SPECIFICATIONS

FOR

PARK IMPROVEMENTS

FOR

TOWN OF EGYPT, ARKANSAS

FUNDED BY

ARKANSAS PARKS & TOURISM

August 2024

Miller-Newell

MILLER-NEWELL ENGINEERS, INC.
P.O. Box 705
510 Third Street
Newport, AR 72112
Phone (870) 523-6531
Fax (870) 523-6533
e-mail: milnewengr@aol.com

M-N 23-079

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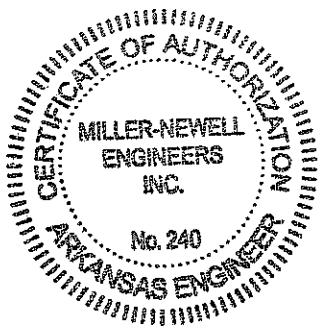

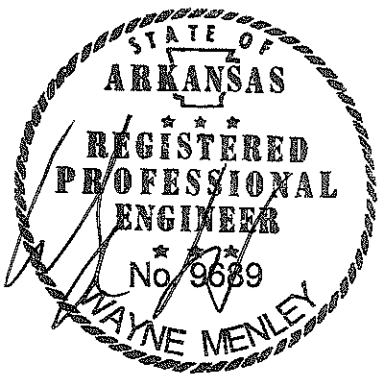

MILLER-NEWELL ENGINEERS, INC.
P.O. Box 705
510 Third Street
Newport, AR 72112

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ADVERTISEMENT FOR BIDS

Separate sealed bids for the PARK IMPROVEMENTS TO INCLUDE WALKING TRAIL, ADA PARKING, PAVILION IMPROVEMENTS AND OTHER IMPROVEMENTS will be received by the Town of Egypt, Arkansas, at Town Hall,11063 Kings Hwy, Egypt, AR 72427 until 10:00 A.M., on September 24, 2024, and then at said location publicly opened and read aloud.

The Information for Bidders, Form of Bid, Form of Contract, Plans, Specifications, Forms of Bid Bond, Performance and Payment Bond, and other Contract Documents may be examined at the following locations:

Miller-Newell Engineers, Inc., 510 Third Street, Newport, AR
Dodge Plan Room, (www.dodgeplans.construction.com)
Construction Market Data (www.cmdgroup.com)
Southern Reprographics, 901 West Seventh, Little Rock, AR

Copies of the Contract Documents must be obtained at the office of MILLER-NEWELL ENGINEERS, INC., 510 Third Street, Newport, Arkansas 72112, upon the payment of $25 for each set. Bidders will be refunded $25 upon return of the Bidding Documents/Plans in usable condition within 14 days after receipt of bids.

The Owner reserves the right to waive any informalities or to reject any or all bids.

Each bidder must deposit with his bid security in the amount, form and subject to the conditions provided in the Information for Bidders.

In accordance with Act 150 of 1965, as amended, all bidders shall conform to the requirements of the Arkansas State Licensing Law for Contractors.

No bidder may withdraw his bid within 60 days after the actual date of the opening thereof.

This Advertisement for Bids is being published by and paid for by the following:

Town of Egypt
P.O. Box 9
Egypt, AR 72427

The amount of this publication is $_____.

James Barron Upton, Mayor
Date: September 1, 2024

INFORMATION FOR BIDDERS

Bids will be received by the Town of Egypt, Arkansas (herein called the "OWNER"), at the Town Hall, 11063 Kings Hwy, Egypt, AR 72427 until 10:00 A.M., on September 24, 2024, and then at said office publicly opened and read aloud. Each bid must be submitted in a sealed envelope, addressed to Town of Egypt, AR. Each sealed envelope containing a bid must be plainly marked on the outside as BID FOR PARK IMPROVEMENTS TO INCLUDE WALKING TRAIL, ADA PARKING, PAVILION IMPROVEMENTS AND OTHER IMPROVEMENTS, and the envelope should bear on the outside the name of the bidder, his address, his license number, if applicable, and the name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to the Owner, P.O. Box 9, Egypt, AR 72427.

Bids must be made on the required bid form. All blank spaces for bid prices must be filled in, in ink or typewritten, and the bid form must be fully completed and executed when submitted. Only one copy of the bid form is required.

The Owner may waive any informalities or minor defects or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 60 days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the Owner and the bidder.

Bidders must satisfy themselves of the accuracy of the estimated quantities in the bid schedule by examination of the site and a review of the drawings and specifications, including all addenda. After bids have been submitted, the bidder shall not assert that there was a misunderstanding concerning the quantities of work or of the nature of the work to be done.

The Owner shall provide to bidders, prior to bidding, all information which is pertinent to and delineates and describes the land owned and rights-of-way acquired or to be acquired.

The Contract Documents contain the provisions required for the construction of the project. Information obtained from an officer, agent or employee of the Owner or any other person shall not affect the risks or obligations assumed by the Contractor or relieve him from fulfilling any of the conditions of the contract.

Each bid must be accompanied by a Bid Bond payable to the Owner for five percent of the total amount of the bid. As soon as the bid prices have been compared, the Owner will return the bonds of all except the three lowest responsible bidders. When the Agreement is executed, the bonds of the two remaining unsuccessful bidders will be returned. The Bid Bond of the successful bidder will be retained until the Payment Bond and Performance Bond have been executed and approved, after which it will be returned. A certified check may be used in lieu of a Bid Bond.

A Performance Bond and Payment Bond, each in the amount of 100 percent of the contract price, with a corporate surety approved by the Owner, will be required for the faithful performance of the contract.

Attorneys-in-fact who sign Bid Bonds or Payment Bonds or Performance Bonds must file with each bond a certified and effective dated copy of their power of attorney.

The party to whom the contract is awarded will be required to execute the Agreement and obtain the Performance Bond and Payment Bond within ten (10) calendar days from the date when the Notice of Award is delivered to the bidder. The Notice of Award shall be accompanied by the necessary Agreement and bond forms. In case of failure of the bidder to execute the Agreement, the Owner may at his option consider the bidder in default, in which case the Bid Bond accompanying the proposal shall become the property of the Owner.

The Owner, within ten (10) days of receipt of acceptable Performance Bond, Payment Bond and Agreement signed by the party to whom the Agreement was awarded, shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the Owner not execute the Agreement within such period, the bidder may by written notice withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the Owner.

The Notice to Proceed shall be issued within ten (10) days of the execution of the Agreement by the Owner. Should there be reasons why the Notice to Proceed cannot be issued within such period, the time may be extended by mutual agreement between the Owner and Contractor. If the Notice to Proceed has not been issued within the ten (10) day period or within the period mutually agreed upon, the Contractor may terminate the Agreement without further liability on the part of either party.

The Owner shall make such investigations as he deems necessary to determine the ability of the bidder to perform the work, and the bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid on the evidence submitted by, or investigation of, such bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein. A conditional or qualified bid will not be accepted. Award will be made to the lowest responsible bidder.

All applicable laws, ordinances and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout.

Each bidder is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. The failure or omission of any bidder to do any of the foregoing shall in no way relieve any bidder from any obligation in respect to his bid.

The low bidder shall supply the names and addresses of major material suppliers and subcontractors when requested to do so by the Owner.

The Engineer is MILLER-NEWELL ENGINEERS, INC., 510 THIRD STREET, NEWPORT, ARKANSAS 72112.

NOTICE TO BIDDERS

The following is made a part of these Contract Documents:

1. SAFETY STANDARDS AND ACCIDENT PREVENTION

With respect to all work performed under this Contract, in accordance with Act 291 of the Arkansas 79th General Assembly, the Contractor shall:

A. Comply with the safety standards provisions of applicable laws, building and construction codes, and the Manual of Accident Prevention in Construction: published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596 and the requirement of Title 29 of the Code of Federal Regulations, Section 1518 as published in the Federal Register, Volume 36, No. 75, Saturday, April 17, 1971), and specifically OSHA's Standard for Excavation and Trenches Safety Systems, 29 CFR Part 1926, Subpart P, which is made a part hereof by reference.

B. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.

C. Maintain at his office or other well-known place at the job site, all articles necessary for giving first aid to the injured and shall make standing arrangements for the immediate removal to a hospital or doctor's care of persons (including employees) who may be injured on the job site.

2. BID FORM - SEPARATE PAY ITEM

A. A separate lump sum bid item has been included for "Excavation/Trench Safety System (for excavation in excess of 5')". Bidder is required to complete this pay item in accordance with Act 291 of the Arkansas 79th General Assembly.

B. In the event a bidder fails to complete this pay item, the Owner shall declare that the bid fails to comply fully with the provisions of the specifications and bid documents and will be considered invalid as a non-responsive bid.

C. **NOTE: Payment for the lump sum bid item for "Excavation/ Trench Safety Systems" will be paid at the completion of the Contract. No partial payments will be allowed thereunder.**

PROPOSAL FORM

DATE: _____

Proposal of _____

(hereinafter called "Bidder"), a corporation, organized and existing under the laws of the State of _____; a partnership; an individual doing business as _____

_____.* (*STRIKE INAPPLICABLE PHRASE)

TO: Town of Egypt, Arkansas (Hereinafter called "Owner")

GENTLEMEN:

The Bidder, in compliance with your invitation for bids for the furnishing of materials and/or labor for **PARK IMPROVEMENTS TO INCLUDE WALKING TRAIL, ADA PARKING, PAVILION IMPROVEMENTS AND OTHER IMPROVEMENTS,** having examined the plans and specifications with the related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project, including the availability of materials, hereby proposes to furnish all materials and supplies in accordance with the Contract Documents, within the time set forth therein, and at the price stated below. These prices are to cover all expenses incurred in furnishing the equipment/materials required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in written "Notice to Proceed" of the Owner and to fully complete the project within **One Hundred Twenty (120) consecutive calendar days** thereafter as stipulated in the specifications. Bidder further agrees to pay as liquidated damages, the sum of $300.00 for each calendar day thereafter as hereinafter provided in Section 34 of the General Conditions.

