

TE  
229  
.M36  
1968

**MANUAL OF INSTRUCTIONS**  
**FOR**  
**RURAL ROAD INVENTORY**

**November , 1968**

**PREPARED BY**  
**HIGHWAY PLANNING SURVEYS DEPARTMENT**  
**DIVISION OF PLANNING**  
**IOWA STATE HIGHWAY COMMISSION**  
**IN COOPERATION WITH THE**  
**UNITED STATES DEPARTMENT OF TRANSPORTATION**  
**FEDERAL HIGHWAY ADMINISTRATION**  
**BUREAU OF PUBLIC ROADS**

metal, (4) scrap building material, (5) sanitary fills, (6) other), and other culture outside of cities and towns served by the road being inventoried. All cultural items will be noted on the township plat, by name or symbol, and located by odometer reading. See classification of standard symbols on pages 18, 19, 20, 21. To avoid duplication where rural schools, farm units, etc., are located at road intersections, the feature will be inventoried on the road from which the principle entrance leads.

- B. Odometer Readings - Odometer readings will be plotted at the following places: the beginning and end of each section of road being inventoried, all bridges over 12 feet in length, all railroad grade crossings, road junctions and intersections, section lines (where there is no road on the section line, location can sometimes be identified by a fence row, or inquiries may be made at adjacent farm houses), the beginning and end point of enlargement areas, change in surface types, change in road alignment, corporation lines, and all driveway entrances to farms, etc.
- C. Road Width - The width of the road surface (traveled-way) and width of the roadway (shoulder to shoulder) will be recorded along side of each road section. For unsurfaced roads the prevailing width of the traveled-way, as well as shoulder to shoulder width, will be recorded.
- D. Surface Type - The surface type of each road section will be indicated by the following color code or marking:

Closed Road	<del>XXXXXX</del>
Legal Road Not Open to Traffic	<del>~~~~~</del>
Unimproved Road	(blue)
Graded and Drained Earth Road	(green)
Soil-Surfaced Road	(orange)
Gravel or Stone Road	(red)
Bituminous Road	(brown)
Paved Road	(yellow)

1. Closed Road - When a road is closed by a fence or any other obstruction which appears to be for the purpose of closing the road permanently, the County Engineer should be contacted in order to determine the status of this road.

2. Legal Road Not Open to Traffic - On occasion roads may be grown over with brush making them impassable for vehicular travel. The County Engineer should be contacted to determine the status and length of these roads.
3. Unimproved Road - A road, composed wholly or with minor local exceptions, of the natural ground of the region traversed, which may or may not have been bladed, which does not conform in respect to alignment, grade and drainage, at least to the definition of "Graded and Drained Earth Road," and on which the only work that has been done by public authority is that required to maintain a condition of bare passability for motor vehicles.
4. Graded and Drained Earth Road - A road of natural earth, aligned and graded to permit reasonable convenient use by motor vehicles, and drained by longitudinal and transverse systems, natural or artificial, sufficiently to prevent serious impairment of the road by surface water.

Note: The degree of adequacy of alignment, grade and drainage, here implied, are considerably less than complete. They are considered to be the least that will qualify for the designation "Graded and Drained." It is believed that practically all such roads should be reported under this classification and not under "Unimproved Roads" since by definition the unimproved road classification includes all roads which may or may not have been graded and are only maintained in a condition of bare passability for motor vehicles. By far the greatest mileage is graded to permit reasonable convenient use of motor vehicles, which would classify the road as "Graded and Drained Earth Road" as defined above.

5. Soil Surfaced Road - A road of natural soil, passing qualities of alignment, (grade and drainage at least equal to those described under "Graded and Drained Earth Road,") the surface of which has been treated for the purposes of stabilization by the addition of a

course of mixed soil, such as sand-clay or top-soil, or an admixture such as bituminous material, portland cement, calcium chloride, sodium chloride or fine granular material (sand or similar material), or by surfacing with mine shale.

Note: This classification includes all roads of natural soil, the surface of which has been treated with tar or oil without the addition of any mineral aggregate to the surface except sand for blotting of excess oil.

6. Gravel or Stone Road - A road, the wearing surface of which consists of gravel, broken stone, slag, chert, disintegrated rock or granite, or other similar fragmental material (coarser than sand).
  7. Bituminous Road - A road listed in the 40 code series on the Highway Needs field sheets will be classified as a bituminous road.
  8. Paved Road - A road listed in the 50 code series on the Highway Needs field sheets will be classified as a paved road. This includes brick.
- E. Roads on Corporation Limits - All roads on corporate limits of cities and towns will be inventoried, but no off-road culture within the corporate limits will be recorded. When inventorying these roads, plot all streets leading into town off of the road being inventoried, and record the street name.
- F. State and County Line Roads - A complete inventory will be made on State Line roads, including bridge information and railroad grade crossing information. In the case of a road on a county line, a complete inventory will be made when the road is on the north or west boundary. On the south and east boundary, only the off-road culture will be recorded.
- G. Primary Roads - Off-road culture will be inventoried on the primary road system. Bridges over 12 feet in length and railroad grade crossings will be located by odometer reading, but no measurements will be recorded.

- H. FAS Extensions - Mileage will be recorded on FAS Extensions in cities and towns from the point of entry to the point of exit or to the termination point within. Record mileage and street identification at junctions of other Federal Aid Facilities and major through-streets when they intersect with the FAS Extension being inventoried. Record approximate business center of town if it is on the inventory route.

#### IV. DRAINAGE STRUCTURES

- A. Structures carrying the road (Bridges and Culverts) - To qualify as a bridge, a structure must comply with one of the following definitions.

Definition: State law defines a bridge as having a single opening in excess of 12 feet.

Definition: AASHO defines a bridge as having a span length of 20 feet or more. This includes multiple box culverts with a total span of 20 feet or more. By this definition a twin 10 x 10 culvert is a bridge, a triple 8 x 8 x 8 is a bridge. A twin 8 x 8 is not a bridge by either definition.

All rural secondary bridges and bridges located on FAS Extensions will be inventoried. All bridges within the right of way, that serve private properties, will be inventoried. Structures need not be remeasured when an examination of existing records reveals no obvious change. If a change is evident, complete descriptive information will be recorded on Bridge Survey Report Form 107 (see example form on page 22). Structures that do not qualify as a bridge by either State or AASHO definitions will not be inventoried. Where culverts consist of double or triple lines of pipe or box openings, the aggregate span or diameter should be used to determine the limiting dimensions.

Information to be recorded on the Bridge Survey Report Form 107 is as follows:

1. Spaces concerning Sheet Number and Bridge Number will be left blank in field.
2. Record the road system as indicated on the Highway Needs field sheets.

3. Record the surface type code as indicated on the Highway Needs field sheets.
4. County - Record the county name in which bridge is located.
5. Year Built - Occasionally a plate showing the year built will be attached to the bridge. If a date is not readily available, this information can be obtained from the County Engineer.
6. Date Reported - Record the date of the inventory being taken.
7. Reported By - The party chief's name should be recorded.
8. Location - Structures are to be located by section, township, and range. Locate the structure to the nearest hundredth of a mile east and/or south of the northwest corner of the section. The roads bounding the section along the north and west sides are assigned to that section. Structures located on FAS Extensions should be located by town and street name.
9. Spaces concerning Project Number, Xing Number, and Station Number will be left blank in field.
10. Feature Crossed - Record the name of stream that the structure crosses. If the stream is unnamed, record "small stream" or "drainage ditch." If the structure is over stream that serves private property, record "side ditch."
11. Spaces concerning R.R. Bridge Number, Design Number, Cost, Contractor, and Maintained By, will be left blank in field.
12. Description - Record the type of main superstructure, the number of spans in the main superstructure, and the length of each span. To aid in the classification of various bridge types, see "General Bridge Types" located on pages 23 through 30. For illustrations of bridge measurements, see "Bridge Measurements" on page 31.  
When approach structures are present, record the type of superstructure, the number of spans, and the length of each span. Record approach structures with their directional relationship to the main structure.  
(Show as "N." or "S.", "E." or "W.")  
Span length should be measured from centerline of bearing to centerline of bearing. On some structures the centerline of the bearings cannot be determined, therefore, the length of the waterway opening should be measured. The span length of box culverts, corrugated metal pipe and structural plate pipe will be determined by measuring the barrel width or diameter.

13. Total Length - Total length is measured between the centerlines of end bearings. The total length of a multiple span structure can be determined by adding the recorded span lengths. The total length of multiple box culverts, multiple corrugated metal pipe, and structural plate pipe can be determined by the addition of the barrel widths.
14. Floor Type - Record the type of material used in floor of structure such as wood plank, concrete, steel or iron, pre-cast materials, wood and steel (traffic tread), wood block, steel and bituminous, asphalt plank, concrete and wood (main structure concrete-approach wood). Record "road surfacing continues" when there is no break in the continuity of the road surfacing because of the structure being located under grade such as a box culvert or structural plate pipe. Length of floor will not be recorded.
15. Substructure (Abutments) - Abutments will be identified as either "Full" or "Stub". (See "Abutment Types" on page 32.) Full abutments remain visible to stream bed while stub abutments are affixed on top of timber piling with only the top portion of the abutment visible. Record the predominate material used in abutments such as concrete, steel, stone masonry, brick, treated wood, untreated wood, concrete plank, etc.
16. Substructure (Piers) - Record the type of piers used. (See "Pier Types" on pages 26 & 33.) If the piers are of a type other than those illustrated, describe them briefly, such as concrete filled steel tubes, stone filled cribs, etc. Record the predominate material used in piers.
17. Width - There are two widths required: (1) between curbs and (2) between railings. (See "Bridge Measurements" on page 31.) If there are no curbs, the distance between railings, only, should be recorded. Record sidewalk width (if any) on bridges located on FAS Extensions.
18. Minimum clearance, road surface to bottom of portal - On certain high truss bridges the recording of one measurement, from the road surface to the bottom of the portal, will not give the necessary information for height of loads that can pass through the opening, if another vehicle is on the bridge, because of a brace member from the portal truss to the end post. Therefore, the "minimum clearance from road surface to bottom of portal," should be the vertical distance

from the road surface to bottom of the brace member on the end post. (See "Bridge Measurements" on page 31.) There is a vertical clearance on two types of structures, "high truss" and "through truss."

19. Record the maximum distance from surface of road to bottom of stream and the clear distance of opening above bottom of stream. (See "Bridge Measurements" on page 31.)
20. Condition (Superstructure) - For this evaluation all structural components normally considered as part of the superstructure will be rated. This includes any part of the structure above the bearing seats (i.e., beams or girders, trusses, stringers, rail, etc.) exclusive of the actual deck. Components of the superstructure showing wear or deterioration should be noted and this item rated down according to the severity of the structural deficiency. Damage to the superstructure by traffic or other external causes should be examined and taken into consideration on the overall evaluation. Record the good, fair, or poor rating that coincides with the Highway Needs code rating, as follows:

Code

Good	15	New or like new condition
Good	10-14	Minor deterioration easily remedied by routine maintenance
Fair	5-9	Major deterioration of some structural members of damaged members that can be replaced individually
Poor	1-4	One or more entire spans need replacing or major repairs (i.e., approach spans may be sound, but main span should be replaced).
Poor	0	Very poor condition throughout - should be replaced.

