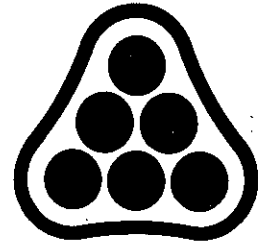


SEDGWICK COUNTY, KANSAS



PROFESSIONAL
ENGINEERING
CONSULTANTS
PROFESSIONAL ASSOCIATION

SPECIFICATIONS
FOR
STREET AND STORM DRAIN IMPROVEMENTS

IN
SPRING VALLEY ESTATES ADDITION

TO
SEDGWICK COUNTY, KANSAS

PROJECT NO. 30-78380-024

JANUARY 1980

PRELIMINARY

JAN 22 1980

PROFESSIONAL ENGINEERING CONSULTANTS, P.A.
WICHITA, KANSAS

SEDGWICK COUNTY, KANSAS

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ADVERTISEMENT FOR BIDS

Board of County Commissioners, Sedgwick County, Kansas

Owner

525 N. Main, Wichita, Kansas 67203

Address

Separate sealed BIDS for the construction of (briefly describe nature, scope, and major elements of the work)

Street and Storm Drain Improvements in Spring Valley Estates, an addition to

Sedgwick County, Kansas Project No. 30-78380-024

will be received by The Board of County Commissioners

at the office of Sedgwick County Purchasing Department (Room 343)

until 9:45A.M. Sedgwick County Courthouse, 525 N. Main, Wichita, Kansas 67203
(Standard Time-Daylight Savings Time)

19____, and then at said office publicly opened and read aloud at the Board of Bids and Contracts Meeting, at the County Commission Meeting Room, Room #320.

The CONTRACT DOCUMENTS may be examined at the following locations:

Sedgwick County Department of Public Works, 1015 Stillwell, Wichita, Kansas

Professional Engineering Consultants, P.A., 1440 East English, Wichita, Kansas

Dodge Reports, 230 Laura, Wichita, Kansas

Chamber of Commerce Plan Room, 15 East 2nd Street, Hutchinson, Kansas

Copies of the CONTRACT DOCUMENTS may be obtained at the office of Professional Engineering Consultants, P.A.

located at 1440 East English, Wichita, Kansas 67211

upon payment of \$ 25.00 for each set. No refund will be made.

By Order of the Board of County Commissioners, Sedgwick County, Kansas

ATTEST:

Chairman

Date

County Clerk

Date

INFORMATION FOR BIDDERS

BIDS will be received by The Board of County Commissioners, Sedgwick County, Kansas
The Sedgwick County Commission Meeting Room (320)
(herein called the "OWNER"), at Sedgwick County Courthouse, 525 North Main, Wichita, Ks.
until 9:45A.M., 19_____, and then at said office publicly opened and read
aloud.

Each BID must be submitted in a sealed envelope, addressed to Board of County
Commissioners, Sedgwick County, Kansas at The Sedgwick County Commission Meeting Rm.
Each sealed envelope containing a BID must be plainly marked on the outside as BID
for Spring Valley Estates Addition Street and Storm Drain Impr. - and the
envelope should bear ^{Proj. No. 30-78380-024} 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 at The Sedgwick County Commission, Sedgwick
County Courthouse, 525 North Main, Wichita, Kansas

All 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 agree-
ment 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 specifica-
tions including ADDENDA. After BIDS have been submitted, the BIDDER shall not as-
sert 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 construc-
tion 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 BID-
DERS 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 a 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 and 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 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 may 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 if 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.

Further, the BIDDER agrees to abide by the requirements under Executive Order No. 11246, as amended, including specifically the provisions of the equal opportunity clause set forth in the SUPPLEMENTAL GENERAL CONDITIONS.

The low BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when requested to do so by the OWNER.

Inspection trips for prospective BIDDERS will leave from the office of the

_____ at _____

The ENGINEER is Professional Engineering Consultants, P.A. His address is 1440 East English, Wichita, Kansas 67211

BID

Proposal of _____ (hereinafter called "BIDDER"), organized and existing under the laws of the State of _____ doing business as _____*

To the Board of County Commissioners, Sedgwick County, Kansas
_____(hereinafter called "OWNER").

In compliance with your Advertisement for Bids, BIDDER hereby proposes to perform all WORK for the construction of Spring Valley Estates Addition Street and Storm Drain Improvements - Project No. 30-78380-024

in strict accordance with the CONTRACT DOCUMENTS, within the time set forth therein, and at the prices stated below.

By submission of this BID, each BIDDER certifies, and in the case of a joint BID each party thereto certifies as to his own organization, that this BID has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this BID with any other BIDDER or with any competitor.

BIDDER hereby agrees to commence WORK under this contract on or before a date to be specified in the NOTICE TO PROCEED and to fully complete the PROJECT within _____ working days thereafter. BIDDER further agrees to pay as liquidated damages, the sum of \$ 25.00 for each working day thereafter as provided in Section 15 of the General Conditions.

BIDDER acknowledges receipt of the following ADDENDUM:

*Insert "a corporation", "a partnership", or "an individual" as applicable.

1. Bidder agrees to perform all the work described in the CONTRACT DOCUMENTS for the following unit prices or lump sum:

BID SCHEDULE - Note: BIDS shall include sales tax and all other applicable taxes and fees. (For tax exempt status see Supplemental General Conditions.)

SPRING VALLEY ESTATES ADDITION
STORM DRAIN IMPROVEMENTS

Item No.	Approximate Quantities	Unit	Description With Unit Prices Written in Words	Unit Prices in Figures	Amount in Figures
1	439	L.F.	48" Storm Sewer, In Place for _____ Dollars and _____ Cents per linear foot.	\$ _____	\$ _____
2	1,201	L.F.	36" Storm Sewer, In Place for _____ Dollars and _____ Cents per linear foot.	\$ _____	\$ _____
3	398	L.F.	30" Storm Sewer, In Place for _____ Dollars and _____ Cents per linear foot.	\$ _____	\$ _____
4	122	L.F.	24" Storm Sewer, In Place for _____ Dollars and _____ Cents per linear foot.	\$ _____	\$ _____
5	33	L.F.	18" Storm Sewer, In Place for _____ Dollars and _____ Cents per linear foot.	\$ _____	\$ _____
6	286	L.F.	15" Storm Sewer, In Place, for _____ Dollars and _____ Cents per linear foot.	\$ _____	\$ _____

Item No.	Approximate Quantities	Unit	Description With Unit Prices Written in Words	Unit Prices in Figures	Amount in Figures
7	1	Ea.	48" End Section for _____ Dollars and _____ Cents per each.	\$ _____	\$ _____
8		Ea.	5'-0" Curb Inlet, In Place, for _____ Dollars and _____ Cents each.	\$ _____	\$ _____
9	5	Ea.	4'-2" Curb Inlet, In Place, for _____ Dollars and _____ Cents per each.	\$ _____	\$ _____
10	1	Ea.	Inlet (Type II Ditch) In Place, for _____ Dollars and _____ Cents per each.	\$ _____	\$ _____
11	1	Ea.	Type A, Manhole, In Place, for _____ Dollars and _____ Cents per each.	\$ _____	\$ _____
12	3	Ea.	Reinforced Concrete Manhole, In Place for _____ Dollars and _____ Cents each.	\$ _____	\$ _____

STORM DRAIN IMPROVEMENTS SUBTOTAL \$ _____

STREET IMPROVEMENTS

13	14,181	C.Y.	Excavation, Unclassified, for _____ Dollars and _____ Cents per cubic yard.	\$ _____	\$ _____
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<u>Item No.</u>	<u>Approximate Quantities</u>	<u>Unit</u>	<u>Description With Unit Prices Written in Words</u>	<u>Unit Prices in Figures</u>	<u>Amount in Figures</u>
14	14,229	S.Y.	6" Subgrade Treatment in Place, for _____ Dollars and _____ Cents per square yard.	\$ _____	\$ _____
15	13,415	S.Y.	3" Bituminous Sub-Base, In Place, for _____ Dollars and _____ Cents per square yard.	\$ _____	\$ _____
16	11,070	S.Y.	3" Bituminous Base, In Place, for _____ Dollars and _____ Cents per square yard.	\$ _____	\$ _____
17	519	S.Y.	4" Bituminous Base, In Place, for _____ Dollars and _____ Cents per square yard.	\$ _____	\$ _____
18	11,115	S.Y.	2" Asphaltic Concrete Wearing Surface, In Place, for _____ Dollars and _____ Cents per square yard.	\$ _____	\$ _____
19	6,902	L.F.	Combined Curb and Gutter (Std), In Place, for _____ Dollars and _____ Cents per linear foot.	\$ _____	\$ _____
20	6	Ea.	Inlet Connections, In Place, for _____ Dollars and _____ Cents per each.	\$ _____	\$ _____

<u>Item No.</u>	<u>Approximate Quantities</u>	<u>Unit</u>	<u>Description With Unit Prices Written in Words</u>	<u>Unit Prices in Figures</u>	<u>Amount in Figures</u>
21	210	L.F.	Culvert Pipe (43" x 27" CMAC), In Place, for _____ Dollars and _____ Cents per linear foot.	\$ _____	\$ _____
22	4	Ea.	43" x 27" CMAC End Section, for _____ Dollars and _____ Cents per each.	\$ _____	\$ _____
23.	4	Ea.	Concrete Slope Drains, In Place, for _____ Dollars and _____ Cents per each.	\$ _____	\$ _____
24	229	S.Y.	Heavy Stone RipRap, In Place, for _____ Dollars and _____ Cents per square yard.	\$ _____	\$ _____
25	623	S.F.	4" Concrete Sidewalk In Place, for _____ _____ Dollars and _____ Cents per square foot.	\$ _____	\$ _____
26	625	S.F.	Handicap Ramp, In Place, for _____ _____ Dollars and _____ Cents per square foot.	\$ _____	\$ _____
27	1.5	Acre	Seeding, in place and accepted, for _____ Dollars and _____ Cents per Acre.	\$ _____	\$ _____

Item No.	Approximate Quantities	Unit	Description With Unit Prices Written in Words	Unit Prices in Figures	Amount in Figures
28	7	Ea.	Street Signs, In Place, for _____ Dollars and _____ Cents per each.	\$ _____	\$ _____

STREET IMPROVEMENTS SUBTOTAL

\$ _____

TOTAL BID

\$ _____

Total Bid Written In Words

_____ Dollars
and _____ Cents

2. Any increase or decrease of quantities of materials necessitated by altering the design of any of the structures will be adjusted by increasing or decreasing the prices bid for those structures by an amount equal to the number of units of materials increased or decreased multiplied by the unit prices bid for those units of materials increased or decreased.

3. It is understood that the approximate quantities shown in the foregoing schedule are solely for the purpose of facilitating the comparison of bids, and the Contractor's compensation will be computed upon the basis of the actual quantities in the completed and accepted work, whether those quantities be more or less than the quantities shown herein.

4. All amounts and totals stated above will be subject to verification by the Board of County Commissioners, Sedgwick County, Kansas. In case of variation between unit offer prices and amounts and totals stated by offers, the unit prices written in words will be considered to be the offer. The contract will be awarded to the lowest responsive, responsible bidder on the basis of the lowest acceptable "Base Bid".

5. Accompanying this bid is a (bid bond) (certified check) (cashier's check)

in the amount of _____ Dollars (\$ _____),

payable without condition to Board of County Commissioners, Sedgwick County, Kansas, which it is agreed shall be retained as liquidated damages for the delay and extra expense caused the Sedgwick County, Kansas, if the undersigned fails to execute the contract and furnish the bonds required by the Contract Documents within ten (10) days after notice of acceptance of this bid.

6. In submitting this bid it is understood that the Owner reserves the right to reject any and all bids and that this bid may not be withdrawn for a period of thirty (30) days from the opening thereof.

Dated _____ day of _____ 1979.

Name of Contractor

Address of Contractor

Authorized Officer

Title

SEAL
(If Corporation)

GENERAL CONDITIONS

1. Definitions
2. Additional Instructions and Detail Drawings
3. Schedules, Reports and Records
4. Drawings and Specifications
5. Shop Drawings
6. Materials, Services and Facilities
7. Inspection and Testing
8. Substitutions
9. Patents
10. Surveys, Permits, Regulations
11. Protection of Work, Property, Persons
12. Supervision by Contractor
13. Changes in the Work
14. Changes in Contract Price
15. Time for Completion and Liquidated Damages
16. Correction of Work
17. Subsurface Conditions
18. Suspension of Work, Termination and Delay
19. Payments to Contractor
20. Acceptance of Final Payment as Release
21. Insurance
22. Contract Security
23. Assignments
24. Indemnification
25. Separate Contracts
26. Subcontracting
27. Engineer's Authority
28. Land and Rights-of-Way
29. Guaranty
30. Arbitration
31. Taxes

1. DEFINITIONS

1.1 Wherever used in the CONTRACT DOCUMENTS, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

1.2 ADDENDA—Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the CONTRACT DOCUMENTS, DRAWINGS and SPECIFICATIONS, by additions, deletions, clarifications or corrections.

1.3 BID—The offer or proposal of the BIDDER submitted on the prescribed form setting forth the prices for the WORK to be performed.

1.4 BIDDER—Any person, firm or corporation submitting a BID for the WORK.

1.5 BONDS—Bid, Performance, and Payment Bonds and other instruments of security, furnished by the CONTRACTOR and his surety in accordance with the CONTRACT DOCUMENTS.

1.6 CHANGE ORDER—A written order to the CONTRACTOR authorizing an addition, deletion or revision in the WORK within the general scope of the CONTRACT DOCUMENTS, or authorizing an adjustment in the CONTRACT PRICE or CONTRACT TIME.

1.7 CONTRACT DOCUMENTS—The contract, including Advertisement For Bids, Information For Bidders, BID, Bid Bond, Agreement, Payment Bond, Performance Bond, NOTICE OF AWARD, NOTICE TO PROCEED, CHANGE ORDER, DRAWINGS, SPECIFICATIONS, and ADDENDA.

1.8 CONTRACT PRICE—The total monies payable to the CONTRACTOR under the terms and conditions of the CONTRACT DOCUMENTS.

1.9 CONTRACT TIME—The number of calendar days stated in the CONTRACT DOCUMENTS for the completion of the WORK.

1.10 CONTRACTOR—The person, firm or corporation with whom the OWNER has executed the Agreement.

1.11 DRAWINGS—The part of the CONTRACT DOCUMENTS which show the characteristics and scope of the WORK to be performed and which have been prepared or approved by the ENGINEER.

1.12 ENGINEER—The person, firm or corporation named as such in the CONTRACT DOCUMENTS.

1.13 FIELD ORDER—A written order effecting a change in the WORK not involving an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, issued by the ENGINEER to the CONTRACTOR during construction.

1.14 NOTICE OF AWARD—The written notice of the acceptance of the BID from the OWNER to the successful BIDDER.

1.15 NOTICE TO PROCEED—Written communication issued by the OWNER to the CONTRACTOR authorizing him to proceed with the WORK and establishing the date of commencement of the WORK.

1.16 OWNER—A public or quasi-public body or authority, corporation, association, partnership, or individual for whom the WORK is to be performed.

1.17 PROJECT—The undertaking to be performed as provided in the CONTRACT DOCUMENTS.

1.18 RESIDENT PROJECT REPRESENTATIVE—The authorized representative of the OWNER who is assigned to the PROJECT site or any part thereof.

1.19 SHOP DRAWINGS—All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a SUBCONTRACTOR, manufacturer, SUPPLIER or distributor, which illustrate how specific portions of the WORK shall be fabricated or installed.

1.20 SPECIFICATIONS—A part of the CONTRACT DOCUMENTS consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards and workmanship.

1.21 SUBCONTRACTOR—An individual, firm or corporation having a direct contract with the CONTRACTOR or with any other SUBCONTRACTOR for the performance of a part of the WORK at the site.

1.22 SUBSTANTIAL COMPLETION—That date as certified by the ENGINEER when the construction of the PROJECT or a specified part thereof is sufficiently completed, in accordance with the CONTRACT DOCUMENTS, so that the PROJECT or specified part can be utilized for the purposes for which it is intended.

1.23 SUPPLEMENTAL GENERAL CONDITIONS—

Modifications to General Conditions required by a Federal agency for participation in the PROJECT and approved by the agency in writing prior to inclusion in the CONTRACT DOCUMENTS, or such requirements that may be imposed by applicable state laws.

1.24 SUPPLIER—Any person or organization who supplies materials or equipment for the WORK, including that fabricated to a special design, but who does not perform labor at the site.

1.25 WORK—All labor necessary to produce the construction required by the CONTRACT DOCUMENTS, and all materials and equipment incorporated or to be incorporated in the PROJECT.

1.26 WRITTEN NOTICE—Any notice to any party of the Agreement relative to any part of this Agreement in writing and considered delivered and the service thereof completed, when posted by certified or registered mail to the said party at his last given address, or delivered in person to said party or his authorized representative on the WORK.

2. ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS

2.1 The CONTRACTOR may be furnished additional instructions and detail drawings, by the ENGINEER, as necessary to carry out the WORK required by the CONTRACT DOCUMENTS.

2.2 The additional drawings and instruction thus supplied will become a part of the CONTRACT DOCUMENTS. The CONTRACTOR shall carry out the WORK in accordance with the additional detail drawings and instructions.

3. SCHEDULES, REPORTS AND RECORDS

3.1 The CONTRACTOR shall submit to the OWNER such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data where applicable as are required by the CONTRACT DOCUMENTS for the WORK to be performed.

3.2 Prior to the first partial payment estimate the CONTRACTOR shall submit construction progress schedules showing the order in which he proposes to carry on the WORK, including dates at which he will start the various parts of the WORK, estimated date of completion of each part and, as applicable:

3.2.1. The dates at which special detail drawings will be required; and

3.2.2 Respective dates for submission of SHOP DRAWINGS, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

3.3 The CONTRACTOR shall also submit a schedule of payments that he anticipates he will earn during the course of the WORK.

4. DRAWINGS AND SPECIFICATIONS

4.1 The intent of the DRAWINGS and SPECIFICATIONS is that the CONTRACTOR shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the WORK in accordance with the CONTRACT DOCUMENTS and all incidental work necessary to complete the PROJECT in an acceptable manner, ready for use, occupancy or operation by the OWNER.

4.2 In case of conflict between the DRAWINGS and SPECIFICATIONS, the SPECIFICATIONS shall govern. Figure dimensions on DRAWINGS shall govern over scale dimensions, and detailed DRAWINGS shall govern over general DRAWINGS.

4.3 Any discrepancies found between the DRAWINGS and SPECIFICATIONS and site conditions or any inconsistencies or ambiguities in the DRAWINGS or SPECIFICATIONS shall be immediately reported to the ENGINEER, in writing, who shall promptly correct such inconsistencies or ambiguities in writing. WORK done by the CONTRACTOR after his discovery of such discrepancies, inconsistencies or ambiguities shall be done at the CONTRACTOR'S risk.

