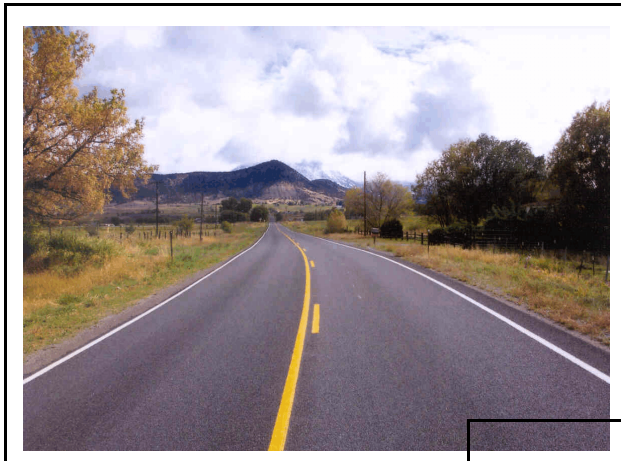




Guide Contract Documents and Specifications for Hot Mix Asphalt Construction on Colorado Pavements





This document was developed by the Colorado Asphalt Pavement Association (CAPA). It is intended to be used as a resource in the specification development and use of asphalt pavements in Colorado. CAPA can not accept any responsibility for the inappropriate use of these guide specifications and contract documents. Engineering judgment and experience must be used to properly utilize the principles and guidelines contained in these guide specifications, taking into account available equipment, local materials and conditions. All reasonable care has been taken in the preparation of these guide specifications; however, the Colorado Asphalt Pavement Association can not accept any responsibility for the consequences of any inaccuracies which it may contain.

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PREFACE

This Guide has been prepared to provide essential information required for the proper control for the construction of Hot Mix Asphalt Pavements for Colorado roadways. This Guide sets forth a form for such a document and contains materials that should be included in a properly prepared Contract Documents and Specification. For engineers and local agencies that do not have a standard contract document or specification for Hot Mix Asphalt Pavements, this Guide can assist in the preparation of such documents for the control of paving projects. The material contained in this Guide is all the necessary contractual documents and specifications required for proper advertising for bids, bidding documents, contracts, bond forms and specifications for the construction of Hot Mix Asphalt Pavements.

This Guide is arranged in the chronological order of a project, i.e., Bid Advertisement, Bid Proposal, Bid Bond, Notice of Award, Contract Agreement, etc. The engineer or local agency is free to use any and/or all parts of this guide in developing Contract Documents and Specifications for a paving project. Before adopting any part of the Guide, the engineer or local agency should have those areas of this Guide, contemplated for adoption, reviewed by legal council to ensure that it meets the proper legal requirements of the agency.

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Note to Engineer: Highlighted (shaded) areas throughout this Guide indicate the engineer will need to insert information specific to the project.

PART I - LEGAL

INVITATION TO BID

Separate sealed **BIDS** will be received by *(insert name of owner, i.e. City of _____)* (**Owner**) at the office of the Director of Public Works, *(insert address of the place of bid opening)* until *(insert time and date of bid opening)*, for the *(insert name of project)*.

At said place and time, and promptly thereafter, all **BIDS** that have been duly received will be publicly opened and read aloud.

The work consist of the construction of *(insert brief description of the work to be accomplished)* shown in the LOCATION MAP in PART V.

All **BIDS** must be in accordance with the **CONTRACT DOCUMENTS** on file with the *(insert location where Contract Documents can be seen, i.e. usually the clerk's office or the engineer's office)*.

Copies of the **CONTRACT DOCUMENTS** for use in preparing and submitting **BIDS** may be obtained after *(insert date and time bidding documents are available to be picked up)*, from the Office of the Director of Public Works, *(insert address of the Director)* at a non-refundable charge of *(insert cost of a set of bidding documents)* for each complete set of documents.

A tour of the project can be arranged by contacting the Public Works Director at the *(insert address and phone number of the Director)*.

BIDS will be received on a unit price basis in accordance with the **BID SCHEDULE** included in the **CONTRACT DOCUMENTS**.

Successful Contractor has ten (10) days following date of **NOTICE OF AWARD** in which to provide all bonds, insurance and to enter into a **CONTRACT** with the **OWNER**.

Work at the site should commence within ten (10) days after the date of the **NOTICE TO PROCEED**. The contractor will be allowed to postpone project start until *(insert latest date which the contractor will begin)*. When the project commences, the contractor will be allowed **(XXX)** working days to complete the project. Working days are defined as Monday - Friday or as other wise defined, excluding holidays.

Bid security in the amount specified herein must accompany each **BID**.

The successful **BIDDER** will be required to furnish a **PERFORMANCE BOND** and a **PAYMENT BOND** as security for the faithful performance and the payment of all bills and obligations arising from the performance of the **CONTRACT**.

No **BIDS** may be withdrawn within a period of thirty (30) days after the date established for opening **BIDS**.

The **OWNER** reserves the right to reject any and all **BIDS**, to waive informalities, and to reject nonconforming, non-responsive, or conditional **BIDS**. The decision of the *(insert the name of the governing body, i.e. City Council of the City of _____, Board of County Commissioners of _____ County)* shall be final.

INSTRUCTION TO BIDDERS

Owner. The Owner of this project is the *(insert name of owner)*.

Engineer. The Engineer for this project is the *(insert the name of the engineer, i.e. City or County Engineer of the City or County of _____)*.

Contents of Proposal Form. Upon request, the **Owner** will furnish the prospective **Bidder** with **Bidding Documents**. This form will state the location and description of the contemplated construction and will show the appropriate estimate of the various quantities and kinds of work to be performed or materials to be furnished, and will have a schedule of items for which unit bid prices are invited. The proposal form will state the time in which the work must be completed, the amount of the proposal guarantee, and the date, time and place of the opening of the **BIDS**. The form will also include any special provisions or requirements which vary from or are not contained in the standard specifications.

All papers bound with or attached to the bid forms are considered a part thereof and must not be detached or altered when the **BID** is submitted.

The plans, specifications and other documents designated in the proposal form, will be considered a part of the proposal whether attached or not.

Bidding Documents. The Bidding Documents shall include the Information for Bidders, the plans and specifications for the project, the Bid Proposal, Bid Bond, all Addenda issued during the bidding process, Statement of Bidders' Qualifications and Non-collusion Affidavit of Prime Bidder.

Submission of Bids. All **BIDS** must be submitted on the forms provided in the Bidding Documents and in a sealed envelope addressed to the *(insert the name of the position and address who will be receiving the bids)*. Each envelope shall state on the outside "*(insert the name of the project)*", and shall state the name and address of the **Bidder**.

All blank spaces in the **Bid Form** must be completely filled out in ink or typewritten when submitted. All Bid Documents shall be filled out completely and submitted in total. Where a blank space answer does not apply to Bidder, insert "**N/A**".

Interpretation of Quantities in Bid Schedule. The quantities appearing in the **Bid Proposal** are approximate only and are prepared for the comparison of bids. Payment to the Contractor will be made only for the actual quantities of work performed and accepted or materials furnished in accordance with the **CONTRACT**. The scheduled quantities of work to be done and materials to be furnished may be increased, decreased, or omitted as hereinafter provided.

Examination of Plans, Specifications, Special Provisions, Contract Documents and Site of Work. Before submitting any **Bid**, the **Bidder** shall examine the **Contract Documents**, as defined in the General Conditions, including all **Addenda**, and the project site and become totally familiar with each. Any inconsistencies, ambiguities, errors or omissions found in the **Contract Documents** or at the project site shall be brought immediately to the attention of the Owners Representative.

The Submission of a Bid shall be a representation by the **Bidder** that he has complied with the requirements of the above paragraph.

The field conditions set forth shall not constitute a representation or warranty, expressed or implied, that such conditions are actually existent. **Bidder** shall make their own investigations and form their own estimates of the actual site conditions.

No claim that there was any misunderstanding as to the quantities, conditions, or nature of the work will be entertained after submission of **Bids**. Any question during the bidding process can be addressed to the Owners Representative.

Preparation of Proposal. The Bidder shall submit his proposal upon the forms furnished by the Owner. The Bidder shall specify a unit price in words or figures, or both if required, for each pay item for which a quantity is given and shall also show the products of the respective unit prices and quantities written in figures in the column provided for that purpose and the total amount of the proposal obtained by adding the amounts of the several items. All the words and figures shall be in ink or type. In case of a discrepancy between the prices written in words and those written in figures, when both are required, the prices written in words shall govern.

When an item in the proposal contains a choice to be made by the bidder, the bidder shall indicate his choice in accordance with the specifications for that particular item, and thereafter no further choice will be permitted.

The bidder's proposal must be signed with ink by the individual, by one or more members of the partnership, by one or more members or officers of each firm representing a joint venture, or by an officer of a corporation, or by an agent of the Contractor legally qualified and acceptable to the Owner. If the proposal is made by an individual, his name and post office address must be shown; by a partnership, the name and post office address of each partnership member must be shown; as a joint venture, the name and post office address of each member or officer of the firms represented by the joint venture must be shown; by a corporation, the name of the corporation and the business address of its corporate officials must be shown.

Modification and Withdrawal of Bids. A Bidder may withdraw or revise his Bid at any time prior to the time stated herein for the opening of Bids. All modifications or withdrawals must be in writing and must arrive at the place where Bids are accepted prior to the time for the opening of Bids. A Bid modification shall not reveal the total amount of the original Bid. No Bidder may withdraw his bid within thirty (30) days after the date of opening of bids.

Telegraphic Modification. No telegraphic modification of his bid will be accepted.

Informalities. The Owner may waive any informalities or reject any or all bids.

Qualifications of Bidder. 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 Contract and to complete the work contemplated therein. Conditional bids will not be accepted.

Conditions of Work. Each Bidder must inform himself fully of the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful Bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his Contract. Insofar as possible the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor.

Reference is made to the Special Conditions for the availability of surveys and investigations made for the Owner by Independent Testing Laboratories of subsurface or physical conditions at the site or otherwise affecting performance of the work which have been relied upon in preparing the Drawings and Specifications. Before submitting his bid, each Bidder shall, at his own expense, make such additional surveys and investigations as he may deem necessary for the performance of the work at his bid price within the terms of the Contract Documents.

Addenda and Interpretations. No interpretation of the meaning of the Drawings, Specifications or other prebid documents will be made to any Bidder orally. Every request for such interpretation should be in writing addressed to the **Engineer** at the address hereinbefore given, and to be given consideration must be received at least eight days prior to the date fixed for the opening of bids. Any and all such interpretation and any supplemental instructions will be in the form of written Addenda which, if issued, will generally be mailed by certified mail with return receipt requested to all parties recorded as having received bidding documents (at the respective addresses furnished for such purposes), prior to the date fixed for the opening of bids, however, it will be the Bidder's responsibility to verify with the Architect-Engineer and/or Owner that all Addenda have been received prior to submitting a bid. All Addenda so issued shall become part of the Contract Documents.

Power of Attorney. Attorneys-in-fact who sign Bid Bonds, Performance Bonds or Labor and Materials Payment Bonds must file with each bond a certified and effectively dated copy of their power of attorney.

Laws and Regulations. The Bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though therein written out in full.

Obligation of Bidder. At the time of the opening of bids each Bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Drawings, Specifications and other Contract Documents including all Addenda. The failure or omission of any Bidder to examine any form, instrument or document shall in no way relieve any Bidder from any obligation in respect of his bid.

Bonds. Each Bid shall be accompanied by cash, certified check or a Bid Bond on the form provided in the Bidding Documents payable to the Owner, in an amount not less than five percent (5%) of the total Bid. The Owner shall retain

the Bid Bond of any Bidder that the Owner believes to have a reasonable chance of receiving the award of the Contract until the Successful Bidder executes the Owner-Contractor Agreement with the owner and provides the Owner with a Performance Bond, Payment Bond and Certificates of Insurance required by the Bidding Documents. All other Bid Bonds shall be returned within thirty (30) days of the opening of Bids. **ANY BIDS NOT ACCOMPANIED BY A BID BOND IN THE AMOUNT OF FIVE PERCENT (5%) WILL BE REJECTED AND WILL NOT BE READ.**

If the Successful Bidder fails to execute a Contract with the Owner within fifteen (15) days of the receipt of the **Notice of Award**, the Owner shall retain his Bid Bond as Liquidated Damages.

Payment Bond and Performance Bond each in the amount of 100 percent (100%) of the Contract Price, with a corporate surety approved by the Owner, will be required for the faithful performance of the contract and payment of subcontractors, material suppliers and laborers.

Attorneys-in-Fact who sign Bid Bonds, Payment Bonds and Performance Bonds must file with each Bond a certified and dated copy of their Power of Attorney.

Award of Contract. The award will be made to the lowest responsive, responsible Bidder, who will serve the best interest of the Owner. Award may be made for any one section of the Bid Form separately or for the total Bid, or for any combination thereof. The Owner reserves the right to accept or reject any and all Bids, to waive any informality or technicality in any Bid, and to disregard all nonconforming, non-responsive, conditional or alternate Bids. Before making any award of a contract, the Owner will investigate any bidder in such manner as it deems appropriate, to determine the qualifications of that bidder to perform the work under Contract.

Statement of Bidders Qualifications. The bidder must completely fill out the "**Statement of Bidders Qualifications**" to be eligible for consideration for the award of contract.

