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**Section 10,010 - Demolition of Building Structures (Continued)**

<b>Figure</b>	<b>Figure No.</b>
Details for Plugging Water Wells	10010.101

**DEMOLITION OF BUILDING STRUCTURES****PART 1 - GENERAL****1.01 SECTION INCLUDES**

- A. Protection of Public and Private Facilities
- B. Demolition of Building Structures
- C. Removal and Disposal of all Site Elements
- D. Site Backfill, Grading, Soil Restoration, and Clean Up
- E. Establishment of Ground Cover

**1.02 DESCRIPTION OF WORK**

- A. Properly disconnect all public and private utilities.
- B. Comply with local, state, and federal regulations to remove and properly dispose of sidewalks, steps, driveways, and structures (including both above ground and below ground elements).
- C. Comply with local, state, and federal regulations to remove fuel tanks, septic tanks, cisterns, and any other underground facilities; and to properly dispose of any liquids or products contained within these items.
- D. Properly plug or abandon wells.
- E. Place backfill material in holes and depressions, grade the site, and establish ground cover.

**1.03 SUBMITTALS**

Comply with Division 1 - General Provisions and Covenants, as well as the following:

Seventy-two hours prior to initiating demolition at each site, submit a plan to control erosion and sediment from each site covered by the contract.

**1.04 SUBSTITUTIONS**

Comply with Division 1 - General Provisions and Covenants.

**1.05 DELIVERY, STORAGE, AND HANDLING**

Comply with Division 1 - General Provisions and Covenants, as well as the following:

Ensure access to fire hydrants is maintained at all times.

**1.06 SCHEDULING AND CONFLICTS**

Comply with Division 1 - General Provisions and Covenants, as well as the following:

- A. Submit a schedule of work to the Engineer a minimum of 72 hours prior to commencing activities.
- B. Coordinate with public and private utilities for timely disconnection of service prior to initiating demolition.

**1.06 SCHEDULING AND CONFLICTS (Continued)**

- C. Submit a traffic control plan to the Engineer 48 hours in advance of any lane or road closures indicating the area of closure and the signs and traffic control devices to be used to set up the closure.

**1.07 SPECIAL REQUIREMENTS**

- A. The use of explosives is not allowed unless specified in the contract documents.
- B. Use of fire is prohibited.
- C. Obtain all local, state, and federal permits required for execution of the work, including notification to the Iowa DNR according to 40 CFR 61.145. Pay all permit fees.
- D. Property Ownership:
  - 1. Title: The property address, legal description, and ownership will be included in the contract documents. Upon execution of the contract for the work of demolition and site clearance on all or any part of the demolition area, all rights, title, and interest of the Jurisdiction in and to buildings, structures, and other property to be demolished and/or removed by the Contractor on part or all of said project area as described in the contract documents and contract addenda thereto, is vested with the Contractor.
  - 2. Land: No property rights, title, or interest of any kind whatsoever, in or to the land or premises upon which such buildings or structures stand, is created, assigned, conveyed, granted, or transferred to the Contractor or any other person or persons, except only the license and right of entry to remove such buildings and according to the contract documents. Do not use the land or premises, or allow any other party to use the land or premises, for any purpose other than activities in direct support of the demolition of the building.

**1.08 MEASUREMENT AND PAYMENT****A. Demolition Work:**

- 1. **Measurement:** Lump sum item; no measurement will be made.
- 2. **Payment:** Payment will be at the lump sum price.
- 3. **Includes:** Unit price includes, but is not limited to, removal of trees, brush, vegetation, buildings, building materials, contents of buildings, appliances, trash, rubbish, basement walls, foundations, sidewalks, steps, and driveways from the site; disconnection of utilities; furnishing and compaction of backfill material; furnishing and placing topsoil; finish grading of disturbed areas; placing and removing safety fencing; removal of fuel and septic tanks and cisterns; seeding; and payment of any permit or disposal fees.

**B. Plug or Abandon Well:**

- 1. **Measurement:** Each abandoned or plugged well will be counted.
- 2. **Payment:** Payment will be at the unit price for each plugged or abandoned well.
- 3. **Includes:** Unit price includes, but is not limited to, obtaining all permits; plug or abandon private wells according to local, state, and federal regulations.

