B. All surface objects, trees, stumps, roots, and other protruding obstructions, not designated to remain, shall be cleared and grubbed to a depth of not less than 6 inches below the original ground.

C. The existing vegetation, including brush, grass, agricultural crops, and other suitable material, that can be used as mulch shall be stockpiled in a location designated by the Engineer. The Contractor shall incorporate the mulch into the topsoil as directed by the Engineer. This work shall be performed on a "Time and Material" basis.

D. The Contractor may dispose of the remaining refuse generated from clearing and grubbing at an available waste site, approved by the Engineer. The Contractor shall dispose of these materials in such a manner to meet all requirements of State, County, and municipal regulations regarding health safety, and public welfare. The Contractor shall obtain necessary permits from the WDEQ for material disposal. The Contractor shall be reimbursed for landfill fees in accordance with Section O, Miscellaneous Force Account.

3.3 STRIPPING AND STOCKPILING TOPSOIL / COVERSOIL

A. Prior to topsoil / coversoil salvage, all old mining debris, tires, equipment, wood, domestic solid waste, etc., that may interfere with grading activities shall be disposed of as directed by the Engineer. If off-site disposal of such materials is required, the Contractor will be reimbursed in accordance with Section P, Miscellaneous Force Account.

B. Potential topsoil / coversoil locations include all areas where plant growth currently exists. The actual locations of topsoil / coversoil will be defined in the field by the Engineer.

C. Stripping of topsoil / coversoil material shall be conducted in all excavation and embankment areas where the topsoil / coversoil material has been determined as suitable. Topsoil / coversoil shall only be stripped when the ground is free of frost to allow proper excavation, removal, and stockpiling. Topsoil / coversoil shall be stripped to a minimum depth of 10 inches, or as directed by the Engineer and stockpiled in locations designated by the Engineer. Topsoil / coversoil stockpiles shall be constructed in a manner to minimize wind and water erosion.

3.4 EXCAVATION AND PLACEMENT

A. Individual sinkholes and depressions located within the designated subsidence area mass grading limits and **not open** to the underground mine workings shall be reclaimed by mass grading in a manner that

generally conforms to the drawing details and as directed by the Engineer. Individual sinkholes that **are open** to the underground mine workings shall be reclaimed in accordance with Section L, Mitigation of Individual Sinkholes.

B. Following topsoil / coversoil salvage, areas of unsuitable material and spoil material, shall be excavated first and placed into the shallow subsidence sinkholes and depressions, as directed in the field by the Engineer. The unsuitable material shall be sub-excavated to a minimum depth of two (2) feet. The excavated area shall be backfilled with unclassified soils to the lines and grades established in the field by the Engineer.

C. Excavate, haul, and place unclassified soils from areas within the designated subsidence area mass grading limits to the shallow sinkholes and depressions to within +/- one (1) foot of the lines and grades shown on the drawings or as directed by the Engineer.

D. Each lift of embankment shall be placed in approximately horizontal layers at a thickness of one (1) foot uncompacted. No density requirements will be applied; however, the Contractor shall conduct the placement in such a manner, as approved by the Engineer, to obtain the maximum compaction by wheel rolling with earth hauling equipment and/or tamping with an excavator's bucket.

E. All drainage way transitions from off-site channels into the subsidence area mass grading limit, or vice-a-versa, shall be uniform and gradual as directed and approved by the Engineer.

F. After fill placement has been completed, all excavation and embankment areas shall be final graded to the satisfaction of the Engineer. The final graded surface shall be free from cobbles and boulders that may be detrimental to revegetation activities, as determined by the Engineer.

G. After final grading has been completed, all areas disturbed will be scarified to a minimum depth of four (4) inches. Topsoil / coversoil shall be removed from existing stockpiles, hauled and placed in approximately horizontal layers over the final graded surface to a minimum depth of 10 inches or as directed by the Engineer. Placement of frozen Topsoil / coversoil will not be allowed.

4.0 BRACING, SHORING, AND BENCHING

A. Excavated surfaces too steep to be safe and stable if unsupported shall be supported as necessary to safeguard personnel, equipment, and work and to prevent adjacent ground from sliding.

B. It is the Contractor's responsibility and liability to determine if bracing, shoring, or benching is necessary in order to ensure safety and to comply with all applicable Wyoming Occupational Health and Safety and Federal Occupational Safety and Health Administration (OSHA) Regulations. All shoring, bracing, or benching required shall be constructed in accordance with the regulations for construction as set forth by each of these entities.

C. If shoring, bracing, or benching is necessary, the cost to provide such measures shall be covered under Section O, Miscellaneous Force Account.

5.0 DUST CONTROL

A. The Contractor shall provide dust control measures for health, safety, and the reduction of a dust nuisance. These measures shall consist of the application of water to the disturbed surfaces, access roads and haul roads. Water shall be uniformly applied in a fine spray by means of controllable pressure and spray bars or nozzles and in such a manner that will avoid ponding or over wetting. The water wagon described in this section shall be properly fitted with such equipment.

B. The source of water used for dust control shall be secured by the Contractor and approved by the Engineer, as discussed in Section I of these Specifications.

6.0 CONSTRUCTION WATER

A. Selection and arrangements for use of water sources is the Contractor's responsibility. However, the Contractor will select location and method for water supply which does not create significant environmental impacts and sedimentation to live streams.

B. The Contractor will provide the Engineer, in writing, proof of permission for use of all water sources including State Engineer and DEQ permits as required. The Contractor will be responsible for compliance with permits or consents.

C. Construction water is considered incidental to Bid Item J-1, Mobilization/Demobilization. No separate payment will be made to the Contractor relative to this item.

7.0 TIME AND MATERIALS CONSTRUCTION

A. All earthwork associated with "subsidence area mass grading" shall be performed on an hourly equipment and labor rate basis.

B. All heavy equipment utilized in the performance of this project shall be diesel powered with a flywheel horsepower (FWHP) and operating weight (OW) not less than the minimum requirement specified, with the exception of the water wagon. Prior to initiating construction work, the Contractor shall submit a list of proposed equipment, **including age**, to be used for this work to the Engineer for review and approval. The Engineer has the right to inspect or reject equipment or negotiate adjustments to the bid rates based on equipment performance, productivity, and excessive down time.

C. The Contractor's attention is specifically directed to the fact that discontinuities of work will occur with specific equipment during construction activities. No standby time will be paid for any such discontinuities. Payment shall only be made for the actual number of hours that the equipment is performing work.

D. In the event of equipment breakdowns, the Contractor shall repair, correct or replace such equipment within 72 hours, or as specified in a written notice from the Engineer. If the Contractor does not repair, correct or replace such equipment within the allotted time, the Engineer may have the equipment removed and replaced. The Contractor shall pay all direct and indirect costs of such action, including compensation for additional professional services, and appropriate deductive Change Order shall be issued. No additional payment will be made to the Contractor to repair, correct or replace equipment.