Notice of Award. The Owner shall notify the Successful bidder in writing in accordance with the General Conditions of the specifications. The Notice of Award shall be accompanied by the Owner-Contractor Agreement, and the necessary Bond Forms. Within ten (10) days of receipt of the Notice of Award, the successful bidder shall present, properly executed, a Payment Bond, Performance Bond and the Certificates of Insurance required by the Contract Documents and execute the Owner-Contractor Agreement.

Failure to Execute the Owner-Contractor Agreement. In the event the Contractor fails to execute the Owner-Contractor Agreement, or provide a properly executed Performance Bond, Payment Bond and the necessary Certificates of Insurance as required by the Contract Documents, the Owner may elect to hold the Bidder in Default and retain the Bid Bond as liquidated damages.

If the Owner fails to execute the Owner-Contractor Agreement within thirty (30) day of receipt of a properly executed Payment Bond and performance Bonds, and the necessary Certificates of Insurance in accordance with the Contract Documents, the Successful bidder may by written notice to the Owner, withdraw from the Owner-Contractor Agreement. Notice of Withdrawal shall be effective upon receipt by the Owner, and shall not be cause of the Owner to retain the Bid Bond of the Successful Bidder.

Notice to Proceed. A notice to Proceed, stating the date on which the work is to commence, shall be issued within ten (10) days of the execution of the Owner-Contractor Agreement by the Owner and the Successful Bidder.

Substitution of Materials and Equipment. All Bids are to be based on those materials and equipment specified in the Contract documents. The Engineer shall be the sole judge of the acceptability of substitute materials and equipment and may accept or reject such substitutes at any time. If a Bid is based on substitute material or equipment, the Owner may require the Bidder to supply those materials or equipment specified in the Contract Documents at no increase in contract price and with no extension of the period of performance.

Commencement of Work and Time of Completion. The Contractor shall commence work on or before the time specified in the Notice to Proceed and shall diligently prosecute the work until completion. The time of Completion is stated in the Special Provisions under Contract Time. Contract time will be charge commencing with the date stipulated in the Notice to Proceed.

Liquidated Damages. The Contractor shall pay to the Owner a sum determined from the schedule of Liquidated Damages, set forth in the Special Conditions, per day for each and every day's delay in completing all or any designated portion of the work called for under the Contract, in all parts and requirements, within the time set forth in these special provisions.

BID PROPOSAL

Proposal of _____ (hereinafter called "Bidder")
organized and existing under the laws of the State of _____, doing business
as a/an _____.
(Corporation, partnership or individual)

To: *(Insert the name of the Owner which will appear on the Contract, i.e. City Council or Board of County Commission, City or County of _____)*
(hereinafter called "Owner").

Gentlemen:

The undersigned, in compliance with the Advertisement for Bids for the construction of *(insert the name of the project)*, have examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, superintendence and supplies, and to construct the project in accordance with the contract documents, within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part.

The undersigned hereby agrees to commence work under this contract on or before a date to be specified in a written "Notice to Proceed" of the Owner and to fully complete the project within the **Contract Time** as stipulated in these specifications. The undersigned further agrees to pay, as liquidated damages, a sum determined from the schedule of Liquidated Damages, set forth in the Special Provisions, per day for each consecutive day thereafter as hereinafter provided in the General Conditions.

The undersigned acknowledges receipt of the following addenda:

The undersigned understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

Extensions of these unit prices are on the basis of estimated quantities; the arithmetic accuracy of such extensions and the totaling thereof will be checked and corrected by the owner before evaluating the proposals; and the lowest of such corrected and checked totals will determined the lowest bid.

In case of discrepancy between the unit price and the extension, the unit bid price shall govern. In case of a discrepancy between the total bid and the proper addition and/or subtraction of the corrected extension, the latter shall govern.

The current total bid shall be the basis for establishing the amount of the performance and payment bonds for this Contract. The total bid is based on quantities shown on the proposal form and on the dimensions on the plans where specific quantities are not itemized, and is subject to additions or reductions according to the actual construction quantities and measurements of finished construction as determined by the Owner upon completion of the construction.

The undersigned agrees to furnish all labor, materials, equipment, superintendence and supplies, and to construct the project in accordance with the contract documents, within the time set forth therein, and at the following prices:

(Insert the name of the project)
Department of Public Works
(Insert the name of the City or County)

BID SCHEDULE

Item No.	Description	Units	Estimated Quantity	Unit Price	Total Amount

The undersigned, if awarded the contract, agrees to execute and file the complete Contract and Bonds within ten (10) days of the Notice of Award and further agrees to complete the work within the Contract Time as stated in these specifications and in the Notice to Proceed. Failure of the Contractor to complete the work in this allotted time shall make the Contractor liable for liquidated damages in the amount indicated.

Respectfully submitted,

(Name of Firm)

Business Address

By

ATTEST:

Title

(Seal)

Date

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, _____
_____ as Principal, and _____,
a _____ held and firmly bound unto *(insert the name of the owner)* in the sum
of _____ Dollars (\$ _____)
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 _____, 20____.

The Conditions of the above obligation is such that whereas the Principal has submitted to the *(insert the name of the owner, i.e. City Council or Board of County Commissioners, City of County of _____)* 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, 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.

ATTEST

(Principal) Secretary

(SEAL)

(Witness as to Principal)

(Address)

ATTEST:

(Surety) Secretary

(SEAL)

(Witness as to Surety)

(Address)

PRINCIPAL

By: _____

(Address)

SURETY

By: _____

(Address)

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 of Colorado.

STATEMENT OF BIDDER'S QUALIFICATIONS

PROJECT NUMBER _____

DATE SUBMITTED _____

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information that is pertinent. ***If the Bidder has worked under a contract, during the previous year, with (insert the name of the owner) and none of the Contractor's responses to this questionnaire have changed, they need not complete this form.***

1. Name of Bidder? _____
2. Permanent main office address? _____
3. Does the state in which your permanent main address is located have a Resident Contractor preference? _____
If so, what is the preference? _____

4. When Organized? _____
5. If a corporation, where incorporated? _____
6. How many years have you been engaged in this type of construction? _____ Under what firm or trade names and how long under each? _____

7. Contracts on hand (show gross dollar amount of each contract and the anticipated date of completion):

8. Are you licensed as a Contractor or any other title? Yes _____ No _____ If "Yes," in what city, county, and state? _____
9. General character of work performed by your firm? _____

10. Has your firm ever failed to complete any work awarded to you? Yes ____ No ____ If "Yes," where and why? _____

11. Has your firm defaulted on a contract? Yes ____ No ____ If "Yes," where and why? _____

12. List the more important contracts recently completed by your firm, stating approximate gross cost for each, and the month and year started and completed, location and type of construction. (Use additional sheets if necessary.)

13. List your firm's experience in construction work similar in importance to this project. DETAIL (Use additional sheets if necessary.) _____

14. List your firm's major equipment available for this contract. _____

15. Background and experience of the principal members of your firm including the officers.

NAME*

EXPERIENCE

NAME*	EXPERIENCE
_____	_____
_____	_____
_____	_____
_____	_____

* Submit current address, telephone number, and Social Security Number of each on a separate sheet.

16. Are any lawsuits pending against you or your firm at this time? Yes _____ No ____ If "Yes," PROVIDE DETAILS.

17. Have any charges been filed against you or your firm or the bidding entity with the Office of Contract Compliance, the Equal Opportunity Commission, the State of Colorado Civil Rights Commission, or any other similarly constituted entity charged by any state or local government with the enforcement of anti-discrimination legislation or regulations? Yes _____ No ___ If "Yes," PROVIDE DETAILS. _____

18. Attach copies of all current Department of Labor Forms EEO-1 which have hitherto been filed by your firm.

19. Give bank reference _____

20. What are the limits of your firm's public liability? DETAIL. _____

What Insurance Company? _____

21. What are your firm's bond limitations? _____

22. Credit available? _____
23. Will you, upon request, fill out a detailed financial statement for your firm and furnish any other information that may be required by the *(insert the name of the owner)*? Yes _____ No _____
24. Is your firm currently prequalified with Colorado Department of Transportation for contracts of the size and type as set forth in your Bid Proposal? Yes __ No _____
25. List below all subcontractors to be used, work to be performed by item, and dollar amount of subcontracted work. No change in this subcontractor list shall be made without written authorization by the Engineer.

Subcontractor	Items of Work	Dollar Amount
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

The undersigned hereby authorizes and requests any person, firm, or corporation to furnish any information requested by the *(insert the name of the owner)* in verification of the recitals comprising this Statement of Bidder's Qualifications.

DATED AT _____, this _____ day of _____, 20____.

 Name of Bidder
 By _____
 Title _____

STATE OF _____)
)ss.
 COUNTY OF _____)

_____, being first duly sworn, deposes and says that _____ is the _____ of _____ the Bidder that has submitted the attached Bid, and that the answers to the foregoing questions and all statements therein contained are true and correct. Subscribed and sworn to me before this _____ day of _____ 20 ____.

 (Notary Public)

My commission expires _____

NOTICE OF AWARD

To: (insert the name of the contractor to be awarded the contract)

Project Description: (insert the name of the project)

The Owner has considered the Bid submitted by you for the above described work in response to its Bid Opening dated (Insert bid opening date).

You are hereby notified that your Bid has been accepted in the amount _____.

You are required by the Instruction To Bidders to execute the Owner-Contractor Agreement and furnish the required Contractor's Performance Bond, Payment Bond and Certificate of Insurance within ten (10) days from the date of this Notice. Failure to do so, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bonds. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner.

Dated this _____ day of _____ 20 _____.

Owner: (Insert name of Owner)

By _____
(Insert name and title of person signing)

Date _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged

By: _____
Contractor's Name

Date _____

By: _____
Signature

Print or Type Name

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 20_____,
by and between **(insert name of owner)**, hereinafter called "**Owner**" and _____
doing business as (an individual,) or (a Partnership), or (a Corporation) hereinafter called "**Contractor**".

WITNESSETH:

That for and in consideration of the payments and agreements hereinafter mentioned:

1. The Contractor will commence and complete the construction of "**(insert name of project)**".
2. The Contractor will furnish all of the materials, supplies, tools, equipment, labor and other services necessary for the construction and completion of the Work describes herein.
3. The Contractor Will commence the work required by the Contract Documents within ten (10) days after the date of the Notice to Proceed and will complete the same by **(insert contract time)** days unless the period for completion is extended otherwise by the Contract Documents.
4. The Contractor agrees to perform all of the Work described in the Contract Documents and comply with the terms therein for the unit prices shown in the Bid Schedule.
5. The term "**Contract Documents**" means and includes the following:

A. Part I - LEGAL

Invitation to Bids
Instructions to Bidders
Bid Proposal
Bid Bond
Statement of Bidders Qualifications
Notice of Award
Agreement
Payment Bond
Performance Bond
Notice to Proceed
Change Order
Notice of Final Acceptance

B. Part II - GENERAL CONDITIONS

C. Part III - CONSTRUCTION SPECIFICATIONS

D. Part IV - SPECIAL CONDITIONS

E. Part V - LOCATION MAP

F. Addenda:

No. _____ dated _____, 20____.

No. _____ dated _____, 20____.

No. _____ dated _____, 20____.

No. _____ dated _____, 20____.

6. The Owner will pay to the Contractor in the manner and at such time as set forth in the General Conditions such amounts as required by the Contract Documents. Portions of each payment due for completed work shall be retained by the Owner in accordance with **Part IV Section 4.008 Retainage** of the **Special Conditions**.
7. Should the Contractor fail to complete all work within the time span allotted, he shall be liable to the Owner for Liquidated Damages at the rate set forth in the **Special Conditions**.
8. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in quintuple (5) each of which shall be deemed an original of the date first above written.

(SEAL)

ATTEST:

Signature

Name (typed)

Title

Date

(SEAL)

ATTEST:

(Insert the name of the person who attest signatures)

Date

CONTRACTOR:

Firm's Name

Principal

Name (typed)

Address

OWNER:

(Insert the name of the owner)

Chairman

Member

Member

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that: _____,
_____ as principal, hereinafter called the Contractor, with
offices at _____ and, _____
as Surety, with general offices in _____, a corporation organized under the laws of the
State of _____ and authorized to transact business in the State of Colorado, are hereby bound
unto the *(insert the name of the owner)*, as obligee, hereinafter called " the *(insert either City or County)*," in the penal sum of _
_____ dollars (\$ _____) in United States currency, for the
payment of which sum the Contractor and Surety bind themselves, their heirs, executors, administrators, successors, and
assigns, jointly and severally.

WHEREAS, the Contractor has entered into a written Contract with the *(insert either City or County)* dated _____
for _____
in accordance with plans and specifications referenced in the Contract;

NOW, THEREFORE, the conditions of this Payment Bond are such that, if the Contractor shall at all times
promptly make payments of all amounts lawfully due to all persons supplying or furnishing him or his subcontractors with
labor, materials, rental machinery, tools or equipment used or performed in the prosecution of the work provided for in the
Contract, and shall indemnify and save harmless the *(insert either City or County)* to the extent of any payments in connection
with the performance of such Contract that the *(insert either City or County)* may be required to make under law, then this
obligation shall be null and void; otherwise the Surety shall pay the full amount of this penalty Bond.

THE UNDERSIGNED SURETY for value received hereby agrees that no extension of time, change in, addition
to, or other modification of terms of the Contract or work to be performed thereunder or the specifications of the Contract
Documents shall in any way affect its obligation of this Bond and the Surety does hereby waive notice of any such
extension of time, change, addition, or modification.

EXECUTED on this _____ day of _____, 20____.

