

**ADAMS COUNTY POLICY ON ACCOMODATION  
OF UTILITIES ON COUNTY ROAD  
RIGHT-OF-WAY**

**January 18, 2011**



RESOLUTION NO. R-02-2011

ORDER OF BOARD OF COUNTY COMMISSIONERS  
ADAMS COUNTY, WASHINGTON

IN THE MATTER OF ADOPTING THE REVISED POLICY ON ACCOMMODATION OF UTILITIES ON COUNTY ROAD RIGHT-OF-WAY; AND, RESCINDING RESOLUTION NO. R-124-97

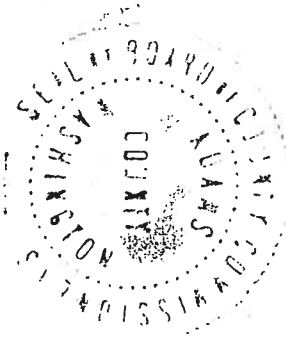
**WHEREAS**, certain portions of the WAC and the Washington State Department of Transportation Standard Specifications for accommodation of utilities on county road right-of-way have been revised; and,

**WHEREAS**, the policy adopted under Resolution No. 124-97 is no longer valid with these revisions in place;

**NOW THEREFORE BE IT HEREBY RESOLVED** that the attached "Policy Regarding Accommodation of Utilities on County Road Right-of-Way for Adams County" is hereby adopted and is effective immediately;

**AND, BE IT FURTHER RESOLVED** that Resolution No. 124-97 is hereby rescinded.

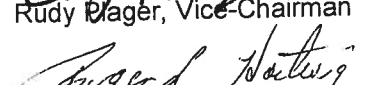
**DATED** this 18<sup>th</sup> day of January, 2011.



BOARD OF COUNTY COMMISSIONERS  
ADAMS COUNTY, WASHINGTON

  
Jeffrey W. Stevens, Chairman

  
Rudy Plager, Vice-Chairman

  
Roger L. Hartwig, Commissioner

ATTEST:



Linda Reimer, MMC  
Clerk of the Board

Attachment

**POLICY REGARDING  
ACCOMMODATION OF UTILITIES ON COUNTY ROAD RIGHT OF WAY  
FOR ADAMS COUNTY**

(Adopted by Resolution R-02-2011, effective Jan 18/2011)

**1. PURPOSE**

The purpose of this policy is to establish a county policy to provide administrative and procedural guidance needed to accommodate the installation and relocation of all above and below ground utilities which are located within the county road right-of-way.

**2. APPLICATION**

This policy shall apply to all new franchises and permits issued pursuant to RCW 80.32.010, RCW 80.36.040 and RCW 36.55, to all public and private utilities, and to all installation and relocation of utilities within the county road right-of-way, including but not limited to electric power, telephone, television, telegraph, communication, water, gas, all petroleum products, steam, chemicals, sewage, drainage, irrigation, and similar pipes, lines or cables.

This policy cannot address all situations and conditions that may be encountered. Specific provisions contained herein may not be appropriate for all locations and existing conditions. The policy is intended to assist, but not substitute for, competent work by both road and utility design and installation professionals. This policy is not intended to limit any innovative or creative effort which could result in better quality, better cost savings or improved safety characteristics.

It shall be the responsibility of any utility installing or relocating any of its facilities to ascertain and abide by the requirements and conditions of this policy.

**3. DEFINITION OF TERMS**

Unless otherwise stated, words and phrases used herein shall have the following meanings:

- a. Appurtenance - Equipment and/or accessories which are a necessary part of an operating utility system or subsystem.
- b. Backfill - replacement of excavated material with suitable material compacted as specified.
- c. Boring - Grade and alignment-controlled mechanical or other method of installing a pipe or casing under a road without disturbing the surrounding medium.

- d. Carrier - pipe directly enclosing a transmitted fluid or gas.
- e. Casing - a larger pipe enclosing a carrier for the purpose of providing structural or other protection to the carrier and/or to allow for carrier replacement without re-excavation, jacking or boring.
- f. Coating - protective material applied to the exterior of a pipe or conduit to prevent or reduce abrasion and/or corrosion damage.
- g. Conduit - an enclosed tubular runway for protecting wires or cables.
- gg. County - shall mean Adams County, Washington, and any successor entity/ies.
- h. Cover - depth to top of pipe, conduit, casing or gallery below the grade of a road or ditch.
- i. Drain - appurtenances to discharge accumulated liquids from casings or other enclosures.
- j. Encasement - structural element surrounding a pipe or conduit for the purpose of preventing future physical damage to the pipe or conduit.
- k. Franchise - occupancy and use document granted by the county required for occupancy of road rights of way in accordance with RCW 36.55 and RCW 80.32.
- l. Gallery - underpass for two or more utility lines.
- m. Manhole - an opening in an underground utility system into which workers or others may enter for the purpose of making installations, inspections, repairs, connections, cleaning, and testing.
- n. Pavement - the combination of subbase, base course, and surfacing placed on a subgrade to support the traffic load and distribute it to the subgrade.
- o. Permit - a document issued under the authority of (1) the County Engineer and/or (2) a franchise granted by the County's legislative authority. The permit provides specific requirements and conditions for specific utility work at specific locations within the right of way.
- p. Pipe - a structural tubular product designed, tested, and produced for the transmittance of specific liquids and gases under specific conditions.
- q. Plowing - direct burial of utility lines by means of a 'plow' type mechanism which breaks the

ground, places the utility line at a predetermined depth, and closes the break in the ground.

- r. Pressure - internal gage pressure in a pipe in pounds per square inch, gage (psig).
- s. Private Lines - privately owned, operated and maintained utility facilities devoted exclusively to the use of the owner(s).
- t. Relocation - Planned change of location of an existing facility to a more advantageous place without changing the character or general physical nature of the facility.
- u. Replacement - Installation of a like element of a utility system or subsystem in the same or near-same physical location normally due to damage, wear or obsolescence of the element.
- v. Restoration - all work necessary to replace, repair or otherwise restore the right of way and all features contained within to the same or equal condition as before any change or construction thereto.
- w. Right-of-Way - a general term denoting public land, property, or interest therein, usually in a strip, acquired for or devoted to transportation or secondary purposes.
- x. Road (or Roadway) - a general term denoting a street, road or other public way, including shoulders, designated for the purpose of vehicular traffic.
- y. Sleeve - short casing through a pier, wall or abutment of a highway structure.
- z. Traffic Control - those activities necessary to safeguard the general public, as well as all workers, during the construction and maintenance of utility facilities within the right of way.
- aa. Trenched - installation of a utility in an open excavation.
- bb. Untrenched - installation of a utility without breaking the ground or pavement surface such as by jacking or boring.
- cc. Vent - appurtenance to discharge gaseous contaminants from casings or other enclosures.

#### 4. **GENERAL CONDITIONS AND REQUIREMENTS**

##### A. **LOCATION**

- (1) Utility installations shall be located to minimize need for later adjustment to accommodate future roadway improvements and to permit access to servicing such

installations with minimum interference to roadway traffic. Adams County may make available to utilities a copy of their six-year transportation improvement program (or capital facilities and transportation plan where required,) in order to minimize both utility customer and road user inconvenience should future road improvements (on existing or new alignment) require adjustment or relocating of the utility facilities. Said utilities shall, within the limits of standard business practice, make available appropriate short and long range development plans to the county.