**PART 2 - PRODUCTS****2.01 BACKFILL MATERIAL**

Meet the requirements of Section 3010, 2.03.

**2.02 TOPSOIL**

Meet the requirements of Section 2010, 2.01.

**2.03 SEEDING**

Meet the requirements of Section 9010.

**2.04 WELL PLUGGING****A. Sealing Materials:**

1. **Neat Cement:** Provide at a ratio of 14 pounds of cement per 1 gallon of water.
2. **Bentonite:** Graded bentonite, bentonite pellets, or bentonite grout.
3. **Sand Cement Grout:** Provide at a ratio of 1 sack of cement, equal volume of masonry sand, and not more than 6 gallons of water.
4. **Concrete:** Provide a Class A, Class B, or Class C mix meeting the requirements of Iowa DOT Materials I.M. 529.

**B. Filling Materials:** Provide filling materials free of foreign matter and any toxic residue.

1. Sand
2. Pea gravel
3. Class A, B, or C granular surfacing material
4. Agricultural lime

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**PART 3 - EXECUTION****3.01 GENERAL**

- A. Protect existing fire hydrants, street lights, traffic signals, utility poles, fire alarm boxes, wire cables, underground utilities, and other appurtenances in the vicinity of the demolition site.
- B. Provide correct type and class of fire extinguishers on site and in equipment. Provide fire extinguishers adjacent to any areas where cutting torches are used.
- C. Comply with noise pollution requirements and any working hour restrictions of the Jurisdiction.
- D. Prior to starting demolition, remove and properly dispose of all volatile or flammable materials such as gasoline, kerosene, benzene, cleaning fluids, paints or paint thinners, household hazardous wastes, or similar products.
- E. Inspect the site for its character and the type of structures to be demolished. The Jurisdiction assumes no responsibility for the condition of existing buildings, structures, and other property within the demolition area, or the condition of the property before or after the solicitation for proposals. No adjustment of proposal price or allowance for any change in conditions that occur after the acceptance of the lowest responsible, responsive proposal will be made.
- F. Pay all disposal costs, including costs related to disposal of specialty items such as household hazardous wastes, appliances, yard wastes, or electronics.

**3.02 UTILITY DISCONNECTIONS**

Disconnect all utilities prior to initiating demolition.

- A. Sanitary Sewer:** Disconnect and plug all sanitary sewer service lines according to Section 4010, 3.08 and the Jurisdiction's Plumbing Code. Notify engineer for inspection of the disconnection prior to placing backfill material.
- B. Water Service:** Disconnect all water services by a licensed plumber according to the Jurisdiction's Plumbing Code requirements. Notify engineer for inspection prior to placing backfill material.
- C. Storm Sewer:** Disconnect all sump pump and area drain connections to the storm sewer system according to the requirements of the Jurisdiction. Notify engineer for inspection prior to placing backfill material.
- D. Private Utility Services:** Disconnect all natural gas or propane lines, electric services, communication services, and any other services according to the requirements of the specific utility involved.
- E. Backfill:** Place backfill material for all service disconnects according to Section 3010, 3.05.
- F. Surface Restoration:**
  - 1. Within the Street:** Restore the street surface according to Section 7040.
  - 2. Public Right-of-way:** Grade and seed according to Section 9010. Provide a 1 year warranty for all seeded areas. If dates do not allow for seeding, complete fine grading and apply mulch until seeding can be completed.