ATTEST:

(Secretary)

(Contractor)

By: _____
(President)

(Surety Company)

By: _____
(Attorney-in-Fact)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute Bond. Accompany this Bond with
Attorney-in-fact's authority from the Surety to execute Bond, certified to include the date of the Bond.

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: that: _____,
_____ as principal, hereinafter called the Contractor,
with offices at _____ and, _____
as Surety, with general offices in _____, a corporation organized under the laws of
the State of _____, and authorized to transact business in the State of Colorado, are hereby bound
unto the *(insert the name of the owner)*, as obligee, hereinafter called " the *(insert either City or County)*," in the penal sum of _
_____ dollars (\$ _____)
in United States currency, for the payment of which sum the Contractor and Surety bind themselves, their heirs, executors,
administrators, successors, and assigns, jointly and severally.

WHEREAS, the Contractor has entered into a written Contract with the *(insert either City or County)* dated _____,
for _____
in accordance with plans and specifications referenced in the Contract;

NOW, THEREFORE, the conditions of this Performance Bond are such that, if the Contractor shall satisfactorily
perform the Contract, then this Bond shall be null and void; otherwise, the Surety shall pay the full amount of this penalty
Bond.

In addition, if the Contractor or his subcontractor shall fail to duly pay for any labor, materials, team hire,
sustenance, provisions, provender, or other supplies used or consumed by such Contractor or his subcontractor in
performance of the Contract or shall fail to duly pay any person who supplies rental machinery, tools, or equipment in the
prosecution of the work, then the Surety shall pay the same in an amount not exceeding the sum specified in the Bond
together with interest at a rate of eight percent per annum.

THE UNDERSIGNED SURETY for value received hereby agrees that no extension of time, change in, addition
to, or other modification of the terms of the Contract or work to be performed thereunder or of the specifications of the
Contract Documents shall in any way affect its obligation on this Bond and the Surety does hereby waive notice of any such
extension of time, change, addition, or modifications.

EXECUTED on this _____ day of _____, 20____.

ATTEST:

(Secretary)

(Contractor)

By: _____
(President)

(Surety Company)

By: _____
(Attorney-in-Fact)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is Partnership, all partners should execute Bond. Accompany this Bond with
Attorney-in-fact's authority from the Surety to execute Bond, certified to include the date of the Bond.

NOTICE TO PROCEED

To: (Contractor)

Date:

Project:

You are hereby notified to commence work and that the Contract Time for the above project will commence on _____ day of _____, 20____. On that date you are to start performing your obligations under the Contract between you and *(insert the name of the owner)*, dated _____. The period of performance is ____ days from the date of commencement. The date of final completion is therefore, _____.

You are required to return an acknowledge copy of this Notice to Proceed to the Owner.

Owner: *(insert the name of the owner)*

By: _____
(Insert name and title of person who signs)

Date: _____

ACCEPTANCE OF NOTICE

Receipt of the above Notice to Proceed is hereby acknowledged.

Contractor: _____

By: _____

Title: _____

Address: _____

Telephone: _____

Date: _____

CHANGE ORDER

DEPARTMENT OF PUBLIC WORKS

(Insert the name of the city of county)

Date: _____

Change Order No. _____

Contract Date: _____

Name of Project: _____

Owner: *(insert the name of the owner)*

Contractor: _____

The following changes are hereby made to the Contract Documents:

Justification:

Original Contract Price \$ _____

Current Contract Price adjusted by previous Change Order(s) \$ _____

The Contract Price due to this Change Order will be (increased) (decreased) by \$ _____

The new Contract Price, including this Change Order, is \$ _____

The Contract Time will be (increased) (decreased) by _____ days.

The date for completion of all Work will be _____
(Date)

If additional compensation is determined due the Contractor under this Change Order, it shall be in full payment of all extra work and/or materials as set forth in the Change Order to the date of the Change Order, including compensation for all claims, direct or indirect, for extended overhead and profit, and damages of any type whatsoever, including delay and impact damages.

Any additional costs to the Contractor resulting from delays caused by the Owner shall be presumed to be included in this Change Order adjustment for time and price.

APPROVALS REQUIRED:

Requested by: _____ Date: _____

Recommended by: _____ Date: _____

Ordered by: _____ Date: _____

Accepted by: _____ Date: _____

NOTICE OF FINAL ACCEPTANCE and GUARANTEE

_____, 20_____

Received this date from the *(insert the name of the approving body)*, *(insert the name of the city or county)*, as full and final payment of the cost of the improvements, provided for in the Contract dated _____, 20_____, together with all amendments, Change Orders, and additions thereto, the sum of _____ Dollars (\$_____), by check, being the remainder of the full amount accruing to the undersigned by virtue of said Contract and extra work performed thereunder, said payment covering and including full payment for the cost of all work and material furnished by the undersigned in the construction of _____ and all incidentals thereto, for which the total payments have totaled _____ Dollars (\$_____). The undersigned releases *(insert the name of the owner)* from any and all additional claims whatsoever resulting from said Contract and all work performed thereunder.

The undersigned certifies that all persons doing work upon or furnishing materials for said improvements under the Contract and all additions thereto have been paid in full, and the undersigned further certifies that all work has been completed in a workmanlike manner in conformity with the plans and specifications.

The undersigned agrees that, if any portion of said work or material proves defective within *(insert the length of time for responsibility for the project, i.e. 1 year, 2 years, etc)* from the date of final acceptance of the entire project by the Owner, he shall replace any such defective material and remedy any such defective work to the satisfaction of the Owner and shall defend, indemnify and save harmless *(insert the name of the owner)* from all damages, claims, demands, expenses and charges of every kind which may arise as a result of any such defective material and workmanship during said period.

Contractor

By

Title

PART II - GENERAL CONDITIONS

SECTION 1 DEFINITION AND TERMS

Wherever in these specifications or in other Contract Documents the following terms or pronouns in place of them are used, the intent and meaning shall be interpreted as follows:

1.001 Abbreviations. Wherever the following abbreviations are used in these specifications or on the plans, they are to be construed the same as the respective expressions represented:

AAN	American Association of Nurserymen
AAR	Association of American Railroads
AASHTO	American Association of State Highway and Transportation Officials
AGC	Associated General Contractors of America
AIA	American Institute of Architects
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute
ARA	American Railroad Association
AREA	American Railroad Engineering Association
ASCE	American Society of Civil Engineers
ASLA	American Society of Landscape Architects
ASTM	American Society for Testing Materials
AWPA	American Wood Preservers' Association
AWWA	American Water Works Association
CDOT	Colorado Department of Transportation
FHWA	Federal Highway Administration
FSS	Federal Specifications and Standards. General Services Administration
HMA	Hot Mix Asphalt
SAE	Society of Automotive Engineers
UL	Underwriter's Laboratory

1.002 Addenda. A Supplement to any of the Contract Documents issued, in writing, after advertisement of but prior to the opening of bids for a contract.

1.003 Advertisement. The public announcement, as required by law, inviting Bids for work to be performed or materials to be furnished.

1.004 Agreement. The written agreement between Owner and Contractor covering the Work to be performed; other Contract Documents are made a part thereof as provided therein.

1.005 Application for Payment. The form accepted by the Engineer which is to be used by Contractor in requesting progress or final payment and which is to include such supporting documentation as required by the Contract Documents.

1.006 Award. The formal action of the governing body of accepting a proposal.

1.007 Bid. The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

1.008 Bidder. Any qualified individual, firm, partnership, corporation or combination thereof, acting directly or through a duly authorized representative who legally submits a Proposal for the advertised work.

1.009 Owner or Owners Representative. The Owner or Owners Representative (*insert owner / owners Representative name*) acting under the authority of the laws of the State of Colorado.

1.010 Bridge. A structure, including supports, erected over a depression or an obstruction, as water, highway, or railway, and having a track or passageway for carrying traffic or other moving loads and having a length measured along the center of roadway of more than 20 feet between undercopings of abutments or extreme ends of openings for multiple boxes.

(Length) The length of a bridge structure is the over-all length measured along the line of survey stationing back to back of backwalls of abutments, if present, otherwise end to end of the bridge floor; but in no case less than the total clear opening of the structure.

(Roadway Width) The clear width measured at right angles to the longitudinal centerline of the bridge between the bottom or curbs or guard timbers or in the case of multiple height of curbs, between the bottom of the lower risers.

1.011 Calendar Day. Every day shown on the calendar.

1.012 Change Order. A written order issued by the Engineer to the Contractor to make changes in the work or to perform Extra Work, and setting forth conditions for payment and/or adjustment in Time of Completion.

1.013 Contract or Completion Time. The number of calendar days for completion of an act, including authorized time extensions. In case a calendar date of completion is shown in the Proposal in lieu of the number of calendar days, the Contract shall be completed by that date. The time within which an act is to be done shall be computed by

excluding the first and including the last day; and if the last day be Sunday or a legal holiday, that shall be excluded.

1.014 Contract. The written instrument executed by the Contractor and the Contracting Agency by which the Contractor is bound to furnish all labor, equipment, and materials and to perform the work specified, and by which the Contracting Agency is obligated to compensate the Contractor therefore at the prices set forth therein. The Contract Documents are herewith by reference made a part of the Contract as if fully set forth therein.

1.015 Contract Documents. All the integral documents of the Contract, including but not limited to, Invitation to Bid, General Conditions, Construction Specification, Plans, Standard Specifications and Details, Special Conditions, Proposal Addenda, Performance Bond, Payment Bond, Certificates of Insurance, Ordinance, Contract, and Change Orders.

1.016 Contractor. The individual, firm, partnership, corporation or combination thereof entering into a Contract with the Contracting Agency to perform the advertised work.

1.017 City. *(Insert name of city)*, organized and existing under and by virtue of the laws of the State of Colorado.

1.018 Days. Unless otherwise designated, days will be understood to mean calendar days.

1.019 Engineer. The person, appointed as City or County Engineer by the Council or the Board of Commissioners, acting directly or through his duly authorized representative.

1.020 Extra Work. An item of work not provided for in the Contract as awarded but found essential to the satisfactory completion of the Contract within its intended scope.

1.021 Field Order. A written set of emergency instructions to the Contractor issued only where the time required for preparation and execution of a formal Change Order would result in a delay or a stoppage of work, or would allow a hazardous condition to exist.

1.022 Force Account Work. Extra work performed by the Contractor for which no bid price has been established and which is defined in Section 1.020.

1.023 Holiday. Holidays recognized in the State of Colorado are: *(use holidays that the entity observes)*

- New Years Day
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Christmas Day

Additional holidays recognizable by some State of Colorado Cities and Counties are:

- Martin Luther King's Birthday
- Presidents Day
- Columbus Day
- Veteran's Day
- Thanksgiving Friday

When New Years Day, Independence Day or Christmas Day fall on Sunday, the following Monday shall be considered a holiday.

Additional legal holidays, when designated by the Governor or President of the United States, will also be recognized by the State, City and/or County.

1.024 Inspector. The Engineer's authorized representative assigned to make detailed inspections of contract performance.

1.025 Liquidated Damages. A daily charge made against the Contractor for each day, including free time, that any work shall remain uncompleted after elapse of Contract time.

1.026 Method of Measurement. The manner in which a "Pay Item" is measured to conform with the "Pay Unit".

1.027 Non Pay Item. An item of work for which no separate payment will be made under the proposal, but which must be included as an incidental cost for payment on an associated item included in the proposal.

1.028 Notice of Award. A notification from the Owner advising the Contractor that he is the successful Bidder and the Council or Board of Commissioners has accepted his Proposal.

1.029 Notice to Proceed. A directive issued by the Engineer, authorizing the Contractor to start the work or improvements required in the Contract.

1.030 Owner. The State, City, County, Private Owner or Developer, acting through its legally constituted officials, officers or employees.

1.031 Pay Item. A detail of work for which separate payments are to be made under the Contract, as specified in the proposal.

1.032 Payment Bond. The security provided by the Contractor solely for the protection of claimants, supplying labor and materials to the Contractor or his Subcontractors.

1.033 Performance Bond. The security by the Contractor solely for the protection of the Contracting Agency and conditioned upon the faithful performance of the Contract

in accordance with the plans, specifications and conditions thereof.

1.034 Permit. The license to do construction in public rights-of-way and/or easements; issued by an Agency to a Contractor working for another party.

1.035 Plans. All approved drawings or reproductions thereof pertaining to the work and details therefor, which are made a part of the Contract Documents.

1.036 Proposal. The offer of a Bidder on the prescribed form, to perform the work and to furnish the labor and materials at the prices quoted.

1.037 Proposal Form. The approved form on which the Contracting Agency requires Bids to be prepared and submitted for the work.

1.038 Proposal Guarantee. The security furnished with a Bid to guarantee that the Bidder will enter into the Contract if his Bid is accepted.

1.039 Resident Project Representative. The authorized representative of Engineer who may be assigned to the site or any part thereof. Also called the Inspector.

1.040 Special Conditions. The special conditions, requirements, additions, and/or revisions to the Standard Specifications, applicable to the work, to cover conditions or requirements peculiar to the project under consideration. Special Conditions fall within one of the two following categories and take precedence as over the General Conditions in Part II.

- a. **Project Special Conditions.** Special Conditions peculiar to the project and not otherwise thoroughly or appropriately set forth in the standard specifications or plans.
- b. **Standard Special Conditions.** Special directions or requirements not otherwise thoroughly or appropriately set forth in the standard specifications, and which are peculiar to a selected group of projects or which are intended for temporary use.

