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WAR DEPARTMENT
U. S. ENGINEER OFFICE
ALBUQUERQUE DISTRICT
ALBUQUERQUE, NEW MEXICO

SPECIFICATIONS
FOR
CONSTRUCTION
OF
ROADS AND DRAINAGE

GRANADA RELOCATION CENTER

COLORADO

PREPARED BY
WILSON & COMPANY ENGINEERS
ALBUQUERQUE, NEW MEXICO

July 10, 1942

I N F O R M A T I O N

The information contained in these Drawings and Specifications is not to be publicized in any way. It must be clearly explained to all persons to whom this information is made available that it is to be held in strict confidence, and not, under any circumstances, to be transmitted to others for publication or release to the press, periodicals or other agencies of public contact having either general or limited distribution. Any person failing to observe these restrictions may be prosecuted under the provisions of the Espionage Act, Title 50, U.S.C., Sections 31 and 32.

I M P O R T A N T N O T I C E

The attention of all bidders is invited to the fact that all capital equipment is subject to allocation by the War Production Board. It is expected that each bidder will own, or will have arranged to rent or otherwise acquire, and have available the plant and construction equipment necessary to construct the work herein specified. Delays in procurement of plant and equipment necessary for completion of the work under this contract will not constitute justification for any extension of time to the contract period as herein specified.

(Do not write above this line)

STANDARD GOVERNMENT FORM OF INVITATION FOR BIDS

(Construction Contract)

WAR DEPARTMENT
UNITED STATES ENGINEER OFFICE
ALBUQUERQUE DISTRICT
ALBUQUERQUE, NEW MEXICO

July 10, 1942.

A contract will be negotiated, subject to the conditions contained herein, for furnishing all plant, labor and materials and performing all work in accordance with the attached specifications for the construction of Roads and Drainage, Granada Relocation Center, Colorado.

I. SPECIFICATIONS AND PLANS. - The work shall be performed in strict accordance with the specifications, bidding schedule and plans, all of which are made a part hereof, and designated as follows:

Specifications for Construction of Roads and Drainage, Granada Relocation Center, Colorado.

The drawings which will become a part of the proposed contract are designated on the Drawing Index Sheet, and listed in paragraph 1-03 of the specifications.

II. INVESTIGATION OF CONDITIONS. - It is expected that bidders will visit the site and acquaint themselves with all available information, including local conditions and the availability of labor; and to make their own estimates of the facilities required and difficulties attending the execution of the work. Failure to acquaint himself with all available information concerning these conditions will not relieve the successful bidder of assuming all responsibility for estimating the difficulties and cost of successfully performing the complete work as required. Prospective bidders should contact the Area Engineer at Lamar, Colorado, who will make the necessary arrangements for the inspection of the site.

III. COMMENCEMENT AND COMPLETION. - The work to be done shall be commenced within one day after the date of receipt of notice of award and shall be completed in accordance with provisions of paragraph 1-05 of the specifications.

IV. MISCELLANEOUS PROVISIONS

(a) Labor and Wage Conditions to be maintained under the proposed contract or any subcontract thereunder, for work executed at the site of the project, shall be as stated in paragraphs 1-06, 1-10 and GC-5 of the specifications and Articles 11, 17 and 19 of the contract. The United States Employment Services, with offices in Lamar, Colorado has facilities for the referral of local labor. The use of this service is optional with the contractor, but the contractor shall use such labor as may be available from the relief rolls which he finds satisfactory. This labor is to be paid the established prevailing rate referred to in paragraph 1-10 of the specifications.

(b) Minimum Wage Rates.- Pursuant to the provision of Article 17 of the contract, the minimum wage rates to be paid labor under this contract will be determined by the Department of Labor.

(c) Hours of Work and Overtime Pay.- Provisions regarding hours of work and overtime pay will be made a part of the contract. (See paragraph GC-32 of the specifications.)

(d) Reports.- In order to assist the Department of Labor in obtaining employment statistics and to assist the Government in obtaining cost data, bidders, unless otherwise indicated in their bids will be considered as having voluntarily consented, without cost to the Government to the inclusion of paragraphs GC-5 and GC-41 of the specifications as a part of the contract.

(e) Liquidated Damages for delay will be prescribed. (See paragraph 1-05 (b) of the Specifications and Article 9 of the contract.)

(f) Patents. - Articles on patents will be made a part of the contract. (See paragraph GC-7 of the specifications.)

(g) Partial Payments will be made. (See Paragraph GC-36 of the specifications and Article 16 of the contract.)

(h) Claims, Protests and Appeals.- Decisions on claims, protests and appeals will be made by the Secretary of War, Washington, D.C. (See paragraph GC-39 of the specifications and Articles 9 and 15 of the contract.)

(i) Federal, State and Local Taxes.- Provisions for adjustment of contract price by means of change in Federal, state and local taxes will be made a part of the contract. (See paragraph GC-42 of the specifications.)

(j) Accident Prevention, Liability and Safety Requirements. The attention of bidders is directed to the requirements of paragraph GC-16 of the specifications regarding accident prevention, liability, and safety requirements.

(k) Labor Discrimination. - Provision on discrimination against workers because of race, creed, color or national origin will be made a part of the contract.

(l) Assignment of Claims. - Articles on assignment of claims will be made a part of the contract. (See paragraph GC-35 of the specifications.)

(m) Priorities. - The attention of bidders is directed to paragraph 1-07 and GC-29 of the specifications which provides for the establishment of a priority rating for the contract.

(n) Liability Resulting from Enemy Operations. - A provision to relieve the contractor from liability for damage due to enemy operations will be made a part of the contract.

(o) Termination for the Convenience of the Government. - A provision for "Termination for Convenience of the Government" will be made a part of the contract.

(p) Discounts. - No offers of discount for prompt payment or cash discounts will be tendered to or considered by the Government.

V. PREPARATION OF BID.

(a) Form. - Bids must be submitted on the Standard Government Form of Bid to be eligible for consideration in awarding the contract.

(b) Bidding Schedule. - The bid form has an entry for each item on which estimates will be given or payments made. The quantities of each item of the bid, as finally ascertained at the close of the contract, in the units given and unit prices of the several items stated by the bidder in the accepted bid, will determine the total payments to accrue under the contract. No other allowance of any kind will be made unless specifically provided for in the specifications or the contract or by adjustments under Article 3 of the contract. The unit price bid for each item must allow for all collateral or indirect cost connected therewith.

(c) Bid Bond. - A bid bond is not required.

VI. DATA TO BE FURNISHED WITH BIDS.

(a) General. - All bids submitted must be accompanied by a statement establishing that the bidder maintains a permanent place of business and has a suitable financial status to meet obligations incident to the work. (See paragraph 3 of the bidding schedule.) In addition, each bidder shall submit with his bid the statement of equipment which he proposes to employ on this work, including its location, ownership and how it is proposed to be obtained if not already owned or controlled by the bidder. These data are considered essential in enabling the contracting officer to determine whether the bidder is responsible and experienced in similar types of construction and whether the bid is based on a careful study of construction methods applicable to the work and full realization of the various factors which may affect the progress of the work.

(b) Experience. - Each bidder shall state in the space provided in the bidding schedule, a brief description of the character of the work previously executed by him and the locations of the major projects. After the bids are open, any bidder may be required by the contracting officer to state whether he is now or ever has been engaged in any construction work similar to that proposed, the year in which it was done, and the manner of its execution, and to give such other information as will tend to show his ability to prosecute vigorously the work required by these specifications. (See Paragraph 2 of the Bidding Schedule.)

VII. AWARD OF CONTRACT. - Award of contract will be made as a whole to one bidder, subject to the right reserved, as the interest of the Government may require, to reject any and all bids and to waive any informality in bids received. A bid may be rejected if the bidder fails to submit the data required with his bid or cannot show, to the satisfaction of the contracting officer, that he has the necessary capital and experience and owns or controls by firm option or can procure the necessary plant, as listed in the bidding schedule submitted, to commence work at the time prescribed in the specifications and thereafter to prosecute and complete the work at the rate of time specified; and that he is not already obligated for the performance of other work which would delay the commencement, prosecution or completion of the work contemplated. Any unbalanced bid which, in the opinion of the contracting officer, jeopardizes the interest of the Government will be subject to rejection for that reason. The United States specifically reserves the right to reject any qualified bids and will normally reject those which make it impossible to determine the true amount of the bid.

VIII. CONTRACT. - Contract will be required to be executed by the successful bidder on the accompanying standard form No. 23, in accordance with the accompanying Government Instructions to Bidders (Standard Form No. 22).

IX. PERFORMANCE AND PAYMENT BONDS. - Performance and Payment Bonds will be required as follows:

(a) A performance bond with good and sufficient surety or sureties, for the protection of the United States, Standard Form No. 25 will be executed in a penal sum of approximately equal to and not less than ten per cent (10%) of the full amount of the consideration of the contract. (See Standard Government Form of Bid, paragraph 5, for time limit of submitting payment bonds.)

(b) If the consideration of the contract will exceed two thousand dollars (\$2,000.00) in amount, payment bond with good and sufficient surety or sureties, for the protection of persons furnishing material and labor for the work, Standard Form 25-A will be executed in a penal sum approximately equal to and not less than fifty per cent (50%) of the full amount of the consideration of the contract when the latter is not more than one million dollars, (\$1,000,000.00), forty per cent (40%) where the contract exceeds one million dollars (\$1,000,000.00) but is not more than five million dollars (\$5,000,000.00) and two million five hundred thousand dollars (\$2,500,000.00) for all contracts above five million dollars (\$5,000,000.00).

X. ESTIMATES OF COST.- Bidders are advised that the Government will prepare estimates of the cost of construction of the work required under the specifications.

XI. RELEASE OF CLAIMS -ADDITIONAL FEE.- If prospective contractor now has a contract on cost-plus-a-fixed-fee basis, it will be necessary that there be furnished in quadruplicate, to the District Engineer, U.S. Engineer Office, Albuquerque, New Mexico an unconditional release releasing the United States, its offices and agents, from any and all claims or demands for additional fee by virtue of work or services prior to date of negotiation and the execution of the release in connection with the cost-plus-a-fixed-fee contract.

Note: U.S. Standard Form No. 23, Construction Contract,
U.S. Standard Form No. 22, Instructions to Bidders, and
U.S. Standard Form Release of Claims, are attached.

U.S. Standard Forms Nos. 25 and 25A, Performance and
Payment Bonds, may be obtained on application to the
U.S. Engineer Office, Albuquerque, New Mexico.

INDEX TO SPECIFICATIONS

<u>Par. No.</u>	<u>Paragraph Title</u>	<u>Page No.</u>
GENERAL CONDITIONS		
GC-1	General	1
GC-2	Visiting Site	1
GC-3	Site of Work	1
GC-4	Contract Requirements	1
GC-5	Contractor's Reports	1
GC-6	Liability for Damages	1
GC-7	Patents	2
GC-8	Standard Stock Products	2
GC-9	Control and Access to Work	2
GC-10	Character of Work and Mechanics	2
GC-11	Subcontractors	2
GC-12	Interpretation of Contract	2
GC-13	Lines, Grades and Stakes	3
GC-14	Roads and Grounds	3
GC-15	Utilities	3
GC-16	Accident Prevention, Liability and Safety Requirements	4
GC-17	Substitutes for Critical Materials	6
GC-18	Protection of Stored Material	6
GC-19	Misplaced Material	6
GC-20	Standard Tests, Quality and Guarantees	6
GC-21	Federal Specifications	7
GC-22	Material, Equipment and Samples to be Submitted	7
GC-23	Drawings and Specifications, Cooperative	8
GC-24	Discrepancies	8
GC-25	Drawings	8
GC-26	Complete Work Required	9
GC-27	Minor Modifications	10
GC-28	Interference with Other Contractors	10
GC-29	Priorities	10
GC-30	Order of Work	10
GC-31	Work Covered by Contract Price	10
GC-32	Hours of Work and Overtime Pay	10
GC-33	Workmen's Compensation Laws	11
GC-34	Insurance	11
GC-35	Assignment of Claims	11
GC-36	Payments	12
GC-37	Organization, Plant and Progress	12
GC-38	Inspection	13
GC-39	Claims, Protests and Appeals	14
GC-40	Purchase Orders	14
GC-41	Cost Data	14
GC-42	Adjustment of Contract Price by Reason of Change in Federal, State or Local Taxes	15
GC-43	Restoration of Site	15
GC-44	Final Examination and Acceptance	16

Par. No.

Paragraph Title

Page No.

