arrangements are made by the local agency to furnish cash.

For bridges located on routes which are on the federal-aid system, soft-match credit cannot be used and a cash share will be required.

The local share shall be secured (either through cash deposit to the Road Fund or actual credit balance transfer by Resource Management) prior to the Notice to Proceed being given to the consultant.

For special inspections to be placed on a statewide contract the district will also be responsible to assist the Bridge Division in research and investigative work required to complete the MHTC "Conflict of Interest Check Form." This investigative work which involves researching local deed descriptions and locations of property owned by MHTC Commission members will need to be completed prior to placement of the proposed statewide inspection contract on the MHTC Commission agenda for consideration.

4) Load Postings and Ratings

The NBIS requires that all bridges on inventory be evaluated for load postings if the capacity is less than the state legal load. Load Posting Compliance (comparisons with archived recommended load postings) is also part of the inspection process for local bridges. For the broad purposes of the local inspection program, MoDOT will categorize load posting status in the county or local jurisdiction in one of three following categories:

Category A: **Compliance** – The number of bridges improperly posted is less than 5%

Category B: **Substantial Compliance** – These jurisdictions do not meet Category A or Category C. Improvement is needed to meet Category A.

Category C: **Non-Compliance** – The number of bridges improperly posted is more than 5 and more than 20% of the bridges that require posting.

For local agencies found to be in Category "C" (Non-Compliance), if improper load postings are not corrected to a level needed to attain Category "A" status within 90 days from notification by the district, federal funds may be suspended in the county or local jurisdiction.

Improper load postings include situations where the restrictions placed on the bridge in the field are less restrictive than the archived approved posting, or there are one or more missing signs. (NBI Item 41 is coded a "B").

It is considered appropriate for a local jurisdiction, at their discretion, to load post a bridge using a lower weight limit or restrictions that are more conservative than the

MoDOT archived approved load posting. This situation is not considered to be an improper posting and NBI Item 41 is coded "P."

Even though a county doesn't receive notification they are in the non-compliant category for the broad purposes of MoDOT's administration of the local inspection program, the jurisdictions involved should be encouraged to rectify any improperly posted bridge. Any improperly posted bridge could represent a safety concern for the local agency involved.

If a local county or city does not have a qualified engineering staff or a working arrangement with a private consultant to load rate bridges using local funds, MoDOT will provide a recommendation for a load posting using the department's standard methods (based on AASHTO specifications and girder-line analysis) for routine or standard types of bridges in comparison to the state legal load. To utilize this service, the district personnel will need to collect inventory and comprehensive load rating measurements and information.

MoDOT's responsibility for recommending a load posting is strictly limited to normal MoDOT methods and considerations involving a weight limit compared to the state legal load and does not extend to special load permit situations. This same limitation extends to engineering services available under the Bridge Engineering Assistance Program (BEAP).

MoDOT's service to provide a recommended load posting is generally only available for routine types of bridge designs, which were built using standard and good construction practices. Due to limitations on available analytical techniques and resources, assessment of the load capacity for other situations is generally considered to be beyond the scope of MoDOT's local bridge program. For bridges in a moderate or advanced state of deterioration throughout, or with unusual or questionable details, MoDOT may be limited in its ability to furnish a precise assessment of the load capacity. In these situations, MoDOT's recommendation by necessity may be conservative due to the unknowns or uncertainties involved. In these cases it may be in the best interest of the local agency to obtain the services of a qualified structural engineer at their own expense to provide a more in-depth structural analysis to more accurately assess the load capacity of the bridge.

Therefore, in order to be able to make the best economic advantage from MoDOT's service to provide a load posting recommendation, local agencies should be encouraged to make every effort to construct standard types of bridges and ensure good construction and repair practices are used. This will also ensure the local agency will obtain the best quality of load posting recommendation for the bridge. In situations involving engineering advice needed regarding repairs, the local agency may make use of the Bridge Engineering Assistance Program (BEAP) resource. In the event a local agency chooses not to take advantage of the available resources under BEAP, the local agency is expected to engage a qualified consultant for these services at their own expense.

Local agencies are expected to cooperate with MoDOT districts by informing non-state inspection personnel when bridges are constructed or modified, so that the appropriate information needed to evaluate the load capacity of the bridge can be collected. In addition to assisting MoDOT, this will also help ensure the best quality of load posting recommendation can be provided.

If the local agency does not agree with MoDOT's recommendations for load posting or bridge closure, the local agency is free to engage a qualified consultant at their own expense to perform a more in-depth evaluation or study of the bridge than can customarily be provided by MoDOT's local bridge program. The local agency can then submit the consultant's findings for review to make appropriate adjustments to the MoDOT approved posting level. However, in the interim, MoDOT's current recommendation will stand as the basis for program operation.

Examples of these more in-depth studies by local agencies' own consultant could involve field or laboratory tests to substantiate material properties, three-dimensional structural analysis, or diagnostic load testing. Proof load testing results may be considered for concrete structures (see Sec. 4.4), but this approach is not considered applicable to other types of structures. Diagnostic load testing for bridge rating should only be performed by consultants experienced in the proper instrumentation of bridges and interpretation of the results.

New or rehabilitated bridges, which are constructed with federal funds, are required by the LPA Manual to be load rated by the design consultant and this data furnished with the PSE submittals. For these situations not involving federal funds where the local agency has engaged a consultant to perform the design, the local agency is expected to cooperate with MoDOT by requiring their consultant to load rate the bridge in accordance with Section 4 of the Manual and furnish the calculations and results to MoDOT for archiving the recommended postings. Local agencies should be made aware of this requirement, so they can include it in the scope of work for the design consultant at the outset of their project.

Local agencies also need to be aware that load rating or engineering studies by their own engineering staff or a consultant need to investigate all of the state's standard load posting vehicles and provide revised inventory and operating ratings for the National Bridge Inventory. The engineer's work shall include an interpretive summary with a report containing definite recommendations and conclusions. In order for the local agency engineer or consultant's work to be recognized by MoDOT the report must be signed and sealed by a Missouri Registered Professional Engineer.

Engineering designs for new bridges or engineering evaluation of proposed rehabilitation details or alternatives prior to construction is generally considered to be beyond the scope of MoDOT's local bridge inventory and inspection program. In these situations the local agency should engage and obtain advice from a qualified consulting engineer as needed.

III MINIMUM REQUIREMENTS FOR A BRIDGE INSPECTION PLAN (LOCAL AGENCIES ONLY)

(a) Qualifications of team leaders and other personnel involved with the program.

List name, role, specific qualifications for that role (identify new inspectors, submit resume of experience and training with a request for MoDOT to issue team leader registration for those the local agency deems qualified)

(b) List the approximate number of bridges from the jurisdiction to be included in this inspection cycle, and the approximate anticipated submittal date.

(c) List estimated costs per bridge for inspections included under this plan (counties and cities seeking reimbursement in federal funds only). Estimate should include hourly rates and estimated hours for personnel.

(d) Statement that local agency will perform underwater wading and probing inspections and "Most Fracture Critical Member" inspections as part of the routine inspections.

(e) Will inventory inspections on bridges built without federal funds be provided by your inspectors? How will bridge load ratings be handled?

(f) Indicate if reimbursement with federal funds is requested and level. Indicate if soft match credit is being used.

(g) If any work is being done by consultant, provide copy of consultant agreement for informational purposes to assist in MoDOT's review of the inspection plan.

IV TRAINING

Bridge safety inspections directly affect the safety of the travelling public, and are highly dependent on the practical judgement and initiative of the inspector. The current structure of the inspection program places greater requirements on the knowledge and judgement of the non-state bridge engineer and inspection personnel than in the past. Examples of decisions that must be made in the field include determining the need and viability of special more involved inspections (such as comprehensive fracture critical and underwater inspections), and when to recommend reanalyzing structures for deterioration along with the type of field data that needs to be collected.
Care should be exercised by districts, consultants, and local agencies in the selection of qualified individuals to perform this work. In recruitment, qualities such as sound judgement, initiative, responsibility, and enthusiasm for inspection work should be considered beyond the applicant just meeting the minimum requirements.

For those not being an engineering graduate, the principal training certification requirement for an inspection team leader involves passing the comprehensive two week NHI course on "Safety Inspection of In-Service Bridges-13055" to meet NBIS

requirements. Although not strictly required by the minimum program qualifications for most professional engineers and those eligible for professional registration, the two-week NHI course may be highly desirable depending on the background experience of the individual.

Periodically, if the statewide demand for the two-week course becomes sufficient (usually in the neighborhood of 40 registrants), MoDOT will normally sponsor the course at a location in Missouri. In the past, the NHI course has been hosted by the Bridge and Bridge Maintenance Divisions on an alternating basis. In the intervening period if a need would arise due to employee turnover within a MoDOT business unit or district for an employee to obtain this training, the district or business unit involved will need to make arrangements to send the employee for training to an out-of-state location in a nearby state. The Bridge Division can be contacted to help locate information on upcoming NHI courses in other states.

This approach is used since it is considered to be more cost-effective and efficient overall for the department to send these smaller intermittent groups out-of-state than to host the training course in-state only for a relatively small number of attendees. For attendance in out-of-state training courses, all course arrangements including travel expenses and the course fee is considered to be the budgetary responsibility of the individual district or other business unit involved.

Attendance in FHWA courses periodically sponsored by MoDOT will generally be limited to MoDOT employees, engineering consultants, employees of other government agencies, and local agency personnel who will serve as a team leader of a bridge inspection team. NHI course training will not normally be made available to local agency personnel for agencies that do not perform their own NBIS inspections. Non-government personnel attending NHI courses will normally be charged a fee on a pro-rata basis for the course cost.

Consultants or local agencies that have personnel needing the NHI course training at times other than when an in-state course is available are responsible for all costs and making their own attendance arrangements with a nearby state hosting the course.

Bridge Division personnel will be available to assist with district inspection coordinating sessions with MoDOT or local agency personnel to discuss program requirements, and changes at the invitation of district managers. The Bridge Division will also be available to provide technical support (within the scope of the local inspection program) for districts as needed.

MoDOT districts, business units and local agencies may provide their employees on an individual basis with additional training seminars or courses other than the two-week NHI course discussed above at their discretion. However, all arrangements, expenses, and course fees in these instances are considered the budgetary responsibility of the entity involved.

V PROGRAM ACCOUNTABILITY

With the current structure of the Non-State Bridge Inspection Program, appropriate quality control reviews of the inspections (prior to submittal to General Headquarters for processing and merging into the National Bridge Inventory), and effective management of resources working on the program is considered the domain of the district. Districts are also expected to apply sufficient resources to properly operate the inspection program at the district level. Therefore, the Bridge Division does not routinely maintain detailed performance information on all aspects of the program in the individual districts.

However, the Bridge Division does have available some general tracking information pertaining to the non-state inspection program that is a product of its statewide support and quality assurance role. This general type of information or spot inspections can be provided by Bridge Division personnel upon specific request by the district's manager.

In the fall of 1997, the Bridge Division instituted the practice of compiling and providing each district with the outcome of its quality assurance review of each county or jurisdiction in written format to help facilitate the resolution of discrepancies and as a written record. It also provides a mechanism for more instantaneous feedback to the district as to where recurring problems or weaknesses in their processes may exist. In this way, processes for inspections that are still in progress can be corrected in a more timely manner.

In addition, the Bridge Division may contact the district separately on issues that may come to the attention of general headquarters in the course of spot checks or quality assurance reviews. District managers may also elect to take this information into consideration in their employee performance management processes. Examples can include (but are not limited to) timeliness of inspections, work quality, and timeliness of responses to request for follow-up information.

Incomplete or improperly completed inspection submittals will not normally be registered in the Bridge Division tracking system as being submitted, but will be returned to the district for reworking.

INVENTORY GUIDELINES
SUPPLEMENTAL INFORMATION FOR NON-STATE STRUCTURES

I. Introduction

The following information is presented as an aid to the districts to assist in determining whether or not a non-state system bridge should be placed on the bridge inventory. This information is intended to clarify MoDOT's policies concerning this area and is intended as a supplement to information presented in Section 1 - "Recording and Coding Guide for the Structural Inventory and Appraisal of the Nation's Bridges."

These considerations are important, as bridge safety inspection services to local agencies under MoDOT's Non-State Bridge Inspection Program are strictly limited to bridges eligible to be placed on the bridge inventory. The inventory status of a structure location also directly impacts federal funding.

II. General Information Concerning Off-System Bridges That are Eligible or Required to be Placed on the Bridge Inventory

Generally, non-state bridges which are located on a route that can be considered to be part of the local public road system of the county or city are eligible (and are required by Title 23 of the U.S. Code) to be placed on the bridge inventory. Public roads are generally understood to be routes which are under the operational control of a county, special road district, municipality, or similar public body.

In addition to being considered part of the public road system of the county or city, the inventory route is required to be open to public travel. Bridges which are open to vehicular traffic on the local county or city public road system normally are required to be inventoried for the purposes of MoDOT's local bridge inspection program. Conversely, existing bridges which are in a closed condition (or were previously removed) are not considered eligible to be added to the non-state bridge inventory if they are not currently on the inventory.

For the purposes of MoDOT's administration of the local bridge program, off-system bridges on the local public road system are normally assigned to the county where the bridge is located. Off-system bridges are generally understood to be on routes not on the "federal system." The county is expected to act as MoDOT's operational contact concerning all issues related to the NBI inspections of off-system bridges on their inventory or other aspects of MoDOT's federal aid programs for local agencies. Under this system, the county is generally expected to act as the primary contact and liaison between MoDOT or other entities that may be involved (i.e., special road districts, small rural municipalities, railroads, etc.) for all issues concerning "off-system" bridges on their inventory. As a condition of continuing to receive federal funds under MoDOT's local bridge programs, the county is expected to be responsive as the operational contact and cooperate fully with all aspects of MoDOT's local bridge inspection program. In the

event of non-responsiveness, federal funds may be suspended for the particular county involved.

In major urban areas, the operational contact for a particular bridge is largely determined by the district in accordance with their regional transportation system. For non-responsiveness involving "on-federal" system bridges in the major urban areas, the MPO involved may be contacted to suspend federal funds to the particular municipality or other jurisdiction that may be involved.

The following are some additional points as a guide to determine if a bridge should be on the non-state bridge inventory.

A. Non-state bridge inventory questions normally key on whether the bridge is on a route that can be considered part of the local city or county public road system. The actual ownership of the bridge is a secondary issue to it being on a public road open to public travel.

An example is a county public road over a railroad, where the bridge itself is actually owned and maintained by the railroad. In this case, the off-system bridge should be placed on the county's inventory since the county or a political subdivision within the county has jurisdictional control over the road leading to the bridge. For any issues concerning the bridge, the county is expected to coordinate with the railroad or any other of the entities involved. In this example, if a critical inspection finding (CIF) is issued, the county should have the authority to cause the roadway access to be barricaded and thereby effectively close the bridge to vehicular traffic even though the county may not actually own the bridge structure itself. (For a CIF, MoDOT will also normally attempt to provide notification to the actual owner of the bridge as a courtesy, if known.)

B. Local agency bridges that are not on routes that may be determined to be on a local public road as discussed above are not to be inventoried, as these situations are generally considered to be beyond the scope of MoDOT's local bridge inventory and inspection program. Examples are restricted areas, private lanes or roads, private developments and roads in subdivisions that have not been taken into the local public road system by the public authority. For situations where it is not easily discerned whether the bridge is on a public road, the district should contact the county or city for assistance in determining if the route is on part of the local public road or street system.

There could be cases where a local agency provides the information that a particular bridge is located on a route that is NOT considered a public road, but the bridge could possibly be accessible to the public. In these cases, the district should document (in the district's records) the representations made by the local agency concerning the non public status

of the route for future reference as may be needed to support the department's decision not to inventory the bridge or section of the route.

C. Local agency bridges not carrying vehicular traffic, such as pedestrian bridges and structures carrying only railroad traffic, are not eligible to be on the non-state bridge inventory. Currently, these types of structures are beyond the scope of MoDOT's local bridge inspection and inventory program.

D. If a closed local agency bridge not currently on the inventory is extensively rehabilitated in order to restore it to a condition where it can be opened to traffic, a new inventory inspection and SI&A are required so that it can be placed on the county's inventory and a new load posting can be recommended. The SI&A should indicate the original date built and Item 106 should also be coded with a reconstruction date to reflect the rehabilitation date. If the bridge was not previously on the inventory, a suffix is not required for the bridge number.

E. To be eligible to be on the inventory, all geometric requirements in the coding guide such as length, etc. shall be met.

F. If a route which was previously considered to be part of the local public road system has been vacated by the local public body having jurisdiction, consideration can be given to removal from inventory for any bridges involved on the section of route vacated. Along with the request to remove the bridge from their inventory, the local public agency shall submit documentation concerning the action taken to vacate the section of public road involved.

G. New structures under construction on a public road may be inventoried with Item 41 - G (not yet open to traffic). When the new bridge is open to traffic, the district needs to notify the Bridge Division for a revision to Item 41 and so any old bridge information for the site can be removed from inventory. (This approach is required for all federally funded bridge projects.)

III. Removal of Closed Off-System Bridge from Inventory

According to guidelines MoDOT has received from FHWA, bridges which have been closed for three years or more are not eligible for federal bridge funds and should be removed from the bridge inventory unless the local agency has made reasonable progress in scheduling the replacement or rehabilitation of the structure.

At the expiration of the three-year period, MoDOT will automatically remove the closed bridge from the county's inventory unless the local agency having jurisdiction has

provided the request form (See form in Appendix) to keep the bridge on inventory over the three-year time limitation. Along with the request form the local agency should provide documentation of the progress which has been made in scheduling the replacement or rehabilitation of the structure.

If the request form has been provided by the local agency and approved, the bridge will not be removed automatically from the inventory at the end of the three-year period from the date of bridge closure. Approval of the request form will provide for a one-time 2-year time extension to the original 3-year time limit to remove the bridge from inventory. However, unless the local agency programs a viable federally funded (BRO, BRM, STP, or Credit Bridge) replacement structure within the above 5-year period from the date of bridge closure, the structure location will automatically and permanently be removed from the county's inventory. Also, in cases where a federally funded replacement structure is programmed, an original bridge which has been closed 3 years or more will be automatically removed from the bridge inventory.

Districts should make every effort to ensure local public agencies are aware of this ongoing process for automatic removal so they will have the opportunity to provide the necessary documentation. Once a structure is removed form the inventory; the bridge site is no longer eligible for federal funds.

If an inspector encounters closed bridges or locations where a bridge has been removed or replaced by a non-NBI structure, the district should at this time approach the local bridge owner to determine the future plans for the bridge site. If the local bridge owner advises that a bridge has been permanently closed or replaced by the non-inventory length structure, a letter of consent to remove the structure from the inventory, signed by the appropriate local officials, should be forwarded with the inspections.

If the letter from the local officials giving concurrence is provided, this greatly assists the department in the timely removal of obsolete information for bridges which have been closed or destroyed less than the above described 3-year period from Missouri's bridge inventory.

If credit is given or federal funds are expended on rehabilitation or a replacement type of structure, the old structure being replaced must be removed from the bridge inventory. In this situation, the old bridge site is also no longer eligible for federal funds. This removal will generally be automatic when the old bridge is replaced, and the Bridge Division is notified by the district that the new bridge is open for traffic.

The installation of temporary structures, or non-NBI replacements (such as culvert pipes, or low-water crossings) at the site of the closed bridge does not forestall the time limits indicated above for the removal of the old bridge from the bridge inventory. If reasonable progress has not been made by the local agency toward the repair or permanent replacement of a closed bridge within the prescribed three-year time limit, in the absence of other prior arrangements with MoDOT, the old bridge will automatically be removed from the bridge inventory and any "temporary" structure in place will be

regarded by MoDOT as the intended permanent replacement. After the old bridge is removed from the bridge inventory, the closed bridge is not eligible for reinstatement to the inventory, and the site is no longer considered to be eligible for federal bridge funds based on the characteristics of the old bridge. Once the old bridge is removed from inventory, any future evaluation for funding eligibility under any of the other local programs will instead be based on the type of installation or conditions currently physically existing at the site.

According to FHWA guidelines, low water crossings and other types of non-NBI installations are not allowed to be placed on the inventory nor are they considered to represent any bridge needs. Therefore, the placement of a temporary structure, or non-NBI structure, does not in itself represent significant project action to schedule the repair or rehabilitation of the existing structure. Non-NBI "temporary" structures should be indicated in the BOSI comments of the closed bridge. The information concerning the "temporary" structure may be kept in the BOSI comments area of the closed bridge as long as the old bridge remains on the inventory within the time limits discussed above. However, if the old bridge is removed from the inventory, the "temporary" non-NBI structure information contained in the original record will also be automatically deleted as well.

Local agencies also need to be aware of the inventory implications regarding situations where the bridge location is programmed for rehabilitation or replacement under one of MoDOT's federal aid programs, and the location is later dropped or removed from the program for any reason. In these situations, if the bridge has been closed more than 3 years, this will cause the same bridge location to be automatically and permanently removed from the bridge inventory.