5. SHOP DRAWINGS

5.1 The CONTRACTOR shall provide SHOP DRAWINGS as may be necessary for the prosecution of the WORK as required by the CONTRACT DOCUMENTS. The ENGINEER shall promptly review all SHOP DRAWINGS. The ENGINEER'S approval of any SHOP DRAWING shall not release the CONTRACTOR from responsibility for deviations from the CONTRACT DOCUMENTS. The approval of any SHOP DRAWING which substantially deviates from the requirement of the CONTRACT DOCUMENTS shall be evidenced by a CHANGE ORDER.

5.2 When submitted for the ENGINEER'S review, SHOP DRAWINGS shall bear the CONTRACTOR'S certification that he has reviewed, checked and approved the SHOP DRAWINGS and that they are in conformance with the requirements of the CONTRACT DOCUMENTS.

5.3 Portions of the WORK requiring a SHOP DRAWING or sample submission shall not begin until the SHOP DRAWING or submission has been approved by the ENGINEER. A copy of each approved SHOP DRAWING and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

6. MATERIALS, SERVICES AND FACILITIES

6.1 It is understood that, except as otherwise specifically stated in the CONTRACT DOCUMENTS, the CONTRACTOR shall provide and pay for all materials, labor, tools, equipment, water, light, power, transportation, supervision, temporary construction of any nature, and all other services and facilities of any nature whatsoever necessary to execute, complete, and deliver the WORK within the specified time.

6.2 Materials and equipment shall be so stored as to insure the preservation of their quality and fitness for the WORK. Stored materials and equipment to be incorporated in the WORK shall be located so as to facilitate prompt inspection.

6.3 Manufactured articles, materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by the manufacturer.

6.4 Materials, supplies and equipment shall be in accordance with samples submitted by the CONTRACTOR and approved by the ENGINEER.

6.5 Materials, supplies or equipment to be incorporated into the WORK shall not be purchased by the

CONTRACTOR or the SUBCONTRACTOR subject to a chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller.

7. INSPECTION AND TESTING

7.1 All materials and equipment used in the construction of the PROJECT shall be subject to adequate inspection and testing in accordance with generally accepted standards, as required and defined in the CONTRACT DOCUMENTS.

7.2 The OWNER shall provide all inspection and testing services not required by the CONTRACT DOCUMENTS.

7.3 The CONTRACTOR shall provide at his expense the testing and inspection services required by the CONTRACT DOCUMENTS.

7.4 If the CONTRACT DOCUMENTS, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any WORK to specifically be inspected, tested, or approved by someone other than the CONTRACTOR, the CONTRACTOR will give the ENGINEER timely notice of readiness. The CONTRACTOR will then furnish the ENGINEER the required certificates of inspection, testing or approval.

7.5 Inspections, tests or approvals by the engineer or others shall not relieve the CONTRACTOR from his obligations to perform the WORK in accordance with the requirements of the CONTRACT DOCUMENTS.

7.6 The ENGINEER and his representatives will at all times have access to the WORK. In addition, authorized representatives and agents of any participating Federal or state agency shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records. The CONTRACTOR will provide proper facilities for such access and observation of the WORK and also for any inspection, or testing thereof.

7.7 If any WORK is covered contrary to the written instructions of the ENGINEER it must, if requested by the ENGINEER, be uncovered for his observation and replaced at the CONTRACTOR'S expense.

7.8 If the ENGINEER considers it necessary or advisable that covered WORK be inspected or tested by others, the CONTRACTOR, at the ENGINEER'S request, will uncover, expose or otherwise make available for observation, inspection or testing as the ENGINEER may require, that portion of the WORK in question, furnishing all necessary labor, materials, tools, and equipment. If it is found that such WORK is defective, the CONTRACTOR will bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction. If, however, such WORK is not found to be defective, the CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction and an appropriate CHANGE ORDER shall be issued.

8. SUBSTITUTIONS

8.1 Whenever a material, article or piece of equip-

ment is identified on the DRAWINGS or SPECIFICATIONS by reference to brand name or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the CONTRACT DOCUMENTS by reference to brand name or catalogue number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Any cost differential shall be deductible from the CONTRACT PRICE and the CONTRACT DOCUMENTS shall be appropriately modified by CHANGE ORDER. The CONTRACTOR warrants that if substitutes are approved, no major changes in the function or general design of the PROJECT will result. Incidental changes or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the CONTRACT PRICE or CONTRACT TIME.

9. PATENTS

9.1 The CONTRACTOR shall pay all applicable royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and save the OWNER harmless from loss on account thereof, except that the OWNER shall be responsible for any such loss when a particular process, design, or the product of a particular manufacturer or manufacturers is specified, however if the CONTRACTOR has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the ENGINEER.

10. SURVEYS, PERMITS, REGULATIONS

10.1 The OWNER shall furnish all boundary surveys and establish all base lines for locating the principal component parts of the WORK together with a suitable number of bench marks adjacent to the WORK as shown in the CONTRACT DOCUMENTS. From the information provided by the OWNER, unless otherwise specified in the CONTRACT DOCUMENTS, the CONTRACTOR shall develop and make all detail surveys needed for construction such as slope stakes, batter boards, stakes for pile locations and other working points, lines, elevations and cut sheets.

10.2 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.

10.3 Permits and licenses of a temporary nature necessary for the prosecution of the WORK shall be secured and paid for by the CONTRACTOR unless otherwise stated in the SUPPLEMENTAL GENERAL CONDITIONS. Permits, licenses and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the OWNER, unless otherwise specified. 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 CONTRACT DOCUMENTS are at variance therewith, he shall promptly notify the ENGINEER in writing, and any necessary changes shall be adjusted as provided in Section 13, CHANGES IN THE WORK.

11. PROTECTION OF WORK, PROPERTY AND PERSONS

11.1 The CONTRACTOR will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the WORK. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the WORK and other persons who may be affected thereby, all the WORK and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

11.2 The CONTRACTOR will comply with all applicable laws, ordinances, rules, regulations and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the WORK, all necessary safeguards for safety and protection. He will notify owners of adjacent utilities when prosecution of the WORK may affect them. The CONTRACTOR will remedy all damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any SUBCONTRACTOR or anyone directly or indirectly employed by any of them or anyone for whose acts any of them be liable, except damage or loss attributable to the fault of the CONTRACT DOCUMENTS or to the acts or omissions of the OWNER or the ENGINEER or anyone employed by either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of the CONTRACTOR.

11.3 In emergencies affecting the safety of persons or the WORK or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the ENGINEER or OWNER, shall act to prevent threatened damage, injury or loss. He will give the ENGINEER prompt WRITTEN NOTICE of any significant changes in the WORK or deviations from the CONTRACT DOCUMENTS caused thereby, and a CHANGE ORDER shall thereupon be issued covering the changes and deviations involved.

12. SUPERVISION BY CONTRACTOR

12.1 The CONTRACTOR will supervise and direct the WORK. He will be solely responsible for the means, methods, techniques, sequences and procedures of construction. The CONTRACTOR will employ and maintain on the WORK a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the WORK.

13. CHANGES IN THE WORK

13.1 The OWNER may at any time, as the need arises,

order changes within the scope of the WORK without invalidating the Agreement. If such changes increase or decrease the amount due under the CONTRACT DOCUMENTS, or in the time required for performance of the WORK, an equitable adjustment shall be authorized by CHANGE ORDER.

13.2 The ENGINEER, also, may at any time, by issuing a FIELD ORDER, make changes in the details of the WORK. The CONTRACTOR shall proceed with the performance of any changes in the WORK so ordered by the ENGINEER unless the CONTRACTOR believes that such FIELD ORDER entitles him to a change in CONTRACT PRICE or TIME, or both, in which event he shall give the ENGINEER WRITTEN NOTICE thereof within seven (7) days after the receipt of the ordered change. Thereafter the CONTRACTOR shall document the basis for the change in CONTRACT PRICE or TIME within thirty (30) days. The CONTRACTOR shall not execute such changes pending the receipt of an executed CHANGE ORDER or further instruction from the OWNER.

14. CHANGES IN CONTRACT PRICE

14.1 The CONTRACT PRICE may be changed only by a CHANGE ORDER. The value of any WORK covered by a CHANGE ORDER or of any claim for increase or decrease in the CONTRACT PRICE shall be determined by one or more of the following methods in the order of precedence listed below:

(a) Unit prices previously approved.

(b) An agreed lump sum.

(c) The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work. In addition there shall be added an amount to be agreed upon but not to exceed fifteen (15) percent of the actual cost of the WORK to cover the cost of general overhead and profit.

15. TIME FOR COMPLETION AND LIQUIDATED DAMAGES

15.1 The date of beginning and the time for completion of the WORK are essential conditions of the CONTRACT DOCUMENTS and the WORK embraced shall be commenced on a date specified in the NOTICE TO PROCEED.

15.2 The CONTRACTOR will proceed with the WORK at such rate of progress to insure full completion within the CONTRACT TIME. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the CONTRACT TIME for the completion of the WORK described herein is a reasonable time, taking into consideration the average climatic and economic conditions and other factors prevailing in the locality of the WORK.

15.3 If the CONTRACTOR shall fail to complete the WORK within the CONTRACT TIME, or extension of time granted by the OWNER, then the CONTRACTOR will pay to the OWNER the amount for liquidated damages as specified in the BID for each calendar day that the CONTRACTOR shall be in default after the time stipulated in the CONTRACT DOCUMENTS.

15.4 The CONTRACTOR shall not be charged with liquidated damages or any excess cost when the delay in completion of the WORK is due to the following, and the CONTRACTOR has promptly given WRITTEN NOTICE of such delay to the OWNER or ENGINEER.

15.4.1 To any preference, priority or allocation

order duly issued by the OWNER.

15.4.2 To unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including but not restricted to, acts of God, or of the public enemy, acts of the OWNER, acts of another CONTRACTOR in the performance of a contract with the OWNER, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and abnormal and unforeseeable weather; and

15.4.3 To any delays of SUBCONTRACTORS occasioned by any of the causes specified in paragraphs 15.4.1 and 15.4.2 of this article.

16. CORRECTION OF WORK

16.1 The CONTRACTOR shall promptly remove from the premises all WORK rejected by the ENGINEER for failure to comply with the CONTRACT DOCUMENTS, whether incorporated in the construction or not, and the CONTRACTOR shall promptly replace and re-execute the WORK in accordance with the CONTRACT DOCUMENTS and without expense to the OWNER and shall bear the expense of making good all WORK of other CONTRACTORS destroyed or damaged by such removal or replacement.

16.2 All removal and replacement WORK shall be done at the CONTRACTOR'S expense. If the CONTRACTOR does not take action to remove such rejected WORK within ten (10) days after receipt of WRITTEN NOTICE, the OWNER may remove such WORK and store the materials at the expense of the CONTRACTOR.

17. SUBSURFACE CONDITIONS

17.1 The CONTRACTOR shall promptly, and before such conditions are disturbed, except in the event of an emergency, notify the OWNER by WRITTEN NOTICE of:

17.1.1 Subsurface or latent physical conditions at the site differing materially from those indicated in the CONTRACT DOCUMENTS; or

17.1.2 Unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in WORK of the character provided for in the CONTRACT DOCUMENTS.

17.2 The OWNER shall promptly investigate the conditions, and if he finds that such conditions do so materially differ and cause an increase or decrease in the cost of, or in the time required for, performance of the WORK, an equitable adjustment shall be made and the CONTRACT DOCUMENTS shall be modified by a CHANGE ORDER. Any claim of the CONTRACTOR for adjustment hereunder shall not be allowed unless he has given the required WRITTEN NOTICE; provided that the OWNER may, if he determines the facts so justify, consider and adjust any such claims asserted before the date of final payment.

18. SUSPENSION OF WORK, TERMINATION AND DELAY

18.1 The OWNER may suspend the WORK or any portion thereof for a period of not more than ninety days or such further time as agreed upon by the CONTRACTOR, by WRITTEN NOTICE to the CONTRACTOR and the ENGINEER which notice shall fix the date on which WORK shall be resumed. The CONTRACTOR

will resume that WORK on the date so fixed. The CONTRACTOR will be allowed an increase in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, directly attributable to any suspension.

18.2 If the CONTRACTOR is adjudged a bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property, or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to SUBCONTRACTORS or for labor, materials or equipment or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the WORK or if he disregards the authority of the ENGINEER, or if he otherwise violates any provision of the CONTRACT DOCUMENTS, then the OWNER may, without prejudice to any other right or remedy and after giving the CONTRACTOR and his surety a minimum of ten (10) days from delivery of a WRITTEN NOTICE, terminate the services of the CONTRACTOR and take possession of the PROJECT and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the WORK by whatever method he may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the WORK is finished. If the unpaid balance of the CONTRACT PRICE exceeds the direct and indirect costs of completing the PROJECT, including compensation for additional professional services, such excess SHALL BE PAID TO THE CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR will pay the difference to the OWNER. Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a CHANGE ORDER.

18.3 Where the CONTRACTOR'S services have been so terminated by the OWNER, said termination shall not affect any right of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of monies by the OWNER due the CONTRACTOR will not release the CONTRACTOR from compliance with the CONTRACT DOCUMENTS.

18.4 After ten (10) days from delivery of a WRITTEN NOTICE to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the PROJECT and terminate the Contract. In such case, the CONTRACTOR shall be paid for all WORK executed and any expense sustained plus reasonable profit.

18.5 If, through no act or fault of the CONTRACTOR, the WORK is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or other public authority, or the ENGINEER fails to act on any request for payment within thirty (30) days after it is submitted, or the OWNER fails to pay the CONTRACTOR substantially the sum approved by the ENGINEER or awarded by arbitrators within thirty (30) days of its approval and presentation, then the CONTRACTOR may, after ten (10) days from delivery of a WRITTEN NOTICE to the OWNER and the ENGINEER, terminate the CONTRACT and recover from the OWNER payment for all WORK exe-

cuted and all expenses sustained. In addition and in lieu of terminating the CONTRACT, if the ENGINEER has failed to act on a request for payment or if the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon ten (10) days written notice to the OWNER and the ENGINEER stop the WORK until he has been paid all amounts then due, in which event and upon resumption of the WORK, CHANGE ORDERS shall be issued for adjusting the CONTRACT PRICE or extending the CONTRACT TIME or both to compensate for the costs and delays attributable to the stoppage of the WORK.

18.6 If the performance of all or any portion of the WORK is suspended, delayed, or interrupted as a result of a failure of the OWNER or ENGINEER to act within the time specified in the CONTRACT DOCUMENTS, or if no time is specified, within a reasonable time, an adjustment in the CONTRACT PRICE or an extension of the CONTRACT TIME, or both, shall be made by CHANGE ORDER to compensate the CONTRACTOR for the costs and delays necessarily caused by the failure of the OWNER or ENGINEER.

19. PAYMENTS TO CONTRACTOR

19.1 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 ten (10) percent of the amount of each payment until final completion and acceptance of all work covered by the CONTRACT DOCUMENTS. The OWNER at any time, however, after fifty (50) percent of the WORK has been completed, if he finds that satisfactory progress is being made, shall reduce retainage to five (5%) percent on the current and remaining estimates. 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.

19.2 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.

19.3 Prior to SUBSTANTIAL COMPLETION, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the WORK. Such use shall not constitute an acceptance of such portions of the WORK.

19.4 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the CONTRACT DOCUMENTS. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the WORK, or the restoration of any damaged WORK except such as may be caused by agents or employees of the OWNER.

19.5 Upon completion and acceptance of the WORK, the ENGINEER shall issue a certificate attached to the final payment request that the WORK has been accepted by him under the conditions of the CONTRACT DOCUMENTS. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within thirty (30) days of completion and acceptance of the WORK.

19.6 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demands of SUBCONTRACTORS, laborers, workmen, mechanics, materialmen, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the WORK. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of the nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed, in accordance with the terms of the CONTRACT DOCUMENTS, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, his Surety, or any third party. In paying any unpaid bills of the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the CONTRACT DOCUMENTS by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

19.7 If the OWNER fails to make payment thirty (30) days after approval by the ENGINEER, in addition to other remedies available to the CONTRACTOR, there shall be added to each such payment interest at the maximum legal rate commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR.

20. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

20.1 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and all liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this WORK and for every act and neglect of the OWNER and others relating to or arising out of this WORK. Any payment, however, final or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the CONTRACT DOCUMENTS or the Performance BOND and Payment BONDS.

21. INSURANCE

21.1 The CONTRACTOR shall purchase and maintain such insurance as will protect him from claims set forth below which may arise out of or result from the CONTRACTOR'S execution of the WORK, whether such execution be by himself or by any SUBCONTRACTOR or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

21.1.1 Claims under workmen's compensation, disability benefit and other similar employee benefit acts;

21.1.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of his employees;

21.1.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than his employees;

21.1.4 Claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the CONTRACTOR, or (2) by any other person; and

21.1.5 Claims for damages because of injury to or destruction of tangible property, including loss of use resulting therefrom.

21.2 Certificates of Insurance acceptable to the OWNER shall be filed with the OWNER prior to commencement of the WORK. These Certificates shall contain a provision that coverages afforded under the policies will not be cancelled unless at least fifteen (15) days prior WRITTEN NOTICE has been given to the OWNER.

21.3 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, liability insurance as hereinafter specified:

21.3.1 CONTRACTOR'S General Public Liability and Property Damage Insurance including vehicle coverage issued to the CONTRACTOR and protecting him from all claims for personal injury, including death, and all claims for destruction of or damage to property, arising out of or in connection with any

operations under the CONTRACT DOCUMENTS, whether such operations be by himself or by any SUBCONTRACTOR under him, or anyone directly or indirectly employed by the CONTRACTOR or by a SUBCONTRACTOR under him. Insurance shall be written with a limit of liability of not less than \$500,000 for all damages arising out of bodily injury, including death, at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than \$500,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than \$200,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than \$200,000 aggregate for any such damage sustained by two or more persons in any one accident.

21.3.2 The CONTRACTOR shall acquire and maintain, if applicable, Fire and Extended Coverage insurance upon the PROJECT to the full insurable value thereof for the benefit of the OWNER, the CONTRACTOR, and SUBCONTRACTORS as their interest may appear. This provision shall in no way release the CONTRACTOR or CONTRACTOR'S surety from obligations under the CONTRACT DOCUMENTS to fully complete the PROJECT.

21.4 The CONTRACTOR shall procure and maintain, at his own expense, during the CONTRACT TIME, in accordance with the provisions of the laws of the state in which the work is performed, Workmen's Compensation Insurance, including occupational disease provisions, for all of his employees at the site of the PROJECT and in case any work is sublet, the CONTRACTOR shall require such SUBCONTRACTOR similarly to provide Workmen's Compensation Insurance, including occupational disease provisions for all of the latter's employees unless such employees are covered by the protection afforded by the CONTRACTOR. In case any class of employees engaged in hazardous work under this contract at the site of the PROJECT is not protected under Workmen's Compensation statute, the CONTRACTOR shall provide, and shall cause each SUBCONTRACTOR to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.