E. The following equipment shall be required to perform the work in accordance with these Specifications:

EQUIPMENT	MINIMUM FWHP	MINIMUM OW	MINIMUM CAPACITY
Motor Grader	125-HP	28,000 LB	N/A
Tracked Excavator	155-HP	50,000 LB	0.75 CY (bucket)
Tracked Dozer w/Ripper	200-HP	40,000 LB	SU Blade
Water Wagon	N/A	N/A	3,000 Gallons

8.0 MEASUREMENT AND PAYMENT

8.1 METHOD OF MEASUREMENT

A. The "Motor Grader," "Tracked Excavator," Tracked Dozer w/Ripper," and "Water Wagon" work hours will be measured by the actual number of hours that equipment performs work to the nearest one-quarter hour. Down time and standby time will not be measured for payment. All travel time necessary to move equipment from work area to work area will be recorded as work hours and will be paid for.

B. The time and cost of the operator, mechanic, maintenance personnel, fuel, lubricants, parts, or other associated and necessary costs for the "Motor Grader," "Tracked Excavator," Tracked Dozer w/Ripper," and "Water Wagon" will not be measured separately but will be included in the equipment unit price per hour.

C. "Foreman w / P.U. Truck" and "Laborer" hours will be measured by the actual number of hours that work is performed to the nearest one-quarter hour.

D. The Contractor's Foreman and the Engineer shall compare daily records and agree upon the total actual number of hours of acceptable work performed by each piece of equipment. Additionally, the Contractor will keep a log of the estimated quantity of materials excavated each day. This log will be shown to the Engineer daily.

E. The quantities listed on the Bid Schedule are estimates of the work required and are provided for evaluating the bids. The actual number of hours may vary due to local conditions, weather, etc.; therefore, the 30 percent variance to those quantities, as shown on the Bid Schedule, does not apply and the unit price bid will not be renegotiated.

F. Payment for the accepted quantities of equipment hours will be made at the Contract unit price per hour. The Contract unit price per hour shall include furnishing the specified equipment in completely operable condition, maintaining and operating the equipment, establishing and maintaining any needed controls for performing the work, materials, equipment, tools, fuel, oil, lubricants, and all other incidentals necessary to complete the work.

8.2 PAY ITEMS

A. Payment will be made under:

Pay Item	Pay Unit
K-1 Motor Grader	Hour (HR)
K-2 Tracked Excavator	Hour (HR)
K-3 Tracked Dozer w/Ripper	Hour (HR)
K-4 Water Wagon	Hour (HR)
K-5 Foreman w / P.U. Truck	Hour (HR)
K-6 Laborer	Hour (HR)

END OF SECTION K

SECTION L
MITIGATION OF INDIVIDUAL SINKHOLES

1.0 GENERAL

A. This section applies to mitigation of individual sinkholes open to the underground mine workings and shall consist of salvaging and stockpiling topsoil; sinkhole over-excavation; development of a borrow source; installation of a two (2) inch diameter PVC drain pipe; dumping and nesting of 12 inch (minimum) rock; placement of concrete slurry into the 12 inch rock voids; backfilling above the concrete with scoria pit run material; and backfilling above the scoria pit run material with over-excavated soils and/or on-site borrow material sources.

B. This project requires construction work around hazardous and unprotected mine openings. The Contractor shall be responsible for thoroughly investigating the site conditions and directing his equipment, operations, personnel, and safety procedures to prevent accidents and injuries.

1.1 SCOPE OF WORK

A. The Contractor shall furnish all labor, tools, supplies, and equipment necessary to perform the site preparation, excavation, backfilling, compaction, and sinkhole mitigation as described herein and as directed in the field by the Engineer.

B. All earthwork associated with "mitigation of individual sinkholes" shall be performed on a "Time and Material" basis utilizing the materials and equipment types described in theses specifications.

C. The Engineer will identify in the field the individual sinkholes requiring mitigation. The Contractor shall be solely responsible to determine the method(s) necessary to excavate and backfill all designated sinkhole features and construct each disturbed area to the lines and grades shown on the drawings and/or as established in the field by the Engineer.

D. Rock backfill and scoria pit run material for the subsidence features shall be obtained from off-site locations as approved by the Engineer.

E. The Contractor should be aware that old mining debris such as tires, old pieces of equipment, wood, domestic solid waste, etc., may be encountered. If encountered, they will be disposed of as directed by the Engineer. If off-site disposal of such materials is required, the Contractor will be reimbursed in accordance with Section O, Miscellaneous Force Account.

1.2 SITE CONDITIONS

A. It is the responsibility of the Contractor to examine the site personally and to conduct such additional investigations as he/she may deem necessary for the planning and execution of the work.

B. Much of the designated earthwork required for this project is in areas which have been historically mined underground (coal) and the Contractor shall be aware of the potential for hazardous subsidence sinkholes which may occur at random. It shall be the responsibility of the Contractor to examine the site personally and to conduct such additional investigations as necessary for the execution of work.

C. The Contractor shall be aware that coal and coal fumes are combustible materials. The Contractor shall be responsible for using extreme caution when performing the work and take ensuring measures that will prevent the starting of any fires.

D. The Contractor is responsible for the health and safety of personnel, subcontractors, and suppliers. Special precautions shall be taken to protect operators and equipment from hazards. The Contractor, personnel, subcontractors, and suppliers may be exposed to coal dust, fumes, and carbon monoxide during performance of the work.

2.0 MATERIALS

2.1 BACKFILL MATERIAL

A. The rock backfill material shall consist of 12 inch (minimum) competent rock and six (6) inch (minimum) competent rock. The rock backfill material can be obtained from a permitted off-site quarry or from other off-site sources as approved by the Engineer.

B. The over-excavated soils shall consist of Unclassified Soils obtained from the sinkhole excavation.

C. On-site borrow material sources shall consist of Unclassified Soils obtained from areas adjacent to the sinkhole, as approved by the Engineer.

2.1.1 ROCK BACKFILL

A. Rock used for backfill shall be sound and durable, free from organic material, clay or shale seams, cracks, or other structural defects, and shall have a specific gravity of at least 2.50.

B. Rounded stone (i.e. river rock), cobbles, or boulders are acceptable. Suitable rock types generally include, but are not limited to, granite and similar crystalline rock types, limestone and dolomite. Unsuitable rock types are generally shale, slates, volcanic rocks, and shists. Broken concrete shall not be acceptable.

C. The Contractor shall identify the rock source. The rock backfill material can be obtained from a permitted off-site quarry or from other off-site sources as approved by the Engineer. Rock sources must be identified by the Contractor and approved by the Engineer prior to initiating delivery and rock backfill placement.

2.2 CONCRETE MATERIALS

The following materials and specifications shall be used in the batching of concrete used for filling the voids in the 12 inch rock backfill material:

A. Portland Cement: ASTM C 150, Type II Modified Low C3A or Type V, unless otherwise specified herein.

B. Normal Weight Aggregates: ASTM C 33, except local aggregates of proven durability, may be used where acceptable to the Engineer.

C. Coarse Aggregate: 67%-100% passing 1-inch sieve.

D. Fine Aggregate: Clean, sharp, natural sands free from loam, clay lumps, or other deleterious substances.

E. Water: Clean, drinkable.

F. Air-Entraining Admixture: ASTM C 260.

G. Water-Reducing Admixture: ASTM C 494, Type A, and contain not more than 1% chloride ions.

H. Water-Reducing, Retarding Admixture: ASTM C 494, Type D, and contain not more than 1% chloride ions. Calcium chloride not permitted.