IV. Inventory Assignment – Not Intended to Determine Legal Liability

The assigning of bridges to the inventory of a particular county is solely for the purposes of MoDOT's administration of the inspection and inventory program for local bridges. This function is not intended to necessarily indicate the actual legal ownership or liability for a given structure. The determination of which of multiple parties may actually be legally liable for a given structure is considered beyond the scope of MoDot's local bridge inspection and inventory program.

Due to limited resources, and the absence of legal authority to assign or transfer liability for locally owned structures through MoDOT's administration of the local inspection program, the actual ownership or party legally responsible for a bridge cannot readily be ascertained by MoDOT in many cases. MoDOT is also generally not in a position to mediate between multiple parties that may be involved concerning which entity is legally responsible for repairing a given locally owned structure.

MoDOT's correspondence with a county, MPO, regional contact, or other entity is primarily for the purposes of disseminating and distributing information regarding the findings and results of MoDOT's inspection and inventory of bridges. Therefore, this

correspondence should not be misunderstood that MoDOT has made any determination regarding liability for the structure.

Likewise, MoDOT's action regarding removing a structure from a county's inventory should also not be erroneously interpreted by a local agency as releasing them from liability which may already exist regarding a structure or conditions at the site. If a local agency has any questions regarding the entities that may be legally responsible for the maintenance and safety of a particular structure, or similar matters, the county or local agency involved is advised to seek the appropriate legal advice from a qualified attorney.

V. Bridges Located On A County Border

If a bridge is on a county boundary where the actual ownership of the bridge may be shared by two counties, it is greatly preferred that only one of the counties involved agrees to assume the bridge on their inventory.

For the administration of MoDOT's inspection and inventory program, it is advantageous to have only one county act as the department's regional contact and as a liaison to any other local entities that may be involved with the bridge. Under this arrangement, the county that carries the bridge on their inventory will generally be a matter of agreement between the bordering counties or other entity that may be involved. Decisions relating to distribution of federal funds will be based on which county carries the bridge on its inventory. This approach is highly desirable as it avoids duplication of inspection efforts, distribution of federal funds, and other services.

Also, it is generally beyond the scope of MoDOT's local bridge inventory and inspection program to determine which of the counties or agencies involved is legally responsible for maintaining a given bridge. (This principle applies whether the bridge is on a county border or not.)

In the event agreement cannot be reached between the border counties regarding the inventory assignment of the bridge, MoDOT may elect one of the following approaches. However, the department may not be limited to these options.

1) The bridge may be arbitrarily assigned to the inventory of only one of the border counties. (This initial assignment may be revised anytime in the future if MoDOT receives a letter executed by both counties requesting the bridge be assigned to the other county.)

2) If the bridge crosses a county line and has a length is 40 feet or more; a proportionate part of the bridge length may be allocated to each county. (This approach may be desirable for the more major type of bridge in discrete units, which are maintained individually by agreement between the counties.)

3) Another possibility exists for a bridge crossing a county line which is located on a dead-end road, or if one of the two counties has permanently and securely closed

access to all traffic on their side of the bridge with immovable barricades. In this case, MoDOT may assign the bridge to the inventory of the opposite county which is currently maintaining or allowing the access to the bridge.

Procedures for the Use of Unconventional Materials
(work this section with pages 3.0I- 3.0K of this manual)

MoDOT considers a material to be unconventional when AASHTO have yet to develop material specifications, analytical methodology and inspection procedures for the uses and application of the material. MoDOT's knowledge and expertise to inspect and perform load posting calculations for many types of unconventional materials that may be considered for newly constructed, rehabilitated or strengthened bridges is very limited. Most of these materials are currently being researched and are considered to be experimental in nature and are not endorsed by FHWA for widespread use. Many of the long-term effects of these materials have yet to be determined. For unconventional materials the following requirements will be in place until such time as AASHTO may develop the appropriate national guidelines and their use is endorsed by FHWA.

For newly constructed, rehabilitated and strengthened bridges utilizing unconventional materials, the local agency must provide a comprehensive report including a summary which is certified (signed and sealed) by a professional engineer registered in the state of Missouri. The report must include the load rating calculations for MoDOT's posting vehicles, the recommended load posting of the structure and any other pertinent data that supports the load posting such as field or laboratory tests to substantiate material properties, diagnostic load tests, construction procedures, etc. Upon MoDOT's review that the report is complete as to meeting the intent of this section, the recommended posting will be entered in the NBI as the approved posting and the local agency may implement the posting.

A certified report shall also be provided by the local agency at each biennial inspection cycle for all structures which rely on unconventional materials for the approved level of posting in the NBI. This includes structures that have been built or strengthened using unconventional materials to date. Each bridge is required to have its own individual report, which will include a summary page of recommendations. The report should include inspection information, photos, descriptions, calculations, etc. verifying that the unconventional material is performing as expected and the current load posting is still appropriate for the structure. This periodic reporting will be needed for the life of the bridge or until AASHTO would publish national guidelines covering the use of the material. Due to the unknowns which may exist, periodic reporting will be required to sustain a posting level initially established on the basis of load tests. In order to maintain the current level of approved posting, our office will need to receive this certified report no later than May 1 of the biennial inspection year for the structure.

For rehabilitated and strengthened structures, if the reporting is not provided by the above-mentioned date, the approved level of load posting in the NBI of the bridge will revert back to the load posting based on the condition of the original portion of the structure constructed of conventional materials. If the certified report is not received for a

structure comprised entirely of unconventional material by the above-mentioned date, the approved load posting of the bridge in the NBI may be established at a provisional posting of 5 tons, until the appropriate engineering validations are furnished.

Additional Information Regarding Diagnostic Load Testing
(work this paragraph with page 3.0K of this manual)

Load postings determined by diagnostic load testing are not considered by MoDOT to be a permanent verification of the approved load posting since the condition of bridge structure may change over time. If there is a significant change in the condition or use of a structure, the original load test may no longer be applicable and the load posting may need to be reevaluated.

NON-STATE OFF-SYSTEM INVENTORY AND APPRAISAL PROGRAM
STRUCTURE NUMBERING SYSTEM

Numbers shall be assigned to each structure within each county to assure its uniqueness. Identification will take the form of an eight-digit number developed as follows:

The first three digits will be the county road number as shown on the CART ROAD MAPS. Where the road number has less than three digits it shall be preceded by leading zeroes thus: 003, 012, 116, etc.

The fourth digit will be a zero except where the county road number exceeds 999. In these counties the first four digits will be used. County Road No. 3 would be coded 0003 and County Road No. 1034 would be coded 1034.

The next three digits will be the distance in miles, to the nearest tenth, from the northern or western terminus of the county road. Again leading zeroes will be employed to fill unused spaces thus: 011, 243, etc. Do not use the decimal point in bridge number. The tenth of a mile is understood. If CART road number has not been assigned to the road, refer to General Comments, SI&A Sheet, page No. 3.14.

The eighth digit will identify major rehabilitations to the structure (not routine maintenance work) or replacements. For original structures it will remain blank and then be coded with an increasing numerical sequence of 1 through 9 with each major rehabilitation or replacement.

For example, an original bridge in a county with road number 12 running in a generally westerly direction located 6.5 miles from the western end of the route would be identified as bridge number 0120065 (No decimal point!!)

The same bridge would be numbered 01200651 after its first major rehabilitation or replacement and 01200652 after its second major rehabilitation or replacement.

The number thus developed will identify the structure and reasonably locate it within the county simultaneously.

Should a situation arise in which multiple structures exist closer than 0.1 mile apart, the numbers should be adjusted to reflect the order in which the structures occur using the orientation above.

It is recognized that in the latter case the mileage portion of the number will be slightly in error but this is acceptable since the prime purpose of the number is identification. Other factors serve to identify location.

All bridges should be located on a mylar map of the county (1/2" = mile scale) and updated after each bridge inspection. Copies of the latest map should be included with the inspection report submittals.

NUMBERING SYSTEM FOR STRUCTURES WITHIN CITIES

The number to be assigned for structures within cities normally will be different than the rural county numbering system.

In very small communities it may be possible to extend the county road number into the city and use the same system.

All bridges should be located on a mylar map of the city (1/2" = mile scale) and updated after each bridge inspection. Copies of the latest maps should be included with the inspection report submittals.

In general, for structures falling within the city limits, the number will again be an eight-digit number made up as follows:

The first four digits will be the Missouri city code shown on the listing on pages 3.3 through 3.8. The next three digits will simply be a sequential listing of the bridges within the city.

The eighth digit is to identify major rehabilitations to the structure (not routine maintenance work) or replacements. For original structures it will remain blank and then be coded with an increasing numerical sequence of 1 through 9 with each major rehabilitation or replacement.

For example, if three bridges were to occur in the city of Caruthersville, the third structure inventoried would be identified by the number of 0725003. The same bridge would be numbered 07250031 after its first major rehabilitation or replacement and 07250032 after its second rehabilitation or replacement.

Alternate System:

Cities with many bridges may opt for a system which provides a general location in the number. Kansas City's seven digit system is shown below as an example. The eighth digit identifies major rehabilitations.

Example	S	0	7	8	B	3	1	_
Space	1	2	3	4	5	6	7	8

Space 1 will be the letter N or S indicating whether the bridge is North or South of the Missouri River.

Spaces 2 through 4 indicate the number of the section in which the bridge is located. The sections are outlined and numbered on a city map.

Space 5 has a "B" to indicate that the structure is a span type bridge; "C" for a culvert.

Space 6 indicates the quarter section in which the bridge is located. The quarter sections are numbered counter-clockwise from the NE quarter which is number 1.

Space 7 indicates the sequential number of that bridge within the quarter section.

Space 8 will identify major rehabilitations to the structure. For original structures, the eighth digit will remain blank and then be coded in increasing numerical sequence of 1 through 9 with each major rehabilitation or replacement. For example, the above-referenced bridge after its first rehabilitation or replacement would be S078B311 and after its second major rehabilitation or replacement would be S078B312.

A bridge number should be painted on the structure.

make sure this is documented IF Local agency takes over a structure from another local agency change Bridge num

CITY CODE FOR MISSOURI

0005	Adrian
0010	Advance
0012	Afton
0015	Agency
0020	Airport Dr.
0025	Alba
0030	Albany
0035	Aldrich
0040	Alexandria
0045	Allendale
0050	Alma
0055	Altamont
0060	Altenburg
0065	Alton
0070	Amazonia
0075	Amity
0080	Amoret
0085	Amsterdam
0090	Anderson
0095	Annada
0100	Annapolis
0105	Anniston
0110	Appleton
0115	Appleton City
0120	Arbela
0125	Arbor Terrace
0130	Arbyrd
0135	Arcadia
0140	Archie
0142	Arcola
0145	Argyle
0150	Arkoe
0155	Armstrong
0157	Arnold
0160	Arrow Rock
0165	Asbury
0170	Ashburn
0175	Ash Grove
0180	Ashland
0185	Atlanta
0190	Augusta
0195	Aullville
0200	Aurora
0205	Auxvasse
0210	Ava
0215	Avilla
0220	Avondale
0225	Bagnell
0230	Baker
0233	Bakersfield
0234	Baldwin Park
0235	Ballwin
0240	Baring
0245	Barnard
0250	Barnett
0255	Bates City
0257	Battlefield
0260	Belgique
0265	Bella Villa
0270	Bell City
0275	Belle
0280	Bellefontaine Neighbors
0285	Bellerive
0290	Bellflower
0295	Bell-Nor
0300	Bel-Ridge
0305	Belton
0308	Benton City
0310	Benton
0320	Berdell Hills
0325	Berger
0330	Berkeley
0335	Bernie
0340	Bertrand
0345	Bethany
0350	Bethel
0355	Beverly Hills
0360	Bevier
0362	Big Lake
0365	Bigelow
0370	Billings
0375	Birch Tree
0380	Birmingham
0385	Bismarck
0390	Blackburn
0392	Black Jack
0395	Blackwater
0400	Blairstown
0405	Bland
0410	Blodgett
0415	Bloomfield
0418	Bloomsdale
0420	Blue Eye
0425	Blue Springs
0427	Blue Summit
0430	Blythedale
0435	Bogard
0440	Bolckow
0445	Bolivar
0450	Bonne Terre
0455	Boonville
0460	Bosworth
0465	Bourbon
0470	Bowers Mill
0475	Bowling Green
0480	Bradleyville
0485	Bragg City
0490	Brandsville
0495	Branson
0500	Brashear
0505	Brasher
0510	Braymer
0515	Breckenridge
0520	Breckenridge Hills
0525	Brentwood
0530	Bridgeton
0535	Bridgeton Terrace
0540	Brimson
0545	Bronaugh
0550	Brookfield
0551	Brookline
0553	Brooklyn Heights
0555	Browning
0560	Brownington
0565	Brumley
0570	Brunswick
0575	Bucklin
0580	Buckner
0585	Buell
0590	Buffalo
0595	Bunceton
0597	Bunker
0600	Burgess
0605	Burlington Jct.
0610	Butler
0615	Butterfield
0620	Cabool
0625	Cainsville
0630	Cairo
0635	Calendonia
0640	Calhoun
0645	California
0650	Callao
0655	Calverton Park
0660	Camden
0665	Camden Point
0670	Camdenton
0675	Cameron
0680	Campbell
0685	Canalou
0690	Canton
0695	Cape Girardeau
0700	Cardwell
0705	Carl Junction
0707	Carlow
0710	Carrollton
0715	Carterville
0720	Carthage
0725	Caruthersville
0730	Cassville
0735	Catron
0736	Carytown
0737	Cedar City
0738	Cedar Hill Lake
0740	Center
0745	Centertown
0750	Centerview
0755	Centerville
0765	Centralia
0770	Chaffee
0772	Chain-O-Lakes

0775 Chamois
0780 Champ
0785 Charlack
0790 Charleston
0795 Cherryville
0800 Chilhowee
0805 Chillicothe
0810 Chula
0811 Circle City
0815 Clarence
0820 Clark
0825 Clarksburg
0830 Clarksdale
0835 Clarkson Valley
0840 Clarksville
0845 Clarkton
0855 Claycomo
0860 Clayton
0865 Clearmont
0870 Cleveland
0875 Clever
0880 Cliff Village
0885 Clifton Hill
0890 Climax Springs
0895 Clinton
0900 Clyde
0905 Cobalt City
0910 Coffey
0915 Cole Camp
0925 Collins
0930 Columbia
0935 Commerce
0940 Conception Jct.
0942 Concor
0945 Concordia
0950 Conway
0955 Cool Valley
0960 Cooter
0965 Corder
0970 Corning
0975 Cosby
0977 Cottleville
0980 Country Club Hills
0985 Country Club Vill.
0990 Country Life Acres
0995 Cowgill
1000 Craig
1005 Crane
1010 Creighton
1015 Crestwood
1020 Creve Coeur
1025 Crocker
1030 Cross Timbers
1035 Crosstown
1040 Crowder
1045 Crystal City
1050 Crystal Lake Park
1055 Cuba
1060 Curryville
1065 Dadeville
1070 Dalton
1073 Danville
1075 Dardenne Prairie
1080 Darlington
1085 Dearborn
1086 Deerfield
1090 Deepwater
1095 Deering
1100 Dekalb
1105 Dellwood
1110 Delta
1115 Dennis Acres
1120 Denton
1125 Denver
1130 DesArc
1135 Desloge
1140 De Soto
1145 Des Peres
1150 DeWitt
1155 Dexter
1160 Diamond
1165 Diehlstadt
1170 Diggins
1175 Dillard
1180 Dixon
1185 Doniphan
1190 Doolittle
1195 Dover
1200 Downing
1205 Drexel
1210 Dudley
1215 Duenwing
1220 Dunlap
1225 Duquesne
1230 Eagleville
1240 East Lynne
1245 Easton
1250 East Prairie
1255 Edgerton
1257 Edgar Springs
1260 Edina
1265 Edmundson
1270 Eldon
1275 Eldorado Springs
1280 Ellington
1285 Ellisville
1290 Ellsinore
1300 Elmer
1305 Elmira
1310 Elmo
1315 Elsberry
1320 Elvins
1322 Emerald Beach
1325 Eminence
1330 Emma
1332 Eolia
1335 Essex
1340 Esther
1345 Ethel
1350 Eugene
1355 Eureka
1360 Everton
1364 Ewing
1370 Excelsior Springs
1375 Exeter
1380 Fairfax
1382 Fair Grove
1385 Fair Play
1390 Fairview
1395 Fairview Acres
1400 Farber
1405 Farley
1410 Farmington
1415 Fayette
1420 Fenton
1425 Ferguson
1430 Ferrelview
1435 Festus
1438 Fidelity
1440 Fillmore
1445 Fisk
1450 Flat River
1453 Fleming
1455 Flemington
1458 Flinthill
1460 Fordell Hills
1465 Florissant
1470 Foley
1475 Ford City
1480 Fordland
1485 Forest City
1487 Foristell
1490 Forsyth
1495 Fortescue
1497 Fort Leonard Wood
1505 Foster
1510 Frankford
1515 Franklin
1520 Fredericktown
1525 Freeburg
1530 Freeman
1535 Freistatt
1540 Fremont
1545 Frohna
1550 Frontenac
1555 Fulton
1560 Gainesville
1565 Galena
1570 Gallatin
1575 Galt
1580 Garden City

1585	Gasconade
1595	Gentry
1600	Gerald
1605	Gerster
1610	Gibbs
1615	Gibson
1620	Gideon
1630	Gilliam
1635	Gilman City
1640	Gladstone
1645	Glasgow
1650	Glenaire
1655	Glenallen
1660	Glendale
1665	Glen Echo Park
1670	Glenwood
1675	Gobler
1680	Golden City
1685	Goodfellow Terrace
1690	Goodman
1695	Goodman Heights
1700	Gordonville
1705	Gower
1710	Graham
1715	Grain Valley
1720	Granby
1725	Grandin
1730	Grand Pass
1735	Grandview
1740	Granger
1745	Grant City
1750	Grantwood Village
1755	Gravois Mills
1760	Grayson
1770	Greencastle
1775	Green City
1780	Greendale
1785	Greenfield
1788	Green Park
1790	Green Ridge
1795	Greentop
1800	Greenville
1805	Greenwood
1815	Guilford
1820	Gunn City
1825	Hale
1826	Halfway
1830	Hallsville
1835	Halltown
1840	Hamilton
1845	Hanley Hills
1850	Hannibal
1855	Hardin
1860	Harris
1865	Harrisburg
1870	Harrisonville
1875	Hartsburg
1880	Hartville
1885	Harvielli
1890	Harwood
1895	Hawk Point
1900	Hayti
1901	Hayti Heights
1902	Haywood City
1903	Hayward
1905	Hazelwood
1915	Henley
1920	Henrietta
1925	Herculaneum
1930	Hermann
1935	Hermitage
1945	Higbee
1950	Higginsville
1955	High Hill
1965	Highley Heights
1970	Hill House Addition
1975	Hillsboro
1980	Hillsdale
1985	Hoberg
1990	Holcomb
1995	Holden
2000	Holland
2005	Holliday
2010	Hollister
2015	Hollywood
2020	Holt
2021	Holts Summit
2022	Homestown
2023	Homestead Village
2025	Hopkins
2030	Hornersvile
2040	Houstonia
2045	Houston Lake
2050	Howardsville
2055	Houghesville
2060	Humansville
2065	Hume
2070	Humphreys
2075	Hunnewell
2080	Hunter
2085	Huntleigh
2095	Huntsville
2100	Hurdland
2105	Hurley
2110	Hurricane Deck
2111	Iantha
2115	Iberia
2120	Ilimo
2125	Independence
2130	Ionia
2135	Irondale
2140	Iron Gates
2143	Iron Mountain Lake
2145	Ironton
2150	Jackson
2155	Jacksonville
2160	Jameson
2165	Jamesport
2170	Jamestown
2175	Jasper
2180	Jefferson City
2185	Jennings
2190	Jericho Springs
2200	Jonesburg
2205	Joplin
2207	Josephville
2210	Junction City
2215	Kahoka
2220	Kansas City
2225	Kearney
2230	Kelso
2235	Kennett
2240	Keytesville
2245	Kidder
2247	Kimberling City
2250	Kimmswick
2255	King City
2257	Kingdom City
2260	Kingston
2265	Kingsville
2270	Kinloch
2275	Kirksville
2280	Kirkwood
2285	Knob Noster
2290	Knox City
2295	Koshkonong
2300	La Belle
2305	Laclede
2310	Laddonia
2315	Ladue
2320	La Grange
2324	Lake Annette
2325	Lake Lotawana
2326	Lake Mykee
2327	Lake Ozark
2328	Lake St. Louis
2330	Lakeshire
2331	Lakeland
2332	Lakeside
2333	Lake Tapawingo
2335	Lakeview
2340	Lake Waukomis
2343	Lake Winnebago
2345	Lamar
2350	Lamar Heights
2355	Lambert
2360	La Monte
2365	Lanagan
2370	Lancaster
2375	La Plata
2380	Laredo
2385	La Russell