Condition (Substructure) - For this evaluation, all structural components normally considered as part of the substructure will be rated. This includes any part of the structure beneath the bearing seats (footings, piers, columns, caps, abutments, etc.). Concrete should be examined for spalling, scouring, or other deterioration and rated down accordingly, particularly if reinforcing steel is exposed. Steel substructures should be examined for rust or other chemical deterioration severe enough to affect the structure's strength.



Damage to steel and timber members caused by ice-floes or driftwood should also be considered and rated down if structure is weakened. Record the good, fair, or poor rating that coincides with the Highway Needs adequacy rating, as follows:

Adequacy Rating

Good	15	New or like new condition
Good	10-14	Minor deterioration easily remedied by routine maintenance
Fair	5-9	Major deterioration of some structural members that can be replaced individually
Poor	1-4	One or more entire bents need replacing or major repairs, i.e., abutments and first interior bents may be sound, but other interior bents may be damaged.
Poor	0	Very poor condition throughout. It should be replaced.

Condition (Floor) - The evaluation of the floor condition takes into consideration the riding surface or that portion of the structure actually in contact with traffic. Cracking and spalling of concrete surfaces, raveling and irregularity of bituminous overlays, and wear and deterioration of wooden decks are conditions which will lower this rating. Record the good, fair, or poor rating that coincides with the Highway Needs adequacy rating, as follows:

Adequacy Rating

Good	5	New or like new condition
Fair	3-4	Minor maintenance required. Isolated spots need repair.
Poor	1-2	Partial reconstruction is required. Large sections need to be replaced or repaired.
Poor	0	Very poor - Complete new deck is needed.

21. Condition (Arches and Culverts) - Box culverts and some types of arches that are built under grade will be rated in this column. Record good, fair, or poor as applies to the overall structure.

22. Posted Load Limits - Record the posted load limit in tons.

- B. Overpasses (Highway Over Railroad) - All overpasses located on the rural secondary road system and on FAS Extensions will be inventoried. Structures need not be remeasured when an examination of existing records reveals no obvious change. If a change is evident, complete descriptive information will be recorded on the "Railroad Overpass Report." (See sample form on page 34.)

The descriptive information required to complete the form is essentially the same as for bridges.

1. Crossing Number - Leave blank in field.
2. County, Road System, Year Built, Date Reported, and Reported By, will be recorded.
3. Over - Record the name of the railroad passing under the highway and the number of tracks.
4. Maximum distance from surface of road to R.R. tracks - Measure the distance from the structure deck to the railroad tracks below.
5. Minimum clearance from bottom of structure to R.R. tracks - Measure the distance from the underside of the structure to the railroad tracks below.

- C. Underpasses (Highway Under Railroad) - All underpasses located on the rural secondary road system and on FAS Extensions will be inventoried. Structures need not be remeasured when an examination of existing records reveals no obvious change. If a change is evident, complete descriptive information will be recorded on the "Railroad Underpass Report." (See sample form on page 35.)

The descriptive information required to complete this form is essentially the same as for bridges.

1. Crossing Number - Leave blank in field.
2. County, Road System, Year Built, Date Reported, and Reported By, will be recorded.
3. Under - Record the name of the railroad passing over the highway.

There are two types of underpasses, "simple" and "combined." Simple underpasses are those structures which are constructed primarily for the purpose of permitting the highway to pass under the railroad. Combined underpasses are those structures in which

the roadway crossing is incidental to the crossing of a stream by the railroad, that is, the structure would have been necessary regardless of the presence of the highway.

4. Number of Tracks - Record the number of tracks on the structure.
5. Minimum Horizontal Clearance Highway Roadway - Record the distance between abutments, or on a multiple span structure, the distance between piers. This measurement should show the maximum width of vehicle that could pass through the underpass opening.
6. Traffic Lane Separated With Piers (Show Width Right and Left) - Record the maximum width of vehicle that could pass through the underpass opening from each direction.
7. Sidewalk Width (Show Right or Left) - Record sidewalk width (if any) on underpasses located on FAS Extensions.
8. Minimum Vertical Clearance - On certain underpasses, the maximum vertical clearance as measured directly under the structure will not give the correct height for the vehicle load that can pass through the opening on account of the effect of the approach gradient. Record the minimum vertical clearance.
9. Maximum Height of Load - Record the maximum height of vehicle that could pass through the opening.
10. Vertical Distance from Rail to Highway - Record the vertical distance from the rails to the road below.
11. On a multiple span underpass, show by a diagram at the bottom of the form which two piers the highway passes between.

#### V. RAILROAD CROSSINGS AT GRADE

A. Rural - The Rural Grade Crossing Report will be used for recording descriptive information at all rural secondary highway-railway grade crossings. Information to be recorded is as follows: (See example form on page 36.)

1. Crossing Number - Leave blank in field.
2. County, Road System, Surface Type, Surface Width, Date, and Party Chief will be recorded.
3. Name of Railroad and Number of Tracks will be recorded.
4. Location - Crossings are to be located by section, township, and range. Locate the crossing to the nearest hundredth of a mile east and/or south of the northwest corner of the section.

5. Type of Warning Protection - Record the type of warning protection installed at the crossing. Classification of warning signs or devices that are generally used at grade crossings are provided on the form.
6. Smallest Angle - Record the smaller of the two angles formed by the intersection of the highway and the railway. This angle should be measured by means of sighting with a protractor.
7. Visibility of Crossbuck SD - Record the rating that coincides to the maximum distance, in feet, that a constant view of the crossbuck can be maintained when approaching the crossing from each direction. This SD rating should be recorded on the crossing diagram as indicated on the sample Rural Grade Crossing Report.
8. Draw Diagram - Draw a diagram of the crossing being inventoried. Define, as nearly as possible, the true situation with respect to road alignment, railroad alignment, intersecting streets within 300 feet of the crossing and angle of crossing. Note the location of all warning protection that is present at crossing or on approaches to crossing. A fair degree of scale should be maintained in drawing the diagram.

At a point 300 feet from the crossing, the clear sight distance along the railroad and obstructions to view (if any) causing a restricted sight of less than 2,000 feet, should be determined for each quadrant between highway and railway. Clear sight distance for each quadrant is to be indicated on the diagram by means of a dotted line. Obstructions to clear view are to be sketched outside the line of vision as indicated by dotted lines. The obstruction should be described briefly such as "store," "house," "trees," "high-ground," etc. Any buildings or other structures sufficiently close to the crossing to be affected by a future grade separation or to cause further restriction of view as the car approaches closer to the railroad from the 300-foot point should be located on the diagram.

If the clear view along the railroad track is 2,000 feet or more, it is not necessary to measure or estimate the length of this view. In such cases, the view can be recorded as unlimited.

It is possible that clear view may be greatly restricted at a point 300 feet from the railroad but becomes much improved or "unlimited" at a point closer to the railroad.

If such a condition exists, record the distance from the centerline of the railroad to the point (no closer than 15 feet to the center of the nearest main track) where maximum sight distance can be obtained. The maximum sight distance in both directions along the railroad from this point should be recorded.

Record the clearview at the point of intersection of a road that intersects within 300 feet of the crossing.

It is not necessary to make accurate measurement of the distances along the railroad track for the purpose of determining clear view. It is usually satisfactory to count the number of telegraph poles after first having determined the distance between poles.

9. Profile of Survey Street - Plot on this graph, the breaks in elevations or depressions of the survey street approach (within a distance of 300 feet of the center of the main track) on each side of the railroad. At each break indicate the number of feet plus (+) or minus (-) level grade.
  10. Spaces concerning Daily or Weekly Train Traffic, Train Speed at Crossing, and Daily Vehicle Traffic will be left blank in field.
  11. Vehicle Speed Zone Post - Record the posted speed limit.
- B. Municipal - The Municipal Grade Crossing Report will be used for recording descriptive information at municipal highway-railway grade crossings located on FAS Extensions. Information to be recorded is as follows: (See example form on page 37.)
1. Crossing Number - Leave blank in field.
  2. County, Road System, Surface Type, Surface Width, Date, and Party Chief will be recorded.
  3. Name of Railroad and number of tracks will be recorded. Classify the tracks as to number of main, passing, industrial, or storage.
  4. Location - Record the city or town name and the street name. The street description should also include reference to the street or streets parallel to the railroad (for example, "Locust Street between First and Second Streets").
  5. Type of Warning Protection - Record the type of warning protection installed at the crossing. Classification of warning signs or devices, that are generally used at grade crossings, are provided on the form. The

warning installation shall be identified as to "single," "double," "center (overhead)" or "center (ground)."

- a. "Single" installation - One unit or assembly which serves as a warning to highway traffic moving in both directions. This unit or assembly may be located on either side of the highway or the railroad or may be in the center of the highway at the surface or suspended overhead.
- b. "Double" installation - Two units or assemblies of warning signs or devices so located as to provide one unit or assembly for the protection of traffic moving in each direction at the crossing. These installations generally will be located on the right hand side of each approach to the crossing but in some instances will be found in the center of the highway on each approach.
- c. "Center" installation - Warning installations installed in the center of the highway should be reported as "center overhead" or "center ground" and in addition should be identified as "single" or "double."

Since bells on "double" installations of "wigwag and bells" or "flashing lights and bells" are usually placed on one of the units only, it will be necessary to examine both units to determine if bells are a part of the warning device.

Gates or barriers are to be classified as "manual" (operated by a watchman on duty at the crossing or a tower man at a nearby tower) or "automatic" (gates which are operated by approaching trains), and in addition, should be identified as "single" or "double" for installations on one approach or both approaches.

If a watchman is provided to control traffic at the crossing, either with or without additional devices, the hours of the day that the watchman is on duty, together with the total hours for the day that such protection is provided, should be recorded.

Indicate if a street light (or equivalent illumination such as flood lights in operation during all hours of darkness) is located within 100 feet of the main track for one direction or for both directions.

6. Smallest Angle - Record the smaller of the two angles formed by the intersection of the highway and the railway. This angle should be measured by means of sighting with a protractor.
7. Visibility of Crossbuck SD - Record the rating that coincides to the maximum distance, in feet, that a constant view of the crossbuck can be maintained when approaching the crossing from each direction. This SD rating should be recorded on the crossing diagram as indicated on the sample Rural Grade Crossing Report.
8. Draw Diagram - Draw a diagram of the crossing being inventoried. Define, as nearly as possible, the true situation with respect to road alignment, railroad alignment, intersecting streets within 600 feet of the crossing, and angle of crossing. Note the location of all warning protection that is present at crossing or on approaches to crossing. A fair degree of scale should be maintained in drawing the diagram. The clear sight distances along the railroad and obstructions to view (if any) causing a restricted sight of less than 2,000 feet, should be determined for each quadrant between highway and railway at positions on the center line of each street approach at points 300 feet, 200 feet, and 100 feet from the center of the main track. The clear sight distance to the left and to the right, at these points, is to be indicated on the diagram by means of a dotted line. Obstructions to clearview are to be sketched outside the line of vision as indicated by dotted lines. The obstruction should be described briefly such as "store," "house," "trees," "buildings," etc.  
When determining the sight distance from the approach to the crossing with a side track between the observer and the main track, the clear sight distance, as limited by fixed objects other than standing (or moving) railroad cars, should be recorded. It is apparent that occasionally the sight distance from such approach will be limited to one-half the width of street R.O.W. by cars stored on the siding; however, this condition will be evident from the fact that side tracks are involved at the crossing and will be considered when evaluating the conditions at each crossing. Thus, sight restrictions resulting from cars stored on sidings will not be recorded. Moving objects on the highway or cars parked along the street R.O.W. will not be considered as obstructions to clear sight distance.