1.041 Specifications. The descriptions, directions, provisions, and requirement for performing the work as contained in the Contract Documents.

1.042 State. The State of Colorado.

1.043 Standard Specifications. Uniform general specifications adopted as Standard Specifications by the Engineer (IE. but not limited to CDOT specifications and project specific supplemental specifications.)

1.044 Subcontractor. An individual, firm, corporation, or other legal entity to whom the Contractor sublets part of the contract.

1.045 Substantial Completion. The work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, and Owner as evidenced by a definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it was intended. The terms "substantially complete" and "substantially completed" as applied to any work refer to Substantial Completion thereof. The work must meet the following criteria for Substantial Completion to apply:

- 90% of all pay items have been completed and are eligible for payment.
- The facility is ready for use.
- All traffic features have been completed.
- A "punch list" of remaining work has been prepared and accepted.

1.046 Superintendent. The Contractor's authorized representative in responsible charge of the work.

1.047 Surety. The individual, firm or corporation, bound with and for the Contractor for the acceptable performance, execution, and completion of the work, and for the satisfaction of all obligations incurred.

1.048 Work. Any of all of the improvements mentioned and authorized to be made, and the construction, demolition, reconstruction, and repair of all or any portion of such improvements, and all labor, services, incidental expenses, and material necessary or incidental thereto.

1.049 Working Day. A calendar day, exclusive of Saturdays, Sundays and Contracting Agency recognized legal holidays, on which weather and other conditions not under the control of the Contractor will permit construction operations to proceed for the major part of the day with the normal working force engaged in performing the controlling item or items of work which would be in progress at that time.

1.050 Work Order. A written order, signed by the Engineer, of a contractual status requiring performance by the Contractor without negotiation of any sort.

SECTION 2 BIDDING REQUIREMENTS AND CONDITIONS

2.001 Bidders Qualifications. Bidders wishing to have their Bid considered for the work contemplated herein shall complete the *Statement of Bidder's Qualifications* questionnaire contained in Part I of the Contract Documents. Any Bidder not completing this questionnaire will have their Bid rejected and not considered.

2.002 Contents of Proposal Form. Upon request, the Owner will furnish the prospective Bidder with a proposal form. This form will state the location and description of the contemplated construction and will show the appropriate estimate of the various quantities and kinds of work to be performed or materials to be furnished, and will have a schedule of items for which unit bid prices are invited. The Proposal form will state the time in which the work must be completed, the amount of the Proposal Guaranty, and the date, time and place of the opening of Bid Proposals. The form will also include any special provisions or requirements which vary from or are not contained in the Standard Specifications.

All papers bound with or attached to the Proposal form are considered a part thereof and must not be detached or altered when the Proposal is submitted.

The plans, specifications and other documents designated in the Proposal form, will be considered a part of each copy of the Proposal whether attached or not.

The prospective Bidder will be required to pay the State, City, County, Private Owner or Developer or their representatives, *(insert the name)* the sum stated in the Invitation to Bid for each copy of the Proposal form and each set of plans.

2.003 Issuance of Proposal Form. The *(insert the name of the owner)* reserves the right to disqualify or refuse to issue a Proposal form if a Bidder is in default for any of the following reasons:

- Lack of competency and adequate machinery, plant and other equipment, as revealed by the *Statement of Bidder's Qualifications* questionnaire required under 2.001.
- Uncompleted work which, in the judgement of the Engineer, with proper documentation to substantiate this judgement, might hinder or prevent the prompt completion of additional work if awarded.

- Failure to pay, or satisfactorily settle, all bills due for labor and material on former contracts in force at the time of issuance of Proposals.
- Failure to comply with any prequalification regulations of the *(insert the name of the owner)*.
- Default under previous contracts
- Unsatisfactory performance of previous work.

2.004 Interpretation of Quantities and Bid Schedule. The quantities appearing in the Bid Schedule are approximate only and are prepared for the comparison of Bids. Payment to the Contractor will be made only for the actual quantities of work performed and accepted or materials furnished in accordance with the Contract. The scheduled quantities of work to be done and materials to be furnished may each be increased, decreased, or omitted as hereinafter provided.

2.005 Examination of Plans, Specifications, Special Provisions, and Site of Work. The Bidder is expected to examine carefully the site of the proposed work, the Proposal, Plans, Specifications, Supplemental Specifications, Special Conditions, and Contract forms, before submitting a Proposal. The owner will provide all known information including preliminary or final soils investigations, and any other known investigations of the site to all bidders. The submission of a Bid shall be considered prima facie evidence that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the Plans, Specifications, Supplemental Specifications, Special Conditions, and Contract.

Boring logs and other records of subsurface investigations are available for inspection by Bidders. It is understood that such information was obtained and is intended for design and estimating purposes only. It is made available to Bidders that they may have access to identical subsurface information available to the Engineer, and is not intended as a substitute for personal investigation, interpretations and judgement of the Bidder.

2.006 Preparation of Proposal. The Bidder shall submit his Proposal upon the forms furnished by the Owner. The Bidder shall specify a unit price in words or figures, or both if required, for each Pay Item for which a quantity is given and shall also show the products of the respective unit prices and quantities written in figures in the column provided for that purpose and the total amount of the proposal obtained by adding the amounts of the several items. All the words and figures shall be in ink or typed. In case of a discrepancy between the prices written in words and those written in figures, when both are required, the prices written in words shall govern.

When an item in the Proposal contains a choice to be made by the Bidder, the Bidder shall indicate his choice in

accordance with the specifications for that particular item, and thereafter no further choice will be permitted.

The Bidder's Proposal must be signed with ink by the individual, by one or more members of the partnership, by one or more members or officers of each firm representing a joint venture, or by one or more officers of a corporation, or by an agent of the Contractor legally qualified and acceptable to the Owner. If the Proposal is made by an individual, his name and post office address must be shown; by a partnership, the name and post office address of each partnership member must be shown; as a joint venture, the name and post office address of each member or officer of the firms represented by the joint venture must be shown; by a corporation, the name of the corporation and the business address of its corporate officials must be shown.

2.007 Irregular Proposals. Proposals will be considered irregular and may be rejected for any of the following reasons:

- If the Proposal is on a form other than that furnished by the Owner; or if the form is altered or any part thereof is detached.
- If there are unauthorized additions, conditional or alternate Bids, or irregularities of any kind which may tend to make the Proposal incomplete, indefinite, or ambiguous as to its meaning.
- If the Bidder adds any provisions reserving the right to accept or reject an Award, or to enter into a Contract pursuant to an Award.

This does not exclude a Bid limiting the maximum gross amount of awards acceptable to any one Bidder at any one Bid letting, provided that any selection of Awards will be made by the Owner.

- If the Proposal does not contain a unit price for each pay item listed except in the case of authorized alternate pay items.
- If the Bid is unbalanced based on published and known guidelines.

2.008 Proposal Guaranty. No Proposal will be considered unless accompanied by a guaranty of the character and in an amount not less than the amount indicated in the Instructions to Bidders.

2.009 Delivery of Proposals. Each Proposal should be submitted in a special envelope furnished by the Owner. The blank spaces on the envelope shall be filled in correctly to clearly indicate its contents. When an envelope other than the special one furnished by the Owner is used, it shall be of the same general size and shape and be similarly marked to clearly indicate its contents. When sent by mail, the sealed Proposal shall be addressed to State,

City, County, Private Owner or Developer or their representatives at the address and in care of the official in whose office the Bids are to be received. All Proposals shall be filed prior to the time and at the place specified in the Invitation to Bid. Proposals received after the time for openings of Bids will be returned to the Bidder unopened.

2.010 Withdrawal or Revision of Proposals. A Bidder may withdraw or revise a Proposal after it has been deposited with the Owner, provided the request for such withdrawal or revision is received by the Owner, in writing or by telegram, before the time set for opening of Proposals.

2.011 Combination or Conditional Proposals. If the Owner so elects, Proposals may be issued for projects in combination and/or separately, so that Bids may be submitted either on the combination or on separate units of the combination. The Owner reserves the right to make Awards on combination Bids or separate Bids to the best advantage of the Owner. No combination of Bids, other than those specifically set up in the Proposals by the Owner, will be considered. Separate Contracts will be written for each individual project included in the combination.

Conditional Proposals will be considered only when so stated in the Special Conditions.

2.012 Public Opening of Proposals. Proposals will be opened and read publicly at the time and place indicated in the Invitation to Bid. Bidders, their authorized agents, and other interested parties are invited to be present.

2.013 Disqualification of Bidders. Either of the following reasons may be considered as being sufficient for the disqualification of a Bidder and the rejection of his Proposal or Proposals:

- More than one Proposal for the same work from an individual, firm, or corporation under the same or different name.
- Evidence of collusion among Bidders. Participants in such collusion will receive no recognition as Bidders for any future work of the Owner until any such participant shall have been reinstated as a qualified Bidder.

2.014 Material Guaranty. The successful Bidder may be required to furnish a complete statement of the origin, composition, and manufacture of any or all materials to be used in the construction of the work together with samples, which samples may be subjected to the tests provided for in these specifications to determine their quality and fitness for the work.

SECTION 3 AWARD AND EXECUTION OF CONTRACT

3.001 Consideration of Proposals. After the Proposals are opened and read, they will be compared on the basis of the summation of the products of the quantities shown in the Bid Schedule by the unit Bid prices. The results of such comparisons will be immediately available to the public. In the event of a discrepancy between unit Bid prices and extensions, the unit Bid price shall govern.

The right is reserved to reject any or all Proposals, to waive technicalities or to advertise for new Proposals, if in the judgment of the awarding authority the best interests of the Owner will be promoted thereby.

3.002 Award of Contract. The Award of Contract, if it be Awarded, will be made within thirty (30) days after the opening of Proposals to the lowest responsible and qualified Bidder whose Proposal complies with all the requirements prescribed. The successful Bidder will be notified, by letter (Notice of Award) mailed to the address shown on his Proposal, that his Bid has been accepted and that he has been Awarded the Contract.

3.003 Cancellation of Award. The Owner reserves the right to cancel the Award of any Contract at any time before the execution of said Contract by all parties without any liability against the Owner.

3.004 Return of Proposal Guaranty. All Proposal Guaranties, except those of the two lowest Bidders, will be returned immediately following the opening and checking of the Proposals. The retained Proposal guaranties of the two lowest Bidders will be returned after a satisfactory bond has been furnished and the Contract has been executed.

3.005 Requirement of Contract Bond. At the time of the execution of the Contract, the successful Bidder shall furnish a Surety Payment Bond and Performance Bonds in a sum equal to the full amount of the Contract. The form of the Bonds and the security shall be acceptable to the Owner as stipulated in the Contract Documents.

3.006 Execution and Approval of Contract. The Contract shall be signed by the successful Bidder and returned, together with the contract bonds, within ten (10) days after the Contract has been mailed to the Bidder. If the Contract is not executed by the Owner within thirty (30) days following receipt from the Bidder of the signed Contracts and Bonds, the Bidder shall have the right to withdraw his Bid without penalty. No Contract shall be considered as effective until it has been fully executed by all of the parties thereto.

3.007 Failure to Execute Contract. Failure to execute the Contract and file acceptable bonds within ten (10) days after the Contract has been mailed to the Bidder shall be

just cause for the cancellation of the Award and the forfeiture of the Proposal guaranty which shall become the property of the Owner, not as a penalty, but in liquidation of damages sustained. Award may then be made to the next lowest responsible Bidder, or the work may be readvertised and constructed under Contract or otherwise, as the Owner may decide.

SECTION 4 SCOPE OF WORK

4.001 Intent of Contract. The intent of the Contract is to provide for the construction and completion in every detail of the work described. The Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the Contract.

4.002 Alteration of Plans or Character of Work. The Owner reserves the right to make, at any time during the progress of the work, such increases or decreases in quantities and such alterations in the work within the general scope of the Contract, including alterations in the grade or alignment of the road or structure or both, as may be found to be necessary or desirable. Such increases or decreases and alterations shall not necessarily invalidate the Contract nor release the Surety provided the changes do not make substantial changes to the contract or scope of the contract. The Contractor agrees to accept the work as altered, provided the changes do not make substantial changes to the contract or scope of the contract, the same as if it had been a part of the original Contract.

Under no circumstances shall alterations of plans or of the nature of the work involve work beyond the termini of the proposed construction except as may be necessary to satisfactorily complete the project.

Unless such alterations and increases or decreases materially change the character of the work to be performed or the cost thereof, the altered work shall be paid for at the same unit prices as other parts of the work. Increases or decreases of (insert a number) % are agreed upon, and shall be considered material for the purpose of cost adjustment. If, however, the character of the work or the unit costs thereof are materially changed, an allowance shall be made on such basis as may have been agreed to in advance of the performance of the work, or in case no such basis has been previously agreed upon, then an allowance shall be made, either for or against the Contractor, in such amount as the Engineer may determine to be fair and equitable.

No claim shall be made by the Contractor for any loss of anticipated profits because of any such alteration, or by reason of any variation between the approximate quantities and the quantities of work as done.

If the altered or added work is of sufficient magnitude as to require additional time in which to complete the project, such time adjustments may be made in accordance with the provisions of section 8.006.

Optional Addition: Should the Contractor encounter or the Owner discover during the progress of the work subsurface or latent physical conditions at the site differing materially from those indicated in this Contract, or 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, the Engineer shall be promptly notified in writing of such conditions before they are disturbed. The Engineer will thereupon promptly investigate the conditions and if they do so materially differ and cause an increase or decrease in the cost of, or the time required for performance of the contract, an equitable adjustment based on unit rates will be made and the Contract modified in writing accordingly.