2390	Latham
2395	Lathrop
2400	La Tour
2403	Laurie
2405	Lawson
2410	Leadington
2413	Leadwood
2420	Leasburg
2425	Leawood
2430	Lebanon
2435	Lee's Summit
2440	Leeton
2443	Lemay
2445	Leonard
2450	Leslie
2452	Lesterville
2455	Levasy
2458	Lewis and Clark
2460	Lewiston
2465	Lexington
2470	Liberal
2475	Liberty
2480	Licking
2490	Lilbourn
2495	Lincoln
2500	Linn
2505	Linn Creek
2510	Linneus
2515	Lithium
2520	Livonia
2525	Lock Springs
2530	Lockwood
2535	Lohman
2537	Lone Jack
2540	Longtown
2542	Louisburg
2545	Louisiana
2550	Lowry City
2555	Lucerne
2560	Ludlow
2565	Lupus
2570	Luray
2575	Lutesville
2585	McFall
2590	McKittrick
2595	MacKenzie
2600	Macks Creek
2605	Macon
2610	Madison
2615	Maitland
2620	Malden
2625	Malta Bend
2630	Manchester
2635	Mansfield
2640	Maplewood
2645	Marble Hill
2650	Marceline
2655	Margona Village
2660	Marionville
2665	Marlborough
2670	Marquand
2675	Marshall
2680	Marshfield
2685	Marston
2690	Marthasville
2695	Martinsburg
2705	Maryland Heights
2710	Maryridge
2715	Maryville
2720	Matthews
2725	Maysville
2730	Mayview
2740	Meadville
2750	Memphis
2755	Mendon
2760	Menfro
2765	Mercer
2770	Merwin
2775	Meta
2780	Metz
2785	Mexico
2790	Miami
2795	Middle Grove
2800	Middletown
2805	Midway
2810	Milan
2812	Millard
2815	Miller
2820	Mill Spring
2825	Milo
2830	Mindenmines
2835	Miner
2840	Mineral Point
2845	Missouri City
2850	Moberly
2855	Modena
2860	Mokane
2865	Moline Acres
2870	Monett
2875	Monroe City
2880	Mountevallo
2885	Montgomery City
2890	Monticello
2895	Montrose
2900	Mooresville
2905	Morehouse
2915	Morley
2920	Morrison
2925	Morrisville
2930	Mosby
2935	Moscow Mills
2945	Mound City
2950	Moundville
2955	Mountain Grove
2960	Mountain View
2965	Mount Lenard
2970	Mount Moriah
2975	Mount Vernon
2980	Napolean
2985	Naylor
2990	Neck City
2995	Neelyville
3000	Nelson
3005	Neosho
3010	Nevada
3015	Newark
3020	New Bloomfield
3025	Newburg
3030	New Cambria
3035	New Court Village
3040	New Florence
3045	New Franklin
3050	New Hamburg
3055	New Hampton
3060	New Haven
3065	New London
3070	New Madrid
3072	New Melle
3075	Newtonia
3080	Newton
3085	Niangua
3090	Nixa
3095	Noel
3100	Norborne
3105	Normandy
3110	North Kansas City
3115	North Lilbourn
3120	Northmoor
3122	North Wardell
3125	Northwoods
3130	Northwye
3135	Norwood
3140	Norwood Court
3145	Novelty
3150	Novinger
3160	Oak Grove
3162	Oak Grove Village
3165	Oakland
3170	Oakland Park
3175	Oak Ridge
3180	Oaks
3185	Oakview
3190	Oakwood
3195	Oakwood Manor
3200	Oakwood Park
3205	Odessa
3210	O'Fallon
3215	Old Monroe
3220	Olean
3225	Olivette
3228	Olympian Village
3230	Oran
3235	Oregon
3240	Oronogo
3245	Orrick
3250	Osage Beach

3255	Osburn
3260	Osceola
3265	Osgood
3270	Otterville
3275	Overland
3280	Owensville
3285	Ozark
3290	Pacific
3295	Pagedale
3300	Palmyra
3310	Paris
3315	Parkdale
3320	Parkville
3325	Parkway
3330	Parma
3335	Parnell
3340	Pasadena Hills
3345	Pasadena Park
3350	Pascola
3355	Passaic
3360	Pattonsburg
3361	Paynesville
3365	Peach Orchard
3370	Peculiar
3375	Peerless Park
3376	Penermon
3380	Perkins
3385	Perry
3390	Perryville
3395	Pevely
3400	Phelps City
3405	Phillipsburg
3410	Pickering
3415	Piedmont
3420	Pierce City
3425	Pilot Grove
3430	Pilot Knob
3435	Pine Lawn
3440	Pineville
3445	Piney Park
3450	Platte City
3455	Platte Woods
3460	Plattsburg
3465	Pleasant Green
3470	Pleasant Hill
3475	Pleasant Hope
3480	Pleasant Valley
3485	Pocahontas
3487	Pollock
3495	Polo
3500	Poplar Bluff
3505	Portage Des Sioux
3510	Portageville
3515	Potosi
3525	Powersville
3530	Prairie Hill
3535	Prairie Home
3540	Prathersville
3545	Preston
3555	Princeton
3558	Protem
3560	Purcell
3565	Purdin
3570	Purdy
3575	Puxico
3580	Queen City
3585	Quitman
3590	Quilin
3593	Randolph
3600	Ravenwood
3605	Raymondville
3610	Raymore
3615	Raytown
3620	Rayville
3625	Rea
3630	Readings Mill
3635	Reeds
3640	Reeds Spring
3645	Reger
3650	Renick
3655	Rensselaer
3660	Republic
3665	Revere
3670	Rhineland
3675	Richards
3680	Rich Hill
3685	Richmond
3695	Richmond Heights
3700	Ridgeway
3701	Ridgely
3705	Risco
3710	Ritchey
3715	Rivermines
3720	Riverside
3725	Riverview
3730	Rives
3735	Roanoke
3740	Rocheport
3745	Rockaway Beach
3750	Rock Hill
3755	Rock Port
3760	Rockville
3765	Rocky Comfort
3770	Rogersville
3775	Rolla
3780	Roscoe
3785	Rosebud
3790	Rosendale
3795	Rothville
3800	Rush Hill
3805	Rushville
3815	Russellville
3820	Rutledge
3822	Saginaw
3825	Saint Ann
3830	St. Charles
3835	St. Clair
3837	St. Cloud
3845	St. Elizabeth
3847	Ste. Genevieve
3850	St. George
3855	St. James
3860	St. John
3865	St. Joseph
3870	St. Jude Acres
3875	St. Louis
3877	St. Martins
3880	St. Mary's
3885	St. Peter's
3890	St. Robert
3892	St. Thomas
3895	Salem
3900	Salisbury
3905	Sandy Hook
3906	Sappington
3910	Sarcoxie
3915	Savannah
3920	Schell City
3925	Scotsdale
3930	Scott City
3935	Sedalia
3940	Sedgewickville
3945	Seligman
3950	Senath
3955	Seneca
3960	Seymour
3963	Shawneetown
3965	Shelbina
3970	Shelbyville
3975	Sheldon
3980	Sheridan
3985	Shoal Creek Drive
3986	Shoal Creek Estate
3990	Shrewsbury
3995	Sibley
4000	Sikeston
4005	Silex
4010	Silver Creek
4015	Skidmore
4020	Slater
4030	Smithton
4035	Smithville
4040	South Gifford
4045	South Gorin
4050	South Greenfield
4055	South Lineville
4060	Southwest City
4062	Spanish Lake
4065	Sparta
4070	Spickard
4073	Spring Garden

4075	Springfield
4085	Spring Valley
4090	Stanberry
4095	Stark City
4100	Steele
4105	Steelville
4110	Stella
4115	Stewartsville
4120	Stockton
4125	Stotesbury
4130	Stotts City
4135	Stoutland
4140	Stoutsville
4145	Stover
4147	Strafford
4150	Strasburg
4155	Sturgeon
4160	Sugar Creek
4165	Sullivan
4170	Summersville
4175	Sumner
4177	Sundown
4180	Sunnyvale
4185	Sunrise Beach
4190	Sunset Hills
4195	Sweet Springs
4200	Sycamore Hills
4205	Syracuse
4206	Table Rock Townsite
4207	Tallapoosa
4208	Taneyville
4212	Taos
4215	Tarkio
4218	Tarrants
4219	Tarsney Lakes
4225	Thayer
4227	Theodosia
4228	Tightwad
4230	Times Beach
4235	Tina
4240	Tindall
4245	Tipton
4250	Town and Country
4255	Tracy
4260	Trenton
4265	Trimble
4270	Triplett
4275	Troy
4280	Truesdale
4285	Turney
4290	Tuscumbia
4295	Twin Oaks
4296	Umber View Heights
4300	Union
4305	Union Star
4310	Unionville
4315	Unity Village
4320	University City
4325	Uplands Park
4330	Urbana
4340	Urich
4345	Valley Park
4350	Van Buren
4355	Vandalia
4360	Vandiver
4365	Vanduster
4370	Velda Village
4375	Velda Village Hills
4380	Verona
4385	Versailles
4390	Vibbard
4395	Viburnum
4400	Vienna
4405	Vinita Park
4410	Vinita Terrace
4415	Vista
4420	Waco
4425	Wakenda
4430	Walker
4435	Walnut Grove
4440	Wardell
4443	Wardsville
4445	Warrensburg
4450	Warrenton
4455	Warsaw
4460	Warson Woods
4462	Washburn
4465	Washington
4470	Watson
4475	Waverly
4480	Wayland
4485	Waynesville
4490	Weatherby
4495	Weatherby Lake
4500	Weaubleau
4505	Webb City
4510	Webster Groves
4511	Weldon Spring
4512	Weldon Spring Heights
4515	Wellington
4520	Wellston
4525	Wellsville
4530	Wentworth
4535	Wentzville
4540	Westboro
4545	Westline
4550	Weston
4555	Wesphalia
4560	West Plains
4565	Westwood
4570	Wheatland
4575	Wheaton
4580	Wheeling
4582	Whiteman
4585	White Oak
4590	Whiteside
4595	Whitewater
4600	Wilbur Park
4602	Wildwood
4605	Willard
4610	Williamsville
4615	Willow Springs
4620	Wilson City
4625	Winchester
4630	Windsor
4635	Winfield
4640	Winona
4645	Winston
4650	Wittenburg
4655	Wood Heights
4660	Woodson Terrace
4665	Wooldridge
4667	Worland
4675	Worth
4676	Worthington
4680	Wright City
4685	Wyaconda
4690	Wyatt
4695	Zalma

COUNTY CODE AND DISTRICT NUMBERS

CODE NO.	DIST. NO.	COUNTY
001	2	Adair
002	1	Andrew
003	1	Atchison
004	3	Audrain
005	7	Barry
006	7	Barton
007	7	Bates
008	5	Benton
009	10	Bollinger
010	5	Boone
011	1	Buchanan
012	10	Butler
013	1	Caldwell
014	5	Callaway
015	5	Camden
016	10	Cape Girardeau
017	2	Carroll
018	9	Carter
019	4	Cass
020	7	Cedar
021	2	Charlton
022	8	Christian
023	3	Clark
024	4	Clay
025	1	Clinton
026	5	Cole
027	5	Cooper
028	9	Crawford
029	7	Dade
030	8	Dallas
031	1	Daviess
032	1	DeKalb
033	9	Dent
034	8	Douglas
035	10	Dunklin
036	6	Franklin
037	5	Gasconade
038	1	Gentry
039	8	Greene
040	2	Grundy
041	1	Harrison
042	4	Henry
043	8	Hickory
044	1	Holt
045	2	Howard
046	9	Howell
047	9	Iron
048	4	Jackson
049	7	Jasper
050	6	Jefferson
051	4	Johnson
052	3	Knox
053	8	Laclede
054	4	Lafayette
055	7	Lawrence
056	3	Lewis
057	3	Lincoln
058	2	Linn
059	2	Livingston
060	7	McDonald
061	2	Macon
062	10	Madison
063	5	Maries
064	3	Marion
065	2	Mercer
066	5	Miller
067	10	Mississippi
068	5	Moniteau
069	3	Monroe
070	3	Montgomery
071	5	Morgan
072	10	New Madrid
073	7	Newton
074	1	Nodaway
075	9	Oregon
076	5	Osage
077	8	Ozark
078	10	Pemiscot
079	10	Perry
080	5	Pettis
081	9	Phelps
082	3	Pike
083	4	Platte
084	8	Polk
085	9	Pulaski
086	2	Putnam
087	3	Ralls
088	2	Randolph
089	4	Ray
090	9	Reynolds
091	9	Ripley
092	6	St. Charles
093	7	St. Clair
094	10	St. Francois
095	10	Ste. Genevieve
096	6	St. Louis
097	2	Saline
098	2	Schuyler
099	3	Scotland
100	10	Scott
101	9	Shannon
102	3	Shelby
103	10	Stoddard
104	8	Stone
105	2	Sullivan
106	8	Taney
107	9	Texas
108	7	Vernon
109	3	Warren
110	9	Washington
111	10	Wayne
112	8	Webster
113	1	Worth
114	8	Wright
115	(City)	St. Louis City

F.I.P.S. CODES

STATE NAME: MISSOURI
STATE ABBREVIATION: MO
STATE CODE: 29
REGION: 7

CODE NO.	DIST. NO.	COUNTY NAME
001	2	Adair
003	1	Andrew
005	1	Atchison
007	3	Audrain
009	7	Barry
011	7	Barton
013	7	Bates
015	5	Benton
017	10	Bollinger
019	5	Boone
021	1	Buchanan
023	10	Butler
025	1	Caldwell
027	5	Callaway
029	5	Camden
031	10	Cape Girardeau
033	2	Carroll
035	9	Carter
037	4	Cass
039	7	Cedar
041	2	Charlton
043	8	Christian
045	3	Clark
047	4	Clay
049	1	Clinton
051	5	Cole
053	5	Cooper
055	9	Crawford
057	7	Dade
059	8	Dallas
061	1	Daviess
063	1	DeKalb
065	9	Dent
067	8	Douglas
069	10	Dunklin
071	6	Franklin
073	5	Gasconade
075	1	Gentry
077	8	Greene
079	2	Grundy
081	1	Harrison
083	4	Henry
085	8	Hickory
087	1	Holt
089	2	Howard
091	9	Howell
093	9	Iron
095	4	Jackson
097	7	Jasper
099	6	Jefferson
101	4	Johnson
103	3	Knox
105	8	Laclede
107	4	Lafayette
109	7	Lawrence
111	3	Lewis
113	3	Lincoln
115	2	Linn
117	2	Livingston
119	7	McDonald
121	2	Macon
123	10	Madison
125	5	Maries
127	3	Marion
129	2	Mercer
131	5	Miller
133	10	Mississippi
135	5	Moniteau
137	3	Monroe
139	3	Montgomery
141	5	Morgan
143	10	New Madrid
145	7	Newton
147	1	Nodaway
149	9	Oregon
151	5	Osage
153	8	Ozark
155	10	Pemiscot
157	10	Perry
159	5	Pettis
161	9	Phelps
163	3	Pike
165	4	Platte
167	8	Polk
169	9	Pulaski
171	2	Putnam
173	3	Ralls
175	2	Randolph
177	4	Ray
179	9	Reynolds
181	9	Ripley
183	6	St. Charles
185	7	St. Clair
187	10	St. Francois
189	6	St. Louis
193	10	Ste. Genevieve
195	2	Saline
197	2	Schuyler
199	3	Scotland
201	10	Scott
203	9	Shannon
205	3	Shelby
207	10	Stoddard
209	8	Stone
211	2	Sullivan
213	8	Taney
215	9	Texas
217	7	Vernon
219	3	Warren
221	9	Washington
223	10	Wayne
225	8	Webster
227	1	Worth
229	8	Wright

CODE	INDEPENDENT CITY
510	(City) St. Louis City

Structurally Deficient Bridge Definition:

A bridge that is in relatively poor condition or if it has insufficient load capacity compared to modern design standards. The insufficient load capacity may be the result of obsolescence of the loads used in the original design or from degradation of structural properties.

More specifically to be considered structurally deficient (SD) the first digit of Item 5 must be coded "1," and Item 49 must be coded a numeric value greater or equal to 20. A bridge must also meet the following conditions:

A condition rating of 4 or less for:

Item No. 58 – Deck; or
Item No. 59 – Superstructure; or
Item No. 60 – Substructure; or
Item No. 62 – Culvert and Retaining Walls (Applies only if the last two digits of Item 49 are 7 or 19)

or an appraisal rating of 2 or less for:

Item No. 67 – Structural Condition (from FHWA Edit/Update Program); or
Item No. 71 – Waterway Adequacy* (Applies only if the last digit of Item 42 is coded 0, 5,6,7,8, or 9)

Revised Nov 1992

* For local agency bridges, must additionally be in combination with a deficiency in Items 58, 59, 60, 62 or 67 to appear on MoDOT's eligible local bridge funding list for non-state bridges.

Any bridge classified as structurally deficient is excluded from the functionally obsolete category.

Functionally Obsolete Bridge Definition:

A bridge inadequate to properly accommodate the traffic due to poor roadway alignment, waterway, insufficient width, low structural evaluation, or inadequate clearances.

More specifically to be considered functionally obsolete (FO), the first digit of Item 5 must be coded "1," and Item 49 must be coded a numeric value greater or equal to 20. A bridge also must meet the following conditions:

An appraisal rating of 3 or less for:

Item No. 68 – Deck Geometry***(From FHWA Edit/Update Program); or
Item No. 69 Underclearances (Applies only if the last digit of Item 42 is coded 0, 1,2,4,6,7 or 8);

or

Item No. 72 – Approach Roadway Alignment **

or an appraisal rating of 3 for:

Item No. 67 – Structural Condition (From FHWA Edit/Update Program); or
Item No. 71 – Waterway Adequacy ** (Applies only if the last digit of Item 42 is coded 0,5,6,7,8 or 9).

Revised Nov 1992

** For local agency bridges, must additionally be in combination with a deficiency in Items 67, 68, or 69 to appear on MoDOT's eligible local bridge funding list for non-state bridges.

*** Local agency bridges coded for 2-way traffic, ADT = 0-100, deck widths from 16-17.9, and approach roadway widths under 18' are not be considered eligible for local bridge funding unless all other bridge deficiencies in the jurisdiction are removed.

Revised Sept 1992

Sufficiency Rating Definition:

The numerical rating of a bridge used by FHWA to determine the allowable funding level which is based on structural adequacy and safety, serviceability and functional obsolescence, and essentiality for public use. The structural adequacy and safety comprise up to 55 percent of the total rating, while the serviceability and functional obsolescence comprise up to 30 percent of total rating. The essentiality for public use comprises up to 15 percent of the total rating. A numerical rating of 100 would represent an entirely sufficient bridge while a zero would represent an entirely insufficient or deficient bridge.

Full replacement funding is only allowed for bridges that have a sufficiency rating in the range from 0 to less than 50 and also are categorized as being either structurally deficient or functionally obsolete. (The bridge may alternately be eligible for full rehabilitation funding if this will provide the best value.)

Only partial funding is allowed for bridges that have a sufficiency rating in the range from 50 to 80 and also are categorized as being either structurally deficient or functionally obsolete. Replacement is still allowed. However, the funding participation by the FHWA may be less than 80%. Funding participation will be limited to the cost of a feasible rehabilitation strategy.

* Definition of Operating Rating:

The maximum allowable load on a bridge based on 75% of the yield strength of the material used to build the structure.

or, put another way

The rating which will result in the maximum permissible load level to which a structure may be subjected.

* Definition of Inventory Rating:

The design load on a bridge based on 55% of the yield strength of the material used to build the structure.

or, put another way

The rating which will result in a load level that can safely utilize a structure for an indefinite period of time.

Definition of Posting Rating:

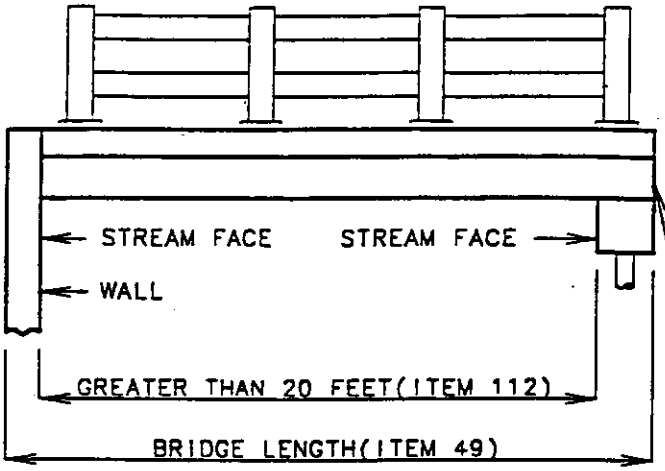
The rating which will result in a load level that may legally cross a structure without obtaining a special permit and less than the legal limit.