- (2) Unless otherwise approved by the county, all above-ground utilities and their appurtenances as well as all above-ground appurtenances of below-ground utilities that may constitute a roadside obstacle for traffic using the road shall be located as close as practicable to the edge of the right-of-way line. If an appurtenance within the right-of-way would constitute an unacceptable roadside obstacle, said obstacle may, at the county's option, and the utility's expense, be:
  - (a) relocated to another place within the right-of-way,
  - (b) converted to a break-away design,
  - (c) crash-protected, or
  - (d) relocated to another location off the road right-of-way.
- (3) Installations that are required for a road purpose, such as street lighting or traffic signals, are to be located and designed in accordance with this policy.
- (4) Where existing facilities are in place, new facilities shall be compatible with the existing installations and conform to this policy as nearly as practicable.
- (5) Routine maintenance functions will not require a county permit unless relocation or reconstruction of the facility is part of the routine maintenance to be performed.
- (6) Adams County Code §16 shall govern utility easements in subdivisions.

**B. DESIGN - GENERAL**

- (1) The utility shall be responsible for the design of the utility facility being proposed. This responsibility shall include, in addition to the integrity of the proposed utility facility, provisions for public safety during the course of construction, as well as consideration of traffic safety and accident potential for the life of the installation.
- (2) For work requiring application to the county, the county will review and approve the utility's plans with respect to:

- (a) location,
- (b) the manner in which the utility facility is to be installed,
- (c) measures to be taken to preserve safe and free flow of traffic,
- (d) structural integrity of the roadway, bridge, or other structure,
- (e) ease of future road maintenance, and appearance of the roadway.

Approval, denial or requirement extension of review time for the application will be given by the county within ten (10) working days of receipt of the application in the Adams County Public Works office in Ritzville, Washington. 210 W Alder, 99169

- (3) Provision shall be made for known or planned expansion of the utility facilities, particularly those located underground or attached to bridges or other structures within the right of way.
- (4) Granting of a franchise or permit SHALL NOT imply or be construed to mean the county shall be responsible for the design, construction, or operation of the facility or for public safety during the facility's installation, operation, or maintenance.

#### **C. STANDARDS AND CODES**

All overhead installations shall conform to WAC 136-40 All underground installations shall maintain a depth of thirty-six (36) inches below the bottom of the ditch and across the roadway surface in conformance with WAC 136-40.

All utility installations shall be designed in accordance with the standards, codes and regulations applicable to the type of utility. The methods of installation and materials used shall conform to the codes and standards promulgated by federal, state, and local government entities and/or political subdivisions and by the industry. This shall also include any road design standards which the county shall deem necessary to provide adequate protection to the road, its safe operation, appearance and maintenance.

#### **D. ADJUSTMENT AND RELOCATION OF EXISTING FACILITIES**

- (1) Existing underground utilities on county road right-of-way may be removed or relocated when road work funded by the county would disturb the existing underground utility. All such removal or relocation shall be at the sole expense of the owning utility and all work must be accomplished by the same permitting process as for new installations.
- (2) Notwithstanding reinforcement or protection otherwise provided, a permittee shall be responsible for the security of each existing pipeline and utility within a road

construction zone. Where there are unusual utility hazards or where heavy construction equipment will be used, the permittee shall provide adequate temporary protection. In replacing the roadway, the design should give due consideration to the protection of previously existing utilities in the roadway section without sacrificing the geometrics of roadway design.

**5. PERMITS**

**A. GENERAL REQUIREMENTS**

For all work authorized by franchise, comprehensive plan, or other agreement, a written permit will be required for occupancy of road right-of-way by all utility facilities, including private lines. No facility shall be used for other than the purpose stated, unless prior written approval is granted by the County Engineer.

**B. SPECIFIC REQUIREMENTS**

As required, permit applications shall be submitted on the standard form as provided by the county. The permit application shall include the following information:

- (1) Agreement to all pertinent provisions of this policy and to all additional permit conditions as the county may deem appropriate.
- (2) A detailed description of the facilities to be installed, with precise locations of such utilities.
- (3) Two (2) copies of all exhibits adequately depicting existing or proposed location of the facility in relation to the road, including right-of-way or easement lines; relationship to currently planned road revisions, if applicable; and all locations and situations for which deviations in depth of cover (including the proposed method of protection and work) or other locational standards are anticipated.
- (4) Fees are regulated by Adams County Resolution.

**6. SPECIFIC REQUIREMENTS - UNDERGROUND UTILITIES**

**A. UNDERGROUND UTILITIES - LOCATION AND ALIGNMENT**

- (1) For all crossings, the angle of crossing should be as near a right angle to the road centerline as practicable. However, lesser angles may be permitted based upon economic considerations of practical alternatives which in no way compromise public

safety.

- (2) Where practicable, crossings should avoid deep cuts, footings of bridges and retaining walls, or locations where highway drainage would be affected.
- (3) Longitudinal installations should run parallel to the roadway and lie as near as practicable to the right-of-way line. Installations which cannot be so installed may be allowed within the right of way, provided that the installation will not adversely affect the design, construction, stability, structural integrity, traffic safety, or operation of the road facility.
- (4) Where irregularly shaped portions of the right-of-way extend beyond the normal right of way limits, a uniform alignment of facilities may be allowed.

**B. UNDERGROUND UTILITIES - COVER**

The grade of and resulting cover for an underground utility shall be in compliance with all applicable federal, state and county permit requirements unless otherwise specified in writing by the county engineer.

**C. UNDERGROUND UTILITIES - ENCASEMENT**

- (1) Casings shall be installed for roadway crossings where required by appropriate industry governmental code or by county permit requirement.
- (2) Casings may be required for the following conditions:
  - (a) As an expediency in the insertion, removal, replacement, or maintenance of a carrier line crossing or other locations where it is necessary in order to avoid open trench construction; or
  - (b) As protection for carrier lines from external loads or shock either during or after construction of a road; or
  - (c) For jacked or bored installations of coated carrier lines.
- (3) Within the road right of way, where practicable, casing pipes shall extend beyond the toe of fill slopes, back of roadway ditch, outside of curb or to the right-of-way limits.
- (4) Other than for necessary vents and/or drains, casing pipes shall be sealed at both ends.

- (5) Casing pipes shall be designed to support the load of the road and superimposed loads thereon and, as a minimum, shall equal the structural requirements for road drainage facilities. Casings shall be composed of materials of sufficient durability to withstand conditions to which they may normally be exposed.

**D. UNDERGROUND UTILITIES - UNCASSED CARRIERS**

- (1) The carrier pipe shall conform to the material and design requirements of the appropriate utility industry and all governmental codes and specifications.
- (2) The carrier pipe shall be designed and tested to support the load of the road, plus superimposed loads thereon, when the pipe is operated under all ranges of pressure from maximum internal to zero pressure. Written, verified proof of such testing shall be submitted with the initial permit application.