Bidder acknowledges receipt of the following addendum:

_____

_____

_____

_____

Bidder agrees to perform all the work required and to furnish all material required to be furnished to cover the finished work as described in the Specifications and as shown on the Plans for the following prices:

BID SCHEDULE

BASE BID:

DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL COST
1. Site Prep to Include Grubbing, Etc.		LS		$_____
2. Construct 8' Asphalt Walking Trail to Include Earthwork, Fill, Base, Asphalt, Etc.		LS		$_____
3. Install Pavilion & Concrete Slab		LS		$_____
4. Install Concrete Slab & Relocate Existing Pavilion		LS		$_____
5. Install Exercise Stations		LS		$_____
6. Construct Sidewalks		LS		$_____
7. Relocate Bench & Install Concrete Pad		LS		$_____
8. Mark ADA Parking, Install Wheel Stop, ADA Sign, Etc.		LS		$_____
9. Trench Safety System		LS		$_____
10. Miscellaneous		LS		$_____
TOTAL BASE BID				$_____

WRITTEN IN WORDS:_____

_____

DEDUCTIVE ALTERNATE NO. 1:

DESCRIPTION	UNIT		TOTAL COST
1. DELETE Exercise Station	LS	DELETE	$_____
TOTAL DEDUCTIVE ALTERNATE NO. 1	-	DELETE	$_____

WRITTEN IN WORDS:_____

_____

In submitting this bid, it is understood that the right is reserved by the Owner to reject any or all bids. No bid shall be withdrawn for a period of sixty (60) days subsequent to the opening of bids without the consent of the Owner.

Upon receipt of written notice of the acceptance of this bid, bidder will execute the formal contract attached within 10 days.

The bid security attached in the sum of _____ _____Dollars ($_____) is to become the property of the Owner in the event the contract is not executed within the time above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

RESPECTFULLY SUBMITTED,

_____

By:_____
Signature

_____
Title

(SEAL if bid is by corporation)

BUSINESS ADDRESS:

_____

_____

_____
CONTRACTOR'S ARKANSAS LICENSE NUMBER

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____

_____, as Principal, and _____,

as Surety, are held and firmly bound unto _____

_____, as Owner, in the penal sum of _____

_____Dollars ($_____

_____), for payment of which sum well and truly to be made, we hereby jointly and severally bind ourselves, our successors and assigns.

SIGNED this _____ day of _____, 2024.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal has submitted to _____ a certain BID, attached hereto and made a part hereof, to enter into a contract in writing for:

PARK IMPROVEMENTS TO INCLUDE WALKING TRAIL, ADA PARKING,

PAVILION IMPROVEMENTS AND OTHER IMPROVEMENTS

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the date and year first set forth above.

_____
Principal

_____
Surety

By:_____

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

CONTRACT

THIS AGREEMENT, made and entered into this ____ day of _____, 2024, by and between **TOWN OF EGYPT, ARKANSAS,** hereinafter called "Owner," and _____, of _____, Arkansas, hereinafter called "Contractor."

WITNESSETH: That for an in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the Owner, the Contractor hereby agrees with the Owner to commence and complete the construction described as follows:

PARK IMPROVEMENTS TO INCLUDE WALKING TRAIL, ADA PARKING, PAVILION IMPROVEMENTS AND OTHER IMPROVEMENTS

for TOWN OF EGYPT, Arkansas, hereinafter called the project, for the sum of _____**Dollars & NO/100 ($**_____**)** and all extra work in connection therewith, under the terms as stated in the General and Special Conditions of the Contract; and at his (its or their) own proper cost and expense to furnish all materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, Supplemental General Conditions and Special Conditions of the Contract, the plans, which includes all maps, plats, blueprints, and other drawings and printed or written explanatory matter thereof, the specifications and contract documents therefore as prepared by MILLER-NEWELL ENGINEERS, INC., NEWPORT, ARKANSAS, herein entitled the Engineer, all of which are made a part hereof and collectively evidence and constitute the contract.

The Contractor hereby agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within **One Hundred Twenty (120) consecutive calendar days** thereafter. The Contractor further agrees to pay, as liquidated damages, the sum of $300.00 for each day thereafter as hereinafter provided in the General Conditions.

The Owner agrees to pay the Contractor in current funds for the performance of the contract, subject to additions and/or deductions, as provided in the General Conditions, and to make payments on account thereof as provided in Paragraph 33, "Payments to Contractor," of the General Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in six (6) counterparts, each of which shall be deemed an original, on the day and year first above mentioned.

TOWN OF EGYPT, ARKANSAS
Owner

(SEAL)
ATTEST:

By:_____

_____ _____Mayor_____
County Clerk Title

_____
Contractor

(SEAL)
ATTEST:

By:_____

_____ _____
Print Name

_____ _____
Title Title

_____

_____
Business Address

NOTE: Secretary of the Owner should attest. If Contractor is a corporation, Secretary should attest.

ARKANSAS PERFORMANCE AND PAYMENT BOND
(14-604 Arkansas Statutes)

KNOW ALL MEN BY THESE PRESENTS, that we _____, a _____, hereinafter called "Principal" and _____, of _____, hereinafter called the "Surety," are held and firmly bound unto _____, hereinafter called "Owner," in the penal sum of _____ _____Dollars ($___ _____) in lawful money of the United States, for payment of which sum well and truly to be made, said principals and surety bind themselves, their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the Owner, dated the _____ day of _____, 2024, a copy of which is attached and made a part hereof, for:

PARK IMPROVEMENTS TO INCLUDE WALKING TRAIL, ADA PARKING, PAVILION IMPROVEMENTS AND OTHER IMPROVEMENTS

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms and conditions, and agreement of said contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, and shall promptly make payment to all persons, firms, subcontractors and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, all amounts due for but not limited to, materials lubricants, oil, gasoline, coal and coke, repair on machinery, equipment and tolls, consumed or used in connection with the construction of said work, fuel oil, camp equipment, food for men, feed for animals, premium for bonds and liability and worker's compensation insurance, rentals on machinery, equipment and draft animals; also for taxes or payments due the State of Arkansas or any political subdivisions thereof which shall have arisen on account of or in connection with the wages earned by workmen covered by the bond; and for all labor, performing in such work whether by subcontractor or otherwise, then this obligation shall

be void, otherwise to remain in full force and effect.

The Surety agrees the terms of this bond shall cover the payment by the Principal of not less than the prevailing hourly rate of wages as found by the Arkansas Department of Labor or as determined by the court on appeal to all workmen performing work under the contract.

PROVIDED, FURTHER, THAT THE SAID surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder of the specifications accompanying the same shall in any wise affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract as to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is execution in six (6) counterparts, each of which shall be deemed an original, this ___ day of _____, 2024.

_____
Principal

ATTEST: By:_____

_____ _____
Secretary Address

_____ _____
Witness as to Principal

_____
Address

_____
Surety

ATTEST: By:_____
Attorney-In-Fact

_____ _____
Secretary Address
(SEAL)

_____

_____ _____
Witness

_____
Address

NOTE: (1) Date of Bond must not be prior to date of Contract.
(2) This bond must be filed with the Circuit Clerk of the County where the work is to be performed prior to the start of construction.

GENERAL CONDITIONS

1. DEFINITIONS

A. The "Contract Documents" consist of the Advertisement for Bids, the Information for Bidders, the Proposal Form, the General Conditions, the Agreement of Contract, the Contract Bond, the Specifications and the Approved Plans, including all modifications to any of the above documents incorporated therein before their execution. All of these form the Contract.

B. The "Owner" is understood to mean the individual for whom the work is being done.

C. The "Engineer" is understood to mean the Registered Professional Engineer, registered in Arkansas, employed by the Owner to carry out the conditions of this contract. The Engineer is the duly authorized representative of the Owner. Where the term "Architect/Engineer" is used it is intended to mean "Engineer" and does not mean to imply the Engineer is an Architect.

D. The "Work Order" or "Notice to Proceed" is the Contractor's authority to begin the work. It shall designate the day on which working time shall commence. The work order shall be deemed to have been delivered when mail to the Contractor at the address given in the Proposal. When a Contractor begins work before a work order is issued, his time begins on the day he commences.

E. The term "Subcontractor," as employed herein, includes only those having direct contact with the Contractor and it includes one who furnished material worked to a special design according to the plans or specifications, but does not include one who merely furnishes material so worked.

F. The term "Work," includes labor or material or both, equipment, or other facilities necessary to complete the work.

2. CONTRACTOR'S UNDERSTANDING OF CONDITIONS OF WORK

It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and location of the work, the conformation of the ground, the character, quality and quantity of materials to be encountered, the character of equipment and facilities needed preliminary to and during the prosecution of the work, the general and local conditions, and all other matters which can in any way affect the work under this contract. No verbal agreement or conversation with any officer, agent or employee of the Owner, either before or after the execution of this Contract, shall affect or modify any of the terms or obligations herein contained.

3. MATERIALS, APPLIANCES, EMPLOYEES

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power and transportation and other facilities necessary for the execution and completion of the work.

Unless otherwise specified, all materials shall be new and both workmanship and materials shall be of good quality. The Contractor shall, if required, furnish satisfactory evidence, such as test reports, as to the kind and quality of materials.

The Contractor shall at all times enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him.

4. ROYALTIES AND PATENTS

The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible when a particular process or product of a particular manufacturer is specified, but if the Contractor has information that the process or article specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Engineer in writing.

5. SURVEYS, PERMITS AND REGULATIONS

The Engineer will provide the Contractor with the bench mark and alignment as may be necessary for the Contractor to layout the work correctly. The finished work must conform to the bench marks furnished by the Engineer.

The Owner shall furnish all right-of-way, easements and sites for the construction.

The Contractor shall furnish all permits and licenses required by law.

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the plans and specifications are at variance therewith, he shall promptly notify the Engineer in writing and proper changes or adjustments shall be made in accordance with the contract provisions for changes in the work.

6. PROTECTION OF WORK AND PROPERTY

The Contractor shall continuously maintain adequate protection of all his work from damages and shall protect the Owner's property from injury of loss arising in connection with the work. He shall make good any such damage, injury or loss, except such as may be

due directly to errors in the Contract Documents or caused by agents or employees of the Owner. He shall protect all private property adjacent to the work. He shall provide and maintain all passage ways, guard fences, lights and other facilities for protection required by law or local conditions.

The Contractor is hereby authorized to act in an emergency affecting loss of life or property without special authorization from the Engineer. Any compensation claimed by the Contractor on account of emergency work shall be determined by agreement or arbitration.

7. INSPECTION OF WORK AND TESTING OF MATERIALS

Inspection shall be provided by a representative of Miller-Newell Engineers, Inc., the Engineer, and his representatives, shall at all times have access to the work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access and inspection.

The Contractor shall furnish to the Engineer certified laboratory testing on all material to be used on the project.

No work or preparation for work shall be covered up without consent of the Engineer. If such work is covered up, without consent of the Engineer, the Contractor, if required by the Engineer, shall uncover such work for examination and replace it at his own expense.

Reexamination of approved work may be ordered by the Engineer and if so ordered, the work must be uncovered by the Contractor. If such work is found to be in accordance with the Contract Documents, the Owner shall pay the cost of the reexamination and replacement. If such work is found not to be in accordance with the Contract Documents, the Contractor shall pay cost, unless he shall show that the defect in the work was caused by another Contractor and, in that event, the Owner shall pay such costs.