SECTION I - SPECIAL PROVISIONS

1-01	Location	I-1
1-02	Work to be Done	I-1
1-03	Drawings	I-1
1-04	Quantity of Work	I-2
1-05	Commencement, Prosecution and Completion	I-3
1-06	Sundays, Holidays and Nights	I-3
1-07	Priorities	I-3
1-08	Equipment Furnished by the Government	I-3
1-09	Material, Procurement of which is Arranged by the Government	I-3
1-10	Minimum Wage Rates	I-4

SECTION II - EXCAVATION, GRADING AND BACKFILL

2-01	Scope	II-1
2-02	General	II-1
2-03	Clearing and Grubbing	II-2
2-04	Roadway Excavation	II-2
2-05	Excavation for Drainage Ditches	II-2
2-06	Excavation for Culverts	II-2
2-07	Embankment	II-3
2-08	Backfill	II-4
2-09	Preparation of Subgrade	II-5
2-10	Shoulders	II-6
2-11	Disposal of Surplus Material	II-6
2-12	Final Grading	II-6
2-13	Payment	II-7

SECTION III - CRUSHED ROCK SURFACING

3-01	Scope	III-1
3-02	Materials	III-1
3-03	Construction Methods	III-2
3-04	Tests	III-3
3-05	Measurement and Payment	III-4

SECTION IV - COAL STORAGE CONCRETE SLAB

4-01	Scope	IV-1
4-02	Concrete	IV-1
4-03	Forms	IV-4
4-04	Curing	IV-5
4-05	Finishing	IV-5
4-06	Final	IV-6
4-07	Payment	IV-6

<u>Par. No.</u>	<u>Paragraph Title</u>	<u>Page No.</u>
SECTION V - CULVERTS		
5-01	Scope	V-1
REINFORCED CONCRETE CULVERTS		
5-02	General	V-1
5-03	Pipe	V-1
5-04	Installation	V-1
WOOD CULVERTS		
5-05	General	V-3
5-06	Materials	V-3
5-07	Installation	V-4
PAYMENT		
5-08	Culvert Pipe	V-4
SECTION VI - ASPHALTIC SURFACING - ARMOR COAT		
6-01	Scope	VI-1
6-02	Materials	VI-1
6-03	Truck Scales	VI-2
6-04	Subgrade Preparation	VI-2
6-05	Prime Coat	VI-3
6-06	Armor Coat	VI-3
6-07	Measurement and Payment	VI-3

WAR DEPARTMENT
U. S. ENGINEER OFFICE
ALBUQUERQUE DISTRICT
ALBUQUERQUE, NEW MEXICO

GENERAL CONDITIONS

GC-1. GENERAL. - These conditions are a part of the Specifications and shall govern wherever applicable. (See "Special Conditions").

GC-2. VISITING SITE. - The Bidder should visit the site and acquaint himself as to local conditions, availability of labor, water, electric power, roads, soil conditions, the relation of finished grade of the building to existing grades and difficulties which may attend execution of the work. The submission of a proposal will be construed as evidence that such a visit and investigation has been made and later claims for labor, equipment, or materials required, or difficulties encountered will not be considered.

GC-3. SITE OF WORK. - The term "Site of Work", as used in these specifications and in Articles 17 and 19 of the contract, will embrace all areas wherein field operations are conducted by the contractor in connection with this contract, including work areas, shops, camps, yards, etc., irrespective of whether such operating areas lie within the limits of right-of-way shown on the drawings.

GC-4. CONTRACT REQUIREMENTS. - The contractor shall acquaint himself and require subcontractors to be thoroughly acquainted with all the provisions and requirements of the basic contract and exact strict compliance with all terms thereof affecting such subcontractors, particularly as to wages, reports and affidavits.

GC-5. CONTRACTOR'S REPORTS. - The contractor will report monthly, and will cause all subcontractors to report in like manner, within five days after the close of each calendar month, on forms to be furnished by the Department of Labor, the number of persons on their respective pay rolls, the aggregate amount of such pay rolls, the man hours worked, and the total expenditures for materials. He shall furnish the Department of Labor the names and addresses of all subcontractors on the work at the earliest date practicable provided that the foregoing shall be applicable only to work at the site of the construction project.

GC-6. LIABILITY FOR DAMAGES. - The contractor will be held responsible for all damage to the work under construction, whether from fire, water, high wind, or other causes, during performance and until final completion and acceptance, even though partial payments may have been made under the contract. He will be held answerable for all damages that may occur to persons, property, animals, or vehicles from want of proper shoring, bracing, lighting, watching, boarding or enclosing, and for any accident arising from defective

GENERAL CONDITIONS

scaffolding or apparatus, or any negligence on the part of himself or his employees.

GC-7. PATENTS. - The contractor shall hold and save the Government, its officers, agents, servants and employees, harmless from liability of any nature or kind including costs and expenses for or on account of any patented or unpatented invention, article or appliance manufactured or used in the performance of this contract, including its use by the Government. These specifications are furnished with the explicit understanding that when drawings, specifications and other data prepared by the War Department are furnished manufacturers and others for use in the manufacture or purchase of supplies, or for any other purpose, the Government assumes no responsibility nor obligation whatever, and the furnishing of said data by the War Department is not to be regarded by implication or otherwise as in any manner licensing the holder or conveying the rights or permission to manufacture, use, or sell any patented invention that may in any way be thereto related.

GC-8. STANDARD STOCK PRODUCTS. - All materials, supplies and articles furnished shall, wherever so specified, and otherwise wherever practicable, be the standard stock products of recognized reputable manufacturers. The standard stock products of manufacturers other than those specified will be accepted, if in the opinion of the contracting officer, they are equal in strength, durability, usefulness and convenience for the purpose intended. (See Article 7 of the contract). Any changes required in the details and dimensions shown on the drawings for the substitution of standard stock products, other than those provided for, shall be properly made as approved by the contracting officer, and at the expense of the contractor.

GC-9. CONTROL AND ACCESS TO WORK. - The work shall be entirely under the control of the contracting officer and he or his authorized representatives shall have access to same at all times. The contracting officer may require the contractor to dismiss such employees as he deems to be incompetent or careless.

GC-10. CHARACTER OF WORK AND MECHANICS. - The work shall be executed in the best and most workmanlike manner by qualified, careful and efficient mechanics, in strict accordance with the drawings and specifications.

GC-11. SUBCONTRACTORS. - Subcontractors and their employees shall be considered to be employees of the contractor as the term "employee" is used in these specifications.

GC-12. INTERPRETATION OF CONTRACT. - Unless otherwise specifically set forth, the contractor shall furnish all materials,

GENERAL CONDITIONS

labor, etc., necessary to complete the work according to the true intent and meaning of the drawings and specifications of which intent and meaning the contracting officer shall be the interpreter. Except when otherwise indicated, no local terms or classifications will be considered in the interpretation of the contract or the specifications forming a part thereof.

GC-13. LINES, GRADES, AND STAKES.

(a) The contractor shall, at his own expense, furnish all stakes, material for batter boards, templates, patterns, plat-forms, and special labor that may be required in setting and cutting or laying out any part of the work. After lines and grades for any part of the work have been given by the Government inspectors, the contractor will be required to check their accuracy and will be held responsible for the proper execution of the work to the correct lines and grades. All stakes or other marks given shall be preserved by him until authorized by the inspector to remove them. The contracting officer may require that work be suspended at any time when for any reason such marks cannot be properly followed.

(b) The contracting officer will furnish to the contractor all location and limit marks reasonably necessary for the primary layout of the work, including grades for utility systems, to five feet outside the building lines. After primary layout of each unit has been furnished, the contractor shall make all further layout necessary for the prosecution of the work including the setting of batter boards. He shall be responsible for the preservation of the primary layout and, in case any portion is destroyed, he shall replace it as directed by the contracting officer.

GC-14. ROADS AND GROUNDS. - All building operations, and the grounds used in connection therewith, shall be confined to the limits designated by the contracting officer. Only such established and temporary roadways as the contracting officer may authorize shall be used by the contractor. Damaged roadways shall be repaired as directed by the contracting officer, at no expense to the United States. The contractor shall keep the buildings and grounds in use by him at the site of the work in an orderly and sanitary condition.

GC-15. UTILITIES. - Where water and electrical current are available from existing systems belonging to the United States, the contractor on application to the contracting officer will be furnished same through metered connections as required for his work, provided, however, that in case of emergency and/or in the opinion of the contracting officer the water supply becomes only sufficient to meet military needs, the contractor shall furnish the water necessary for his use from other approved sources.

GENERAL CONDITIONS:

Connection to water mains or services shall be made by the contractor under the supervision of the contracting officer at the contractor's expense. The contractor shall provide all piping, corporation cocks, fittings, etc., required to make the connection and from it the contractor shall run such piping as he requires. Temporary piping shall be run underground in such locations as are approved by the contracting officer.

The contractor shall house connection to main or service in an accessible and approved manner and properly protect all piping against freezing. Connections, pipe, fixtures and fittings shall be maintained by the contractor. Failure to stop any leakage or other waste will be cause for use of the water to be discontinued. After temporary lines have served their purpose, the contractor shall remove all or part and restore the surface of the ground, as required by the contracting officer.

The closing of corporation cocks at mains shall be done by the contractor in a manner satisfactory to the contracting officer. Where water and/or electrical current are not available from the United States, the contractor will make his own arrangements for securing the same.

The United States will not be liable for delays or for any damage or expenses occasioned by the contractor due to any water and/or power shortage.

GC-16. ACCIDENT PREVENTION, LIABILITY AND SAFETY REQUIREMENTS.

(a) The contractor will not be allowed to block or obstruct any public highway without having secured prior permission from the contracting officer, and having provided safe, temporary detours. During the time the highways are so blocked, the contractor shall replace danger lights, barricades and warning signs in accordance with all local and State laws or as directed by the contracting officer.

(b) The contractor shall be responsible that his employees strictly observe the laws of the United States at the site under the contract.

(c) Accident Prevention. - In order to protect the life and health of employees in the performance of this contract, the contractor will comply with all pertinent provisions of the "Safety Requirements in Excavation - Building - Construction" approved by the Chief of Engineers, December 16, 1941, (a copy of which is on file in the office of the contracting officer) and as may be amended, and will take or cause to be taken such additional measures as the contracting officer may determine to be reasonably necessary for

GENERAL CONDITIONS

this purpose. The contractor will maintain an accurate record of and will report to the contracting officer in the manner and on the forms prescribed by the contracting officer, all cases of death, occupational disease and traumatic injury arising out of or in the course of employment on work under this contract. The contracting officer will notify the contractor of any non-compliance with the foregoing provisions and the action to be taken. The contractor shall, after receipt of such notice, immediately correct the conditions to which attention has been directed. Such notice, when served on the contractor or his representative and at the site of the work, shall be deemed sufficient for the purpose aforesaid. If the contractor fails or refuses to comply promptly, the contracting officer may issue an order stopping all or any part of the work. When satisfactory corrective action is taken, a start order will be issued. No part of the time lost due to any such stop order shall be made the subject of claim for extension of time or for excess costs or damages by the contractor.

(d) Particular attention is invited to Section 8302.03 of the "Safety Requirements in Excavation - Building - Construction" referred to in paragraph (c) above providing for First Aid Stations, infirmaries, medical and First Aid personnel, and ambulance services.

(e) The Infirmary and all First Aid Stations shall remain open and be completely manned as directed by the contracting officer during all hours that work is being performed.

(f) On projects employing 300 or more persons, a competent Safety Engineer shall be provided by the contractor for full-time supervision of the contractor's Safety Program. This Safety Engineer shall be an employee of the contractor and not a representative of the contractor's insurance company. The Safety Engineer shall have full authority to plan and direct an efficient Safety Program for the contractor and to correct deficiencies found by him or reported to him by representatives of the contracting officer.

(g) It will be permissible for the contractor to make arrangements to combine his facilities with the facilities of other contractors prosecuting work at the site, who have established the facilities and services specified in subparagraph (c) and (f) above, so that the combined facilities and services meet the requirements of these specifications. Such arrangements shall be subject to the prior approval of the contracting officer.

(h) Nothing in this paragraph shall be construed as modifying the responsibility of the contractor as set forth in Article 10 of the contract.

GENERAL CONDITIONS

GC-17. SUBSTITUTES FOR CRITICAL MATERIALS. - The plans and specifications for the various divisions of work have been prepared with a view toward reducing the use of critical materials to a minimum.

Where further changes in materials are deemed necessary in compliance with the lists of prohibited items as issued by the Army and Navy Munitions Board on priorities instructions, such changes will be ordered by the contracting officer. Any increase or decrease in cost occasioned by such changes to be adjusted according to Article 3 of the contract.

GC-18. PROTECTION OF STORED MATERIAL. - All materials, supplies, and articles delivered at the site, shall be adequately housed or otherwise protected against deterioration and damage to the satisfaction of the contracting officer. In case material or equipment furnished and stored by the contractor, on which payments have been made, becomes damaged or destroyed due to improper protection, the contractor shall replace such material at his own expense and to the satisfaction of the contracting officer.

GC-19. MISPLACED MATERIAL. - Any material that is deposited elsewhere than the place designated or approved by the contracting officer will not be paid for, the contractor may be required to remove such material and waste it or redeposit it as directed.

GC-20. STANDARD TESTS, QUALITY AND GUARANTEES.

(a) All materials, supplies and parts and assemblies thereof entering into the work to be done under these specifications shall be tested as specified herein, or, if not specified, in conformity with Article 6 of the contract and according to the best modern approved method for the particular type and class of work.