Any adjustment in Contract Time because of such change or changes will be made in accordance with the provisions of section 8.006.

4.003 Extra Work. The Contractor shall perform unforeseen work, for which there is no price included in the Contract, whenever it is deemed necessary or desirable in order to complete fully the work as contemplated. Such work shall be performed in accordance with the specifications and as directed, and will be paid for as provided under section 9.004.

4.004 Maintenance of Traffic. Unless otherwise provided, the road while undergoing improvements shall be kept open to all traffic by the Contractor. Where so provided on the plans, or approved by the Engineer, the Contractor may bypass traffic over an approved detour route. The Contractor shall keep the portion of the project being used by public traffic, whether it be through or local traffic, in such condition that traffic will be adequately accommodated. He shall furnish, erect, and maintain barricades, warning signs, delineators, flagmen and pilot cars in accordance with the **Manual on Uniform Traffic Control Devices for Streets and Highways**. He shall also provide and maintain in a safe condition temporary approaches or crossings and intersections with trails, roads, streets, businesses, parking lots, residences, garages and farms; provided, however, that snow removal will not be required of the Contractor. The Contractor shall bear all expense of maintaining the traffic over the section of road undergoing improvement and of constructing and maintaining such approaches, crossings, intersections, and other features as may be necessary, without direct compensation, except as provided below:

- a. *Special Detours.* When the proposal contains an item for "Maintenance of Detours" or "Removing Existing Structures and Maintaining Traffic," then the payment for such item shall cover all cost of constructing and maintaining such detour or detours, including the construction of any and all temporary bridges and accessory features and the removal of the same, and obliteration of the detour road. Right-of-way for temporary highways or bridges called for under this paragraph will be furnished by the Owner.
- b. *Maintenance of Traffic During Suspension of Work.* During any suspension, the Contractor shall make passable and shall open to traffic such portions of the project and temporary roadways or portions thereof as may be agreed upon between the Contractor and the Engineer for the temporary accommodation of necessary traffic during the anticipated period of suspension. Thereafter, and until an issuance of an order for the resumption of construction operations, the maintenance of the temporary route or line of

travel agreed upon will be by and at the expense of the Owner. When work is resumed, the Contractor shall replace or renew any work or materials lost or damaged because of such temporary use of the project; shall remove to the extent directed by the Engineer any work or materials used in the temporary maintenance thereof by the Owner; and shall complete the project in every respect as though its prosecution had been continuous and without interferences. All additional work caused by such suspensions, for reasons beyond the control of the Contractor, will be paid for by the Owner at Contract prices or by extra work.

3. *Maintenance Directed by the Engineer.* If the Engineer directs special maintenance for the benefit of the traveling public, then the Contractor will be paid on the basis of unit prices or under section 4.003 Extra Work. The Engineer will be the sole judge of work to be classed as special maintenance.

4.005 Rights In and Use of Materials Found on the Work. The Contractor, with the approval of the Engineer, may use on the project such stone, gravel, sand, or other material determined suitable by the Engineer, as may be found in the excavation and will be paid both for the excavation of such materials at the corresponding Contract unit price and for the pay item for which the excavated material is used. He shall replace at his own expense with other acceptable material all of that portion of the excavation material so removed and used which was needed for use in the embankments, backfills, approaches, or otherwise. No charge for the materials so used will be made against the Contractor. The Contractor shall not excavate or remove any material from the highway location which is not within the grading limits, as indicated by the slope and grade lines, without written authorization from the Engineer.

Unless otherwise provided, the material from any existing old structure may be used temporarily by the Contractor in the erection of the new structure. Modification of such material will not be permitted except with the approval of the Engineer.

4.006 Final Cleaning Up. Before final acceptance, the highway, borrow, and local material sources and all areas occupied by the Contractor in connection with the work shall be cleaned of all rubbish, excess materials, temporary structures, and equipment; and all parts of the work shall be left in an acceptable condition.

SECTION 5 CONTROL OF WORK

5.001 Authority of the Engineer. The Engineer will make all final decisions after discussion with the contractor to all questions which may arise as to the quality and acceptability of materials furnished and work performed and as to the rate of progress of the work; all questions which may arise as to the interpretation of the plans and specifications; all questions as to the acceptable fulfillment of the Contract on the part of the Contractor.

The Engineer will have the authority to suspend the work after sufficient written notice has been given to the contractor wholly or in part due to the failure of the Contractor to correct conditions unsafe for the workmen or the general public; for failure to carry out provisions of the Contract; for such periods as he may deem necessary due to unsuitable weather; for conditions considered unsuitable for the prosecution of the work or for any reason deemed to be in the public interest.

5.002 Plans and Working Drawings. Plans will show details of all structures, lines, grades, typical cross sections of the roadway, location and design of all structures and a summary of items appearing on the Proposal. Only general features will be shown for steel bridges. The Contractor shall keep one set of plans available on the work at all times.

The plans will be supplemented by such working drawings as are necessary to adequately control the work. Working drawings for structures shall be furnished by the Contractor and shall consist of such detailed plans as may be required to adequately control the work and are not included in the plans furnished by the Owner. They shall include stress sheets, shop drawings, erection plans, falsework plans, cofferdam plans, bending diagrams for reinforcing steel or any other supplementary plans or similar data required of the Contractor. All working drawings must be approved by the Engineer, and such approval shall not operate to relieve the Contractor of any of his responsibility under the Contract for the successful completion of the work.

The Contract price will include the cost of furnishing all working drawings.

5.003 Conformity with Plans and Specifications. All work performed and all materials furnished shall be in reasonably close conformity with the lines, grades, cross sections, dimensions, and material requirements, including tolerances, shown on the plans or indicated in the specifications.

Based on test results and observations the Engineer finds the materials furnished, work performed, or the finished product are not within reasonably close conformity with the plans and specifications but that reasonably acceptable work has been produced, he shall then make a determination if the work shall be accepted and remain in place, be reworked and resubmitted or removed and replaced. In this event, the Engineer will document the basis of acceptance by Contract modification which will provide for an appropriate adjustment in the Contract price for such work or materials as he deems necessary to conform to his determination based on engineering judgment.

5.004 Coordination of Plans, Specifications, Supplemental Specifications, and Special Conditions. These Specifications, the Supplemental Specifications, the Plans, Special Conditions, and all supplementary documents are essential parts of the

Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. The following order of importance in which the project documents govern the work: Special Conditions, plans, supplemental specifications, and standard specifications

The Contractor shall take no advantage of any apparent error or omission in the Plans or Specifications. In the event the Contractor discovers such an error or omission, he shall immediately notify the Engineer. The Engineer will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of the Plans and Specifications.

5.005 Cooperation by Contractor. The Contractor will be supplied with a minimum of two sets of approved plans and Contract assemblies including Special Conditions, one set of which the Contractor shall keep available on the work at all times.

The Contractor shall give the work the constant attention necessary to facilitate the progress thereof, and shall cooperate with the Engineer, his inspectors, and other Contractors in every way possible.

The Contractor shall have on the project at all times, as his agent, a competent Superintendent or other designated person capable of reading and thoroughly understanding the plans and specifications and thoroughly experienced in the type of work being performed, who shall receive instructions from the Engineer or his authorized representatives. The Contractor's Superintendent or other designated representative shall be available anytime (day and/or night) construction is actively in progress and the contract is in force.

The Superintendent or other designated person shall have full authority to execute orders or directions of the Engineer without delay, and to promptly supply such materials, equipment, tools, labor, and incidentals as may be required. A qualified representative shall be furnished irrespective of the amount of work sublet.

5.006 Cooperation with Utilities. The Owner will notify all utility companies, all pipe line owners, or other parties affected, and endeavor to have all necessary adjustments of the public or private utility fixtures, pipe lines, and other appurtenances within or adjacent to the limits of construction, made as soon as practicable.

Water lines, gas lines, wire lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals, and all other utility appurtenances within the limits of the proposed construction which are to be relocated or adjusted are to be moved by the owners at their expense, unless otherwise provided in the Contract.

It is understood and agreed that the Contractor has considered in his Bid all of the permanent and temporary utility appurtenances in their present or relocated positions as shown on the plans and that no additional compensation will be allowed for any delays, inconvenience, or damage sustained by him due to any interference from the said utility appurtenances or the operation of moving them.

NOTE: The Contract will indicate various utility items, certain of which are to be relocated or adjusted by the utility owner and others which are to be relocated or adjusted by the Contractor. The Special Conditions shall indicate the means of adjudication, if any, in case of failure by the utility owners

to comply with their responsibility in relocating or adjusting their facility.

5.007 Cooperation Between Contractors. The Owner reserves the right at any time to contract for and perform other or additional work on or near the work covered by the Contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct his work so as not to interfere with or hinder the progress or completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with his Contract. If delays are experienced by any contractor due to the actions or lack of from any other contractor not working under the same contract, the contractor delayed may submit a claim for time extension or damages. Any and all claims against another contractor or the owner will be considered and discussed with the engineer prior to a final decision.

The Contractor shall arrange his work and shall place and dispose of the materials being used so as not to interfere with the operations of the other Contractors within the limits of the same project. He shall join his work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

5.008 Construction Stakes, Lines, and Grades. The Engineer will set construction stakes establishing lines, slopes, and continuous profile-grade in road work, and centerline and bench marks for bridge work, culvert work, protective and accessory structures and appurtenances as he may deem necessary, and will furnish the Contractor with all necessary information relating to lines, slopes and grades. These stakes and marks shall constitute the field control by and in accordance with which the Contractor shall establish other necessary controls and perform the work.

The Contractor shall be held responsible for the preservation of all stakes and marks, and if any of the construction stakes or marks have been carelessly or willfully destroyed or disturbed by the Contractor, the cost of replacing them will be charged against him and will be deducted from the payment for the work.

The Owner will be responsible for the accuracy of lines, slopes, grades, and other engineering work which is set forth under this section.

5.009 Authority and Duties of the Engineer. As the direct representative of the Owner, the Engineer has immediate charge of the engineering details of each construction project. He is responsible for the administration and satisfactory completion of the project. The Engineer has the authority to reject defective material and to suspend any work that is being improperly performed with proper documentation and provided the contractor is sufficiently notified and given ample opportunity to complete the contracted work.

5.010 Duties of the Inspector. Inspectors employed by the Owner will be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication or manufacture of the materials to be used. The Inspector will not be authorized to alter or waive the provisions of the Contract. The Inspector will not be authorized to issue instructions contrary to the plans and specifications, or to act as foreman for the Contractor; however,

he shall have the authority to reject work or materials until any questions at issue can be referred to and decided by the Engineer.

5.011 Inspection of Work. All materials and each part or detail of the work shall be subject to inspection by the Engineer. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as Extra Work; but should the work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed, will be at the Contractor's expense.

Any materials used without proper submittals may be ordered removed and replaced at the Contractor's expense.

When any unit of government or political subdivision or any railroad corporation is to pay a portion of the cost of the work covered by this Contract, its respective representatives shall have the right to inspect the work. Such inspection shall in no sense make any unit of government or political subdivision or any railroad corporation a party to this Contract, and shall in no way interfere with the rights of either party hereunder.

5.012 Removal of Unacceptable and Unauthorized Work. All work which does not conform to the requirements of the Contract will be considered unacceptable, unless otherwise determined acceptable under the provisions in Section 5.003.

Unacceptable work, documented and substantiated, whether the result of poor workmanship, use of defective materials, damage through carelessness or any other cause, found to exist prior to the final acceptance of the work, may be required to be removed and replaced in an acceptable manner with agreement of all parties.

No work shall be done without lines and grades having been given by the Engineer. Work done contrary to the instructions of the Engineer, work done beyond the lines shown on the plans, or as given, except as herein specified, or any Extra Work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the Contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply forthwith with any order of the Engineer made under the provisions of this article, the Engineer will have authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs from any monies due or to become due the Contractor.

5.013 Load Restrictions. The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the project. A special permit will not relieve the Contractor of liability for damage which may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or the roadway or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base or structure before the expiration of the curing period. In no case shall legal load limits be exceeded unless permitted in writing. The Contractor shall be responsible for all damage done by his hauling equipment.

If a vehicle's gross weight exceeds the legal limit, and the material transported by the vehicle is delivered to the project, the material and the scale ticket (certificate of correct weight) will not be accepted.

5.014 Maintenance During Construction. The Contractor shall maintain the work during construction and until the project is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces to the end that the roadway or structures are kept in satisfactory condition at all times.

In the case of a Contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All cost of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various pay items, and the Contractor will not be paid an additional amount for such work.

5.015 Failure to Maintain Roadway or Structure. If the Contractor, at any time, fails to comply with the provisions of Section 5.014, the Engineer will immediately notify the Contractor of such non-compliance. The contractor will be required to respond to the notice and make all necessary corrections. If the Contractor fails to remedy unsatisfactory maintenance within 24 hours after receipt of such notice, the Engineer may proceed to maintain the project. If the contractor fails to respond to the notice the entire cost of this maintenance may be deducted from monies due or to become due the Contractor on his Contract.