8. SUPERINTENDENCE AND SUPERVISION

The Contractor shall keep on his work during its progress a competent superintendent and any necessary assistants, all satisfactory to the Engineer. The Superintendent shall not be changed without the consent of the Engineer, unless he proves to be unsatisfactory to the Contractor and ceases to be in his employ. The Superintendent shall represent the Contractor in his absence and instructions and directions given to him shall be binding on the Contractor. Important decisions shall be confirmed to the Contractor in writing.

If the Contractor, in the course of the work, finds any discrepancy between the plans and the physical conditions of the locality, or any errors of omissions in the drawings or in the layout as given by prints and instructions, it shall be his duty to immediately inform the Engineer, in writing, and the Engineer

shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.

9. CHANGES IN THE WORK

The Owner, without invalidating the Contract, may order extra work or make changes by altering, adding or deducting from the work, the Contract Sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract, except that any claim for extension in time caused thereby shall be adjusted at the time of ordering such change.

In giving instructions, the Engineer shall have the authority to make minor changes in the work, not involving extra cost, and not inconsistent with the purpose of the work, but otherwise, except in an emergency endangering life or property, no extra work or change shall be made unless in pursuance of a written order by the Engineer, and no claim for an addition to the Contract sum shall be valid unless so ordered.

The value of any such extra work or changes shall be determined in one or more of the following ways:

A. By estimate and acceptance in a lump sum;

B. By unit prices named in the Contract or subsequently agreed upon;

C. By cost and percentage or by cost and a fixed fee.

If none of the above methods is agreed upon, the Contractor, provided he receives an order as above, shall proceed with the work. He shall keep an accurate account of the cost of labor and materials, pending final determination of the value of the work.

10. CLAIMS FOR EXTRA COST

If the Contractor claims that any instructions in the plans or otherwise involves any extra cost under this contract, he shall give the Engineer written notice thereof within a reasonable time after the receipt of such instructions and, in any event, before proceeding to execute the work, except in an emergency endangering life or property. No such claims shall be valid unless so made.

11. DEDUCTIONS FOR UNCORRECTED WORK

If the Engineer deems it inexpedient to correct work injured or not done in accordance with the Contract, an equitable deduction from the Contract price shall be made therefore.

12. DELAYS AND EXTENSION OF TIME

If the Contractor be delayed at any time in the progress of the work by an act or neglect of the Owner or of his employees or by any other contractor employed by the Owner or by changes ordered

in the work or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any causes by the Engineer pending arbitration, or by any cause which the Engineer shall decide justifies the delay, then the time of completion shall be extended for such reasonable time as the Engineer may decide.

No such extension shall be made for delay occurring more than seven days before claim therefor is made in writing to the Engineer. In the case of the continuing cause of delay, only one claim is necessary.

This article does not exclude recovery of damages for delay by either party under provisions of the Contract Documents.

13. CORRECTION OF WORK BEFORE FINAL PAYMENT

The Contractor shall promptly remove from the premises all materials condemned by the Engineer as failing to conform to the Contract, whether incorporated in the work, or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Owner and shall bear all the expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.

If the Contractor does not remove such condemned work and materials within a reasonable time, fixed by written notice, the Owner may remove them and may store the materials at the expense of the Contractor.

14. SUSPENSION OF WORK

The Owner may at any time suspend work, or any part thereof, by giving five days written notice to the Contractor. The work shall be resumed by the Contractor within ten days after the date fixed by the written notice from the Owner to the Contractor to do so. The Owner shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this contract as a result of such suspension.

But, if the work or any part thereof shall be stopped by the notice in writing aforesaid, and if the Owner does not give in writing notice to the Contractor to resume the work at a date within thirty days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work so suspended and he will be entitled to the estimates and payment for all work done on the portions so abandoned.

15. THE OWNER'S RIGHT TO DO WORK

If the Contractor should neglect to prosecute the work or fail to perform any of the provisions of this Contract, the Owner, after three days written notice to the Contractor, may, without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor.

16. THE OWNER RIGHT TO TERMINATE THE CONTRACT

If the Contractor should be adjudged a bankrupt, or he should make a general assigned for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency, or if he should persistently or repeatedly refuse or fail to make prompt payment to his subcontractors or for material or labor, or if he should persistently or repeatedly refuse or should fail, except in cases for which time is provided, to supply enough skilled workmen or proper materials, or if he should persistently disregard laws, ordinances or the instructions of the Engineer, or otherwise be guilty of a substantial violation of any provision of the contract, then the Owner, upon the certification of the Engineer that sufficient cause exists to justify such action, may without prejudice to any other right or remedy and after giving the Contractor seven (7) days notice in writing, terminate the employment of the Contractor and take possession of the premises and all materials, tools and appliances thereon and finish the work by whatever method he may deem expedient. In such cases, the Contractor will not be entitled to any further payment until the work is finished. If the unpaid balance of the contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The expense incurred by the Owner as herein provided, and the damage incurred through the Contractor's default, shall be certified by the Engineer.

17. THE CONTRACTOR'S RIGHT TO TERMINATE THE CONTRACT

If the work should be stopped under the order of any court, or other public authority, for a period of three months, through no act or fault of the Contractor or of anyone employed by him, or if the Engineer should fail to issue any estimate for payment seven days after it is due, or if the Owner should fail to pay the Contractor within seven (7) days of its maturity and presentation, any sum certified by the Engineer or awarded by arbitrators, then the Contractor may, upon seven (7) days written notice to the Owner and the Engineer, stop the work or terminate this contract and recover from the Owner payments for all work executed and any loss sustained upon any plant or materials and reasonable profit and damages.

18. PAYMENTS WITHHELD

The Owner may withhold or, on account of subsequently discovered evidence, nullify whole or part of any certificate to such extent as may be necessary to protect himself from loss on account of:

A. Defective work not remedied;

B. Claims or reasonable evidence that claims will be filed;

C. Failure of the Contractor to pay all bills properly;

D. A reasonable doubt that the Contractor can finish work on time; or

E. Damage to another contractor.

When the above grounds are removed, payment shall be made for the amounts withheld because of them.

19. CONTRACTOR'S LIABILITY INSURANCE

The Contractor shall maintain such insurance as will protect him for claims under the Worker's Compensation Act and from other claims for damages for personal injury, including death, which may arise from operations under this Contract, whether such operations be by himself or by any subcontractor or anyone directly or indirectly employed by either of them. Certificates of insurance for liability and property damage shall be filed with the Engineer before the work is started and shall be subject to his approval for adequacy of protection.

As required above, the Contractor's Public Liability Insurance and Vehicle Liability Insurance shall be in an amount not less than $500,000.00 for injuries, including accidental death, to any one person, and subject to the same limit for each person, and in an amount not less than $500,000.00 on account of one accident, and Contractor's property damage insurance in an amount not less than $500,000.00.

The insurance certificate must contain the following verbiage: **"The insurance covered by this certificate will not be canceled or materially altered except after ten (10) days prior written notice has been received by the Owner."**

The Contractor shall either (1) require each of his subcontractors to procure and to maintain during the life of his subcontract, Subcontractor's Public Liability and Property Damage of the type and in the same amounts as specified in the preceding paragraphs, or (2) insure the activities of his subcontractors in his own policy.

20. INDEMNITY

The Contractor shall indemnify and save harmless the Owner from and against all losses and all claims, demands, suits, actions, recoveries and judgments of every nature and description brought or recovered against him by reason of any act or omission of the said Contractor, his agents or employees, in the execution of the work or in the guarding of it.

The Contractor shall, and is hereby authorized to, maintain and pay for such insurance, issued in the name of the Owner, as will protect the Owner from his contingent liability under this Contract, and the Owner's right to enforce against the Contractor any provisions of this article shall be contingent upon the full compliance by the Owner with terms of such insurance or policies, a copy of which shall be deposited with the Owner.

21. FIRE INSURANCE AND BUILDERS RISK INSURANCE

The Contractor shall secure in the name of the Owner, policies for fire insurance and builders risk insurance in the amount, form and from companies satisfactory to the Engineer, upon such structures and materials as shall be specified by the latter, payable to the Owner for the benefit of the Contractor or the Owner as the Engineer shall find their interest to appear.

22. GUARANTY BONDS

The Contractor shall furnish the Owner, where stipulated in the advertisement for bids, with a performance bond covering the faithful performance on the contract and payment of all obligations arising thereunder, in such form as the Owner may prescribe and with surety company or companies as the Owner may approve.

23. DAMAGES

Any claims for damages arising under this Contract shall be made in writing to the party liable within a reasonable time of the first observance of such damage and not later than the time of final payment, except as expressly stipulated by agreement or arbitration.

24. LIENS

Neither the final payment nor any part of the retained percentage shall become due until the Contractor, if required, shall deliver to the Owner a complete release of all liens arising out of this contract, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as he had knowledge or information, the releases and receipts include all the labor and material for which the lien could be filed; but the Contractor may, if any subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Engineer, to indemnify the Owner against any lien. If any lien remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all moneys that the latter may be compelled to pay in discharging such lien, including all costs and a reasonable attorney's fee.

25. ASSIGNMENT

Neither party to the contract shall assign the contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any moneys due or to become due to him hereunder without the previous written consent of the Engineer.

26. SEPARATE CONTRACTS

The Owner reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs.

27. SUBCONTRACTS

The Contractor shall, as soon as practicable after the signature of the contract, notify the Engineer in writing the names of the subcontractors proposed for the work and shall not employ any of the subcontractors that the Engineer may object to as incompetent or unfit.

The Contractor agrees that he is fully responsible to the Owner for all work or omissions of his subcontractors, either directly or indirectly employed by him. Nothing in this contract shall create any contractual relations between the subcontractor or the Owner.

28. POINTS AND INSTRUCTIONS

The Contractor shall carefully preserve bench marks, reference points and stakes and, in case of willful or careless destruction, he shall be charged with the resulting expense and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance.

29. ENGINEER'S STATUS

The Engineer shall observe the execution of the work. He has the authority to stop the work whenever such stoppage may be necessary to insure the proper execution of the Contract. He shall also have the authority to reject all work and materials which do not conform to the contract, to direct application of the forces to any part of the work, as in his judgment is required, and to order the force increased or diminished, and to decide questions which arise in the execution of the work.

30. ENGINEER'S DECISIONS

The Engineer shall, within a reasonable time after their presentation to him, make decisions in writing on all claims of the Owner or Contractor and on other matters relating to the execution and progress of the work or the interpretation of the Contract Documents.

All such decisions of the Engineer shall be final except in cases where time and/or financial considerations are involved, which, if no agreement in regard thereto is reached, shall be subject to arbitration.

31. LANDS FOR WORK

The Owner shall provide the lands upon which the work under this Contract is to be done, except that the Contractor shall provide land required for the erection of temporary construction facilities and storage of his materials, together with right of access to same.