(b) Unless otherwise authorized or directed, where standard published specifications of recognized authorities or organizations are specified, the latest revisions of such specifications current at the time the work is executed shall govern.

(c) Unless waived in writing by the contracting officer, all tests and trials shall be made in the presence of a duly authorized representative of the contracting officer. When the presence of the inspector is so waived, sworn statements, in triplicate, of the tests made and the results thereof shall be furnished the contracting officer by the contractor as soon as possible after the tests are made.

(d) All costs of all tests and trials, excepting the

GENERAL CONDITIONS

expenses of the Government inspector and the testing of concrete aggregate and concrete cylinder tests shall be borne by the contractor and shall be included in the contract unit price for the items to which the inspections apply.

(e) In accordance with Article 7 of the contract, all materials, supplies and articles furnished and incorporated in the permanent structure shall be of the highest grade, free from defects and imperfections, of recent manufacture, and unused. Workmanship shall be of the highest grade and in accordance with the best modern standard practice.

(f) All articles, supplies, equipment parts and assemblies thereof, of standard manufacture, or for which detail designs or requirements are not prescribed in these specifications shall be guaranteed by the contractor against any failure in proper use or operation, caused by defective material, workmanship or design, for a period of one year from the date of final acceptance of the complete work under this contract. Failure in any part due to such causes within that time shall be promptly and satisfactorily remedied by the contractor without cost to the Government.

GC-21. FEDERAL SPECIFICATIONS. - All Federal Specifications hereinafter referred to shall include the latest revisions and amendments and may be seen in this office. Federal Specifications may be obtained from the Superintendent of Documents, Washington, D.C., or they may be seen at the U. S. Engineer Office, Albuquerque, New Mexico.

GC-22. MATERIAL, EQUIPMENT AND SAMPLES TO BE SUBMITTED. - As soon as practicable and within fifteen (15) days or any additional time as determined necessary by the contracting officer after the date of receipt of notice of award of the contract and before any materials, fixtures or equipment are purchased, the contractor shall submit for approval a complete list of all materials, fixtures and equipment which he intends to incorporate in the work in triplicate, together with the names and addresses of the manufacturers, servicing agencies and their catalog numbers and trade names. The contractor shall also furnish samples or detailed information in accordance with requirements specified in the detailed specifications. Approval of materials will be based on manufacturer's published ratings. The equipment of any manufacturer who does not have an established distributing warehouse or servicing shop, conducted under responsible management and having qualified and experienced mechanics available, within a reasonable distance from the airfield, will not be considered. Failure to furnish the names of servicing agencies, or any other data called for in these specifications, will be considered sufficient reason for rejection of the equipment. Such servicing facilities shall have been established prior to the submittal of

GENERAL CONDITIONS

bids and not merely set up for the purpose of complying with this requirement of the specifications. In the event the contractor submits for approval materials, fixtures, and equipment that are not in conformity with the specifications, or not of the best quality and grade, the contracting officer reserves the right to reject such materials, fixtures, and equipment and to select a complete line; or the contractor shall submit for approval other equipment which is in conformity with the specifications. If the contractor fails to submit for approval within the specified time after the date of receipt of notice of award of the contract, the list of materials as above specified, then the contracting officer reserves the right to select a complete line of materials, fixtures and equipment. The selection made by the contracting officer shall be final and binding upon the contractor and shall be furnished and installed by the contractor without change in the contract price.

GC-23. DRAWINGS AND SPECIFICATIONS, COOPERATIVE. - The drawings and specifications shall be considered as cooperative and work and material called for by one and not shown or mentioned in the other shall be done or furnished in as faithful and thorough a manner as though fully covered by both.

GC-24. DISCREPANCIES. - Where no figures or memoranda are given, the drawings shall be accurately followed according to scale. In any case of discrepancy in the figures on drawings, the matter shall be immediately submitted to the contracting officer without whose decision said discrepancy shall not be adjusted by the contractor, save only at his risk; and in the settlement of any complications arising from such adjustment the contractor shall bear all extra expense involved.

In case of differences between drawings and specifications, the specifications shall govern.

GC-25. DRAWINGS. - The work shall conform to drawings listed in "Special Provisions."

(a) The work shall also conform to such drawings in explanation of details or modifications as may be furnished by the contracting officer from time to time during construction, including such changes as the contracting officer may consider necessary on account of special conditions encountered during prosecution of the work. (See Articles 2 and 3 of the contract.)

(b) During the prosecution of the work the contractor shall check all drawings and shall immediately report all errors and omissions found therein to the contracting officer. Parts and details not fully shown on the drawings shall be detailed by the contractor in accordance with standard architectural and engineering

GENERAL CONDITIONS

practice. The contractor shall submit three sets of prints of each of such detailed drawings and accompanying specifications to the contracting officer who will return one set with his approval or with notations of such changes as he deems necessary. Approval of drawings by the contracting officer shall not relieve the contractor of responsibility for the correct fitting together and exact position of all parts of the work and complete conformity with the specifications. After approval, the contractor shall furnish the contracting officer with five sets of prints of each approved drawing and accompanying specifications. Each print submitted for approval shall have a three-inch by four-inch white space in the lower right hand corner, just above the title, in which the contracting officer may indicate the action taken. All such approved drawings and specifications shall form a part of these specifications. Payment for the contractor's drawings, revisions thereof, and for copies furnished, shall be included in the contract prices of the various items of work.

(c) Shop and Erection Drawings. - The contractor shall submit to the contracting officer for approval five copies of all shop drawings called for under the various sections. These drawings shall be complete, giving all the required information. If approved, each copy will be identified as having received such approval by being stamped or marked thus: "THIS SHOP DRAWING APPROVED IN ACCORDANCE WITH PROVISIONS OF SPECIFICATIONS," signed and dated. Four sets will be retained by the contracting officer and one returned to the contractor. If not approved, each copy will be so identified by being stamped or marked thus: "THIS SHOP DRAWING TO BE CORRECTED AS NOTED," and dated. After being stamped and marked for correction, with the necessary changes having been indicated thereon, one copy of each drawing will be returned to the contractor for the necessary corrections. After the corrections have been made and approved, the contractor shall submit five copies of the revised drawings to the contracting officer for approval and distribution as above provided. All approved shop drawings will form a part of the specifications. The approval shall not be construed as a complete check, but will only indicate that the general method of construction and detailing is satisfactory. Approval of the drawings will not relieve the contractor of the responsibility for any error which may exist, as the contractor shall be responsible for the dimensions and design of adequate connections, details and satisfactory construction of all work.

GC-26. COMPLETE WORK REQUIRED. - It is intended that the drawings and specifications include everything requisite and necessary to finish the entire work properly notwithstanding every item necessarily involved is not particularly mentioned. All work when finished shall be delivered in a complete and undamaged state and in proper working order.

GENERAL CONDITIONS

GC-27. MINOR MODIFICATIONS. - The right is reserved to make such minor changes in the execution of the work to be done under these specifications as, in the judgment of the contracting officer, may be necessary or expedient to carry out the intent of the contract; provided that the unit cost to the contractor of doing the work shall not be increased thereby, and no increase in unit price over the contract rate will be paid to the contractor on account of such changes. (See Articles 3, 4 and 5 of the contract).

GC-28. INTERFERENCE WITH OTHER CONTRACTORS. - The contractor shall not interfere with materials, appliances, or workmen of the United States or any other contractor who may have work at this site. As far as practicable all contractors shall have equal rights in the use of all assigned roads and grounds. In case of disagreement regarding such use the decision of the contracting officer shall govern.

GC-29. PRIORITIES. - Attention of the contractor is called to the fact that a priority rating will be established for this contract. (See "Special Provisions"). In case the contractor is unable to obtain the required delivery on materials and/or equipment which are to become a permanent part of the construction, the contractor shall notify the contracting officer, submitting with his notification supporting data to his claim that the required delivery of such materials or equipment cannot be obtained.

If the completion of the undertaking to be performed under the terms of this contract be delayed by reason of delay in the delivery of materials or supplies essential to such performance because of national defense priorities and without the fault or negligence of the contractor, the time of performance will be extended for a period equal to such delay, as determined by the contracting officer, and subject to appeal, as provided in Article 9 of the contract.

GC-30. ORDER OF WORK. - Construction shall be carried on in such order and sequence as found necessary and approved by the contracting officer.

GC-31. WORK COVERED BY CONTRACT PRICE. - The contractor shall, under his contract prices, furnish and pay for all materials, labor and all permanent, temporary, preparatory and incidental work, furnish all accessories and do everything which may be necessary to carry out the contract in good faith, which contemplates the completion of everything in good working order, of good material, and with accurate workmanship, skillfully fitted and properly connected and put together.

GC-32. HOURS OF WORK AND OVERTIME PAY. - The contractor will prosecute the work in accordance with the following conditions and will include the same provisions in all subcontracts entered into by him.

GENERAL CONDITIONS

(a) Overtime Rates. - Where a single shift is worked eight hours of continuous employment except for lunch periods shall constitute a day's work beginning on Monday and through Friday of each week. When work is required in excess of eight hours on any one day or during the interval from five p.m. Friday to seven a.m. Monday or on holidays such work shall be paid for at one and one-half times the basic rate of wages.

(b) Shifts. - Where two or more shifts are worked, five days of seven and one-half hour shifts from Sunday midnight to Friday midnight, shall constitute a regular weeks work. The pay for a full shift period shall be a sum equivalent to eight times the basic hourly rate and for a period less than the full shift shall be the corresponding proportional amount which the time worked bears to the time allocated to the full shift period. Any time worked from Friday midnight to Sunday midnight or in excess of regular shift hours shall be paid for at one and one-half times the basic rate of wages. Wherever found to be practicable shifts should be rotated.

GC-33. WORKMEN'S COMPENSATION LAWS. - The act approved June 25, 1936, (49 Stat. 1938, 1939) provides that the several states have authority to make their workmen's compensation laws applicable to contracts for the construction, alteration or repair of a public building, or public work of the United States, and the several states are vested with the power and authority to enforce such state laws on lands of the United States.

GC-34. INSURANCE. - No partial payment will be made until the contractor has submitted satisfactory proof that the property to be paid for is covered by a fire and comprehensive coverage insurance policy with extended coverage endorsement. Such insurance shall be in a sum at least equal to the amount of the payment to be made, plus any other partial payments previously made thereon. The contractor shall keep all such property fully insured, without cost to the Government, until final inspection and acceptance of all work under the contract. The insurance policy or policies shall be written by a company or companies satisfactory to the contracting officer, and shall provide that any loss be payable to the contractor and the Government as their respective interests may appear. All insurance policies shall be filed with the contracting officer and shall be subject to his approval.

GC-35. ASSIGNMENT OF CLAIMS.

(a) In accordance with the provisions of the Assignment of Claims Act (Public No. 811, 76th Congress, 3d Session) approved October 9, 1940, payments due under this contract may be assigned to a bank, trust company, or other financing institution, including

GENERAL CONDITIONS

any Federal lending agency.

(b) Any assignment shall cover all amounts payable under this contract and not already paid and shall not be made to more than one party, except that any such assignment may be made to one party as agent or trustee for two or more parties participating in such financing.

(c) Any claim under this contract may be subject to further assignment to a bank, trust company, or other financing institution including any Federal lending agency, and to similar further assignment; provided that any such assignee shall file written notice of further assignment, together with a true copy of the instrument of further assignment with the contractor and also as provided in proviso 4 of Section 1 of the Assignment of Claims Act of 1940 (Public No. 811, 76th Congress) in respect to original assignment.

(d) No assignee shall divulge any information concerning the contract, or contained therein, except to those persons necessarily concerned with the transaction.

(e) Payments to an assignee of any claim arising under this contract shall not be subject to reduction or set-off for any indebtedness of the assignor to the United States arising independently of this contract.

(f) Further information concerning procedure for assignment may be obtained from the contracting officer.

GC-36. PAYMENTS. - Payments to the contractor will be made semi-monthly in accordance with Article 16 of the contract and in accordance with a well-balanced schedule to be prepared by the contractor and approved by the contracting officer apportioning the total amount of the contract among the main items that go to form the completed work. The total amount shown by said schedule shall equal the amount to be paid under the contract. Ten per cent (10%) of the amount of each estimate will be retained until the contract work is fifty per cent (50%) completed, after which the total amount retained will never be less than 5 per cent (5%) of the total contract amount until the full completion and acceptance of all work covered by the contract, when final payment will be made thereon, including the retained percentage.

GC-37. ORGANIZATION, PLANT AND PROGRESS.

(a) The contractor shall within seven days after issuance of the notice of award, prepare and submit to the contracting officer, for approval a practicable and feasible schedule showing the order in which the contractor proposes to carry on the work,

GENERAL CONDITIONS

the dates on which he will start the several salient features (including procurement of materials, plant and equipment) and the contemplated dates for completing the same. The schedule shall be in the form of a progress chart of suitable scale so as to indicate appropriately the percentage of work scheduled for completion at any time. The contractor shall enter the actual progress at the end of each week and shall immediately deliver to the contracting officer three blue print copies of the same.