2.2.1 PROPORTIONING

The proportion of ingredients shall be selected to allow the proper placement, durability, strength, and other required properties. The proportion of ingredients shall be such as to produce a mixture that will work readily into the corners and angles of the rocks and forms, but without permitting the materials to segregate or excessive free water to collect on the surface. The mix design shall be proportioned in accordance with field experience or trial batches.

Before any concrete is placed on the job, the Contractor shall submit to the Engineer the concrete mix design he/she proposes to use. The mix design must be approved by the Engineer prior to their use on the project.

A. Strength: The compressive strength shall be 3,500 psi at 28 days.

B. Durability: All concrete subjected to freezing and thawing while wet shall have an air content of 5%-7% and a maximum water-cement ration of 0.45.

C. Slump: Slump shall be no less than 4" and no greater than 8".

2.2.2 READY-MIX CONCRETE

A. Mix certificates shall be furnished to the Engineer for each load of ready-mix concrete delivered to the job. All materials and the proportioning of it shall conform in every respect to those specified heretofore. Ready-mixed concrete shall be mixed and delivered in accordance with "Specifications for Ready-Mixed Concrete" (ASTM C-94).

B. Addition of water to increase slump shall be prohibited. Concrete shall be mixed only in quantities required for immediate use. Concrete that has set shall not be retempered, but shall be discarded. When concrete arrives at the project with slump below that which is suitable for placing, water may be added only if neither the maximum permissible water-cement ratio nor the maximum slump is exceeded. The water must be incorporated by additional mixing equal to at least half of the total mixing required. Such additional water must be approved by the Engineer.

C. To maintain the temperature of the concrete above the minimum placing temperature of 50 degrees F, the as-mixed temperature shall not be less than 55 degrees F when the mean temperature falls below 40 degrees F. If water or aggregate has been heated, the water shall be combined with the aggregate in the mixer before cement is added. Cement shall not be added to mixtures of water and aggregate when the temperature of the mixture is greater than 100 degrees F.

2.3 DRAINPIPE MATERIAL

A. The drainpipe material shall consist of two (2) inch diameter, schedule 40 PVC pipe. The portion of the pipe placed in the rock shall be perforated with one half (½") inch diameter holes as approved by the Engineer. The top of the pipe shall be wrapped with properly secured filter cloth material.

2.4 FILTER CLOTH MATERIAL

A. The filter cloth shall be a pervious sheet composed of plastic yarn fabricated into a pattern with distinct pores or openings.

B. The plastic yarn shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of propylene, ethylene, or vinylidene-chloride and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistant to deterioration due to ultraviolet light and heat exposure. The edges of the cloth shall be salvaged or otherwise finished to prevent the outer yarn from pulling away from the cloth.

C. The filter cloth shall, at the Contractor's option, be either woven or nonwoven, and shall meet the following requirements for the type specified:

FABRIC PROPERTIES	TEST METHOD	MINIMUM REQUIREMENTS
WOVEN FILTER CLOTH		
Tensile Strength	ASTM D 4632	200 Pounds
Elongation	ASTM D 4632	$\leq$ 15%
Permeability	ASTM D 4491	0.5 sec^{-1}
Burst Strength	ASTM D 3786	320 psi
NONWOVEN FILTER CLOTH		
Tensile Strength	ASTM D 4632	90 Pounds
Elongation	ASTM D 4632	$\leq$ 50%
Permeability	ASTM D 4491	0.5 sec^{-1}
Burst Strength	ASTM D 3786	320 psi

D. Seams shall be sewn with thread of material meeting the chemical requirements given above for plastic yarn. The sheets of filter cloth shall be sewn together at the factory or another approved location to form sections not less than two (2) feet wide. Seams shall be tested in accordance with the applicable ASTM method, using one (1) inch square jaws and 12 inches per minute constant rate of traverse. The strengths shall be not less than 90 pounds in any principal direction.

E. All brands of plastic filter cloth and all seams to be used will be accepted on the basis of a certification. The Contractor shall furnish the Engineer a mill certificate or affidavit signed by a legally authorized official from the company manufacturing the cloth. The mill certificate or affidavit shall attest that the cloth meets the chemical, physical, and manufacturing requirements stated in this section.

F. During all periods of shipment and storage, the cloth shall be protected from direct sunlight, ultraviolet rays, temperatures greater than 140

degrees Fahrenheit, mud, dirt, and debris. To the extent possible, the cloth shall be wrapped in a heavy-duty protective covering.

3.0 EXECUTION

3.1 CLEARING AND GRUBBING

A. An excavator with a hydraulic thumb (or other suitable equipment) shall be used to clear and grub the disturbance area. Topsoil will be salvaged and stockpiled nearby.

B. The area shall be cleared and grubbed of existing debris to allow for a safe working environment. All debris and other undesirable material found in the disturbance areas shall be removed and disposed of in approved areas as directed by the Engineer.

3.2 OVER-EXCAVATION

A. Over-excavation of the sinkhole shall consist of removal of the loose and disturbed material that is present in the sinkhole and the immediate circumference area of the sinkhole. The minimum depth of the sinkhole over-excavation will be ten (10) feet or as directed by the Engineer. The material excavated will be stockpiled nearby.

B. The final over-excavated slopes of each sinkhole will be a minimum 1H: 1V. The overall configuration of the over-excavated sinkhole will resemble a truncated cone.

3.3 DRAINPIPE PLACEMENT

A. The drainpipe shall be suspended at the center of the sinkhole while the rock backfill is placed within the sinkhole and around the drainpipe.

B. The drainpipe is to be extended (as necessary) to protrude above the backfill material.

C. For each sinkhole, the upper end of the drainpipe will be approximately one (1) inch above the upper surface of the six (6) inch rock layer.

D. The upper end of the drainpipe shall be securely covered with filter cloth material to prevent sediment plugging.

3.4 PLACEMENT OF 12 INCH ROCK BACKFILL

A. The 12 inch (minimum) rock backfill will be placed with the excavator bucket to a level that is three (3) feet above the upper portion of the

underground mine workings exposed at the bottom of the sinkhole, or as directed by the Engineer.

3.5 PLACEMENT OF CONCRETE

Concrete will be poured into the voids of the 12 inch rock backfill layer within the sinkhole. A typical concrete void pour will have a volume of approximately eight (8) cubic yards.

A. In general, all placement of concrete shall be in conformance with "Specifications for Structural Concrete for Building" ACI 301-89. Cold weather concreting shall conform to ACI 306.1.

B. Prior to placing the concrete, any type of debris or other materials considered detrimental to the integrity of the concrete shall be removed from the concrete pour area.

C. The concrete shall be poured to the full thickness in one event as specified in the field by the Engineer. The concrete may be mixed at the work site or delivered as "ready mix," at the Contractor's option.

D. The final surface of the concrete plug shall be concave with the low point in the center of the plug as indicated on the drawings. The concave configuration is necessary to direct any water accumulation towards the center of the concrete plug.

E. All concrete shall be finish sprayed with a clear liquid membrane-curing compound as specified in ASTM C309.

H The concrete shall cure for a minimum period of 48 hours before backfilling activities above the concrete is allowed to initiate.