32. CLEANING UP

The Contractor, as directed by the Engineer, shall remove from the Owner's property and from all public and private property, at his own expense, all temporary structures and construction facilities, rubbish and waste materials resulting from his operations.

33. PAYMENTS TO CONTRACTOR

At least ten (10) days before each progress payment falls due (but not more often than once a month), the Contractor will submit to the Engineer a partial payment estimate filled out and signed by the Contractor covering the work performed during the period covered by the partial payment estimate and supported by such data as the Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the Owner, as will establish the Owner's title to the material and equipment and protect his interest therein, including applicable insurance. The Engineer will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the Owner, or return the partial payment estimate to the Contractor indicating in writing his reasons for refusing to approve payment. In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate. The Owner will, within ten (10) days of presentation to him of an approved partial payment estimate, pay the Contractor a progress payment on the basis of the approved partial payment estimate. The Owner shall retain five (5) percent of the amount of each payment until final completion and acceptance of all work covered by the Contract Documents. When the work is substantially complete (operational or beneficial occupancy), the retained amount may be further reduced below five (5) percent to only that amount necessary to assure completion. On completion and acceptance of a part of the work on which the price is stated separately in the Contract Documents, payment may be made in full, including retained percentages, less authorized deductions.

The request for payment may also include an allowance for the cost of such major materials and equipment which are suitably stored either at or near the site.

34. TIME OF COMPLETION - LIQUIDATED DAMAGES

The work shall be commenced at the time stipulated in the Notice to Proceed to the Contractor and shall be fully completed within one hundred twenty (120) consecutive calendar days thereafter.

As actual damages for any delay in completion are impossible to determine, the Contractor and his sureties shall be liable for and shall pay to the Owner the sum of $300.00 per day as fixed and agreed liquidated damages for each calendar day of delay until the work is completed and accepted.

35. SAFETY STANDARDS AND ACCIDENT PREVENTION

With respect to all work performed under this Contract, the Contractor shall:

A. Comply with the safety standards provisions of applicable laws, building and construction codes, and the Manual of Accident Prevention in Construction: published by the Associated General Contractors of America, the requirements of the Occupational Safety and Health Act of 1970 (Public Law 91-596 and the requirement of Title 29 of the Code of Federal Regulations, Section 1518 as published in the Federal Register, Volume 36, No. 75, Saturday, April 17, 1971), and specifically OSHA's Standard for Excavation and Trenches Safety Systems, 29 CFR Part 1926, Subpart P.

B. Exercise every precaution at all times for the prevention of accidents and the protection of persons (including employees) and property.

C. Maintain at his office or other well-known place at the job site, all articles necessary for giving first aid to the injured and shall make standing arrangements for the immediate removal to a hospital or doctor's care of persons (including employees) who may be injured on the job site.

SUPPLEMENTAL GENERAL CONDITIONS

REFERENCE DOCUMENT: These Supplemental General Conditions are included as a part of the Contract Documents for this project to supplement and/or amend the standard provisions of the General Conditions.

1. EXECUTION, CORRELATION, INTENT AND INTERPRETATIONS

Section 2 of the General Conditions is hereby supplemented as follows: The Drawings and Specifications are intended to agree and to be mutually explanatory. Should any discrepancy exist and not be clarified by addendum prior to bid opening, it will be presumed that the Contractor has based his proposal on the more expensive of the conflicting requirements. Before proceeding with any part of the work, Contractor shall report any such discrepancy to the Engineer, who shall rule on which of the conflicting requirements is to be followed. If the least expensive is directed, the Contractor shall refund to the Owner the difference in net cost.

Explanatory notes on Drawings shall be preferred to conflicting drawn out indications, if any. Large scale details will be preferred to small scale drawings, and figured dimensions to scale measurements. Where figures are lacking, scale measurements may be followed, but in all cases the measurements are to be checked from work in place, and should variations be found, such must be referred to the Engineer for instructions. Where on any of the Drawings a portion of work is drawn out and remainder is indicated in outline, the parts drawn out shall apply also to all other like portions of the work. Where the word "similar" occurs on Drawings, it shall be interpreted in its general sense and not as meaning identical, and all details shall be worked out in relationship to their location and their connection with other parts of the work.

2. PROTECTION AGAINST THEFT

Contractor shall take such precautions as he deems necessary to protect himself and the Owner from loss by theft. Contractor shall be responsible for the recovery or replacement of all materials or equipment lost by reason of theft during the entire course of the work, even though payment for same may have been received.

3. TOILET FACILITIES

General Contractor shall furnish, install and maintain ample sanitary facilities for workmen, including those of other contractors. Toilets shall be placed where indicated on the site as soon as work begins. They shall be housed in temporary enclosures and shall be maintained in a sanitary condition. They shall be removed from the premises upon completion of the work. They shall comply with all regulations of governmental agencies having jurisdiction.

4. GUARANTY

The Contractor shall guarantee all materials and equipment furnished and work performed for a period of one (1) year from the

date of substantial completion. The Contractor warrants and guarantees for a period of one (1) year from the date of substantial completion of the system that the completed system is free from all defects due to faulty materials or workmanship and the Contractor shall promptly make such corrections as may be necessary by reason of such defects, including the repairs of any damage to other parts of the system resulting from such defects. The Owner will give notice of observed defects with reasonable promptness. In the event that the Contractor should fail to make such repairs, adjustments or other work that may be made necessary by such defects, the Owner may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

SECTION I

SCOPE OF WORK

PART 1. WORK INCLUDED

1.1 It is intended that the contract shall include all materials, labor, equipment, services, etc. required for the Construction of a Walking Trail, Pavilion Improvements, Exercise Station, ADA Parking Improvements, Etc. in Egypt, Arkansas, together with any site work and attendant facilities thereto, as shown in the Drawings and described in the Specifications prepared by Miller-Newell Engineers, Inc., 510 Third Street, Newport, AR.

The Contractor will not be required to perform work that is not within the general character and scope of the Drawings and Specifications or not reasonably inferrable therefrom; however, he must recognize and accept the fact that these documents are not intended to illustrate or describe each and every possible detail of construction or finish that will be encountered in the execution of the work, nor can they show the exact location of each mechanical line, wiring device, fixture, etc. Where conditions are encountered that have not been specifically shown or detailed, they shall be worked out and finished similar to other details of like nature, or in accordance with supplementary Drawings furnished by the Engineer.

It shall be the responsibility of the General Contractor to coordinate all of the various phases of the construction and finish materials, including mechanical and electrical lines and equipment, so that all of the many components will fit together and function properly without interference one to the other to the end that the entire job when completed will present a neat and finished appearance with all movable parts and mechanical and electrical equipment operating properly, ready for the Owner's occupancy and use.

PART 2. SCOPE OF SUBCONTRACTORS WORK

2.1 This shall be established by agreement between the General Contractor and his subcontractors. For convenience of reference, the Specifications are separated into titled sections; however, such separation shall not operate to make the Engineer and arbiter to establish limits of the contracts between the General Contractor and subcontractors.

PART 3. GRADES, LINES, LEVELS AND SURVEYS

3.1 All grades, lines, levels and bench marks shall be established and maintained by the General Contractor who shall be responsible for same.

Contractor shall verify all grades, lines, levels and dimensions as shown on the Drawings, and he shall report any errors or

inconsistencies in the above to the Engineer before commencing work.

Contractor shall provide and maintain well built batterboards at all corners, he shall establish bench marks in not less than two widely separated places. As the work progresses he shall establish bench marks at each floor, giving exact levels of the various floors, and shall layout on the forms (or rough flooring) the locations of all partitions, etc., as a guide to all trades and subcontractors.

PART 4. DATA FOR "AS-BUILT" DRAWINGS

4.1 Contractor shall make a clearly legible record on one set of drawings of all conditions where the actual construction differs from the Contract Drawings. This includes the exact location of all mechanical lines and principal electrical conduits, referenced to convenient points with dimensions. Upon completion of the job, this set of drawings shall be delivered to the Engineer for his use.

PART 5. PROTECTION OF EXISTING UTILITIES

5.1 Contractor shall exercise extreme caution during excavation and/or earthwork of all kinds to prevent damage to existing mechanical lines and/or cables which may be located in the vicinity of work under this Contract. Approximate locations of such lines, insofar as the Engineer has been able to determine, are indicated on the plot plan; however, the Engineer does not certify to the correctness of such information and does not assume any responsibility for same. In the event that such lines or cables should be disturbed by operations under this Contract, the Contractor shall immediately and at his own expense, make repairs necessary to restore them to their present condition.

PART 6. OWNER AND LOCATION

6.1 The work is to be done for Egypt, Arkansas or its duly authorized representative, referred to throughout the Contract Documents as the "Owner."

The project is located at Egypt, Arkansas, at the point indicated on the plans.

All items to be done shall be inspected by the Engineer's Resident Project Representative and/or the Owner's Inspector before being covered up by other trades of work.

SECTION II

EARTHWORK

PART 1 - GENERAL

1.1 CONDITIONS

A. Requirements of the Conditions of the Contract apply to all work under this Section. This includes all labor, materials, equipment and services necessary to complete all work indicated on the drawings and herein specified, or both.

B. Carefully read the General Conditions of the Specifications, which shall be considered as and made a part of this section.

1.2 SCOPE

A. The work required under this section consists of all excavating, filling, grading, dewatering, and related items necessary to complete the work indicated on the Drawings and described in these Specifications, including but not necessarily limited to the following:

1. Excavating and disposal of building and site rubble, removal of top 12" of on-site soils (stripping) and stockpile for landscaping purposes.

2. Rough grading and subgrade preparation. Filling to top of subgrade with ordinary fill (locally available soil) approved by the Engineer.

3. Providing and installing controlled fill materials, footings and slabs.

1.3 EXAMINATION OF SITE AND DOCUMENTS

A. It is hereby understood that the Contractor has carefully examined the site and all conditions affecting work under this section. No claim for additional costs will be allowed because of lack of full knowledge of existing conditions as indicated in the Contract Documents, or obvious from observation at the site.

B. Plans, surveys, measurements, and dimensions under which the work is to be performed are believed to be correct, but the Contractor shall have examined them for himself during the bidding period as no allowance will be made for any errors or inaccuracies that may be found herein.

1.4 SUBSURFACE CONDITIONS

A. Subsurface conditions are to be assumed substantially as shown on the Drawings.

1.5 REQUIREMENTS OF REGULATORY AGENCIES

A. All work shall conform to the Drawings and Specifications and shall comply with applicable codes and regulations.

B. Comply with rules, regulations, laws and ordinances of all authorities having jurisdiction.

C. The Contractor shall procure and pay for all permits and licenses required for the complete work specified herein and shown on the Drawings.