(b) The contractor shall furnish sufficient forces, construction plant and equipment, and shall work such hours, including night shifts and Sunday and holiday work as may be necessary to insure the prosecution of the work in accordance with the approved progress schedule. If, in the opinion of the contracting officer, the contractor falls behind the progress schedule, the contractor shall take such steps as may be necessary to improve his progress and the contracting officer may require him to increase the number of shifts, days of work and/or the amount of construction plants, all without additional cost to the Government.

(c) Failure of the contractor to comply with the requirements of the contracting officer or his authorized representative under this provision shall be grounds for the determination by the contracting officer that the contractor is not prosecuting the work with such diligence as will insure completion within the time specified; and when such determination has been made, the contracting officer may provide the necessary additional forces and/or plant at the contractor's expense to insure completion within the required time.

GC-38. INSPECTION.

(a) The work will be conducted under the general direction of the contracting officer and will be inspected in accordance with Article 6 of the contract by inspectors appointed by him. The inspectors will keep a record of the work done and see that the location and limit marks are kept in proper order, but the presence of the inspector shall not relieve the contractor or his responsible agent (See Article 8 of the contract) of the responsibility for the proper execution of the work.

(b) Except as specified in this paragraph, in Article 6 of the contract, or otherwise provided for in these specifications, all expenses of inspection will be borne by the Government.

(c) It is understood that any instructions or decisions given by a superior officer through the contracting officer are to

GENERAL CONDITIONS

be considered instructions or decisions of the contracting officer in all cases where, under the terms of the contract, decisions rest with the contracting officer.

GC-39. CLAIMS, PROTEST AND APPEALS. - If the Contractor considers any work demanded of him to be outside the requirements of the contract, or if he considers any action or ruling of the contracting officer or of the inspectors to be unfair, the contractor shall, without undue delay, upon such demand, action or ruling, submit his protest thereto in writing to the contracting officer, stating clearly and in detail the basis of his objections. The contracting officer shall thereupon promptly investigate the complaint and furnish the contractor his decision, in writing, thereon. If the contractor is not satisfied with the decision of the contracting officer, he may, within thirty (30) days appeal in writing to the Secretary of War, whose decision, or that of his duly authorized representative, shall be final and binding upon the parties to the contract. Except for such protests or objections as are made of record in the manner herein specified and within the time limit stated, the records, rulings, instructions or decisions of the contracting officer shall be final and conclusive. All appeals from decisions of the contracting officer authorized under the contract shall be addressed to the Secretary of War, Washington, D. C. The appeal shall contain all the facts or circumstances upon which the contractor bases his claim for relief and should be presented to the contracting officer for transmittal within the time provided for in the contract.

GC-40. PURCHASE ORDERS. - Two copies of all purchase orders, showing firm names and addresses, shall be submitted to the contracting officer prior to the placement of orders for materials which are to be incorporated in the work. Two copies of shipping bills or invoices covering shipment of all materials received, whether they are to be incorporated in the permanent work or consumed in the course of construction, shall be furnished in each case within ten days after receipt of shipment. Such invoices or shipping bills shall clearly indicate, in the case of each shipment, the firm names and addresses, the car initials and numbers when shipped by railroad, and the weights or other units of measure. In the case of material which is to be incorporated in the permanent work, the invoices or shipping bills will be so worded or marked that each item, piece or member can be definitely identified on the drawings.

GC-41. COST DATA. - The Government will keep a record of the costs of the work performed under these specifications and the contractor shall permit the contracting officer to have access to his timekeeping, invoices and plant records for this purpose. The contractor shall also furnish the contracting officer with a statement of the initial cost and date of purchase of all plant used in connection with the work.

GENERAL CONDITIONS

(See paragraph IV (d), Invitation for Bids.)

GC-42. ADJUSTMENT OF CONTRACT PRICE BY REASON OF CHANGE IN FEDERAL, STATE OR LOCAL TAXES. - Unless otherwise indicated, the prices herein include any Federal, state and local tax or charge heretofore imposed which is applicable to the supplies or work covered hereby. If after the date of award, the Federal Government or any state or local government shall impose, remove or change any duty, sales, use or excise tax or any other tax or charge directly applicable to the supplies or work covered hereby or the materials used in the manufacture thereof or directly upon the importation, production, processing, manufacture, construction or sale of such supplies, work, or materials, which tax or charge must be borne by the contractor because of a specific contractual obligation or by operation of law, or in case of a decrease or elimination of a tax, where the contractor is relieved to that extent, and if in case of an increase in an existing tax or the imposition of a new tax the contractor has paid such tax or charge to the Federal Government or a state or local government, or any person, then the prices named herein will be increased or decreased accordingly and any amount due to the contractor as a result of such change will be charged to the Government and entered on vouchers (or invoices) as a separate item; provided, however, that the Government reserves the right to issue to the contractor in lieu of such payment a tax exemption certificate or certificates acceptable to the Federal Government or state or local government, as the case may be, and the contractor agrees, in the case of any such state or local tax or charge, to take such steps as may be requested by the Government to cause such tax or charge to be paid under protest, to preserve and to cause to be assigned to the Government any and all rights to the refund of such tax or charge, and to furnish to the Government all reasonable assistance and cooperation requested by the Government in any litigation or proceeding for the recovery of such tax or charge; and Provided further, That nothing contained herein shall be construed as requiring the Government to reimburse the contractor for any Federal, state or local income taxes, income surtaxes or excess profits taxes.

GC-43. RESTORATION OF SITE. - Before final payment is made, the contractor shall remove from the site, without expense to the Government, all rubbish, unused materials provided by him, temporary buildings and other structures erected by him, shall fill all holes or cavities made for his convenience, except as otherwise provided, and shall leave the entire site in good order and condition, all as required by the contracting officer.

GC-44. FINAL EXAMINATION AND ACCEPTANCE.- When all work called for under this contract has been completed, the contracting officer will make a thorough examination of the same and, if it is found to fully comply with the requirements of the contract, it will be accepted and final payment will be made in accordance with the provisions of Article 16 (d) of the contract.

WAR DEPARTMENT
U. S. ENGINEER OFFICE
ALBUQUERQUE DISTRICT
ALBUQUERQUE, NEW MEXICO

APPROPRIATION: 212/30905 ENGINEER SERVICE ARMY, 1942 and 1943
(A 0905-23).

SPECIFICATIONS: CONSTRUCTION OF ROADS AND DRAINAGE, GRANADA RELOCATION
CENTER, COLORADO.

SECTION I

SPECIAL PROVISIONS

1-01. LOCATION. - The site of the work is near Granada, Colorado.

1-02. WORK TO BE DONE. - The work to be performed under this contract, in accordance with these specification, is authorized by the Fifth Supplemental National Defense Appropriation Act, 1942, approved March 5, 1942, (Public Law 474, 77th Congress - Second Session), and consists of furnishing all plant, labor and materials, for the construction, in accordance with the drawings and with these specifications, of Roads and Drainage, Granada Relocation Center, Colorado.

1-03. DRAWINGS.

(a) The work shall conform to the following drawings marked, "Roads and Drainage, Granada Relocation Center, Colorado," which form a part of these specifications and which are filed in the U. S. Engineer Office, Albuquerque, New Mexico. There are 8 sheets of drawings with file numbers as follows:

<u>Designation</u>	<u>File No.</u>
Index to Drawings	GC-R-1/1
1st Street (Access Road) - Plan & Profile	GC-R-1/2
Building Area Roads - Plan	GC-R-1/3
2,3,4,5,6,7,8, & 9 streets - Profiles	GC-R-1/4
10,11, 12 Streets - Disposal Plant Road, Garbage Field Road, A,B, & C Streets - Profiles	GC-R-1/5
E,F,& G Streets - Profiles	GC-R-1/6

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

<u>Designation</u>	<u>File No.</u>
H, K, L & M Streets and Intercepting Ditch - Profiles	GC-R-1/7
Typical Roadway and Ditch - Cross Section & Details	GC-R-1/8

(b) Ten sets of prints of necessary contract drawings and ten sets of specifications will be furnished the contractor without charge. Additional sets may be secured upon request at cost of reproduction.

(c) The work shall also conform to such modifications as may be furnished by the contracting officer, as stated under "General Conditions."

1-04. QUANTITY OF WORK. - The following quantities of work to be done under these specifications is given only to serve as basis for canvassing bids and for determining the approximate amount of the consideration of the contract. The contractor will be required to perform under the following items all the work specified in paragraph 1-02, be it more or less than the quantities listed below.

<u>Item No.</u>	<u>Designation</u>	<u>Unit</u>	<u>Quantity</u>
1.	Clearing and Grubbing	Acre	50
2.	Excavation, Unclassified	Cu.Yd.	47,500
3.	Crushed Rock Surfacing	Cu.Yd.	21,000
4.	Bituminous Material, Prime Coat	Gallon	11,800
5.	Bituminous Material, Seal Coat	Gallon	8,000
6.	Aggregate, Armor Coat	Ton	400
7.	4" Concrete Slab, Coal Storage	Sq.Yd.	19,800
8.	12" Culvert Pipe, installed	Lin.Ft.	168
9.	18" Culvert Pipe, installed	Lin.Ft.	392
10.	24" Culvert Pipe, installed	Lin.Ft.	512
11.	30" Culvert Pipe, installed	Lin.Ft.	224
12.	36" Culvert Pipe, installed	Lin.Ft.	140

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

1-05. COMMENCEMENT, PROSECUTION AND COMPLETION.

(a) The contractor will be required to commence the work to be done within one calendar day after the date of receipt by him of notice of award, to prosecute the said work with faithfulness and energy, and to complete the entire work on or before August 31, 1942, plus any extension of time duly granted under the provisions of the contract and specifications. If any bid is accepted, a letter contract will be issued within three days after opening of bids, pending execution of the formal contract on the prescribed form. Work shall be prosecuted vigorously during all seasons of the year.

(b) In case of failure on the part of the contractor to complete the work to be done within the time thus determined and agreed upon for its completion as set forth in sub-paragraph (a) above, the Government may, by written notice to the contractor, terminate his right to proceed with the work or such part of the work as to which there has been delay. In such event the Government may take over the work and prosecute the same to completion, by contract or otherwise, and the contractor shall be liable to the Government for any excess cost occasioned the Government thereby.

1-06. SUNDAYS, HOLIDAYS AND NIGHTS.- Work shall be prosecuted on Sundays and holidays on the same basis as on other week days. Work at night shall be at the option of the contractor subject to the requirements of paragraph 1-05 and GC-37.

1-07. PRIORITIES.- A priority rating of A-1-e will be established for this contract. (See General Conditions).

1-08. EQUIPMENT FURNISHED BY THE GOVERNMENT.- None.

1-09. MATERIAL, PROCUREMENT OF WHICH IS ARRANGED BY THE GOVERNMENT.- None.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

1-10. MINIMUM WAGE RATES.

(a) The minimum wages to be paid laborers and mechanics on this project, as determined by the Secretary of Labor to be prevailing for the corresponding classes of laborers and mechanics employed on projects of a character similar to the contract work in the pertinent locality, are as follows:

Classification of Laborers and Mechanics: Minimum Rates of Wages per Hour.	
Air Tool Op. (Jack hammerman, Vibrator)	\$.75
Asbestos Workers	1.40
Asbestos Workers Improvers, 1st Year	.85
" " " 2nd Year	.95
" " " 3rd Year	1.00
" " " 4th Year	1.05
Asphalt Rakers	.625
Asphalt Shovelers	.625
Blacksmiths	1.25
Blaster-Powderman	1.25
Boilermakers	1.50
Blasters Helper	.80
Boilermakers Helpers	1.375
Bricklayers	1.65
Bricklayers Apprentices	
1st 6 months 20 per cent of journeymen's rate	
2nd 6 " 20 " " " " "	
3rd 6 " 30 " " " " "	
4th 6 " 35 " " " " "	
5th 6 " 50 " " " " "	
6th 6 " 60 " " " " "	
7th 6 " 65 " " " " "	
8th 6 " 75 " " " " "	
Carpenters, Journeymen	1.25
Carpenters Apprentices, 1st 6 months	.50
2nd 6 months	.50
3rd 6 months	.65
4th 6 months	.65
5th 6 months	.80
6th 6 months	.80
7th 6 months	.95
Cement Finishers	1.25
Electricians	1.50
Electricians Apprentices, 1st year - \$10.00 per week	
2nd year	.55
3rd year	.70
4th year	.80