3.6 PLACEMENT OF SIX (6) INCH ROCK BACKFILL AND FILTER CLOTH

A. The six (6) inch (minimum) rock backfill will be placed with the excavator bucket to a level that is three (3) feet below the approximate surface of the sinkhole, or as directed by the Engineer.

B. The filter cloth material shall be placed on top of the six (6) inch rock backfill in the manner and at the locations shown on the drawings or as directed by the Engineer. At the time of installation, cloth shall be rejected if it has defects, rips, holes, flaws, deterioration, or damage incurred during manufacture, transportation, or storage.

C. The areas upon which the filter cloth material is to be placed shall be relatively smooth and free of projections or depressions that may cause the filter cloth to be punctured.

D. The filter cloth material shall be placed without stretching and shall lie smoothly in contact with the six (6) inch rock backfill surface. When overlapping of strips is necessary, the joints shall be overlapped a minimum of two (2) feet.

E. The filter cloth shall be protected at all times during construction from damage. Any filter cloth damaged during its installation or during placement of backfill shall be replaced at the Contractor's expense.

3.7 OVER-EXCAVATED MATERIAL AND TOPSOIL REPLACEMENT

A. Over-excavated material shall be removed from the temporary stockpile and placed into the remaining portion of the open sinkhole and mounded to the lines and grades shown on the drawings or as determined by the Engineer.

B. On-site borrow material sources shall be used if there are insufficient quantities of over-excavated material. Borrow material shall consist of unclassified soils obtained from areas adjacent to the sinkhole, as approved by the Engineer.

C. Each lift of the over-excavated material shall be placed in approximately horizontal layers at a thickness of one (1) foot uncompacted. No density requirements will be applied; however, the Contractor shall conduct the placement in such a manner, as approved by the Engineer, to obtain the maximum compaction by tamping with an excavator's bucket.

D. After fill placement has been completed; all disturbed areas shall be final graded to the satisfaction of the Engineer. The final graded surface shall be free from cobbles and boulders that may be detrimental to revegetation activities, as determined by the Engineer.

E. After final grading has been completed, the area shall be scarified to a minimum depth of four (4) inches. Topsoil / coversoil shall be removed from temporary stockpiles, hauled and placed over the final graded surface to a minimum depth of 10 inches or as directed by the Engineer.

4.0 BRACING, SHORING, AND BENCHING

A. Excavated surfaces too steep to be safe and stable if unsupported shall be supported as necessary to safeguard personnel, equipment, and work and to prevent adjacent ground from sliding.

B. It is the Contractor's responsibility and liability to determine if bracing, shoring, or benching is necessary in order to ensure safety and to comply with all applicable Wyoming Occupational Health and Safety and Federal Occupational Safety and Health Administration (OSHA) Regulations. All

shoring, bracing, or benching required shall be constructed in accordance with the regulations for construction as set forth by each of these entities.

C. If bracing or shoring of excavated surfaces is necessary, the cost to provide such measures shall be covered under Section O, Miscellaneous Force Account. The use of such measures for payment must be authorized by the Engineer, in writing, prior to installation.

5.0 TIME AND MATERIALS CONSTRUCTION

A. All earthwork associated with "mitigation of individual sinkholes" shall be performed on an hourly equipment rate basis in accordance with Section K, Subsidence Area Mass Grading.

6.0 MEASUREMENT AND PAYMENT

6.1 METHOD OF MEASUREMENT

A. Measurement and payment for earthmoving equipment and labor work hours shall be in accordance with Section K - Subsidence Area Mass Grading.

B. Measurement and payment for concrete shall be per cubic yard placed. Each load delivered to the site shall be supported by certified weigh tickets indicating total cubic yards delivered and/or supplier invoices. The unit price shall constitute full compensation for furnishing, hauling, delivery, clear liquid membrane curing compound, forms, PVC drain pipe, filter cloth, and all materials, and incidentals whatever nature necessary **(excluding earthmoving equipment and labor)** required to complete the work in accordance with the drawings and these specifications.

C. Measurement and payment for 12" rock backfill and 6" rock backfill shall be per cubic yard placed as measured from initial and final surveys. Each load delivered to the site shall be supported by certified weigh tickets and/or supplier invoices. The unit price shall constitute full compensation for furnishing, hauling, delivery, and incidentals whatever nature necessary **(excluding earthmoving equipment and labor)** required to complete the work in accordance with the drawings and these specifications.

D. Where it is impractical to measure 12" rock backfill and 6" rock backfill volumes by survey methods because of the erratic location; load counts may be used. The Engineer and Contractor shall compare records daily as to the number of loads for each type of material that was hauled and placed. Equipment capacities will be considered to be struck cubic yards,

as supported by manufacturer's specifications and shall be mutually agreed upon by the Contractor and Engineer, in writing, prior to hauling.

E. The quantities listed on the Bid Schedule are estimates of the work required and are provided for evaluating the bids. The actual quantities may vary due to sinkhole condition changes, weather, etc.; therefore, the 30 percent variance to quantities in Section L, as shown on the Bid Schedule, does not apply and the unit price bid will not be renegotiated.

6.2 PAY ITEMS

A. Payment will be made under:

Pay Item	Pay Unit
L-1 Concrete	Cubic Yard (CY)
L-2 12" Rock Backfill	Cubic Yard (CY)
L-3 6" Rock Backfill	Cubic Yard (CY)

END OF SECTION L

SECTION M
REVEGETATION

1.0 GENERAL

A. This work shall consist of furnishing all labor, equipment, and materials necessary to complete agricultural pre-ripping, disking, fertilizer application, pitting and seeding in designated areas as required by these Specifications. It shall be the responsibility of the Contractor to comply with all applicable requirements and regulations of the General Safety and Health Regulation of the Wyoming Occupational Health and Safety Commission.

B. Revegetation shall be completed on the areas designated by the Engineer. Areas disturbed during construction shall be revegetated according to these Specifications.

C. The Contractor shall be responsible for protecting the revegetation areas from damage during and between the various revegetation procedures. Construction equipment shall not be allowed on the revegetation areas except for the purpose of completing other revegetation procedures. Damage of any revegetated areas shall be repaired at the Contractor's expense.

1.1 SCHEDULE

A. Agricultural pre-ripping shall not begin more than forty-eight (48) hours before completion of seeding operations as stipulated in this section. The purpose of this time limitation between the commencement of the agricultural pre-ripping and completion of all agronomic activities is to reduce the possibility of excessive soil wetness or dryness, which may delay subsequent operations.

B. Agricultural disking shall be completed in conformance with these Specifications after agricultural pre-ripping has been completed and accepted by the Engineer.

C. All revegetation/seeding procedures shall be completed in conformance with these Specifications after the work has been completed and accepted by the Engineer.

D. All pitting and seeding shall be completed between September 1 and the time that frost prevents preparation of a proper seedbed as determined by the Engineer.

1.2 QUALITY ASSURANCE

A. The Owner and Engineer reserve the right to sample any or all materials delivered to the project for any applicable tests of purity and germination plus any other test deemed necessary by either the Owner or Engineer. Samples shall be collected by the Engineer in the presence of the Contractor and submitted for analysis at a laboratory selected by the Owner and Engineer.