D. The Contractor shall not close or obstruct any street, sidewalk, alley or passageway without permission from authorities having jurisdiction. The Contractor shall so conduct his operations as to interfere as little as possible with the use ordinarily made of roads, driveways, alleys, sidewalks, or other facilities near enough to the work to be affected thereby.

PART 2 - MATERIALS AND EQUIPMENT

2.1 FILL MATERIALS

A. Gravel Fill. Well graded natural sand and gravel free from ice, organic or other deleterious materials, conforming to the following gradations:

U.S. Sieve No.	Percent Passing by Weight	
	Maximum	Minimum
4 Inch	---	100
1 Inch	100	60
No. 4	85	25
No. 40	35	5
No. 200	5	0

B. Ordinary Fill. Well-graded, natural, inorganic soil shall consist of sand or gravel clays approved by the Architect/Engineer and meeting the following requirements:

1. It shall be free of organic and other weak or compressive materials, of frozen materials, and of stones larger than 6 inches maximum dimension.

2. It shall be of such nature and character that it can be compacted to the specified density of 100% Standard Proctor in a reasonable length of time.

3. It shall be free of highly plastic clays, of all materials subject to decay, decomposition, or dissolution, and of cinders or other materials which will corrode piping or other materials.

4. It shall have a plasticity index (PI) of less than 15.

5. Ordinary fill shall be used to fill to the top of subgrade.

C. Controlled Fill/Base Material Under Footings Slabs, Paved (both Rigid and Flexible) Driveways and Parking Areas.

1. The controlled fill under the floor slabs and footings shall consist of clayey sand or clayey gravel with a plasticity index less than 15. Samples of materials proposed shall be submitted for approval.

D. Granular Material Under Concrete Slabs.

1. The granular material under floor slabs shall consist of porous sands or crushed fine limestone with no more than 5% passing a No. 200 sieve (absence of fines), as approved by the Engineer.

E. Topsoil. Fertile, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a well-drained arable site, reasonably free from clay, lumps, coarse sands, stones, plants, roots, sticks, brick and other foreign materials, with acidity range of between pH 6.0 and 6.8. Disturbed areas to be seeded shall receive a 3" minimum of approved topsoil. Areas that shall receive beds and sod shall receive a 3" minimum layer of approved topsoil

1. Identify source location of topsoil proposed for use on the project.

2. Provide topsoil free of substances harmful to the plants, which will be grown in the soil.

2.2 SOURCE QUALITY CONTROL

A. All fill materials shall be subject to quality control testing. A qualified laboratory will be selected and paid by the Contractor to perform tests on materials. Test results and laboratory recommendations will be available to the Owner.

2.3 COMPACTION EQUIPMENT

A. Provide sufficient equipment units of suitable types to spread, level and compact fills promptly upon delivery of materials.

B. Contractor may use any compaction equipment or device which he finds convenient and economical, but the Architect/ Engineer retains the right to disapprove equipment which, in his opinion, is of inadequate capacity or unsuited to the character of materials being compacted.

PART 3 - EXECUTION

3.1 GENERAL

A. Site Preparation

1. To prepare for construction, all topsoil, vegetation, roots, and any soft soils in the building or pavement areas shall be stripped from the ground surface and either wasted or stockpiled for later use in landscaping. Some old foundation slabs may be encountered.

2. Site grading should include removal of the surficial organic soil zone in the building and pavement areas. Depth of stripping is estimated to be on the order of 12 inches, although potentially greater in localized soft and/or moist areas during wetter seasons.

3. Following stripping, and prior to placing fill, the site should be proof-rolled with a minimum 20,000 pound pneumatic tired roller, loaded tandem-wheeled dump truck, or similar equipment. Soft or loose zones should be undercut and be processed and re-compacted or undercut and replaced with approved select fill. Additional undercutting in excess of the 12 inches will be considered a part of "site work" in the lump sum bid schedule and no additional compensation will be made.

4. Subgrade shall be compacted to 98% Standard Proctor. A subgrade support fabric such as Mirafi 500x (or equal) shall be placed between the compacted fill and the natural ground to improve site stability of soils.

5. Undercutting to depths of 3 to 4 feet are possible under extremely wet conditions, or if excessive disturbance occurs due to heavy construction equipment. To reduce undercut potential, the use of light dozers is recommended for stripping. In addition, operation of heavy rubber-tired equipment should be limited. See Soils Report, Appendix A.

6. Fill required for backfill or to raise existing grade should consist of select clayey sand (SC), sandy clay (CL), or clayey gravel (GC) having a liquid limit less than 40, or an approved alternate. Since the footings will be supported in fill, a compaction criteria of at least 100 percent of Standard Proctor dry density (ASTM D-1557) with a moisture content range of -2 to +3 percent of optimum is recommended. In pavement areas, a compaction criteria of at least 100 percent of maximum Standard Proctor dry density (ASTM D-698) for base course, at a moisture content near optimum is recommended. Fill should be placed in maximum 8 inch lifts. Each lift or fill should be properly compacted, tested, and approved prior to placing subsequent lifts.

B. Layout and Grades

1. All lines and grade work not presently established at the site shall be laid out by the Contractor in accordance with the Contract Drawings and Specifications. The Contractor shall establish permanent bench marks determined by a Registered Land Surveyor Professional Civil Engineer. Maintain all established bounds and bench marks and replace as directed any which are destroyed or disturbed.

2. The words "finished grades" as used herein shall mean the required final grade elevations indicated on the Drawings. Spot elevations shall govern over proposed contours. Where not otherwise indicated, project site areas outside of the buildings shall be given uniform slopes between points for which finished grades are indicated or between such points and existing established grades.

3. The word "subgrade" as used herein means the required surface of subsoil, ordinary fill or compacted fill. The surface is immediately beneath the site improvements, specially dimensioned fill, paving, loaming, or other surfacing materials.

C. Disposition of Existing Utilities

1. Active utilities existing on the site shall be carefully protected from damage and relocated or removed as required by the work. When an active utility line is exposed during construction, its location and elevation shall be plotted on the record drawings and both the Architect/Engineer and the utility owner notified in writing.

2. Inactive or abandoned utilities encountered during construction operations shall be removed, plugged or capped. The location of such utilities shall be noted on the record drawings and reported in writing to the Architect/Engineer.

D. Frost Protection

1. Make no excavations to the full depth indicated when freezing temperatures may be expected, unless the footings or slabs can be placed immediately after the excavation has been completed. Protect the bottom so excavated from frost if placing of concrete is delayed. Should protection fail, remove frozen materials and replace with gravel fill as directed, at no cost to the Owner.

2. The underside of in-place beams and slabs shall be protected from freezing temperatures.

E. Disposal

1. All excavated materials which are not used for fill or backfill, and all surplus excavated materials shall be

removed from the site and disposed of at no cost to the Owner.

3.2 EXCAVATION

A. Excavate all materials as required to allow construction of the foundations for the structure as shown on the Drawings. Attention is called to "General Notes" on Structural Drawings and to the requirements contained therein which may affect the work under this section.

B. If rock is encountered, trenches shall be excavated to 6 inches below bottom of pipe. Trenches for storm and sanitary sewers shall have a continuous slope in the direction of flow.

C. When the depth of backfill over the pipes exceeds ten (10) feet, keep the trench below the level of the top of the pipe as narrow as practicable.

3.3 DEWATERING

A. Provide, maintain and operate pumps and related equipment, including standby equipment, of sufficient capacity to keep excavation free of all water at all times and under any and all contingencies that may arise until the structures attain their full strength.

3.4 PLACING FILLS

A. General

1. Areas to be filled or backfilled shall be free of construction debris, refuse, compressible or decayable materials and standing water. Do not place when fill materials or layers below it are frozen.

2. Notify the Architect/Engineer when excavations are ready for inspection. Filling and backfilling shall not be started until conditions have been approved by the Architect/Engineer.

3. Furnish approved materials. Place fill in layers not exceeding 6 inches compacted thickness and compact as specified below for various fill conditions.

4. Before backfilling against walls, the permanent structures (including basement floor slabs) shall be cast and sufficiently aged to attain strength required to resist backfill pressures without damage. Temporary bracing will not be permitted except by written permission from the Architect/Engineer. When filling on both sides of a wall or pier, place fill simultaneously on each side. Correct any damage to the structure caused by backfilling operations at no cost to Owner. Place no stones closer than eighteen (18) inches to wall surfaces.

5. Backfill trenches only after pipe has been inspected, tested, and location of pipes and appurtenances have been recorded.

6. Pipe bed shall be shaped by means of hand shovels to give full and continuous support to lower third of pipe. Backfill by hand around pipe and for a depth of twelve (12) inches above the pipe; use sand and tamp firmly in layers not exceeding six (6) inches in thickness, taking care not to disturb the pipe. Compact the remainder of the backfill thoroughly with a rammer of suitable weight or with an approved mechanical tamper to achieve the compaction specified below for various fill conditions.

7. Where soft materials of poor bearing qualities are found in trenching, a concrete foundation may be required to insure a firm foundation for the pipe. Such concrete foundation shall be bedded with six (6) inches of sand tamped in place so as to provide a uniform bearing for the pipe between joints.

8. All exposed subgrade shall be proof-rolled prior to fill placement to aid in identifying areas of loose or soft subgrade soils. Random compaction tests shall be performed to verify a subgrade soil compaction of 98% Standard Proctor of the top 6" of subgrade soil prior to ordinary fill or base course fill placement.

B. Placing Ordinary Fill

1. Ordinary fill as specified in Paragraph 2.1.B. hereinabove shall be provided behind all walls and for all backfill and fill where gravel fill has not been specified hereinabove or on Drawings.

2. Place ordinary fill in lifts not exceeding eight (8) inches, uncompacted thickness, and compact to 100% standard proctor density (ASTM D-698).

C. Placing Controlled Fill

1. The controlled fill should be scarified and then processed to a moisture content between three percentage points below and two percentage points above the Standard Proctor optimum. The subgrade soils should be recompacted to a dry density of at least 98% of the standard Proctor maximum dry density for depths of at least 6 inches below the surface.

2. After subgrade preparation and inspection have been completed, fill placement may begin. Fill materials should be free of organic or other deleterious materials, have a maximum particle size of 3 inches, and have a plasticity index of less than 15. If a fine-grained (silt or clay) soil is used for fill, very close moisture content control will be required to achieve the recommended degree of

compaction.

3. Fine-grained and granular structural fill should be compacted to at least 100% of the maximum Standard Proctor dry density as determined by ASTM Designation D-698. The fills under the concrete pavements shall have some plasticity. Select clayey sand or clayey gravel with a plasticity index between 4 and 15 shall be used.