**E. UNDERGROUND UTILITIES - APPURTENANCES**

- (1) Vents shall be required for casings, tunnels and galleries enclosing carriers of fuel where required by federal safety standards. Vent stand pipes should be located and constructed so as neither to interfere with maintenance of the road nor to be concealed by vegetation. Preferably stand pipes should stand by a fence or on the right-of-way line.
- (2) Drains shall be required for casings, tunnels or galleries enclosing carriers of liquid, liquified gas, or heavy gas. Drains for carriers of hazardous materials shall be directed to natural or artificial holding areas to prevent the potential for surface or ground water contamination. Drains for which only water or other non-hazardous liquids may discharge may be directed into the roadway ditch or natural water course at locations approved by the county. The drain outfall shall not be used as a waste way for routine purging of the carrier unless specifically authorized by the county.
- (3) Location markers and emergency information shall be used when required by applicable federal, state or county standards.
- (4) Manholes should be designed and located in a manner that will cause the least interference to other utilities or future road expansion. Where practicable, installations in the pavement or shoulders should be avoided.

**F. UNDERGROUND UTILITIES - INSTALLATION**

Installations shall ensure safety of traffic, pedestrians and preservation of the roadway structure, and required construction shall, unless otherwise provided in the approved permit, be

in accordance with the following controls:

- (1) Trenched Construction and Backfill:
  - (a) Where the pavement must be removed, it first shall be cut in vertical (or undercut) continuous straight lines.
  - (b) Trenches shall be cut to have vertical faces, where soil and depth conditions permit, with a maximum width of outside diameter of pipe plus 2 feet. Shoring shall comply with the Washington State Department of Labor and Industries Safety Code as well as WISHA and OSHA where they apply.
  - (c) The pipe or carrier shall be installed and the trench backfilled in a manner which assures no deformation of the pipe likely to cause leakage. Restoration of the structural integrity of the roadway structure is mandatory. Specific trench backfill requirements regarding materials and methods shall be provided by the county.
  - (d) When trenching is approved on paved roads, the pavement shall be restored as required by the county Permit Requirements.
  - (e) When trenching is approved on gravel roads, the road will be restored as stated in county Permit Requirements.
  - (f) Adams County Typical Trench Detail shall be as per WSDOT standard specifications and plans and shall apply to all installations.
- (2) Untrenched construction may be required for pipelines crossing roads paved with asphalt concrete or cement concrete and for roads paved with bituminous surface treatment when directed by the county permit.
  - (a) Where sufficient right-of-way exists, the length of untrenched construction shall extend a distance from edge of pavement as determined or approved by the county engineer.
  - (b) Over breaks, unused holes, or abandoned casings shall be backfilled as directed by the county engineer.
  - (c) Water boring under roadways shall not be permitted.
  - (d) Existing carriers and conduit installed under a roadway may be physically

located prior to pipeline installation.

- (3) Plowing of communication and electrical lines on or adjacent to existing roads by means of a vibratory plow may be allowed by the county, provided that the structural integrity of the roadway is not impaired.

**G. UNDERGROUND UTILITIES - ONE CALL SYSTEM**

Utility facilities shall be located and identified in accordance with Title 19 RCW, (Washington State One Call System).

**7. SPECIFIC REQUIREMENTS - OVERHEAD UTILITIES**

**A. POWER AND COMMUNICATION LINES**

- (1) Single-pole construction and joint use of the pole is desirable and should be used whenever feasible.
- (2) The minimum vertical clearance for overhead power and communication lines above the road and the minimum lateral and vertical clearance from bridges shall be in compliance with the National Electrical Safety Code and Washington State Department of Labor and Industries "Electrical Construction Code" and any Federal Codes such as WISHA and OSHA when they apply.
- (3) Where irregularly shaped portions of the right-of-way extend beyond the normal right-of-way limits, a uniform alignment of facilities shall be allowed.

**8. AESTHETIC/SCENIC CONSIDERATIONS**

- A. Utility installations shall be designed and constructed to minimize the adverse affect on existing roadside manmade or natural amenities. Special efforts shall be taken to minimize any potential negative impact on areas of scenic beauty (i.e., scenic strips, viewpoints, rest areas, recreation areas, public parks or historic sites, etc.).
- B. Overhead utility installations shall be permitted in areas of scenic beauty when other utility locations are not available, are not technically feasible, are unreasonably costly, or are less desirable from the standpoint of visual quality.
- C. If the utility intends to use chemical sprays to control or kill weeds and brush in scenic areas, prior approval must be granted by the county at least annually. The county may limit or restrict the types, amounts, and timing of applications if a significant negative impact on the aesthetics

of the area is anticipated, provided such limitations or restrictions are not in conflict with State law governing utility right-of-way maintenance.

- D. Refuse and debris resulting from the installation or maintenance of the utility facilities shall be promptly removed once work is completed.

## 9. **INSTALLATIONS ON ROADWAY BRIDGES AND STRUCTURES**

Attachment of utility lines to a roadway structure (including bridges) may be allowed where such attachment conforms to sound engineering considerations for preserving the roadway structure and its safe operation, maintenance and appearance. All plans for attachment to any county owned bridge or structure shall have the written approval of the county engineer. The attachment shall be in accordance with Appendix A, Bridge Utility Installation Guidelines or as approved by the Adams County Engineer.

## 10. **MISCELLANEOUS PROVISIONS**

### A. **PRESERVATION, RESTORATION AND CLEANUP**

- (1) The size of disturbed area necessary to install a utility shall be kept to a minimum.
- (2) Restoration methods shall be in accordance with the specifications of the county.
- (3) Unsatisfactory restoration work shall be promptly corrected by the utility after written notice from the county engineer. If necessary, in the opinion of the county engineer, unsatisfactory restoration work may be corrected by the county and billed to the utility.

### B. **TRAFFIC CONTROL AND PUBLIC SAFETY**

- (1) Traffic controls, including detours for all utility work, shall conform with the currently applicable "Manual on Uniform Traffic Control Devices for Streets and Highways".
- (2) All construction and maintenance operations shall be planned to keep interference with traffic to a minimum. On heavily traveled roads, construction operations interfering with traffic should not be scheduled during periods of peak traffic flow. Work shall be planned so that closure of intersecting streets, road approaches, or other access points is held to a minimum.
- (3) Adequate provision shall be made to safeguard any open excavation, and shall include barricades, lights, flaggers, or other protective devices as may be necessary.
- (4) The storage of materials on through roadways shall not be allowed, and parking of

vehicles on through roadways shall be kept to a minimum.

- (5) Temporary storage of excavation materials on the roadway may be allowed by permit requirements if the traffic control plans indicate that Section 10.B.3 above will be in force.

**C. EMERGENCY REPAIRS**

- (1) All utility facilities shall be kept in a good state of repair. Emergency repairs shall be undertaken in a timely manner.
- (2) If emergency repairs disturb the right of way, such repairs may be immediately undertaken and the right of way restored. Approval as to the manner of final restoration of the right of way shall be secured from the county in a timely fashion. The utility shall notify the county engineer on the next working day following the date of the emergency repair. If the traveled portion of the roadway is damaged in any way the utility shall immediately notify the county engineer so that traffic safety can be maintained until repairs can be made.

**D. AMERICANS WITH DISABILITIES ACT (ADA)**

Adams County desires to provide prompt and equitable resolution of complaints alleging any action prohibited by the U.S. Department of Justice regulations implementing Title II of the Americans with Disabilities Act.