21.5 The CONTRACTOR shall secure, if applicable, "All Risk" type Builder's Risk Insurance for WORK to be performed. Unless specifically authorized by the OWNER, the amount of such insurance shall not be less than the CONTRACT PRICE totaled in the BID. The policy shall cover not less than the losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the CONTRACT TIME, and until the WORK is accepted by the OWNER. The policy shall name as the insured the CONTRACTOR, the ENGINEER, and the OWNER.

22. CONTRACT SECURITY

22.1 The CONTRACTOR shall within ten (10) days after the receipt of the NOTICE OF AWARD furnish the OWNER with a Performance Bond and a Payment Bond in penal sums equal to the amount of the CONTRACT PRICE, conditioned upon the performance by

the CONTRACTOR of all undertakings, covenants, terms, conditions and agreements of the CONTRACT DOCUMENTS, and upon the prompt payment by the CONTRACTOR to all persons supplying labor and materials in the prosecution of the WORK provided by the CONTRACT DOCUMENTS. Such BONDS shall be executed by the CONTRACTOR and a corporate bonding company licensed to transact such business in the state in which the WORK is to be performed and named on the current list of "Surety Companies Acceptable on Federal Bonds" as published in the Treasury Department Circular Number 570. The expense of these BONDS shall be borne by the CONTRACTOR. If at any time a surety on any such BOND is declared a bankrupt or loses its right to do business in the state in which the WORK is to be performed or is removed from the list of Surety Companies accepted on Federal BONDS, CONTRACTOR shall within ten (10) days after notice from the OWNER to do so, substitute an acceptable BOND (or BONDS) in such form and sum and signed by such other surety or sureties as may be satisfactory to the OWNER. The premiums on such BOND shall be paid by the CONTRACTOR. No further payments shall be deemed due nor shall be made until the new surety or sureties shall have furnished an acceptable BOND to the OWNER.

23. ASSIGNMENTS

23.1 Neither the CONTRACTOR nor the OWNER shall sell, transfer, assign or otherwise dispose of the Contract or any portion thereof, or of his right, title or interest therein, or his obligations thereunder, without written consent of the other party.

24. INDEMNIFICATION

24.1 The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the WORK, provided that any such claims, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property including the loss of use resulting therefrom; and is caused in whole or in part by any negligent or willful act or omission of the CONTRACTOR, and SUBCONTRACTOR, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

24.2 In any and all claims against the OWNER or the ENGINEER, or any of their agents or employees, by any employee of the CONTRACTOR, any SUBCONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the CONTRACTOR or any SUBCONTRACTOR under workmen's compensation acts, disability benefit acts or other employee benefits acts.

24.3 The obligation of the CONTRACTOR under this paragraph shall not extend to the liability of the ENGINEER, his agents or employees arising out of the preparation or approval of maps, DRAWINGS, opinions, reports, surveys, CHANGE ORDERS, designs or SPECIFICATIONS.

25. SEPARATE CONTRACTS

25.1 The OWNER reserves the right to let other con-

tracts in connection with this PROJECT. 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. If the proper execution or results of any part of the CONTRACTOR'S WORK depends upon the WORK of any other CONTRACTOR, the CONTRACTOR shall inspect and promptly report to the ENGINEER any defects in such WORK that render it unsuitable for such proper execution and results.

25.2 The OWNER may perform additional WORK related to the PROJECT by himself, or he may let other contracts containing provisions similar to these. The CONTRACTOR will afford the other CONTRACTORS who are parties to such Contracts (or the OWNER, if he is performing the additional WORK himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of WORK, and shall properly connect and coordinate his WORK with theirs.

25.3 If the performance of additional WORK by other CONTRACTORS or the OWNER is not noted in the CONTRACT DOCUMENTS prior to the execution of the CONTRACT, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional WORK. If the CONTRACTOR believes that the performance of such additional WORK by the OWNER or others involves him in additional expense or entitles him to an extension of the CONTRACT TIME, he may make a claim therefor as provided in Sections 14 and 15.

26. SUBCONTRACTING

26.1 The CONTRACTOR may utilize the services of specialty SUBCONTRACTORS on those parts of the WORK which, under normal contracting practices, are performed by specialty SUBCONTRACTORS.

26.2 The CONTRACTOR shall not award WORK to SUBCONTRACTOR(s), in excess of fifty (50%) percent of the CONTRACT PRICE, without prior written approval of the OWNER.

26.3 The CONTRACTOR shall be fully responsible to the OWNER for the acts and omissions of his SUBCONTRACTORS, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

26.4 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the WORK to bind SUBCONTRACTORS to the CONTRACTOR by the terms of the CONTRACT DOCUMENTS insofar as applicable to the WORK of SUBCONTRACTORS and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provision of the CONTRACT DOCUMENTS.

26.5 Nothing contained in this CONTRACT shall create any contractual relation between any SUBCONTRACTOR and the OWNER.

27. ENGINEER'S AUTHORITY

27.1 The ENGINEER shall act as the OWNER'S representative during the construction period. He shall decide questions which may arise as to quality and acceptability of materials furnished and WORK performed. He shall interpret the intent of the CONTRACT DOCUMENTS in a fair and unbiased manner. The

ENGINEER will make visits to the site and determine if the WORK is proceeding in accordance with the CONTRACT DOCUMENTS.

27.2 The CONTRACTOR will be held strictly to the intent of the CONTRACT DOCUMENTS in regard to the quality of materials, workmanship and execution of the WORK. Inspections may be made at the factory or fabrication plant of the source of material supply.

27.3 The ENGINEER will not be responsible for the construction means, controls, techniques, sequences, procedures, or construction safety.

27.4 The ENGINEER shall promptly make decisions relative to interpretation of the CONTRACT DOCUMENTS.

28. LAND AND RIGHTS-OF-WAY

28.1 Prior to issuance of NOTICE TO PROCEED, the OWNER shall obtain all land and rights-of-way necessary for carrying out and for the completion of the WORK to be performed pursuant to the CONTRACT DOCUMENTS, unless otherwise mutually agreed.

28.2 The OWNER shall provide to the CONTRACTOR information which delineates and describes the lands owned and rights-of-way acquired.

28.3 The CONTRACTOR shall provide at his own expense and without liability to the OWNER any additional land and access thereto that the CONTRACTOR may desire for temporary construction facilities, or for storage of materials.

29. GUARANTY

29.1 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.

30. ARBITRATION

30.1 All claims, disputes and other matters in question arising out of, or relating to, the CONTRACT DOCUMENTS or the breach thereof, except for claims which have been waived by the making and acceptance of final payment as provided by Section 20, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association. This agreement to arbitrate shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrators shall be final, and judgment may be entered upon it in any court having jurisdiction thereof.

30.2 Notice of the demand for arbitration shall be filed in writing with the other party to the CONTRACT DOCUMENTS and with the American Arbitration Association, and a copy shall be filed with the ENGINEER. Demand for arbitration shall in no event be made on any claim, dispute or other matter in question which would be barred by the applicable statute of limitations.

30.3 The CONTRACTOR will carry on the WORK and maintain the progress schedule during any arbitration proceedings, unless otherwise mutually agreed in writing.

31. TAXES

31.1 The CONTRACTOR will pay all sales, consumer, use and other similar taxes required by the law of the place where the WORK is performed.

SUPPLEMENTARY GENERAL CONDITIONS

SGC-1 SUPPLEMENTS AND AMENDMENTS

a. The Standard General Conditions are hereinafter supplemented and amended. All supplementary provisions shall be considered as added to the Standard General Conditions. Where any article is amended, the unaltered provisions of such article shall remain in effect.

SGC-2 AMENDMENTS TO ARTICLES OF THE STANDARD GENERAL CONDITIONS

a. To Article 1 - DEFINITIONS -

(1) Add the following to the definition for "CONTRACT DOCUMENTS".

"The SPECIFICATIONS consists of pages numbered as shown on the Table of Contents.

"The DRAWINGS consist of the following:

<u>TITLE</u>	<u>DRAWING NUMBER</u>
Title Sheet	1
Key Map	2
Type 1A Curb Inlet Detail	3
Precast Type 1A Curb Inlet Detail	4
Std. Manhole and Reinforced Concrete Manhole Details	5
Miscellaneous Drainage Details	6
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Ditch cross-Sections	
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(2) Delete paragraph 1.23.

(3) Add the following to the definition for "WORKING DAY":

"WORKING DAY - A working day shall be any day upon which the Contractor can physically and legally prosecute the work and shall be counted as provided in these Specifications, unless weather or working conditions are such that the Contractor cannot work as determined by the Engineer. Saturdays, Sundays, and Legal Holidays will not be counted, unless work is accomplished by the Contractor and approved by the Engineer.

Days limited by weather conditions shall be counted on the following basis:

Forty (40) percent or less of a normal working day-----	0
Between forty (40) percent and eighty percent of a normal working day-----	1/2
Eighty (80) percent or more of a normal working day-----	1"

b. To Article 4 - DRAWINGS AND SPECIFICATIONS -

(1) To Paragraph 4.2 add the following:

"Within the Specifications the order of precedence shall be as follows: Addenda, Supplementary General Conditions, Information for Bidders, Standard General Conditions, Technical Provisions."

c. To Article 7 - INSPECTION AND TESTING -

(1) To Paragraph 7.2 add the following:

"So long as the CONTRACTOR'S work progresses in an orderly and reasonable manner the costs of field sample preparation and testing of all specimens will be borne by the OWNER. Should the CONTRACTOR use methods or procedures that require unreasonable or excessive field testing to determine whether specification requirements are being met, or if field testing is performed with continued negative results that indicate the CONTRACTOR'S methods or procedures are not adequate to provide the specified results, the ENGINEER shall notify the CONTRACTOR in writing that the costs of all additional testing beyond specific limits, which shall be set out in the written notice for the particular area or material in question, shall be the responsibility of the CONTRACTOR. Such costs will then be deducted from the monies due the CONTRACTOR for the work performed."

(2) Add the following new paragraphs:

"7.9 If the work is defective, or CONTRACTOR fails to supply sufficient skilled workmen or suitable materials or equipment or if CONTRACTOR fails to make prompt payments to Subcontractors or for labor, materials or equipment, OWNER may order CONTRACTOR to stop the work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party."

"7.10 The ENGINEER and/or OWNER may provide one or more Resident Project Representatives to inspect materials to be used in the work and observe construction methods to determine compliance with the Contract Requirements. The ENGINEER and the Resident Project Representatives shall be provided free access to all parts of the work at the project site and to off-site locations where materials

or equipment proposed for use in the work are to be produced or fabricated. Resident Project Representatives shall have the authority to reject defective materials; to delay specific construction operations while the acceptability of materials is being determined, or while equipment or machines are being adjusted or calibrated; and to suspend operations on any part of the work not meeting Contract Requirements. Project Representatives shall have no authority to deviate from or waive the requirements of the specifications without written permission of the ENGINEER. Resident Project Representatives will not perform as Superintendent or Foreman for the CONTRACTOR and neither the presence or absence of the Project Representative on the work shall relieve the CONTRACTOR of his responsibility to perform all work in accordance with the Contract Requirements."

d. To Article 10 - SURVEYS, PERMITS AND REGULATIONS - Add the following new paragraph:

"10.1.1 The Boundary Surveys to be furnished to the CONTRACTOR by the OWNER shall consist of the following:

Location of each inlet and manhole per Contractor's requirements.

e. To Article 14 - CHANGES IN CONTRACT PRICE - Add the following new paragraph:

"14.2 When the Agreement calls for stipulated unit prices for certain items of work, the Contract Price for each work item specified shall be determined as the product of the stipulated unit price and the completed units of acceptable work as measured and certified by the ENGINEER."

f. To Article 15 - TIME FOR COMPLETION AND LIQUIDATED DAMAGES - In paragraph 15.3, change "calendar day" to "working day".

g. To Article 22 - CONTRACT SECURITY -

(1) To Paragraph 22.1 add the following:

"The CONTRACTOR shall furnish a Statutory Bond which is a surety bond, running to the State, conditioned that the CONTRACTOR, as principal, shall pay all indebtedness incurred for labor, supplies, equipment and materials furnished in making the improvements called for by the contract documents."

h. To Article 31 - TAXES -

(1) Add the following new paragraph:

"31.2 Materials and equipment incorporated into this project are exempt from payment of the Kansas Sales Tax and such taxes shall be excluded from Bidder's proposals. The OWNER will furnish the CONTRACTOR with a proper exemption certificate. Should the OWNER fail to provide the exemption certificate within fifteen (15) days of contract date, he shall reimburse the CONTRACTOR monthly for all sales tax for which the CONTRACTOR becomes liable until the certificate is provided. Upon receipt of a proper exemption certificate number, the CONTRACTOR shall assume full responsibility

for his proper use of the certificate and shall pay all costs of any legally assessed penalties for his improper use thereof. The CONTRACTOR will pay all other taxes required by law in the place where the work is to be performed."

SGC-3 SUPPLEMENTS TO STANDARD GENERAL CONDITIONS

a. Article 32 - PUBLIC CONVENIENCE - Add to the General Conditions:

"During the progress of the work the convenience of the local public and of residents along the work shall be considered and, where possible, their rights of access shall be preserved. Temporary driveways, approaches and crossings shall be provided where practicable and maintained in good condition. Construction materials shall be so stored or stockpiled as to cause as little obstruction as possible and still be readily accessible for use or inspection. No material shall be stored within 2 feet of any tree or building nor within 5 feet of any fire hydrant; fire hydrants shall remain ready for immediate use by the fire department. The CONTRACTOR'S proposed schedule for beginning new sections of the work shall be coordinated with and approved by the ENGINEER. To prevent extended inconvenience to the local residents, the CONTRACTOR will not be permitted to open up extensive areas for work during periods when cold or other weather conditions which would curtail the work are normally expected."

b. Article 33 - PROCESS AGENT - Add to the General Conditions:

"Upon notice of award and prior to execution of the contract, any successful bidder who is not a legal resident of the county in which the work is located shall appoint his process agent in accordance with Section 16-113, General Statutes of Kansas, 1949, as amended. The term of appointment of this process agent shall be for the full term of the surety bonds to be furnished by the Contractor as a part of these contract documents."

c. Article 34 - TIME FOR COMPLETION AND LIQUIDATED DAMAGES - Add to the General Conditions.

(1) "34.1 It is understood by the parties hereto that the date to beginning, rate of progress, and completion date hereunder are ESSENTIAL CONDITIONS of the Contract. Refer to the "Bid" for the time limit, time of completion, and liquidated damages."

(2) "34.2 It is expressly understood and agreed that the time for completion is a reasonable time, taking into consideration average weather and other unusual conditions."

(3) "34.3 The stated amount of liquidated damages is fixed and agreed upon because of the extreme difficulty of ascertaining the actual damages the OWNER would sustain, and such amounts, if due, may be retained from money due the CONTRACTOR."

(4) "34.4 The CONTRACTOR shall not be charged with liquidated damages for delays over which he has no control as set forth in Article 15 providing proper claim is made and approved. Except for unusually severe weather, weather conditions shall not be a cause for extension of time, nor shall delay in material deliveries or in the performance of subcontracts be cause for delay unless caused by acts described in Article 15 as applied to Suppliers and SUBCONTRACTORS."

d. Article 35 - NONDISCRIMINATION OF EMPLOYMENT - Add to the General Conditions.

(1) "35.1 Contracts for work under this proposal will obligate the contractors and subcontractors not to discriminate in employment practices."

(2) "35.2 Successful bidders, if requested, shall submit a signed statement as to whether they have previously performed work subject to the President's Executive Order No. 11246 of September 24, 1965, as amended."

(3) "35.3 Bidders and their subcontractors must, if requested, submit a compliance report concerning their employment practices and policies in order to maintain their eligibility to receive the award of the contract."

(4) "35.4 Successful bidders must be prepared to comply in all respects with the Contract Provisions regarding nondiscrimination as contained in the Labor Standards Contract Provisions, February, 1969."

(5) "35.5 The successful Bidder agrees to comply with the following provisions during his performance under this Contract.

(a) The CONTRACTOR shall observe the provisions of the Kansas act against discrimination and shall not discriminate against any person in the performance of work under the present contract because of race, religion, color, sex, physical handicap unrelated to such persons ability to engage in the particular work, national origin or ancestry.

(b) In all solicitations or advertisements for employees, the CONTRACTOR shall include the phrase "equal opportunity employer" or a similar phrase to be approved by the Kansas Commission on Civil Rights.

(c) If the CONTRACTOR fails to comply with the manner in which the CONTRACTOR reports to the Kansas Commission on Civil Rights in accordance with the provisions of K.S.A. 1976 Supp 44-1031, so amended, the CONTRACTOR shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, in whole or in part, by the OWNER.

(d) If the CONTRACTOR is found guilty of a violation of the Kansas act against discrimination under a decision or

order of the Kansas Commission on Civil Rights which has become final, the CONTRACTOR shall be deemed to have breached the present contract and it may be cancelled, terminated or suspended, in whole or in part, by the OWNER.

(e) The CONTRACTOR shall include the provisions of paragraphs (a) through (d) inclusively of this subsection (35.5) in every subcontract or purchase order so that such provisions will be binding upon such subcontractor or vendor.

(f) The provisions of the K.S.A. 44-1030 and of this section shall not apply to the CONTRACTOR, if he has already complied with the provisions of such sections by reason of holding a contract with the federal government or a contract involving federal funds."

e. Article 36 - WAGE-HOUR REQUIREMENTS CLAUSE - Add to the General Conditions.

Eight (8) hours shall constitute a days' work for all laborers or other persons employed by Contractor in the performance of the Contract, except in cases of extraordinary emergency which may arise, in time of war, or in cases where it is necessary to work more than eight (8) hours per calendar days for the protection of property or human life. Laborers or other persons so employed working to exceed eight (8) hours per calendar day, shall be paid upon the basis of eight (8) hours constituting a days work. Not less than the current rate of per diem wage in the locality where the work is being performed shall be paid to laborers or other persons so employed by Contractor. No laborer, workman, or mechanic in the employ of the Contractor or his subcontractors or other persons doing or contracting to do the whole or part of the work contemplated by this Contract, shall be permitted or required to work more than eight (8) hours in any one calendar day except in cases of extraordinary emergencies as defined in K.S.A. 44-201 et. seq. or as engaged in projects excepted from the hours worked per calendar day provisions of K.S.A. 44-201.

The current per diem wage has been interpreted as being that decision as published in the Federal Register, Volume 43, Number 93, dated Friday, May 12, 1978, known as Decision KS78-4049 and attached hereto as Attachment A which are incorporated by reference and are made a part of the Supplementary Conditions of these specifications as though fully repeated herein.