4. Fill should be placed in maximum lifts of eight inches of loose material and should be compacted within the range of two percentage points above to three percentage points below the optimum moisture content as determined by the standard Proctor test. If water must be added, it should be uniformly applied and mixed into the soil by disking or scarifying.

5. Each lift of compacted soil should be tested and approved by the soils Architect/ Engineer or his representative prior to placement of subsequent lifts. As a guideline, it is recommended that field density tests be taken at a frequency of not less than one test per 2500 square feet of surface area per lift of fill in the building areas. This testing frequency may be reduced to one test per 5000 square feet of surface area per lift of fill in the pavement areas.

D. Field Quality Control

1. See overlapping procedures in Source of Quality Control.

2. Cooperate with laboratory in obtaining field samples of in-place materials after compaction. Furnish identical field labor in connection with these tests.

E. Construction Procedures

1. It is anticipated that the surficial silty clay soils encountered over portions of the site may be subject to significant loss in shear strength upon exposure and saturation. Therefore, adequate drainage of surface runoff should be established during the early phases of site grading and continued throughout construction to prevent ponding and subsequent saturation of subgrade soils.

2. It is anticipated that if construction is initiated during wetter seasons limited perched ground water may be encountered above excavation depths. Further, if the silty clay surficial soils within the building area are near saturation, pumping of these soils may occur during fill placement, requiring additional undercutting or the use of a "bridge" lift procedure. The potential for these problems to occur is considered to be significantly reduced if the site is dry.

3. Foundation excavations should be free of all loose or soft soils and water prior to placing concrete. Concrete should be placed as soon as possible after excavation, cleaning and inspection are complete to minimize possible changes in soil conditions due to the effects of wetting and drying. The Contractor shall notify the Architect/Engineer so he can be present during foundation excavation to monitor soil conditions at foundation depths.

4. Care should be taken to adequately slope or brace the sides of foundation excavations to prevent sloughing or caving. All applicable safety requirements (OSHA) regarding trench excavations should be adhered to.

3.5 CLEAN UP

A. Remove all excess earth, debris, topsoil or other materials associated with this work from the job site.

B. Keep driveways and city streets free from mud or trash deposited by equipment used in performing work under this section.

SECTION III

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specified cast-in-place concrete, including formwork, reinforcing, mix design, placement procedures, and finishes.

B. Concrete walks.

1.3 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by the Architect/Engineer.

C. Shop drawings for reinforcement, prepared for fabrication, bending and placement of concrete reinforcement, showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:

1. ACI 318, "Building Code Requirements for Reinforced Concrete."
2. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."

B. Concrete Testing Service: Engage a testing laboratory acceptable to Architect/Engineer to perform material evaluation tests and do design concrete mixes.

C. Materials and installed work may require testing and retesting at

any time during progress of work. Tests, including retesting of rejected materials for installed work, shall be done at Contractor's expense.

D. Pre-Construction Conference: Conduct conference at project site to comply with requirements of Division 1 Section "Project Meetings" and to be attended by the following:

1. Contractor's superintendent.
2. Laboratory responsible for field quality control.
3. Ready-mix concrete producer.
4. Concrete subcontractor.
5. Architect, Engineer, or Owner's representative.

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

B. Form Ties: Factory-fabricated, adjustable length, removable or snap-off metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches to exposed surface.

2.2 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

B. Supports for Reinforcement: Bolsters, chairs, spacers, and other devises for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire-bar-type supports complying with CRSI specifications.

1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I.

1. Use one brand of cement throughout project unless otherwise acceptable to Architect/Engineer.

B. Normal Weight Aggregates: ASTM C 33 and as herein specified. Provide aggregates from a single source for exposed concrete.

1. Local aggregates not complying with ASTM C 33 but that special tests or actual service have shown to produce concrete of adequate strength and durability may be used when acceptable

to Architect/Engineer.

C. Water: Drinkable.

D. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

2.4 RELATED MATERIALS

A. Vapor Retarder: Provide vapor retarder cover over prepared base material where indicated below slabs on grade. Use only materials that are resistant to deterioration when tested in accordance with ASTM E 154, as follows:

1. Polyethylene sheet not less than 8 mils thicks.

B. Evaporation Control: Monomolecular film-forming compound applied to exposed concrete slab surfaces for temporary protection from rapid moisture loss.

1. Available Projects: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:

"Aquafilm," Conspec Marketing and Mfg. Co.
"Eucobar," Euclid Chemical Co.
"E-Con," L & M Construction Chemicals, Inc.
"Confilm," Master Builders, Inc.

C. Expansion joints in concrete slabs shall be 1 x 4 or 2 x 4 Redwood lumber.

D. Expansion joints using 1 x 4 Redwood shall be constructed with a 1 / 2" x 3 / 4" reservoir for sealant. The joints shall be sealed with Throseal Caulking, as manufactured by Sonneborne.

2.5 PROPORTIONING AND DESIGN OF MIXES

A. Submit written reports to Architect/Engineer of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until proposed mix designs have been reviewed by Architect/Engineer.

B. Design mixes to provide normal weight concrete with the following properties, as indicated on drawings and schedules.

1. 3000 psi, 28 day compressive strength; W/C ratio 0.58 maximum (non-air-entrained), 0.46 maximum (air-entrained); with a minimum cement of 470# per cu.yd.

2. 4000 psi, 28 day compressive strength; with a minimum cement of 560# per cu.yd.

C. Adjustment to Concrete Mixes: Mix design adjustments may be

requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Architect/Engineer. Laboratory test data for revised mix design and strength results must be submitted to an accepted by Architect/Engineer before using in work.

2.6 ADMIXTURES

A. Use water-reducing admixture or high-range water-reducing admixture (Superplasticizer) in concrete as required for placement and workability.

B. Use non-chloride accelerating admixture in concrete slabs at ambient temperatures below 50 deg. F (10 deg C).

C. Use high-range water-reducing admixture (HRWR) in pumped concrete, concrete for industrial slabs, architectural concrete, parking structures slabs, concrete required to be watertight, and concrete with water/cement rations below 0.50.

D. Use air-entraining admixture in exterior exposed concrete unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus or minus 1-1/2 percent within following limits:

1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or hydraulic pressure: 6.0 percent (sever exposure) 3/4-inch max. aggregate.

2. Other concrete (not exposed to freezing, thawing, or hydraulic pressure) or to receive a surface hardener: 2 percent to 4 percent air.

E. Use admixtures for water reduction and set control in strict compliance with manufacturer's directions.

1. Water-Cement Ratio: Provide concrete for following conditions with maximum water-cement (W/C) ratios as follows:

   Subjected to freezing and thawing: W/C 0.45.
   Subjected to deicers/watertight: W/C 0.40.
   Subjected to brackish water, salt spray or deicers: W/C 0.40.

F. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

1. Ramps, slabs, and sloping surfaces: Not more than 3 inches.
2. Reinforced foundation systems: Not less than 1 inch and not more than 3 inches.
3. Concrete containing HRWR admixture (Superplasticizer): Not more than 8 inches after addition of HRWR to site-verified 2-inch to 3-inch slump concrete.
4. Other Concrete: Not more than 4 inches.

G. Fly ash is not acceptable as a substitute for cement.

2.7 CONCRETE MIXING

A. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as specified.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.

3.2 FORMS

A. General: Design, erect, support, brace, and maintain form work to support vertical and lateral, static and dynamic loads that might be applied until concrete structure can support such loads. Construct form work so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain form work construction tolerances complying with ACI 347.

B. Construct forms to sizes, shapes, lines and dimensions shown and to obtain accurate alignment, location, grades, level, and plumb work in finished structures. Provide for openings, offsets, recesses, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent leakage of cement paste.

C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces.

D. Provisions for Other Trades: Provide openings in concrete form work to accommodate work of other trades. Determine size and location of openings, recesses, and chases from trades providing such items. Accurately place and securely support items built into forms.

E. Cleaning & Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retighten forms and bracing before concrete placement as required to prevent mortar leaks and maintain proper alignment.

3.3 VAPOR RETARDER/BARRIER INSTALLATION

A. General: Following leveling and tamping of granular base for slabs on grade, place vapor retarder/ barrier sheeting with longest dimension parallel with direction of pour.

B. Lap joints 6 inches and seal vapor barrier joints with manufacturer's recommended mastic and pressure-sensitive tape.

C. After placement of vapor retarder/barrier, cover with sand cushion and compact to depth as shown on drawings.

3.4 PLACING REINFORCEMENT

A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars," for details and methods of reinforcement placement and supports and as herein specified.

1. Avoid cutting or puncturing vapor retarder during reinforcement placement and concreting operations.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials that reduce or destroy bong with concrete.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as approved by Architect/ Engineer.

D. Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at lease one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.5 JOINTS

A. Construction Joints: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Architect/Engineer.

B. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints except as otherwise indicated. Do not continue reinforcement through sides of strip placements.

C. Use bonding agent on existing concrete surfaces that will be

joined with fresh concrete.

3.6 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to or supported by cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.

B. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to obtain required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.7 CONCRETE PLACEMENT

A. Inspection: Before placing concrete, inspect and complete form work installation, reinforcing steel, and items to be embedded or cast in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work.

B. General: Comply with ACI 304, "Recommended Practice of Measuring, Mixing, Transporting, and Placing Concrete," and as herein specified.

C. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete to avoid segregation at its final location.

D. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

1. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309.

2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

E. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

1. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

2. Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

3. Maintain reinforcing in proper position during concrete placement.

F. Cold-Weather Placing: Comply with provisions of ACI 306 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

G. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and mot more than 80 deg F (27 deg C) at point of placement.

1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

2. Do not us calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

H. Hot-Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F (32 deg C). Mixing water may be chilled, or chapped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.

2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

3. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.

4. Use water-reducing retarding admixture when required by high

temperatures, low humidity, or other adverse placing conditions, when acceptable to Architect/ Engineer.

3.8 MONOLITHIC SLAB FINISHES

A. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint or other film finish coating system.

1. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of Ff20 - F1 17. Grind smooth surface defects that would telegraph through applied floor covering system.

B. Trowel and Fine Broom Finish: Sidewalks shall receive trowel and fine broom finish.

3.9 CONCRETE CURING AND PROTECTION

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. In hot, dry and windy weather, protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply in accordance with manufacturer's instructions after screeding and bull floating, but before power floating and troweling.

B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.

C. Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as herein specified.

D. Provide moisture curing by following methods.

1. Keep concrete surface continuously wet by covering with water.

2. Use continuous water-fog spray.

3. Cover concrete surface with specified absorptive cover, thoroughly saturate cover with water, and keep continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4-inch lap over adjacent absorptive covers.

E. Provide moisture-cover curing as follows:

1. Cover concrete surfaces with moisture-retaining cover for

curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

F. Provide curing and sealing compound to exposed interior slabs and to exterior slabs walks, and curbs as follows:

1. Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours and after surface water sheen has disappeared). Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

2. Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.