Title II of the Americans with Disabilities Act provides, in part, that “no otherwise qualified disabled individual shall, solely by reason of such disability, be excluded from the participation in, be denied the benefits of, or be subject to discrimination” in programs or activities sponsored by a public entity.

## **Appendix A**

### **Bridge Utility Installation Guidelines**

#### **A-1 General**

The following general guidelines are intended as a design aid for installing gas, water, telephone, power, sewer and other utility lines on County-owned bridges. Although some utility installations are unique, the general concepts and procedures shown in these guidelines can be applied to most utility installations. The general guidelines are as follows:

- A. Attachment of a utility shall not be considered unless the structure in question is of a design that is adequate to support the additional load and can accommodate the utility facility without compromise of highway features, including reasonable ease of maintenance.
- B. Manholes and other utility access panels should be avoided within the roadway portion of the structure.
- C. Attachment on a structure of a pipeline carrying a hazardous transmittant shall be avoided where practicable.
- D. The utility attachment shall not reduce the clearance of a structure where such clearance is critical. Attachment to the outside of a structure should be avoided where there are reasonable alternatives.
- E. Utility mountings shall be of a type which shall not create noise resulting from vibration.
- F. The hole created in a structure abutment shall be sleeved, shall be of the minimum size necessary to accommodate the utility line, and shall be sealed to prevent any leakage of water or backfill material.
- G. The utility line back of the abutment shall curve or angle out to align outside the roadbed area in as short a distance as is operationally practicable.
- H. Communication and electrical power line attachments shall be suitably insulated, grounded, and preferably carried in protective conduit or pipe from point of exit from the ground to re-entry. Carrier pipe and casing pipe shall be properly isolated from electric power line attachments.
- I. The appropriate Adams County Standard Detail for Utility Installation On Bridges shall apply.

## **A-2 Permit Requirements**

To install any utilities on an Adams County bridge, a Right-of-Way Permit must be obtained from the Public Works Department. Plans for installation must be completed and submitted to the Department for review prior to any permit approval. Beside the items listed in Section 5.B. the plans must include at least the following:

- 1 . Plan view with Adams County Bridge Number.
2. Elevation view.
- 3 . Typical section views.
4. Specifications, including maximum design pressures and regular operating pressure for pressure pipe system.
5. Methods of attachment, including thrust protection details and lateral bracing details for pressure systems, utility weights and span lengths between supports.
6. Utility expansion provisions.

The County Engineer or his representative will review details pertaining to the bridge crossing, such as attachment details or trenching details adjacent to bridge piers or abutments. The Engineer will review the remaining details and provide overall review. If, in the opinion of the Engineer, the proposed utility could cause structural overloading of the bridge, the proposed utility installation will not be allowed.

The applicant shall allow 30 days for plan review. Five copies of the plans shall be submitted with the permit application.

## **A-3 General Concepts**

On new construction, the utility installation shall be located to minimize the effect on the appearance of the structure. In most cases, this will mean installing the utility between girders or in curbs. Utilities and supports shall not normally extend below the bottom of the superstructure. When the utility is located between girders, it should be installed no lower than 1 foot 0 inches above the bottom of the girders. In some cases when appurtenances are required such as air release valves, care should be taken to provide adequate space.

When the bridge is to receive pigmented sealer, consideration shall be given to painting any exposed utility lines and hangers to match the bridge. When pigmented sealer is not required, steel utility lines and hangers shall be painted or galvanized for corrosion protection. The special provisions shall specify cleaning and painting procedures. On existing structures, proposed utility attachments are normally reviewed by the

County Engineer or his representative and either approved or returned for correction.

#### **A-4 Design Criteria for Utility Installations**

1. All pipelines carrying flammable materials through box girder bridges or other closed cell type structures should be encased throughout the length of the structure as determined by the Engineer. A casing approximately 3 inches larger than the outside diameter of the carrying pipe shall be used. The space between the carrying pipe and the encasing sleeve shall be effectively vented beyond the structure at each end and at high points.
2. Utilities shall not be attached above the bridge deck nor attached to the railings or posts. They may be placed in the concrete traffic barrier no higher than 16 inches above the top of the deck.
3. Utilities shall not extend below the bottom of the superstructure.
4. Utilities shall include suitable expansion devices at bridge expansion joints or include other expansion methods, as approved by the Engineer, to prevent longitudinal temperature forces transferring to bridge members. For telephone and power conduit, longitudinal restraint may be considered to be the cable itself. For other conduit, longitudinal restraint may be considered to be the bridge end fill. For long runs of water pipe, expansion joints in the pipe shall be properly spaced with longitudinal load carrying supports.
5. Rigid conduit shall extend for a minimum of 10 feet beyond the ends of the structure to reduce the effects of embankment settlements on the utility and to provide protection in case of future work involving excavation near the structure. This requirement shall be stated on the plans. Utilities that are off of the bridge, shall be installed prior to paving of approaches.
6. Utility supports shall be designed so that none of the conduits, supports, bridge structures or bridge members are over stressed by any loads imposed by the utility installation. Provide longitudinal and transverse support for loads from gravity, earthquakes, temperature, inertia, etc., such as the Grinnell style and other similar inserts which cannot resist movement.
7. Utility locations and supports shall be designed so that a failure will not result in damage to the bridge, the surrounding area, or be a hazard to traffic.
8. All conduit shall be steel pipe or rigid PVC pipe.
9. Lag screws may be used for attaching brackets to wooden structures. All bolt holes shall meet the requirements of Sections 6.04.3(4) and 6.04.3(5) of the Washington State Department of Transportation Standard Specifications for Road, Bridge, and Municipal Construction, current edition.
10. Welding across main members will not be permitted. All welding must be approved.

11. Utilities shall be located to minimize bridge maintenance and bridge inspection problems.
12. Conduits or brackets attached to the concrete superstructure shall use an approved epoxy bonded anchor bolt system such as Molly "Parabond", Hiti, Kelken-Gold "Keilbond", ITW Ramset/Red Head "Epcon Ceramic" 6", or approved equal. Lag screws shall not be used for attachment to concrete. Cast-in-place concrete inserts are acceptable for utility installations on new bridges.
13. Drilling through reinforcing steel will not be permitted. If steel is hit when drilling, the anchorage location must be moved and the abandoned hole filled with non-shrink grout conforming to the requirements of Section 6-03.3(36) of the Washington State Department of Transportation Standard Specifications for Road, Bridge, and Municipal construction, current edition.
14. There shall be a minimum of 3-inches distance from the edge of the concrete to the center line of bolt holes in concrete.
15. All utilities and utility supports shall be designed not only to support their dead load but to resist other forces from the utility (surge, etc.) and wind and earthquake forces. The utility company may be asked to submit one set of calculations to verify their design forces.
16. Drilling into prestressed concrete members for utility attachments shall not be allowed.
17. Water or sewer lines to be placed lower than adjacent bridge footings shall be encased if failure can cause undermining of the footing.
18. For new structures, utilities installed concurrently in the cells of box girder bridges should be embedded in concrete where structurally and economically feasible. Where utilities, other than telephone and power conduit, are not embedded in concrete, access shall be provided in each cell. Such access can be from manholes in the shoulder of the roadway or in the sidewalk. Access to box girder cells may be provided by a hatch in the bottom of the box girder at the end piers. Close coordination with the bridge designer is necessary.
19. Telephone and power conduit may be installed in the cells of box girder bridges without provision for embedment or access provided that conduit is galvanized steel pipe, or Schedule 80 PVC rigid or heavier.
20. All materials and workmanship for attachment to the structure shall be in accordance with the requirements of the State of Washington, Department of Transportation, Standard Specifications for Road, Bridge, and Municipal Construction, current edition.
21. All steel in utility supports, including fastenings and anchorages, shall be galvanized in accordance with AASHTO M-111 or M-232 (ASTM A-123 or A-153 respectively).