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

Elevator Constructors	\$ 1.50
Elevator Constructors Helpers	1.05
Firemen and Oilers	1.00
Glaziers	1.30
Iron Workers, Structural	1.50
Iron Workers, Ornamental	1.50
Iron Workers, Reinforcing	1.50
Iron Workers Apprentices	
1st 6 months 50 per cent of journeymen's rate	
2nd 6 " 60 " " " " " "	
2nd year 66-2/3 " " " " " "	
Laborers, Unskilled	.625
Lathers, Metal	1.50
Lathers, Wood	1.25
Marble Setters	1.50
Marble Setters Helpers	1.00
Mason Tenders	.90
Mortar Mixers	.90
Millwrights	1.25
Painters, Brush	1.25
Painters, Spray	1.50
Painters, Structural Steel	1.50
Painters Apprentices	
1st year 25 per cent of journeymen's rate	
2nd " 33 " " " " " "	
3rd " 50 " " " " " "	
4th " 75 " " " " " "	
Painters, Sign	1.50
Piledrivermen	1.25
Pipe Layers (Concret: and Clay)	.75
Plasterers	1.50
Plasterers Tenders	.90
Plumbers	1.50
Plumbers Apprentices, 1st year \$13.71 per week	
2nd " 16.00 " "	
3rd " 20.57 " "	
4th " 22.86 " "	
5th " 28.57 " "	
Power Equipment Operators	
Air Compressors, 750 cu. ft. or under	.80
Air Compressors, over 750 cu. ft.	1.25
Asphalt Plat	1.43
Backfiller	1.43
Bulldozers	1.43
Cranes, Derricks, Draglines	1.50
Finishing Mach. (Cem. Conc. Pave.)	1.10
Hoists, 1 Drum	1.25
Hoists, 2 or more Drum	1.43
Loader or Conveyor	1.25

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

Mixers, 1 cu. yd. or less	\$ 1.25
Mixers, over 1 cu. yd.	1.43
Motor Graders	1.43
Filedriers	1.50
Pumps, under 100 H.P.	.80
Pumps, 100 H.P. or over	1.10
Rollers	1.43
Scrapers	1.43
Scrapers (Le Tourneau)	1.43
Shovels	1.50
Tractors, over 35 H.P.	1.43
Tractors, 35 H.P. or under	1.00
Trenching Machines	1.43
Roofers, Composition	1.25
Roofers, Slate and Tile	1.25
Roofers, Helpers	.80
Sheet Metal Workers	1.25
Sheet Metal Workers Apprentices	
1st 6 months 35 per cent of journeymen's rate	
2nd 6 " 40 " " " " "	
3rd 6 " 45 " " " " "	
4th 6 " 50 " " " " "	
5th 6 " 55 " " " " "	
6th 6 " 60 " " " " "	
7th 6 " 70 " " " " "	
8th 6 " 80 " " " " "	
Soft Floor Layers (Linoleum)	1.15
Steam Fitters	1.50
Steam Fitters Apprentices	
1st year \$3.43 per day	
2nd year \$4.00 per day	
3rd year \$4.57 per day	
4th year \$5.49 per day	
Stone Cutters or Masons	1.50
Tank Builders	1.60
Tank Builders Helpers	1.40
Terrazzo Workers Helpers	.90
Tile Setters	1.50
Tile Setters Helpers	.90
Truck Drivers, 1-1/2 tons or less	.75
Truck Drivers, over 1-1/2 tons	1.00
Welders - Receive rate prescribed for craft performing operation to which welding is incidental	
Well Drillers	1.25
Well Drillers Helpers	.90
Wreckers	.625

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

Glaziers Apprentices	\$	
1st year, 2nd 6 months		.46
2nd year, 1st 6 months		.49
2nd year, 2nd 6 months		.57
3rd year, 1st 6 months		.65
3rd year, 2nd 6 months		.72
4th year, 1st 6 months		.86
4th year, 2nd 6 months		.97
Terrazzo Workers		1.50

(b) Any class of laborers and mechanics not listed in the preceding paragraph, which will be employed on this contract, shall be classified or reclassified conformably to the foregoing schedule. In the event the interested parties cannot agree on the proper classifications or reclassification of a particular class of laborers and mechanics to be used, the question, accompanied by the recommendation of the contracting officer, shall be referred to the Secretary of Labor for final determination.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

SECTION II

EXCAVATION, GRADING AND BACKFILL

2-01. SCOPE. - The work to be done under this section consists of furnishing material and equipment, and performing all labor necessary to do all earth work as shown on the drawings, and as specified herein, including clearing and grubbing, excavation and grading, ditching, backfilling, borrow excavating, compaction of embankments, preparation of subgrade and shoulders; all as directed by the contracting officer.

2-02. GENERAL.

(a) Surveys. - The layout of the work pertinent under this section, including lines and grades, shall proceed in the manner and in strict accordance with the provisions specified in paragraph GC-13, "Lines, Grades and Stakes."

(b) Definitions. - The terms "Excavation," and "Grading," shall apply to any materials encountered, of whatever kind, wet or dry.

(c) Stripping. - Materials determined by the contracting officer to be unfit to remain in place shall be removed and placed in embankments or disposed of as directed, at no extra cost to the Government.

(d) Borrow and Waste.

(1) When the quantity of materials obtained from the excavations made as shown on the drawings and as directed is greater than required to construct the embankments, or when materials from the excavations are determined by the contracting officer to be unfit for use in embankments, the contractor will be required to waste the excess materials at locations determined by the contracting officer. All waste areas shall be finished to the same degree as other parts of the grading work.

(2) When the quantity of suitable material obtained from the excavations is not great enough to construct the embankments as shown on the drawings and as directed, the contractor will be required to obtain materials from borrow pits at locations determined by the contracting officer and shaped as directed. All side slopes and bottoms of borrow pits shall be neatly finished and, where possible well drained. Unsuitable material encountered in borrow pits shall be wasted.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

2-03. CLEARING AND GRUBBING. - All fences, cacti or other undergrowth within the area to be graded, as shown on the drawings or directed by the contracting officer, shall be cleared from the area and burned or otherwise disposed of as directed by the contracting officer. Roots shall be grubbed to a depth of 6 inches or to such depth as is necessary, as determined by the contracting officer. Grass and weed growth on areas to be graded, including that on areas upon which fill is to be placed, shall be removed and in no case shall be incorporated in fill. Clearing and grubbing will not be required for the areas occupied by drainage ditches and spoil banks.

2-04. ROADWAY EXCAVATION. - The contractor shall excavate for roadways to the lines and grades shown on the drawings and as directed by the contracting officer. Where excavated material contains excessive amounts of clay or silts, or is otherwise unsuitable for use in embankments, as determined by the contracting officer, the contractor may be required to waste such material in areas designated by the contracting officer.

The roadway excavation shall be made accurately to the cross-sections shown on the drawings and as directed by the contracting officer. All slopes shall be trimmed accurately to the slopes as staked on the ground, and care shall be exercised that no material shall be loosened beyond the required slope.

The contractor shall finish cut slopes and ditch and roadway cross-sections to the degree of finish ordinarily secured by machine-finish methods. During construction of the roadway, roadbed shall be maintained in good condition, and shall be kept well drained at all times.

2-05. EXCAVATION FOR DRAINAGE DITCHES. - The contractor shall excavate all drainage ditches shown on the drawings or where directed by the contracting officer. The ditches shall be excavated true to the lines, grades and cross-sections shown on the drawings, or as staked. Care shall be taken to insure that excavation is not made below the flow-line grade of the ditch. Ditch side-slopes shall be finished to a degree commonly secured by machine-finishing methods, and the ditch shall be left in a condition to provide maximum hydraulic efficiency. All temporary plugs or dams shall be removed from the ditches, and entrance ditches shall be shaped to facilitate entrance of surface water. Outlets of ditches shall be excavated to borrow pits, connecting ditches, or natural drainage courses as shown on the drawings, and as directed by the contracting officer.

2-06. EXCAVATION FOR CULVERTS. - The contractor shall excavate, where necessary, for installation of roadway culverts at the locations shown on the drawings, and as directed by the contracting officer.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

Pipe trenches shall be made sufficiently wider than the outside diameter of the pipe to be installed to permit the installation and jointing of the pipe. The trench excavation shall be carried to a firm and even bearing at the required grades. Side slopes of trench excavation shall be held as nearly vertical as possible. Should the trench excavation, through accident, or if directed by the contracting officer because of unsuitable foundation conditions, be excavated below the established grade-line, the contractor shall backfill the trench subgrade with sand, gravel, or other approved granular material, up to the grade of the bottom of the pipe, to form a foundation bed for the pipe to be installed. The contractor shall excavate necessary inlet and outlet ditches for culverts to facilitate flow of water through the structures as part of the excavation for the culverts.

2-07. EMBANKMENT. - The contractor shall construct all embankments in roadways and over and around structures, as shown on the drawings, as specified herein, and as directed by the contracting officer. Wherever the methods and degree of consolidation of embankment material is not definitely specified herein, the contractor shall place all fill material in a manner satisfactory to the contracting officer.

(a) Roadway Embankment. - Excavated material from areas of roadway excavation, drainage ditches or borrow pits, meeting the requirements of these specifications, and with the approval of the contracting officer, shall be deposited in roadway embankment in such quantities that after compaction the cross-section of the roadway subgrade will conform at all points to the lines, grades and cross-sections shown on the drawings, and as staked. Only suitable and satisfactory material obtained from excavations shall be used in embankments. The material shall be free from stumps, trees, roots or other vegetable matter, and shall be free from large clods or frozen lumps. No adobe material shall be placed in embankment above a height of one foot below the surface of the finished roadway subgrade.

If, in the judgement of the contracting officer, the soil on which the roadway embankment is to be constructed is not suitable to carry the superimposed load, such unsuitable soil within the limits of the embankment slopes shall be stripped to a depth of 2 feet below the ground surface, the excavated material wasted, and additional suitable embankment material placed and compacted as hereinafter specified.

The use of draglines or other equipment dumping embankment material directly on the roadway fills in layers of greater thickness than specified herein will not be permitted.

(b) Compaction. - Roadway embankments shall be placed in successive layers of not more than 8 inches in depth for the full width of the roadway. The embankment shall be kept substantially level

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

at all times, and end-dumping on fills will not be permitted. Embankment material shall be compacted in place to produce a density for the material being used of not less than 95 per cent optimum, as determined by the contracting officer. All equipment used for hauling and depositing, grading and compaction of roadway embankment material shall meet the approval of the contracting officer.

(c) Mixing and Rolling. - The contractor shall add water to the embankment material in quantities directed by the contracting officer, shall thoroughly mix the water and embankment material by discing, blading or other approved methods, and shall roll each layer of the embankment with a sheepsfoot roller until the specified degree of the compaction has been secured. In the event rain or snow leaves the embankment fill in a muddy or unstable condition, a light lift of borrow material shall be placed over the grade and mixed with the unstable material by discing and blading until excess moisture has been worked up into the lift being rolled. This process shall be repeated until all excess moisture has been eliminated before continuing placing additional layers of the embankment. The rate of placing embankment material shall be coordinated with the rolling operations, and if necessary to keep the top of the embankment substantially level and free from ruts, and as directed by the contracting officer, blade grading shall be alternated with the passage of the roller.

(d) Description of Roller. - Rollers used for compacting earth fills shall be of the studded tamping or sheepsfoot type. The sheepsfoot roller shall consist of one or more units. Each unit shall consist of a watertight, cylindrical drum not less than 48 inches in length and shall be surmounted by metal studs with tamping feet projecting not less than 7 inches from the surface of the drum, and spaced not less than 6 inches nor more than 10 inches, measured diagonally from center to center.

The cross-sectional area of each tamber foot shall be not less than 5-1/2 square inches nor more than 9 square inches. The weight of the unit shall be such that the load on each tamber foot in one row parallel to the axis of the roller shall be so designed that the weight may be increased to at least 250 p.s.i. Each unit shall be provided with suitable tamber feet cleaning devices. The roller used shall be subject to the approval of the contracting officer.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

(a) Backfilling for Roadway Culverts. - After the roadway culvert pipe has been installed and jointed, selected material consisting of fine, loose earth, free from large clods or stones shall be carefully deposited on both sides of the pipe simultaneously, in layers not exceeding 6 inches in depth. The backfill material shall be thoroughly compacted, so that on each side of the pipe there shall be a berm of compacted material at least as wide as the exterior diameter of the pipe, except insofar as undisturbed material obtrudes upon this area. If directed by the contracting officer, backfill material which is dry shall be wetted before compaction. Compaction may be done by rolling in a direction parallel to the center line of the pipe, or by tamping with mechanical tampers, or by hand tamping, special care being taken to compact the fill thoroughly under the haunches of the pipe. Backfilling and compaction for roadway culvert pipe shall be continued until the embankment has reached an elevation 6 inches above the outside top of the pipe. When culvert pipes are placed wholly or in part in fill areas, the fill should be constructed to an elevation 12 inches above the top of the culvert pipe, then excavated as required for the pipe installation. Care shall be taken to insure that roadway embankment following the backfilling of the pipe trenches shall be so installed as to provide uniform density between the pipe backfill material and the roadway embankment material.