B. The Contractor shall be responsible for measuring the in-ground depth of pre-ripping and disking to ensure that each operation is being completed consistently and meets the requirements of these specifications.

1.3 REFERENCES

- Wyoming Seed Law
- Federal Seed Law

1.4 DELIVERY, STORAGE, AND HANDLING

A. Seed shall be delivered in the vendor's original containers clearly marked to show analysis of seed mixture as detailed in these Specifications. Any wet or otherwise damaged packages will be rejected by the Engineer.

B. All seed used on this project shall be purchased through a dealer licensed with the Wyoming Department of Agriculture.

C. All seed shall be furnished in sealed, undamaged containers with labels plainly detailing:

1. The commonly accepted name of the species and variety of seed;
2. Lot number;
3. The percentage of pure seed, crop seed, inert matter, weed seeds by weight, germination and hard seed;
4. The month and year of the germination test;
5. Origin of the seed;
6. Full name and address of the supplier;
7. Name and number of each kind of secondary noxious weed seed as listed in the Wyoming Seed Law. Seed shall not contain any of the primary noxious weed seeds as designated in the Wyoming Seed Law.
8. Net weight of seed in each container;
9. The words "POISONOUS TREATED" shall appear in bold print on the label of seeds treated with chemicals, which are toxic to either humans or livestock.

D. The Contractor shall be responsible for appropriate storage of all seed and materials delivered to the project site.

1.5 SUBMITTALS

A. The Contractor shall submit two (2) copies of a revegetation/seeding plan at the Pre-Construction Conference detailing how the items in this section will be completed. This plan should include a list of equipment, the vendor supplying fertilizer, the vendor-supplying seed, the number of employees, and estimated schedule of work for completing the revegetation operations.

B. The Contractor's revegetation/seeding plan is subject to the approval of the Engineer prior to beginning any revegetation/seeding operations.

C. The Contractor shall furnish to the Engineer, one (1) original copy of a material certification signed by the vendor before initiating seeding operations. This document shall certify that each lot of seed has been tested by a recognized State Seed Testing Laboratory or by a commercial laboratory employing a certified seed analysis technician(s). The seed must have been tested not more than nine (9) months before the *date of seeding* on the project.

D. The Contractor shall submit all Blue and Yellow certification bag tags as part of the vendor's written certification.

E. The Contractor shall collect all seed container tags. The Contractor shall write the seeding date on each tag and submit all tags to the Engineer on a daily basis.

F. The Contractor shall furnish to the Engineer, one (1) certified copy of the seed analysis reports as prepared by the respective Seed Testing Laboratory. A tetrazolium viability test shall be accepted in lieu of the germination portion of the sample seed analysis report as prepared by the respective testing laboratory. The Wyoming Department of Agriculture reserves the right to collect random samples from all seed entering the State of Wyoming. The table of tolerances acceptable to the State of Wyoming Department of Agriculture is as follows:

OFFERED % Pure Live Seed (PLS)	TOLERANCE Percentage Points
96% or over	-5
90% or over but less than 96%	-6
80% or over but less than 90%	-7

70% or over but less than 80%	-8
60% or over but less than 70%	-9
60% or less	-10

G. If the percent (%) PLS (Pure Live Seed) of the delivered seed is below the listed tolerance, when tested by the Wyoming State Seed Laboratory, then the Wyoming State Seed Laboratory test results shall govern and the seed shall be rejected. The Contractor shall be required to replace the lot(s) of seed rejected with seed meeting the offered percent PLS. This may mean completely repeating any or all seeding as determined necessary by the Engineer at no additional cost to the Owner.

1.6 PROTECTION

A. The Contractor shall proceed with each revegetation operation in its proper sequence and in a continuous manner. Any delay in the Contractor's operations (other than due to weather and related ground conditions) resulting in damage to the prepared ground surfaces as determined by the Engineer shall be repaired or replaced by the Contractor at no additional cost to the Owner.

B. The Contractor shall protect areas from damage by construction equipment or traffic until final acceptance. Any areas damaged by these causes shall be repaired by the Contractor at no additional cost to the Owner.

2.0 PRODUCTS AND MATERIALS

2.1 GENERAL

A. Material substitutions shall not be allowed unless the Contractor can demonstrate to the satisfaction of the Engineer that the specified fertilizer or seed species is not available, due to current market conditions. All substitutions must be approved by the Engineer, before purchase of materials. All seed with a named variety shall be blue tag-certified.

B. Minor hand broadcasting of fertilizer and seed may be necessary in areas that cannot be accessed by equipment. In such cases all labor and material will be furnished by the Contractor at no additional cost for applying the fertilizer and seed, and raking it into the soil according to these Specifications.

C. The total percentage (%) of "crop seed" shall not exceed three (3%) percent by weight. The species and varieties of seed, or blends of seeds, shall furnish the Pure Live Seed (PLS) at the rates stipulated in the seed mixture. No seed that has less than eighty (80%) percent pure seed will be used.

2.2 SEED MIXTURE

A. These application rates are for broadcast seeding as part of the pitting process and/or for hand broadcast seeding.

Common Name	Scientific Name	Variety	Required LBS. PLS / Acre
Indian Ricegrass	*Achnatherum hymenoides*	Nezpar	6.0
Western Wheatgrass	*Pascopyron smithii*	Rosana	6.0
Streambank Wheatgrass	*Elymus lanceolatus*	Sodar	4.0
Basin Wildrye	*Leymus cinereus*	Magnar	6.0
Green Needlegrass	*Nasella viridula*	Lodorm	4.0
Four Wing Saltbush	*Atriplex canescens*	N.V.S.	3.0
Blue Grama	*Bouteloua gracilis*	Alma	6.0
Alfalfa	*Medicago satival*	Falcata	1.0
Alkali Sacaton	*Sporobolu airoides*	N.V.S.	1.0
White Prairie Clover	*Dalea candida*	N.V.S.	1.0
N.V.S. = No Variety Specified		**TOTAL**	38.0

2.3 PURE LIVE SEED (PLS) CALCULATION

A. The following method shall be used to calculate the amount of delivered bulk seed that will need to be planted. This method takes into account seed germination and purity of the seed source.

Pure Live Seed (PLS factor) = Germination % x Purity %

Example:

A seed mixture requires planting of 4.0 lbs. of Thickspike Wheatgrass
Thickspike Wheatgrass Germination = 80%
Thickspike Wheatgrass Purity = 90%

PLS factor = 0.80 x 0.90 = 0.72

Bulk Planting Rate = (Plant PLS 4.0 lbs.) / 0.72 = 5.6 lbs./AC of bagged seed should be included in the mix, so that 4.0 lbs. of PLS is planted.

2.4 FERTILIZER

A. Fertilizer for this project shall be a mixture of ammonium phosphate (16-20-0) and shall be applied at a rate of 200 pounds per acre.

B. Fertilizer shall be a soluble commercial carrier of available plant nutrients or combination thereof. The fertilizer shall be uniform in composition and in good condition for application by suitable equipment. It shall be labeled with

the manufacturer's guaranteed analysis as governed by applicable fertilizer laws. Any fertilizer, which becomes wet, contaminated or damaged, making it unsuitable for use, shall not be accepted.