5.016 Acceptance.

- a. *Partial Acceptance.* If at any time during the prosecution of the project the Contractor substantially completes a unit or portion of the project, such as a structure, an interchange, or a section of road or pavement, he may request the Engineer to make final inspection of that unit. If the Engineer finds upon inspection that the unit has been satisfactorily completed in compliance with the Contract, he may accept that unit as being completed, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance shall in no way void or alter any of the terms of the Contract.
- b. *Final Acceptance.* Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer will make an inspection. If all construction provided for and contemplated by the Contract is found completed to his satisfaction, that inspection shall constitute the final inspection, and the Engineer will make the final acceptance--and notify the Contractor in writing of this acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of the work. Upon correction of the work, another inspection will be made which shall constitute the final inspection provided the work has been satisfactorily completed. In such event, the Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

5.017 Claims for Adjustment and Disputes. If, in any case, the Contractor deems that additional compensation is due him for work or material not clearly covered in the Contract or not ordered by the Engineer as *Extra Work*, as defined herein, the Contractor shall notify the Engineer in writing of his intention to make claim for such additional compensation before he begins the work on which he bases the claim. In cases when repairs and/or additional work is completed prior to the discovery of additional cost, the contractor should notify the Engineer as soon as the intent to claim is made. If such notification is not given, the Engineer is not afforded proper facilities by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to arbitrate any claim for such additional compensation. If the claim, after consideration by the Engineer, is found to be just, it will be paid as Extra Work as provided herein for Force Account Work. Nothing in this section shall be construed as establishing any claim contrary to the terms of Section 4.002.

5.018 Automatically Controlled Equipment. Whenever batching or mixing plant equipment is required to be operated automatically under the Contract and a breakdown or malfunction of the automatic controls occurs, the equipment may be operated manually or by other methods for a period of 48 hours following the breakdown or malfunction, provided this method of operations will produce results otherwise meeting specifications.

SECTION 6 CONTROL OF MATERIAL

6.001 Source of Supply and Quality Requirements. The materials used on the work shall meet all quality requirements of the Contract. In order to expedite the inspection and testing of materials, the Contractor shall notify the Engineer of his proposed sources of materials prior to delivery. At the option of the Engineer, materials may be approved at the source of supply before delivery is started. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

6.002 Local Material Sources. Possible sources of local materials may be designated on the plans and described in the Special Conditions. The quality of material in such deposits will be acceptable in general, but the Contractor shall determine for himself the amount of equipment and work required to produce a material meeting the specifications. It shall be understood that it is not feasible to ascertain from samples the limits for an entire deposit, and violations shall be considered as usual and are to be expected. The Engineer may order procurement of material from any portion of a deposit and may reject portions of the deposit as unacceptable based on standard practices for acceptance for any any all parts of the materials.

The Owner may require the contractor to take materials from the sources designated on the plans and described under Special Conditions, together with the right to use such property as may be specified, for plant site, stockpiles and hauling roads.

If the Contractor desires to use material from sources other than those designated, he shall acquire the necessary rights to take materials from the sources and shall pay all costs related thereto, including any which may result from an increase in length of haul. All costs of exploring and developing such other sources shall be borne by the Contractor. The use of material from other than designated sources will not be permitted until such preliminary samples as may be required by the Engineer have been obtained and tested at the expense of the Contractor. Additional samples may be required of the Contractor for inspection and testing by the Engineer, prior to approval of and authorization to use the source.

When material deposits are not designated in the Special Conditions, the Contractor shall provide sources of material acceptable to the Engineer.

When sources of material or material deposits are provided by the Contractor, the Owner will assume the cost of processing samples to determine the suitability of the material.

Unless otherwise permitted, pits and quarries shall be so excavated that water will not collect and stand therein. Sites from which material has been removed shall, upon completion of the work, be left in a neat and presentable condition.

6.003 Samples, Tests, Cited Specifications. All materials proposed to be used on the project shall be approved by the Engineer before incorporation in the work. Any work in which materials are used without approval or written permission of the Engineer shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized after being used may not be paid for and, if directed by the Engineer, may be removed at the Contractor's expense. Unless otherwise designated, tests in accordance with the most recent cited standard methods of

AASHTO or ASTM, or other agency requirements which are current on the date of Advertisement For Bids, will be made by and at the expense of the Owner. Samples will be taken by a properly certified representative of the Contractor. Samples obtained may be split between the contractor and Owner for testing or inspection. All materials being used are subject to inspection, test or rejection at any time prior to or during incorporation into the work. Copies of all tests or inspections performed by the owner will be furnished to the Contractor's representative at his request.

6.004 Certification of Compliance. The Engineer may permit use prior to sampling and testing of certain materials or assemblies accompanied by Certificates of Compliance stating that such materials or assemblies fully comply with the requirements of the Contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a Certificate of Compliance in which the lot is clearly identified.

Materials or assemblies used on the basis of Certificates of Compliance may be sampled and tested at any time and if found not to be in conformity with Contract requirements will be subject to rejection whether in place or not.

The form and distribution of Certificates of Compliance shall be as approved by the Engineer.

The Engineer reserves the right to refuse permission for use of materials or assemblies on the basis of failure to meet the minimum requirements for Certificates of Compliance.

6.005 Plant Inspection. The Engineer may undertake the inspection of materials at the source. Manufacturing plants may be inspected periodically for compliance with specified manufacturing methods, and material samples will be obtained for laboratory testing for compliance with materials quality requirements. This may be the basis for acceptance of manufactured lots as to quality.

In the event plant inspection is undertaken, the following conditions should be met:

- a. The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom he has contracted for materials.
- b. The Engineer shall have full entry with notice to such parts of the plant as may concern the manufacture or production of the materials being furnished.
- c. If required by the Engineer, the Contractor shall arrange for an approved building for the use of the inspector; such building to be located conveniently near the plant, and conforming to the requirements of Section 6.006.
- d. Adequate safety measures shall be provided and maintained.
- e. Crushing or screening facilities should be equipped with an automatic or semi-automatic mechanical sampling device.

Based on continual testing and inspection during the project, and obtaining varied results the Owner reserves the right to have additional testing performed on materials prior to incorporation into the work which have been previously tested and approved at the source of supply. After the materials have been delivered

the Owner may, based on the additional test results from both the contractor and owner reject materials which, when retested, do not meet the requirements of these specifications, or those established for the specific project.

6.006 Field Laboratory. The Contractor shall provide, only when directed by the Special Conditions, an inspector's shelter or field laboratory, consisting of a suitable building with adequate electrical supply and water supply in which to house and use the equipment necessary to carry on the required tests. The building shall be provided in accordance with the contract requirements and payment will be made as specified.

6.007 Foreign Materials. Materials manufactured outside the United States shall be delivered to approved locations within the State unless otherwise permitted by the Contract, where they shall be retained until sampling and testing can be completed.

After the contract is let, the Contractor shall, at no cost to the Owner, arrange for any required testing which the Owner is not equipped to perform. The owner shall furnish a list of all testing required and that which they cannot perform. All testing by the Contractor shall be performed within the State, if possible and be subject to witnessing by the Engineer.

Each lot of foreign material shall be accompanied by a Certificate of Compliance prepared in accordance with requirements of Section 6.004. In addition, certified mill test reports shall be attached to the Certificate of Compliance for those materials for which mill test reports are required and shall clearly identify the lot to which they apply.

Structural materials requiring mill test reports will be accepted only from those foreign manufacturers who have previously established to the satisfaction of the Engineer the adequacy of their in-plant quality control to assure delivery of uniform material in conformance with contract requirements.

Adequacy of quality control shall be established based on the project specification, and special provisions. A standard Quality Control plan shall be submitted providing detailed written proof of adequate control, or may be confirmed through an in-plant inspection by the Engineer or his representative.

No structural materials will be accepted which cannot be properly identified with mill test reports and Certificates of Compliance.

6.008 Storage of Materials. Materials shall be so stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located so as to facilitate their prompt inspection. Approved portions of the right-of-way may be used for storage purposes and for the placing of the Contractor's plant and equipment, but any additional space required thereof must be provided by the Contractor at his expense. Private property shall not be used for storage purposes without written permission of the owner or lessee, and if requested by the Engineer copies of such written permission shall be furnished him. All storage sites shall be restored to their original condition by the Contractor at his expense. This shall not apply to the stripping and storing of topsoil, or to other materials salvaged from the work.

6.009 Handling Materials. All materials shall be handled in such manner as to preserve their quality and fitness for the work. Aggregates shall be transported from the storage site to the work in tight vehicles so constructed as to prevent loss or segregation of materials after loading and measuring in order that there may

be no inconsistencies in the quantities of materials intended for incorporation in the work as loaded, and the quantities as actually received at the place of operations.

6.010 Unacceptable Materials. All materials not conforming to the requirements of the specifications shall be considered as unacceptable, and all such materials will be rejected and shall be removed immediately from the site of the work unless otherwise instructed by the Engineer. No rejected material, the defects of which have been corrected, shall be used until approval has been given.

6.011 Owner-Furnished Material. The Contractor shall furnish all materials required to complete the work. If the Owner has materials that can be used to complete the work, the Contractor can choose to use the materials, but will be responsible for the quality of all the materials used in the work.

Material furnished by the Owner will be delivered or made available to the Contractor at the points specified in the Special provisions.

The cost of handling and placing all materials after they are delivered to the Contractor shall be considered as included in the contract price for the item in connection with which they are used.

The Contractor will be held responsible for all material delivered to him after the project documents are signed and the executed, and deductions will be made from any monies due him to make good any shortages and deficiencies, from any cause whatsoever, and for any damage which may occur after such delivery, and for any demurrage charges. If the owner will supply materials for the project the contractor will not be responsible for any charges which may be incurred during the procurement or for storage of the materials.

SECTION 7 LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

7.001 Laws to be Observed. The Contractor shall keep fully informed of all Federal and Owner laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his employees.

Job-site safety shall be the responsibility of the Contractor.

7.002 Permits, Licenses and Taxes. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

7.003 Patented Devices, Materials, and Processes. If the Contractor employs any design, device, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner. The Contractor and the Surety shall indemnify and save harmless the Owner, any affected third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the prosecution or after the completion of the work.

7.004 Restoration of Surfaces Opened by Permit. The right to construct or reconstruct any utility service in the highway or street or to grant permits for same, at any time, is hereby expressly reserved by the Owner for the proper authorities in which the work is done; and the Contractor shall not be entitled to any damages either for the digging up of the street or for any delay occasioned thereby.

When an individual, firm, or corporation is authorized through a duly executed permit from the Owner, the Contractor shall allow parties bearing such permits, and only those parties, to make openings in the highway. When ordered by the Engineer, the Contractor shall make in an acceptable manner all necessary repairs due to such openings, and such necessary work will be paid for as Extra Work, or as provided in these specifications, and will be subject to the same conditions as original work performed.

7.005 Federal Aid Participation. When the United States Government participates in the cost of the work covered by the Contract, the work shall be under the supervision of the Owner but subject to the inspection and approval of the proper officials of the United States Government and in accordance with the applicable Federal Statutes and rules and regulations made pursuant thereto.

Such inspection shall in no sense make the Federal Government a party to this Contract and will in no way interfere with the rights of either party hereunder.

7.006 Sanitary, Health, and Safety Provisions. The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his employees as may be necessary to comply with the requirements of the Owner and local Board of Health, or of other bodies or tribunals having jurisdiction.

Attention is directed to Federal, Owner and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his health or safety.

7.007 Public Convenience and Safety. The Contractor shall at all times so conduct his work as to assure the least possible obstruction to traffic. The safety and convenience of the general public and the residents along the highway and the protection of persons and property shall be provided for by the Contractor as specified under Section 4.004.

7.008 Railway-Highway Provisions. If the plans require that materials be hauled across the tracks of any railway, the Owner will arrange with the railway for any new crossings required or for the use of any existing crossings. If the Contractor elects to use crossings other than those shown on the plans, he shall make his own arrangements for the use of such crossings.

All work to be performed by the Contractor in construction on the railroad right-of-way shall be performed at such times and in such manner as not to unnecessarily interfere with the movement of trains or traffic upon the track of the railway company. The Contractor shall use all care and precaution in order to avoid accidents, damage, or unnecessary delay or interference with the railway company's trains or other property.

7.009 Construction Over or Adjacent to Navigable Waters. All work over, on, or adjacent to navigable waters shall be so conducted that free navigation of the waterways will not be interfered with and that the existing navigable depths will not be impaired except as allowed by permit issued by the U.S. Coast Guard and/or the U.S. Army Corps of Engineers, as applicable.

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

The Contractor shall erect warning signs in advance of any place on the project where operations may interfere with the use of the road by traffic, and at all intermediate points where the new work crosses or coincides with an existing road. Such warning signs shall be placed and maintained in accordance with the plans furnished. No signs, barricades, lights, or other protective devices shall be dismantled or removed without permission of the Engineer.

All barricades, warning signs, lights, temporary signals, and other protective devices shall conform with the *Manual on Uniform Traffic Control Devices for Streets and Highways* published by

the U.S. Government Printing Office, which was in effect when the project was bid.

7.011 Use of Explosives. When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. The Contractor shall be responsible for all damage resulting from the use of explosives.

The Contractor's personnel in-charge of the use of explosives shall be licensed and qualified to use explosives.

All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the Engineer and in general not closer than 1,000 feet from the road or from any building or camping area or place of human occupancy.

The Contractor shall notify each property owner and public utility company having structures or facilities in proximity to the site of the work of his intention to use explosives. Such notice shall be given sufficiently in advance to enable them to take such steps as they may deem necessary to protect their property from injury.