22. All utilities and utility support surfaces, including galvanized utilities, which are installed on a painted bridge structure and are visible to the public, shall be painted to match the bridge structure.
23. Any painted surfaces damaged during construction shall be cleaned and painted as noted above.
24. Any paint splatters shall be removed from the bridge.
25. Appearance of the utility installation shall be given serious consideration in all cases. Where possible, the utility installation shall be hidden from public view.

## **A-5 Special Considerations for Various Utilities**

### **A-5.1 Gas Lines or Volatile Fluids**

Gas lines or lines carrying flammable fluids shall be designed, installed, and maintained in accordance with Chapter 480-93 WAC-Gas Company-Safety.

### **A-5.2 Water Lines**

Water lines shall be galvanized steel or ductile iron pipe. Where freezing may be encountered, consideration should be given to the use of insulation on the pipe. Insulation shall be jacketed and saddles shall be galvanized to avoid electrolysis.

Care shall be taken that all inertia loads due to dynamic action (e.g., water hammer) can be properly carried. Transverse supports shall be provided for all water lines. Additional temporary bracing shall be provided during pressure testing. The design loading of the temporary bracing shall be shown on the plans. Pressure test loading force magnitude shall be obtained from the utility company.

In box girders, the utility shall ensure that a failure of the water line would not flood the cell with an excess amount of water which may cause consequential structural failure of the girder. Additional weep holes or open grating shall be used if necessary (see Adams County Standard Details, Utility Installation on Bridges, Concrete Utility Supports, Sheet 5 of 6).

### **A-5.3 Sewer Lines**

Normally, an appropriate encasement pipe is required for sewer lines on bridges. Sewer lines must meet the same design criteria as waterlines.

### **A-5.4 Telephone and Power Conduit**

Generally, telephone, television cable, and power conduit shall be galvanized steel pipe or a PVC pipe of a UL approved type and shall be Schedule 40 or heavier. Where such conduit is buried in concrete curbs or barriers or has continuous support, such support is considered to be adequate. Where conduit is supported by hangers or brackets at intervals, the distance between supports shall be small enough to avoid excessive sag

between supports (see PVC pipe in A-6 below). Generally, the conduit shall be designed to support the cable in bending without exceeding working stresses for the conduit material. Also, only galvanized steel conduits will be allowed in barriers when slip forming is employed. Stub outs for galvanized steel pipe shall be protected against corrosion as stated in the following subparagraph.

#### **A-5.5 Rigid Electrical Conduit**

In the case of all new bridge construction where roadway shoulders have not yet been paved and where usable shoulder width is 4 feet or greater in width, electrical conduit shall be stubbed-out and capped 1 foot 6 inches below grade and 3 feet 0 inches horizontally toward roadway centerline from the face of the traffic barrier.

Longitudinally, this stub-out location should be near the back of pavement seat. The conduit in this location should clear any foreseeable obstructions. The location of the stubbed-out conduit at bridge ends shall be clearly shown on the plans. The galvanized steel conduit stub out shall be wrapped with corrosion resistant tape at least one foot inside and outside of the concrete structure, and this requirement shall be so stated on the plans. The corrosion resistant tape shall be 3M Scotch 50, Bishop 5, Nashua AVI I 0, or approved equal. The usual location of the conduit throughout the remainder of the bridge should be in the traffic barrier.

The number and size of conduits within the traffic barrier shall be minimized to assure proper concrete consolidation. A maximum of one (1) 4-inch conduit or two (2) 2-inch conduits will be allowed.

Pull boxes shall be provided at a maximum spacing of 200 feet. Their size shall conform to the specifications of the National Electric Code or be a minimum of 6 inches by 6 inches by 18 inches to facilitate pulling of wires. Galvanized steel pull boxes (or junction boxes) shall meet the specifications of the "NEMA Type 4X" standard and shall be so stated on the plans. Stainless steel pull boxes shall be allowed as an option to the galvanized steel.

In the case of existing bridges, an area 2 feet in width shall be reserved for conduit beginning at a point either 4 feet or 6 feet outside the face of usable shoulder. The fastening for and location of attaching the conduit to the existing bridge should be worked out on a job by job basis (see Adams County Standard Details, Utility Installation on Bridges, Bridge Ends Conduit Location, Sheet 3 or 6).

### **A-6 Conduits**

#### **A-6.1 PVC Pipe**

PVC pipe may be used with suitable considerations for deflection, the location and placement of expansion fittings, and of freezing water within the conduits. Where conduit is to be exposed in the cells of box girder bridges, PVC should be avoided because of the possibility of damage occurring when the top slab false work collapses. If such false work is specified on the plans to be removed after construction, this provision does not apply. PVC pipe should not be placed in concrete traffic barriers due to damage and pipe separation that often occurs during concrete placement and from temperature variations.

Where conduit is to be supported by hangers or pedestals at intervals, the distance between supports shall be small enough to avoid excessive sag of the conduit. For recommended support spacing and tabulated properties of PVC pipe, see Table A-1 at the end of this Appendix.

#### **A-6.2 High Density Polyethylene or Fiberglass Pipe**

Support as for PVC unless data is shown to justify another type of support. Do not place on traffic barriers.

#### **A-6.3 Steel Pipe**

All steel pipe and fittings shall be galvanized except for special uses.

### **A-7 Supports**

#### **A-7.1 General**

The following types of supports can be used on County bridges. Selection of a particular support should be based on the needs of the installation and the best economy. The various Adams County Standard Details, Utility Installation on Bridges depict typical utility support installations and placement at abutments and diaphragms.

#### **A-7.2 Concrete Embedment**

This is the best structural support condition and offers maximum protection to the utility. Its cost may be high for larger conduit and the conduit cannot be replaced. Special care must be taken to handle expansion joints.

#### **A-7.3 Continuous Support**

This support condition may be achieved by providing a ledge of concrete to support the conduit. In addition, some type of clamping will be required. The support condition here is very good, but the cost may be very high.

#### **A-7.4 Concrete Pedestals**

This consists of concrete supports formed at suitable intervals and provided with some type of clamping device.

#### **A-7.5 Pipe Hangers**

This is the most usual type of support for utilities to be supported under the bridge deck. It allows the use of standard ordered parts (usually "Grinnell") and is very flexible in terms of expansion requirements. It will not normally provide longitudinal support, and if required by the Engineer, transverse support must be provided by a second hanger extending from a girder, by placing bracing against the girder, or other means approved by the Engineer.