Definition of Special Permit Rating:

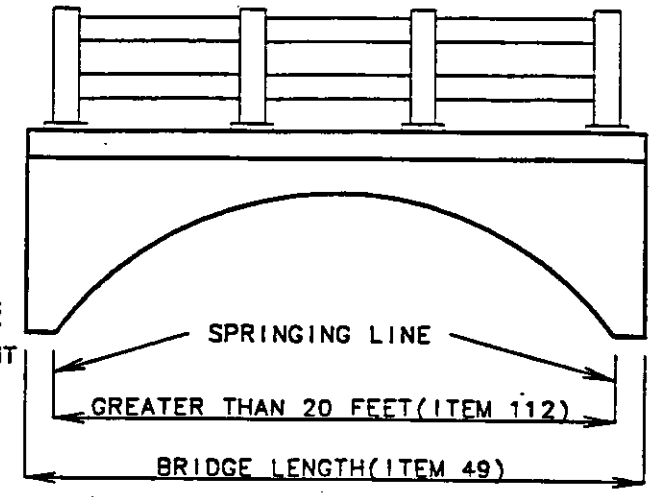
The rating which will result in the issuance of a permit for a specific truck, with a load level in excess of that allowed by the Posting Rating or the legal limit. Used for On-System, or bridges which the custodian and/or owner is the Missouri Department of Transportation. Special permit ratings for local agency bridges are not generally available from MoDOT. Local agencies needing this information should engage a qualified consultant at their own cost.

* Note: Impact shall be added to any live load selected for establishing the Operating Rating and Inventory Rating. Reference: AASHTO Manual for Maintenance Inspection of Bridges.

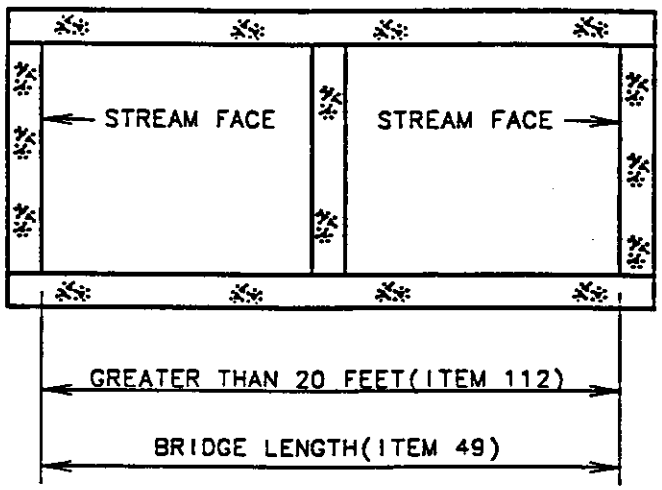
DEFINITION OF BRIDGE STRUCTURE FOR OFFSYSTEM INVENTORY (ITEM 112 AND ITEM 49)



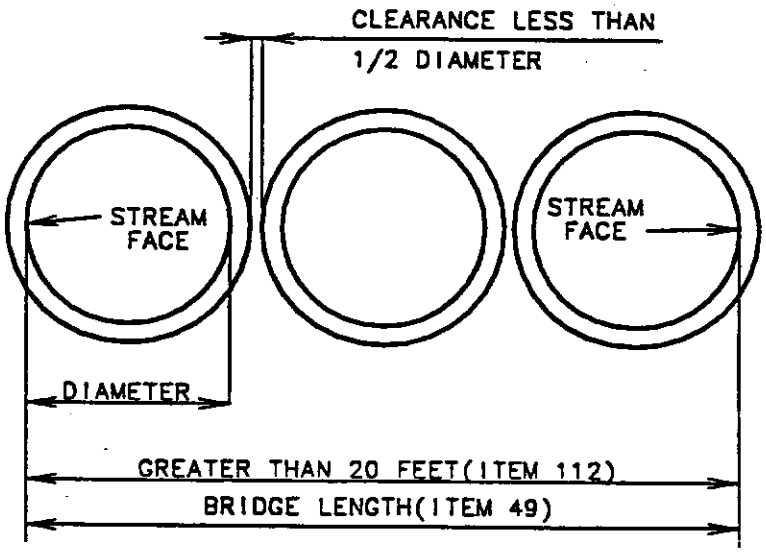
TYPICAL BRIDGE STRUCTURE



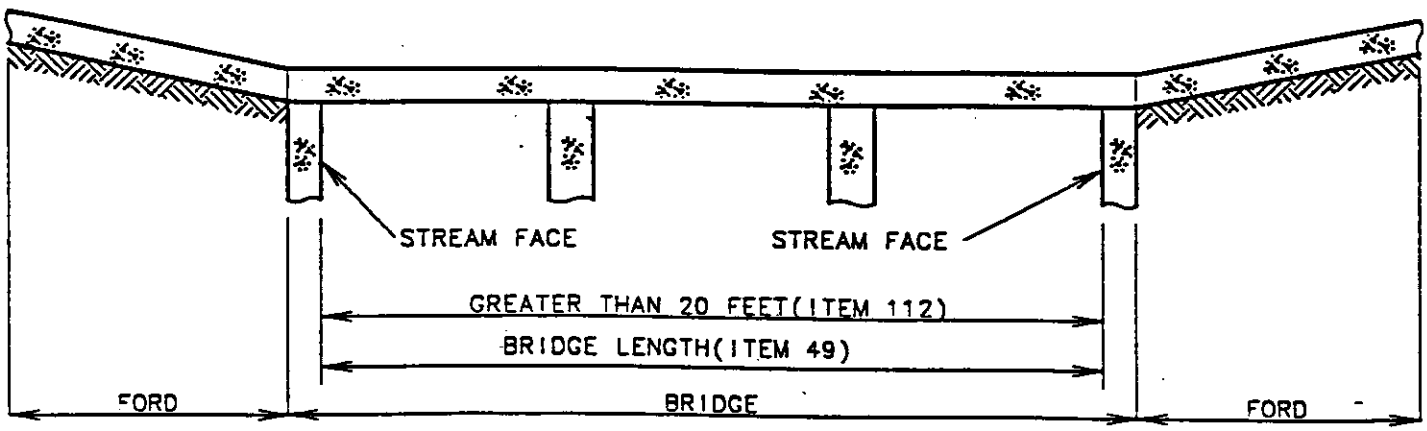
TYPICAL ARCH STRUCTURE



CONCRETE BOX CULVERT



TYPICAL MULTIPLE PIPE



TYPICAL LOW WATER BRIDGE

STRUCTURE INVENTORY AND APPRAISAL SHEET COMMENTS (NON-STATE SYSTEM BRIDGES)

I. GENERAL

District inspection personnel, consultants, and local agencies performing their own inspections need to be familiar with filling out the FHWA Structural Inventory and Appraisal (SI&A) sheets and related information. Collection and documenting updated SI&A information to reflect the current inventory status of the structure is the additional "inventory" level of inspection referred to in Section 3.0.

Generally, complete new SI&A sheets and back-up structural information for load rating purposes is required for the following general areas:

1) **New Structures (At a new location or replacing an existing bridge)**

2) **Bridges which have undergone substantial changes which will cause revision of any of the SI&A items. Some examples of situations where this will be likely to occur:**

   (a) Reconstructions or major rehabilitation.

   (b) Adding spans or replacing existing spans.

   (c) Adding additional supports which changes the span arrangement.

   (d) Redecking to a different type of material.

3) **Bridge Widenings.**

4) **Previously closed structures (Item 41=K) which are encountered by the inspector that have been reopened to traffic.**

Currently, the 1995 FHWA Metric Coding Guide presented in Section 1 is the latest version of this document. Besides it being in metric, it also has included some expanded items that were not previously available in the former 1988 English version.

This situation does create some minor complications for districts in compiling SI&A information. The former 1988 coding guide is an excellent reference for the proper coding of in English units for the majority of structures. However, this approach is not "perfect." Some changes have occurred in the coding from 1988 to 1995 in some areas, and the availability of some additional coding options added in the 1995 version can also be useful. For these reasons, and since the 1995 Coding Guide is used by a wide variety of department personnel, it has been retained in Section 1 of the Manual.

In order to simplify the approach needed to coding English SI&A forms, the department has presented in the Manual a blank English SI&A form (Rev. 8/94), and a filled out example which covers the coding of a typical non-state bridge. Also included in this section are some "Comments" to further clarify the coding shown in the example as it may differ slightly in some areas from the basic reference information in the 1998 FHWA Coding Guide.

If any district personnel do not have available the former English unit version 1998 FHWA Coding Guide, please contact the Bridge Inventory Analyst assigned to your district to obtain a copy.

ALL items on the blank SI&A form need to be filled out by the district unless noted otherwise. If SI&A form information is being supplied by consultants or the local agency, the SI&A form generally should not be submitted directly to the Bridge Division by the local agency. These should be forwarded by the district after review for completeness, accuracy, and compatibility with MoDOT's non-state inspection program requirements. Unless different arrangements have been made in advance, SI&A submittals received from a local agency in the Bridge Division will be returned to the district for verification and review prior to inputting the revised SI&A data in the National Bridge Inventory (NBI) system. This approach is in keeping with the district being primarily responsible for supplying accurate basic SI&A data for non-state structures.

As the primary record-keeping source for all operational correspondence for the inspection and inventory program, districts should keep copies of all SI&A sheets and backup information in the district's files. Correspondence copies should also be maintained in district files concerning any pertinent operational issues regarding the inventory and inspection of local bridges. This correspondence should include representations made by local agencies relating to maintenance agreements or ownership arrangements for the bridge. This information would provide an easy reference in the event questions would later arise in the future regarding the approach the department used to inventory the bridge for the National Bridge Inventory.

The record-keeping responsibility of the central office primarily involves transferring and archiving the submitted SI&A information generated by the district into electronic format for the annual NBI tape information which is required to be submitted to FHWA. Electronic versions of previously archived SI&A information for an entire county or an individual structure are available to assist the district upon request from the central office.

II COMMENTS ABOUT ENGLISH SI&A ITEMS

Bridge Numbers – (Item 8) See sheets 3.1 and 3.2 for information concerning non-state bridge numbers which are generally based on the CART ROAD numbering system. Once a bridge has been assigned a number, it is preferred that it not change, even if a minor discrepancy in the tenths of mile exists. However, when assigning it the first time, the mileage should be as accurate as possible. During the inspections, if you discover a

bridge is on a county road that doesn't have a CART number, this should not be a problem. Generally, there is someone in the district that has custody of the CART ROAD maps who can assign a new number to the road. In the event a new CART ROAD number can't be assigned to the road, additional bridge numbers beginning with 999 and numbered sequentially can be used. Revised CART ROAD maps should also be forwarded to the Bridge Division for information.

Item 4 - Place code for cities, towns, townships, villages, and other census designated places. Refer to Section 1 – Coding guide.

Item 5 - SI&A information for the non-state inventory program will normally be "on" records. At the present time, the development of separate "under" record data is beyond the scope of the local program. However, this may change in the future with the further development of new data systems.

Item 7 - This should be the route name or designation which is officially and consistently used by the local agency to refer to the route, such as "CRD 256." If the county has revised their system of facility designation for 911 emergency service, the district should give consideration to converting their new and existing SI&A information for Item 7 to reflect the 911 system. At the present time, bridge numbers will continue to be based on CART numbers.

Item 9 - The location, S (Section), T (Township), and R (Range) may be obtained from standard county maps which delineate these land coordinates.

Item 10 - The minimum vertical clearance data field is required. Currently, for non-state bridge "on" records in Item 5, this field is coded the same as Item 53.

Items 16&17 The latitude and longitude shall be accurately determined to ensure sufficient precision and accuracy; the use of Global Positioning System (GPS) equipment to collect this data in the field is the preferred method.

Item 19 - By-Pass, Detour Length – This item should be recorded to the nearest mile. It is satisfactory to estimate this distance from a county map. The detour length should make a complete loop. Code 99 for dead end roads.

Item 27 Code all 4 digits of the year in which construction of a new structure was completed. Note: If a new structure replaces an old bridge at the same site, do NOT code Item 106 (Year Reconstructed) with a date, but instead code Item 106 with "0000," and Item 27 with the new date. For more information concerning the proper coding of Items 27 and 106, see manual pages 2.48 and 2.49.

Item 36 - Guardrail – See Manual Section beginning on 2.37 for proper coding.

Item 37 - Historical significance – For a new structure code as a "5."

Items 39&40 Navigational controls – If Item 38 is coded "No" or "N/A," then Items 39 & 40 are coded "000" and "0000" respectively in accordance with both the 1988 and 1995 FHWA Coding Guides.

Item 41 - If the bridge has an existing field load posting, the appropriate letter code should be entered with the type of field posting in place written into the space provided.

Items 48&49 Max. Span Length and Structure Length – Round these values to the nearest foot.

Items 50, 51, 52 Please note these widths are measured to the nearest tenth of a foot, and these are NOT inches.

Item 53 - In accordance with the SI&A example, and the 1995 Coding Guide, code 9999 there is no height restriction or if the actual clearance is over 100 feet. Otherwise, code actual vertical clearance in English units per the 1988 guide.

Item 54 - Vertical Underclearances – In accordance with both the 1988 and 1995 Coding Guide, if the feature below the bridge is not a highway or a railroad, code this item "N0000."

Item 55 - Lateral Underclearance, Right – If the feature beneath the structure is not a railroad or a highway, code "N000" to indicate not applicable (NOTE: In this situation, the coding was revised to "N000" in the current 1995 Coding Guide. This supercedes the value of "N999" which was permitted in the former 1988 Coding Guide.)

Item 56 Lateral Underclearance, Left – In accordance with both the 1998 and 1995 Coding Guides, "000" is used to indicate "not applicable."

Item 62 Culverts – A culvert is generally considered to be a structure with a foot or more of roadway fill over the structure.

Items 64&66 Operating and Inventory Rating – All structures must be evaluated for these NBI values in relation to the HS20 AASHTO Design Vehicle based on the number of lanes available to carry traffic on the structure.

Along with the SI&A data, structural properties and geometry data needs to be collected which is in sufficient detail and quality to perform a complete structural analysis for load rating purposes. Load ratings for bridges not designed by a consultant are solely based on the rating information furnished by the districts. Therefore, in the interest of public

safety, it is important that the field information and measurements compiled by the districts is complete and reliable.

To assist the districts in determining the type of field data that is needed for load rating, the Manual contains various examples and exhibits. For example, a brief outline of the information needed to rate truss bridges is presented beginning on page 3.33.

In addition to documentation of member sizes and construction details, information needs to be provided regarding internal reinforcement size and location, material grades, composite construction, and also lateral bracing information when timber decks are used.

If "state standards" are used to build concrete culverts, the SI&A submittal should include a copy of the actual standards which were used by the local agency with the appropriate details circled.

If a new or rehabilitated bridge has been designed by a consultant or local agency engineering staff, the local agency shall require their consultant to provide MoDOT with the appropriate calculations and rating values for the NBI (See Section 3.0 for more information). The SI&A form shall identify the consultant or other party who is supplying the load capacity information.

Item 106 - Reconstruction Date – See Section 2.48.

Item 108A - Wearing Surface/Protection Systems – See Section 2.50 for proper coding.

GENERAL COMMENTS CONCERNING INSPECTIONS (NON-STATE BRIDGES)

I. GENERAL

When beginning with inspection of a bridge, confer with local agency representatives regarding alterations or repairs which may have occurred since the previous inspection. This information should alert the inspector to situations where new SI&A data (and also new structural data) needs to be collected in accordance with the information discussed in the previous section.

II. COLLECTION OF LOAD RATING DATA

The inspector also needs to be alert for situations where the structure needs to be brought to the attention of the Bridge Division for re-evaluation of the existing load postings. For the convenience of the districts, the following are some typical (but not all-inclusive) situations where new comprehensive structural geometry and member properties need to be forwarded to the Bridge Division.

1) New or rehabilitated bridges.

2) Bridges that were previously closed to traffic and were found to be reopened.

3) Repairs or retrofitting that may involve a change in load capacity (changes in lateral bracing, adding cover plates, shoring, etc.).

4) Bridge widening or deck replacements.

5) When the bridge superstructure or substructure rating is lowered to a "4" or a "3" condition rating (Also collect section loss information)

6) Changes in wearing surface thickness.

7) Extensive corrosion with substantial section loss, deep pits, nicks, cracks or other defects existing in primary structural members.

8) Other situations where the load posting seems unusually high or low for the type or condition of the structure.

Please note that most (but not all of these situations) will also cause the district to make corresponding revisions to the basic SI&A data.

Very useful information can be also provided by observing the bridge during passage of heavy loads to determine if excessive vibration or deflection exists.

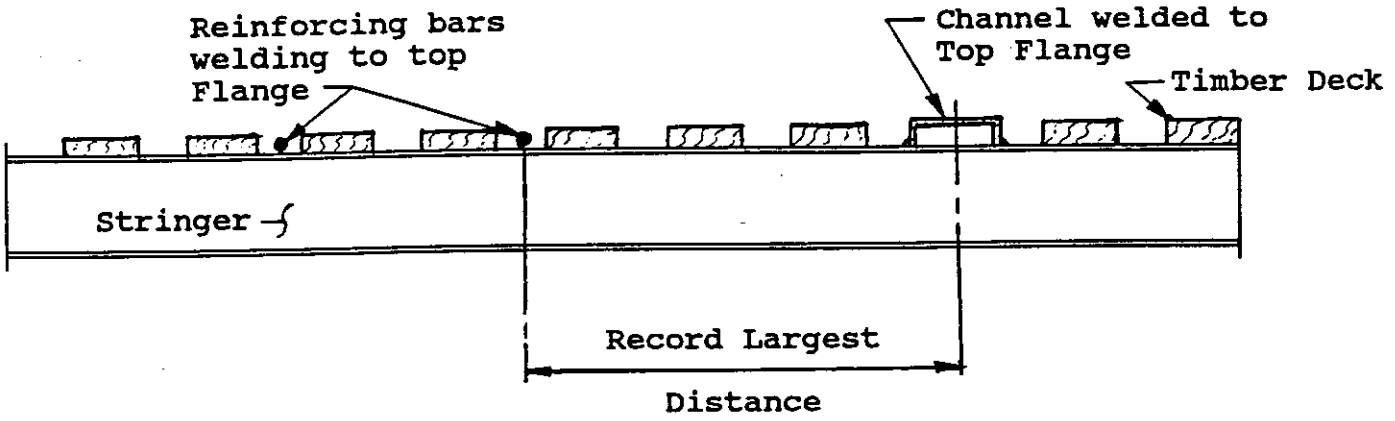
TIMBER

Examine timber decks for decay at their contact surfaces where they bear on stringers and between layers of planking or laminated pieces.

Note any looseness in the timber deck which may have developed from inadequate nailing or where the spikes have worked loose.

Observe the timber deck under traffic for looseness or excessive deflection.

If supported by steel stringers note distance between lateral supports of top (compression flange) of stringers.



CONCRETE

Check concrete decks for cracking, leaching, scaling, spalling, water saturation and other evidence of deterioration.

Always examine the underside of the deck for indications of deterioration or distress.

Note any evidence of water passing through cracks in the deck.

Observe if the concrete deck is raising off of the stringers.

STEEL

Check steel decks for corrosion and unsound welds. Determine if deck is securely fastened to floor system.

GENERAL

Examine all decks for slipperiness.

Determine if all decks are well drained with no areas where water will pond and produce a hazard to traffic.

Check drains and outlets to see that they are open.

Examine vertical and horizontal alignment of deck for indications of movement or settlement.

TIMBER STRINGERS

Examine timber stringers for splitting cracking and excessive deflection.

Check timber stringers for cracking and decay at bearings and where they support the deck.

Check bridging for soundness and tightness.

STEEL STRINGERS AND GIRDERS

Examine steel stringers and girders for cracking and corrosion at bearings where they support the deck and at connections.

Check flanges and webs for misalignment, damage or section loss.

Inspect weld areas for cracks, especially at re-entrant corners and copes and where vibration and movement could produce fatigue.

CONCRETE GIRDERS AND SLABS

Check concrete for abnormal cracking and any deterioration or disintegration. Note location and size or extent.

Investigate any abnormal offset to determine the cause and severity.

Concrete slabs may be inspected similar to concrete decks.

A concrete bridge need not be posted for restricted loading when it has been carring normal traffic for an appreciable length of time and shows no 'distress'. In this instance the definition of 'distress' means cracks caused by traffic, not normal deterioration. This general rule will apply to bridges for which details of the reinforcement are not known.

BEARINGS

Check expansion bearings to see that they can move freely and are clear of all foriegn material.

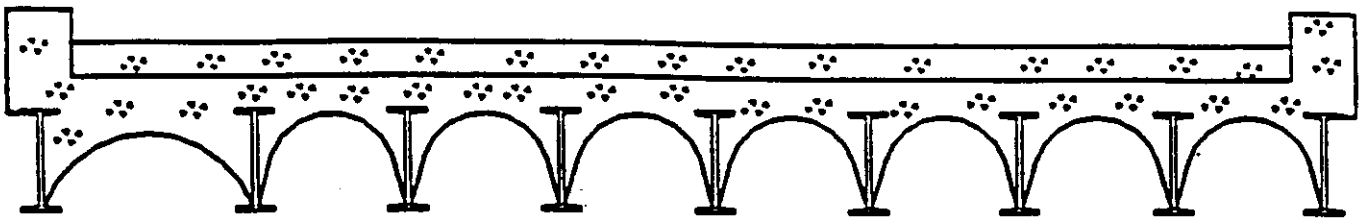
Examine grout pads and pedestals under bearing for cracks, spalls or deterioration.