SUPERSEDES DECISION

STATE: Kansas COUNTY: Nowata
 DECISION NO.: 2378-4069 DATE: Date of Publication
 Supersees Decision No.: FR77-4031 dated February 18, 1977 in 42 FR 10233
 Description of Work: Highway (does not include bridges over navigable waters, tunnels, building structures in rest area projects, railroad construction) and Water and Sewer Line Construction

	Costs Hourly Rates	Edge Benefits Payments		
		M L W	Position	Vacation Education and/or Appt. Tr.
A-frame truck	\$ 3.70			
Asphalt paving machine	4.70			
Asphalt spreader screed operator	4.35			
Asphalt taker	4.00			
Batching plant scalesman	4.10			
Bulldozer operator	4.70			
Carpenters	4.50			
Carpenters tender	4.00			
Cement masons	4.55			
Compressor operator	4.00			
Concrete finisher (paving)	4.55			
Concrete paver	4.70			
Concrete paving curing machine	4.35			
Concrete saw	4.00			
Crane, or any machine power swing	5.00			
Distributor operator	4.35			
Finishing machine operator	4.22			
Form liner and setter	3.75			
Front end loader, over 1 C.Y.	4.55			
Front end loader, 1 C.Y. & less	4.20			
Laborer (Construction & General)	3.50			
Mechanics	5.00			
Mechanic helper	4.35			
Motor grader operator (finish)	5.00			
Motor grader operator (rough)	4.70			
Reinforcing steel setter	4.00			
Roller, pneumatic (self-propelled)	4.20			
Roller, steel (self-propelled)	4.20			
Roller, steel wheel (plant mix)	4.20			
Rotary broom operator	4.00			
Slurry machine operator	4.55			
Tractor operator, 50 HP or less	3.65			
Tractor operator, over 50 HP	4.20			
Trucks:				
Light	3.65			
Single axle	3.85			
Tandem axle	4.35			
Welder	4.35			

BOARD OF COUNTY COMMISSIONERS

SEDGWICK COUNTY, KANSAS

CONTRACT

THIS AGREEMENT, ENTERED INTO ON THIS _____ DAY OF _____, 19 _____,
BY AND BETWEEN THE BOARD OF COUNTY COMMISSIONERS, SEDGWICK COUNTY,
KANSAS, PARTY OF THE FIRST PART, AND _____
HIS-THEIR HEIRS, EXECUTORS, ADMINISTRATORS, SUCCESSORS, OR ASSIGNS, KNOWN AS
THE PARTY OF THE SECOND PART, FOR THE CONSTRUCTION OF THE FOLLOWING
DESCRIBED WORK: _____

KNOWN AS PROJECT NO. _____

WITNESSETH, THAT FOR AND IN CONSIDERATION OF THE PAYMENTS AND AGREEMENTS IN THE PROPOSAL, HERETO ATTACHED, TO BE MADE AND PERFORMED BY THE PARTY OF THE FIRST PART, AND ACCORDING TO THE TERMS EXPRESSED IN THE BONDS REFERRING TO THESE PRESENTS, THE PARTY OF THE SECOND PART AGREES WITH SAID PARTY OF THE FIRST PART, AT HIS OWN PROPER COST AND EXPENSE, TO DO ALL THE WORK IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS HEREIN DESCRIBED, AND IN FULL COMPLIANCE WITH ALL THE TERMS OF THIS AGREEMENT AND THE REQUIREMENTS OF THE ENGINEER UNDER IT.

IT IS ALSO UNDERSTOOD AND AGREED THAT THE PROPOSAL, HERETO ATTACHED, AND PLANS AND SPECIFICATIONS AS FILED IN THE OFFICE OF THE SEDGWICK COUNTY CLERK, ARE ALL ESSENTIAL DOCUMENTS OF THIS CONTRACT AND ARE A PART THEREOF.

IT IS ALSO UNDERSTOOD AND AGREED, THAT THIS CONTRACT IS SUBJECT TO AND CONDITIONED UPON THE APPROVAL, ISSUANCE, AND SALE OF WARRANTS, TEMPORARY NOTES, OR BONDS OF SEDGWICK COUNTY, KANSAS, IN AN AMOUNT SUFFICIENT TO PAY THE CONTRACTOR THE CONSIDERATION TO BE PAID THE CONTRACTOR UNDER THE TERMS OF THE CONTRACT.

IN WITNESS WHEREOF, THE PARTIES HERETO HAVE SET THEIR HANDS ON THE DATE HEREIN NAMED.

RECOMMENDED BY:

COUNTY ENGINEER/DIRECTOR OF PUBLIC WORKS

PARTY OF THE FIRST PART:

BOARD OF COUNTY COMMISSIONERS
SEDGWICK COUNTY, KANSAS

_____ CHAIRMAN

_____ COMMISSIONER

_____ COMMISSIONER

ATTEST:

COUNTY CLERK

APPROVED AS TO FORM ONLY:

COUNTY COUNSELOR

PARTY OF THE SECOND PART:

BY _____

_____ TITLE

Distribution List

- 1—Contractor
- 1—Purchasing
- 2—Engineering
- 2—County Clerk
- 1—Controller

PERFORMANCE AND MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS, THAT THE CONTRACTOR _____

OF _____

AS PRINCIPAL AND AS SURETY _____

A CORPORATION AUTHORIZED UNDER THE LAWS OF THE STATE OF _____ WITH GENERAL

OFFICES IN _____ AND AUTHORIZED TO TRANSACT BUSINESS IN

THE STATE OF KANSAS ARE HELD AND FIRMLY BOUND UNTO _____

AS OWNER, IN THE PENAL SUM OF _____ DOLLARS

(\$ _____) LAWFUL MONEY OF THE UNITED STATES, FOR THE PAYMENT OF WHICH SUM WELL AND TRULY TO BE MADE, SAID PRINCIPAL AND SURETY BIND THEMSELVES, THEIR HEIRS, ADMINISTRATORS, EXECUTORS, SUCCESSORS, AND ASSIGNS, JOINTLY AND SEVERALLY, FIRMLY BY THESE PRESENTS:

SIGNED, SEALED AND DELIVERED THIS _____ DAY OF _____, 19 _____,

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT WHEREAS, SAID PRINCIPAL HAS ENTERED INTO CONTRACT WITH _____

AS OWNER, DATED _____ 19 _____, FOR THE FURNISHING OF ALL MATERIALS AND LABOR AND DOING ALL THE WORK OF WHATEVER KIND NECESSARY TO CONSTRUCT _____

FOR THE OWNER, ALL IN ACCORDANCE WITH THE DETAILED PLANS AND SPECIFICATIONS FOR SUCH WORK ON FILE IN THE OFFICE OF THE LEGALLY AUTHORIZED REPRESENTATIVE OF THE OWNER AND IN ACCORDANCE WITH SAID CONTRACT, A COPY OF WHICH IS, OR MAY BE, ATTACHED HERETO AND WHICH IS BY REFERENCE MADE A PART HEREOF:

NOW, THEREFORE, IF SAID PRINCIPAL SHALL WELL AND TRULY PERFORM ALL THE COVENANTS, CONDITIONS AND OBLIGATIONS OF SAID CONTRACT ON THE PART OF SAID PRINCIPAL TO BE PERFORMED, AND SHALL HOLD THE OWNER HARMLESS AGAINST ALL CLAIMS, LOSS OR DAMAGE WHICH IT MAY SUSTAIN OR SUFFER BY REASON OF ANY BREACH OF SAID CONTRACT BY SAID PRINCIPAL, AND IF SAID PRINCIPAL SHALL MAINTAIN THE IMPROVEMENTS TO BE CONSTRUCTED BY HIM AS PROVIDED FOR IN SAID CONTRACT AND SHALL MAKE GOOD ALL DEFECT IN MATERIAL AND WORKMANSHIP IN THE MANNER AND FOR A PERIOD OF ONE YEAR, OR FOR SUCH OTHER PERIOD AS PROVIDED FOR IN THE SPECIFICATIONS AND CONTRACT ABOVE REFERRED TO, THEN THIS OBLIGATION SHALL BE VOID: OTHERWISE TO REMAIN IN FULL FORCE AND EFFECT.

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 OR THE SPECIFICATIONS ACCOMPANYING THE SAME, SHALL IN ANY WAY AFFECT ITS OBLIGATIONS 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 OR TO THE WORK OR TO THE SPECIFICATIONS.

IN TESTIMONY WHEREOF, SAID PRINCIPAL HAS DULY EXECUTED THESE PRESENTS AND SAID SURETY HAS CAUSED THESE PRESENTS TO BE EXECUTED IN ITS NAME AND ITS CORPORATE SEAL TO BE HEREUNTO AFFIXED, BY ITS DULY AUTHORIZED AGENT OR AGENTS, ALL AS OF THE DAY AND YEAR FIRST ABOVE WRITTEN.

ATTEST:

SECRETARY BY _____
PRINCIPAL

ATTEST:

SECRETARY BY _____
SURETY

APPROVED AS TO FORM AND LEGALITY THIS _____ DAY OF _____ A.D., 19 _____

ATTEST:

CHAIRMAN

COUNTY CLERK

APPROVED AS TO FORM ONLY:

, COUNTY COUNSELOR

BOND TO THE STATE OF KANSAS

Statutory Payment Bond

(K.S.A. 60-111)

KNOW ALL MEN BY THESE PRESENTS, That we _____

as Principal, and _____

as Surety, are jointly and severally bound unto the STATE OF KANSAS in the
sum of _____

_____ Dollars (\$ _____),

for the use and benefit of persons entitled thereto for which payment well
and truly be made, we hereby bind ourselves, our successors, heirs and execu-
tors and administrators, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, THAT

Whereas, the said _____

has entered into a written contract with _____

for certain work in connection with the _____

under date of _____

NOW, THEREFORE, if the said Principal or the subcontractor or subcontrac-
tors of said Principal shall pay all indebtedness incurred for labor furnished
materials, equipment, or supplies used or consumed in connection with or in or
about the construction of or in making such public improvement, this obligation
shall be void; otherwise, it shall remain in full force and effect.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be executed and delivered this _____ day of _____, 19____.

Principal

By _____

ATTEST:

Surety

By _____

Approved and filed this _____ day of _____, 19____,

Clerk of the District Court, _____

BID BOND

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

_____ as Principal, and

_____ as Surety, are hereby

held and firmly bound unto _____ as OWNER

in the penal sum of _____

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

Signed, this _____ day of _____, 19_____

The Condition of the above obligation is such that whereas the Principal has submitted to _____ a certain BID,

attached hereto and hereby made a part hereof to enter into a contract in writing, for the

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 day and year first set forth above.

Principal (L.S.)

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.

LABOR AND MATERIAL PAYMENT BOND

This Bond is issued simultaneously with Performance Bond in Favor of the Owner
conditioned on the full and faithful performance of the Contract.

KNOW ALL MEN BY THESE PRESENTS: That _____
(Here insert full name and address or
legal title of Contractor)

_____ as Principal, hereinafter call Principal, and _____
(Here insert full name and address
or legal title of Surety)

_____ as Surety, hereinafter called Surety, are held and firmly bound unto THE BOARD OF COUNTY
COMMISSIONERS OF SEDGWICK COUNTY, KANSAS

as Obligee, hereinafter called Owner, for the use and benefit of claimants as hereinbelow defined, in the
amount of _____
(Here insert a sum equal to the total contract price)

_____ Dollars (\$ _____).

for payment whereof Principal and Surety bind themselves, their heirs, executors, administrators,
successors and assigns, jointly and severally, firmly by these presents.

WHEREAS,

Principal has by written agreement dated _____, 19 _____, entered
into a contract with Owner for: (Here insert full name, address, and description of project)

in accordance with Drawings and Specifications prepared by:
(Here insert full name and address)

which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THE OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1. A claimant is defined as one having direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.
2. The above named Principal and Surety hereby jointly and severally agree with the owner that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum as may be justly due claimant, and have execution thereon. The Owner shall not be liable for the payment of any costs or expenses of any suit.
3. No suit or action shall be commenced hereunder by any claimant:
 - a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: The Principal, the Owner, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail; postage prepaid, in an envelope addressed to the Principal, Owner or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the State of Kansas.
 - b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

3. (Cont.)

c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the State of Kansas in which the Project, or any part thereof, is situated, or in the United States District Court for the district in which the Project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

Signed and sealed this _____ day of _____, 19 _____.

(Witness)

(Principal) (Seal)

(Title)

(Witness)

(Surety) (Seal)

(Title)

SECTION 1 - SPECIAL CONDITIONS

01. Scope of Work. The work to which these specifications apply consists of Street and Storm Drain Improvements in Spring Valley Estates Addition to Sedgwick County, Kansas.

02. Location. The proposed work is located approximately 2,500' north of Harry Street on the west side of 143rd Street East. The work will be in Sedgwick County, Kansas. The construction of these facilities will be generally located in the S.E. 1/4 of Section 26, Township 27 South, Range 2 East of the 6th P.M..

03. Utilities. The City of Wichita has a public water system located in 143rd Street. Electrical power is available along 143rd Street and is owned by K.G.&E. The contractor will be required to obtain and pay for all utilities used at the job site.

04. Traffic Control. The contractor will be required to maintain through traffic on 143rd Street at all times. All work under this project shall be coordinated by the contractor with the Director of Public Works, Sedgwick County, Kansas. Contractor shall furnish and maintain all safety devices, including barriers, signs, flashers, and flagmen as required to maintain traffic on 143rd Street.

05. Earthwork Stockpiles. The Contractor shall so schedule his work operation as to minimize the necessity of stockpiling earthwork. Stripping, stockpiling, and re-spreading of topsoil shall not be paid for directly but shall be considered a subsidiary part of "Unclassified Excavation".

06. Cleanup. After completion of the work, all debris shall be removed, all spoil banks shall be leveled, and all excess material disposed of. The entire area shall be left in a clean and sightly condition.

07. Calcium Chloride. Paragraph 02.c.(3) on page 3-3 of the Specifications is hereby deleted. The use of calcium chloride as an admixture will not be allowed.

SECTION 2 - EARTHWORK

01. General. Work under this Section shall include clearing and grubbing; all excavation required for construction of roads, streets, drives, and parking areas; formation of embankments, fills, and backfills; excavation for culverts, storm drains, sanitary sewers, manholes, drainage structures, channels, and ditches; subgrade preparation, area and finish grading; hauling, placing, watering and compacting; disposal of surplus and waste materials; and all miscellaneous and incidental operations necessary to construct and complete the work in compliance with the dimensions, lines and grades as shown on the plans.

02. Water. Water can be obtained from any source such as wells, streams, ponds, lakes, waterlines, etc., provided that the Contractor shall obtain all permits and withstand all costs for obtaining and transporting of water to the work site.

03. Clearing and Grubbing. This item shall consist of clearing and/or grubbing, including the disposal of materials, for all areas within the limits designated on the plans or as required by the Engineer.

Clearing and grubbing shall consist of clearing the surface of the original ground of the designated areas, areas to be excavated, or areas to receive embankment of all trees, stumps, down timber, logs, snags, brush, undergrowth, hedges, grass, weeds, fences, debris, and rubbish of any nature to a minimum depth of two feet below grade or subgrade, and the disposal from the project site of all spoil materials resulting from clearing and grubbing operations.

The manner and location of disposal of materials shall be subject to applicable laws and ordinances and to the approval of the Engineer. When the Contractor is required to locate a disposal area outside the limits of the project site, he shall obtain and file with the Engineer, permission in writing from the property owner for the use of his property for this purpose.

04. Removal Of Existing Structures. This item shall consist of the removal and satisfactory disposal of such portions of existing structures as provided in the plans and specifications or ordered by the Engineer.

Where pipe culverts, steel or wood bridge members, or other items with a salvage value are removed, reasonable care shall be exercised in their removal.

All such salvageable items shall remain the property of the Owner, and shall be stored on the project site at locations approved by the Engineer.

All material which is not considered of value by the Engineer shall be disposed of under the same provisions as listed for clearing and grubbing.

05. Excavation For Streets. This work shall consist of excavating the roadway and borrow pits, removing and satisfactorily disposing of all materials taken from within the limits of the work, also such excavation as is necessary for inlet and outlet ditches, channels, shaping and sloping of embankments, excavation for combined curb and gutter, street, alley, and driveway returns and pavement, strictly to the required alignment, grade and cross sections as shown on the plans.

a. Classification of Excavation. All material excavated shall be defined as "Unclassified Excavation" unless, in the proposal form, prices are asked and bids are taken for "Rock Excavation" and "Common Excavation".

"Unclassified Excavation" shall include all excavation performed under this item regardless of the material encountered including water.

"Rock Excavation", when provided in the proposal, shall include all solid rock in ledges, in bedded deposits, in unstratified masses, and conglomerate deposits which are so firmly cemented they present all the characteristics of solid rock and which cannot be removed without drilling and blasting. All boulders containing a volume of more than 1/2 cubic yard will be classified as "Rock Excavation"

"Common Excavation", when provided in the proposal, shall consist of all excavation not included in "Rock Excavation".

Frozen condition of any of the different classified materials taken from excavation does not constitute a basis for a claim for higher classification or for extra work on the part of the Contractor.

b. Construction Methods. All suitable materials removed from the excavation shall be used, as far as practicable, in the formation of the embankment, subgrade, and at such other places as directed by the Engineer.

During construction, the roadbed shall be maintained in such condition that it will be well drained at all times. Unsuitable roadbed material encountered in cuts shall be excavated to the lateral limits and depth indicated on the plans or specified by the Engineer. The material removed shall be replaced with suitable embankment material, or with special backfill when so indicated on the plans or in the specifications.

c. Construction Requirements. The subgrade shall be excavated or filled until it is, after proper compacting, at such an elevation that the pavement or surfacing, when constructed as shown on the plans, will conform to the established grade and cross section for the street.

Included in earth excavation shall be all incidental work such as stripping, plowing, scarifying, refilling, shaping, trimming, watering, compacting, resetting valves, boxes, and all preliminary work required to make the site ready for pavement or surfacing construction.

The subgrade for the pavement or surfacing shall be scarified to a depth of eight (8) inches, and worked free of clods by discing and blading to give a uniform depth of compacted material.

After scarifying, discing, and blading is completed, the entire area shall be compacted as specified hereinafter and a final rolling by means of a smooth steel roller weighing not less than 250 pounds per inch of roller length. An approved type of subgrade planer shall be used in forming the subbase in lieu of the smooth steel rolling specified above.

Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at these locations and adding, removing, or replacing material and re-rolling until the proper cross section and density are obtained. Any portion of the area which is not accessible to a roller shall be compacted to the required density by approved mechanical tampers.

In those areas that are to receive pavement or surfacing, the top of the subgrade shall be of such smoothness that, when tested with a 10-foot straightedge, applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 3/8-inch or shall not be more than 0.05 foot from true grade as established by grade hubs or pins. The Contractor shall protect the subgrade from damage and effectively drained until surfacing material is placed thereon. In the event of ruts or erosion the subgrade shall be reshaped, refilled, and rerolled as directed by the Engineer.