2-09. PREPARATION OF SUBGRADE. - In preparation for placing of surface courses, including coal storage concrete slab, and after the earthwork has been substantially completed and all drainage structures have been completed, the subgrade shall be finished to the lines, grades and cross-sections shown on the drawings, and as specified herein. The upper portion of the subgrade shall be constructed in such a manner that it will be of uniform density throughout its entire width. Where the roadway occurs in other than embankment, the subgrade shall be scarified to a depth of 6 inches and then compacted in the manner specified for roadway embankment in paragraph 2-07.

(a) Method. - The subgrade shall be brought to a true shape, and after final compaction shall be tested, and if not at the proper elevation and density at all points, subgrade material shall be removed, added or rolled as necessary to bring all portions of the subgrade to a correct elevation, and to conform strictly to the cross-sections shown on the drawings. When directed by the contracting officer, the subgrade shall be well wetted and rolled with an approved smooth roller, weighing not less than 200 pounds per linear inch of roller, or in lieu thereof, a rubber-tired roller of acceptable design, and weighing not less than 10 tons may be used. All soft and yielding spots shall be removed, and the space refilled with approved material.

Grading and shaping of the subgrade shall be done in such a manner that surface water accumulating on the surface of the subgrade may be collected and conducted to the side-ditches without damage to the subgrade. All side-ditches shall be kept open during construction.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

The contractor shall be responsible for maintaining the finished subgrade in its final and accepted form until such time as the stabilized base has been placed. If the finished subgrade is damaged by rain or by the passage of equipment, or for any other reason, it shall be reworked and reshaped as often as is necessary, and as directed by the contracting officer, to maintain the finished subgrade in a condition ready for placing of stabilized base. Storage or stockpiling of materials on the subgrade will not be permitted.

2-10. SHOULDERS. - After the earthwork has been substantially completed, and after all trenches have been installed, the roadway shoulders shall be constructed of approved materials, to the elevation and shape as shown on the drawings, and as staked, and after the surface course of pavement is completed, the shoulders shall be graded and dressed as directed to provide the full width of roadbed outside the lines of surfacing, as shown on the cross-sections of the drawings.

(a) Method. - Before any subgrade shall be finally approved, the adjacent shoulders shall be constructed to full width and to proper elevation. In all cases where subgrade rolling is required, the rolling operation shall be extended onto the shoulders for a distance at least one foot outside the pavement or surface course. When the surface course has been completed, the shoulders shall be shaped, additional material being added as necessary, compacted and trimmed to the lines, elevation and cross-section shown on the drawings, and as directed by the contracting officer. The side-slopes of roadway embankment shall be redressed where necessary, and excess material from side-ditches removed. The degree of finish of shoulders and adjacent side-slopes shall be equal to that ordinarily secured by machine-finishing methods.

2-11. DISPOSAL OF SURPLUS MATERIAL. - Any excess of earth excavation not required for embankments, or considered by the contracting officer to be of improper quality, shall be deposited where and as directed by the contracting officer.

2-12. FINAL GRADING. - In all areas for disposal of surplus material as directed by the contracting officer, the contractor shall grade the surface to conform to the finish grades given, in such a manner as to prevent the accumulation of water within each of the areas affected. All areas of operation of the work required under this section, whether excavation, borrow, or embankment, shall be left in a clean and neat condition. All surplus or waste construction material shall be removed from the site, and disposed of as directed by the contracting officer.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

2-13. PAYMENT.

(a) Clearing and Grubbing. - Clearing and grubbing will be measured on the basis of area actually cleared and grubbed in an approved manner. Payment will be made at the contract price, per acre, for "Clearing and Grubbing," which shall include all costs in connection with clearing the site, grubbing roots which are required to be removed, and disposing of all vegetation, roots, and foreign material, as directed by the contracting officer.

(b) Excavation. - Measurement of excavation for roadway and drainage ditches will be based on the actual yardage removed, and will be computed on the basis of cross-sections taken before construction and the final excavated lines as shown on the drawings or required by the contracting officer.

(1) Roadways. - Payment will be made at the contract unit price per cubic yard for "EXCAVATION; Unclassified." Payment will be made only on the volume removed in excavation as specified above, or borrowed to supply any deficiency of material, and shall include all costs of excavating, transporting, wetting and rolling, and preparation of subgrade and shoulders.

(2) Drainage Ditches. - Payment for drainage ditches will be made at the contract unit price per cubic yard for "EXCAVATION; Unclassified," which shall include construction of spoil banks where required and all incidentals necessary to complete the item.

(3) Excavation for culverts will not be paid for directly, but shall be included in the contract unit price for the size culvert installed.

(c) Concrete Slabs. - Excavation for the coal storage concrete slabs will be measured and paid for as specified under Section VI, "Coal Storage Concrete Slabs."

SECTION III

CRUSHED ROCK SURFACING

3-01. SCOPE. - The work to be done under this section consists of furnishing material and equipment and performing labor necessary to construct surfacing in two courses on the prepared subgrade, to conform with the lines, grades, and typical cross-sections shown on the drawings, and in accordance with these specifications. The bottom course shall be 4-inch compacted thickness and the top course 2-inch compacted thickness. The following types of roads are included on the drawings:

(a) Type A Roads. - Primary roads, shown on the drawings as Type A, shall receive the asphaltic surfacing armor coat treatment, as specified under Section VI, "Asphaltic Surfacing-Armor Coat," in addition to the 6-inch crushed rock surfacing specified herein and as detailed on the drawings.

(b) Type B Roads. - Primary roads shown on the drawings as Type B roads, shall be surfaced only with the 6-inch crushed rock surfacing specified herein and as detailed on the drawings.

(c) Roads Not to be Surfaced. - Secondary roads as shown on the drawings shall have blade graded, compacted earth surface only.

3-02. MATERIALS. - Several deposits of local surfacing materials are available in the vicinity of the project. Materials from any source meeting the requirements of this specification and the approval of the contracting officer may be used in the work.

(a) The surfacing material shall be uniformly graded and when tested by means of laboratory sieves (A.A.S.H.O. Method T-27-38), shall meet the following requirements:

(1) Surfacing Material for the Bottom Course:

Passing a Sieve with one inch square openings	100%
Passing a Sieve with 3/8-inch square openings, not more than	75%
Passing a No. 10 Sieve	30% to 55%
Passing a No. 200 Sieve	7% to 15%

(2) Surfacing Material for the Top Course:

Passing a Sieve with 3/4-inch square openings	100%
Passing a Sieve with 3/8-inch square openings, not more than	80%
Passing a No. 10 Sieve	35% to 60%
Passing a No. 200 Sieve	7% to 15%

(3) Abrasion Test. - The surfacing material shall have a percentage of wear of not more than 50 per cent when tested in accordance with "Standard Los Angeles Abrasion Test of Coarse Aggregates," A.A.S.H.O., (Method T-96-38).

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

(4) Binding Material. - The contractor shall be required to provide a screen or other suitable means to eliminate fines below the No. 10 sieve if such fines should prove to be objectionable material.

If sufficient binding material of satisfactory quality is not produced in the quarry, it shall be obtained and added by the contractor as part of the operation of furnishing surfacing material. Also, the contractor will be required to manipulate the materials at the gravel quarries to produce material complying with the grading and other requirements of these specifications, and the contractor will be required to dispose of all clay pockets or other unsuitable materials encountered in the quarries.

(5) Liquid Limit and Plasticity. - Material passing the No. 200 sieve shall be less than one-half the material passing the No. 40 sieve. The material passing the No. 40 sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than 8. The liquid limit shall be determined in accordance with "Standard Method of determining the Liquid Limit of Soils," A.A.S.H.O. Method T-89-38. The plasticity index shall be determined in accordance with "Standard Method of Determining the Plasticity Index of Soils," A.A.S.H.O. Method T-91-34.

3-03. CONSTRUCTION METHODS.

(a) General. - All acceptable surfacing material shall be screened and, if necessary, the over-size shall be crushed and returned to the screened material in such manner that uniform product will be produced. The contractor shall weigh and place the material on the prepared subgrade in two courses, conforming to the width and thickness shown on the drawings, and as approved by the contracting officer.

(b) First Course. - The contractor shall commence depositing the material on the prepared subgrade or on a completed course at the point farthest from the point of loading unless otherwise directed by the contracting officer. The materials shall be delivered to the subgrade in approved vehicles of a uniform capacity and it shall be the responsibility of the contractor that the required amount of material shall be delivered at all points to construct the compacted thickness indicated on the drawings.

Material deposited upon the subgrade shall be spread and shaped the same day. After placing the material, it shall be moved by heavy blade machine into a windrow to one side of the subgrade. The windrowed material shall then be bladed with a revolving motion from one side of the roadbed to the other. The areas or nests of segregated coarse or fine materials shall be corrected or removed and replaced with well-graded material as directed by the contracting officer. If additional or corrective binder is considered desirable or necessary, it shall be furnished and spread by the contractor in the amount directed by the contracting officer.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

Such added binding material shall be carefully and evenly incorporated with the material in place by scarifying, harrowing, or other approved methods.

The materials shall be wetted and scarified to distribute the moisture uniformly as required, bladed to the proper section and compacted as hereinafter specified.

During compaction of the first layer and before placement of the second layer, the surface of the first layer shall be reshaped where necessary by blading.

(c) Second Layer. - The second layer shall be placed and mixed by the same methods described above for the first layer and shall be rolled and compacted as hereinafter specified.

(d) Rolling. - Each layer of the surfacing shall be compacted by rolling with a sheepsfoot roller conforming to the applicable provisions of Section II, "Excavation, Grading and Backfill." The material shall be wetted and compacted by rolling until a density of not less than 95 per cent of optimum throughout the full depth of the layer is obtained in accordance with the standard tests of A.A.S.H.O. T-99-38. Rolling and blading shall be alternated to secure the proper cross-section and additional material added to correct any irregularities or depressions that develop under rolling. The second course shall be compacted in the same manner as the first course. In addition to the compaction specified for the first layer, the second layer, after compaction, shall be bladed with a heavy blade grader and rolled with a smooth roller alternating with the blade grader as required or directed to obtain a smooth, even, uniformly compacted surface.

The smooth roller shall be tandem or three-wheeled roller, weighing not less than 8 tons. The type of smooth roller shall be subject to the approval of the contracting officer. Rolling will progress gradually from the sides to the center parallel to the centerline of the road and lapping uniformly each preceding track by one-half the width of the track.

3-04. TESTS. - Upon completion of the crushed rock surfacing, tests shall be made at points selected by the contracting officer to determine the actual thickness and compaction of the course. Test samples shall be taken and the test area repaired by the contractor with no additional cost to the Government. If such tests do not show satisfactory depth and compaction, the surfacing shall be corrected by the contractor.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

3-05. MEASUREMENT AND PAYMENT. - Surfacing will be measured for payment on the basis of the number of cubic yards placed and compacted, measured in place, for completed and accepted work. Measurement will not be made of material placed outside the lines and grades shown on the drawings, or of materials rejected at the site of the work by the contracting officer as not meeting the requirements of these specifications.

Payment for surfacing will be made at the contract unit price, per cubic yard, for "Crushed Rock Surfacing," which shall include furnishing all materials and equipment, and performing all labor necessary to complete the item in place, as shown on the drawings and as specified herein, including furnishing of material, crushing, screening, mixing, hauling, placing on subgrade, manipulating, wetting, and compacting, and all incidentals necessary to complete the item.

SECTION IV

COAL STORAGE CONCRETE SLAB

4-01. SCOPE. - The work to be done under this section consists of furnishing all material and equipment and performing the necessary labor to do all concrete work shown on the drawings or hereinafter specified.

4-02. CONCRETE.

(a) Composition. - Concrete shall be composed of portland cement, fine aggregate, coarse aggregate and water so proportioned and mixed as to produce a plastic, workable mixture in accordance with all requirements under this section and suitable to the specific conditions of placement.

(b) Strength. - Except as otherwise specified herein, the mix will be designed to secure concrete having the following compressive strength at the age of 7 and 28 days, as determined by breaking standard 6" by 12" or 8" by 16" test specimens:

<u>Class</u>	<u>Minimum Average for any 5 consecutive cylinders</u>	<u>Minimum for any one cylinder</u>
C	2000 lbs. per sq. in.	1600 lbs. per sq. in.

(1) "Class C" Concrete. - "Class C" concrete shall be used in all work.

(c) Cement. - Cement shall be portland cement conforming to Federal Specification SS-C-191b. Only one brand of cement shall be used for work covered by these specifications.

(d) Fine Aggregate.

(1) Composition. - Fine aggregate shall be natural sand.

(2) Quality. - Fine aggregate shall consist of hard, strong, durable and uncoated particles and shall conform to Federal Specification SS-A-281a and Amendment 1, dated November 12, 1941, "Class 1," except as otherwise specified.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

(3) Grading. - Fine aggregate shall be well graded from coarse to fine and when tested by means of U. S. Standard sieves shall fall within the following limits of gradation:

<u>Total Passing</u>	<u>Per Cent by Weight</u>
No. 4 sieve	95 - 100
No. 16 sieve	35 - 75
No. 50 sieve	10 - 25
No. 100 sieve	2 - 8

(e) Coarse Aggregate.