**3.03 PROTECTION OF THE PUBLIC**

- A. Temporary Fencing:** Erect temporary fencing prior to any work around all excavations, buildings, or other dangerous elements to prevent unauthorized access. Provide a fence 4 feet high minimum. Ensure the fence is consistently restrictive from top to grade and without horizontal openings greater than 2 inches. Maintain fencing until all hazards are eliminated.
- B. Adjacent Property:** Protect structures, parking lots, driveways, sidewalks, utilities, lawns, and other property elements from damage from the demolition activities. Provide sheeting or shoring as necessary to protect adjacent property. Prevent the accumulation of debris and litter on adjacent properties.
- C. Sidewalks:** If sidewalks are to be closed during demolition, submit a sidewalk closure plan that meets the ADA requirements to the Engineer 48 hours prior to the scheduled closure. Install necessary signing and barricades according to the approved closure plan. Sidewalks designated to remain and damaged during the work will be replaced by the Contractor at no cost to the Contracting Authority.
- D. Streets:** Promptly remove any demolition debris, litter, or mud from streets and rights-of-way caused by the demolition work. Repair damage to the street and right-of-way caused by the demolition at no additional cost to the Contracting Authority.
- E. Vehicle Covering:** Cover all open-bodied vehicles transporting demolition debris and trash.
- F. Drainage Facilities:** Maintain or re-establish all tiles, roadway subdrains, culverts, or other drainage facilities not identified in the contract documents for removal.

**3.04 ENVIRONMENTAL REQUIREMENTS**

- A. Erosion and Sediment Control:** Implement the approved erosion and sediment control plan for each site prior to initiating demolition by placing all required devices; include measures to prevent tracking of mud onto adjacent streets or alleys.
- B. Dust Control:** Comply with all applicable air pollution requirements of the Jurisdiction. Use water or appropriate chemicals for control of dust in the demolition area, on hauling equipment, on adjacent roadways, and when grading the site.
- C. Litter:** Take steps to prevent the generation of litter during demolition and collect all litter from the demolition area at the end of each working day. Load trucks to prevent leakage or blowing of debris.
- D. Septic Tanks and Outdoor Toilets:** Pump out all septic tanks and outdoor toilets using a licensed company. Remove septic tanks and dispose of properly. Demolish outdoor toilet building and remove from site.
- E. Cisterns and Meter Pits:** Pump out and remove all cisterns and meter pits.
- F. Freon:** Identify, handle, and dispose of all Freon containing appliances according to applicable state and federal regulations.
- G. Mercury and PCB:** Handle and dispose of any fluorescent light fixtures and ballasts or thermostats containing polychlorinated biphenyl (PCB) or mercury according to state and federal regulations.
- H. Electronic Wastes:** Comply with local regulations to dispose of all electronic wastes, including TVs, VCRs, DVD players, stereo equipment, cell phones, and computers.

**3.05 FUEL TANK REMOVAL**

Remove and dispose of all fuel tanks containing gasoline, benzene, kerosene oils, or similar volatile materials, either above or below ground, according to the State Fire Marshal and Iowa DNR regulations.

Pump out or empty all other tanks in a safe manner. Flush immediately with water, carbon dioxide, or nitrogen until gas-free. Prior to tank removal, use appropriate metering equipment to verify the tank is free of all volatile gases. Conduct the test by a competent individual in the presence of the Engineer.

**3.06 WELL PLUGGING AND ABANDONMENT**

Plug and abandon all wells according to the Iowa Administrative Code, Section 567, Chapter 39. File an Iowa DNR Abandoned Water Well Plugging Record upon completion of the well abandonment.

**A. Plugging Procedures, All Wells:**

1. Remove all obstructions from the well.  
*Note: Some high horsepower submersible pumps contain mercury. Contact the Iowa DNR Private Well Program office if the pump motor is separated from the pump head assembly, the motor is positioned horizontally in the well, or if mercury contamination is observed.*
2. Remove casing pipe, any curbing, frost pit, or pump house structure to a depth of 4 feet below the ground surface.
3. Introduce sealing or filling material from the bottom of the well, or interval to be filled or sealed, and place progressively upward to the top of the well or interval to be filled or sealed.
4. For placement of neat cement, sand cement grout, or concrete, utilize grout pipe, tremie pipe, cement bucket, or dump bailer to avoid segregation or dilution of the sealing materials during placement.
5. Place bentonite pellets or graded bentonite for sealing by pouring in place and agitating to avoid bridging.
6. Sealing materials may be substituted for filling materials to fill the entire well up to the well cap. This procedure is preferred but not required.

**B. Plugging Procedures, Class 1 Wells:**

1. Place filling or sealing materials from the bottom of the well to 1 foot below the static water level.
2. Place sealing materials on top of the filling materials up to the static water level to act as a cap.
3. Place filling or sealing materials up to top of 4 feet below the ground surface.
4. Place 1 foot of sealing material on top of filling materials, extending 6 inches beyond the diameter of the well casing.