3.10 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Steel Pan Stairs: Provide concrete fill for steel pan stair treads and landings and associated items. Cast-in safety inserts and accessories as shown on drawings. Screed, tamp, and finish concrete surfaces as scheduled.

3.11 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect/Engineer.

1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar before bonding compound has dried.

B. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repairs to satisfaction

of Architect/Engineer. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections of surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry-pack mortar, or precast cement cone plugs secured in place with bonding agent.

1. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

C. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having required slope.

1. Repair finished unformed surfaces that contain defects that affect durability of concrete. Surface defects, as such, include crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, popouts, honeycomb, rock pockets, and other objectionable conditions.

2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.

3. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with patching compound. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to Architect/Engineer.

4. Repair defective areas, except random cracks and single holes not exceeding 1 inch in diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

3.12 QUALITY CONTROL TESTING DURING CONSTRUCTION.

A. General: Employ a testing laboratory to perform tests and to submit test reports.

B. Sampling and testing for quality control during placement of concrete may include the following, as directed by Architect/Engineer.

C. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM D 94.

1. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.

2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method of normal weight concrete; one for each day's pour of each type of air-entrained concrete.

3. Concrete Temperature: Test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27deg C) and above, and each time a set of compression test specimens is made.

4. Compression Test Specimen: ASTM C 31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cure test specimens are required.

5. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. more than the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

6. When frequency of testing will provide fewer than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

D. Test results will be reported in writing to Architect, Structural Engineer, Ready-Mix Producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

F. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Architect/Engineer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

SECTION IV

AGGREGATE BASE COURSE

PART 1 - GENERAL PROVISIONS

1.1 DESCRIPTION

A. This work shall include the installation of aggregate base course for the construction of the gravel parking area.

PART 2 - MATERIALS

2.1 BASE COURSE

A. Crushed Stone Base. This material shall consist of crushed run stone or a mixture of crushed stone and natural fines uniformly mixed and so proportioned as to meet all the requirements hereinafter specified, with the further provision that a mixture of crushed stone and natural fines shall contain not less than 90 percent crusher produced material. The stone shall be hard and durable with a percent of wear of 45 by Los Angeles Test (AASHTO T 96). For the purpose of this specification, shale and slate are not considered to be stone. The material furnished shall not contain more than 5 percent by weight of shale, slate and other deleterious matter.

The class or classes of crushed stone base course material that may be used on any particular job will be those called for on the proposed schedule.

GRADING REQUIREMENTS

Size of Sieve Total Retained	Percent by Weight Class SB-2	Class SB-3
1 1/2"	0	---
1"	---	0
3/4"	10-50	0-35
No. 4	50-75	50-75
Total Passing		
No. 40	10-30	10-30
No. 200	3-10	3-10

The fraction passing the No. 200 sieve shall not be greater than two-thirds the fraction passing the No. 40 sieve. The fraction passing the No. 40 sieve shall have a liquid limit not greater than 25 and a plasticity index of not greater than 6.

When it is necessary to blend two or more materials, each material shall be proportioned separately through mechanical

feeders to insure uniform production. Premixing or blending in the pit to avoid separate feeding will not be permitted. Blending materials on the roadway in order to obtain a mixture that will comply with the above requirements will not be permitted.

PART 3 - APPLICATION

3.1 APPLICATION

A. Crushed Stone Base Construction. The base course material shall be placed on a completed and approved subgrade or existing base that has been bladed to conform to the grade and cross section shown on the plans.

The subgrade shall be prepared as specified and shall be free from an excess or deficiency of moisture at the time of placing the base course. The subgrade shall also comply, where applicable, with the requirements of other items that may be contained in the contract that provide for construction, reconstruction or shaping of the subgrade or the reconstruction of the existing base course.

Base course material shall not be placed on a frozen subgrade or subbase.

The crushed stone gravel shall be placed on the subgrade or other base course material and spread uniformly to such depth and lines that when compacted it will have the thickness, width and cross-section shown on the plans.

If required, the compacted depth of the base course exceeds six inches (6"), the base shall be constructed in two or more layers of approximate equal thickness. The maximum compacted thickness of any one layer shall not exceed six (6) inches. When vibrating or other approved type of special compacting equipment is used, the compacted depth of a single layer of the base course may be increased to 8 inches upon approval.

The spreading shall be done the same day that the material is hauled and it shall be performed in such manner that no segregation of coarse particles or nests or hard areas caused by dumping the gravel on the subgrade will exist. To insure proper mixing, the gravel shall be bladed entirely across the roadbed before being spread. Care must be taken to prevent mixing of subgrade or shoulder material with base course material in the blading and spreading operation.

Each course shall be compacted by any satisfactory method that will produce the density hereinafter specified. The gravel shall be substantially maintained at optimum moisture during the mixing, spreading, and compacting operations. The density of the compacted material in each course, as determined by AASHTO T-191, shall not be less than 95 percent of the density

obtained in the laboratory by AASHTO T-180. The crushed stone shall be compacted across the entire width of application.

The laboratory density shall be obtained as follows. The sample is prepared by removing the aggregate retained at the 3/4 inch sieve and adding aggregate passing the 3/4 inch sieve and retained on the No. 4 sieve in an amount equal to that removed. The sample so prepared is compacted at various water contents in five equal layers in a mold 6 inches in diameter and 7 inches in height. Each layer is compacted by 55 blows of a 10 pound hammer 2 inches in diameter dropped from a height of 18 inches. The density used is the dry weight obtained at the optimum water content.

The compacted base course shall be tested for depth and any deficiencies corrected by scarifying, placing additional material, mixing, reshaping, and recompacting to specified density, as directed.

The Contractor shall maintain the base course in a satisfactory condition until accepted.

SECTION V

ASPHALTIC CONCRETE PAVEMENT

PART 1.00 - GENERAL

1.1 GENERAL PROVISIONS

A. Description. This work shall consist of the replacement of asphalt surface damaged during construction. The asphalt surface course for a 2" overlay shall be Type II asphalt and shall be placed and compacted in accordance with these specifications.

B. Intent of Contract. The intent of the contract is to provide for the construction and completion in every detail of the work described. The bidder is expected to examine carefully the site of the work and all documents pertaining to its construction in order to verify the work conditions and requirements established by the Engineer. The Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications and terms of the Contract.

C. Authority of the Engineer. The Engineer shall decide all questions that may rise as to quality and acceptability of materials furnished, manner of performance and rate of progress of the work, interpretation of specifications or plans relating to the work, and acceptable fulfillment of the contract by the Contractor. Suspension of the work may be ordered by the Engineer if deemed to be in the public interest.

D. Barricades and Warning Signs. The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs, and other traffic control devices. He shall take all necessary precautions to protect the work and to safeguard the public. Streets closed to traffic shall be protected by effective barricades, and obstructions shall be illuminated during hours of darkness. Suitable warning signs shall be provided to control and direct traffic properly.

E. Protection and Restoration of Property and Landscape. The Contractor shall be responsible for preserving all public and private property. He shall protect from disturbance or damage all land monuments and property. He shall protect from disturbance or damage all land monuments and property

marks until the Engineer has witnessed or otherwise referenced their location.

During the prosecution of the work, the Contractor shall be responsible for all damage or injury to any property that results from any act, omission, neglect or misconduct in his execution of the work. He shall be responsible for all damage or injury due to defective work or materials. Repair or replacement of damaged or injured property shall be at the Contractor's expense and shall be similar or equal to that existing before such damage or injury occurred.

F. Equipment. Design, capacity and mechanical condition of equipment and tools necessary for handling materials and performing all parts of the work shall be approved by the Engineer. Equipment shall be at the job site sufficiently ahead of the start of construction operations to be examined thoroughly and approved.

G. Special Provisions. Any work not covered in these specifications shall be detailed by special provisions or shall be accomplished in accordance with the current standards and specifications of the State Highway Department.

PART 2.00 - BITUMINOUS SURFACE COURSE

2.1 MATERIALS

A. Tack Coat. All materials shall conform with the requirements provided in Section 403, "Materials and Equipment for Bituminous Surface Courses" in the Standard Specifications for Highway Construction of the Arkansas State Highway Commission. In general, a rapid curing cut back or emulsified asphalt will be used for tack coat. Dependent upon the texture of the base and the season of the year that work is being performed, the Engineer will select the particular grade of the type of bituminous material designated that will be used.

B. Surface Course. Shall be Asphaltic Concrete Hot Mix Surface Course, Type 2, as provided in the Standard Specifications for Highway Construction of the Arkansas State Highway Commission.

2.2 APPLICATION OF BITUMINOUS SURFACE COURSE

A. Tack Coat. The tack coat is applied to provide bond between existing surface and the construction to be superimposed. Immediately preceding the tack coat application,

the surface to be treated shall be swept free of dust, dirt and loose or foreign material, cleaning but not loosening or dislodging the top embedded aggregate. Layers or pockets of dirt or other materials which do not form an integral part of the surface to be treated shall be removed. Such sweeping operations shall be performed by mechanical methods. If deemed necessary by the Engineer, the surface shall be sprinkled with water and given an additional sweeping with hand brooms, it being the intent of these specifications that the surface to be treated be free as practicable of dirt, or pockets of other loose material. The sweeping and cleaning operations shall be carried only far enough to advance of the application of the bituminous material to insure the surface being properly prepared at the time of application. When the existing surface is an old concrete pavement, all joints and crack filler shall be removed from the surface.

The tack coat shall be applied by means of a pressure distributor in the same manner as outlined above for the application of prime coat. When emulsified asphalt is used, it shall be diluted with water in order to insure complete coverage and adhesion to the pavement surface. The rate of application shall be from 0.03 gallons per square yard to 0.10 gallons per square yard as designated by the Engineer. The tack coat shall be applied sufficiently in advance of the wearing surface to allow the proper curing of the bituminous material but shall not be applied so far in advance as to lose its adhesiveness as a result of being covered with dust or foreign material. If the tack coat becomes damaged or covered with foreign material prior to placing the wearing surface, such areas shall be cleaned as necessary and re-treated at the expense of the Contractor.

B. Asphaltic Concrete Hot-Mix Surface Course. This item shall consist of an asphaltic concrete wearing surface composed of a compacted mixture of mineral aggregate and asphalt cement constructed on the completed road bed in accordance with these specifications and in conformity with the lines, grades, completed thickness and typical cross sections shown on the plans.

(1) Prior to the arrival of the mixture at the work, the prepared surface, primed or tack coated as specified, shall be cleaned of all loose and foreign material. The mixture shall not be placed on the surface which shows evidence of moisture.