**Table A-1**

**Properties of Schedule 40 and Schedule 80 PVC Pipe**

Table A-1

## Properties of Schedule 40 and Schedule 80 PVC Pipe

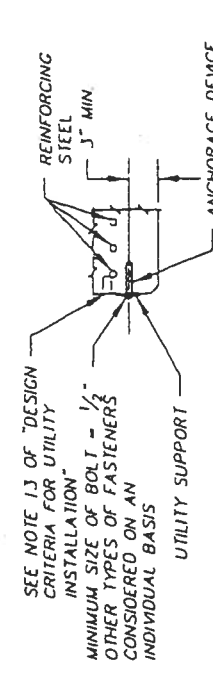
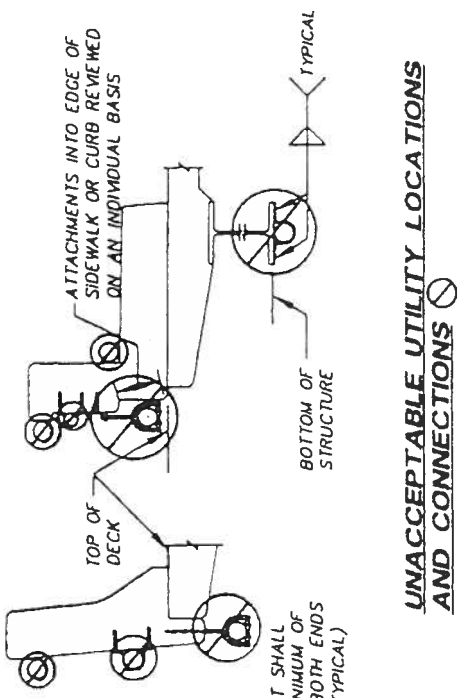
Nominal Size (in.)	O.D. (in.)	I.D. (in.)		Wall Thickness (in.)		Weight Per 100 ft. (lbs.)		Recommended Support Spacing ① (ft.)	
		40	80	40	80	40	80	40	80
0.50	0.840	④	0.546	④	0.147	④	20.5	④	4.5
0.75	1.050	0.824	0.742	0.113	0.154	22.0	28.0	4.0	4.5
1.00	1.315	1.049	0.957	0.133	0.179	32.0	41.0	4.5	5.0
1.25	1.660	1.380	1.278	0.140	0.191	43.5	56.5	5.0	5.5
1.50	1.900	1.610	1.500	0.145	0.200	52.0	68.5	5.0	5.5
2.00	2.375	2.067	1.939	0.154	0.218	69.5	94.5	5.0	6.0
2.50	2.875	2.489	2.323	0.203	0.276	109.5	144.5	6.0	6.5
3.00	3.500	3.068	2.900	0.216	0.300	143.0	193.0	6.0	7.0
4.00	4.500	4.026	3.826	0.237	0.337	203.5	282.0	6.5	7.5
5.00	5.563	②	4.813	②	0.375	276.0	392.0	7.0	8.0
6.00	6.625	6.065	5.761	0.280	0.432	359.0	539.0	7.5	9.0
8.00	④	③	④	③	④	③	④	8.0	9.5
10.00	④	④	④	④	④	④	④	8.5	④
① 100°F maximum temperature ② Use 5" PVC Class 200 ③ Use 8" PVC Class 160 ④ No data provided					⑤ Physical Properties of PVC: E = 410,000 psi Tensile strength = 7,300 psi at 78°F Bending working stress = 4.0 k/in. <sup>2</sup> Temp. coeff. = 0.035"/100°F/foot				
Reference: WSDOT Bridge Design Manual Table 8.3.5-1 and Western Plastics Corp.									

**Appendix B**

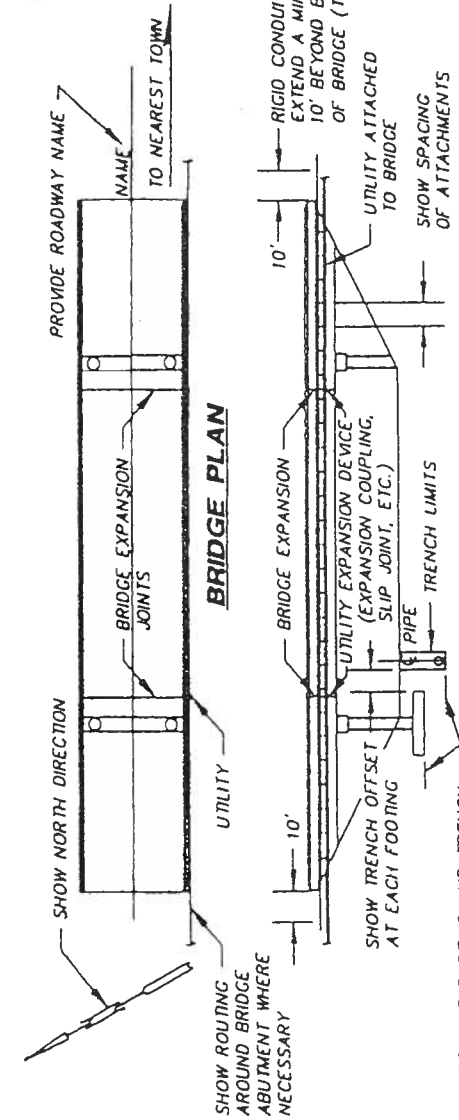
Use current version of the  
**WSDOT Standard Specifications and Plans**  
for Road, Bridge, and Municipal Construction

# ADAMS COUNTY STANDARD DETAILS UTILITY INSTALLATION ON BRIDGES GUIDE FOR UTILITY INSTALLATIONS

DEPARTMENT  
of  
PUBLIC WORKS  
RITZVILLE, WASHINGTON 99169



**ANCHORAGE DETAIL**  
EPOXY BONDED ANCHOR BOLTS SHALL BE USED WHEREVER POSSIBLE FOR ALL CONCRETE SUPERSTRUCTURE ATTACHMENTS.



**BRIDGE ELEVATION**  
PROVIDE BRIDGE NAME AND NUMBER

NOTE: THE LOCATION OF EXISTING UTILITIES MUST ALSO BE SHOWN WITH RESPECT TO THE PROPOSED ATTACHMENTS.

NOTE: THE DETAILS SHOWN HERE ARE PRESENTED AS A GUIDE ONLY. EACH PROPOSED UTILITY INSTALLATION SHALL BE SUBMITTED TO THE ADAMS COUNTY ENGINEER FOR APPROVAL ON AN INDIVIDUAL BASIS. COMPLIANCE WITH THESE DETAILS DOES NOT ASSURE APPROVAL NOR DOES VARIANCE FROM THESE DETAILS, FOR REASONABLE CAUSE, OR USE OF DETAILS NOT SHOWN HERE, NECESSARILY EXCLUDE APPROVAL.