Unlimited sight distance is considered as 2,000 feet. All shorter distances are to be estimated as accurately as possible by counting the number of telegraph poles and multiplying by the distance between poles.

In many cases other streets intersect the survey street within 300 feet of the crossing. Often these streets are important thoroughfares and the angle of intersection may be such as to constitute a through-route across the railroad. When the highway traffic crossing the railroad is distributed over two or more such streets that intersect within 300 feet of the crossing, separate sight distance records should be obtained for each street carrying a substantial share of the traffic. An additional diagram may be sketched on the reverse side of the form to show these sight distances.

Indicate by a sketch on the diagram the distance on each side of the railroad to the first intersecting street within 600 feet of the crossing; also, record the street name.

Positions on the highway (within 100 feet of the crossing) for maximum clear view - When the clear view on an approach to the crossing at any point within 100 feet of the center of the main track is less than 2,000 feet, the distance from the center of the main track to the nearest position on the center line of the highway at which the clear view becomes less than 2,000 feet should be determined and indicated on the diagram. This determination should be made separately for clear view to the left and to the right on each approach to the crossing. In no case will the point of observation be less than 15 feet from the center of the main track. If a clear view of 2,000 feet is not available at a distance of 15 feet or more from the center of the main track, the clear view at that point should be recorded.

9. Profile of Survey Street - Plot on this graph the breaks in elevations or depressions of the survey street approach (within a distance of 500 feet of the center of the main track) on each side of the railroad. At each break indicate the number of feet plus (+) or minus (-) level grade.
10. Spaces concerning Daily or Weekly Train Traffic, Train Speed at Crossing, and Daily Vehicle traffic will be left blank in field.
11. Vehicle Speed Zone Post - Record the posted speed limit.

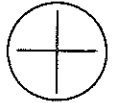


IOWA STATE HIGHWAY COMMISSION  
HIGHWAY PLANNING SURVEYS DEPARTMENT

AMES, IOWA

















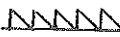
















ROAD INVENTORY ENLARGEMENT

SCALE \_\_\_\_\_ COUNTY \_\_\_\_\_  
FIELD PARTY \_\_\_\_\_ DATE \_\_\_\_\_ SEC. \_\_\_\_\_ T. \_\_\_\_\_ R. \_\_\_\_\_




# STANDARD SYMBOLS

## Farm Units, Dwellings, Etc.











<u>Classification</u>	Symbol	
	<u>In Use</u>	<u>Not In Use</u>
Farm Unit.....		
Dwelling (other than farm).....		
Rows or groups of Dwellings Closely Spaced (Figure denotes number of Dwellings).....		
Combined Dwelling and Store.....		
Dwelling and Post Office.....		
Dwelling, Business, and Post Office.....		
Barracks or Dormitories for Students, Workers, Migrants, etc. (Figure denotes number of units).....		
Seasonal or Summer Colony Dwelling.....		
Seasonal Dwellings Closely Spaced (Figure denotes number of dwellings--sawteeth not to represent the number of dwellings).....		
Church or other Religious Institution (for important institutions give name).....		
School.....		
Cemetery (Indicate Limits).....		
Hospital.....		
Toll House, State Port of Entry or Weight Station.....		
Industrial		
Store or Small Business Establishment (numerals may be added to indicate a group).		
Business and Post Office.....		
Factory or Industrial Plant.....		
Existing Mine--Shaft or Drift (any kind)....		
Group of Storage Tanks (oil, gas or grain).. Gauging or Pumping Station (General).....	 	

# STANDARD SYMBOLS




## Industrial--Cont'

<u>Classification</u>	<u>Symbol</u>	
	<u>In Use</u>	<u>Not In Use</u>
Grain Elevator.....		
Nursery (Indicate limits).....		
Quarry (Indicate limits).....		




## Educational and Correctional Institutions

Schoolhouse.....		
Consolidated or Large School.....		
Other Educational Institutions (for important institutions give name).....	 Luther College	
Townhall, Grange, or Community Hall (add letters T, G, or C to designate kind).....	 T	
Agricultural Experiment Station (Indicate limits).....		
County Farm (Indicate limits).....		
State or County Prison Farm (Use "C" or "S") (Indicate limits).....	 C	
State Institutions (Name) (Indicate limits).	 Clarinda	

## Public Service Facilities

Post Office.....	
Pipe Line, Gas or Oil.....	
Radio or Television Station (with call letters).....	 WHO

## Airways and Airports

Military Field (some facilities available) (Indicate limits).....	
Airport, Complete Facilities (Commercial or Municipal) (Indicate limits).....	
Airfield, Limited Facilities (Indicate limits).....	

# STANDARD SYMBOLS

## Airways and Airports--Cont'

### Classification

### Symbol

Landing Area or Strip (including private air fields) (Indicate limits).....



Airway Light Beacon, General.....



## Conservation and Recreation

Picnic Ground.....



Playground, Ball Field, etc.....



Bathing Beach or Swimming Pool.....



Camp or Lodge (permanent site with buildings).....



Small Park (SP--State, CP--County, MP--Municipal, WP--Wayside Park).....



Game Preserve\* (Indicate limits).....



Rifle Club (Indicate limits).....



Golf Ground or Country Club (Indicate limits).....



Polo Grounds (Indicate limits).....



Amusement Park or Hall (Indicate limits)....



Fair Ground, Race Course, Speedway (Indicate limits).....



Drive-In Theatre (Indicate limits).....



State Park, Recreation Area, Historic Site (Name) (Indicate limits).....



\*For Federal or State Areas add letter "F" or "S" respectively.

## Miscellaneous

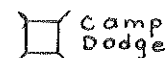
Armory.....



Arsenal (Indicate limits).....



Fort, Army Camp, Barracks, or Other Military Post (Give name) (Indicate limits).....



# STANDARD SYMBOLS

## Miscellaneous--Cont'

### Classification

Triangulation Station.....

### Symbol



Stop Signs.....



Driveway Entrance.....

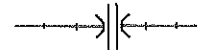


### Structures

Highway Bridge, General.....



Overpass, Highway Over Railroad.....



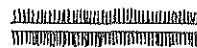
Underpass, Highway Under Railroad.....



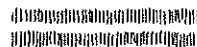
Dam with Road.....



Levee or Dike with Road.....



Levee or Dike.....



**SAMPLE**

**Iowa State Highway Commission  
BRIDGE SURVEY REPORT**

Sheet No. \_\_\_\_\_  
Road System E.M. & F.A.S.  
Surface Type 56  
County BOONE  
Bridge No. \_\_\_\_\_  
Year Built 1950  
Date Reported 10-15-68  
Reported By JOHN DOE

Location .66 EAST & .78 SOUTH Sec. 13 T. 84 N R. 27 W  
(Direction and Distance from N. W. Cor. of Sec.)

Project No. \_\_\_\_\_ Xing No. \_\_\_\_\_ Station No. \_\_\_\_\_

Feature DES MOINES RIVER Over ☐ R. R. Bridge No. \_\_\_\_\_  
Crossed (If unnamed stream mark "small") Under ☐

Design No. \_\_\_\_\_ Cost \_\_\_\_\_ Contractor \_\_\_\_\_

Bridge Maintained By \_\_\_\_\_

**SUPERSTRUCTURE:**

Main Structure:

Twin ☐ Single ☒

Approach Structure:  
(Show as N. or S., E.  
or W.)

DIREC-  
TION  
E  
W

H-Load \_\_\_\_\_

**DESCRIPTION**

Type HIGH TRUSS No. Spans 2 Length Each 200'-200.4'

Type \_\_\_\_\_ No. Spans \_\_\_\_\_ Length Each \_\_\_\_\_

Type PONY TRUSS No. Spans 1 Length Each 71.8'

Type PONY TRUSS No. Spans 1 Length Each 51.2'

Total Length: On line of road over all (Multiple Spans only) \_\_\_\_\_

Floor: Type CONCRETE Lengths \_\_\_\_\_

**SUBSTRUCTURE—**

Abutments:

Type FULL

Material CONCRETE

Piers:

Type PEDESTAL

Material CONCRETE

**WIDTH**

Between Curbs 16.8' Between Railings 17.8' Sidewalk Widths: Right \_\_\_\_\_ Left \_\_\_\_\_

Minimum clearance, road surface to bottom of portal 11.2'

Maximum distance from surface of road to bottom of stream 34.5'

Clear distance of opening above bottom of stream 31.0'

**CONDITION**

Superstructure GOOD

Substructure GOOD

Floor GOOD

Arches and Culverts \_\_\_\_\_

**UNDERPASS**

Number of tracks \_\_\_\_\_

Minimum Horizontal Clearance Highway Roadway \_\_\_\_\_

Traffic Lane Separated with Piers (Show width right and left) \_\_\_\_\_

Sidewalk Width (Show right or left) \_\_\_\_\_

Minimum Vertical Clearance \_\_\_\_\_

Vertical Distance from Rail to Highway \_\_\_\_\_

Posted Load Limits 10 TON Drainage Area \_\_\_\_\_ Acres.

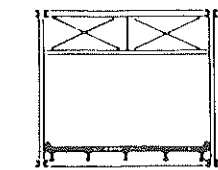
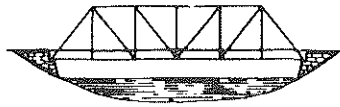
Remarks \_\_\_\_\_

SIMPLE	COMBINE

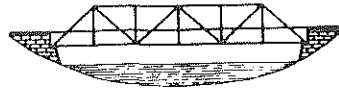
- NOTE: (1) For multiple span bridges give complete information on each span.  
(2) On arch bridges show clear span, face to face of abutments, on metal bridges show length of steel. Skew arch spans to be measured at right angles to face of abutments.  
(3) Under "Remarks" give length, width and number of structure that was replaced, if applicable.  
(4) File report on this form if structure is replaced by a culvert.

§ Required for structures on primary road and extensions of primary roads only.