**3.06 WELL PLUGGING AND ABANDONMENT (Continued)****C. Plugging Procedures, Class 2 Wells:****1. Bedrock Well in Single Confined Aquifer (Artesian Well):**

- a. Place filling material from the bottom of the well up to 10 feet below the bottom of the casing string being plugged or the confining layer.
- b. If well flow cannot be overcome by sealing materials, install a bridge plug or packer in the bottom of the casing.
- c. Place sealing material from a level of 10 feet below the casing string being plugged, or the confining layer if open borehole, to a depth of 10 feet below ground surface.
- d. Place a 6 foot thick cap of neat cement, grout, or concrete to a depth of 4 feet below the ground surface.

**2. Bedrock Well in Single Unconfined Aquifer:**

- a. Place filling material from the bottom of the well up to 10 feet below the bottom of the casing or confining layer, whichever is less.
- b. Place sealing materials to 10 feet below the ground surface.
- c. Place a 6 foot thick cap of neat cement, grout, or concrete to a depth of 4 feet below the ground surface.

**3. Bedrock Well in Multiple Aquifers:**

- a. Place filling material in the lowest aquifer from the bottom of the well up to 10 feet below the bottom of the casing or confining layer of the lowest aquifer, whichever is less.
- b. Place 20 feet of neat cement on top of filling material. Allow neat cement to develop initial set before performing subsequent filling and sealing work. High early strength cement may be used to reduce work stoppage time.
- c. Place sealing materials in at least the top 10 feet of each subsequent aquifer, extending at least 10 feet into the confining layer or casing above. Allow sufficient time for initial set before performing subsequent filling or sealing work.
- d. Place filling materials between subsequent aquifer seals.
- e. Place fill or sealing material from the top of the uppermost aquifer seal to the static water level of the well.
- f. Place sealing materials to 10 feet below the ground surface.
- g. Place a 6 foot thick cap of neat cement, grout, or concrete to a depth of 4 feet below the ground surface.

**3.07 SALVAGE**

- A. Restrictions:** Salvage is allowed only on property owned by the Jurisdiction. The ownership of each site is included in the contract documents. Remove all salvaged materials from the site by the end of each day's work.
- B. Authorized Workers:** Only the Contractor's authorized workers are allowed to salvage or demolish the structure or its contents.

**3.08 DEMOLITION AND REMOVAL****A. Structures:**

1. Except for wood frame or non-rigid masonry buildings, start on the top floor and maintain structural parts of buildings, such as columns, beams, and joists, supporting the floor of any building story until the walls, flooring, and partitions of that story are removed.
2. No wall or part of a wall will be allowed to fall outward from any building except through chutes or other controlled method that will ensure safety and minimize dust, noise, and other nuisance.

**3.08 DEMOLITION AND REMOVAL (Continued)**

3. Remove chimneys or outside portions of chimneys in advance of general demolition. Remove inside chimneys as soon as they become unsupported by reason of removal of other parts of the building.
4. Remove all unstable, free-standing, or inadequately supported building elements prior to the end of each work day.

**B. Basements and Foundations:** Completely remove and dispose of all basement floors, footings, foundations, and walls unless specifically stated in the contract documents. Notify engineer for inspection prior to filling the basement excavation.

**C. Surface Slabs:** Remove all concrete, asphalt, or masonry slabs and appurtenances.

**D. Vegetation:** Remove and dispose of all brush, shrubs, trees, logs, downed timber, and other yard waste on the site unless otherwise specified in the contract documents. Do not mix with demolition material. Remove stumps to a minimum of 2 feet below finish grade.

Protect any trees or other vegetation not designated for removal by placing a fence at the drip line encompassing the entire tree and keeping all operations outside of the fenced in area, including storage of equipment or materials. At no additional cost to the Contracting Authority, replace any trees that are designated for protection but are damaged beyond treatment. The Engineer will determine size and species of the replacement tree.

**E. Retaining Walls:** Remove all retaining walls unless otherwise specified in the contract documents. Complete work without damage to adjacent public or private property. Following removal, grade the adjacent slope to a 3:1 (horizontal to vertical) slope or flatter.