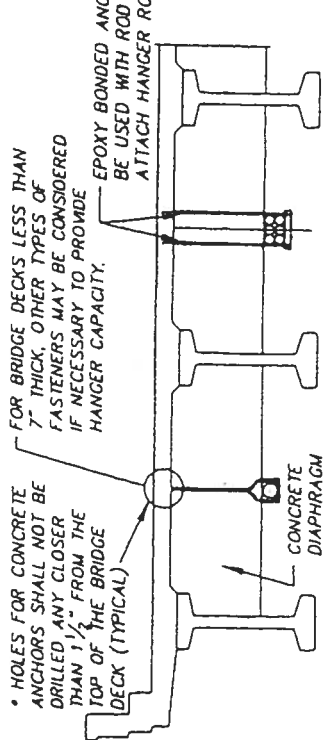
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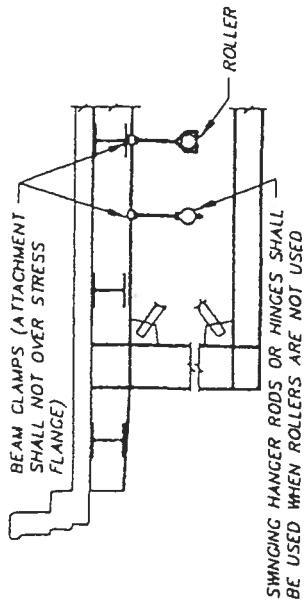
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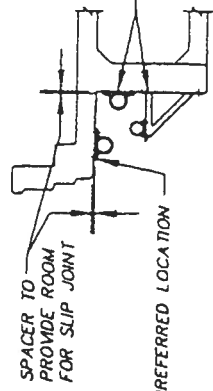
**PRESTRESSED CONCRETE BEAM BRIDGES**

MAY BE USED ON SIMPLE SPAN BRIDGES. UTILITIES SHALL BE CARRIED BELOW DIAPHRAGMS. CORE DRILLING THROUGH THE END DIAPHRAGM OR ABUTMENT WALL MAY BE ALLOWED ON A CASE BY CASE BASIS. FOR CONTINUOUS SPAN BRIDGES, ATTACHMENTS OF THIS NATURE ARE GENERALLY NOT ALLOWED BECAUSE OF INTERFERENCE WITH THE PIER DIAPHRAGMS OR CROSSBEAMS WHICH ARE CONSIDERED MAIN STRUCTURAL MEMBERS.

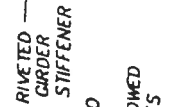


**STEEL DECK TRUSS OR ARCH BRIDGE**

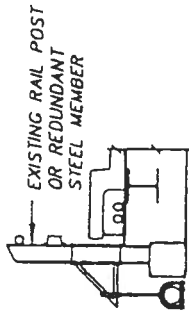
SPACER TO PROVIDE ROOM FOR SLIP JOINT



**CONCRETE T-BEAM OR BOX GIRDER BRIDGES**

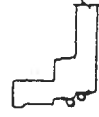


**STEEL GIRDER BRIDGE**

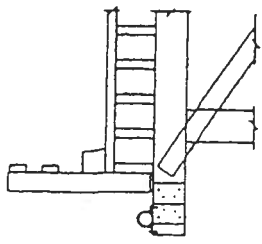


**STEEL TRUSS BRIDGE**

**STEEL TRUSS BRIDGE**

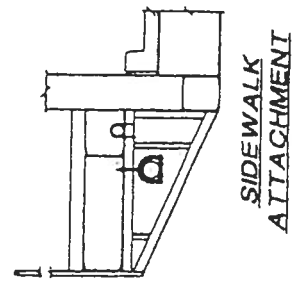


**CONCRETE SLAB SMALL UTILITY**



**TIMBER BRIDGE**

MAILS OR BOLTS SHALL BE FASTENED TIGHTLY. ANY USED HOLES SHALL BE FILLED WITH CREOSOTE TREATED PLUGS.



**SIDEWALK ATTACHMENT**

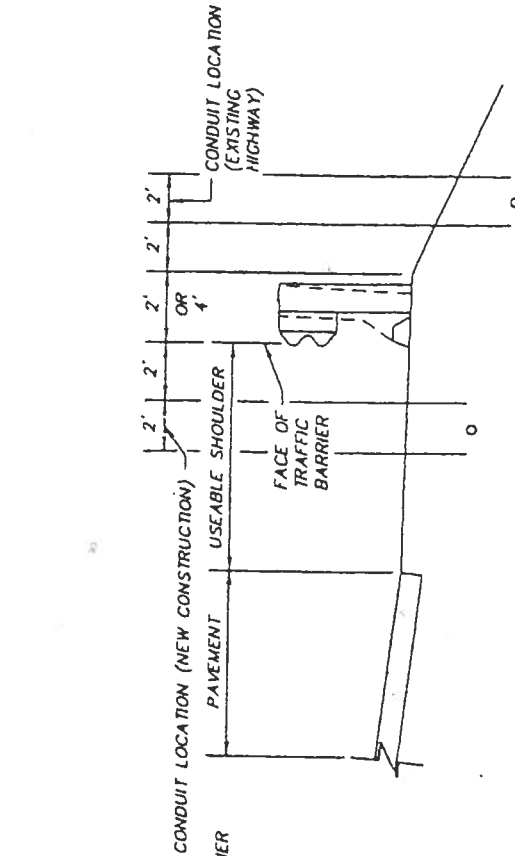
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**ACCEPTABLE UTILITY SUPPORT METHODS**  
ALL HANGERS SHALL HAVE A MEANS OF VERTICAL ADJUSTMENT

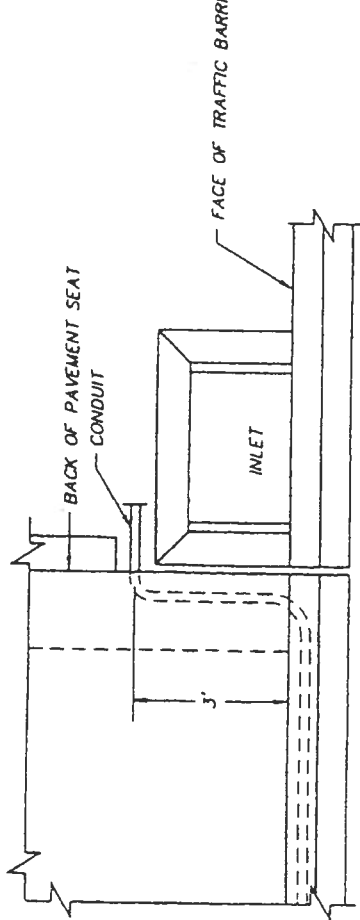
ADAMS COUNTY STANDARD DETAILS  
UTILITY INSTALLATION ON BRIDGES  
GUIDE FOR UTILITY INSTALLATIONS

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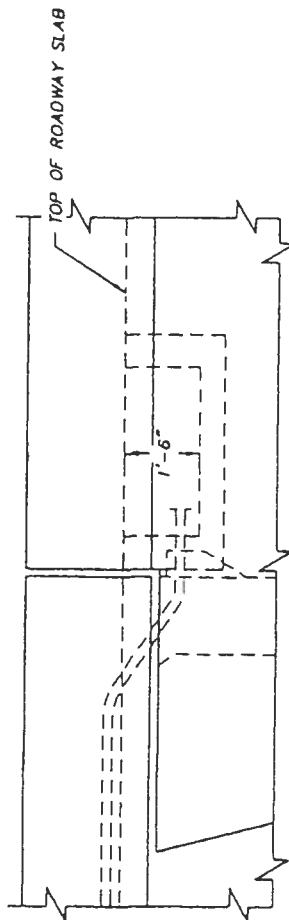