Examine the concrete for cracks and spalls at seats where girders bear directly on concrete or tar paper.

Examine each bearing under traffic, if possible to determine if all bearings at a support are carrying any load.

GENERAL

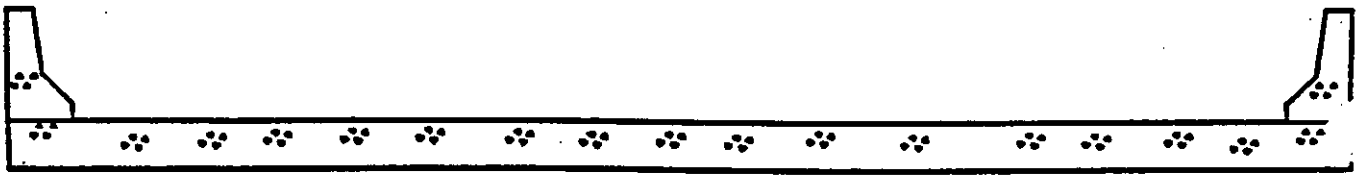
If rated at "2" or less, refer to Section 2, Critical Inspection Findings.



ROADWAY CROSS SECTION

JACK-ARCH BRIDGE

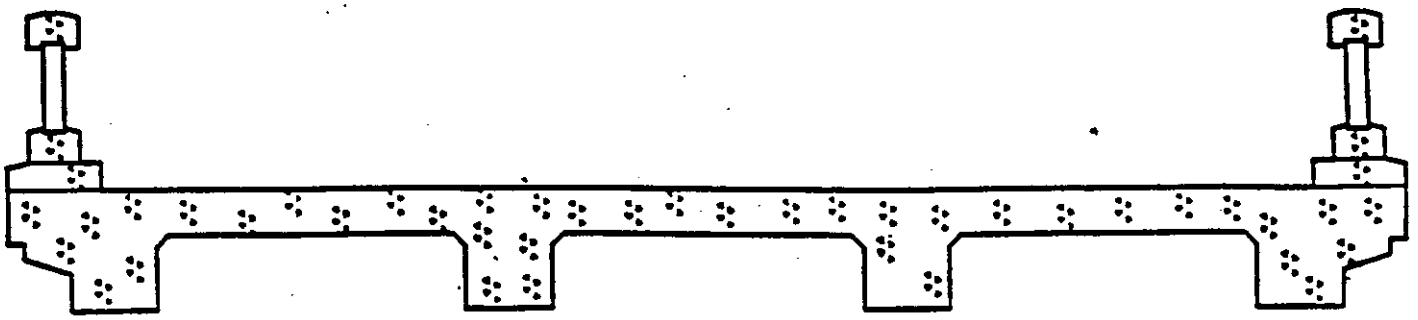
(ITEM 43, BRIDGE TYPE = 100 IF SIMPLE SPAN, 200 IF CONTINUOUS SPANS.)



ROADWAY CROSS SECTION

CONCRETE SOLID SLAB

(ITEM 43, BRIDGE TYPE = 101 IF SIMPLE SPAN, 201 IF CONTINUOUS SPANS.)

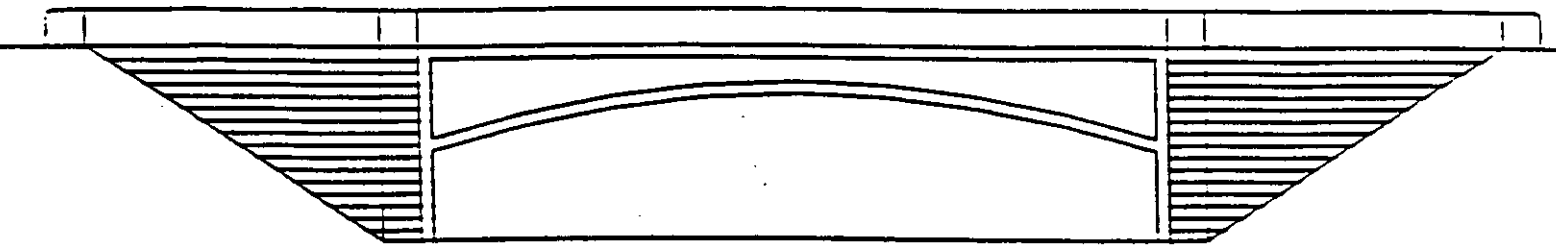


ROADWAY CROSS SECTION

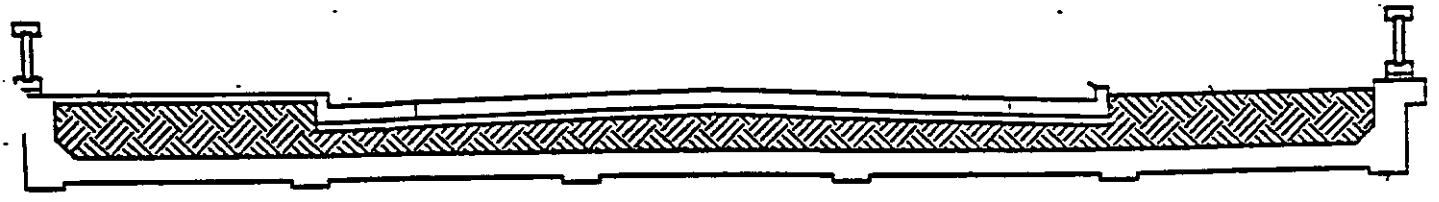
CONCRETE DECK GIRDER

(ITEM 43, BRIDGE TYPE = 104 (IF SIMPLE SPAN).)

CODING FOR CONCRETE FILLED ARCH



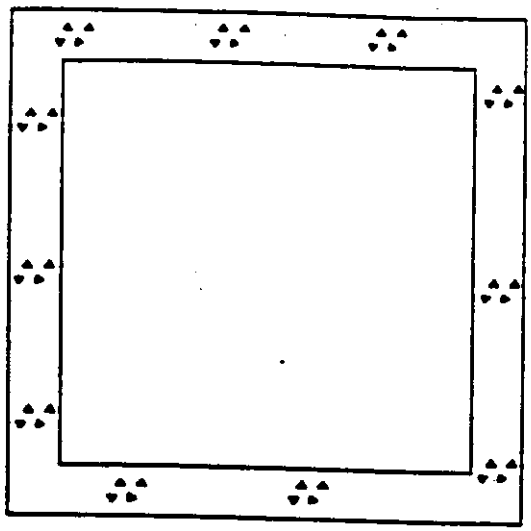
GENERAL ELEVATION
(Reinforced Concrete Filled Arch)



SECTION THRU FILLED ARCH

The coding of the SI&A sheets and inspection forms shall consider similar concrete filled arches as culverts where the roadway is on fill and carried across the structure and the headwalls and/or parapets do not affect the flow of traffic.

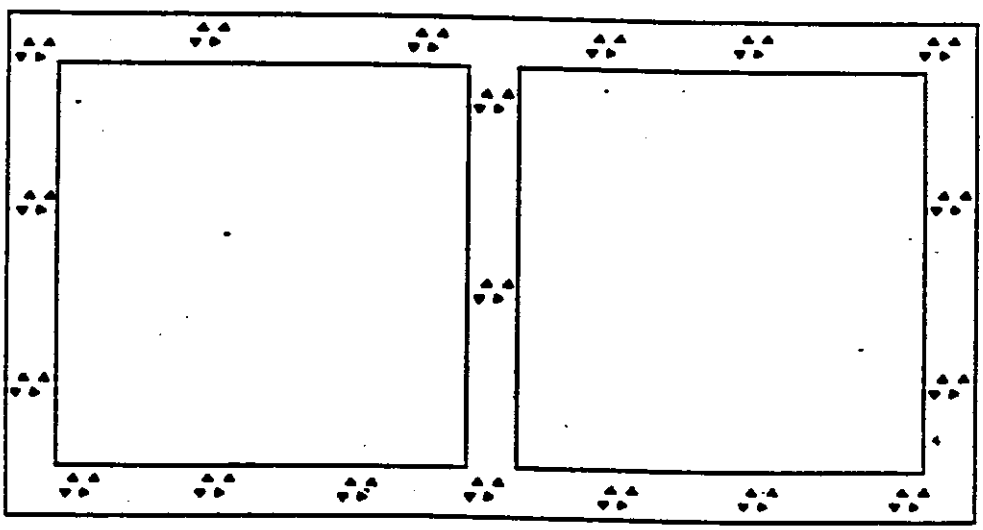
Item 43, Structure Type	119
Item 51, Bridge Roadway Width (Curb to Curb):	0000
Item 58, Deck Condition:	N
Item 59, Superstructure Condition:	N
Item 60, Substructure Condition:	N



SECTION THRU BOX

CONCRETE SINGLE BOX CULVERT

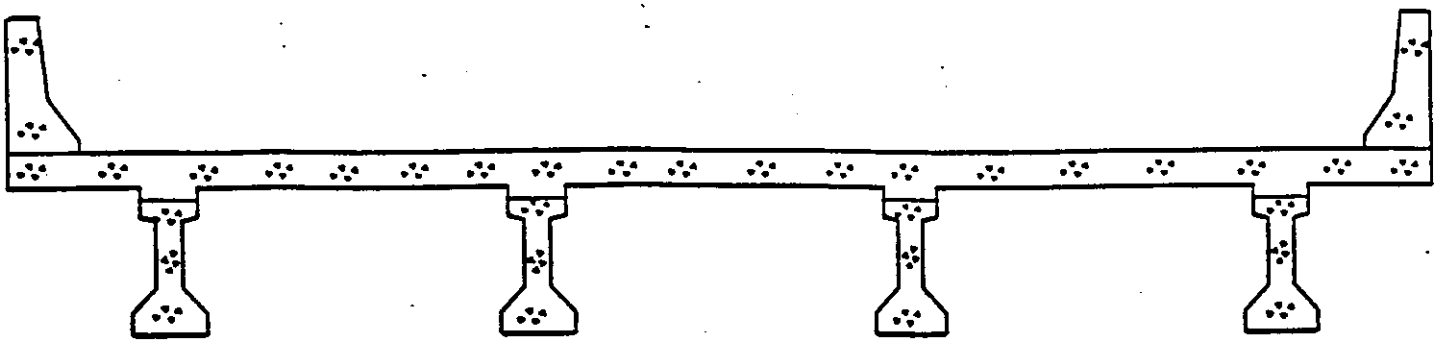
(ITEM 43, BRIDGE TYPE = 119)



SECTION THRU BOX

CONCRETE DOUBLE BOX CULVERT

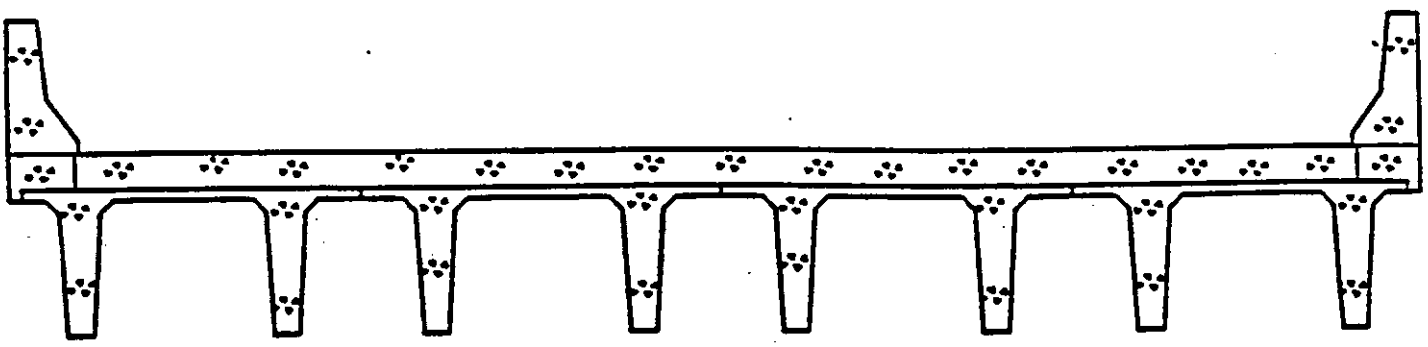
ITEM 43, BRIDGE TYPE = 219 (IF CONTINUOUS SPANS AS SHOWN).



ROADWAY CROSS SECTION

CONCRETE PRESTRESSED I-GIRDER

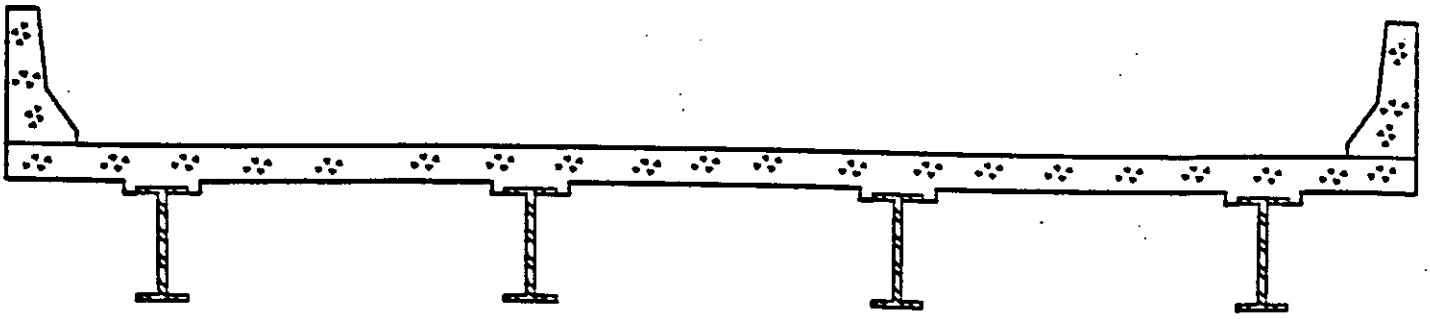
(ITEM 43, BRIDGE TYPE = 502 IF SIMPLE SPAN, 602 IF CONTINUOUS SPANS.)



ROADWAY CROSS SECTION

CONCRETE PRESTRESSED DOUBLE-TEE

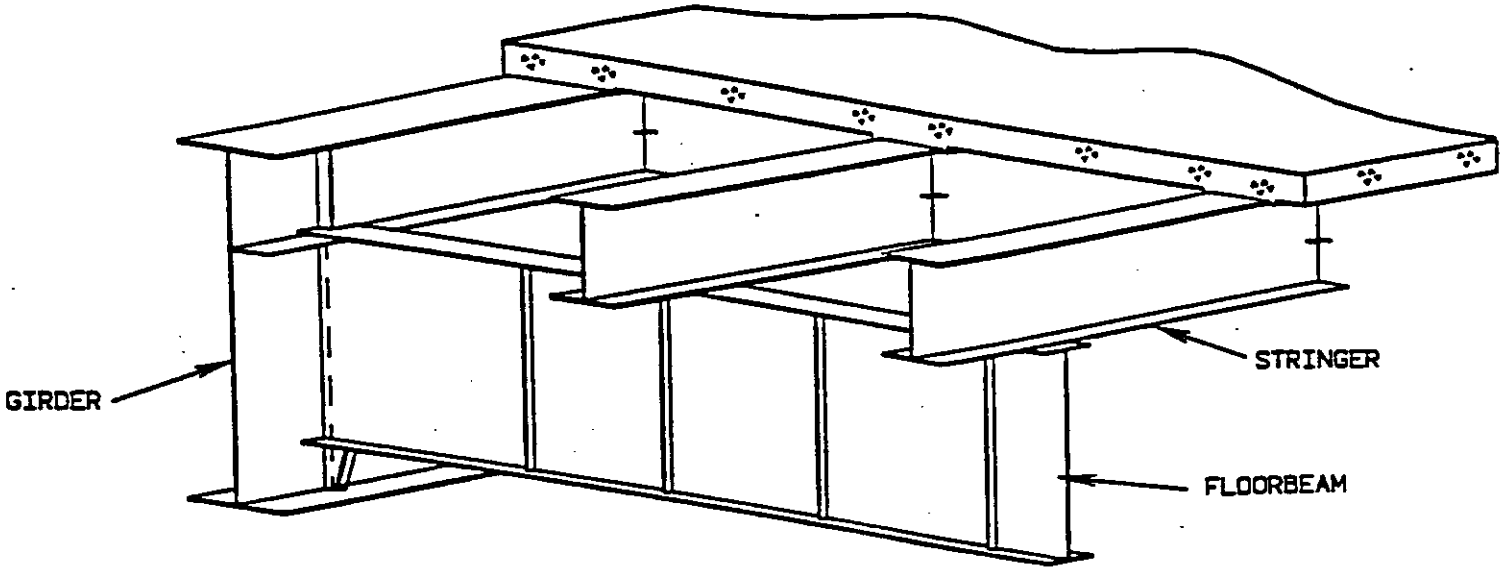
(ITEM 43, BRIDGE TYPE = 504 IF SIMPLE SPAN, 604 IF CONTINUOUS SPANS.)



ROADWAY CROSS SECTION

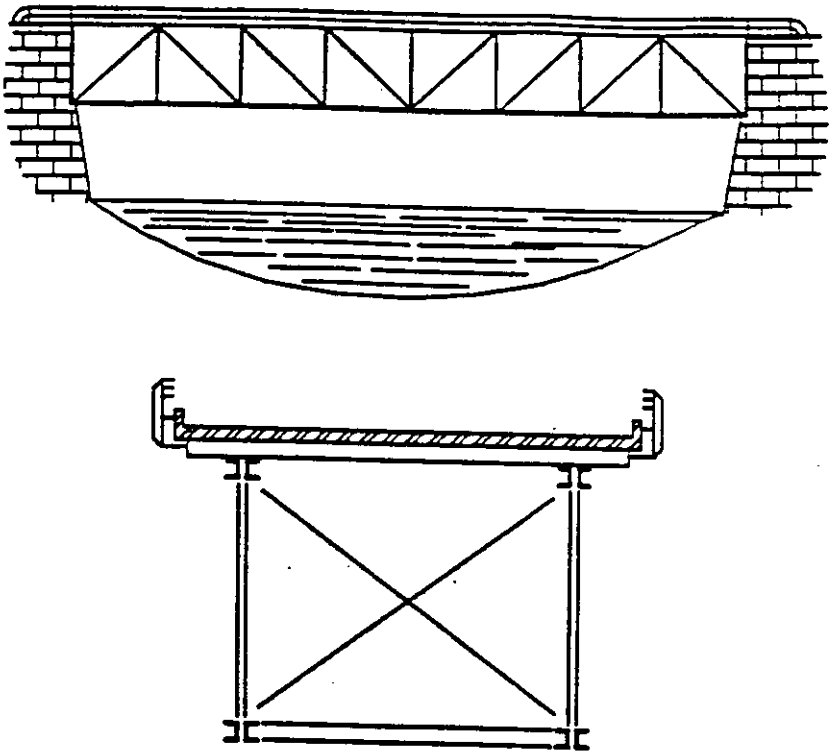
STEEL WIDE FLANGE BEAM

(ITEM 43, BRIDGE TYPE = 302 IF SIMPLE SPAN, 402 IF CONTINUOUS SPANS.)



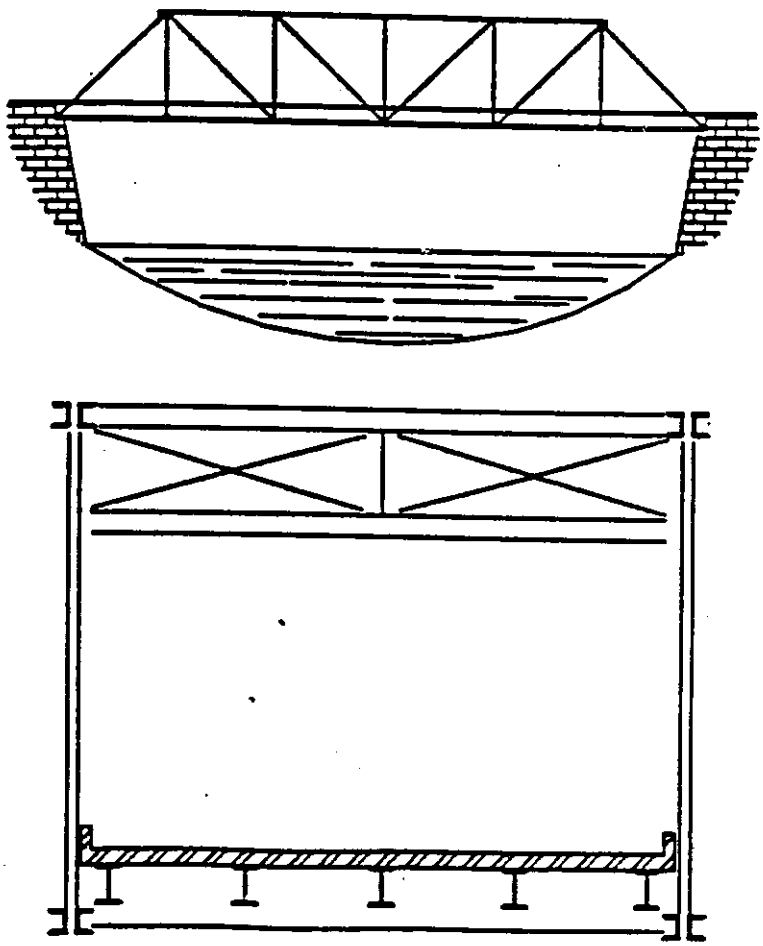
STEEL FLOOR BEAM STRINGER

(ITEM 43, BRIDGE TYPE = 303 IF SIMPLE SPAN, 403 IF CONINUOUS GIRDER SPANS.)