All surplus excavated material shall be used to uniformly widen embankments, backfill behind curbs, flatten slopes, or shall be deposited in such locations as the Engineer may direct.

06. Embankments. This item shall consist of the construction of embankments, including preparation of the areas upon which they are to be placed, in accordance with the specifications and to the lines, grades, and sections shown on the plans or as ordered by the Engineer.

a. Construction Requirements. Immediately prior to the placing of the fill materials, the entire area upon which the embankment is to be compacted to Type B or better, except where limited by rock, shall be scarified and broken by means of a disc harrow or plow, or other approved equipment, to a depth of 6 inches. Scarifying shall be done approximately parallel to the axis of the fill.

Embankments requiring compaction shall be constructed in accordance with the following item on "Compaction of Earthwork". Material to be wasted shall be placed in uniform, horizontal layers not exceeding twelve inches in thickness over the full width of the embankment. Each layer shall be bladed until it is level and uniform before the succeeding layer is placed.

The quantity and quality of equipment in use on the project and the amount of blading and rolling performed shall be sufficient to process the amount of material being delivered to the embankment area. The Engineer shall have the authority to require the suspension of embankment operations at any time until the previously delivered materials are properly placed.

During construction of the embankment, the Contractor shall route his equipment, both when loaded and when empty, over the layers as they are placed and shall distribute the travel evenly over the entire width of the embankment. Starting layers shall be placed in the deepest portion of the fill. Haul road locations from borrow pits shall be routed as approved by the Engineer.

Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material.

No payment will be made separately or directly for haul on any part of the work. All hauling will be considered a necessary and incidental part of the work and its cost shall be considered by the Contractor and included in the contract unit price for the pay items involved.

b. Topsoil. When topsoil is specified or required, it shall be salvaged from stripping or other grading operations. If at the time of excavation or stripping the topsoil cannot be placed in its proper and final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall not be placed on areas which will subsequently require excavation or embankment.

Upon completion of grading operations, topsoil shall be placed as directed by the Engineer.

No direct payment will be made for topsoiling. The quantity removed and placed or stockpiled shall be paid for at the contract unit price for "Unclassified Excavation".

When stockpiled topsoil is later rehandled the material so rehandled shall be paid for at the contract unit price for "Unclassified Excavation".

07. Compaction Of Earthwork. This item shall consist of the compaction of earthwork by rolling or tamping, or any combination of these methods, in accordance with the plans and specifications or at the direction of the Engineer.

a. Construction Requirements. The provisions of "Embankments" shall apply to the construction of embankments that are to be compacted, subgrade compaction, except where subgrade stabilization is specified and backfill when specified as compacted backfill.

(1) Tamping or Sheepsfoot Rollers - shall consist of metal rollers, drums, or shells surmounted by metal studs with tamping feet projecting at least 6-1/2 inches from the drum surface. The weight of tamping rollers shall be such that when fully loaded the load on each tamper foot shall be not less than two hundred (200) pounds per square inch of cross-sectional area. The load per tamper foot will be determined by dividing the total weight of the roller (loaded) by the number of tamping feet in one (1) row parallel to the axis of the roller.

Multiple wheel pneumatic tired rollers shall be constructed so that they can be loaded to a gross weight of at least two hundred twenty-five (225) pounds per inch of width of tire tread. The internal pressure of the tires shall be at least forty-five (45) pounds per square inch and the tires on the front and rear axles shall be staggered so that they will cover the entire area over which the roller travels.

(2) Formation of Compacted Embankments - Embankments shall be formed of satisfactory materials placed in successive horizontal layers of not more than 8 inches in loose depth for the full width of the cross section and shall be compacted as specified before the next layer is placed.

(3) Moisture Requirements - The material in the layers shall be of the proper moisture content before rolling to obtain the desired compaction. Wetting or drying of the material and manipulation when necessary to secure a uniform moisture content throughout the layer shall be required. The addition of water, when required, shall be as the layer is placed on the embankment or prewatered at the source when permitted by the Engineer. Mixing shall be accomplished by the use of spring tooth harrows, disc harrows, disc plows or other approved equipment.

The moisture content of the soil at the time of compaction shall be uniform and within ± 3 percentage points of optimum moisture for the soil involved, except for Type B and when the Engineer elects, may be as specified below.

The moisture content of the soil being compacted shall be considered too high to insure compaction when, after repeated rollings with a sheepsfoot roller, the roller continues to pick up excessive amounts of soil and refuses to "build up" so that the tamping feet eventually ride the compacted surface.

When other types of rollers are used, the moisture content of the soil shall be considered excessive when "bridging" or "building up" of the soil occurs in front of, or behind the rear wheels of such rollers, and/or when earth hauling equipment produces ruts in the rolled surface.

Material containing an excess amount of water shall be dried by mechanical means or permitted to dry naturally to a moisture content which will allow satisfactory compaction.

(4) Compaction Requirements - Compaction requirements are separated into types, depending upon the nature of soil to be compacted and the degree of compaction desired. Unless otherwise indicated on the plans or in the specifications, the minimum compaction shall be Type B as listed below.

(a) Types of Compaction: -

Type I - Compacted density of the soil shall be equal to or greater than ninety-five (95) percent of Standard Density at optimum moisture as per ASTM D-698 and the latest revisions thereof.

Type II - Compacted density of the soil shall be equal to or greater than ninety (90) percent of Standard Density at optimum moisture as per ASTM D-698 and the latest revisions thereof.

Type B - The Contractor shall carefully level up each successive lift or layer and shall make a sufficient number of trips with tamping or sheepsfoot rollers over the entire surface to insure that all soils in the lift are uniformly compacted. Compaction shall continue until the roller feet "ride out" on the surface of the compacted lift. Compaction shall be considered as adequate when additional trips do not result in additional compaction or in bringing the roller feet closer to the surface of the lift. Each successive lift shall contain only that amount of material which will insure the required uniform compaction, but in no instance shall any lift exceed six (6) inches of compacted depth.

If, due to the sandy material that may be encountered, or due to the high moisture content that may be encountered with some soils, the roller will not "ride out" on the surface, or the roller continues to pick up excessive amounts of soil, the Contractor may discontinue the use of the sheepsfoot roller and after obtaining permission from the Engineer, use a pneumatic tired roller for such portions of the work as necessary. When pneumatic tired rollers, meeting the requirements listed above are used, each lift shall be rolled not less than ten trips over its entire surface and not more than fifteen trips will be required.

(5) Tamping - Whenever embankments are placed adjacent to structures or at locations where it is not practical to use a roller and compacted backfill, the embankment and backfill materials shall be tamped by mechanical tampers having a tamping face not exceeding one hundred fifty (150) square inches in area. Each layer shall be compacted to a density equal to or greater than that obtained under the above rolling procedure for the type of compaction designated. Each successive lift shall contain only that amount of material which will insure proper compaction, but in no instance shall any layer be greater than 6 inches compacted depth.

07. Excavation And Backfilling For Structures And Pipe. This item shall consist of all excavation and backfilling for structures including catch basins, manholes, inlets, headwalls, storm and sanitary sewers, culvert pipe, box culverts, and shall include all the necessary clearing and grubbing, bailing, drainage, pumping, sheeting, and construction of cofferdams or cribs, and their subsequent removal. The disposal of all unwanted or excess excavated material is also included under this item of work.

a. Classification. All excavation for structures shall be "Unclassified".

b. Excavation For Structures. The excavation for structures shall be excavated according to the outlines of the footings as shown on the plans and shall be of sufficient size to permit the placing of the full width and length of the footings including the forms. Rounded or undercut corners and edges of footings will not be permitted.

The excavation shall be carried to the elevation shown on the plans or as established by the Engineer.

Suitable and practically watertight cofferdams shall be used whenever water-bearing strata are encountered above the elevation of the bottom of the excavation. They shall be sufficiently large to give easy access to all parts of the foundation form.

Cofferdams shall be sunk to a depth well below the bottom of the excavation or to an elevation as near the bottom of the excavation as foundation conditions will permit; shall be substantially braced in all directions, and of such construction as will permit them to be pumped free of water. Unless otherwise shown on the plans or agreed upon, cofferdams and all sheeting or bracing shall be removed after the completion of the concrete or masonry.

c. Excavating and Forming Bed for Pipe. The trench shall be excavated to the depth and grade shown on the plans or established by the Engineer. The trench shall be of sufficient width at the top of the pipe, when placed, to permit thorough tamping of the backfill under the haunches and around the pipe, but in no case shall the trench width be less than two feet greater than the external diameter of the pipe with the sides of the trench as nearly vertical as practicable.

In excavating, the bottom of the channel shall be so shaped to a template that at least ten (10) per cent of the over-all height of the pipe will be in contact with the bottom of the trench as excavated. Recesses shall be excavated to receive bells, or other parts which extend below the outside perimeter of the pipe.

Where a firm foundation is not encountered at the established grade due to soft, spongy, or other unstable soil, all such unstable material under the pipe and for a width equal to the width of the trench shall be removed and replaced with gravel conforming to ASTM C-33 size No. 67, properly compacted and of the thickness as required by the Engineer to provide adequate support for the pipe.

When specific details for pipe bedding are shown on the plans they shall control the construction requirements. Specifications provisions not in conflict are considered complimentary and shall be complied with in addition to the details provided.

d. Backfilling. Structures, culverts and sewers shall be backfilled in accordance with the following requirements. Only approved materials that will produce a dense, well compacted backfill shall be used for backfilling. Materials such as sod, frozen soil, debris, and soil that contains a large amount of organic matter shall not be used. When permitted by the Engineer, compacted sand may be used in lieu of earth for compacted backfill except for the top two feet. Water shall be drained from the areas to be backfilled. If in the opinion of the Engineer, it is not practicable to drain the areas to be backfilled, the backfill areas shall be dewatered by means of bailing or pumping.

No backfilling shall be placed against any structure until permission is given by the Engineer. Adequate provision shall be made for thorough drainage and not less than two cubic feet of crushed stone shall be placed at each weep hole location.

The backfill material shall be deposited on both sides of all structures and sewers at approximately the same elevation and the same time. Special care shall be taken to prevent any wedging action against the structure.

The material shall be placed in layers and compacted by means of mechanical tampers or hand tampers. Each layer shall be compacted to a minimum density equal to or greater than that of the surrounding undisturbed soil and the top two feet shall be compacted to meet the requirements of Type II Compaction. Each successive layer shall contain only the amount of material that is required for proper compaction, but in no case shall any layer be greater than four (4) inches compacted depth. The moisture content of the soil shall be sufficiently near optimum to insure the required density.

The compaction of the earthwork around any structure shall be carried to the grade as shown on the plans or set by the Engineer. Catch basins, manholes, inlets, sewers, and miscellaneous structures shall be backfilled in accordance with the methods outlined above, except that compaction of the backfill will not be required where structures are outside the roadway right-of-way or any other traveled way. Sewers outside the roadway shall be compacted to the springline of the pipe and the remaining trench backfilled with equipment approved by the Engineer.

When specific details for backfilling in trenches for pipe or culverts, or around structures are shown on the plans they shall control the construction requirements. Specification Provisions not in conflict are considered complimentary and shall be complied with in addition to details provided.

SECTION 3 - CONCRETE WORK

01. General. Concrete shall consist of cement, coarse aggregate, fine aggregate, approved admixture, and water; proportioned and mixed to produce a workable mixture suitable for specific conditions of placement as noted in the following specifications.

All concrete used in the work shall be air-entrained unless otherwise permitted by these specifications or approved by the Engineer.

All reinforcing steel as detailed on the drawings shall be installed and fastened by ties or supports prior to placing any concrete.

02. Materials.

a. Portland Cement.

(1) General - Portland Cement shall conform to the requirements of ASTM Designation C150 and shall be Type II. When approved by the Engineer in writing, Type I or Type III cements may be used in lieu of Type II. Use of special cements containing interground admixtures will not be permitted without approval by the Engineer.

(2) Packaged Cement - Where packaged cement is to be used in the work, it shall be stored in a suitable moisture-proof enclosure with each shipment properly marked and segregated. Bags of cement in which, for any reason, the cement has become partially set, or which contains lumps of caked cement, shall be rejected.

(3) Bulk Cement - Bulk cement may be used in the work when approved by the Engineer. Methods of transporting, handling and storage shall also be subject to approval.

(4) Tests - The Contractor shall furnish certified test reports showing that the cement being supplied complies with these specifications.

b. Aggregates. The use of pit run or naturally mixed aggregates will not be permitted. Fine and coarse aggregates shall be separately furnished and stored. The mixing of different kinds of aggregates from different sources or alternating batches of different aggregates in one stockpile will not be permitted. In no case shall aggregates containing lumps of frozen or partially cemented materials be used. Aggregates proposed for use in the work shall meet the following requirements.

(1) Deleterious Substances - Deleterious substances in aggregates shall not exceed the following percentages by weight when tested under the designated ASTM method.

	Coarse	Fine	Test
Material Passing No. 200 Sieve	1.5	1.00	C117
Shale	0.25	0.05	C123
Soft Friable Pieces	0.25	0.05	C142
Sticks (wet)	0.05	0.05	
Coal	0.25	0.25	C123
Clay Lumps (wet, on No. 4 Sieve)	0.25	0.25	C142

No one of the above percentages shall be exceeded when taken separately. In addition, any combination of shale, soft friable pieces, sticks, coal or clay lumps shall not exceed 0.75 percent.

(2) Coarse Aggregate - Coarse aggregate shall be hard, durable, clean uncoated pieces of crushed rock or gravel. Coarse aggregate will be well graded within the following limits (ASTM Size #67) when tested under ASTM Standard C136.

Sieve Size ----- 1	3/4	3/8	4	8
% Retained ----- 0	0-10	45-80	90-100	95-100

(3) Fine Aggregate - Fine aggregate shall consist of clean, hard, durable, uncoated siliceous or calcareous particles well graded within the following limits.

Sieve Size ----- 3/8	4	8	16	30	50	100
% Retained ----- 0	0-5	0-20	15-50	40-75	70-90	90-99

The Fineness Modulus (F.M.) of the fine aggregate furnished shall be not less than 2.5 nor more than 3.4 when determined by using a sieve series consisting of the No. 4, 8, 16, 30, 50 and 100 sizes. After acceptance of a gradation for use in the work the F.M. shall not vary more than ± 0.2 .

(4) Stockpiles - Aggregates shall be stockpiled by building up free-draining horizontal layers not greater than 4 feet in thickness. Aggregates that have become mixed with earth or foreign material shall not be used. If the water content in coarse aggregate is below that which the aggregate will absorb, such aggregate shall be wet down at least 12 hours in advance of the time the mix is to be batched.

(5) Aggregate Tests -

(a) General - All aggregates proposed by the Contractor for use in the work shall be certified by an approved Testing Laboratory as complying with the above requirements covering deleterious materials and gradation. In addition, unless

waived by the Engineer, certified tests shall also be provided in accordance with Paragraphs (b) thru (e) below. All costs of testing shall be borne by the Contractor.

(b) Soundness - Coarse aggregate for concrete when tested for soundness with magnesium sulphate in accordance with ASTM Standard C88 shall have a total loss not greater than 18% by weight.

(c) Abrasion - The percentage of wear of the coarse aggregates by the Los Angeles Abrasion Test, ASTM C131, shall be less than 40%.

(d) Absorption - Coarse aggregate for concrete shall have an absorption limit of 4% or less, as determined by ASTM C127.

(e) Mortar Strength - Fine aggregates shall be of such quality that when made into a mortar and tested in accordance with ASTM C87 the mortar shall develop a compressive strengths at 7 and 28 days of not less than 100 percent of that developed by the control mortar specified in C87.

c. Admixtures.

(1) General - Admixtures are defined by these specifications as a material, other than portland cement, aggregate or water, added to concrete to modify its properties. The following admixtures shall be used when required and may be used when permitted.

(2) Air Entraining Agent (AEA) - An approved air entraining agent shall be used to produce 5 to 8% air entrainment in the concrete as placed. The AEA shall be a neutralized solution of vinsol resin meeting the requirements of ASTM C-260.

(3) Calcium Chloride - When approved by the Engineer, calcium chloride meeting the requirements of ASTM D-98 may be used as an accelerator in an amount not exceeding two (2) percent of the weight of cement. No calcium chloride, or admixtures containing calcium chloride, shall be used where aluminum conduit, couplings or accessories are embedded in the concrete.

(4) Water Reducing Admixtures - At the option of the Contractor, subject to approval of the Engineer, a water reducing admixture (WRA) may be used composition described as "hydroxylated carboxylic acid" or "hydroxylated polymers" and shall meet the requirements of ASTM C494, Type A or Type D. Before approval, the compatibility of the proposed admixture, with the other materials to be used in the concrete mixture, shall be established by test. Where a WRA has been approved for use, and design mix test results demonstrate adequate strength, the Cement Factor may be reduced by 0.5 bag below that specified in Paragraph .03, "Proportioning".

(5) Tests - The Contractor shall furnish three (3) copies of certified test results showing that the admixtures proposed for use comply with these specifications.

d. Water. Water used in concrete shall be clean, clear, and free from injurious amounts of sewage, oil, acid, strong alkalies or vegetable matter. If the water is of questionable quality, it shall be tested by a comparative mortar strength test in accordance with ASTM C-87.

e. Metal Reinforcement. Metal reinforcement shall be Grade 40 billet steel in accordance with ASTM A615. The size, length and shape shall be as shown and detailed on the drawings.

03. Proportioning.

a. Mix Design. Concrete mixes to be used in the work shall be proportioned in accordance with the requirements of Table I. All materials shall be proportioned by weight considering one sack of cement as 94 pounds and one gallon of water as 8.33 pounds.

Table I

Concrete Class*	Minimum 28-Day Strength (PSI)		Minimum Cement Factor Bags/C.Y.	Maximum W/C Ratio Gal./Bag	Slump** (in.)
	Compressive	Flexural			
Class I	4000	500	6.5	6.0	1 to 3
Class II	3000	425	5.75	6.75	1 to 3
Class III (sand mix)	3500	-	8.0	5.75	1 to 3

*The Class of concrete to be used in the various parts of the work shall be as specified herein or as noted on the drawings. Where no specific class has been designated, Class II concrete shall be used.

**No concrete with slump in excess of 3-inches shall be used in the work without approval of the Engineer.

The Contractor shall design and submit for approval three (3) copies of the proposed design mix for each of the classes of concrete specified for the work. Included with the submittal shall be copies of test reports showing the 7 and 28 day strengths (Flexural and Compressive) for each proposed mix. The proposed design mixes shall be based on the specific materials and the maximum slump to be used in the work. All costs of mix design and testing shall be borne by the Contractor.

b. Aggregate Content. The total volume of aggregate used in each cubic yard of concrete shall be the maximum consistent with the requirements of workability.