C. Fertilizer shall be delivered in standard size bags from the manufacturer showing weight analysis and manufacturer's name, or in bulk quantities accompanied with written certifications from the manufacturer stating that the fertilizer supplied complies with the applicable specifications.

D. All required fertilizer certificates shall be provided to the Engineer a minimum of three days prior to fertilizer placement. The certification shall include the guaranteed analysis of the fertilizers stated in the terms of the percentages of nitrogen, available phosphorous and potash and boron, in that order.

3.0 EXECUTION

3.1 GENERAL

A. Site preparation shall consist of agricultural pre-ripping and disking after the soil surface has been graded to its final contours and accepted by the Engineer. Note: Unless waived by the Engineer, when the Contractor has an area of seed bed prepared that is large enough to complete the seeding operation in a single day, he will be required to proceed with seeding activities.

B. Agricultural pre-ripping, disking, fertilizing, pitting and seeding shall only be completed when the soil and environmental conditions provide an acceptable seed bed for plant growth. Some conditions which may delay agronomic activities include, but are not limited to, soil conditions too wet and formation of clods during pre-ripping or disking. A separate but similar condition exists when certain soils are too dry.

C. Revegetation activities shall not be performed during periods of high wind, rain, or other climatic conditions that would create the loss of topsoil or inhibit proper distribution of the seed over the revegetation site.

D. The length of time from commencement of agricultural pre-ripping until pitting and seeding has been completed shall not exceed forty-eight (48) hours. The affected area shall be re-prepared according to these Specifications or as directed by the Engineer.

3.2 AGRICULTURAL PRE-RIPPING

A. All areas of disturbance shall be pre-ripped to loosen up any compacted soil and to allow for adequate pit development during the pitting procedure or proper soil preparation for seeding.

B. All agricultural pre-ripping will be completed parallel to the slope contours to a depth of 18". Pre-ripping shall be completed with a spacing of 15-18" between ripper rows.

C. The agricultural pre-ripping activity shall be sufficient to "shatter" compacted materials between rip lines of the pre-ripping implement. The term "shatter" shall be defined for the purpose of these specifications as sufficient breaking and/or bursting of the compacted soil/overburden, so that a shovel can easily penetrate to a depth of 16 inches between rip lines.

D. The Contractor is advised that multiple passes of the pre-ripping equipment may be required. The Contractor should test the agricultural ripper before bringing it to the work site to ensure that pre-ripping completed by the implement will adequately meet these Specifications.

E. The agricultural pre-ripping process shall be considered complete when the compacted soil is broken up and the soil is in a loosened condition. All completed areas of agricultural pre-ripping must be approved by the Engineer prior to initiating further revegetation procedures.

3.3 FERTILIZER APPLICATION

A. Fertilizer will be evenly spread at the application rate of 200 bulk lbs/acre to all areas requiring fertilizer after pre-ripping has been completed.

B. The Contractor will be responsible for adjusting and maintaining settings on fertilizer application equipment to assure that fertilizer is applied at the required application rate.

C. Fertilizer will be applied prior to agricultural disking.

D. The fertilizer shall be incorporated into the soil to a depth of 6 (six) inches. The fertilizer shall be incorporated into the soil during the agricultural disking procedure.

3.4 AGRICULTURAL DISKING

A. Agricultural disking shall be conducted to pulverize pre-ripped material, incorporate the fertilizer into the upper soil horizon, and mix topsoil material into the upper soil horizon. Agricultural disking shall be completed prior to the pitting and seeding procedures.

B. Agricultural disking shall be completed to a depth of six (6) inches parallel to the surface contour. Spacing between disk lines shall not exceed eighteen (18) inches and may be constructed by one or more passes. (For example,

for two passes, the disk rows of the second pass should split the disk rows of the first pass). The disking shall be sufficient to *"shatter"* compacted materials between disk lines. The term "*shatter*" shall be defined for this specification as sufficient breaking and/or bursting of the compacted soil/overburden, so that a shovel can easily penetrate to a depth of four (4") inches between disk row lines.

C. Agricultural disking shall produce soil conditions which provide a suitable seedbed that is acceptable to the Engineer for pitting and seeding.

3.5 TIME OF SEEDING

A. Pitting and Seeding operations shall be completed between September 1 and the time that frost prevents preparation of a proper seedbed as determined by the Engineer. If the earthwork is completed too late for fall planting, the affected area may be mulched for winter, spring, and summer protection.

B. Pitting and seeding operations shall be completed as the final step following agricultural disking. Pitting and seeding shall only be completed during daylight hours, which shall be defined for this contract as being the time from one half an hour before sunrise until one half an hour after sunset on the day of seeding.

3.6 SEEDING WITH PITTING ("SUBSIDENCE AREA MASS GRADING")

A. All areas within the mass grading limits shall be pitted. Pitting shall commence immediately after agricultural disking has been completed by the Contractor and accepted by the Engineer.

B. All equipment marks running up and down slopes shall be eliminated prior to pitting in conformance with these specifications.

C. The pitter (pit forming device) shall be specifically designed and constructed for reclamation applications and conditions. There shall be no compacting or imprinting of the soil to form pits.

D. The pitter shall be equipped with ripper teeth of sufficient length to rip below the bottom of the pits that are to be developed. The ripper teeth shall be in alignment with and shall immediately precede the pit forming device.

E. Spacing between pit rows shall be approximately two (2) feet (center to center) between adjacent rows.

F. The developed pit dimensions shall be approximately 12 inches long by approximately eight (8) inches wide and approximately six (6) to eight (8)

inches deep. The pits shall be constructed in staggered rows so that the downward flow of any water between pits in one row is entrapped by the next row of pits.

G. Final surface pitting shall develop approximately 8,000 to 10,000 pits per acre as shown on the drawings.

H. The burden of achieving the desired results shall be the Contractor's responsibility.

I. All seeding shall be performed by dribble seeding or broadcast seeding methods accepted by the Engineer and shall be performed upon the immediate completion of pitting or soil preparation.

J. Before general seeding activities, test plots shall be established for the initial seeding to calibrate the mechanical seeder and ensure a proper seed application rate. All seeding equipment used in seeding operations shall be equipped with a metering device and set to the appropriate seeding rate. Initial calibrations are the responsibility of the Contractor and shall be completed in the presence of the Engineer. Maintaining the proper seed application rate shall be the responsibility of the Contractor. Periodic calibration tests of the seeding equipment may be required as determined necessary by the Engineer.

K. The seed mix shall be applied by either dribble seeding or a mechanical broadcast device at the rate of 31.0 pounds PLS per acre as detailed in Section M 2.2 of this specification.

L. The seed mix shall be uniformly applied to ensure the seeds are evenly distributed.

3.7 SEEDING WITHOUT PITTING ("INDIVIDUAL SINKHOLES")

A. Due to the small areas of anticipated disturbance, these sites will be ripped, fertilized, disked, and hand broadcast seeded. The specified seed mix shall be uniformly distributed with a mechanical devise specifically designed for such work and the ground thoroughly raked or dragged immediately after seeding to cover the seed with approximately one-quarter of an inch of soil. Raking or dragging will be completed parallel to the contour with suitable equipment approved by the Engineer.