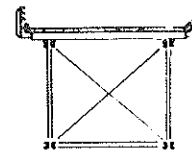
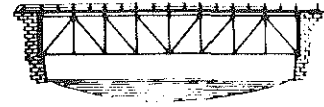
## GENERAL BRIDGE TYPES



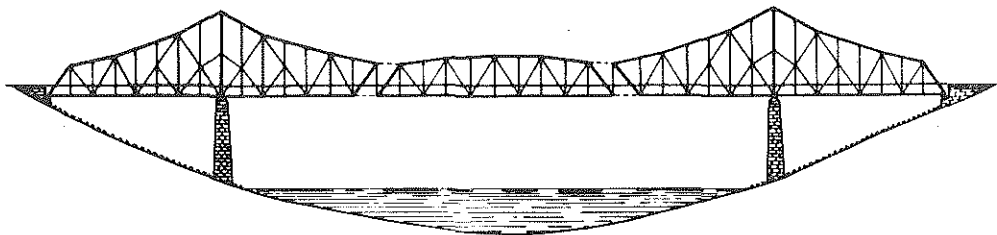
THROUGH TRUSS



PONY TRUSS



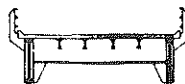
DECK TRUSS



CANTILEVER



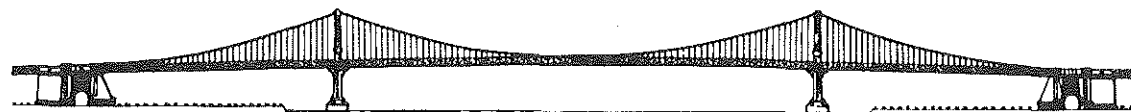
THROUGH GIRDER



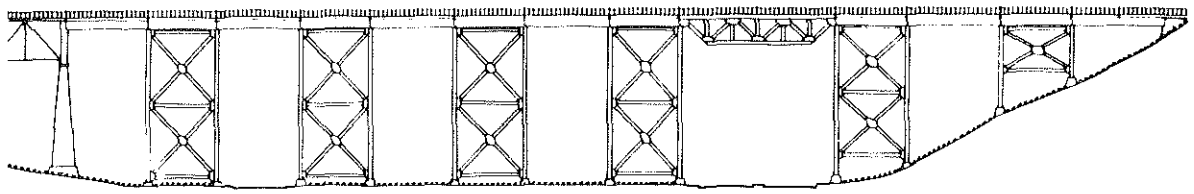
DECK GIRDER



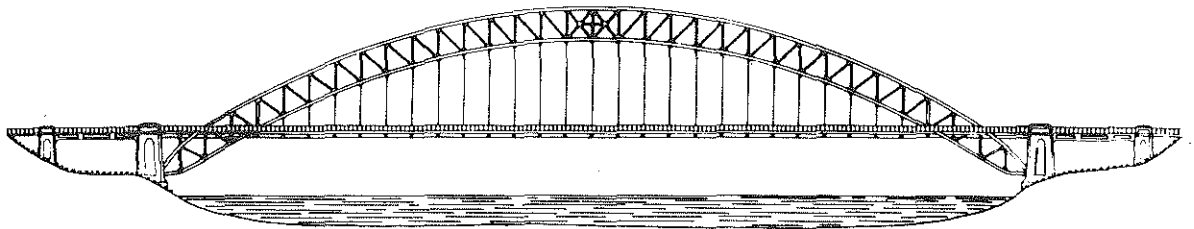
I BEAM



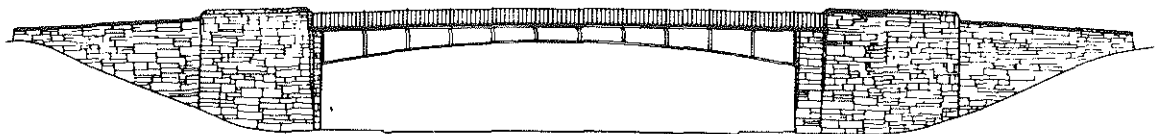
SUSPENSION



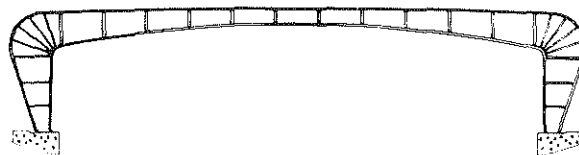
STEEL VIADUCT



THROUGH-ARCH TRUSS

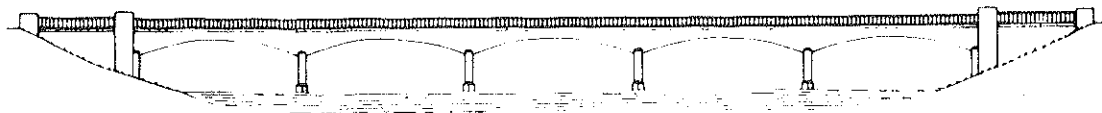


RIGID FRAME - STEEL

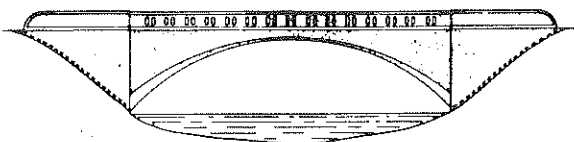


RIGID FRAME  
(STEEL GIRDER ELEMENT)

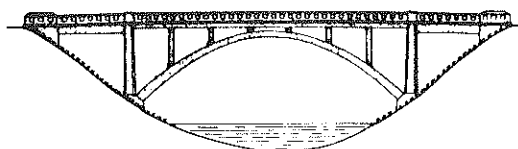




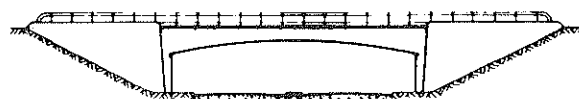
CONTINUOUS GIRDER



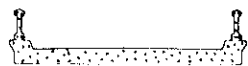
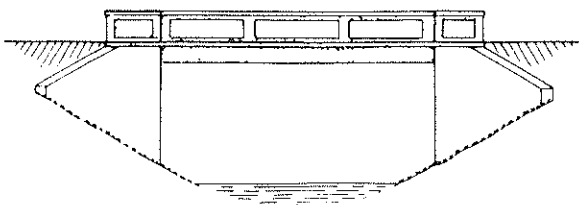
SPANDREL-FILLED ARCH



OPEN SPANDREL ARCH

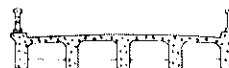
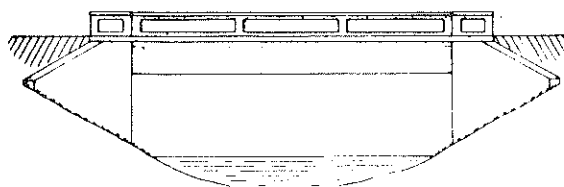


RIGID FRAME-CONCRETE



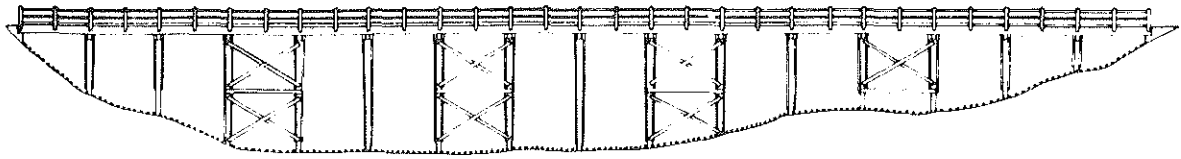
SLAB SECTION

CONCRETE SLAB (PLAIN)