CONDUIT LOCATION BEYOND BRIDGE END



PLAN



ELEVATION - CONDUIT  
LOCATION AT BRIDGE ENDS

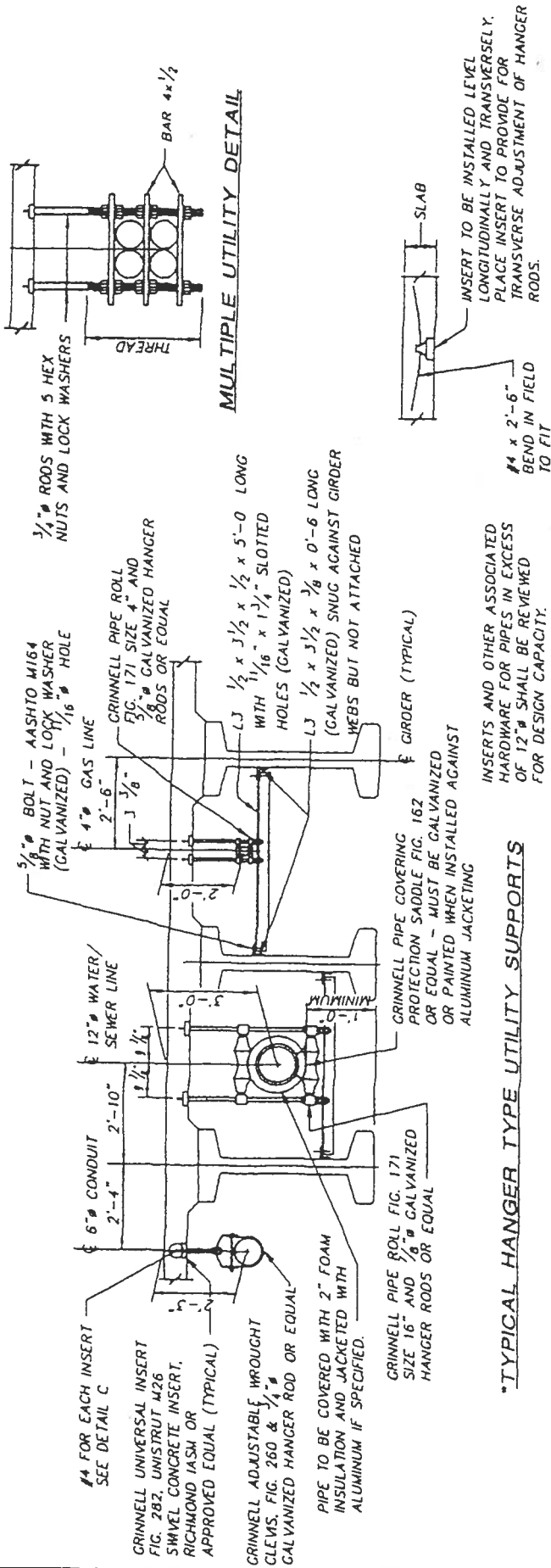
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UTILITY INSTALLATION ON BRIDGES  
BRIDGE ENDS CONDUIT LOCATION

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# ADAMS COUNTY STANDARD DETAILS UTILITY INSTALLATION ON BRIDGES TYP. HANGER TYPE UTILITY SUPPORTS



## \*TYPICAL HANGER TYPE UTILITY SUPPORTS

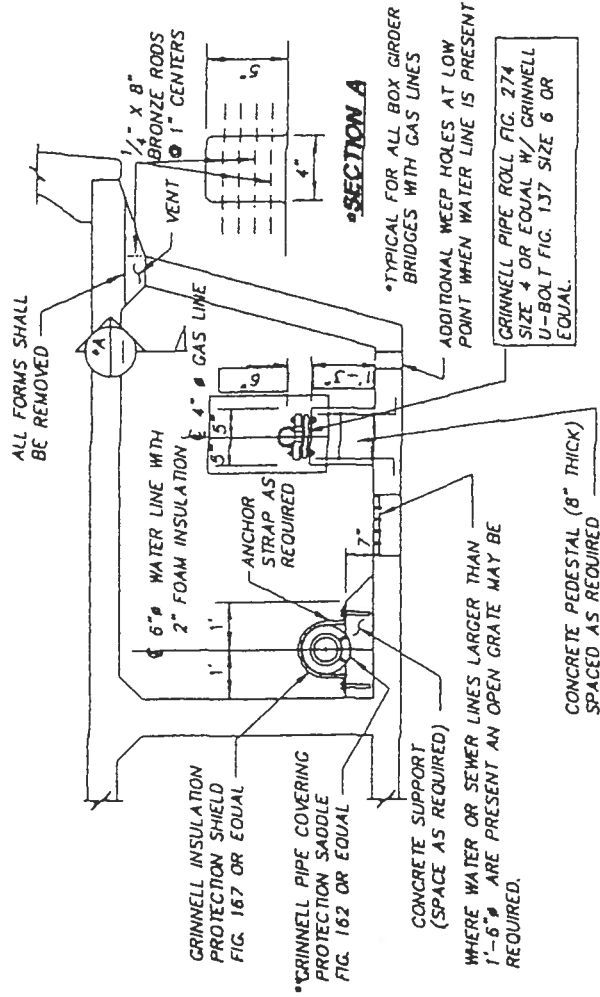
**\*NOTES:**

1. SEE GRINNELL PIPE HANGERS CATALOG, CURRENT EDITION. DETAILS SHOWN ARE TYPICAL. EACH SPECIFIC INSTALLATION SHALL BE DETAILED INDIVIDUALLY.
2. WHERE COUPLING OCCURS ON WATER CARRYING PIPE LINES, PROVIDE "HANGER SUPPORTS" ON BOTH SIDES OF THE COUPLING.

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**CONCRETE UTILITY SUPPORTS**

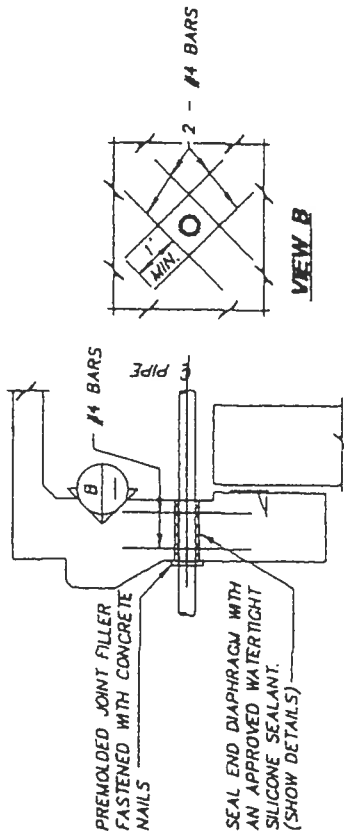
•• SEE GRINNELL PIPE HANGERS CATALOG, CURRENT EDITION.

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ADAMS COUNTY STANDARD DETAILS  
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 CONCRETE UTILITY SUPPORTS

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**PIPE THROUGH END DIAPHRAGM**  
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ADAMS COUNTY STANDARD DETAILS  
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 PIPE THROUGH END DIAPHRAGM

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