4.0 MEASUREMENT AND PAYMENT

4.1 GENERAL

A. Accepted agricultural pre-ripping, disking, fertilizing, pitting and seeding

operations on authorized areas will be paid for on the acre basis to the nearest one tenth (0.1) of an acre as measured by survey. Areas disturbed or caused to be disturbed by the Contractor for his/her convenience or by his/her negligence shall be ripped, disked, pitted and seeded as directed by the Engineer at the Contractor's expense.

B. Multiple passes of pre-ripping and disking will not be measured for payment.

C. The final quantities for the materials may vary from the quantities shown on the Official Bid Schedule. The quantities estimated are based on information gathered and interpreted from surface investigations.

D. The boundaries of revegetation are estimates and intended to serve as a guide in outlining the scope of work and evaluating the bids.

4.2 AGRICULTURAL PRE-RIPPING

A. Payment will only be made for agricultural pre-ripping when this item has been completed and accepted by the Engineer.

B. The accepted quantities of agricultural pre-ripping will be paid for at the contract unit price per acre as measured by survey.

4.3 FERTILIZER

A. Payment will only be made for fertilizer when this item has been completed and accepted by the Engineer.

B. The accepted quantities of fertilizer will be paid for at the contract unit price per acre as measured by survey.

4.4 AGRICULTURAL DISKING

A. Payment will only be made for agricultural disking when this item has been completed and accepted by the Engineer.

B. The accepted quantities of agricultural disking will be paid for at the Contract unit price per acre as measured by survey.

4.5 PITTING AND SEEDING

A. Accepted "Pitting and Seeding" within authorized areas will be measured by survey to the nearest one tenth (0.1) of an acre. Areas to be included for measurement shall be those areas authorized for and containing accepted pitting and seeding.

B. Payment will only be made for pitting and seeding when the item has been completed and accepted by the Engineer.

C. All seeding will be paid for under "Pitting and Seeding;" whether seed is applied as part of the pitting process or with a hand broadcast seeder.

D. The Contractor's attention is specifically called to the fact that the method of measurement **is** along the actual ground surface.

E. Accepted quantities will be paid for at the contract unit price per acre as measured by survey.

4.6 PAY ITEMS

A. Payment will be made under:

Pay Item	Pay Unit
M-1 Agricultural Pre-Ripping	Acre (AC)
M-2 Fertilizer	Acre (AC)
M-3 Agricultural Disking	Acre (AC)
M-4 Pitting and Seeding	Acre (AC)

END OF SECTION M

SECTION N
EROSION CONTROL

1.0 GENERAL

A. This work shall consist of the furnishing and installing of temporary sediment and erosion control including fabric sediment fence at the locations shown on the drawings or as directed by the Engineer and as directed in the Project Strom Water Pollution Prevention Plan (SWPPP), which is included as Appendix 3. The exact length and location of the fabric sediment fence shall be at the direction of the Engineer.

B. The quantities estimated are based on information gathered and interpreted from surface investigations. Conditions during the project construction may affect the quantity of silt fence required to be installed. The Engineer may increase, decrease, or eliminate the quantity at his discretion. Variations in quantity are not changes in details of construction or in the character of work.

2.0 MATERIALS

2.1 FABRIC SEDIMENT FENCE

A. Fabric sediment fence shall meet the following specifications:

1. Woven silt film fabric specifically designed for erosion control.

2. Mullen burst strength per ASTM – D 3786 – 210 PSI.

3. Water flow rate as per ASTM - D 4491 – 40 gal./min. per square foot.

4. Ultra violet resistance as per ASTM D 4335 – 90 percent.

3.0 EXECUTION

3.1 DELIVERY AND STORAGE

A. Fabric used as sediment fence shall be stored in accordance with the manufacturer's recommendations and in a location that will prevent damage to the fabric.

B. The fabric shall be protected from direct sunlight, ultraviolet rays, temperatures greater than 140^0 F, mud, dirt, dust, and debris. The fabric

shall be maintained and wrapped in its' protective covering until installation.

3.2 INSTALLATION

A. Fabric sediment fence shall be installed in the following manner and in the locations shown on the drawings or as directed by the Engineer:

1. Installation will be made perpendicular to the direction of runoff or flow when within a stream channel.

2. Fabric will have a minimum width of three (3) feet.

3. Fabric will be buried along the toe to a minimum depth of six (6) inches. The ends of the fence will be buried in the sides of the channel to a depth of six (6) inches.

4. Height of the installed fabric will be two and one-half (2.5) feet above the finished ground surface after installation.

5. Anchor posts will have a maximum spacing of six (6) feet. The posts will be positioned on the downstream side and be inserted one (1) foot below the channel surface. Anchor posts shall meet specifications for steel fence posts as approved by the Engineer and as shown on the drawings.

6. Fabric will be attached securely to anchor posts and wire mesh.

7. Woven wire mesh shall be a minimum of 36 inches in height, a minimum of 14-gauge wire, with a maximum mesh spacing of six (6) inches.

3.3 MAINTENANCE

A. The Contractor shall maintain the fabric sediment fence until the Project is accepted or until the fence is removed. In addition, the Contractor will also be required to remove and dispose of the silt accumulations at the silt fence. Silt removed shall be hauled and placed as directed by the Engineer. All earthwork required to remove, haul and place the silt shall be paid for under Section K, Subsidence Area Mass Grading.

B. The Contractor shall be required to remove and replace any deteriorated filter fabric that reduces the effectiveness of the fabric sediment fence as determined by the Engineer.

C. The Contractor shall be required to repair, replace or remove any undermined fabric sediment fence as determined by the Engineer at no additional cost to the Owner.

4.0 MEASUREMENT AND PAYMENT

4.1 SPECIAL CONSIDERATIONS

The Contractor's attention is specifically directed to the following:

A. The final quantities for the major categorizations of materials may vary from the quantities shown on the Official Bid Schedule. The quantities estimated are based on information gathered and interpreted from surface investigations.

B. The boundaries of materials, along with the volumes are estimates and intended to serve as a guide in outlining the scope of work and evaluating the bids.

C. Fabric sediment fence is not to be included in the 30 percent variance of quantities as shown in the bid schedule and the unit price will not be renegotiated. Payment will be made for the measured quantities installed or constructed as directed and approved by the Engineer.

4.2 FABRIC SEDIMENT FENCE

A. The accepted quantity of fabric sediment fence, products and construction will be paid for at the contract price per linear foot complete in place. The price and payment will include all materials, labor, equipment, and all other incidentals necessary to complete the work. Measurement of fabric sediment fence will be by linear foot installed.

4.3 PAY ITEMS

A. Payment will be made under:

Pay Item	Pay Unit
N-1 Fabric Sediment Fence	Linear Foot

END OF SECTION N

SECTION O
MISCELLANEOUS FORCE

1.0 **GENERAL**

A. This section covers work, not included i direction of the Engineer, and shall inc there is no price included in this contract.