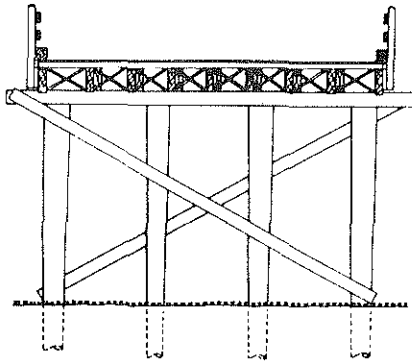


T-BEAM SECTION

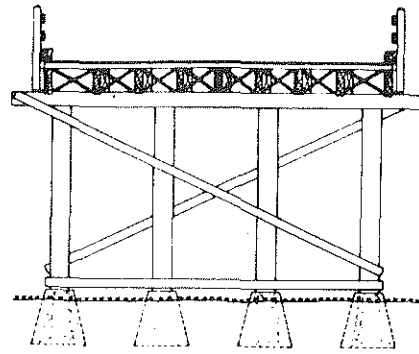
CONCRETE T-BEAM



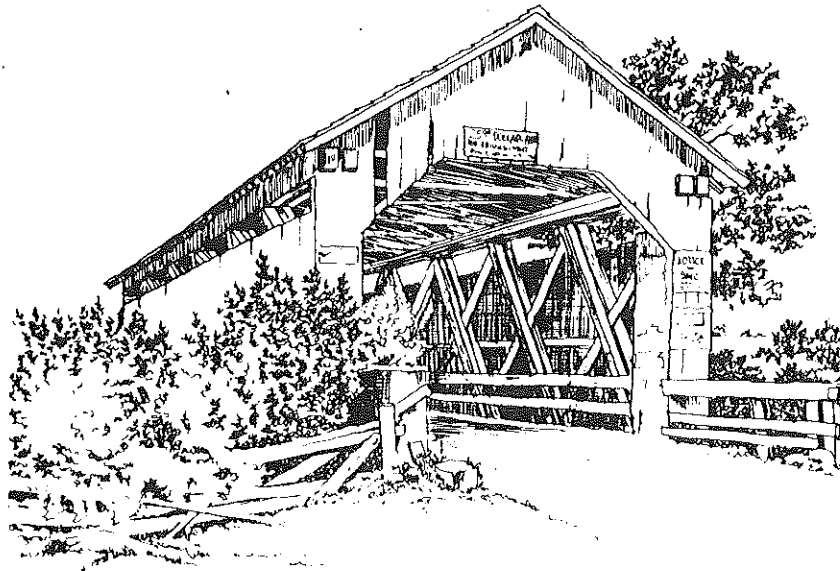
TIMBER TRESTLE



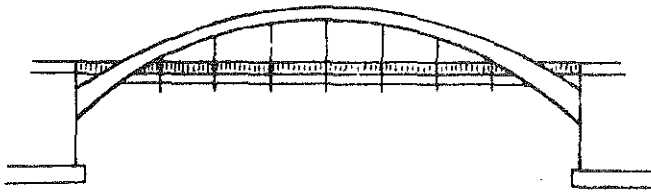
PILE BENT



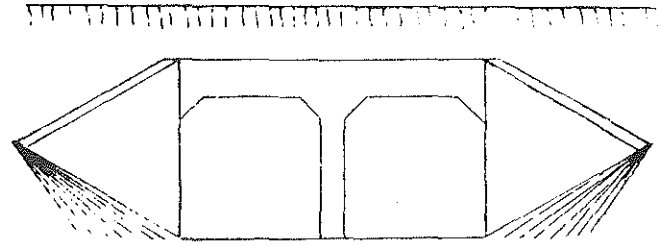
FRAME BENT



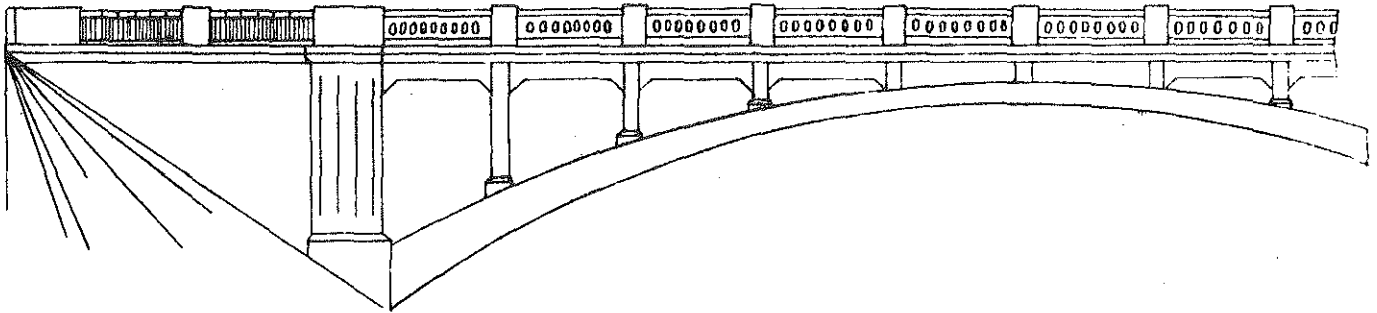
COVERED BRIDGE



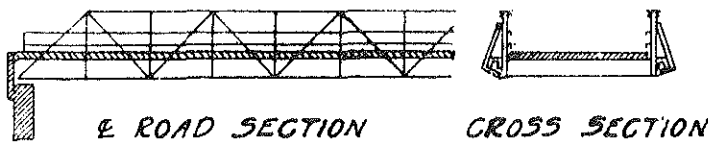
RAINBOW ARCH



TWIN BOX CULVERT



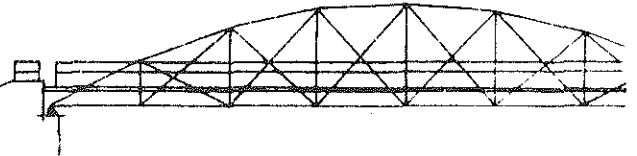
OPEN SPANDREL ARCH



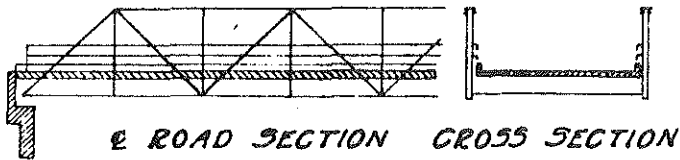
ROAD SECTION

CROSS SECTION

PONY TRUSS

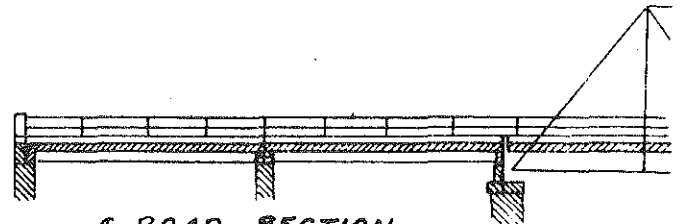


BOW STRING TRUSS



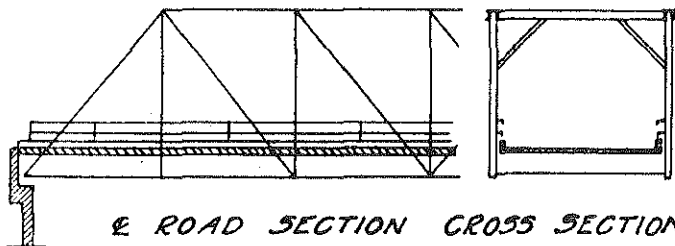
ROAD SECTION CROSS SECTION

PONY TRUSS



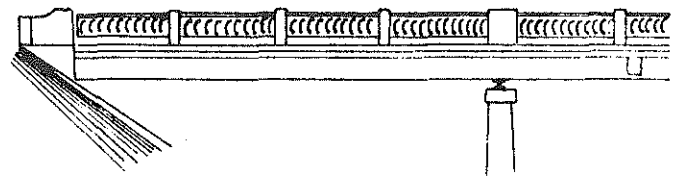
ROAD SECTION

APPROACH SPANS

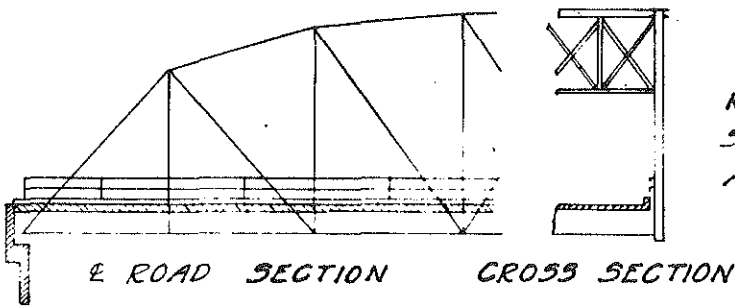


ROAD SECTION CROSS SECTION

HIGH TRUSS

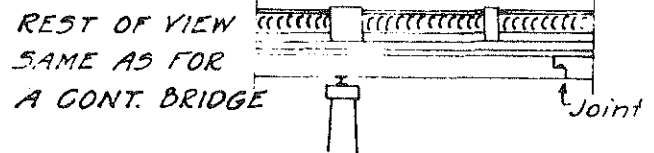


CONTINUOUS I BEAM

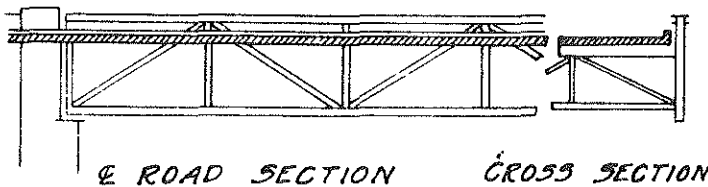


ROAD SECTION CROSS SECTION

HIGH TRUSS

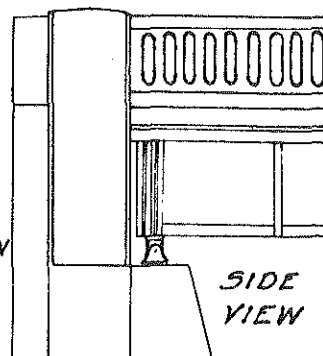


CANTILEVER (I BEAM BRIDGE)

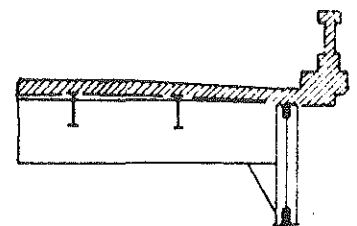


ROAD SECTION CROSS SECTION

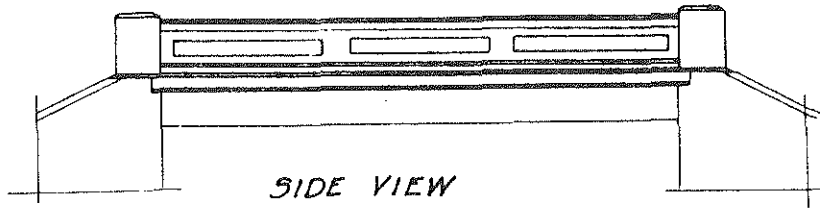
DECK TRUSS



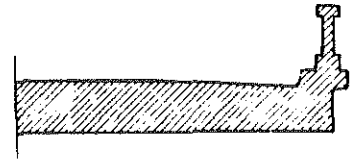
DECK PLATE GIRDER



CROSS SECTION



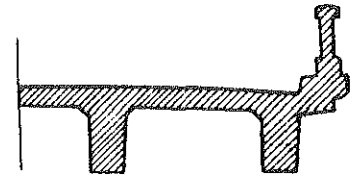
SIDE VIEW



CROSS SECTION

### SLAB BRIDGE

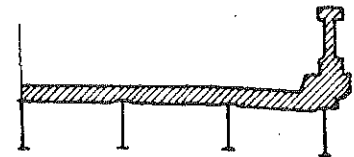
SIDE VIEW SAME AS ABOVE FOR  
CONCRETE SLAB BRIDGE.



CROSS SECTION

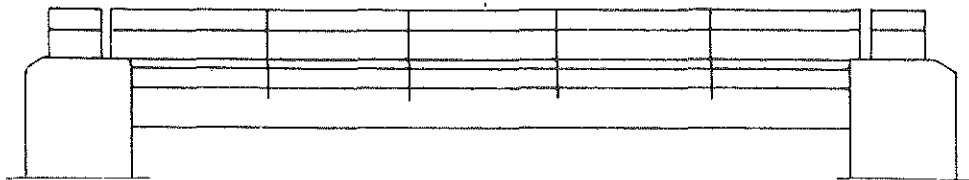
### CONCRETE GIRDER

SIDE VIEW SAME AS ABOVE FOR  
CONCRETE SLAB BRIDGE.