7.012 Protection and Restoration of Property and Landscape. The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property marks until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character, during the prosecution of the work, resulting from any act, omission, neglect, or misconduct in his manner or method of executing the work, or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the nonexecution thereof by the Contractor, he shall restore, at his own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

7.013 Forest Protection. In carrying out work within or adjacent to Owner or National Forests, the Contractor shall comply with all regulations of the Owner Fire Marshal, Conservation Commission, Forestry Owner, or other authority having jurisdiction, governing the protection of forests and the carrying out of work within forests, and shall observe all sanitary laws and regulations with respect to the performance of work in forest areas. He shall keep the areas in an orderly condition, dispose of all refuse, obtain permits for the construction and maintenance of all construction camps, stores, warehouses, residences, latrines, cesspools, septic tanks, and other structures in accordance with the requirements of the Forest Supervisor.

The Contractor shall take all reasonable precaution to prevent and suppress forest fires and shall require his employees and subcontractors, both independently and at the request of Forest officials, to do all reasonably within

their power to prevent and suppress and to assist in preventing and suppressing forest fires and to make every possible effort to notify a Forest official at the earliest moment of the location and extent of any fire seen by them.

7.014 Responsibility for Damage Claims. The Contractor shall indemnify and save harmless the Owner, its officers and employees, from all suits, actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the said Contractor, or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor. The owner or owners agent shall observe the work site and notify the contractor of potentially unsafe work conditions, unacceptable materials which may be used for constructing the work. The owner will not be liable for any claims or amounts recovered from any infringements of patent, trademark, or copyright. Any claims or amounts arising or recovered under the "Workmen's Compensation Act," or any other law, ordinance, order, or decree; and so much of the money due the said Contractor under and by virtue of his Contract as may be considered necessary by the Owner for such purpose may be retained for the use of the Owner; or, in case no money is due, his Surety may be held until such suit or suits, action or actions, claim or claims for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the Owner; except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he is adequately protected by public liability and property damage insurance.

7.015 Third Party Beneficiary Clause. It is specifically agreed between the parties executing this Contract that it is not intended by any of the provisions of any part of the Contract to create the public or any member thereof a third party beneficiary hereunder, or to authorize anyone not a party to the Contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the Contract.

7.016 Opening Sections of Project to Traffic. Opening of sections of the work to traffic prior to completion of the entire Contract may be desirable from a traffic service standpoint, or may be necessary due to conditions inherent in the work, or by changes in the Contractor's work schedule, and may be necessary due to conditions or events unforeseen at the time of the Contract. Such openings as may be necessary due to any of the foregoing conditions shall be made when so ordered by the Engineer. Under no condition shall such openings constitute acceptance of the work or a part thereof, or a waiver of any provisions of the Contract, however, if in the event the contractor is required to open any sections to traffic prior to completion, the owner will be liable for any repairs to such sections.

Special Conditions shall state, insofar as possible, which sections shall be opened prior to completion of the Contract. On any section opened by order of the Engineer, whether covered in the Special Conditions or not, the Contractor shall not be required to assume any expense entailed in maintaining the road for traffic. Such expense shall be borne by the Owner, or compensated for in a manner provided hereinafter in Section 9.004. On such portions of the project which are ordered by the Engineer to be opened for traffic, in the case of unforeseen necessity which is not the fault of the Contractor, compensation for additional expense, if any, to the Contractor and allowance of additional time, if any, for completion of any other items of work on the portions of the project ordered by the Engineer to be

opened in the event of such unforeseen necessity, shall be as set forth in a Change Order mutually agreed on by the Engineer and the Contractor as set forth hereinafter. In the event the contractor is required to open any sections to traffic prior to completion, the owner will be liable for any repairs to such sections.

If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the work, the Engineer may so notify him in writing and establish therein a reasonable period of time in which the work should be completed. If the Contractor is dilatory, or fails to make a reasonable effort toward completion in this period of time, the Engineer may then order all or a portion of the project opened to traffic. On such sections which are so ordered to be opened, the Contractor shall conduct the remainder of his construction operations so as to cause the least obstruction to traffic and shall not receive any added compensation due to the added cost of the work by reason of opening such section to traffic.

On any section opened to traffic under any of the above conditions, whether stated in the Special Conditions or opened by necessity of Contractor's operations, or unforeseen necessity, any damage to the highway not attributable to traffic which might occur on such section shall be repaired by the Contractor at the owners expense.

7.017 Contractor's Responsibility for Work. Until final written acceptance of the project by the Engineer, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the nonexecution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof except damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of governmental authorities.

In case of suspension of work from any cause whatever, the Contractor shall be responsible for the project and shall take such precautions as may be necessary to prevent damage to the project, provide for normal drainage and shall erect any necessary temporary structures, signs, or other facilities at his expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under his Contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

7.018 Contractor's Responsibility for Utility Property and Services. At points where the Contractor's operations are adjacent to properties of railway, telegraph, telephone, and power companies, or are adjacent to other property, damage to which might result in considerable expense, loss, or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.

The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may

progress in a reasonable manner, that duplication of rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.

In the event of interruption to utility services as a result of accidental breakage or as a result of being exposed or unsupported, the Contractor shall promptly notify the proper authority and shall cooperate with the said authority in the restoration of service. If utility service is interrupted continuous cooperation will be required until the service is restored. No work shall be undertaken around fire hydrants until provisions for continued service have been approved by the local fire authority.

7.019 Furnishing Right-Of-Way. The Owner will be responsible for the securing of all necessary rights-of-way in advance of construction. Any exceptions will be indicated in the Contract.

7.020 Personal Liability of Public Officials. In carrying out any of the provisions of these specifications, or in exercising any power or authority granted to them by or within the scope of the Contract, there shall be limited liability upon the Owner, Engineer, or their authorized representatives, either personally or as officials of the Owner, it being understood that in all such matters they act solely as agents and representatives of the Owner.

7.021 No Waiver of Legal Rights. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of acceptance. A waiver on the part of the Owner of any breach of any part of the Contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the Contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the Owner's rights for the contracted warranty or guaranty period.

7.022 Environmental Protection. The Contractor shall comply with all Federal, State, and local laws and regulations controlling pollution of the environment. He shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

SECTION 8 PROSECUTION AND PROGRESS

8.001 Subletting of Contract. The Contractor shall not sublet, sell, transfer, assign, or otherwise dispose of the Contract or Contracts or any portion thereof, or of his right, title, or interest therein, without written consent of the Owner. If such consent is given, the Contractor will be permitted to sublet a portion of the work, but shall perform with his own organization, work amounting to not less than 50 percent of the total Contract cost. Any items designated in the Contract as "specialty items" may be performed by sub-contract, and the cost of any such specialty items performed by sub-contract may be deducted from the total cost before computing the amount of work required to be performed by the Contractor with his own organization. No sub-contracts, or transfer of Contract, shall relieve the Contractor of his liability under the Contract and Bonds.

8.002 Notice to Proceed. The "Notice to Proceed" will stipulate the date on which it is expected the Contractor will begin the construction and from which date Contract Time will be charged. Commencement of work by the Contractor constitutes his waiver of this notice.

8.003 Prosecution and Progress. The Contractor, when required, shall furnish the Engineer with a "Progress Schedule" for his approval. The progress schedule shall be submitted to the Engineer within three (3) business days. The progress schedule may be used to establish major construction operations and to check on the progress of the work. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall submit a revised schedule for completion of the work within the contract time and modify his operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the prosecution of the work be discontinued for any reason, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

8.004 Limitation of Operations. The Contractor shall conduct the work at all times in such a manner and in such sequence as will assure the least interference with traffic. He shall have due regard to the location of detours and to the provisions for handling traffic. The Engineer may require the Contractor to finish a section on which work is in progress before work is started on any additional sections if the opening of such section is essential to public convenience.

8.005 Character of Workmen; Methods and Equipment. The Contractor shall at all times employ sufficient labor and equipment for prosecuting the several classes of work to full completion in the manner and time required by these specifications.

All workmen shall have sufficient skill and experience to perform properly the work assigned to them. Workmen engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who, in the opinion of the Engineer, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall,

at the written request of the Engineer, be subject to removal from the project. The contractor/subcontractor employing such person will respond to the written notice from the Engineer with a plan concerning the employee. Such employees If an employee is removed from the project they shall not be again employed in any portion of the work without the approval of the Engineer.

Should the Contractor fail to remove such person or persons as required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the Engineer may suspend the work by written notice until compliance with such orders.

All equipment which is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the project shall be such that no injury to the roadway, adjacent property, or other highways will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the construction are not prescribed in the Contract, the Contractor is free to use any methods or equipment that will accomplish the contract work in conformity with the requirements of the Contract.

When the Contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than specified in the Contract, he may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with Contract requirements. If, after trial use of the substituted methods or equipment, the Engineer determines that the work produced does not meet Contract requirements based on testing and observation, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor may be required to remove the deficient work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct based on the test results and observations. No change will be made in basis of payment for the construction items involved nor in Contract Time as a result of authorizing a change in methods or equipment under these provisions.

8.006 Determination and Extension of Contract Time. The number of days allowed for completion of the work included in the Contract will be stated in the Proposal and Contract, and will be known as the "Contract Time."

When the contract time is on a working day basis, the Engineer will furnish the Contractor a weekly statement showing the number of days charged to the Contract for the preceding week and the number of days specified for completion of the Contract. The Contractor will be allowed one week in which to file a written protest setting forth in what respect said weekly statement is incorrect; otherwise the statement shall be deemed to have been accepted by the Contractor as correct.

When the contract time is on a calendar day basis, it shall consist of the number of calendar days stated in the Contract counting from the effective date of the Engineer's order to commence work, including all Sundays, holidays, and non-work days. All calendar days elapsing between the effective dates of

any orders of the Engineer to suspend work and to resume work for suspensions not the fault of the Contractor shall be excluded.

When the contract completion time is a fixed calendar date, it shall be the date on which all work on the project shall be substantially completed.

The number of days for performance allowed in the contract as awarded is based on the original quantities as defined in Section 2.004. If satisfactory fulfillment of the Contract requires performance of work in greater quantities than those set forth in the Proposal, the contract time allowed for performance shall be increased on a basis commensurate with the amount and difficulty of the added work.

If the Contractor finds it impossible for reasons beyond his control to complete the work within the Contract Time as specified or as extended in accordance with the provisions of this section, he may, at any time prior to the expiration of the Contract Time as extended, make a written request to the Engineer for an extension of time setting forth therein the reasons which he believes will justify the granting of his request. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, he may extend the time for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect the same as though it were the original time for completion.

When final acceptance has been duly made by the Engineer as prescribed in Section 5.016, the daily time charge will cease.

8.007 Failure to Complete on Time. For each calendar day or work day, as specified, that any work shall remain uncompleted after the Contract Time specified for the completion of the work required by the Contract, the sum specified in the Contract will be deducted from any money due the Contractor not as a penalty but as Liquidated Damages; provided, however, that due account shall be taken of any adjustment of the Contract Time for completion of the work granted under the provisions of Section 8.006.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the Owner of any of its rights under the Contract.

The Owner may waive such portions of the Liquidated Damages as may accrue after the work is in condition for safe and convenient use by the traveling public.

Rates for Liquidated Damages will be set forth in PART IV - Special Conditions of the Contract Documents.

8.008 Default and Termination of Contract. If the Contractor:

- a. Fails to begin the work under the Contract within the time specified in the "Notice to Proceed," or
- b. Fails to perform the work within the agreed upon project time line to assure the prompt completion of said work, or
- c. Performs the work unsuitably or neglects or refuses to remove materials based on agreed upon testing and inspection methods or to perform anew such

work as may be rejected as unacceptable and unsuitable, or

- d. Discontinues the prosecution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so with out proper notification as to the reason for the delay, or
- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- g. Allows any final judgment to stand against him unsatisfied for a period of 10 days, or
- h. Makes an assignment for the benefit of creditors, or
- i. Fails to carry on the work in an acceptable manner based on industry standards, test results and inspection, the Engineer may give notice in writing to the Contractor and his Surety of such delay, neglect, or default.

If the Contractor or Surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the Engineer of the fact of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the Contract, to take the prosecution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment on the ground as may be suitable and acceptable and may enter into an agreement for the completion of said Contract according to the terms and provisions thereof, or use such other methods as in the opinion of the Engineer will be required for the completion of said Contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under Contract, will be deducted from any monies due or which may become due said Contractor. If such expense exceeds the sum which would have been payable under the Contract, then the Contractor and the Surety shall be liable and shall pay to the Owner the amount of such excess.

8.009 Termination of Contract for National Emergencies.

The Owner shall terminate the Contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the prosecution of war or in the interest of national defense.

When Contracts, or any portion thereof, are terminated before completion of all items of work in the Contract, payment will be made for the actual number of units or items of work completed at the contract unit price, or as mutually agreed for items of work partially completed or not started. No claim or loss of anticipated profits shall be considered.

Reimbursement for organization of the work, and other overhead expenses, (when not otherwise included in the Contract) and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at

actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the Engineer.

Termination of a Contract or a portion thereof shall relieve the Contractor of his responsibilities for the completed work, and shall it relieve his Surety of its obligation for and concerning any just claim arising out of the work performed.

SECTION 9 MEASUREMENT AND PAYMENT

9.001 Measurement of Quantities. All work completed under the Contract will be measured by the Engineer according to United States standard measure.

A station when used as a definition or term of measurement will be 100 linear feet.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the Contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures having an area of nine (9) square feet or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the Engineer.

Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.

All items which are measured by the linear foot, such as pipe culverts, guardrail, underdrains, etc., will be measured parallel to the base or foundation upon which such structures are placed, unless otherwise shown on the plans.