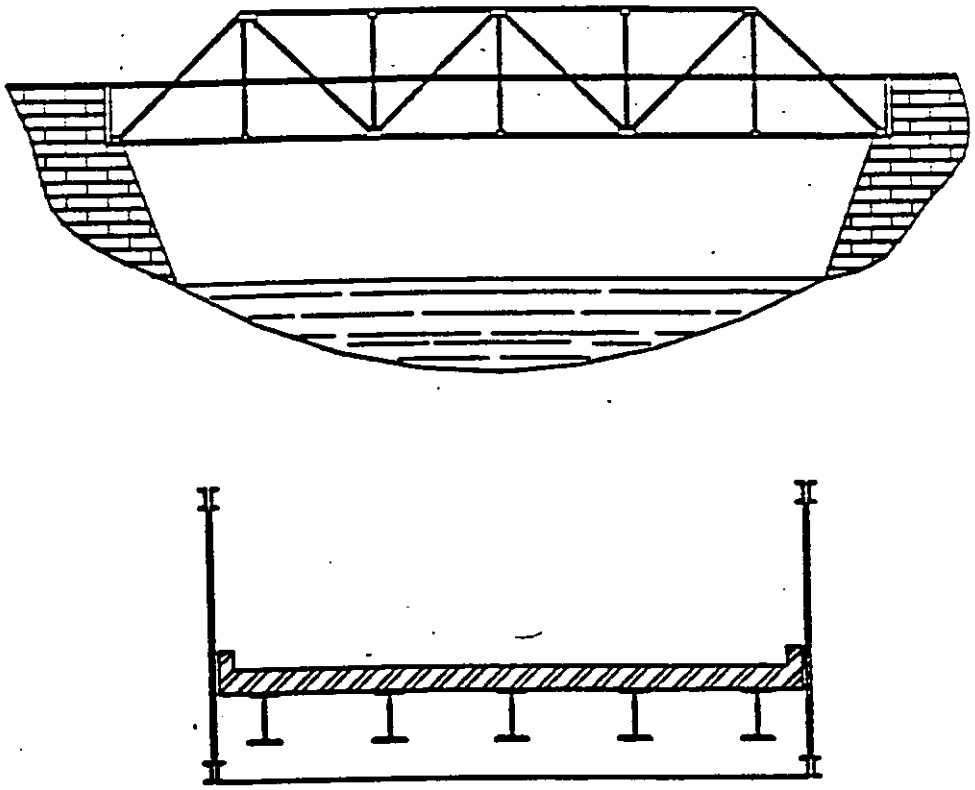
DECK TRUSS

(ITEM 43, BRIDGE TYPE = 309 FOR SIMPLE TRUSS SPAN ILLUSTRATED.)



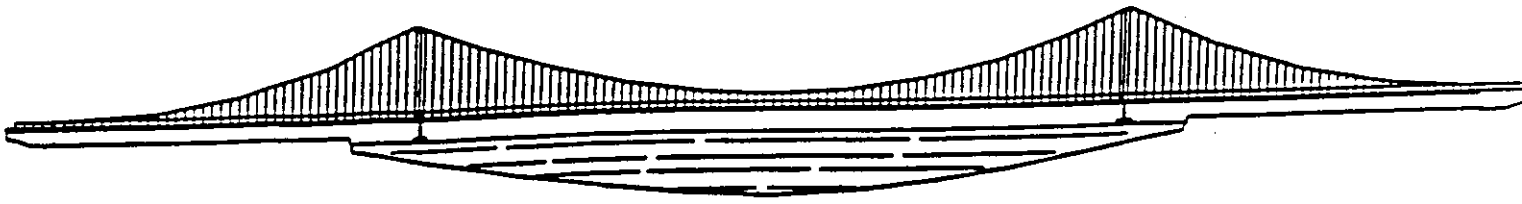
THROUGH TRUSS

(ITEM 43, BRIDGE TYPE = 310 FOR SIMPLE TRUSS SPAN ILLUSTRATED.)



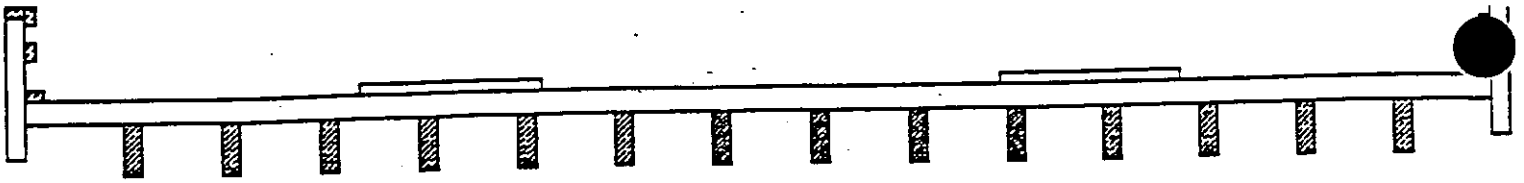
PONY TRUSS OR HALF THROUGH TRUSS

(ITEM 43, BRIDGE TYPE = 310 FOR SIMPLE TRUSS SPAN ILLUSTRATED.)



SUSPENSION BRIDGE

(ITEM 43, BRIDGE TYPE = 413.)



ROADWAY CROSS SECTION

TIMBER BRIDGE

(ITEM 43, BRIDGE TYPE = 702)

ITEM 60 SUBSTRUCTURE

ABUTMENTS, BENTS AND PIERS

Check for scour and undermining.

Check for earth pressure against substructure units causing movement or unstable conditions.

Examine all units for movement or settlement. Measure any misalignment, bends or kinks.

Check condition of concrete for deterioration, cracks and/or water saturation.

Observe steel encased in concrete at the point of encasement.

Check masonry for displacement.

Check timber piles for decay, especially in areas that are alternately wet and dry. (Ground line)

Examine contact surfaces of timber.

Check timber caps for crush and excessive deflection under heavy loads.

Observe caps for rotational movement.

Check all piles for deterioration.

Check steel cassions for cracks and deterioration.

If rated a "2" or less refer to Section 2, Critical Inspection Findings.

ITEM 71 WATERWAY ADEQUACY

Observe the adequacy of the waterway opening under the structure.

Check the adequacy of the freeboard.

Record the high-water mark.

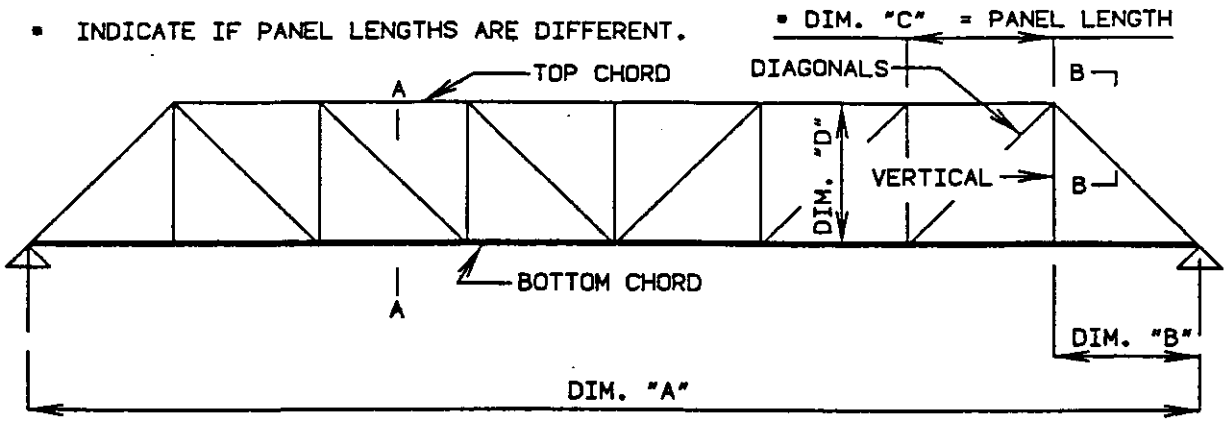
Check for signs of scour.

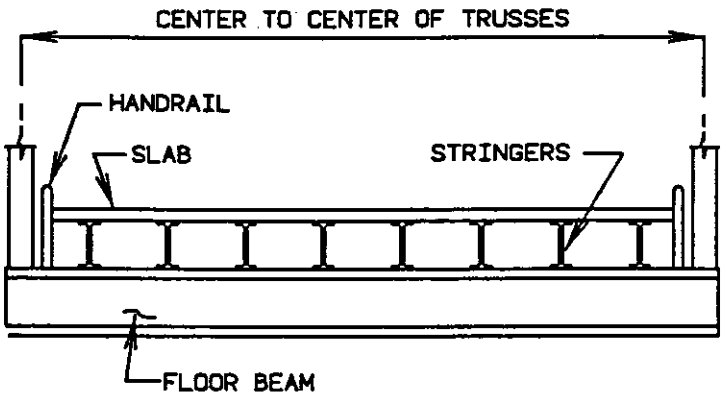
INSPECTION TOOL LIST

- Ax
- Camera
- Extension Ladder
- Hip Boots
- Inspection Reports
  - Bridge
  - Culvert
  - Structural Inventory and Appraisal Sheet
- Level
- Maps
- Markers (Keel-paint)
- Mirror
- Pick
- Pike Pole (Range Pole)
- Plumb Bob
- Prospector's Pick
- Putty Knife
- Rope
- Shovels
  - Round Point
  - Square Point
- Straight Edge
- Steel Tapes (not cloth)
  - 50'
  - 10' or 12'
- Whisk Broom
- Wire Brush

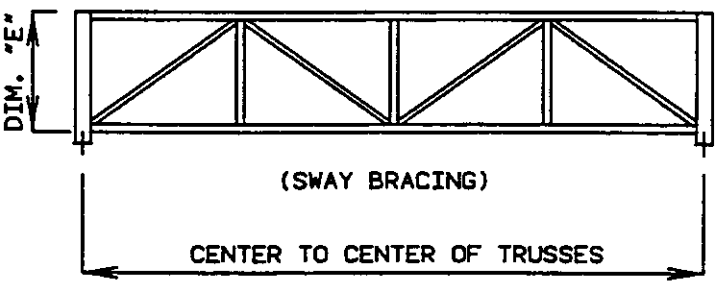
Safety Equipment

INFORMATION TO RATE TRUSS BRIDGES





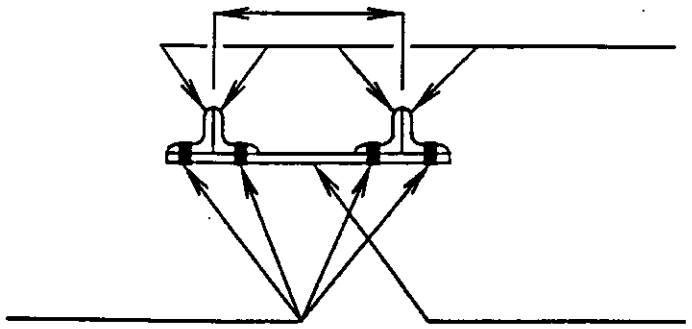
SECTION A-A

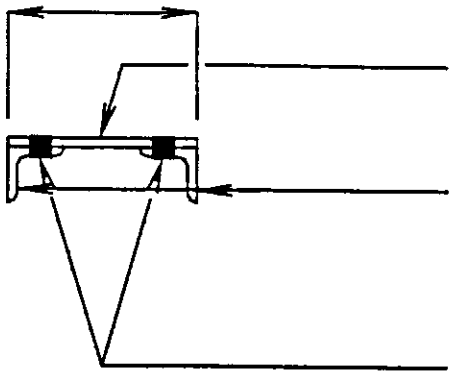


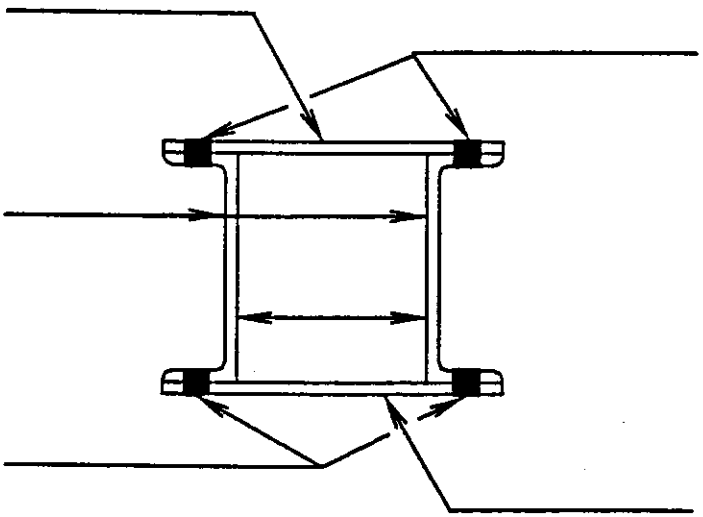
SECTION B-B

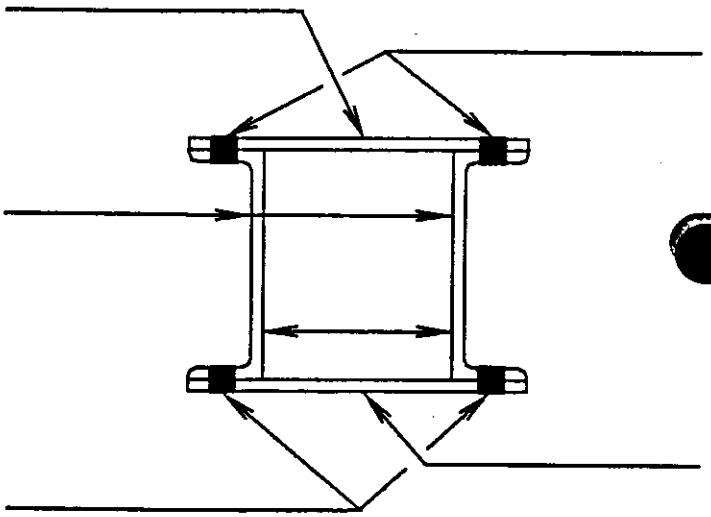
DIMENSION "A"
DIMENSION "B"
DIMENSION "C"
DIMENSION "D"
DIMENSION "E"
CONFIGURATION AND SIZES OF:
- TOP CHORD
- BOTTOM CHORD
- VERTICALS
- DIAGONALS

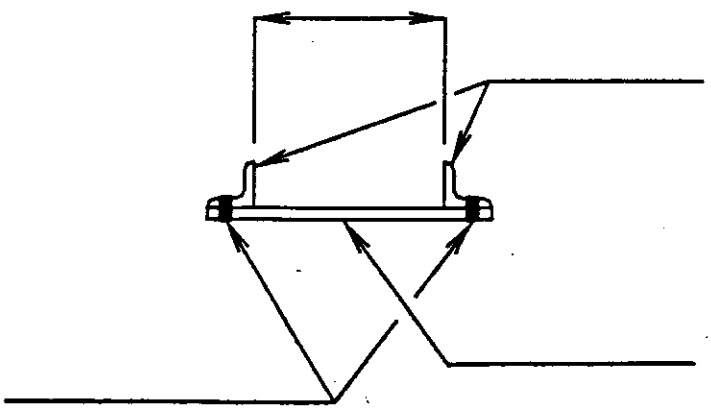
DIMENSION OF:
- CENTER TO CENTER OF TRUSSES
- FLOOR BEAM SIZES
- STRINGER SPACING
- STRINGER SIZES
- ROADWAY WIDTH
- CURB WIDTH
- SWAY BRACING (IF ANY) SECTION B-B
- HANDRAIL TYPE AND DIMENSIONS
- DEPTH OF SLAB