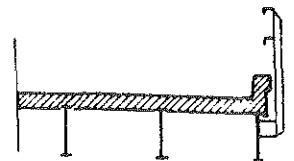


CROSS SECTION

### I-BEAM-CONCRETE RAIL

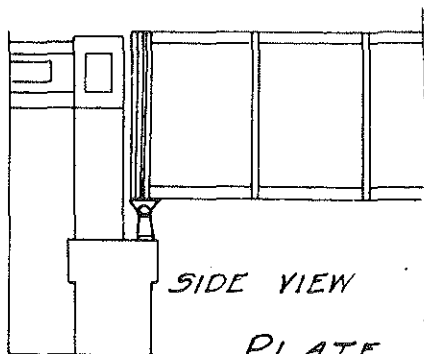


SIDE VIEW

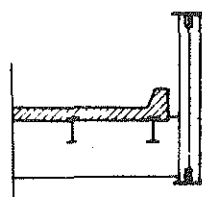


CROSS SECTION

### I-BEAM-STEEL RAIL

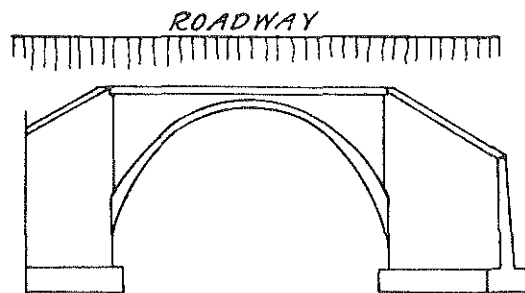


SIDE VIEW

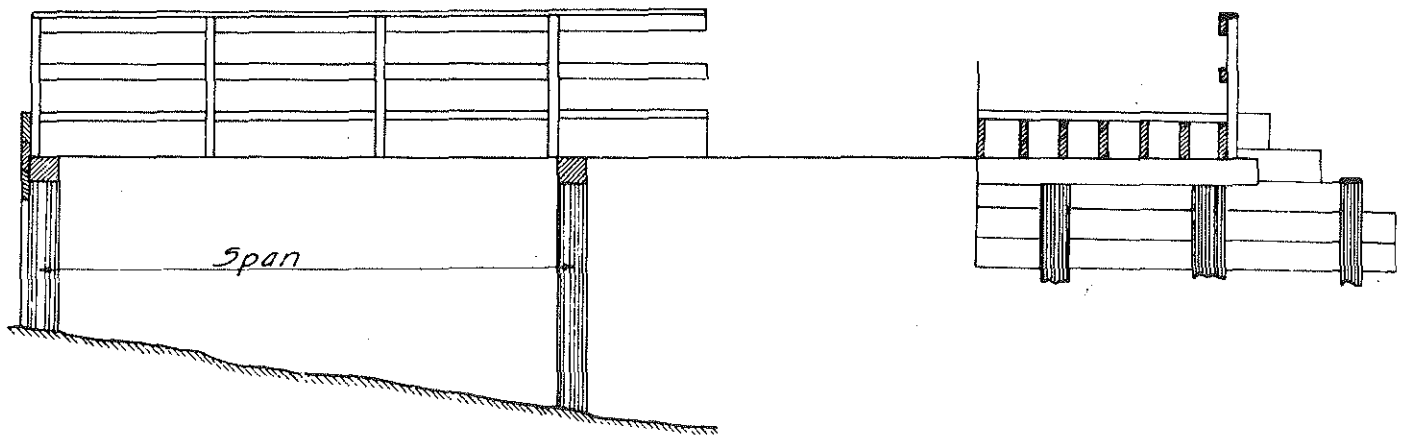


CROSS SECTION

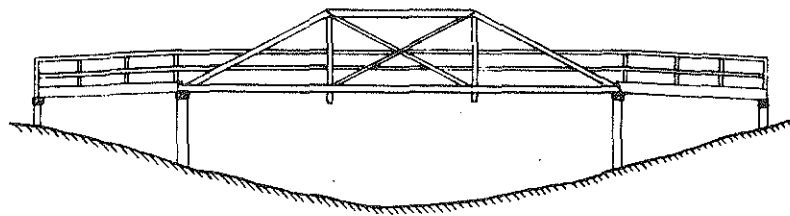
### PLATE GIRDER



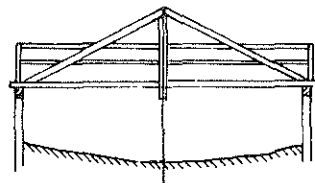
### CONCRETE ARCH



*TIMBER TRESTLE BRIDGE*

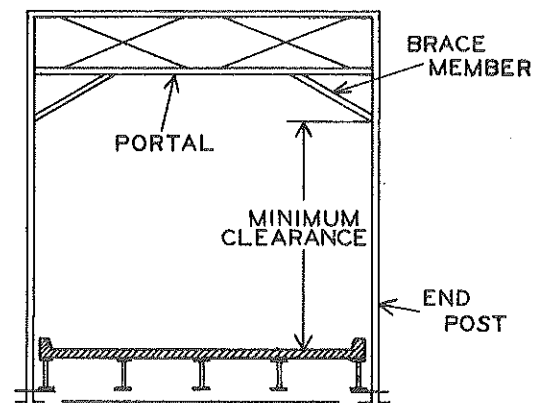
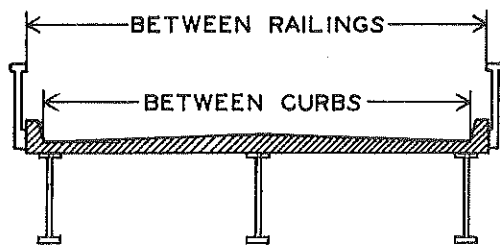
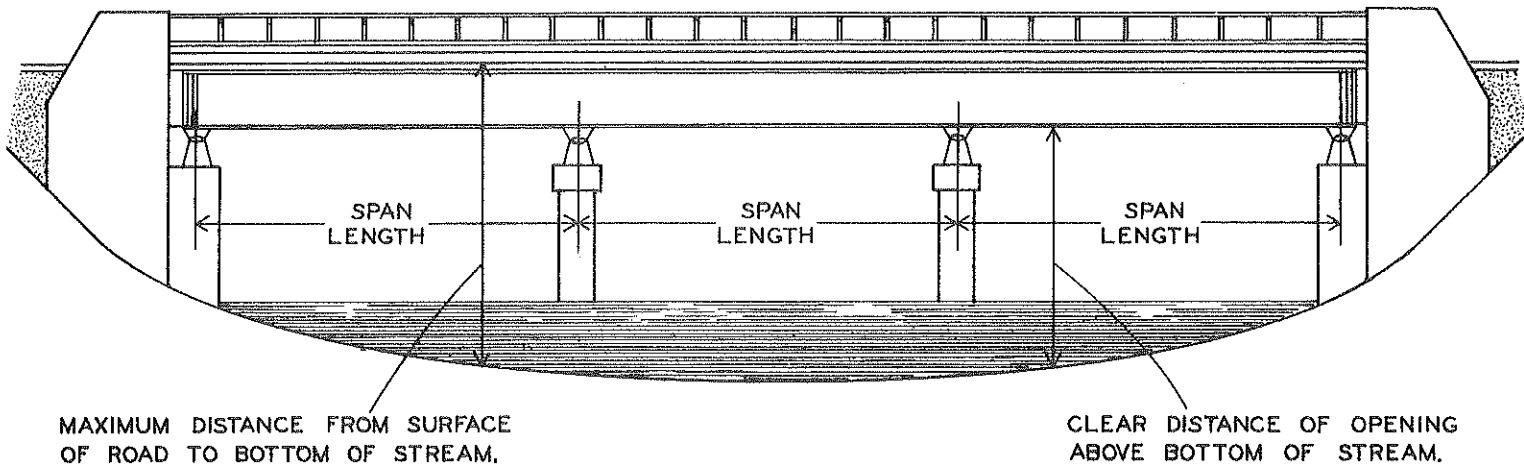