(1) Composition. - Coarse aggregate shall be washed gravel or crushed stone.

(2) Quality. - Coarse aggregate shall consist of hard, tough, durable particles free from adherent coating. It shall contain no vegetable matter nor soft, friable, thin, or elongated particles in quantities considered deleterious by the contracting officer. The substances designated shall not be present in excess of the following amounts:

Soft fragments	5%
Clay lumps	1/4%
Material removed by decantation	1%
The total amount of deleterious material shall not exceed 5%.	

When the material removed by decantation consists essentially of crushed dirt, the maximum amount permitted may be raised to 1-1/2 per cent. Aggregate which has disintegrated or weathered badly under exposure conditions similar to those which will be encountered by the work under consideration shall not be used. When crushed stone is used, the crusher shall be equipped with a screen system which will entirely separate the dust from the stone and convey it to a separate bin.

(3) Size. - Coarse aggregate shall be well graded from fine to coarse so that concrete of the required workability, density and strength can be made without the use of an excess amount of sand, water or cement. The maximum size mesh screen for the coarse aggregate shall be determined by the contracting officer. In general, the following provisions shall govern for the classes of concrete.

For "Class C" concrete, the maximum size mesh screen for the aggregate shall not be less than 3/4 inch nor more than 1-1/2 inches.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado,

The grading of coarse aggregate in the mixed concrete shall fall within the following limits:

	<u>Per Cent by Weight Passing</u>
Maximum size mesh screen (Square mesh)	97 - 100
1/2 maximum size mesh screen (Square mesh)	40 - 70
No. 4 sieve	0 - 6

(f) Water. - The water used in mixing concrete shall be clean and free from oil, acids, alkalies, vegetable, sewage or other deleterious matter.

(g) Proportioning. - All concrete materials will be proportioned so as to produce a workable mixture of the strength specified, in which the water content will not exceed the maximum specified. The proportions of all materials entering into the concrete shall be as directed by the contracting officer. The contractor shall provide all equipment necessary to determine and control the actual amounts of the various materials, including water, cement, fine aggregate, and coarse aggregate entering into the concrete. Proportions will be changed whenever in the opinion of the contracting officer such changes become necessary to obtain the specified strength and desired workability, and the contractor will not be compensated because of such changes. The cement content for each cubic yard of concrete shall be approximately 4-1/2 bags. The cement content shall be at all times subject to variation as deemed necessary by the contracting officer to obtain the results desired. The total water content per bag of cement for each batch of concrete shall not exceed 7-1/2 gallons. The total volume of aggregates to be used in each cubic yard of the concrete shall be determined by the contracting officer.

(h) Mixing and Placing.

(1) Mixing. - Mixing shall be done in batch mechanical mixers of approved type. Mixers shall be equipped with a positive automatic water measuring device to cut off flow when the desired quantity has been released. Mixers shall assure complete distribution of ingredients throughout the mass and produce homogeneous concrete of uniform color. Volume of materials mixed per batch shall not exceed rated capacity of mixer. Each batch shall be mixed for not less than 1-1/2 minutes. The entire contents shall be discharged before recharging, and the mixer cleaned frequently. Retempering of concrete or mortar which has been allowed to stand longer than 30 minutes or which has partially hardened will not be permitted.

(2) Removal of Water. - Water shall be removed from excavations prior to the depositing of concrete.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

(3) Placing. - Concrete shall be taken from the mixer to the place of deposit in a continuous manner as rapidly as practicable, without separation or loss of ingredients, until the unit of operation approved by the contracting officer is completed. Concrete shall not be allowed to drop freely more than 5 feet unless approved by the contracting officer. Concrete as soon as deposited shall be worked into corners by spading, rodding, or by the use of mechanical vibrators.

(4) Placing Temperatures. - Temperatures of the concrete when placed in the forms shall not be more than 90 degrees F., nor less than 40 degrees F. Suitable means shall be provided for maintaining an ambient temperature surrounding the concrete of at least 50 degrees F. for a period of 5 days after placing.

(1) Ready Mixed Concrete. - If authorized by the contracting officer, ready mixed concrete may be used in lieu of concrete mixed at the job. All mixing requirements herein specified for the concrete mixed at the site shall be in force, and the contracting officer shall have free access to the mixing plant at all times. Concrete shall not be used in any case after a period in excess of 1/2 hour after addition of water. The organization supplying the ready mixed concrete shall have a plant of sufficient capacity and transportation facilities to assure continuous delivery at the rate required. The sequence of deliveries to the job shall meet the approval of the contracting officer.

(j) Test Specimens. - To determine whether the compressive strength of the concrete is in accordance with that specified in paragraph 4-02.(b), test specimens will be taken by the Government inspector. A sufficient number of specimens will be taken to give a comprehensive knowledge of the concrete in each section of the work. All specimens will be taken from the concrete in accordance with the current specifications of the American Society for Testing Materials. The specimens will be tested by and at the expense of the Government.

4-03. FORMS

(a) Material.

(1) Unexposed Surfaces. - Unexposed surfaces shall have Forms of No. 2 common grade or better lumber.

(2) Exposed Surfaces. - Forms for exposed surfaces, except as otherwise indicated or directed, shall be dressed T&G lumber of quality to produce smooth even surfaces, or plywood not less than 5/8 inch thick, 5-ply.

Specifications: Roads and Drainage, Granda Relocation Center, Colorado.

(b) Construction. - Forms shall be built to shape, lines and dimensions of the concrete as shown on the drawings. Footings shall have side forms. Forms shall be set to line and grade; braced and secured to maintain shape and position and be sufficiently tight to prevent leakage of mortar. Joints shall be arranged vertically or horizontally. Temporary openings shall be located where required to facilitate cleaning and inspection. Used form lumber shall have nails withdrawn and contact surfaces thoroughly cleaned before re-use. All forms shall be so constructed that they can be removed without prying or hammering against the concrete.

(1) Form Ties. - Form ties shall, in general, be bolts or rods. Wire ties will be permitted only on light work; they shall not be used where, in the opinion of the contracting officer, surface discoloration will be objectionable. Bolts and rods shall be such that when forms are removed no metal shall be within 1-1/2 inches of the finished surface.

(2) Removal of Forms. - Forms shall not be disturbed until concrete has adequately hardened.

4-04. CURING.

(a) Warm Weather. - All concrete shall be adequately protected from injurious action by the sun. Fresh concrete shall be protected from heavy rains and mechanical injury. All concrete shall be kept wet for a period of not less than ten days by covering with water, with an approved water-saturated covering, or any other approved method such as "Paper" or "Membrane" curing which will keep all surfaces continuously (not periodically) wet. Where wood forms are left in place for curing, they shall be kept wet at all times to prevent opening at the joints and drying out of the concrete. Water for curing shall conform to the requirements of paragraph 4-02 (f), and shall be clean and entirely free from any elements which, in the opinion of the contracting officer might cause staining or discoloration of the concrete.

(b) Cold Weather. - Concrete when placed during cold weather shall be kept moist for not less than ten days and provided with adequate protection, subject to the approval of the contracting officer, so that the air in contact with the concrete will be maintained at temperature between 50 degrees F. and 70 degrees F. for at least the first five days of the curing period.

4-05. FINISHING.

(a) Rough Finish. - Concrete for which no other finish is specified shall have fins and rough edges removed.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

(b) Exposed Surfaces. - All unsightly ridges or lips shall be removed and local bulging shall be remedied by tooling and rubbing to the satisfaction of the contracting officer. All voids, unless otherwise directed by the contracting officer shall be reamed and filled with mortar mixed in the proportions as directed by the contracting officer.

(c) Slab Finish. - The slab shall be screeded level and shall be floated to an even surface within 45 minutes after the concrete is poured. The slab shall be marked off with a jointing tool and the corners edged as directed by the contracting officer.

4-06. FINAL.

(a) Imperfect or Damaged Work. - Imperfect or damaged work or any material damaged before final acceptance shall be satisfactorily replaced at the contractor's expense and in accordance with all requirements of the drawings and specifications. Removal or replacement of concrete work shall be done in such manner that the strength will in no way be impaired.

(b) Cleaning. - Upon completion of work, forms, equipment, protective coverings and rubbish resulting therefrom shall be removed from premises. Finished concrete surfaces shall be left in a clean condition satisfactory to the contracting officer.

4-07. PAYMENT.

(a) Concrete Slab. - The construction of coal storage concrete slabs will be paid for at the contract unit price, per square yard, for "4" Concrete Slab, Coal Storage," which price shall include furnishing all material, equipment and labor, preparation of subgrade, forming and all incidentals necessary to complete the item.

(b) Excavation. - Measurement for excavation required for the coal storage concrete slabs will be made as specified for roadways and drainage ditches in paragraph 2-13 (b) of these specifications. Payment will be made at the contract unit price per cubic yard for "EXCAVATION; Unclassified," which price shall include the cost of all excavating, transporting of excavated material, preparation of subgrade, wetting and rolling and all incidentals necessary to complete the item.

SECTION V

CULVERTS

5-01. SCOPE. - The work to be done under this section consists of furnishing all materials, equipment, and labor necessary to install culvert pipe where shown on the drawings, or as directed by the contracting officer. The contractor will be permitted to furnish and install either reinforced concrete culvert pipe or ploygon shaped wood drainage pipe as herein specified, at no change in the contract unit price.

REINFORCED CONCRETE CULVERTS

5-02. GENERAL. - The culverts shall be installed of the size and length, and at the locations shown on the drawings, or as directed by the contracting officer. Precast reinforced concrete culvert pipe meeting the requirements of these specifications shall be used to the extent it is available.

5-03. PIPE. - All reinforced concrete culvert pipe shall be manufactured to conform to specifications A.S.T.M. Designation C-76-37, for "Standard Strength Reinforced Concrete Culvert Pipe." Cement used in the manufacture of the pipe shall conform to Federal Specification SS-C-191b, Aggregates shall conform to Federal Specification SS-A-281, "Grade A."

(a) Testing. - All reinforced concrete culvert pipe shall be subject to inspection and testing after its delivery to the site of the work. Injurious defects revealed subsequent to acceptance of the pipe at manufacturer's plant, or damaged caused by handling, shall be cause for rejection.

5-04. INSTALLATION.

(a) General. - Culvert pipe shall be installed to the line and grades shown on the drawings, and as directed by the contracting officer. Unless otherwise directed, all culverts shall be installed to provide a depth of cover between the top of the barrel and the finished grade of not less than one foot.

(b) Trenching. - Where trenching is required the pipe trench shall be excavated to a width not greater than necessary to permit satisfactory jointing and thorough tamping of the bedding material under and around the pipe, unless otherwise directed by the contracting officer, because of unsuitable foundation material encountered. The bottom of the trench shall be shaped to provide a bedding surface firm but slightly yielding, of uniform density throughout the entire length of the culvert. Recesses shall be excavated for any bells involved.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

(c) Placing and Jointing Pipe. - The pipe shall be laid carefully, bells up-grade, ends fully and closely jointed and true to lines and grades as shown on the drawings, and as given by the contracting officer. Proper equipment shall be provided for lowering the sections of pipe into the trench. Each section shall be securely attached to the adjoining sections by the method contemplated for the type of joint used. After each section of pipe is laid, and before succeeding section is laid, the lower portion of the bell shall be plastered thoroughly on the inside with mortar to such a depth as to bring the inner surface of the abutting pipe flush and even. After the section is laid, the remainder of the joint shall be filled with mortar, and sufficient additional mortar shall be used to form a bead around the outside of the joint. The inside of the joint shall be pointed and wiped and finished smooth. The mortar on the outside shall be protected from the air and sun with a covering of thoroughly wetted earth or cloth until the mortar has set. All jointing material shall be composed of stiff mortar, composed of one part portland cement and three parts of sand. The mortar shall be placed so as to form a durable, waterproof joint. Any pipe which is not in true alignment, or which shows undue settlement after being laid, or is damaged or laid with imperfect joints, shall be taken up and relaid or replaced, as directed by the contracting officer, at the contractor's expense.

(d) Backfilling. - After the pipe has been installed and jointed, selected material from excavation or borrow, consisting of sand-clay, sandy loam, or other material easily pulverized and compacted, free from clods and stones, shall be carefully deposited on both sides of the pipe simultaneously, in layers not exceeding six inches in depth. The backfill material shall be thoroughly compacted so that on each side of the pipe there shall be a berm of compacted material at least as wide as the exterior diameter of the pipe, except insofar as undisturbed material obtrudes upon this area. Backfill material which is dry shall be moistened and then compacted. Compaction may be done by rolling, or by tamping with mechanical tampers, or by hand tamping, with heavy iron tampers, the tamping surface of which shall not exceed 25 square inches in area, special care being taken to compact the fill thoroughly under the haunches of the pipe. Backfilling and compaction shall be continued until the embankment has reached an elevation six inches above the outside top of the pipe.