**F. Fences:** Remove all fences, guardrails, posts, and other appurtenances unless on a property line with adjacent private property and designated for retention in the contract documents. Fill and compact soil in all post holes.

**G. Miscellaneous Objects:** Remove all clotheslines, signs, piping, posts, or any other objects protruding from the ground and fill any resulting hole.

**3.09 DISPOSAL**

**A. Appliances, Electronics, Tires, Trash, Household Hazardous Waste, and Rubbish:** Remove all appliances, electronics, tires, trash, household hazardous wastes, and rubbish from the site leaving the site free of debris. Dispose of appliances, electronics, tires, rubbish, household hazardous wastes, and trash according to local and state regulations and not with the demolition material.

**B. Demolition Material:** Deliver all demolition material to the disposal facility designated in the contract documents according to the rules for that facility. Cover all vehicles used to transport demolition material. The Contractor may submit an alternate disposal facility, fully licensed by the state, for consideration by the Engineer. Submit all disposal tickets received from the disposal facility clearly indicating the specific address of the origin of the demolition debris. Pay all fees associated with disposal of the demolition material.

**3.10 ASBESTOS ABATEMENT**

All asbestos or asbestos containing materials will be removed prior to the demolition by a licensed asbestos contractor through a separate contract. Notify the Engineer if asbestos is discovered in the demolition process. No further work will be allowed until the asbestos has been removed by a licensed contractor.

**3.11 RECYCLING**

If specified in the contract documents, certain materials may be required to be recycled from the demolition site. These include bricks, concrete, and recoverable metals. All costs related to recycling and the value received from recycled materials are the Contractor's.

**3.12 BACKFILL AND GRADING**

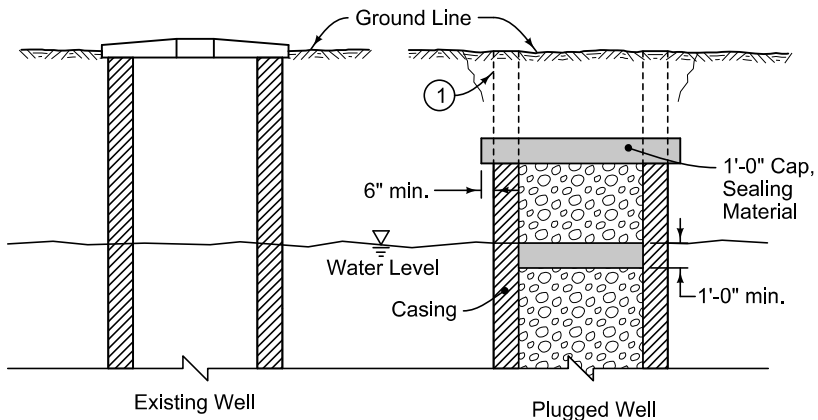
- A. Backfill:** Place backfill material in all excavation areas and holes with material meeting Section 2010, 2.03. Unless otherwise specified in the contract documents, compact using Type A compaction as indicated in Section 2010, 3.04. If compaction with moisture and density control is specified, use Section 2010, 3.09. Notify the Engineer 24 hours in advance of compaction testing so a soil density sample can be obtained and analyzed. Provide density testing as specified in the contract documents.
- B. Topsoil:** Strip and stockpile the top 12 inches of topsoil for use as a final topsoil and grading material. If topsoil quality does not meet Section 2010, 2.01, supply additional material to place a minimum of 8 inches over the site. The Engineer will approve the borrowed topsoil material. No payment will be made for supplying additional topsoil material.
- C. Borrow:** If sufficient fill material is not available, supply additional material of equal quality to the soil on the site. Supply suitable material meeting Section 2010. No payment will be made for supplying additional fill material.
- D. Grading:** Grade site to conform with all surrounding areas with a uniform surface that will not allow ponding and does not change drainage patterns that existed prior to demolition. Remove excess excavation material from the site.