For Class I and II concretes, the composition of the total aggregate (Fine and Coarse) shall be such that not more than 70% or less than 40% will pass the #4 sieve. The exact proportions of fine and coarse aggregate may be varied within the above limits by the Engineer to produce a concrete mixture more suitable for the work at hand.

For Class III concrete 100% fine aggregate shall be used. Sidewalks and driveways shall be 100% fine aggregate (sand mix) except where an approved mix using coarse aggregate is used due to special construction methods. In such cases, not more than 70% or less than 30% shall pass the #4 sieve.

c. Variations in Mix Proportions. The initial concrete mixes used on the work for the various classes of concrete shall be in accordance with the proportions used in the approved design mixes. In the event that these mixes do not produce concretes with the required strength, workability, or air content the Engineer may order changes in the mix proportions to obtain the specified requirements, and the changes so ordered, including additional cement, will be made at no additional cost to the Owner.

d. Control. The Contractor shall provide all equipment necessary to determine and positively control the actual amounts of all materials, including admixtures, entering into the concrete. Batching and weighing devices for aggregates and cement shall be accurate within 0.5 percent, and for water and admixtures within 1.0 percent.

04. Forms. Forms shall be steel or wood as approved by the Engineer and shall conform to the shape, lines, grade and dimensions of the concrete as detailed on the drawings. Lumber used in forms for exposed surfaces shall be dressed to a uniform thickness and free from knots and blemishes. Joints in the forms shall be all horizontal or vertical where the finished surface is to be exposed. Forms shall have nails withdrawn and surfaces to be in contact with concrete thoroughly cleaned and oiled prior to each use. Form oil shall be non-staining and shall be applied to the forms before reinforcement is placed. Forms shall be sufficiently tight to prevent leakage of mortar and properly braced to maintain the desired shape, line and grade.

The removal of forms shall not be started until the concrete has attained the necessary strength to support its own weight and any construction loads. Forms shall not be removed before the expiration of 30 hours from any construction. Forms, supported by false work, shall not be removed until the concrete has attained its design strength. Where forms are removed less than seven days after placement of the concrete, provisions shall be made to insure curing as specified in Paragraph 08, "Curing of Concrete".

05. Reinforcement. Prior to positioning, reinforcing steel shall be cleaned of all loose mill scale and rust or coatings which might prevent or reduce bond. Reinforcement shall be positioned accurately and secured against any displacement by using annealed iron wire ties or suitable clips and shall be supported by

suitable metal supports, spacers or hangers. All reinforcing shall be in place and securely fastened before placing any concrete. The contractor shall submit shop drawings, bar lists and bending diagrams to the Engineer for approval prior to ordering any reinforcement.

06. Mixing.

a. Job-Mixed Concrete. The equipment used for mixing concrete on the project site shall be capable of combining the aggregates, cement and water into a thoroughly mixed and uniform mass, and of discharging the mixture without segregation. The concrete shall be mixed in quantities required for immediate use. Concrete shall not be used which has developed its initial set or that has not been placed within one-half (1/2) hour after the water has been added. Retempering concrete by adding water or by any other means will not be permitted.

The concrete shall be mixed not less than sixty seconds. When a double compartment mixer is used, the minimum mixing time in the first compartment shall be thirty seconds and the total mixing time, including transfer time, shall not be less than sixty-five seconds.

Concrete may be mixed by a paving mixer into which the materials, including the water, can be precisely and regularly proportioned, and which will produce a concrete of uniform consistency, uniform color, and thoroughly and uniformly mixed. The paving mixer shall be equipped with a batch meter and an automatic locking timing device. The water tank shall be equipped with a scale graduated in gallons and fractions thereof. The water measuring device shall be capable of accurate measurement to within one percent of the required amount. The paving mixer shall be equipped with a boom and bucket, fully power controlled, which shall be so operated that the batches may be uniformly distributed on the subgrade.

b. Ready-Mixed Concrete. Ready-Mixed (Transit-mixed) concrete may be used in lieu of concrete mixed at the project site. When used, transit-mixed concrete shall comply with the provisions of Division 400 of the Standard Specifications for State Road and Bridge Construction, latest Edition, Kansas State Highway Commission, except that testing will be in accordance with the requirements of Paragraph 09, "Control Tests".

07. Placing Concrete.

a. General. Before beginning placement of concrete, hardened concrete and foreign materials shall be removed from the inner surface of the conveying equipment. Before depositing concrete, all debris shall be removed from the space to be occupied by the concrete; forms, if constructed of lumber, shall be thoroughly wetted (except in freezing weather) or oiled. Reinforcement shall be secured thoroughly in position and approval by the Engineer obtained before concrete is placed.

b. Removal of Water. Water shall be removed from the space to be occupied by the concrete before concrete is deposited, unless otherwise directed by the Engineer. Any flow of water into an excavation shall

be diverted through proper side drains to a sump, or be removed by other approved methods which will avoid washing the freshly deposited concrete. If directed by the Engineer, water vent pipes and drains shall be filled by grouting, or other approved means, after the concrete has thoroughly hardened.

c. Handling. Concrete shall be handled from the mixer, or in the case of ready-mixed concrete from the transporting vehicle, to the place of final deposit as rapidly as practicable by methods which shall prevent the separation or loss of the ingredients. Under no circumstances shall partially hardened concrete be deposited in the work. Concrete shall be deposited in the forms as nearly as practicable in its final position to avoid rehandling. It shall be deposited as to maintain, until the completion of the unit, an approximately horizontal plastic surface. Forms for walls or thin sections of considerable height shall be provided with openings or other devices that will permit the concrete to be placed in a manner that will prevent segregation and accumulations of hardened concrete on forms or metal reinforcement above the level of concrete. Regardless of the type of transporting vehicle, concrete shall have the quality required when deposited in the forms.

d. Chuting. When concrete is conveyed by chutes, the equipment shall be of such size and design as to insure a continuous flow in the chute. Chutes shall be of metal or metal lined and the different portions shall have approximately the same slope. The slope shall not be less than one vertical to two horizontal and shall be such as to prevent segregation of the ingredients. The discharge end of the chute shall be provided with a baffle plate to prevent segregation. If the distance of the discharge end of chute above surface of the concrete is more than 3 times the thickness of the layer being deposited, but not more than 5 feet above surface of concrete, a spout shall be used and the lower end maintained as near the surface of deposit as practicable. When the operation is intermittent, the chute shall discharge into a hopper. The chute shall be thoroughly cleaned before and after each run and all debris and cleaning water shall be discharged outside the forms.

e. Compacting. During and immediately after depositing, concrete shall be compacted thoroughly by means of suitable tools. In general, concrete shall be compacted by mechanical vibration. Number and type of vibrators shall be subject to the approval of the Engineer.

For thin walls or inaccessible portions of forms where spading, rodding, or forking is impracticable, concrete shall be worked into place by vibrating or tapping forms lightly opposite the freshly deposited concrete. Concrete shall be worked thoroughly around reinforcement, and around embedded fixtures, and into corners of forms.

Accumulations of water on surface of concrete, during placement and compacting, due to water gain, segregation or other causes shall be prevented as far as possible by adjustments in the mixture. Provisions shall be made for removal of such water as may accumulate so that, under no circumstances, will fresh concrete be placed in such accumulations.

f. Depositing Continuously. Concrete shall be deposited continuously or in layers of such thickness that no fresh concrete will be deposited on concrete which has hardened sufficiently to cause formation of seams and planes of weakness within the section. If a section cannot be placed continuously, construction joints shall be located at points as provided for in the drawings or approved by the Engineer.

g. Depositing in Cold Weather. Concrete when deposited shall have a temperature of not less than 50° F. nor more than 100° F. The Contractor shall submit for the approval of the Engineer the methods he proposes to use for protecting the concrete from freezing temperatures during the first 72 hours where Type I or II Portland cement is used, or 24 hours where Type III (high early strength) Portland cement is used. Before placing concrete, forms or subgrade shall be free from frost and ice. Methods of heating materials shall be approved by the Engineer. Salts, chemicals or other foreign materials shall not be mixed with the concrete for the purpose of preventing freezing. Calcium Chloride may be used as an accelerator when specifically approved by the Engineer.

h. Bonding. Before depositing fresh concrete on or against concrete which has hardened, forms shall be retightened. The surface of the hardened concrete shall be roughened, in a manner that will not leave loosened particles of aggregate or damaged concrete at the surface, cleaned thoroughly of foreign matter and saturated with water. To provide adequate mortar at the juncture of the hardened and newly deposited concrete, the cleaned and saturated surfaces, including vertical and inclined surfaces, shall be first covered thoroughly with a coating of mortar or neat cement grout, against which new concrete shall be placed before the grout has attained its initial set.

i. Joints. Expansion, contraction and construction joints shall be installed in accordance with the specification for the specific item of construction, or as detailed on the plans.

08. Curing of Concrete. All concrete surfaces shall be protected to insure that loss of moisture from the surface is held to a minimum for a period of at least seven (7) days following initial set. Where Type III (high early strength) Portland cement is used, the period shall be not less than three (3) days. Concrete damaged by improper curing shall be subject to removal and replacement as directed. The method of curing, regardless of type, will not relieve the Contractor of his responsibility to provide concrete having required strength and surface finish. Unless otherwise specified for a specific item of work, the prevention of the loss of moisture from the concrete surface shall be accomplished by one of the following alternate methods:

- a. Surface maintained continuously wet by sprinkling or inundation;
- b. Covering with burlap mats kept continuously wet;

c. Covering surfaces with white or translucent polyethelene sheeting not less than .004 inch in thickness. Splices shall be made with a minimum lap of 4 inches and sealed with adhesive tape approved by the Engineer;

d. Application of a membrane curing compound such as Protex Industries "Triple Seal"; Carter-Waters' "Chlorcure"; or an equal product approved by the Engineer. Application shall be at a rate of not more than 200 square feet of surface per gallon of compound;

e. Forms left in place during the specified curing period shall be sprinkled and maintained moist as required to prevent rapid drying of the concrete;

f. Other methods of curing as may be approved by the Engineer.

09. Control Tests. All concrete and concrete materials used in the work shall be tested as directed by the Engineer. The Contractor shall provide material for all samples and test specimens required.

So long as the Contractor's work progresses in an orderly and reasonable manner the costs of field sample preparation and testing of all specimens will be borne by the Owner. Should the Contractor use methods or procedures that require unreasonable or excessive field testing to determine whether specification requirements are being met, or if field testing is performed with continued negative results that indicate the Contractor's methods or procedures are not adequate to provide the specified results, the Engineer shall notify the Contractor in writing that the costs of all additional testing beyond specific limits, which shall be set out in the written notice for the particular area or material in question, shall be the responsibility of the Contractor. Such costs will then be deducted from the monies due the Contractor for the work performed.

Control tests which will be conducted on a continuing basis include:

a. Slump Test. (ASTM-C143) as directed during concrete placement.

b. Yield Test. (ASTM-C138) as directed during concrete placement, generally once each day during concrete placement.

c. Compressive Strength. (ASTM-C39) two (2) test specimens for each 50 cubic yards or less of each class of concrete placed during one days operation to be tested at 7 and 28 days. Test specimens to be prepared in accordance with ASTM-C31.

d. Flexural Strength. (ASTM-C78) as directed during concrete placement, generally two (2) test specimens for each days placement of more than 50 CY. Test specimens to be prepared in accordance with ASTM-C31.

e. Air Entrainment. (ASTM-C231) as directed during concrete placement, generally at least once each day during concrete placement.

10. Defective Concrete.

a. Deficient Strength. Where the results of strength tests indicate concrete which fails to conform to these specifications, additional test specimens shall be taken, in accordance with ASTM C42, from the questioned areas, as directed by the Engineer. If the strength indicated by these core samples meets the specification requirements the concrete will be accepted. In the event that the core tests fail to meet the specifications, all concrete represented by the deficient test specimen shall be removed and replaced by the Contractor at no additional cost to the Owner. The cost of all coring and testing, including satisfactory patching of core holes, shall be borne by the Contractor.

b. Defective Area. Areas of concrete which are defective for reasons other than strength (i.e. Honeycombs, finish irregularities, misalignment of forms, etc.) shall be repaired by methods approved by the Engineer. When in the opinion of the Engineer satisfactory repairs cannot be made the defective concrete shall be removed and replaced by the Contractor at no additional cost to the Owner.

SECTION 4 - COMBINED CURB AND GUTTER, VALLEY GUTTER AND MISCELLANEOUS

01. General. Work under this Section includes the construction of combined curb and gutter, edge curb in conjunction with valley gutter, entrances, slope drains, flumes, and ditch linings when called for on the plans or where directed by the Engineer. All concrete items shall conform to the shape and dimensions as detailed and to the lines and grades as shown on the plans. The dimensions shown are to the backs of curbs, unless specifically indicated otherwise.

02. Excavation and Compaction. See Section 2, Earthwork. Excavation and compaction shall be as shown on the plans and shall be wide and deep enough to accommodate any subgrade treatment. Unless otherwise indicated on the plans, the minimum subgrade treatment for combined curb and gutter, valley gutters, and entrances within public right-of-way shall be 6 inches of compaction Type B. No concrete will be placed on frozen subgrade, and all subgrade exposed to frost action or excessive moisture shall be re-compacted when directed by the Engineer.

03. Materials.

a. Concrete. See Section 3. Concrete shall be Class I (AE), unless otherwise indicated on the plans.

b. Concrete Reinforcement.

(1) Steel Reinforcing Bars - Steel reinforcing bars, unless otherwise specified or noted, shall be in accordance with ASTM - A615, Grade 40 billet steel. The size, length, and shape shall be as shown and detailed in the plans. Each shipment of billet - steel reinforcement bars used on the project shall be tagged and identified for their corresponding mill test reports. Mill test reports shall indicate the steel process, chemical, and physical properties, and shall be certified by the manufacturer and furnished by the Contractor.

(2) Welded Wire Fabric - Welded wire fabric shall be in accordance with ASTM A-82 and shall conform to the size and dimensions shown on the Plans.

c. Expansion Joint Filler. shall be pre-formed meeting the requirements of Section 1005.03, Type B, of the Standard Specifications for State Road and Bridge Construction, 1973 Edition. Joint Filler shall be of the thickness indicated and shall conform to the shape of Sections shown in the Plans.

d. Joint Sealing Compound. Joint sealing compound shall conform to the requirements of Section 1005.02, Cold Type Joint Sealing Compound, 1973 Edition of the Standard Specifications for State Road and Bridge Construction.

04. Construction Methods.

a. General. Concrete items shall be constructed to the detailed thicknesses and to the lines and grade as shown on the plans. Concrete shall be placed over moistened and unfrozen subgrade and when the ambient temperature is 40°F. or greater and rising. The subgrade shall be void of excessive moisture. If required by the Plans, the concrete shall be reinforced with the type of reinforcement indicated and the reinforcement shall be secured and tied in place prior to depositing any concrete.

b. Forms. Forms shall be set for the full depth of the section with the proper shape and strength to support any equipment and concrete placing operations. Forms shall be set to line and grade with adequate devices to secure them without visible spring or settlement from vibrations during the consolidating and finishing of the concrete pavement. Flexible or curved forms shall be of a design acceptable to the Engineer for use on irregular shaped areas and true circular curves. Forms shall be checked for line and grade immediately before placing the concrete and shall not deviate from true line by more than one-fourth inch at any point.

Forms shall be thoroughly cleaned and oiled each time they are used. Built-up, battered, twisted, warped or broken forms shall be removed from the work. Steel forms shall have square ends connected with a rigid lock joint. Curved, flexible or wood forms shall be used on the returns.

(1) Combined Curb and Gutter - The Contractor may use a slip-form paver and mechanical finisher in lieu of the forms and metal screed specified for combined curb and gutter. The slip-form paver shall be capable of molding and satisfactorily compacting the concrete to cross section, line and grade. The machine shall be self-propelled and of such weight and traction to maintain straight neat lines.

c. Placing Concrete. The concrete shall be deposited on the subgrade in successive batches for the full width between forms and in a manner which will require as little rehandling as possible. Necessary hand spreading shall be done with shovels, not rakes. Workmen shall not be allowed to walk over the freshly mixed concrete without use of bridges or other approved means. The amount of material deposited shall be sufficiently in excess of that required to form the required cross section after consolidation in order to provide a roll of concrete ahead for the full length of the screed.

Concrete shall be thoroughly consolidated against and along the faces of all forms and along the full length and on both sides of all expansion joint assemblies, by means of vibrators inserted in the concrete.

Concrete shall be deposited as near to expansion and contraction joints as possible without disturbing them, but shall not be dumped from the discharge bucket or hopper onto a joint assembly unless hopper is well centered on the joint assembly.

Should any concrete material fall on or be worked into the surface of a completed slab, it shall be removed immediately by approved methods.

d. Joints. All joints shall be constructed at the locations and to the types as detailed and shown on the plans, unless directed otherwise by the Engineer. Failure to construct the joints called for in the best possible manner will be cause for suspension of work until the cause of the defective work is remedied.

(1) Contraction Joints - Sawed joints shall be sawed after the concrete has hardened sufficiently to prevent tearing and raveling, but before the pavement starts shrinking and cracking. Saw cuts will be straight and uniform with a minimum depth of one-fourth the section thickness and shall be in alignment with adjacent previously sawed joints. After the joint has been sawed, it shall be cleaned with air or water jets and the curing period shall be continued.

(2) Construction Joints - All construction joints shall be sawed along the abutting previously poured edge as described above for contraction joints, except that the depth shall be one inch or as detailed on the plans.

(3) Expansion Joints - Expansion joints shall be constructed as shown on the plans. When not indicated on the Plans expansion joints shall be placed between curb and gutter blocks at the tangent point of all curves, each side of inlets, at alleys, and at intervals of not more than 250 feet in straight runs. Expansion joints shall be cut to full size and shape of the cross section of the curb and gutter less one-half inch from the finished surface thereof. The edges of the blocks against the joint shall be finished with an edging tool and the joint raked clean of concrete.

(4) Joint Sealer - After the specified curing period, the faces of all joints to be sealed shall be thoroughly cleaned, using compressed air, sweeping, brooming or other methods approved by the Engineer. The faces of the joint shall be dry after being thoroughly cleaned, and filled with joint sealing compound using a nozzle designed to completely fill the joint.

Joints shall be filled to within the top surface, but in no case shall they be overfilled. Upon completion of the joint sealing operations, all excess material and foreign material shall be removed from the concrete surface.

e. Finishing. After final screeding is completed, the surface shall be floated in a longitudinal direction and then tested with ten (10) foot straightedges. All high and low places shall be corrected by wood floating operations until no irregularities exist.

(1) Valley Gutter - The concrete surface shall then be textured in a transverse direction by the use of fiber brooms, canvas or rubber belting. Care shall be exercised in preserving the pavement surface by not digging into concrete pavement. Final concrete belting or brooming shall be adjusted until the texture is uniform and meets approval of the Engineer.