*WOOD TRUSS WITH TIMBER TRESTLE APPROACHES*



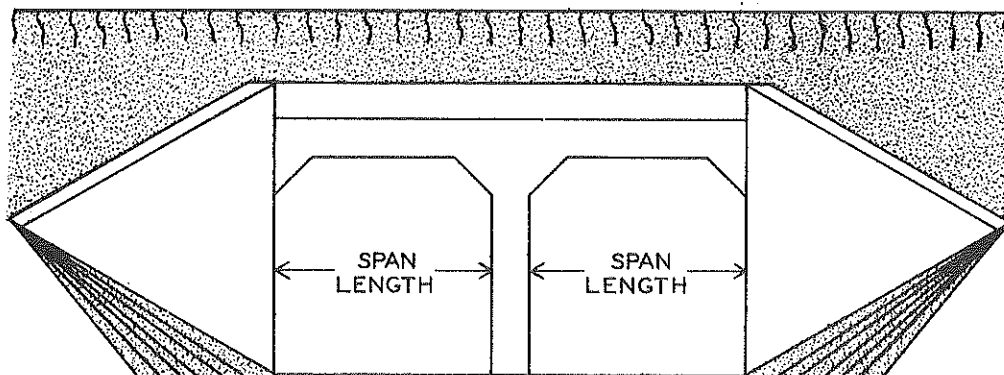
*"A" FRAME BRIDGE*

## BRIDGE MEASUREMENTS

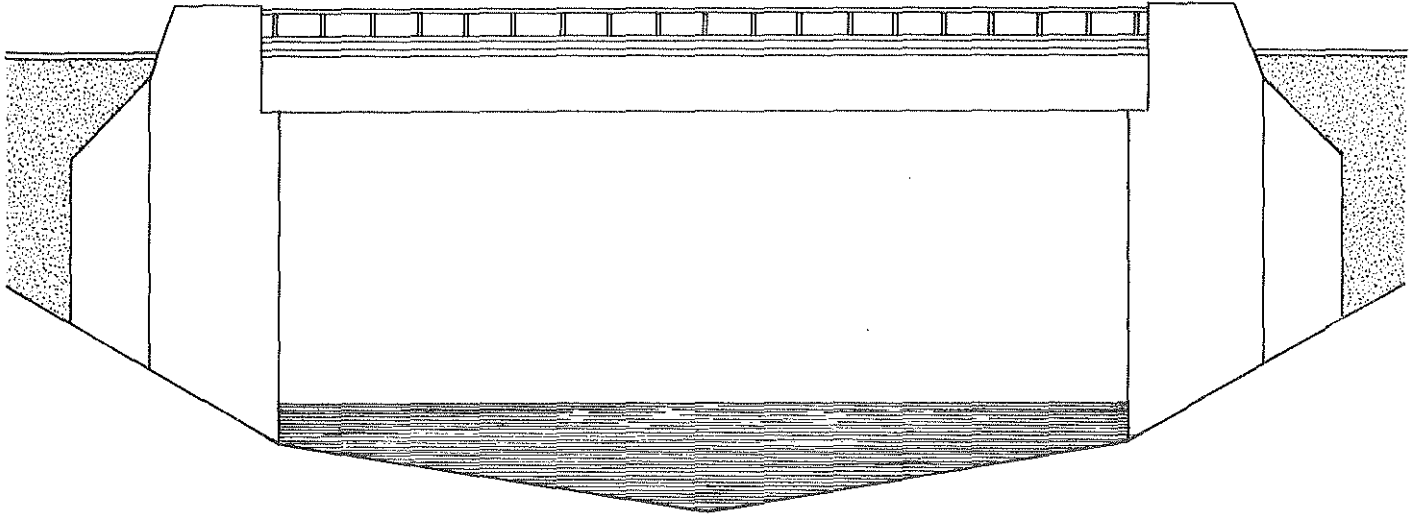


HIGH TRUSS BRIDGE

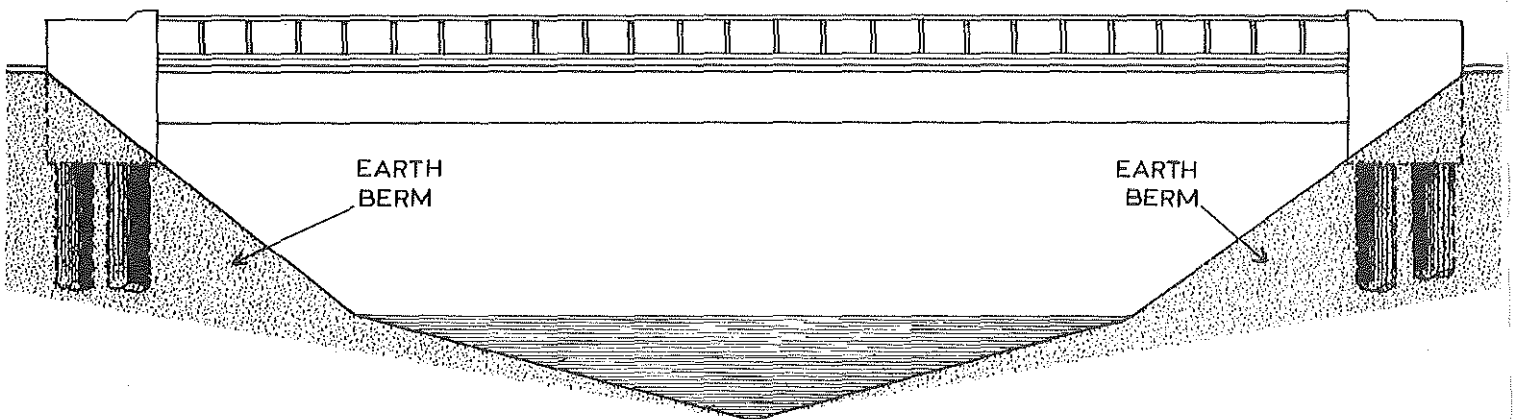
## TWIN BOX CULVERT



## ABUTMENT TYPES



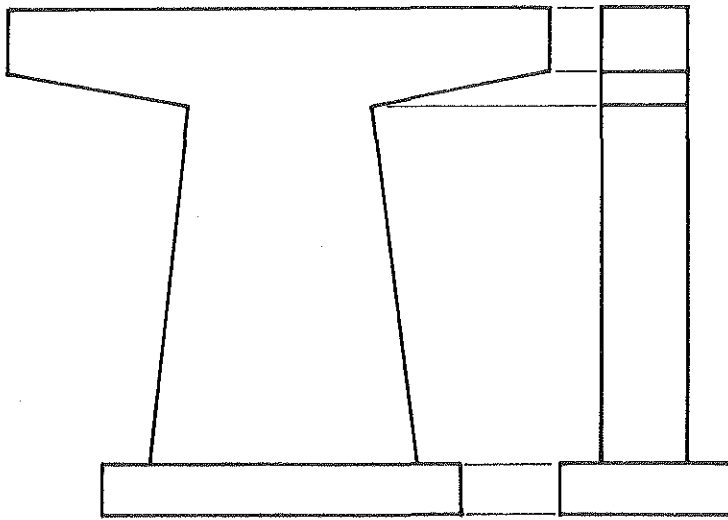
FULL ABUTMENT



STUB ABUTMENT



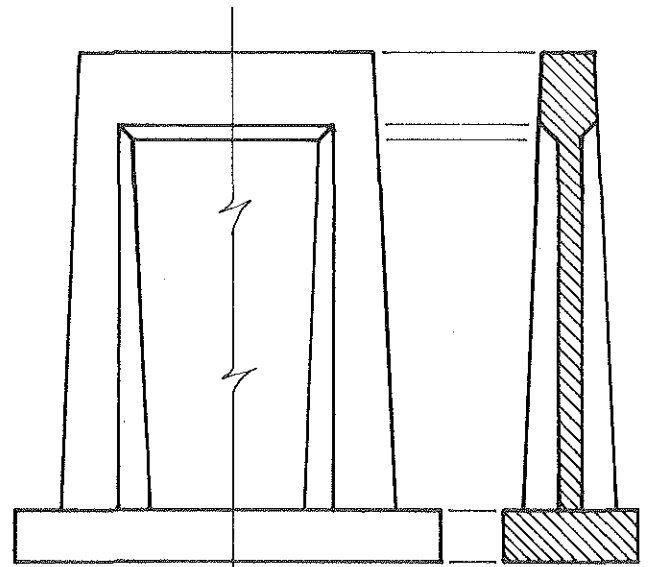
## PIER TYPES



ELEVATION

END VIEW

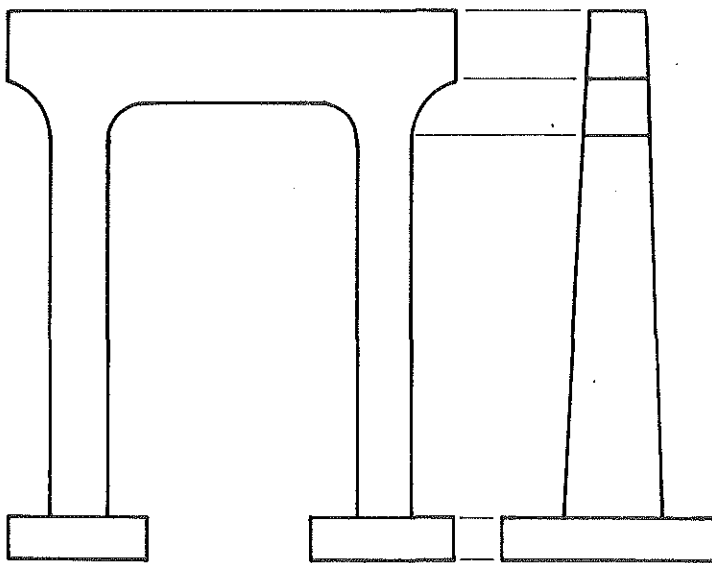
**CONCRETE  
T PIER**



ELEVATION

END VIEW

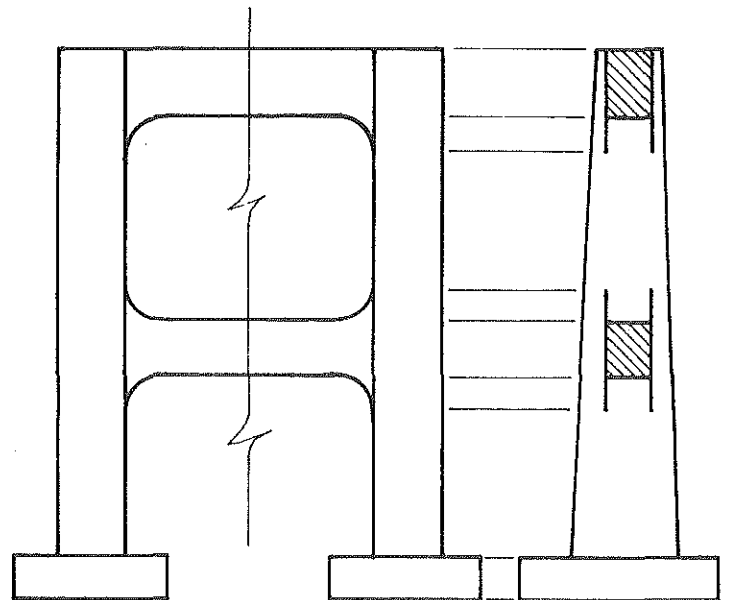
**CONCRETE  
DIAPHRAGM PIER**



ELEVATION

END VIEW

**CONCRETE PEDESTAL PIERS  
WITH OR WITHOUT STRUTS**



ELEVATION

END VIEW

**SAMPLE**

IOWA STATE HIGHWAY COMMISSION  
 Railroad Overpass Report  
 Highway Over Railroad

Crossing No. \_\_\_\_\_  
 County BOONE  
 Road System LOCAL  
 Year Built 1939  
 Date Reported 10-15-68  
 Reported By JOHN DOE

Location .00 EAST & .69 SOUTH Sec. 27 T. 84N R. 27W  
 (Direction and Distance from N.W. Cor of Sec.)

Over CHICAGO & NORTHWESTERN Railroad-No. of Tracks 2  
 (Name)

Superstructure:  
 Main Structure:

Description

Type <u>PONY TRUSS</u>	No. Spans <u>1</u>	Length Each <u>72.8'</u>
Type _____	No. Spans _____	Length Each _____
Type <u>TIMBER TRESTLE</u>	No. Spans <u>2</u>	Length Each <u>16.0'-16.0'</u>
Type <u>TIMBER TRESTLE</u>	No. Spans <u>2</u>	Length Each <u>16.0'-16.0'</u>

Approach Structure:  
 (Show as N. or S.,  
 E. or W.)

Direction  
N  
S

Length: On line of road over all (Multiple Spans Only) 136.8'

Floor: Type 4 X 8 PLANK (CREO)

Substructure:

Abutments: Type FULL Material CREO. PLANK & PILING  
 Piers: Type PILE BENT Material CREO. TIMBER

WIDTH

Between Curbs 18.4' Between Railings 19.4' Sidewalk Widths. Right \_\_\_\_\_ Left \_\_\_\_\_  
 Minimum Clearance, road surface to bottom of portal \_\_\_\_\_  
 Maximum distance from surface of road to R.R. tracks 24.2'  
 Minimum clearance from bottom of structure to R.R. tracks 22.0'

CONDITION

Superstructure FAIR  
 Substructure FAIR  
 Floor GOOD  
 Posted Load Limits 10 TON

Remarks:

**SAMPLE**

IOWA STATE HIGHWAY COMMISSION  
 Railroad Underpass Report  
 Highway Under Railroad

Crossing No. \_\_\_\_\_  
 County WOODBURY  
 Road System LOCAL  
 Year Built 1939  
 Date Reported 10-15-68  
 Reported By JOHN DOE

Location .40 EAST & .00 SOUTH Sec. 21 T. 89 N R. 44 W  
 (Direction and Distance From N.W. Cor. of Sec.)

Under CHICAGO & NORTHWESTERN Railroad \_\_\_\_\_  
 (Name)

Superstructure:  
 Main Structure:

DISCRIPTION

Approach Structure:  
 (Show as N. or S.,  
 E. or W.)

Direction  
W  
E

Type I-BEAM No. Spans 1 Length Each 30.0'  
 Type \_\_\_\_\_ No. Spans \_\_\_\_\_ Length Each \_\_\_\_\_  
 Type TIMBER TRESTLE No. Spans 2 Length Each 13.0'-13.0'  
 Type TIMBER TRESTLE No. Spans 3 Length Each 13.0'-12.5'-13.4'

Substructure:

Abutments: Type FULL Material CREO PLANK & PILING  
 Piers: Type FRAME BENT Material CREO TIMBER

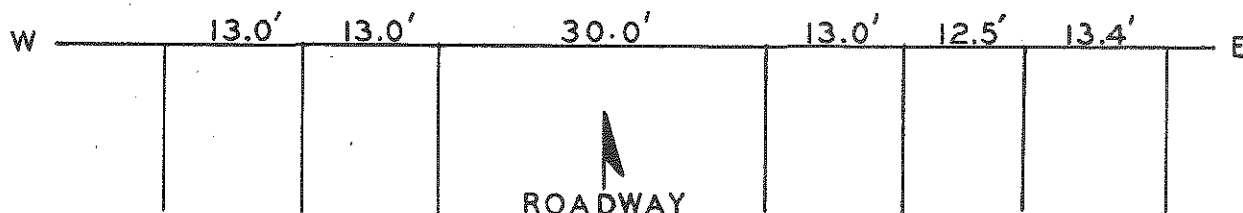
CONDITION

Superstructure FAIR  
 Substructure FAIR

UNDERPASS

	Simple	Combine
Number of tracks	<u>1</u>	
Minimum Horizontal Clearance Highway Roadway	<u>24.8'</u>	
Traffic Lane Separated With Piers (Show Width right and left)		
Sidewalk Width (Show right or left)		
Minimum Vertical Clearance	<u>9.1'</u>	
Maximum Height of Load	<u>9.0'</u>	
Verticle Distance from Rail to Highway	<u>11.8'</u>	

Remarks:



DIVISION OF PLANNING  
IOWA STATE HIGHWAY COMMISSION  
UNITED STATES DEPARTMENT OF COMMERCE  
BUREAU OF PUBLIC ROADS

SAMPLE

RURAL GRADE CROSSING REPORT

Crossing No. \_\_\_\_\_  
County POLK  
Road System FM AND FAS  
Surface Type 0033  
Surface Width 26 FEET  
Date 10-15-68  
Party Chief JOHN DOE