When pipes are placed wholly or in part in fill sections, backfilling and rolling shall continue to a height not less than 6 inches above the outside top of the pipe and the pipe trench then excavated. The material around and over the pipe shall be compacted as specified in the paragraph "Backfilling" above.

(e) Outlet Ditches. - Wherever necessary in order to secure effective drainage to and from the culverts, inlet and outlet ditches shall be provided to insure maximum efficiency of the culverts as specified under Section II, "Excavation, Grading and Backfill." Surplus excavation material shall be disposed of as directed by the contracting officer.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

WOOD CULVERTS

5-05. GENERAL. - Unless otherwise directed by the contracting officer, the pipe shall be octagonal in shape. The installation of octagonal shaped wood drainage pipes shall include the furnishing of all material, equipment and performing the necessary labor to install such pipe of the sizes and dimensions shown on the drawings and in conformity with these specifications.

5-06. MATERIALS. - The wood pipe shall be of the standard stock product of a reputable manufacturer, designed for strength requirements equal to standard strength reinforced concrete pipe, and meeting the requirements specified herein.

(a) Wood. - The main members, forming the octagonal shaped structure, shall be formed of western larch, Douglas Fir, Redwood, yellow pine, oak, chestnut, cypress, or hemlock. Other suitable species of wood may be used with the prior written approval of the contracting officer. Wood dowels shall be made from birch, hickory, oak or maple. All lumber shall be selected merchantable grade. Main members shall be S4S. Authorized inspection certificates of the "Pacific Lumber Inspection Bureau," "West Coast Lumberman's Association," "Southern Pine Association," or "National Hardwood Lumber Association" shall be furnished where required.

(b) Dimensions of Units. - The length of side of individual units that will form the inside of the pipe shall not exceed 75 per cent of the diameter of circle tangent to all sides of the culvert. Individual members forming a single length of the culvert shall be interchangeable for a structure of a given size, or may be made of not more than two shapes and sizes with individual units of each shape and size being interchangeable. Accuracy of milling shall be such that full bearing of individual members on adjacent members is secured. Minimum thickness of units forming the waterway area, and estimated weight per foot of complete pipe shall be as follows:

<u>Diameter (Diam of In- scribed Circle)</u>	<u>Thickness of Timbers</u>	<u>Waterway Area Sq. Ft.</u>	<u>Estimated Weight per foot - lbs.</u>
18	1-5/8"	1.9	29.6
24	"	3.3	38.6
30	1-5/8"	5.2	47.6
36	"	7.5	56.4
48	2-1/8"	13.2	102.8
60	"	30.7	126.2
72	2-5/8"	29.8	192.0

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

Diameter of wood pins shall be not less than 3/8 inch for pipe having a diameter 36 inches or less, and 1/2 inch for diameters larger than 36 inches. Abutting lengths of the culvert shall be joined by the wood pins to make pipe of any length for handling and shipping. Pipe lengths shall be joined in the field by at least four wood cleats, each a minimum of 4 feet in length. The cleats shall be attached by wood pins or nails.

(c) Preservative Treatment. - Units milled from other than douglas fir heartwood, cypress, western larch, white oak, or chestnut shall be given an approved preservative treatment after all cutting and drilling is done. Where indicated on the plans, additional treatment with a specified wood preservative or paint coat will be provided where the pipe is for use in termite infested areas or where additional preservative is desired to meet other local conditions.

5-07. INSTALLATION. - The installation of octagonal shaped wood pipe shall follow with strict conformity all of the applicable requirements of paragraph 5-04.

PAYMENT

5-08. CULVERT PIPE. - Measurement of culvert pipe will be made on the basis of actual length of pipe laid, measured in place. Payment for culvert pipe will be made at the contract unit price, per linear foot, for "Culvert Pipe, installed" for each of the several sizes, which shall include furnishing and installing pipe, excavation and backfill, jointing and all incidentals necessary to complete the installation.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

SECTION VI

ASPHALTIC SURFACING - ARMOR COAT

6-01. SCOPE. - The work to be done under this section consists of a wearing course composed of a primary course of asphaltic oil material, and a seal coat of asphalt cement material and cover*aggregate, constructed on the prepared base in accordance with these specifications and in conformity with the lines, grades and typical cross-section shown on the drawings.

Asphaltic surfacing armor coat shall be applied only to primary roads, designated on the drawings as Type A roads.

6-02. MATERIALS:

(a) Prime Coat. - Prime coat shall be MC-1 and shall conform to the following requirements:

Flash Point. Not less than 100° F.
(Tag. Open Cup)
Furol Viscosity at 122° F. 75 to 150

Distillation: Per Cent of total
Distillate to 680° F.
To 437° F. Not more than 20
To 500° F. 25 to 65
To 600° F. 70 to 90
Residue from distillation to 680° F.
Volume, per cent of sample, by
difference Not less than 60

Tests on Residue from Distillation:

Solubility in Carbon Tetrachloride . . . Not less than 99.5%
Penetration, 77° F., 100 g., 5 Sec . . . 120-300
*Ductility at 77° F. Not less than 100 cm.
Ductility at 39.2° F. Not less than 5 cm.
**Oliensis Spot Test. Negative
Temperature of Application 100-175

*Note: If penetration of residue is more than 200 and its ductility at 77° F., is less than 100 cm., the material will be acceptable if its ductility at 60° F., is more than 100 cm.

**Note: The naptha used for the oliensis spot test may be from the same crude as that from which the asphalt is obtained.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

(b) Seal Coat. - Seal coat shall be an asphalt cement material conforming to the following requirements:

<u>Test</u>	<u>AASHO</u>	<u>Min.</u>	<u>Max.</u>
Penetration at 77° F.	T-49-38	210	250
Ductility at 77° F., cm.	T-51-38	70	-
Flash Point, °F.	T-48-38	450	-
Melting Point, °F.	T-53-35	86	122
Loss at 325° F., 5 hrs. %	T-47-38	-	0.75
Penetration at 77° F. of residue from heating at 325° F., 5 hrs.		125	-
Solubility in CCl ₄ , %	T-45-35	99.5	-
*Oliensis Spot Test			Negative

*The naptha solvent used for the Oliensis Test may be from the same crude as that from which the asphalt is obtained.

(c) Cover Aggregate. - Cover aggregate, when tested in accordance with A.A.S.H.O. Method T-27-38, shall conform to the following requirements:

<u>Passing</u>	<u>Per Cent by Weight</u>
5/8 inch Sieve	100
3/8 inch Sieve	80 - 95
No. 10 Sieve	0 - 5

6-03. TRUCK SCALES. - A set of standard platform truck scales shall be provided and conveniently located. The weighing beams shall be adequately housed at all times. Scales shall be accurate to within 4 pounds per 1000 pounds total load and shall be so maintained. The truck scales shall have a rated capacity of not less than 5000, pounds more than the total load to be weighed. The contractor will be required to test and seal the scales monthly, if so directed by the contracting officer. He shall furnish sworn statements, in triplicate, to the contracting officer showing the results of such tests.

6-04. SUBGRADE PREPARATION. - Prior to placing the prime coat, the surface of the base course shall be true to the cross-sections shown on the drawings, free of ruts and irregularities, and compacted in accordance with the requirements as set forth in Section III, "Crushed Rock Surfacing."

Specifications: Roads and Drainage, Granada Relocation Center, Colorado,

6-05. PRIME COAT. - Immediately before applying the prime coat, the full width of surface to be treated shall be swept with a power broom or cleaned as directed by the contracting officer of loose dirt and other objectionable matter. The asphaltic material shall be applied over the full width of stabilized base by means of an approved pressure distributor at the rate of approximately .25 to .50 gallons per square yard and at a temperature of not less than 50 degrees F., or more than 125 degrees F.

6-06. ARMOR COAT. - Armor coat shall consist of an application of asphalt cement covered with a wearing surface of cover aggregate applied as follows:

If so directed by the contracting officer, the armor coat shall be placed on one-half of the road at a time and the other half of the road kept clear and open to traffic. Before applying the armor coat, the surface shall be free of all objectionable matter. The asphaltic oil material shall be spread with an approved pressure distributor at the rate of approximately .25 to .4 gallons, per square yard of surface covered, at a temperature of not less than 275 degrees F., nor more than 350 degrees F. Immediately following application of the oil, the cover aggregate shall be spread at the rate of from 15 to 30 pounds per square yard of surface covered. Every portion of the surface shall then be broomed to secure a uniform spreading of the aggregate, and the aggregate shall be rolled with a tandem roller weighing not less than 8 tons, as directed by the contracting officer.

6-07. MEASUREMENT AND PAYMENT.

(a) Prime Coat. - Measurement of the bituminous material for the prime coat will be made in gallons, at the applied temperature as measured in the distributor based on the volume of the distributor as determined by calibration made by the contracting officer. The gallonage to be paid for shall be the number of gallons used in the accepted work corrected to gallons at 60 degrees F. in accordance with A.S.T.M. Specification D206-36. Payment for the gallonage, determined as above, will be made at the contract unit price per gallon for "Bituminous Material; Prime Coat," which shall include all work and materials incidental to completion of this item of the work.

(b) Seal Coat. - Measurement of the bituminous material, for seal coat, will be made in the manner described herein for the prime coat. Payment will be made at the contract unit price per gallon for "Bituminous Material; Seal Coat," which price shall include cleaning the surface of the wearing course; furnishing, heating, hauling and applying bituminous material; and all labor, tools, equipment and incidentals necessary to complete this item of the work.

Specifications: Roads and Drainage, Granada Relocation Center, Colorado.

(c) Cover Aggregate. - Measurement for aggregate required for the seal coat will be made in tons of aggregate actually used in the work. Measurement by weight will be made on the truck sales specified herein and the weight of all moisture in excess of 3 per cent contained in the aggregate will be deducted from the net weight of the aggregate to determine the quantity for which payment is made. Payment for aggregate for the armor coat will be made at the contract unit price per ton for "Aggregate; Armor Coat," which price shall include furnishing, hauling, distributing, brooming and rolling the aggregate, removing excess aggregate from the surface, all manipulation, labor, tools, equipment and incidentals necessary to complete this item of the work.

STANDARD GOVERNMENT FORM OF BID

(Construction Contract)

(Place) _____

(Date) _____

To: The District Engineer,
U. S. Engineer Office,
Albuquerque, New Mexico.

1. In compliance with your Invitation for Bids, dated July 10, 1942,
and subject to all the conditions hereof, the undersigned _____

a corporation organized and existing under the laws of the State of

a partnership consisting of _____

or an individual trading as _____

of the City of _____

hereby proposes to furnish all plant, labor and materials, and to perform
all work required for the construction of Roads and Drainage, Granada
Relocation Center, Colorado, at the locations shown and to the extent
indicated; in strict accordance with the specifications and drawings, for
the following consideration for the corresponding items of work;

(112)

SCHEDULE OF BID ITEMS

Item No.	Quantity	Unit	Designation	Unit Price	Amount
1.	50	Acre	Clearing and Grubbing	\$ _____	\$ _____
2.	47,500	Cu.Yd.	Excavation, Unclassified	\$ _____	\$ _____
3.	21,000	Cu.Yd.	Crushed Rock Surfacing	\$ _____	\$ _____
4.	11,800	Gallon	Bituminous Material, Prime Coat	\$ _____	\$ _____
5.	8,000	Gallon	Bituminous Material, Seal Coat	\$ _____	\$ _____
6.	400	Ton	Aggregate, Armor Coat	\$ _____	\$ _____
7.	19,800	Sq.Yd.	4" Concrete Slab, Coal Storage	\$ _____	\$ _____
8.	168	Lin.Ft.	12" Culvert Pipe, installed	\$ _____	\$ _____
9.	392	Lin.Ft.	18" Culvert Pipe, installed	\$ _____	\$ _____
10.	512	Lin.Ft.	24" Culvert Pipe, installed	\$ _____	\$ _____
11.	224	Lin.Ft.	30" Culvert Pipe, installed	\$ _____	\$ _____
12.	140	Lin.Ft.	36" Culvert Pipe, installed	\$ _____	\$ _____

TOTAL BID PRICE, Items Nos. 1 to 12, incl. \$ _____

- NOTE: (1) All amounts and totals above will be subject to verifications by the Government. In case of variation between unit bid price and total shown by bidder, the unit price will govern.
- (2) Bids must be for the entire work and must have each blank space filled in to be acceptable.

5. The undersigned agrees, upon receipt of written notice of the acceptance of this bid for work, to execute the standard form of Government contract, in accordance with the bid as accepted, and to give performance and payment bonds, with good and sufficient surety or sureties, for the faithful performance of the contract, and for the protection of all persons furnishing material and labor in the prosecution of the work, within ten (10) days after the prescribed forms are presented for signature.

6. Performance will begin within one (1) calendar day after the date of receipt of notice of award, and all work included in this contract will be completed by August 31, 1942, in accordance with provisions of paragraph 1-05 of the specifications.

By _____

(Business Address)

Witness:

Note: Read Standard Government Instructions to Bidders before preparing this bid.