(2) Combined Curb and Gutter - There shall be provided on the job a metal screed or mule designed to give proper shape to the curb and gutter. It shall be bent to the exact shape of the finished curb and gutter and the forward edge shall be turned up slightly to prevent disturbing the concrete. It shall be designed to ride on the forms, and when properly manipulated, shall leave the face of the curb and gutter in its proper shape and condition. A gooseneck or "S" trowel shall be used to finish the surface, and minor imperfections shall be corrected with a mason's trowel. A medium broom finish shall be applied to the face of all curbs. Care shall be taken to finish the gutter flow line to a true uniform grade.

(3) Integral Curb - When shown on the plans, integral curb will be poured immediately after finishing of the concrete pavement. Integral curb shall have joints at all locations to match the joints of the adjoining pavement. A medium broom finish shall be applied to the face of curbs as specified above.

(4) Flumes, Slope Drains and Ditch Lining - The surfaces shall be finished with a wooden float, and no plastering of the surfaces will be permitted.

(5) Sidewalks - The concrete surface shall be textured in a transverse direction by use of medium fiber brooms. All outside edges and the joints shall be edged with a one-quarter inch edging tool.

f. Curing. Curing shall be as required in the Section under "Concrete Work" and as approved by the Engineer.

g. Surface Tolerances. The concrete pavement and gutter flowlines after hardening shall be tested with a 10 foot straightedge. All areas showing surface deviations in excess of 1/4 inch shall be ground down with an approved grinding tool until the deviations are 1/4 inch or less. Where departure from the correct cross sections exceeds 1/2 inch, the pavement shall be removed and replaced by the Contractor at his own expense when directed by the Engineer. Any area so removed and replaced shall be for the full width and a minimum of ten feet in length or between joints. If the remaining portion of the slab is less than 10 feet to the nearest joint, it shall also be removed and replaced.

05. Entrances.

a. Alley Entrances. Alley entrances shall be constructed when shown in the detailed plans or as directed by the Engineer. Materials and methods of construction shall be as outlined for valley gutter.

b. Entrances Drives. Entrance drives for residences or commercial establishments shall be constructed within the public right-of-way as shown in the detailed plans or as directed by the Engineer. Materials and methods of construction shall be as outlined for valley gutter. Contractor shall verify with the Property Owner the location and width of each entrance drive. Where the width of drive constructed exceeds 10 feet as detailed on the plans, the cost of the additional width shall be borne by the Property Owner.

c. Private Drives. Private drives outside of the public right-of-way are not a part of this work. All such construction shall be a private arrangement between the Contractor and the Property Owner.

SECTION 5 - STORM SEWERS, CULVERTS, AND APPURTENANT STRUCTURES

01. General. Work under this section consists of the excavation, installation of pipe, construction of inlets, manholes, and appurtenant structures, and backfilling complete in accordance with the lines and grades as shown on the Plans or as established by the Engineer.

02. Excavation and Backfill. See Section 2, Earthwork.

a. Pipe Zone.

(1) RCP, RCPHE shall be Type I Compaction.

(2) CMP, CMAC shall be Type II Compaction.

(3) Over excavation of the trench bottom for storm sewers will not be required unless directed by the Engineer.

03. Materials.

a. Concrete. See Section 3 - Concrete Work. Concrete shall be Class I, unless otherwise shown on the Plans.

b. Structural Steel. Structural Steel shall be in accordance with A.S.T.M. A-36, A242, or A441.

c. Reinforced Concrete Pipe. Reinforced Concrete Pipe shall conform to ASTM Standard C76, Class III. Special sections such as tees or transitions shall be structurally equivalent to Class III pipe.

d. Reinforced Elliptically Shaped, Concrete Pipe. Horizontal Elliptical Pipe shall conform to ASTM Standard C507, HE-11. Special sections such as tees or transitions shall be structurally equivalent to HE-11 pipe.

e. Corrugated metal Pipe. Corrugated Metal Pipe and associated fittings shall meet the requirements of Section 1009.05 of the 1973 Edition of the "Standard Specifications for State Road and Bridge Construction", Kansas Department of Transportation.

f. Fully Paved Corrugated Metal Pipe. Fully Paved Corrugated Metal Pipe and associated fittings shall meet the requirements of Section 1009.07 of the 1973 Edition of the "Standard Specifications for State Road and Bridge Construction", Kansas Department of Transportation.

g. Brick. Brick used in the construction or adjustment of manholes and construction or adjustment of storm drain inlets shall be no. 1 common red brick complying with ASTM C-62 Grade SW or ASTM C-32, Grade MS.

h. Reinforcing Steel. Reinforcing Steel shall conform to that specified in Section 3, Concrete Work.

i. Grates, Castings, Frames, and Covers. Grates, Castings, Frames, and Covers shall be provided as shown on the plans and shall be good quality gray iron, free from cracks, holes, swells and cold shuts. Materials shall comply with ASTM A48, Class 25S.

j. Sand for Mortar. Concrete sand (fine aggregate) sieved through 8 mesh screen.

k. Shrinkage-Correcting Aggregate. Master Builders "Embeco" or Sonneborn "Ferrolith G-DS".

l. Mortar. Eight sacks of Type I cement per cubic yard. Use of hydrated lime will not be allowed.

m. Non-shrinking Mortar. Premixed or job mixed; job mixed shall be one part shrinkage-correcting aggregate, one part portland cement, one part sand.

04. Construction Methods.

a. Pipe Installation. The laying of pipe in the finished trench shall be set to line and grade from the lowest point and laid upgrade. Sections of corrugated metal pipe shall be placed with ends abutting and joined with the manufacturers coupling bands. Reinforced concrete pipe shall be laid with the bell or grooved end upgrade. All pipe shall be firmly and accurately set so the invert is smooth and uniform. Trenches shall be free of water, except the portions of pipe projecting into streams or ponds.

Joints in reinforced concrete pipe shall be cemented with cement mortar.

b. Inlets and Manholes. Inlets and Manholes shall be constructed to the lines, dimensions, and grades as shown on the Plans. Concrete structures shall conform to the applicable requirements of Section 3, Concrete Work.

The Contractor shall exercise care in providing adequate openings and recesses for the grates, castings, frames and covers. Castings, frames, and covers Grates shall be set level and firm in the completed inlets and manholes.

The invert channels of storm sewer structures shall be grout filled and shaped for proper drainage of storm water.

In no case shall the invert section through a sanitary sewer manhole be greater than that of the outgoing pipe. The shape of the invert shall conform exactly to the lower half of the pipe it connects. Side branches shall be connected with as large radius of curve as

practicable. All inverts shall be troweled to a smooth clean surface. The floods shall have slopes of one (1) inch per foot on areas outside of the flow channels. All sanitary sewers extending from manholes shall be supported with concrete for a distance of three feet from the outside wall of the manhole.

(1) Concrete Finish - All exposed concrete surfaces shall be trowelled with a smooth steel trowel followed by a brushed finish.

(2) Formed Surfaces - All formed surfaces to remain exposed after removal of forms and backfilling shall be given a rubbed finish. The rubbed surface shall be freed from uneven moulding lines, fins, etc. by use of a carborundum brick.

(3) Frames and Covers - Manhole rings, covers, etc. shall be made of good quality gray iron, free from cracks, holes, swells and cold shuts and, unless otherwise specified, shall be as shown on the detailed drawings, or an approved equal. Manhole rings and covers shall weigh not less than shown on the details and the covers shall not be perforated. Where noted on the Plans, frames and covers shall be painted after installation.

(4) Brick Work - Manhole bricks shall be laid radially. Manhole and inlet bricks shall be laid in a full bed of mortar with shove joints and staggered bond. Maximum inside face vertical joints shall be 1/4 inch and maximum horizontal joints shall be 1/2 inch between courses. The entire exterior surface of brick work on manholes and inlets shall receive a full 1/2 inch mortar coating. Brick work performed during cold weather shall be protected from all damage by approved methods. No work shall be started when the air temperature is below 32 deg. F without prior approval of the Engineer.

All mortar shall be used within 40 minutes after mixing. Mortar which has begun to take on initial set shall be discarded and shall not be used with additional cement or new mortar.

c. Manhole Adjustment. Where shown on the plans or as directed by the Engineer existing electrical manholes shall be adjusted as required to conform to the adjacent finish grades. Contractor shall carefully remove the existing metal ring and cover and reset them after adjustment of the masonry riser has been completed.

SECTION 6 - LIME TREATED SUBGRADE

01. General. Work performed under this Section consists of constructing one or more courses of a mixture of soil, hydrated lime, pebble quicklime and water in accordance with the lines, grades, thicknesses and typical sections shown on the Plans or established by the Engineer. Materials, equipment, and construction requirements shall be in accordance with Division 1000 - Materials Details, and Division 300, Section 301 - Equipment, and Section 305 - Lime Treated Subgrade, of the Standard Specifications for State Road and Bridge Construction, 1973 Edition, except as supplemented herein.

02. Excavation. See Section 2 - Earthwork.

03. Materials.

a. Lime.

- (1) Hydrated Lime - Section 1010.02.
- (2) Quicklime - Pebble - Minimum Available Lime Index as Calcium Hydroxide shall be 90%.
- (3) Water - Section 1014.02.
- (4) The lime supplier shall certify that the lime furnished meets specifications.

04. Construction Requirements. The rate of application for any type of lime shall be as directed by the Engineer and shall be determined by soil tests performed by an approved laboratory. The Contractor shall pay all costs for sampling and laboratory testing of all soils to be treated. The job shall have a single type and source of lime, unless otherwise permitted by the Engineer. The unit price bid in the proposal for the six inch lime treated subgrade shall be based on the following lime application rates:

Hydrated Lime	pounds per square yard
Quicklime	pounds per square yard

The actual rate of lime application will be adjusted as required by the above specified testing. No adjustment will be made in the unit price bid per square yard of lime treated subgrade for any increase or decrease in lime application rates.

a. Quicklime. Quicklime shall be spread uniformly on dry subgrade and thoroughly mixed into the subgrade soil prior to the addition of any water.

b. Compaction. Delete the entire Article 305.3 (g) and add the following:

After the materials have satisfactorily mixed, aged, and re-mixed, the mixture shall be laid and compacted to at least 95 percent of standard density in accordance with AASHTO T-99. Light sprinkling

with water during laying operations may be required to keep the moisture content a minimum of 2% above optimum. Compaction shall be accompanied with sufficient blading to eliminate all irregularities.

05. Delete the entire Article 305.04 - Method of Measurement.

06. Delete the entire Article 305.05 - Basis of Payment.

SECTION 7 - BITUMINOUS BASE AND ASPHALTIC CONCRETE WEARING SURFACE

01. General. Work performed under this section consists of the three courses of bituminous material to be placed on the prepared subgrade in conformance with the lines, grades, thicknesses, and typical sections shown on the Plans or established by the Engineer. Materials, equipment, and construction requirements shall be in accordance with Division 1000 - Materials Details, and Division 600, Section 601 - Equipment, Section 602 - Asphalt Application Temperatures, and Section 603 - Plant Mix Bituminous Construction, of the Standard Specifications for State Road and Bridge Construction, State Highway Commission of Kansas, 1973 Edition, except as supplemented herein.

02. Materials.

a. Aggregates. Aggregates for the bituminous mixture shall be following types for each course:

(1) Bituminous Sub-Base and Bituminous Base
Aggregates shall be BM-4.

(2) Asphaltic Concrete Wearing Surface
Aggregates shall be BM-2.

b. Bituminous Materials.

(1) Bituminous materials for base courses shall be Type AC-3. Bituminous materials for the wearing surface shall be Type AC-3.

(2) Bituminous materials for tack and priming of contact surfaces of gutters, etc. shall be emulsified asphalt Types SS-1H or CCS-1H.

(3) Certified test reports of bituminous material in current production or stored in tanks shall be submitted to the Engineer for approval.

03. Construction Requirements.

a. Job Mix Design. The job-mixes for each type of bituminous mixture shall be designed by Marshall tests and submitted to the Engineer for approval.

(1) Bituminous Base shall meet the following requirements:

Stability (min)	1000
Flow	.05 to .12
% Voids	3 to 7
% Voids Filled	70 to 80

Minimum asphalt content shall be 4.5 percent of the dry weight of the aggregates.

(2) Asphaltic Concrete Wearing Surface shall meet the following requirements:

Stability (min)	1800
Flow	.05 to .12
% Voids	3 to 7
% Voids Filled	70 to 85

Minimum asphalt content shall be 5.25 percent of the dry weight of the aggregates.

(3) Certified Marshall test reports of bituminous materials in current production may be submitted to the Engineer for approval and the job-mix designs waived if the certified material is acceptable.

b. Surface Preparations.

(1) Subgrade Surface - The subgrade surface shall be maintained by the Contractor and shall not be excessively dry or wet prior to placing of bituminous mixture. No asphalt priming of the subgrade surface will be required, but moistening of the surface will be required when directed by the Engineer

(2) Bituminous Base Surfaces - Bituminous Base Surfaces shall be free of any foreign matter or moisture prior to placing of any additional courses of bituminous material. When in the opinion of the Engineer a tack coat is required, the entire bituminous surface shall be tacked at the rate of 0.1 gallon per square yard prior to placing of the next course of bituminous material.

c. Delete entire Article 603.03 (k) Maintenance of Traffic.

04. Delete entire article 603.07 Method of Measurement.

05. Delete entire Article 603.08 Basis of Payment.

SECTION 8 - HEAVY STONE RIPRAP

01. General. Heavy Stone riprap shall be furnished and installed to the lines, grades, and dimensions as indicated on the plans for the slopes and berms of the embankments.

02. Material. Material is to consist of individual fragments, dense, sound, resistant to abrasion and free of cracks, seams or other defects which would tend to increase unduly their destruction by water and frost actions. Material is to meet the following requirements:

a. Minimum weight per cubic foot, not less than one hundred forty (140) pounds when tested in accordance with A.S.T.M. Standard C-127.

b. Loss after ten (10) cycles of freezing and thawing to be less than fifteen percent (15%) when tested in accordance with AASHO Designation T-103.

c. Broken concrete may be used in lieu of stone, provided that it is sound and durable and meets the above requirements for size. Trim exposed reinforcement to the surface of broken concrete. Large flat pieces and long sections of curb are not acceptable.

Heavy Stone Riprap shall be reasonably well-graded stone weighing not more than 400 pounds with no more than twenty percent (20%) weighing less than 20 pounds whose average size is in the 80 through 150 pound class. Neither the breadth nor the thickness of any piece shall be less than one-third ($1/3$) length.

03. Placement. Heavy Stone riprap may be placed below water providing it is placed by skip or another approved method which will prevent segregation. Stone riprap shall be placed on a prepared bedding layer so as to produce a reasonably well-graded mass with a minimum practicable percentage of void. Stone riprap shall be placed to its full course thickness in one operation without displacing the bedding. Placing rock riprap by dumping into chutes or any other method likely to cause segregation will not be permitted. Placement of stone on the slope and in toe trenches shall be accomplished by controlled dumping directly in place. Bulldozing of stone from the upper banks will not be permitted. Use of a drag line or similar equipment operated from the top of the bank to pull stone into position on the upper slope will be permitted. Larger stones should be well distributed and the entire mass of stones in their final position should be stable and free of pockets of small stones and clusters of larger ones; rearrangement of individual pieces by hand may be required to obtain the results described above. A tolerance of plus six (6) inches from the lines and grades shown on the plans will be allowed in the finished rock riprap surface, except that the extreme tolerance should not be continuous over an area greater than 200 square feet.

04. Bedding Material. Bedding material for riprap shall be reasonably well-graded crushed rock and stone meeting the following gradation specification:

Sieve Size

Percent Passing By Weight

4"	100
2"	60 - 90
1"	40 - 70
No. 4	20 - 40
No. 12	15 - 30
No. 100	0 - 10

SECTION 9 - SEEDING, SPRIGGING AND SODDING

01. General. This work shall consist of the furnishing and planting of seed, sprigs, and/or sod at the locations in reasonable conformity with those shown on the Plans or designated by the Engineer and in accordance with these Specifications. The work shall include the preparation of the ground for the planting, fertilizing and mulching, and watering as specified.

02. Materials.

a. Seeds. Provide grass seed of the variety and at the rates as required to produce the live seed rates specified on the Plans. Furnish the vendors certified statement for each species of grass and grass mixture stating each variety, percentage by weight, and percentages of purity, germination, and weed seed. Live seed for each grass species is the product of the percentage of purity and the percentage of germination.

The seed shall be new-crop seed complying with and labeled in accordance with U.S. Department of Agriculture "Rules and Regulations under the Federal Seed Act" in effect at date of purchase of seed. All seed shall be furnished in standard containers. Seed which has become moldy, wet, or otherwise damaged in transit or storage shall not be accepted.

When Buffalo grass is specified and planted prior to September 1, it shall be treated. The treatment is known as the "Hays" method of Buffalo Grass Seed treatment (See Kansas Agricultural Experiment Station Bulletin #231 "Buffalo Grass".)

A certificate shall be furnished to the Engineer showing the date that the seed was treated. The treated seed shall be planted within twenty-four (24) months after treatment and any treated Buffalo grass seed held by the Contractor or supplied beyond this period shall not be used. The seed shall be stored in a cool dry place until seeding time.

b. Sprigs. Sprigs shall be of the grass species specified on the Plans, and shall be healthy, living stems and roots freshly harvested without adhering soil or weeds and obtained from heavy, vigorous growing and mowed turf. After loosening sprigs from the soil, they shall be immediately gathered in piles or windrows and kept moist until planted.

c. Sod. Sod shall be of the species and of the size as specified on the Plans. Sod shall be strongly rooted, free of weeds and undesirable grasses, not less than 2 years old, and free of disease. Turf shall be mowed to approximately 2 inches, the sod freshly cut and obtained from areas having similar climatic conditions as the project site, shall have a sod thickness of 2 to 3 inches, and shall be kept moist until planted.

d. Fertilizer. Fertilizer shall be proportioned as specified on the Plans and shall be of commercial grade, uniform in composition, free-flowing and suitable for application with approved equipment, delivered to the site in bags or other convenient containers, each fully labeled, conforming to the applicable State Fertilizer Laws, and bearing the same trade name or trade mark, analysis and warranty of the producer.

e. Mulching.

(1) Hay Mulch - Hay mulch shall normally be used. The hay shall not contain an excessive quantity of matured seed or noxious weeds. The mulch shall be a sharp grade prairie hay, sedan grass hay or broom sedge or any other type of native hay or grass. Mulch shall be 8 inches minimum; 50% shall be 10 inches in length or longer.

(2) Asphalt Mulch - Asphalt mulch shall be of a consistency for application by distributing machines and shall be Emulsified Asphalt type SS-1 of the type and grade as approved by the Engineer.