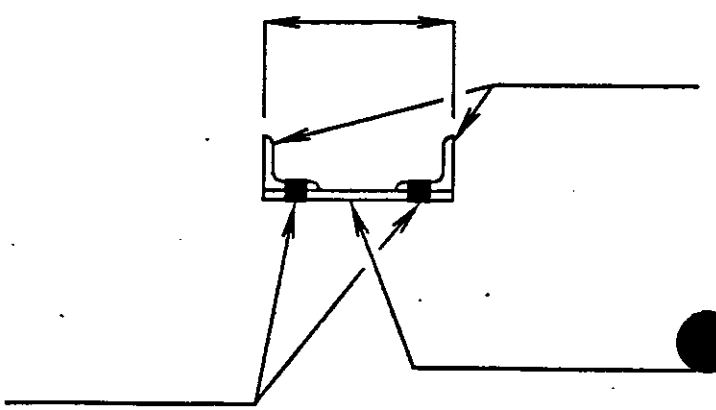




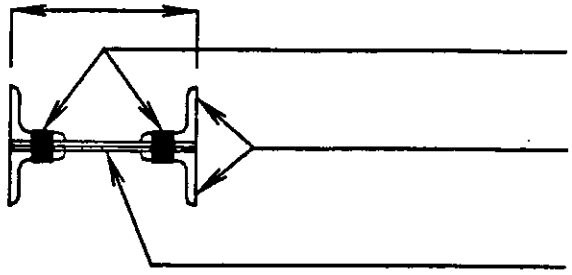


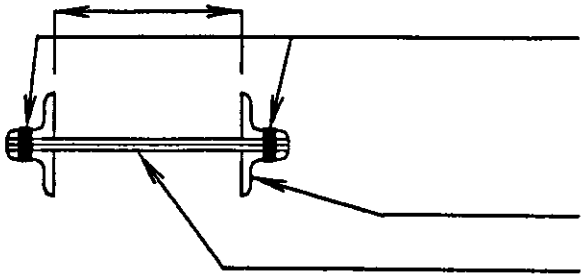


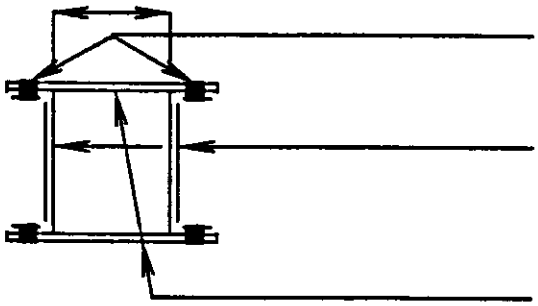


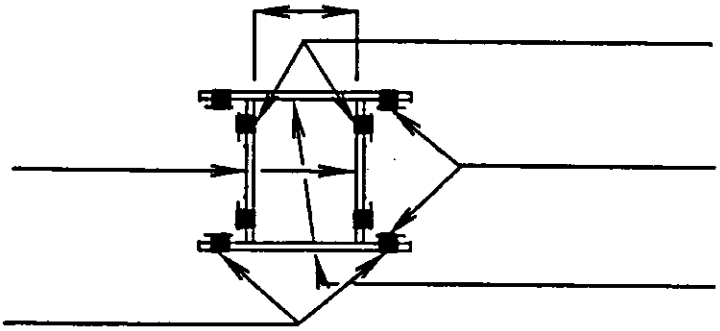


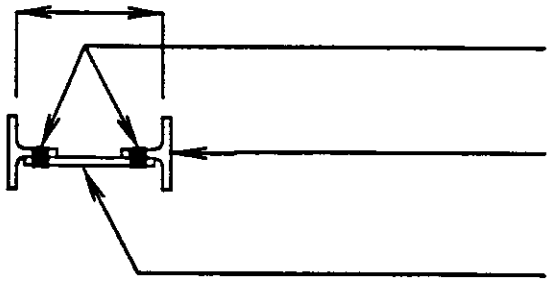
INSPECTION DETAIL AIDS

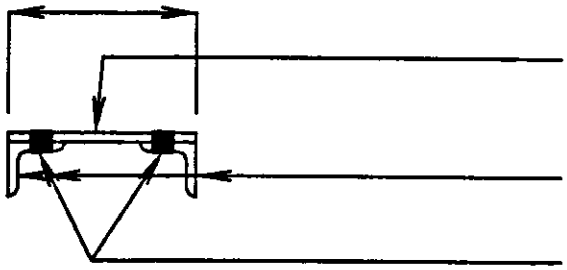


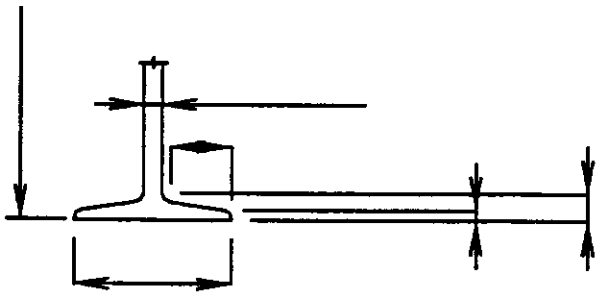


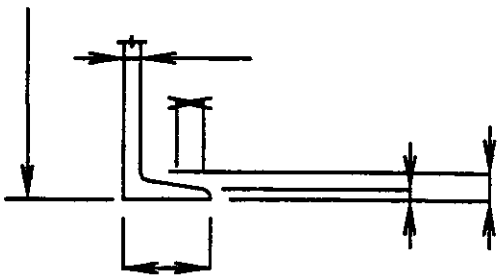


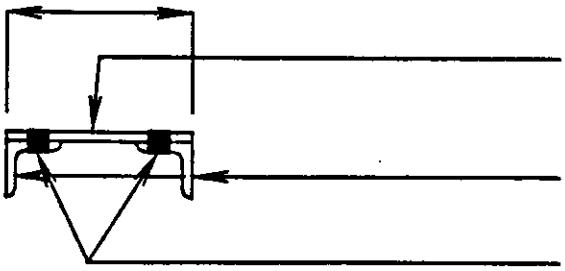


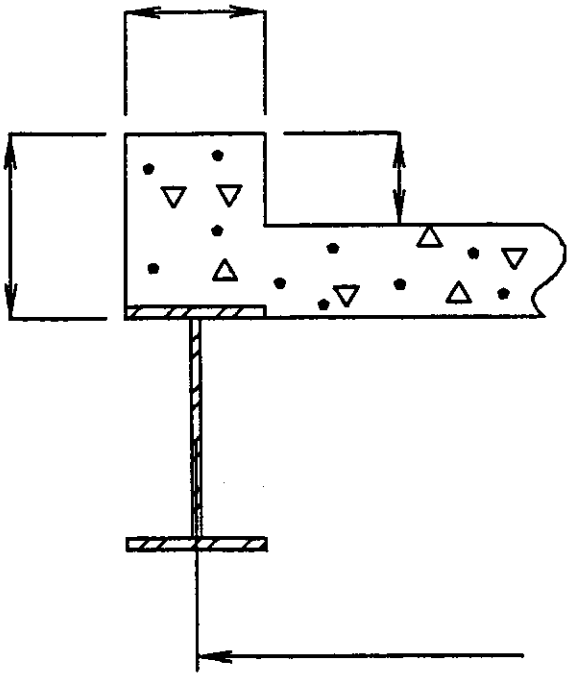


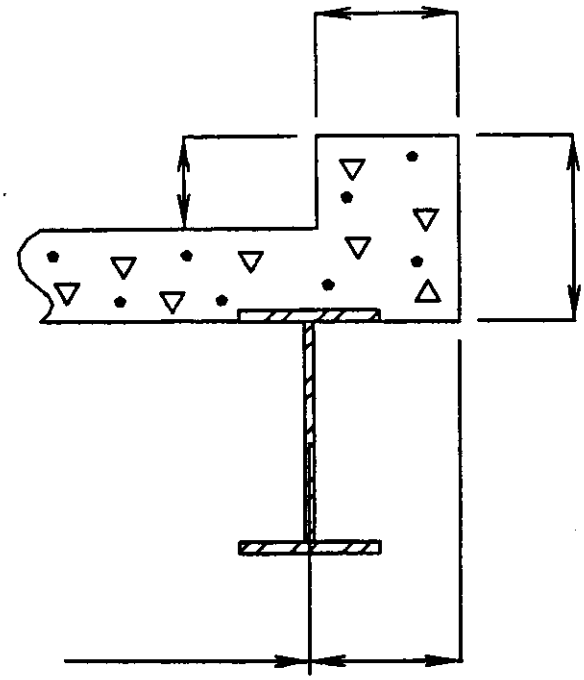


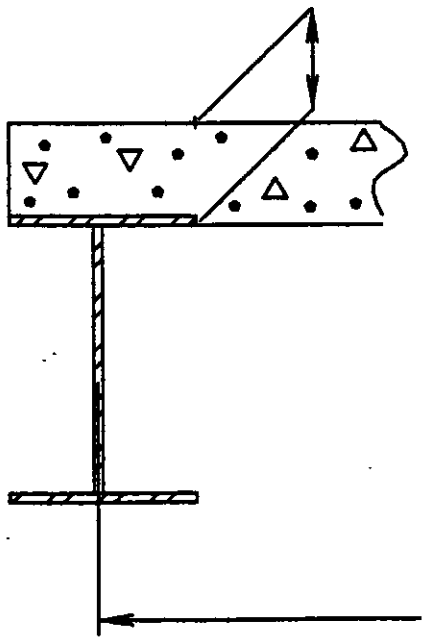


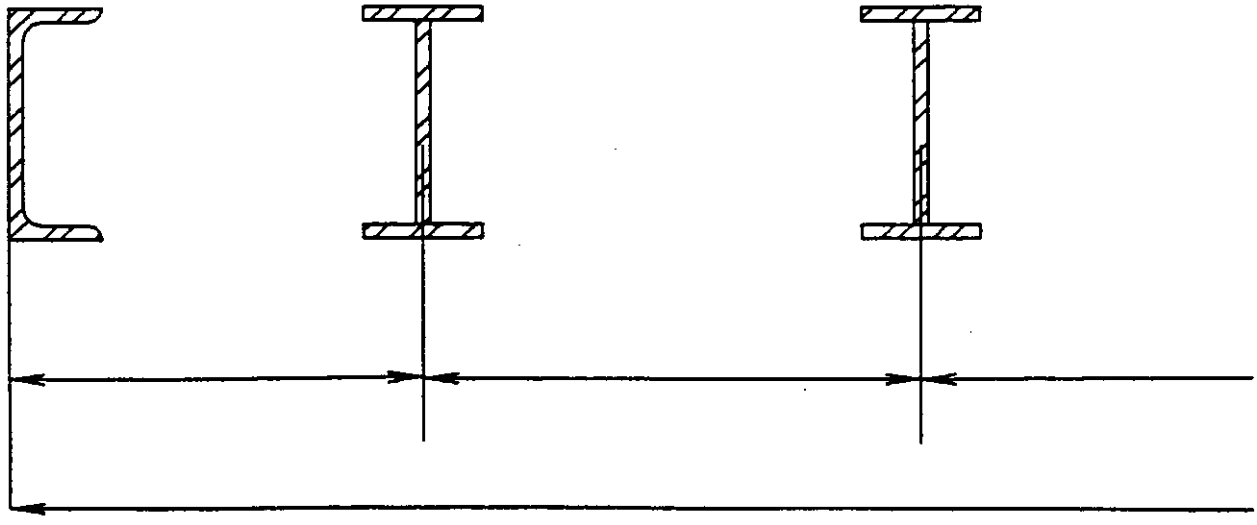


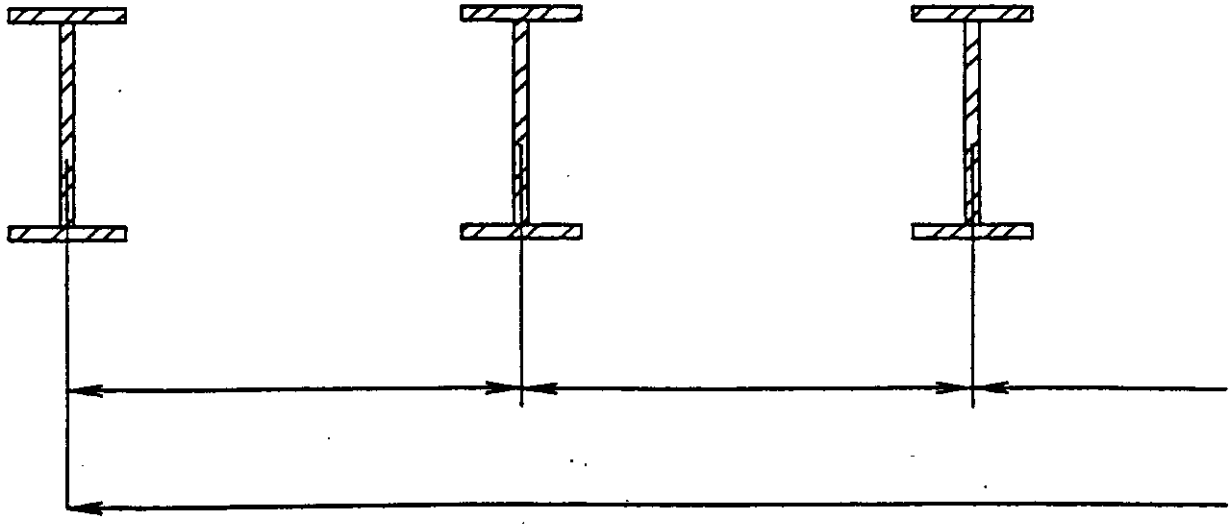






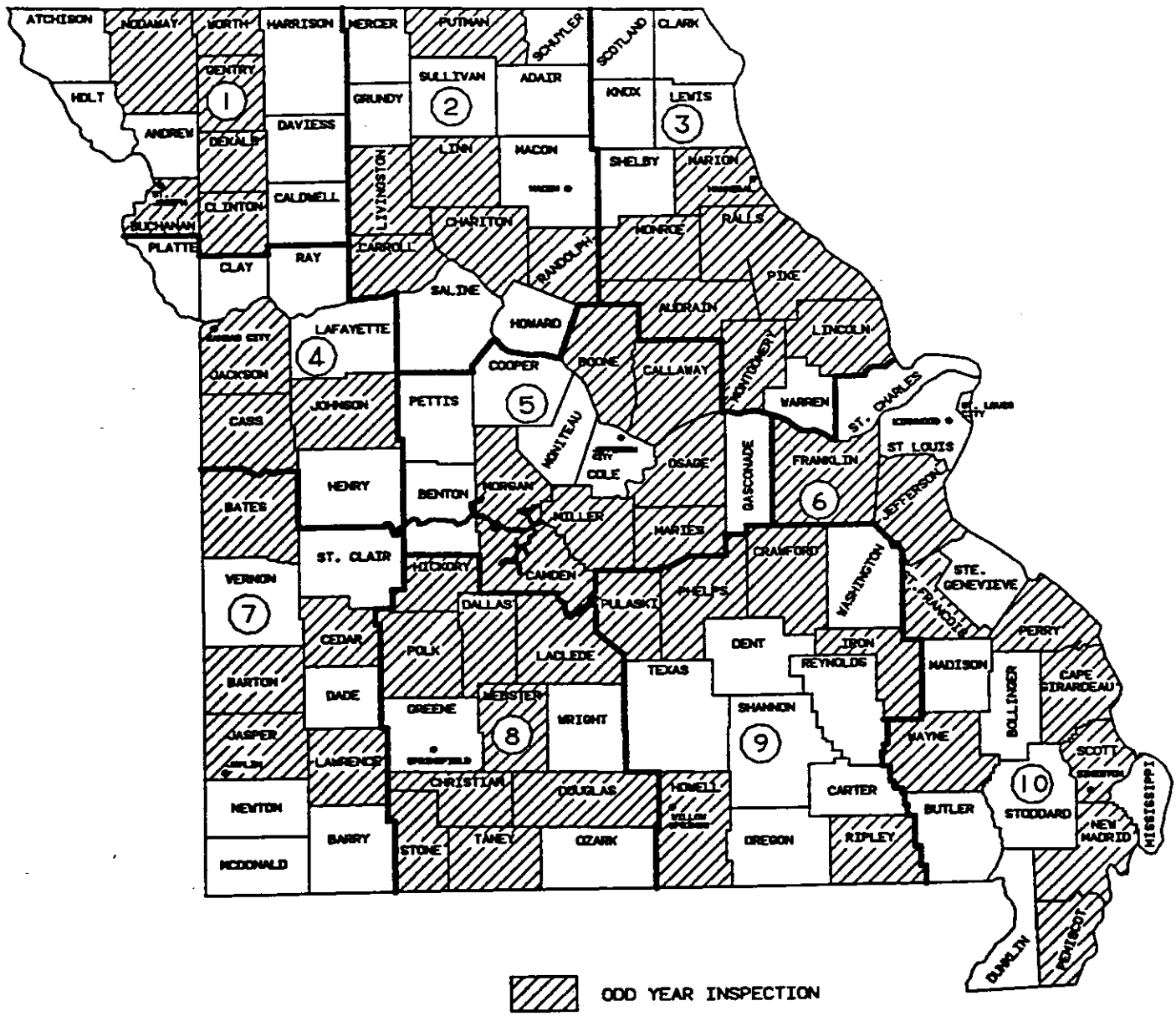






STATE OUTLINE MAP

DISTRICTS AND COUNTIES



OFF SYSTEM BRIDGE INSPECTION REPORT

COUNTY Callaway BRIDGE 25600031 ROUTE CO256

[4] Place Code 16642
[6] Features Intersected LITTLE AUXVASSE CREEK
[22] Owner 02
[9] Location S 36 T 45N R 10W
[26] Functional Classification 09

AGE AND SERVICE - GEOMETRIC DATA - MATERIAL

[49] Structure Length 141 Ft [51] Bridge Width 24.0 Ft [52] Deck Width 24.7 Ft
[32] Approach Roadway Width w/Shoulder 20 Ft
[107] Deck Structure Type 1
[108] Wearing Surface/Protective System 100
[106] Year Reconstructed 0000
[27] Year Built 1992

(Recommended changes to the above data should be indicated in comments)

TRAFFIC

[29] ADT on Structure 40 [30] Year 93 [109] Truck ADT on Structure (%) 10

LOAD RATING AND POSTING

[41] Open/Posted/Closed A
One Sign(s) Missing (Y/N) N
Posting Category S-1

Actual Posting - Trucks Over (Tons) __
- Special Limit (Tons, CL, SL or CS) __
- Overall Weight Limit (Tons) __

CONDITION

[58]	Deck	8
[59]	Superstructure **	8 *
[60]	Substructure **	8 *
[61]	Channel/Channel Protection	8 *
[62]	Culverts	N *

APPRAISAL

[71]	Waterway Adequacy	6
[72]	Approach Roadway Alignment	7
[113]	Scour Crit. Br. (0-9 or N)	8 *
	Type of Scour Evaluation	C

Type of Scour Evaluation
C = Calculated
O = Observed
N = None

INSPECTIONS

	MM	YY
[90] Inspection Date	02	93
[91] Designated Frequency	24	

[92] Critical Feature Inspection

	Y/N	MM
A) Fracture Critical Detail	N	__
B) Underwater Inspection	N	__
C) Other Special Inspection	N	__

[93] Critical Feature Inspection Dates

	Type	MM	YY
A) Fracture Critical Detail	-	__	__
B) Underwater Inspection	-	__	__
C) Other Special Inspection	-	__	__

Type of Fracture Critical Inspection
C = Comprehensive
M = Most F.C. Member
N = Not Applicable

Type of Underwater Inspection
D = Dive
W = Wade
Y = Dry

[36] Traffic Safety Features (Mark Appropriate Code)

Bridge Rail	1	Trans.	1
App. Guardrail	1	App. Rail Term.	1

Traffic Safety Feature Codes
0 = Does Not Meet Standard
1 = Meets Standard
N = Not Applicable

Inspector's Name Leroy Lenger Registration No. MHTD0509
Name of Consulting Firm MHTD

* If < 3, forward copy to Bridge Division IMMEDIATELY!
** If 3, forward rating info and photos of deteriorated areas to Bridge Division.

OFF SYSTEM BRIDGE INSPECTION REPORT

COUNTY Callaway BRIDGE 25600031 ROUTE CO256

Inspector's Name: Leroy Lenger Registration No: MHTD0509
Name of Consulting Firm: MHTD

COMMENTS:

(Item 32, Approach Roadway Width = 20')Deck has minor trans. & long. cracks. Insignificant scuff marks on qdrs app. caused by drift. Minor scrapes on pile due to drift. Banks protected with rip rap, free of brush. Slight chance of flooding appr's., slight reduction in operating speed to cross bridge.

EXPLANATION FOR DEFICIENT ITEMS:
(When Items 58-62 are 4 or less, or Items 71-72 are 3 or less.)

None

RECOMMENDED REPAIRS:

None

STRUCTURAL INVENTORY & APPRAISAL SHEET

COUNTY Callaway BRIDGE NO 25600031 ROUTE 256

IDENTIFICATION

State MISSOURI
[2] Hwy District 5
[3] County Callaway
[4] Place 16642
[5] Inventory Rte. ____ ☐ On ☐ Under
[6] Features Intersected Auxvasse Creek
[7] Facility Carried CRD 256
[8] Structure No. 25600031
[9] Location S 36 T 45n R 10w
[11] Milepoint 000 300
[16] Latitude 38 ° 38.1 '
[17] Longitude 091 ° 59.9 '
[98] Border Bridge State ____
% Responsibility ____
[99] Border Br. Str. No. ____

STRUCTURE TYPE AND MATERIAL

		CODE
[43]	Structure Type-Main	6 0 2
[44]	-Approach	0 0 0

[45] Number of Spans-Main 3
[46] -Approach 0
[107] Deck Structure Type: 1

1-Conc. CIP 2-Conc. P/C Panels
3-Open Grating 4-Closed Grating
5-Steel Plate 6-Corr. Steel
7-Aluminum 8-Timber
9-Other N-Not Applicable
( ) Check if Post Tensioned Concrete

AGE AND SERVICE

[19] By-pass, Detour Length 0 7
[27] Year Built 1992
[28] Lanes on Str. 02 Under 00
[29] ADT on Str 000040 Year 92
CODE
[42] Type Service 1 5
[106] Year Reconstructed 0000
[109] Truck ADT on Str.(percent) ==

GEOMETRIC DATA

[10] Inventory Rte. Min. Vert. Clear. 99 Ft. 99 In.
[32] Appr. Rdwy. Width W/Sh'ld. 020 Ft.
Includes stabilized all weather sh'ld. (State System)
Includes sh'ld. with same surface as roadway (Non-State Off-System)
[33] Br. Median: 0 0-None 1-Open 2-Closed Median (No Barrier) 3-Closed/Non-mountable Barriers
[34] Skew 10 Deg
[35] Struct. Flared ☐ Yes ■ No
[47] Total Horiz. Clear. 240 Ft.
[48] Max. Span Length 0047 Ft.
[49] Structure Length 000141 Ft.
[50] Sidewalk or Curb Lt 00.0 Ft. Rt 00.0 Ft.
[51] Br. Width (Curb-Curb) 024.0 Ft.
[52] Deck Width (Out-Out) 024.0 Ft.
[53] Vert. Clearance Over Deck 99 Ft. 99 In.
[54] Under Clearance-Vert.:Ref N: 00 Ft. 00 In.
[55] -Lateral-Right: Ref N: 00.0 Ft.
[56] -Left 00.0 Ft.

NAVIGATION DATA

[38] Navigation Control: ☐ N/A ☐ Yes ■ No
[39] - Vertical 000 Ft.
[40] - Horizontal 0000 Ft.
[111] Pier Protection(For Navigation): ____
[116] Vert-Lift Br. Nav. Min Vert. Clear. ____ Ft.

CLASSIFICATION

[20] Toll Status 3
1-Toll Bridge 2-On Toll Rd.
3-On Free Rd. 4-Interstate Toll, S.A.
5-Toll Br., S.A.
[21] Maintain 02 Callaway Co.
[22] Owner Callaway Co.
[26] Functional 09
[37] Historical Significance 5
(To be completed by Main Office)
[100] Defense Hwy. 0 (To be completed by M.O.)
[101] Parallel Structure: N R-Rt. L-Lt. N-None
[102] Direction Traffic: 2 0 - No Hwy.Tr. 1 - 1 Way 2-2 Way 3-1 Lane Br.2 Way Tr.
[103] Temporary Structure ☐ Yes ■ No
[104] Highway System: 0
0-Not on NHS 1-On NHS
[110] Designated Nat. Network: 0
[112] NBIS Bridge Length: Y 1-Yes 0-No Y-Yes N-No

[108] WEARING SURFACE/PROTECTIVE SYSTEM

[108A] Type of Wearing Surface 2
1-Concrete 2-Integral Concrete*
3-Latex Concrete 4-Low Slump Concrete
5-Epoxy Overlay 6-Bituminous
7-Timber 8-Gravel
9-Other 0-None
N-Not Applicable (applies only to structures with no deck)
* Separate layer of concrete added but not latex modified, low slump, etc.