2.0 **LABOR**

A. For all labor and foreman in direct charg Contractor shall receive the actual cost of not to exceed those for comparable labo Department wage rates for each and e foreman are actually engaged in such wor

B. An amount equal to 57% of the sum of th the Contractor to cover overhead, property workmen's compensation insurance prem contributions, and social security taxes.

C. In addition to the above payments, the Co costs paid to, or in behalf of, workmen by r allowances, health or welfare benefits, ar such amounts are required by collective legitimate fringe benefit applicable to the cl work.

3.0 **MATERIALS**

A. For materials accepted by the Engineer a the Contractor shall receive payment for th delivered on site for the work, including tran (exclusive of machinery rentals as hereinaf percent will be added.

4.0 **EQUIPMENT**

A. For any machinery or special equipment (otl fuel and lubricants, plus transportation cost authorized by the Engineer, the Contract accordance with the latest approved schedu of the Wyoming State Highway Commission

SECTION O
MISCELLANEOUS FORCE ACCOUNT

1.0 GENERAL

A. This section covers work, not included in the contract, performed at the direction of the Engineer, and shall include unforeseen work for which there is no price included in this contract.

2.0 LABOR

A. For all labor and foreman in direct charge of the specific operations, the Contractor shall receive the actual cost of wages paid by him, but at rates not to exceed those for comparable labor per current Wyoming Highway Department wage rates for each and every hour that said labor and foreman are actually engaged in such work.

B. An amount equal to 57% of the sum of the above items will also be paid the Contractor to cover overhead, property damage and liability insurance, workmen's compensation insurance premiums, unemployment insurance contributions, and social security taxes.

C. In addition to the above payments, the Contractor shall receive the actual costs paid to, or in behalf of, workmen by reason of subsistence and travel allowances, health or welfare benefits, and pension fund benefits when such amounts are required by collective bargaining agreement or is a legitimate fringe benefit applicable to the classes of labor employed on the work.

3.0 MATERIALS

A. For materials accepted by the Engineer and incorporated into the work, the Contractor shall receive payment for the actual cost of such materials delivered on site for the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth) to which cost 15 percent will be added.

4.0 EQUIPMENT

A. For any machinery or special equipment (other than small tools) including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive payment in accordance with the latest approved schedule of Equipment Rental Rates of the Wyoming State Highway Commission. In the event that any of the

equipment to be used is not shown in said schedule, the rental rate for such equipment shall be agreed upon in writing before the work is started.

B. Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the project. If special equipment has been ordered by the Engineer and is to be used in connection with force account work, travel time to the project will be measured for payment from the Contractor's office.

C. Payment will be made based on the number of hours as described above, the sum of which will have no percentage added thereto.

D. Standby time will be paid only on equipment ordered brought to the job and/or ordered held on the job by the Engineer. Equipment already on the project to complete regular contract items will not be considered for payment for standby time.

5.0 MISCELLANEOUS

A. No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided, including tool, machine, or storage building.

B. The Contractor's Representative and the Engineer shall compare records daily of the cost of work as ordered on a force account basis.

6.0 STATEMENTS

A. No payment will be made for work performed on a force account basis until the Contractor has furnished the Engineer with duplicate itemized statements of the cost of such force account work detailed as follows:

1. Date, daily hours, total hours, rate, and extension for each classification of laborers and foremen;

2. Date, daily hours, total hours, rental rate, and extension for each code designation unit of machinery and equipment;

3. Quantities of materials, prices, and extensions; and

4. Transportation of materials.

B. Statements shall be accompanied and supported by receipts for all materials used and for all transportation charges. In lieu of invoices for materials used on the force account, that are not specifically purchased for such work but are taken from the Contractor's stock, the Contractor shall furnish a certified correct statement that such materials were taken from

his stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

C. When extra work paid for on a force account basis is performed by other than the Contractor's organization; the Contractor shall reach agreement with such others as to the distribution of the payment made by the Owner for such work. The Owner will make no additional payment for work performed by others under subcontract to the Contractor.

7.0 MEASUREMENT AND PAYMENT

7.1 PAY ITEMS

A. Payment will be made under:

Pay Item	Pay Unit
O-1 Miscellaneous Force Account	Lump Sum

END OF SECTION O

SECTION P
FENCING

1.0 GENERAL

A. Work covered under this section consists of furnishing all labor, equipment and materials necessary to complete the construction of barbed wire fence as shown on the drawings and as directed by the Engineer in accordance with the specifications detailed in this section.

2.0 MATERIAL

A. New materials for the construction of fence and gates shall be galvanized steel barbed wire of 12.5 gauge high tensile line wires with either two-point or four-point barbs.

B. Wire braces, tie wires, and wire stays shall be not less than 12.5 gauge galvanized steel wire.

C. Fence posts, end panel posts, and brace panel posts shall be of metal or treated wolmanized timber, at the option of the Contractor. When the type has been determined, that type shall remain the same throughout the project.

3.0 NEW FENCE

3.1 WOOD FENCE POSTS

A. End and corner posts shall have no diameter less than seven inches (7.0") nor greater than ten inches (10.0") and shall be seven feet (7.0') in length.

B. Brace posts shall have no diameter less than six inches (6.0") nor greater than nine inches (9.0") and shall be six foot-six inches (6.0'-6.0") in length.

C. Cross braces shall have no diameter less than three inches (3.0") and shall be six foot-six inches (6.0'-6.0") in length. The cross braces shall be nailed to the posts with at least three (3) 40d spikes at each end.

D. Brace wire shall be formed by twisting four (4) strands of wire together and shall be fastened by staples on three (3) sides of each brace post.

3.2 DEADMAN

A. The deadman shall have no diameter less than six inches (6.0") and shall be two feet (2.0') in length. The deadman tie wire shall be centered on the deadman. A deadman shall be placed with each end panel.

B. Deadman tie wire shall be formed by twisting eight (8) strands of wire together and shall be fastened by staples on three (3) sides of the brace post and deadman.

3.3 GATES

A. All gates shall be a normal panel width of 16 feet-six (6) inches, but at the Contractor's option, gate widths may range from 16 feet to 20 feet.

B. Gate sticks shall have a minimum cross section of either three inches by three inches (3.0" x 3.0") square or a three inch (3.0") diameter and shall be of sufficient length to accommodate the particular wire fence spacing and total height.

C. Gate hinges shall be made of double loops or twisted wires and shall be stapled to the gate stock and to the end post.

D. Gate supports shall be made of double loops of twisted wire and shall be stapled to the end post. The opening provided shall be large enough to accommodate the gate stick.

E. Either of the gate tightners as detailed on the drawings may be used. Alternative gate tightners may be used subject to the Engineer's approval.

3.4 LINE POSTS

A. Line posts shall be of metal or treated wolmanized timber, at the option of the Contractor. When the type has been determined, that type shall remain the same throughout the project or as directed by the Engineer.

B. The standard line post shall be a metal "T", five feet-six inches (5.0'-6.0") long and shall have an approximate weight of 1.33 pounds/linear foot. Anchor plates shall be securely fastened to the line post and shall have an approximate weight of 0.67 pounds. Posts shall have notches, studs or holes so placed as to hold the line wires in proper position. Holes or notches should be so placed that they will not impair the strength of the post.