(3) Wood Cellulose Fiber Mulch - Wood fiber mulch shall consist of specially prepared wood cellulose fibers having no growth or germination inhibiting factors, dyed green, and as manufactured by Weyerhaeuser Company, or approved equal. The wood cellulose fiber shall have the characteristic of dispersing rapidly in water to form a homogeneous slurry and remaining in such state while being agitated in hydraulic-slurry equipment.

Wood cellulose fiber mulch shall be shipped packaged or otherwise weighed at a maximum air dry moisture content of 14 percent. -

f. Water. Water shall not contain substances in the amounts considered harmful for the normal growth of vegetation. The Contractor shall supply water and watering equipment as required for the establishment and maintenance of grassed areas.

03. Site Preparation.

a. Project Coordination. After the construction has been completed, (except as provided below), the site has been brought to final grades as shown on the Plans, and other plantings have been accomplished, the Contractor shall prepare the areas to be grassed as specified. When so directed or permitted by the Engineer, portions of the construction site may be grassed at different periods of time provided that the planting occurs in proper seasons as specified. Any grassed areas damaged by subsequent operations of the Contractor shall be replanted as directed by the Engineer at no additional cost to the Owner.

b. Tillage. The areas required to be grassed shall be prepared for planting by cultivation, removal of all objectionable material, and filling in gullies or depressions. The soil preparation shall be accomplished by disking, harrowing and firming. (Plowing will also be required if so indicated on the Plans.) The minimum depth of soil preparation shall be three (3) inches. Existing weed stubble, small weeds and grass that can be disked shall be cut by the disk and partially incorporated into the soil. Several diskings and harrowings over some areas may be required to provide a satisfactory seedbed. Areas too steep or otherwise inaccessible for disking shall be prepared by hand methods. The minimum depth of preparation of the seedbed where hand methods must be employed shall be two (2) inches. Disking,

harrowing and raking shall be done longitudinally on slope areas. The soil preparation on all slope areas shall be performed with disks and harrows unless demonstration shows such methods impracticable and that hand methods must be used.

During the process of soil preparation, extreme care shall be exercised to avoid injury to small trees that have been planted or designated by the Engineer to be saved.

The Engineer may designate local areas of desirable native perennial grasses to be omitted during the soil preparation. Areas of annual grasses such as cheat, crab grass, triple-awn, etc., shall be destroyed by thorough disking prior to seeding.

c. Application of Fertilizer. Fertilizer shall be distributed uniformly at rates as specified on the Plans and over the area to be planted, and shall be incorporated into the soil to a depth of at least 2 inches by disking, harrowing or other methods approved by the Engineer. Distribution by means of an approved seed drill or hydro seeder equipped to sow seed and distribute fertilizer at the same time will be acceptable unless otherwise noted on the Plans.

Additional soil conditioners shall be mixed into the soil by disking, harrowing, etc., when specified on the Plans, or as directed by the Engineer and furnished by the Owner. Unless specified otherwise on the plans, the minimum rate of fertilizer to be applied shall be as required to provide not less than amounts shown for each of the following ingredients:

Nitrogen (N) available - 20 pounds per Acre
Phosphate (P_2O_5) available - 60 pounds per Acre
Potassium (K) water soluble - 20 pounds per Acre

04. Seeding.

a. Time of Seeding. The two general seeding seasons shall be (1) Spring Seeding Season, February 15 to April 20, and (2) Fall Seeding Season, August 15 to September 30. The permissible seeding periods for various seeds may be extended a few days in special cases when mulching is specified to follow the drilling of seeds and fertilizer.

The Engineer reserves the right to delay the drilling or seeding of any seeds or to vary the permissible seeding seasons listed above due to weather or soil conditions or for other causes.

b. Seed Application. Seeds shall be uniformly distributed with acceptable drills, hydraulic-slurry, or other equipment approved by the Engineer. Broadcasting with a standard grass seeder will be required on areas where it is impossible to operate a drill and this method may also be required for certain small seeds.

When a standard drill with fertilizer attachment is used, certain mixed seeds may be placed in the seed box and the fertilizer placed in the fertilizer compartment. Both may be applied during one (1) operation, unless notes on the Plans require separate applications. Fertilizer may be drilled into the soil or applied by hydraulic-slurry. Broadcasting fertilizers is permissible on rough, rocky slopes where drills cannot operate.

All drills shall be fully adjustable so that they will deliver the seeds and fertilizer at the rates specified on the Plans or ordered by the Engineer. Drills that are in poor repair or that do not deliver the seeds and fertilizer uniformly in each drill furrow, shall not be used. Drills shall be adjustable so that the seeds can be planted and covered not to exceed 1/2 inch deep.

Most of the seeds should be drilled about one-half (1/2) inch deep in a well-prepared and firm seedbed. When the fertilizing and seeding operations start on an area, that area shall be completed as soon as possible. No seeding shall be done during windy weather or when the ground is wet or otherwise non-tillable. The grass seed shall then be covered, using a flexible toothed weeder or other suitable equipment. As soon as this covering operation has been completed, the seeded area shall be rolled again with the Culti-packer, the Culti-packer being run over the area only once parallel with the contours of the ground.

Kentucky bluegrass, Bermuda grass and seeds of similar size shall not be mixed with the coarse types of seeds. These seeds may be broadcast with certain drills by removing the seed tubes or they may be broadcast with hand seeder. Broadcast seeding shall be done when the weather is reasonably calm so that the seed will lodge on the prepared areas.

c. Mulching.

(1) Applying Hay Mulch - Hay mulch shall be the required mulching material, unless specified otherwise on the Plans or directed by the Engineer. After seeding operations are complete the mulch shall be spaced uniformly by hand, manure spreader, or other suitable equipment. The mulch shall be anchored to the soil by a V-type wheel land packer, a disk harrow set to cut slightly, or other suitable equipment which will secure the mulch firmly into the ground 2 inches or more to form a soil-binding mulch and prevent loss or bunching by wind. Spacing between disks shall not exceed 8 inches.

(2) Applying Asphalt Mulch - Asphalt mulch shall be used only on very sandy soils and shall not be used unless specified on the Plans or directed by the Engineer. Emulsified asphalt may be diluted with additional water, when permitted by the Engineer, and applied with approved distributing equipment. The asphalt shall be applied to all areas regardless of slope and the rate of application shall provide a bituminous residual of not less than 0.12 gallons per square yard after loss of water.

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(3) Applying Wood Cellulose Fiber Mulch - Wood cellulose fiber mulch may be used in lieu of hay mulch, when the Contractor elects to use a hydro seeder and the method is approved by the Engineer. Wood cellulose fiber mulch shall be applied at the minimum rate of 2000 pounds per acre, unless specified otherwise.

d. Watering. The Contractor shall water the seeded areas as required to assure an acceptable stand of grass.

05. Sprigging and Sodding.

a. Time of Planting. Cool weather grasses such as bluegrass, fescue, etc., and including Buffalo grass shall be planted in either the spring or fall seasons with periods limited to March 1 to June 15 and September 1 to November 15, except that the spring season can be extended to June 30 for Buffalo grass.

Warm weather grass such as Bermuda grass, etc. shall be planted between April 1 and August 15, except that sprigs shall be planted between April 15 and June 15.

b. Planting. The areas to be sodded or sprigged shall be watered prior to planting when the ground is excessively dry.

(1) Sprigging - Grass sprigs of the variety and spaced as shown on the Plans shall be established by setting root divisions in furrows two (2) inches deep, parallel to the contours, and the roots placed so that they lie end to end in the furrow. The roots shall be covered approximately one (1) inch deep, thoroughly watered and firmed. The furrows shall be left partly open to facilitate additional watering and to hold any mulch applied on slope areas.

Firming shall be done with an approved type roller, so that the top of the sod will be slightly below the surrounding surface after the firming process is completed.

(2) Sodding - Grass sod shall be established by means of setting plugs or strips of sod in the soil. The Plans will show the size of plugs and/or the width of strips required and the required spacing of plugs or strips. Excavation shall be made for each plug or strip so that after tamping, the sod will be flushed with the final grade. All plugs or strips shall be firmly tamped and thoroughly watered. After placing, all sods shall be firmed by use of an approved roller, a tamper or other approved methods. On steep slopes the sod may be firmed by compacting with hand shovels. The firming process shall remove all air pockets and shall pack the sod roots firmly into the prepared soil.

On steep slopes, staking of plugs or strips may be required as shown on the Plans or as directed by the Engineer. Stakes shall be of 1/2" lath or similar materials and shall be driven six (6) inches into the ground, leaving approximately one-half (1/2) inch of the top above the sod line.

c. Watering.

(1) Sprigged Areas - Sprigged areas shall be kept thoroughly watered for twenty (20) days. Immediately followings the Contractor shall cultivate all areas between the sprigs with hand tools, to kill all weed growth and leave the soil loose and friable. At the time of cultivating, areas that do not have a satisfactory stand of grass shall be replanted as directed by the Engineer.

(2) Sodded Areas - The Contractor shall water all sods immediately after placing. All sodded areas shall be kept thoroughly watered by the Contractor for twenty (20) days after laying and as often as required thereafter until completion of other items of work in the Contract.

06. Protection and Maintenance. The grassed area shall be protected against traffic or other use immediately after planting. The Contractor shall be responsible for the proper care of the grassed area until all work on the entire contract has been completed and accepted, or a minimum period of 30 days, whichever is the longest duration. The Contractor will be relieved from watering grassed areas accepted by the Engineer and the Owner.

All planted areas shall be growing when accepted. Areas not showing a stand of grass or evidence of growth shall be replanted in accordance with these specifications. All costs in connection with replanting grassed areas shall be borne by the Contractor until an acceptable stand of grass is obtained, with no additional cost to the Owner.

SECTION 10 - STREET SIGNS

01. General. Work under this section shall include the furnishing, erecting, and maintaining of street signs at each intersection within the Project Area.

02. Materials.

a. Concrete. See Section 3. Concrete shall be Class I (AE), unless otherwise indicated on the plans.

b. Posts. The sign post shall be 9 feet long, constructed from 2 3/8" O.D. standard weight galvanized steel pipe.

c. Mounting Brackets. die-cast aluminum brackets shall be aluminum alloy 360 having a tensile strength of 44,000 psi. The brackets shall be smoothly finished free of pits, burrs, and flaws. Each bracket shall be tapped and drilled for 5/16" zinc-plated Allen-type set screws having self-locking saw-tooth ends.

d. Blades. Extruded aluminum blades shall be aluminum alloy conforming to 6063-T6 (ASTM Specification B221, latest issue). The sign blade shall be of the shape and design as shown on the plans. Blades shall have an alodine or phosphate etched finish.

e. Reflective Sheeting. Reflective sheeting shall conform to Federal Specification No. L-S-300B dated July 12, 1974 for Sheeting and Tape, Reflective: Non-exposed lens, adhesive backing. All reflective sheeting shall be Type I, Class 2 heat activated adhesive backing unless otherwise stated. The reflective sheeting shall be Highway Green reverse screened background with Silver-White #2 letters. The street name shall be 4" upper case and the street suffix, such as st, cir, ct, etc., shall be 3" upper case letters, all Series "C".

03. Construction Methods.

a. Location. Contractor shall receive location approval for each street sign from the Engineer prior to installation.

b. Concrete Anchors. The posts shall be set in concrete anchors being 12" x 12" x 24" deep.

c. Posts. Posts shall be positioned so that the bottom blade is 7 feet above grade. The Contractor shall use temporary anchors or tie wires while the concrete is curing to insure that the posts are plumb and are at the correct height.

d. Blades. Blades bearing the street names shall be firmly attached to the mounting brackets using the Allen-type set screws. The blades shall be oriented parallel to the street.

SECTION 11 - MEASUREMENT

01. Unit Constructed Items, such as curb inlets, RCP or CMP end sections, slope drains, toewalls, manholes, special manholes, inlet connections, street signs and manhole adjustments, will be measured per each, completed in place and accepted as described in Section 11, Basis of Payment.
02. Pipelines, such as RCP, RCPHE, CMP and CMAC will be measured by the linear foot along the centerline of the pipe. Pipelines at manholes or structures shall be measured to the inside face of the manhole or structure. Measurements to end sections will be made to the exterior joint line common to the end section and pipe.
03. Unclassified Excavation. Unclassified excavation as shown on the Plans will be measured by the cubic yard (C.Y.) in its original and final position by the method of average end areas. The transverse limit of excavation shall be right-of-way property line and the necessary backslopes, and includes excavation to the bottom of the pavement or valley gutter and 1.0 feet outside back of curb. Also included is excavation for ditches noted on the plans. No measurement will be made for excavation specified to be included in another item.
04. Pavement and Subgrade Preparation, such as Lime Treated Subgrade, Valley Gutter, Concrete Pavement, Bituminous Sub-Base, Bituminous Base Course or Asphaltic Concrete Wearing surface will be measured by the square yard to the limits shown on the plans or as otherwise authorized by the Engineer.
05. Combined Curb and Gutter will be measured by the linear foot in place along the face of curb, deductions being made for valley gutters. Driveway entrances, storm drain inlets, and curb depressions will not be deducted.
06. Entrance Drive will be measured by the square foot from back of curb to the limits shown on the plans, and shall include the sidewalk back of the return constructed the same thickness as the entrance.
07. 4" Concrete Sidewalk and Handicap Ramps will be measured by the square foot in place, from back of curb to the limits shown on the plans.
08. Heavy Stone RipRap will be measured by the square yard in place, to the limits shown on the plans.
09. Seeding will be measured by the acre, in place and accepted to the limits shown or noted on the plans.

SECTION 12 - BASIS OF PAYMENT

01. Excavation, Unclassified. Excavation, Unclassified for the streets and ditches shall be paid for at the contract unit price bid per cubic yard, and the price bid shall be full compensation for all excavation of material encountered, clearing, watering, wasting, water, compaction and recompaction where directed and for furnishing all plant, labor, tools, equipment and incidentals necessary to complete the work. Excess excavation shall be embanked as directed by the Engineer as a subsidiary item.
02. 6" Subgrade Treatment. This item shall be paid for at the contract unit price per square yard, and the price bid shall be full compensation for the lime, testing, water, manipulation, and compaction and for furnishing all other material, equipment, tools, labor and incidentals necessary to complete the work.
03. 3" Bituminous Subbase. This item shall be paid for at the contract unit price per square yard, and the price bid shall be full compensation for bituminous material including tack, aggregates, mixing, hauling, spreading, compacting, sampling, and sample testing and for furnishing all other material, equipment, tools, labor and incidentals necessary to complete the work.
04. 3" and 4" Bituminous Base. These items shall be paid for at the contract unit price per square yard for each thickness specified, and the price bid shall be full compensation for bituminous material including tack, aggregates, mixing, hauling, spreading, compacting, sampling, and sample testing and for furnishing all other material, equipment, tools, labor and incidentals necessary to complete the work.
05. 2" Asphaltic Concrete Wearing Surface. This item shall be paid for at the contract unit price per square yard, and the price bid shall be full compensation for bituminous material including tack, aggregates, mixing, hauling, spreading, compacting, sampling, and sample testing and for furnishing all other material, equipment, tools, labor and incidentals necessary to complete the work.
06. Combined Curb and Gutter. This item shall be paid for at the contract unit price per linear foot for each type, and the price bid shall be full compensation for all concrete, joints, sealing, curing, and for furnishing all other material, equipment, tools, labor and incidentals necessary to complete the work.
07. Inlet Connection. Inlet connections shall be paid for at the contract unit price per each, and the price bid shall be full compensation for all concrete, reinforcing, structural steel, excavation, and backfill and for furnishing all other material, equipment, tools, labor, and incidentals necessary to complete the work.
08. Pipe Lines. Pipe lines shall be paid for at the contract unit price bid per linear foot, for the various sizes and types specified, and the price bid shall be full compensation for furnishing all sand, materials, excavation and backfill, joint materials, equipment, tools, labor and incidentals necessary to complete the work.

09. End Sections. End sections shall be paid for at the contract unit price bid per each, for the various sizes and types specified, and the prices bid shall be full compensation for furnishing all materials, excavation, and backfill, joint materials, equipment tools, labor, and incidentals necessary to complete the work.
10. Curb Inlets. Curb inlets will be paid for at the contract unit price bid per each, for the various sizes and types specified. Payment shall be full compensation for all costs of excavation, backfilling and removal and disposal of excess and waste materials; forming, furnishing, placing, finishing and curing concrete; furnishing and placing reinforcing steel; furnishing and installing brick and mortar work; furnishing, installing and painting metal gratings, castings, and lids; and all incidental work required to complete the item.
11. Manhole. Manholes will be paid for at the unit contract price bid for each type of manhole specified. Payment shall be full compensation for all costs of excavation, backfilling and removal and disposal of excess and waste materials; forming, furnishing, placing, finishing and curing concrete furnishing and placing reinforcing or structural steel; furnishing and installing brick and mortar work or R.C.P. special sections; furnishing, installing manhole frame and cover or other appurtenances; and all incidental work required to complete the item.
12. 4" Concrete Sidewalks. Concrete sidewalk shall be paid for at the contract unit price bid per square foot. Payment shall be full compensation for all costs of excavation, backfilling, removal, and disposal of all excess and waste materials; forming, furnishing, placing, finishing, and curing concrete; furnishing materials, equipment, tools, labor and incidentals necessary to complete the work.
13. Handicap Ramp. Handicap ramps shall be paid for at the contract unit price bid per square foot. Payment shall be full compensation for all costs of excavation, backfilling, removal, and disposal of all excess and waste materials; forming, furnishing, placing, finishing, and curing concrete; furnishing materials, equipment, tools, labor and incidentals necessary to complete the work.
14. Heavy Stone RipRap. Heavy stone riprap shall be paid for at the contract unit price per square yard, which shall be full compensation for furnishing, handling, placing, grouting and maintaining as specified; excavation, removal and disposal of excess and waste materials; all labor, tools, equipment and incidentals necessary to complete the work.
15. Seeding. Seeding shall be paid for at the contract unit price per acre. Payment shall be full compensation for all costs of ground preparation; furnishing and applying seed, mulch, and fertilizer; furnishing, transporting, and applying water as required; furnishing all other materials, equipment, tools, labor and incidentals necessary to complete the work.

16. Concrete Slope Drains. Concrete slope drains shall be paid for at the contract unit price per each, regardless of size, shape, or length. Payment shall be full compensation for all costs of excavation, backfilling, removing, and disposing of excess and waste materials; forming, furnishing, placing, finishing, and curing concrete; furnishing and placing reinforcing steel; furnishing all other materials, equipment, tools, labor, and incidentals necessary to complete the work.

17. Street Signs. Street signs shall be paid for at the contract unit price per each. Payment shall be full compensation for all costs of furnishing all poles, brackets, and blades; fabricating and erecting signs at each intersection within the Project Area; furnishing, hauling, and placing concrete for pole anchors; excavating, backfilling, removing, and disposing of all excess and waste materials; furnishing all other materials, equipment, tools, labor, and incidentals necessary to complete the work.