Name of Railroad CHICAGO & NORTHWESTERN Location 0.49 EAST & 50 SOUTH OF NW COR.  
Number of Tracks, Main 1 Other \_\_\_\_\_ Sec. 36 T. 80 N R. 22 W

Type of Warning Protection \_\_\_\_\_

Visibility of Crossbuck SD

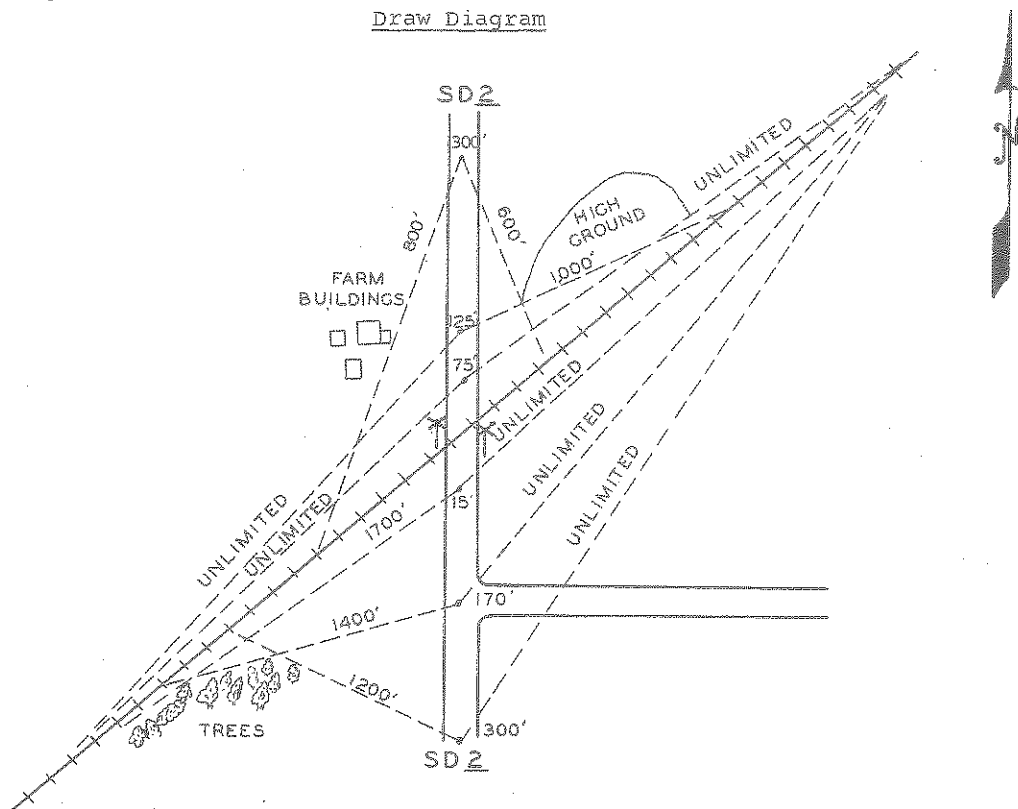
Approach Signs - Plain 2 Reflectorized \_\_\_\_\_  
Crossbucks - Plain \_\_\_\_\_ Reflectorized 2  
Lights - Flashing \_\_\_\_\_ Stationary \_\_\_\_\_  
Bells \_\_\_\_\_ Wigwag \_\_\_\_\_ Gates \_\_\_\_\_  
Other \_\_\_\_\_

10	300 feet or less
9	300-400
8	400-500
7	500-600
6	600-700
5	700-800
4	800-900
3	900-1000
2	1000-1100
1	1100 feet or over

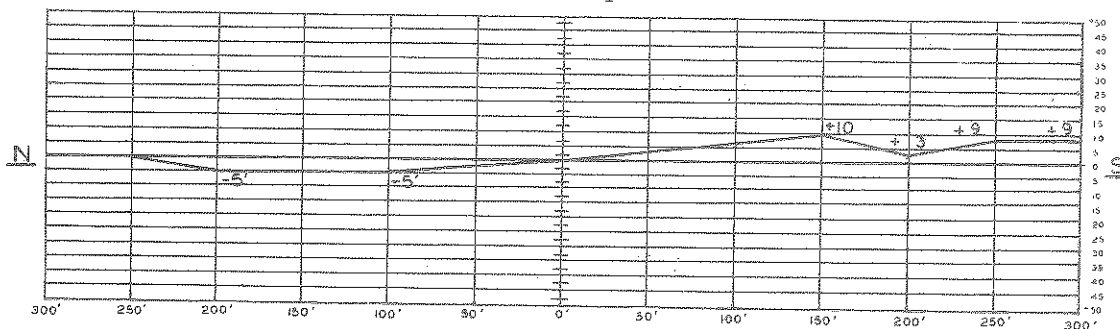
By numerals 1 or 2 indicate whether installation is on one or both sides of track.

Smallest Angle 50°

Draw Diagram



Profile of Survey Street



Daily or Weekly Train Traffic \_\_\_\_\_

Train Speed at Crossing \_\_\_\_\_  
Daily Vehicle Traffic \_\_\_\_\_  
Vehicle Speed Zone Post \_\_\_\_\_

DIVISION OF PLANNING  
IOWA STATE HIGHWAY COMMISSION  
UNITED STATES DEPARTMENT OF COMMERCE  
BUREAU OF PUBLIC ROADS

SAMPLE

MUNICIPAL GRADE CROSSING REPORT

Crossing No. \_\_\_\_\_  
County POLK  
Road System F.A.S.  
Surface Type 0050  
Surface Width 24'  
Date 10-15-68  
Party Chief JOHN DOE

Name of Railroad CHICAGO & NORTHWESTERN Location (City or Town) DES MOINES  
Number of Tracks, Main 2 Other 1 STORAGE City Street Name LOCUST ST. BETWEEN  
1ST AND 2ND ST.

Type of Warning Protection \_\_\_\_\_

Visibility of Crossbuck SD

Approach Signs - Plain \_\_\_\_\_ Reflectorized 2  
Crossbucks - Plain \_\_\_\_\_ Reflectorized \_\_\_\_\_  
Lights - Flashing 2 Stationary \_\_\_\_\_  
Bells 2 Wigwag \_\_\_\_\_ Gates \_\_\_\_\_  
Other \_\_\_\_\_

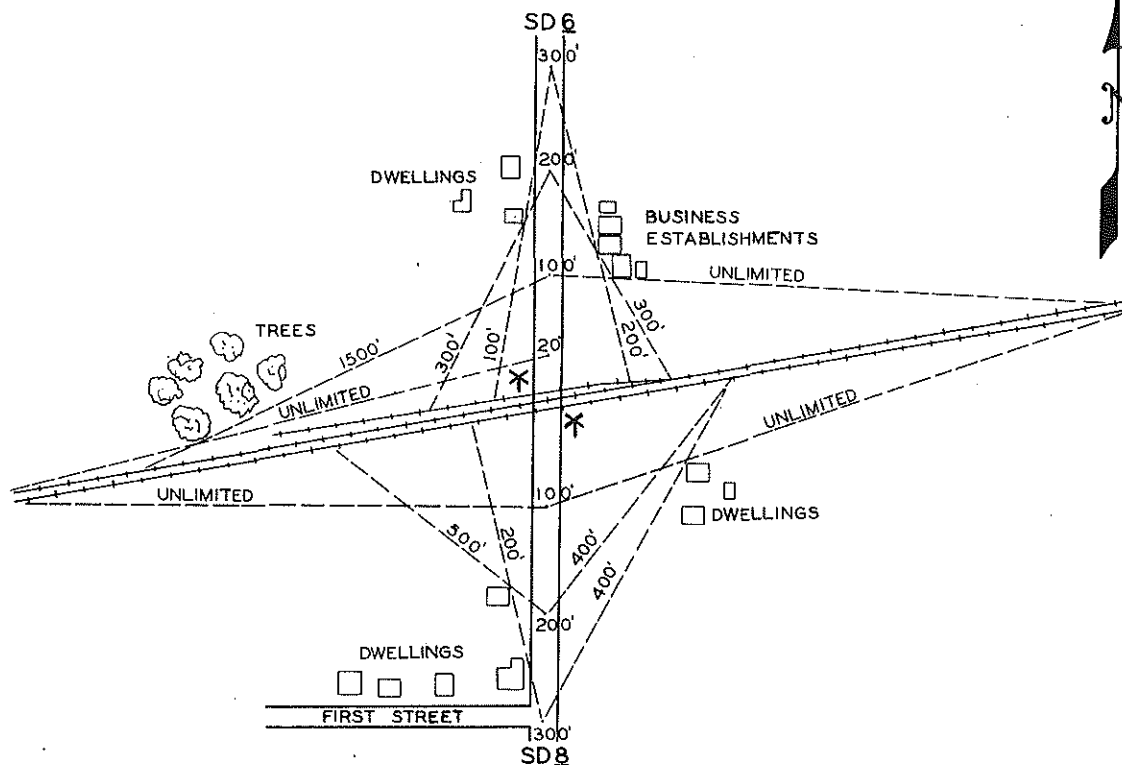
DOUBLE INSTALLATION

By numerals 1 or 2 indicate whether installation is on one or both sides of track.

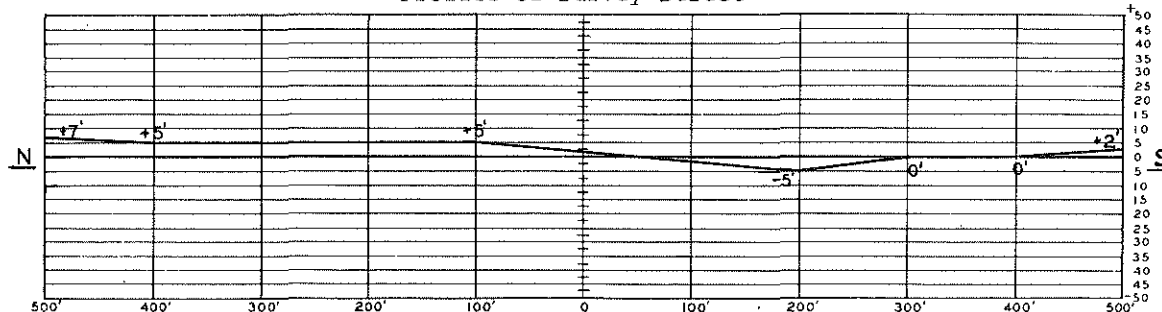
10	300 feet or less
9	300-400
8	400-500
7	500-600
6	600-700
5	700-800
4	800-900
3	900-1000
2	1000-1100
1	1100 feet or over

Smallest Angle 80°

Draw Diagram



Profile of Survey Street



Daily or Weekly Train Traffic \_\_\_\_\_

Train Speed at Crossing \_\_\_\_\_

Daily Vehicle Traffic \_\_\_\_\_

Vehicle Speed Zone Post 35 MPH





STATE LIBRARY OF IOWA



3 1723 02121 2436