[108B] Type Membrane 0
1-Built - up 2-Preformed Fabric
3-Epoxy 8-Unknown
9-Other 0-None
N-Not Applicable (applies only to structures with no deck)

[108C] Type of Deck Protection 0
1-Epoxy Coated Reinforcing 2-Galvanized Reinforcing
3-Other Coated Reinforcing 4-Cathodic Protection
6-Polymer Impregnated 7-Internally Sealed
8-Unknown 9-Other
0-None N-Not Applicable (applies only to structures with no deck)

CONDITION

	Material	Condition Analysis	Rating (9-0 or N)
[58] Deck	Reinforced Concrete		9
[59] Superstructure	P/S Concrete Double Tee Girder		9
[60] Substructure	Pile Cap Bents		9
[61] Channel & Channel Protection			8
[62] Culverts			N

APPRAISAL

[71] Waterway Adequacy (See Table) 6
[72] Approach Roadway Alignment (See Manual) 6
[36] Traffic Safety Features 1 Bridge Rail 1 Transition 1 Approach Guard Rail 1 Approach Rail Terminal
0-Does not meet Standards 1-Meets Standards N-Not Applicable

LOAD RATING AND POSTING

[31] Design Load HS20 Engr. Firm Hamilton & Assoc Name of Engineer David Hamilton P.E. No. E-19025
Structure Open, Posted or Closed to Traffic A A-Open, No Restrictions B-Open, Posting Recommended
D-Open, Temporary Shoring E-Open, Temporary Structure G-New Structure Not Open
K-Closed P-Posted R-Posted, Other Than Load Capacity
[64] Operating Rating 255 [66] Inventory Rating 236
[70] Bridge Posting: A (To be completed by Central Office) Approved posting ____ (To be completed by Central Office)

SCOUR EVALUATION

113 Scour Critical Bridge: 8

	Code		Code
Bridge Not Over Waterway	N	Stable, but Action Required	4
Bridge Foundation Above Flood Level	9	Bridge Scour Critical, Foundation Unstable	
Bridge Foundation Stable	8	Bridge Scour Critical, Immediate Action Required	
Previous Problem Corrected	7	Bridge Scour Critical, Failure Imminent - Close	
Scour Calculation/Evaluation Not Made	6	Bridge Scour Critical, Bridge has Failed and Closed	0
Scour Within Footing Or Pile Limits	5		

Type of Scour Evaluation C C-Calculated O-Observed N - None

PROPOSED IMPROVEMENTS (To Be Completed By Central Office On Bridges Which Qualify For Federal Aid Only)

75 Type of Work _____

76 Improvement Length - Structure _____ Ft.

94 Bridge Improvement Cost..... $ _____,_____,000.

95 Roadway Improvement Cost $ _____,_____,000.

96 Total Project Cost..... $ _____,_____,000.

97 Year of Improvement Cost Estimate.....19/20 _ _

114 Future ADT..... 0 0 0 0 8 0

115 Year of Future ADT.....20 1 2

INSPECTIONS

90 Inspection Date 1 2 9 2 (M M Y Y)

91 Designated Frequency..... 2 4 (M M)

92 Critical Feature Inspection

	(To be completed by C.O.) Y/N	(MONTHS) M	M
A) Fracture Critical Detail	N		
B) Underwater Inspection	N		
C) Other Special Inspection	N		

93 Critical Feature Inspection Date:

	TYPE	(MONTHS) M	M	(YEAR) Y	
A) Fracture Critical Detail					
B) Underwater Inspection					
C) Other Special Inspection					

Type of Underwater Inspection
D = Dive
W = Wade
Y = Dry

Type of Fracture Critical Inspection
C = Comprehensive
M = Most Fracture Critical Member

GENERAL

FORM SI&A Rev. 08/94

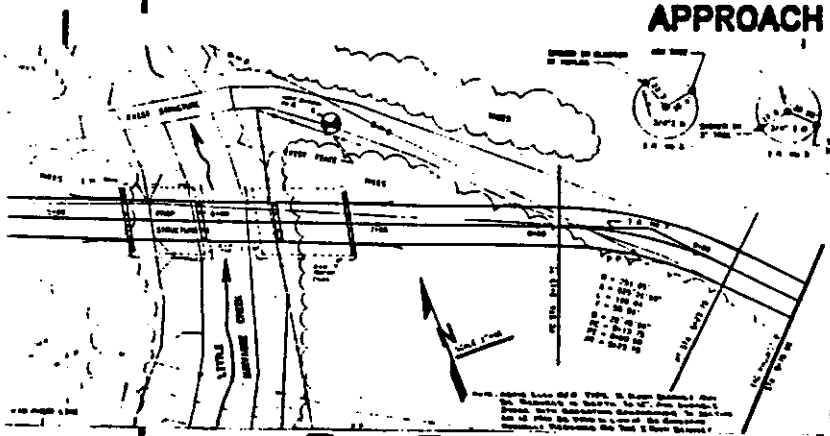
STRUCTURAL INVENTORY & APPRAISAL DATA SHEET

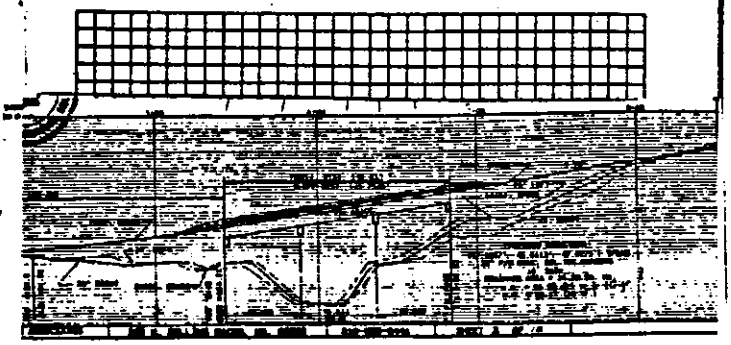
DATE 12/92

COUNTY CALLAWAY BRIDGE NO. 25600031 ROUTE 256

ENG. FIRM HAMILTON & ASSOCIATES ENG. NAME DAVID HAMILTON P.E. NO. E-19025

APPROACH ALIGNMENT



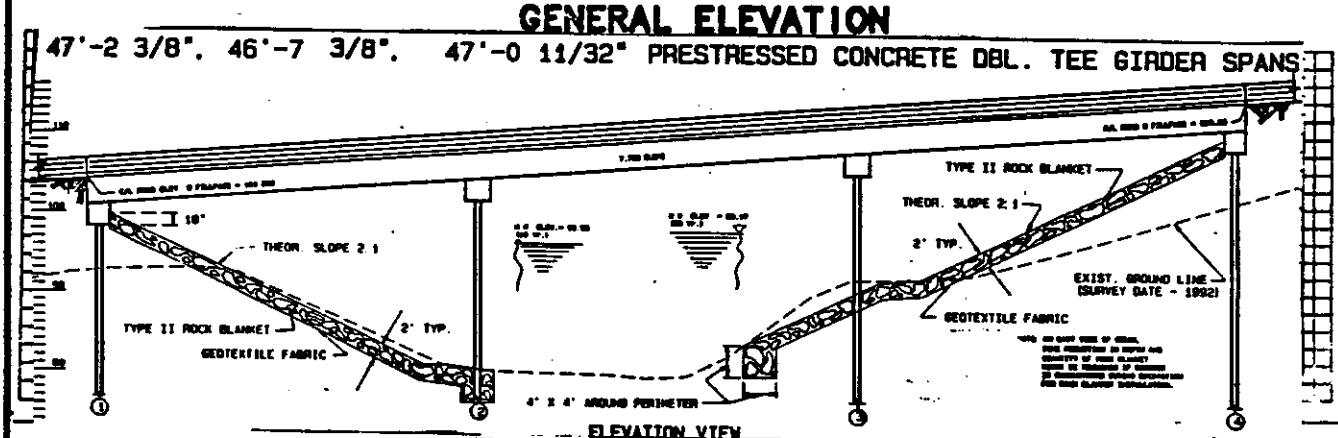


SKEW: ☐ NO ☒ YES EST. DEG. 10

VERTICAL

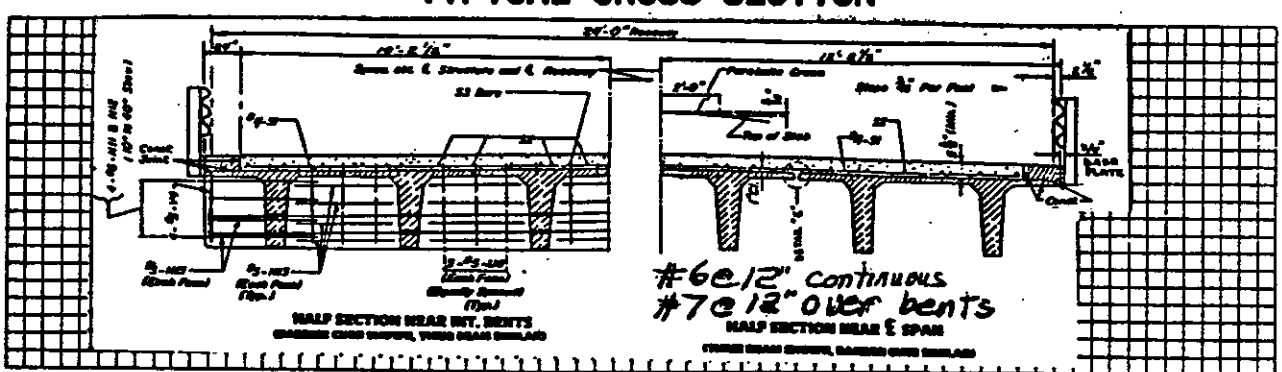
GENERAL ELEVATION

47'-2 3/8", 46'-7 3/8", 47'-0 11/32" PRESTRESSED CONCRETE DBL. TEE GIRDER SPANS



ELEVATION VIEW

TYPICAL CROSS SECTION



Substructure Concrete fc' = 3,000 psi

Deck Concrete fc' 4,000 psi

Reinforcing Steel fy = 60,000 psi

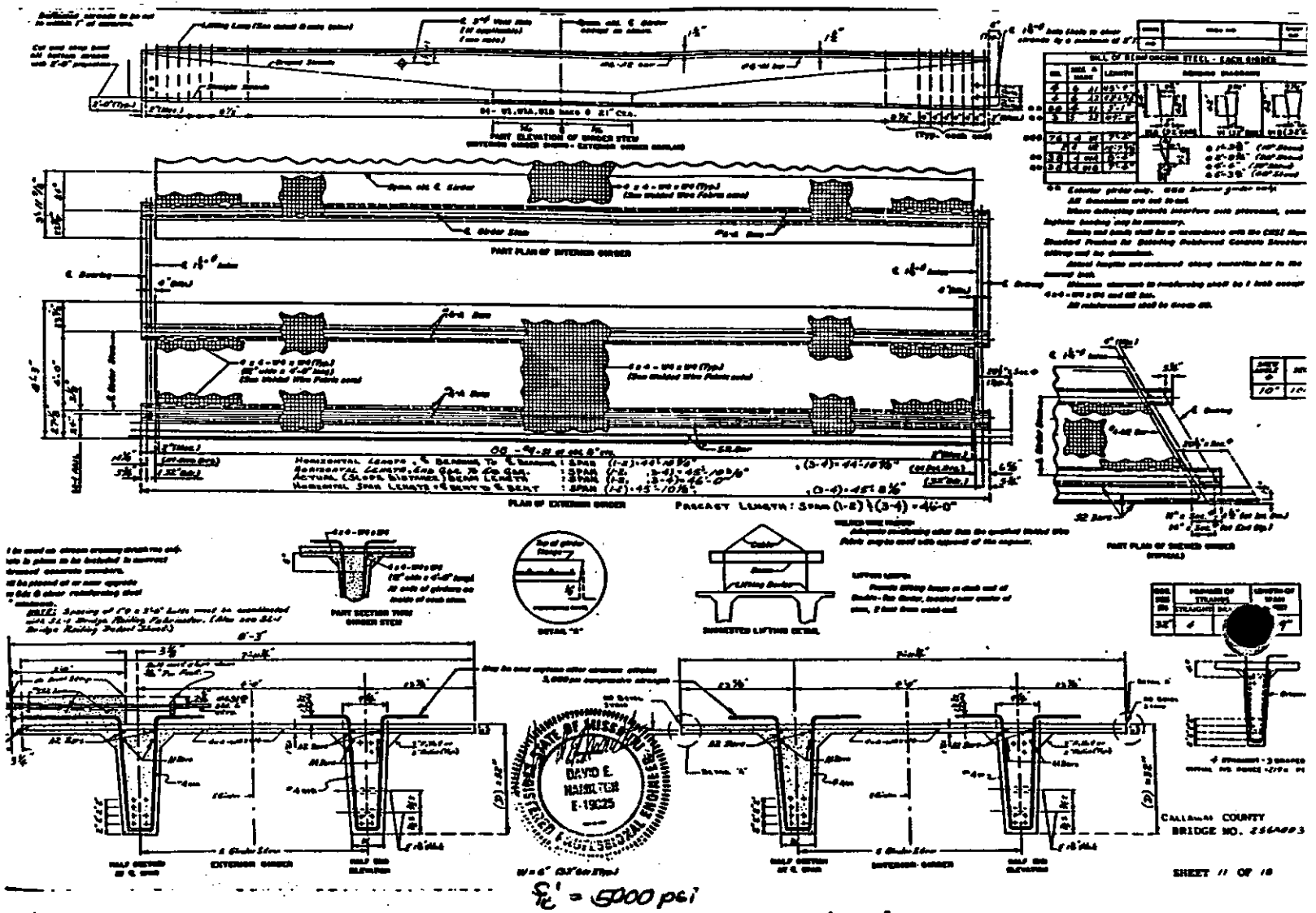
Structural Steel fy = — psi

( ) Rating Procedure Sheet Attached (Required only if calculations or Superstructure details not available)

(✓) Rating Calculations Attached

HYDROLOGIC DATA
Drainage Area = 56.99 SQ MI.
Design Discharge = 8,048 CFS
Design High Water Elevation = 96.55
Frequency = 10 YR
BASIC FLOOD DATA
Q_{100} 13,976 CFS
High Water Elevation = 99.93

SUPERSTRUCTURE DETAILS



f'_c = 5000 psi

Note: All Spans have identical strand arrangements

12/5

Calloway Co. Br. No. 25600031

REMARKS:

General Notes: Design Specifications:
A.A.S.H.T.O.- 1989 WITH INTERIMS
Design Loading:
HS20-44
15 lbs. per sq. ft. future Wearing Surface
Earth 120 lbs. Equivalent Fluid Pressure
30 lbs.
Superstructure: Simply supported non-composite for Dead Load. Continuous composite for Live Load.

BRIDGE INSPECTION RATINGS
CODING OF BRIDGES OVER ABANDONED OR CONVERTED RAILROADS

One of the important duties of the non-state bridge engineer or inspector is to report changes in the relevant SI&A information for a structure due to changes in use or modifications that may occur. This work will also routinely involve reviewing and correcting SI&A information where errors in the archived information exists. An example is instances where a bridge was originally inventoried as being over a railroad, but the railroad has been subsequently abandoned or converted to other uses. To assist the districts in proper coding, the following coding guide was adopted on April 22, 1998. The coding guide will also apply to new bridges over these locations. Archived copies of existing SI&A bridge data for a particular county or local agency is available upon request by the district.

(I) For bridges with railroad beds under the structure, the following investigation should be made during the inspection. First, if the railroad bed has been changed from a freight service to a new type such as rails to trails; or second, if the railroad tracks have been removed but no new service has been provided; then the following inventory items should be changed:

Item #6	feature intersected - indicate new feature
Item #42B	type of service under - change to 0, other
Item #54A	vertical underclearance - change reference feature to N
Item #54B	change vertical dimension to 0000 to indicate not applicable
Item #55A	lateral underclearance - change reference feature to N
Item #55B	change lateral dimension on right to 000 to indicate not applicable
Item #56	change lateral dimension on left to 000 to indicate not applicable

(II) If the railroad bed has been changed from a freight service to a new type such as light rail public transportation service, then the following changes should be made:

Item #6	feature intersected - indicate new feature
Item #42B	type of service under - change to 0, other
Item #54A	vertical underclearance - change reference feature to N
Item #54B	vertical underclearance - indicate correct dimension
Item #55A	lateral underclearance - change reference feature to N
Item #55B	lateral underclearance on right - indicate correct dimension
Item #56	lateral underclearance on left - indicate correct dimension

GUIDELINES CONCERNING CODING OF COMMENT AREA BRIDGE OFF-SYSTEM INSPECTION (BOSI) FORM NON-STATE BRIDGES

I GENERAL

To satisfy current central office minimum requirements, a brief description comment is generally required for any condition or appraisal item which falls below a "6" rating. However, the inspector still needs to keep in mind that when the condition of various items reaches a deficient level, additional levels of reporting may be required by program requirements referenced elsewhere. Also, ensuring BOSI comments are current and deleting outdated information is considered an important part of the inspection for each bridge.

The following information is presented to indicate common situations where the BOSI comment section should be filled out with descriptive information:

(1) A description of a particular problem area.

(2) Comments to clarify reasons a condition or appraisal rating is at a level "5" or below. (See also comments on additional reporting above.)

(3) Information is incorrect on BOSI that the inspector can't change. (It helps to address the comment to "Bridge Division:")

(4) Maintenance recommendations. This has always been considered to be essential information as it provides brief written documentation of the department's efforts to inform and disseminate information to the local agencies regarding these items. This has also been considered to be an important area for comments in the past when MoDOT's inspection reports have been spot reviewed for compliance by FHWA. As a reminder, if one or both load posting signs are missing as indicated by a "B" in item 41, this is also a maintenance item that should be listed in the comments section in BOSI.

(5) Comments and documentation that may be useful due to special conditions of the bridge site to assist the bridge inventory analysts in understanding and interpreting the inspector's coding and appraisal ratings.

(6) The use of the BOSI comment area by the inspector is not necessarily limited to condition or appraisal ratings falling below "6." Districts are encouraged and are free to provide a comment for every condition and appraisal item if it will aid in their internal resource management efforts regarding the inspections and space is available on the inspection form. (Some districts, depending on how they are organized, may find that a comment on every item may aid another inspector in understanding the condition of the bridge on the next inspection cycle.)

CODING OF "TEMPORARY" REPLACEMENT STRUCTURES (NON-STATE BRIDGES)

I. GENERAL

We have occasionally received questions concerning the coding and procedures appropriate for temporary structures (replacing an existing closed or destroyed bridge) that are appropriate for the non-state bridge system. Basically, these situations fall into two categories. This question is usually encountered when the local agency desires to leave the old bridge on inventory (within allowable time limits) for purposes of federal funding.

(1) **Temporary bridge is of Non-NBI length.** This situation commonly occurs when a deficient bridge is temporarily replaced by a simple pipe culvert or other structure which falls below NBI bridge length. In these cases, the old bridge data record is left on the BOSI inspection form in a closed condition (Item 41=K), and the existence of the temporary replacement culvert is noted and described in the BOSI comments section. SI&A Item 103 is NOT coded for a non-NBI length temporary bridge replacement, and the temporary replacement bridge need not be inventoried. The old bridge record may be kept in the system within the allowable time limits to maintain current federal funding status. If the old bridge is later removed from the bridge inventory due to expiration of time limits or other causes, this automatically removes funding eligibility status for the old bridge and the descriptive information for the temporary structure as well.

(2) **Temporary bridge is of NBI length or greater.** A much different procedure is needed for this item as opposed to the simplified process described in (1) above. The temporary structure carrying traffic needs to be added to the bridge inventory, which means SI&A, photos, inspection reports and comprehensive structural information needs to be collected by the district. When filling out the SI&A for the temporary bridge, Item No. 103 is coded with a "T" to denote it is a temporary inventory length structure.

The old bridge data may then be kept on the BOSI disk with the old bridge in a closed condition (Item 41=K), with appropriate comments in the BOSI for each bridge relating to the temporary structural replacement. For biennial inspections it is only necessary to inspect the temporary structure as it is the bridge carrying the traffic. The old bridge, if it is closed, need not have a complete inspection, but obvious deficiencies should be coded.

For purposes of federal funding, the old bridge is normally kept on the inventory (within appropriate time frames allowed by FHWA and Missouri inventory policies). Therefore, the BOSI disk will contain both structures

where this condition is known to exist, unless subsequent changes to the status of either of the bridges occur.

If the old bridge is removed from the inventory due to the passage of time or other causes, the status of the temporary bridge will be automatically upgraded to permanent status by removing the "T" from Item 103.

(3) **General comments for both situations.** In either the case of (1) or (2), when the old bridge is removed from bridge inventory, the site normally will no longer be eligible for federal bridge funds based on the deficiencies that existed in the former bridge at this location. Future consideration for possible federal funding under the various federal programs will be based on conditions and installations currently existing at the site.

In all cases, where the above temporary structure approach is being utilized, the local agency should execute the request form (See Appendix) to leave the old structure on the bridge inventory beyond the usual three-year limit if this time frame will be exceeded. This form, along with supporting documentation, should preferably be forwarded with the inspections or as soon as possible afterward. Unless this form is approved and is on file, MoDOT will initiate a process permanently and automatically remove the closed bridge from the inventory after a three-year time frame has passed. This process will be used regardless of the placement of a "temporary" structure.

For more information concerning MoDOT's policies regarding removal of closed bridges from the inventory, the Supplementary Inventory Information in Section 3.0 should be consulted.