**3.13 CLEAN UP AND SEEDING**

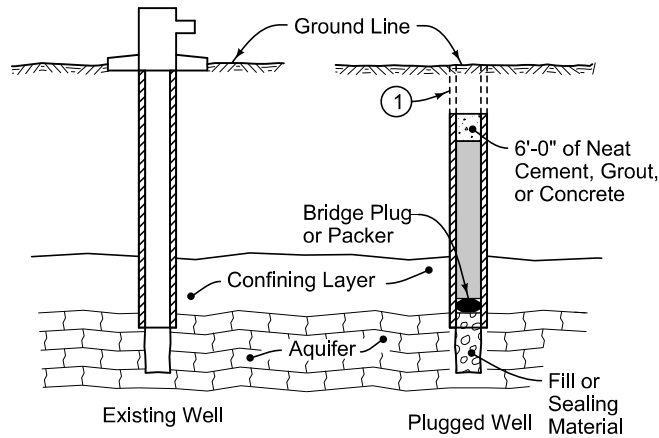
- A. Clean Up:** Remove all unused material and rubbish from the site. Remove all salvaged materials and any materials recycled. Restore all areas occupied during the course of the work, including the public right-of-way and any private property.
- B. Seeding:** Complete seedbed preparation, seeding, fertilizing, and mulching of the site according to the requirements for permanent urban seeding in Section 9010, 2.02, A. If unable to comply with permanent seeding dates, apply the urban temporary erosion control mixture in Section 9010, 2.02, D.

END OF SECTION



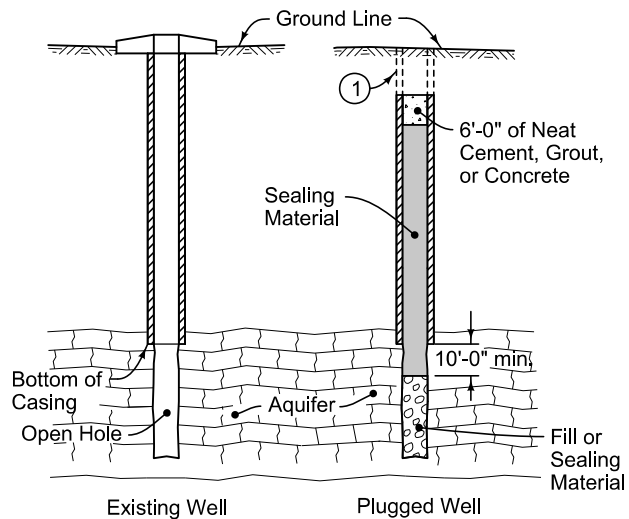


**CLASS 1 WELL**

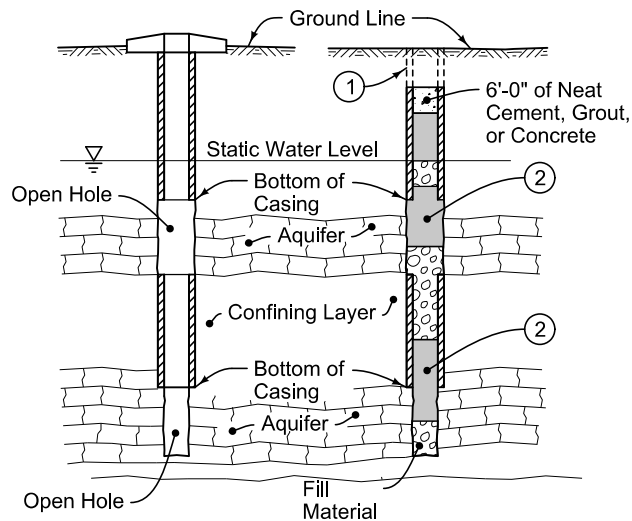


**CLASS 2 BEDROCK WELL IN SINGLE CONFINED AQUIFER (Artesian Well)**




- ① Remove the top 4 feet of the existing casing pipe.
- ② Place sealing material to a minimum thickness of 20 feet (10 feet minimum above and below bottom of casing or top of the aquifer).



**CLASS 2 BEDROCK WELL IN SINGLE UNCONFINED AQUIFER**



**CLASS 2 BEDROCK WELL IN MULTIPLE AQUIFERS**

-  Sealing Material
-  Fill or Sealing Material
-  Neat Cement, Grout, or Concrete

	REVISION
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SUDAS Standard Specifications

DETAILS FOR PLUGGING WATER WELLS