(2) Transporting. The mixture shall be transported from the

paving plant to work in tight vehicles previously cleaned of foreign materials. Each load shall be covered with canvas or other suitable material of sufficient size to retard loss of heat and to protect it from the weather condition. The cover shall extend at least 12 inches over the sides and ends of the truck bed and shall be securely fastened. When the mixture is being hauled more than fifteen miles or when the pavement is being placed after November first or prior to April first, the sides of the vehicles shall be suitably insulated to retard loss of heat. The insulating material shall be at least 3/4 inch thick and shall cover ends, sides and bottom of the truck bed. No loads shall be sent out so late in the day as to interfere with spreading and compacting the mixture during daylight hours unless artificial light, satisfactory to the Engineer, is provided.

The mixture shall be delivered at a temperature of 275 degrees F. to 325 degrees F. It shall be placed only upon a base which shows no evidence of free moisture, and only when weather conditions are suitable. The Engineer may, however, permit work of this character to continue when overtaken by sudden rains to utilize materials which may be in transit from plant at the time, provided the finished pavement otherwise meets specification requirements.

(3) Spreading and Finishing. The mixture shall be laid upon the prepared surface, spread and struck off to the grade and elevation established. Bituminous pavers shall be used to distribute the mixture either over the entire width or over such partial width as may be practicable.

Hand spreading will be permitted only on small turn-outs or other small areas inaccessible to the spreader. On normal two-lane roads the mixture shall be spread and finished in one-half widths. Unless two machines are employed, the spreader shall alternate between the two half widths with such frequency that the second half width shall be laid the next day after the first half width is laid.

The finishing machine shall be kept in good mechanical condition and adjustment. All worn or defective parts shall be replaced immediately when indicated by improper finish of the surface. Bituminous pavers shall be self-contained, power propelled units, provided with an activated screen or strike-off assembly, heated if necessary, and capable of spreading and finishing courses of bituminous plant mix material in land widths applicable to the specified typical section and thicknesses shown on the

plans. Pavers used for shoulders and similar construction shall be capable of spreading and finishing courses of bituminous plant mix material widths shown on the plans.

The paver shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed.

The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture.

When laying mixtures, the paver shall be capable of being operated at forward speeds consistent with satisfactory laying of the mixture.

(4) Rolling and Density Requirements. The mixture shall be compacted as soon after being spread as it will bear the weight of the rollers without undue displacement.

Rolling shall start longitudinally at the sides and proceed toward the center of the roadway, overlapping on successive trips by at least one-half the width of the roller. When paving an echelon or abutting a previously placed lane, the longitudinal joint shall be rolled first followed by the regular rolling procedure. The mixture shall be continuously rolled until all roller marks are eliminated and no further compaction is possible. The motion of the roller shall be slow enough to avoid displacement of the mixture. Displacement as a result of reversing the direction of the roller, or from any other cause, shall at once be corrected by the use of rakes and additional material where required. To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened with water and/or oil.

For surface course, breakdown rolling shall be accomplished with the three-wheel or tandem steel wheeled roller as directed. The pneumatic tired roller shall follow as soon as possible and shall be operated to the end that final rolling with the tandem steel wheeled roller shall be performed before excessive loss of heat occurs in the mix.

Pneumatic tired rollers, when used for breakdown rolling, shall exert an average ground contact pressure of 35 to 55 pounds per square inch. When used for intermediate rolling it shall exert an average contact pressure of 80 to 100 pounds per square inch. The Contractor shall furnish to the Engineer charts or tabulations showing the contact

area pressure and tire pressure for each pneumatic roller furnished.

The contact pressure shall be considered excessive, even within the specified range, when lateral displacement of the mix occurs and shall be lowered in accordance with the stability of the mix as directed.

All jobs requiring compaction of bituminous mixtures shall have a minimum of one tandem steel wheeled roller and one pneumatic roller. All rollers shall meet State Highway Standards. All final rolling shall be done with a tandem steel wheeled roller.

Final approval of roller and rolling sequences will be based upon satisfactory performance and the ability to compact the asphaltic mixtures to a specified density and surface requirements.

The finished bituminous courses shall be compacted to the following densities:

(a) Asphaltic Concrete Hot-Mix Surface Course	Not less than 92% of theoretical density.
(b) Asphaltic Concrete Hot-Mix Binder Course	Not less than 90% of theoretical density.
(c) Dense Graded Hot-Mix Surface Course	Not less than 90% of theoretical density.
(d) Dense Graded Hot-Mix Binder Course	Not less than 90% of theoretical density.
(e) Sand-Asphalt Hot-Mix Surface Course	Not less than 90% of theoretical density.
(f) Sand-Asphalt Hot-Mix Base Course	Not less than 95% of the density obtained in the laboratory.
(g) Hot-Mix Asphalt Stabilized Base Course	Not less than 97% of the density obtained in the laboratory.

(5) Joints. Placing of the bituminous paving shall be as continuous as possible. Roller shall not pass over the unprotected end of a freshly laid mixture unless authorized by the Engineer. Transverse joints shall be formed by cutting back on the previous run to expose the full depth of the course. When directed by the Engineer, a brush coat

of bituminous material shall be used on contact surfaces on transverse joints just before additional mixture is placed against the previously rolled material.

(6) Surface Tests. Before the completion of the rolling, the surface shall be tested for thickness and contour and corrected as necessary while still hot by adding or removing material, restoring and re-rolling until the finished surface complies with the test requirements.

The finished surface, when checked with a ten foot straight edge placed parallel to the centerline, shall show no variation more than 1/8 inch for surface courses.

Such portions of the completed surface as are found defective shall be removed and replaced with suitable material by the Contractor at no expense to the Owner.

(7) Temperature Limitations. Hot-mix bituminous material shall not be mixed or placed when the air temperature in the shade is below 40 degrees F., or when there is frost in the base or subgrade, or at any other time when weather conditions are unsuitable for the type of material being placed. When approved by the Engineer, bituminous material may be placed when the lifts are in excess of 20 inches compacted thickness and the air temperature in the shade is 35 degrees F., or higher.

SECTION VI

SEEDING & MULCHING

PART 1.00 - GENERAL

1.1 This item shall consist of furnishing and applying lime, fertilizer, seed, mulch cover, asphalt and water in accordance with these specifications at locations shown on the plans or as needed. The work under this item shall be accomplished as soon as practicable after the grading in an area has been completed in order to deter erosion.

PART 2.00 - MATERIALS

2.1 Materials:

A. Lime shall be agricultural grade ground limestone or equivalent,

B. Fertilizer shall be a commercial grade, uniform in composition, free flowing, and suitable for application with mechanical equipment. It shall be delivered to the site in labeled containers conforming to current Arkansas fertilizer laws and bearing the name, trademark, and warranty of the producer.

C. Except as modified herein, the seed shall comply with the current rules and regulations of the Arkansas State Plant Board and the germination test shall be valid on the date the seed is used. It shall have a minimum of 98% pure seed and 85% germination by weight, and shall contain no more than 1% weed seeds. A combined total of 50 noxious weed seeds shall be the maximum amount allowed per pound of seed with the following exceptions: Johnson grass seed, wild onion seed, wild garlic seed, field bindweed seed, or nut grass seed will not be allowed in any amount. Seed shall be furnished in sealed, standard containers. Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable.

Legumes shall be inoculated with an approved culture as recommended by the manufacturer, just prior to seeding. Fescue seed shall be certified endophyte free.

Seed shall be composed of the varieties and amounts by weight as shown below.

Seed planted between June 16 and August 31 may require more water than that specified in subsection 620.03 (f) in order to survive. Therefore, watering will continue after germination until growth is established.

D. Mulch cover shall consist of straw from threshed rice, oats, wheat, barley, or rye; of wood excelsior; or of hay obtained from various legumes or grasses, such as lespedeza, clover, vetch, soybeans, bermuda, carpet sedge, bahia, fescue, or other legumes or grasses; or a combination thereof. Mulch shall be dry and reasonably free Johnson grass or other noxious weeds, and shall not be excessively brittle or in an advanced state of decomposition. All material will ne inspected and approved prior to use.

Seed Variety:	Lbs./Acre
March 15 - June 15	
Bermuda Grass (common) unhulled	10
Bermuda Grass (common) hulled	5
Lespedeza (Korean)	30
June 16 - August 31	
Bermuda Grass (common) unhulled	10
Bermuda Grass (common) hulled	5
Weeping Love Grass (Eragrostis Curvula)	10
September 1 - October 31	
Rye Grass (Annual)	50
Crimson Clover (Dixie)	20
Bermuda Grass (common) unhulled	15

E. Water shall be of irrigation quality and free of impurities that would be detrimental to plant growth.

PART 3.00 - CONSTRUCTION REQUIREMENTS

3.1 Construction Requirements:

A. Seedbed Preparation. Areas to be seeded shall be dressed to the shape and section shown on the plans. If the plans call for replacing topsoil, this shall be done prior to any preparations for seeding. Before beginning the seedbed preparation, soil samples shall be obtained from each major soil area for lime and fertilizer requirements analysis.

Lime, at the rate determined by the lime requirements test, shall be uniformly spread on areas to be seeded prior to their being roughened or scarified. The seedbed shall be thoroughly pulverized by means of disk harrows or other approved methods, thoroughly mixing lime and soil to a depth of not less than 4" (2" for slopes 4:1 or steeper) below finish slope elevation. Regardless of pulverizing method used, the soil shall be broken with the contour of the slope. Objectionable foreign matter shall be removed and the soil left in a suitable horticultural condition to receive the fertilizer and seed. Water may be applied before, during, and after seedbed preparation, as directed by the Engineer, in order to maintain the desired moisture content in the soil.

When no lime is required, seedbed preparation shall be accomplished as specified above regardless of the method used in the distribution of fertilizer, seed, and mulch cover.

B. Fertilization. If soil test show fertilizer is needed, fertilizer shall be applied at the rate of 800 pounds per acre of 10-20-10, or the equivalent amount of plant food. Fertilizer shall be uniformly incorporated into the soil alone or in conjunction with the required lime. If the contractor so elects, the fertilizer may be drilled into the soil or combined with the seed in the hydro-seeding operation.

C. Seeding - Broadcasting. Broadcast sowing may be accomplished by hand seeders or by approved power equipment. Either method shall result in uniform distribution and no work shall be performed during high winds. The area seeded shall be lightly firmed with a cultipacker immediately after broadcasting.

D. Mulch Cover. Mulch cover shall be applied at the rate of 4000 pounds per acre immediately after seeding and shall be spread uniformly over the entire area. If this method is used, no change in application rates will be allowed.

E. Water. After application of the mulch cover, water shall be applied in sufficient quality, to thoroughly moisten the soil to the depth of pulverization and then as necessary to germinate the seed.