In computing volumes of excavation the average end area method or other acceptable methods will be used.

The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fractions of inches.

The term "ton" will mean the short ton consisting of 2,000 pounds weight. All materials which are measured or proportioned by weight shall be weighed on accurate, approved scales by competent, qualified personnel at locations designated by the Engineer. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material be paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible identification mark.

Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard may be weighed, and such weights will be converted to cubic yards for payment purposes. All cubic yard measurements shall be for completed in-place materials.

Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Asphaltic materials will be measured by the gallon or ton. Hot Mix Asphalt will be measured by the ton.

Volumes will be measured at 60 degrees Fahrenheit (60°F), or will be corrected to the volume at 60 degrees Fahrenheit (60°F) using ASTM D 1250 for asphalts or ASTM D 633.

Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when asphaltic material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

When asphaltic materials are shipped by truck or transport, net certified weights or volume subject to correction for loss or foaming may be used for computing quantities.

Cement will be measured by the ton or hundred weight.

Timber will be measured by the thousand feet board measure (M.F.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the Contract.

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the project unless special equipment has been ordered by the Engineer in connection with force account work, in which case travel time and transportation to the project will be measured. If equipment has been ordered held on the job on a standby basis by the Engineer, half time rates for the equipment will be paid.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Scales for the weighing of highway and bridges construction materials which are required to be proportioned or measured and paid for by weight, shall be furnished, erected and maintained by the Contractor, or be certified permanently installed commercial scales.

Scales shall be accurate within one-half percent (0.5%) of the correct weight throughout the range of use. The Contractor shall

have the scales checked under the observation of the inspector before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one-tenth of one percent (0.1%) of the nominal rated capacity of the scale; but not less than one pound. The use of spring balances will not be permitted.

Beams, dials, platforms and other scale equipment shall be so arranged that the operator and inspector can safely and conveniently view them.

Scale installations shall have available, ten standard fifty-pound weights for testing the weighing equipment or suitable weights and devices for other approved equipment.

Scales must be tested for accuracy and serviced before use at a new site. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.

Scales over weighing—(indicating more than true weight) will not be permitted to operate, and all materials received subsequent to the last previous correct weighing accuracy test will be reduced by the percentage of error in excess of one-half of one percent (0.5%).

In the event inspection reveals the scales have been underweighing, they shall be adjusted and no additional payment to the Contractor will be allowed for materials previously weighed and recorded.

All costs in connection with furnishing, installing, certifying or testing, and maintaining scales; for furnishing check weights and scale house and for all other items specified in this section for the weighing of highway and bridge construction materials for proportioning or payment shall be included in the unit contract prices for the various pay items of the project.

When the estimated quantities for a specific portion of the work are designated as the pay quantities in the Contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the Engineer. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

9.002 Scope of Payment. The Contractor shall receive and accept compensation provided for in the Contract as full payment for furnishing all materials and for performing all work under the Contract in a complete and acceptable manner and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof, subject to the provisions of Section 7.021.

If the "Basis of Payment" clause in the specifications relating to any unit price in the bid schedule requires that the said unit price cover and be considered compensation for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the specifications.

9.003 Compensation for Altered Quantities. When the accepted quantities of work vary from the quantities in the Bid Schedule, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract unit prices for the accepted quantities of work done. No

allowance except as provided in Section 4.002 will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly from such alterations or indirectly from unbalanced allocation among the contract items of overhead expense on the part of the Bidder and subsequent loss of expected reimbursements therefor or from any other cause.

9.004 Extra and Force Account Work. Extra work performed in accordance with the requirements and provisions of Section 4.003 will be paid for at the unit prices or agreed prices stipulated in the order authorizing the work, or the Owner may require the Contractor to do such work on a force account basis to be compensated in the following manner:

- a. *Labor.* For all labor and foremen in direct charge of the specific operations, the Contractor shall receive the rate of wage (or scale) agreed upon in writing before beginning work.
- b. *Bond, Insurance, and Tax.* For property damage, liability, and workmen's compensation insurance premiums, unemployment insurance contributions and social security taxes on the force account work, the Contractor shall receive the actual cost, to which cost six percent (6%) will be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance, and tax.
- c. *Materials.* For materials accepted by the Engineer and used, the Contractor shall receive the actual cost of such materials delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as herein set forth), to which cost fifteen percent (15%) will be added.
- d. *Equipment.* For any machinery or special equipment (other than small tools) including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is in operation on the work, to which rental sum fifteen percent (15%) will be added.
- e. *Miscellaneous.* Additional allowance will be made for general superintendence, the use of small tools, or other costs for which a price will be agreed upon in writing before such work is begun.
- f. *Compensation.* The Contractor's representative and the Engineer shall compare records of the cost of work done as ordered on a force account basis.
- g. *Statements.* No payment will be made for work performed on a force account basis until the Contractor has furnished the Engineer / Owner with duplicate itemized statements of the cost of such force account work detailed as follows:
 1. Name, classification, date, daily hours, total hours, rate, and extension for each laborer and foreman.
 2. Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

3. Quantities of materials, prices, and extensions.
4. Transportation of materials.
5. Cost of property damage, liability and workmen's compensation insurance premiums, unemployment insurance contributions, and social security tax.

Statements shall be accompanied and supported by receipted invoice for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices the Contractor shall furnish an affidavit certifying that such materials were taken from his stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

The additional payment, based on the percentage stated above, shall constitute full compensation for all items of expense not specifically designated. The total payment made as provided above shall constitute full compensation for such work.

9.005 Eliminated Items. Should any items contained in the proposal be found unnecessary for the proper completion of the work, the Engineer may, upon written order to the Contractor, eliminate such items from the Contract, and such action shall in no way invalidate the Contract. When a Contractor is notified of the elimination of items, he will be reimbursed for actual work done and all costs incurred, including mobilization of materials prior to said notification.

9.006 Partial Payments. Partial payments will be made at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the Contractor and verified by the inspector and submitted to the Engineer, of the value of the work performed and materials complete in place in accordance with the Contract and for materials delivered in accordance with Section 9.007.

No partial payment will be made when the total value of the work done since the last estimate amounts to less than \$500.00.

From the total, as stated in the Special Conditions Section 4.008, of the amounts ascertained as payable, an amount will be deducted and retained by the Owner until after completion of the entire Contract in an acceptable manner.

9.007 Payment for Material on Hand. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided the materials meet the requirements of the plans and specifications when delivered in the vicinity of the project or stored in acceptable storage places. In any event, partial payments for material on hand shall not exceed the bid price.

No partial payment will be made on living or perishable plant materials until planted.

9.008 Payment of Withheld Funds. Attention is directed to Section 9.006, "Partial Payments" and in particular to the retention provisions of said Section.

Upon the Contractor's request, the Owner will make payment of funds withheld from progress payments if the Contractor deposits in escrow securities eligible for the investment of Owner funds or bank certificates of deposit, upon the following conditions:

- a. The Contractor shall bear the expenses of the Owner and the Owner Treasurer in connection with the escrow deposit made.
- b. Securities or certificates of deposit to be placed in escrow shall be subject to approval of the Owner and unless otherwise permitted by the escrow agreement, shall be of a value of at least 100 percent of the amounts of retention to be paid to the Contractor pursuant to this section.
- c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.
- d. The Contractor shall obtain the written consent of the Surety to such agreement.

9.009 Acceptance and Final Payment. When the project has been accepted as provided in Section 5.016, the Engineer will prepare the final estimate of the quantities of the various classes of work performed. If the Contractor approves the final estimate, or if he files no claim within thirty (30) days of receiving the final estimate, the Owner will process the estimate for final payment. With approval of such final estimate by the Contractor, he will be paid the entire sum found to be due after deducting all previous payments and all amounts to be retained or deducted under the provisions of the Contract.

If the Contractor files a claim in accordance with Contract requirements, it shall be submitted in writing in sufficient detail to enable the Engineer to ascertain the basis and amount of such claim. In such cases the final sum determined by the Engineer to be due will be paid pending study of the claim. Upon final adjudication of the claim any additional payment determined to be due the Contractor will be placed on a supplemental estimate and processed for payment.

All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

PART III - CONSTRUCTION SPECIFICATIONS

SECTION 1 HOT MIX ASPHALT PAVEMENTS

1.001 General Description. These specifications cover the requirements for the construction of Superpave Hot Mix Asphalt pavements. They include the general requirements for the construction of one or more lifts of Hot Mix Asphalt Pavement on a prepared surface. The work shall consist of the preparation of the Hot Mix Asphalt (HMA) meeting the requirements herein, and the placement of the HMA to the lines, grades, thickness and typical cross sections shown on the plans or established by the engineer. When more than one lift is required, each lift shall be compacted to the required density prior the placement of the next lift.

In these specifications the following terminology listed in Table 1.001.1 defines the traffic and volume levels for the different designations.

Table 1.001.1 Traffic and Volume Designation

Designation	Volume and Loading Level
Low	≤ 300,000 ESALs*
Moderate	> 300,000 to ≤ 10,000,000 ESALs
High	> 10,000,000 ESALs
Trails and Pathways	< 100,000 ESALs - able to accommodate a 4000 lb vehicle for safety and maintenance purposes
Parking Lots	25 % of volume used for entrance roadways

*ESAL's = Equivalent Single Axle Loads

1.002 Materials. The HMA shall be composed of a mixture of aggregate, approved filler or additives, asphalt binder and reclaimed asphalt pavement (RAP), when permitted. The materials used in the manufacture of HMA shall meet the following requirements.

A. Aggregates. Aggregates shall be of uniform quality, clean, hard, durable particles of crushed stone, crushed gravel, natural gravel or crushed slag free from clay balls, vegetable matter or other deleterious materials meeting the requirements in the following table.

Aggregates meeting the requirements in Table 1.002.1 shall be used to develop the Job Mix Formula (JMF) for the HMA mixture. The aggregate should be composed of angular, coarse textured, cube shaped particles. Natural sand may be used to obtain gradation of the blended aggregate mixture but should not exceed more than 25%. If the percent of aggregate passing the #4 sieve is greater than 10% by weight of the individual aggregate sample, Plasticity will be determined in accordance with AASHTO T 90. The gradation of the aggregates used in the mixture shall meet the criteria shown in the Aggregate Master Range Table, Table 1.002.2, and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa, but shall be well graded from coarse to fine. The nominal size aggregate used in the HMA mixture shall not be more than one-third ($\frac{1}{3}$) the thickness of the uncompacted HMA lift being constructed.

Table 1.002.1 Aggregate Properties

Property	Test Procedure	Coarse Retained on #4 Sieve	Fine Passing the #4 Sieve
Fine Aggregate Angularity Traffic Level Low, Moderate, Trails and Pathways, Parking lots	CP ¹ -L5113 Method A		40% Minimum
Traffic Level Moderate, High			45% Minimum
Fractured Faces (minimum of 2)	CP-45	70% Minimum	
LA Abrasion	AASHTO ² T 96	45% Maximum	
Flat and Elongated Pieces	AASHTO M 283	10% Maximum	
Sodium Sulfate Soundness	AASHTO T 104	12% Maximum Combined Coarse and Fine	
Sand Equivalent	AASHTO T 176		45% Minimum

¹CP designates Colorado Department of Transportation material Testing Procedures

²AASHTO designates American Association of State Highway and Transportation Officials testing procedures

Table 1.002.2 Aggregate Master Range Table for Hot Mix Asphalt Mixtures

Sieve Size	Percent by Weight Passing Square Mesh Sieves		
	Grading S	Grading SG	Grading SX
1½"		100	
1"	100	90 - 100	
¾"	90 - 100		100
½"			90 - 100
⅜"			
#4			
#8	23 - 49	19 - 45	28 - 58
#30			
#200	2 - 8	1 - 7	2 - 10

B. Mineral Filler. If mineral filler is required to meet the JMF it shall conform to the requirements of AASHTO M 17. It shall consist of rock dust, slag dust, hydrated lime, hydraulic cement, fly ash or other suitable mineral matter. Mineral filler shall have a plasticity index not greater than four (4) excluding hydrated lime and hydraulic cement. Mineral filler shall meet the grading limits shown in Table 1.002.3. The maximum amount of allowable Hydrated lime or Hydraulic Cement shall not exceed 3% by weight of mix.

Table 1.002.3 Mineral Filler Grading Limits

Sieve Size	Mass Percent Passing
#30 (600 µm)	100
#50 (300 µm)	95 - 100
#200 (75 µm)	70 - 100

C. Additives. Additives to the mineral aggregate shall be added if the asphalt binder will not coat or stick to the aggregates. Additives shall be either Hydrated Lime or Anti-stripping Agents as approved by CDOT. The Contractor will provide an anti-strip (liquid or mineral) agent as necessary to meet an Index of Retained Strength (AASHTO T 165, T 167 or Lottman Procedure T 283) of 80% minimum for the mix design and 70% minimum for production.

1. Hydrated Lime. Hydrated lime shall conform to ASTM C 207, Type N. The residue retained on a #200 (75µm) sieve shall not exceed 10% when determined in accordance with ASTM C 110.

D. Reclaimed Asphalt Pavement. Reclaimed Asphalt Pavement (RAP) shall be allowed in the HMA mixture. It shall be of uniform quality and gradation with a maximum size particle no greater than the maximum size allowed in the HMA mixture. HMA mixtures containing RAP shall meet the same gradation requirements as a virgin HMA mix. HMA mixtures containing less than 15% RAP need only to take into account the gradation of the RAP so that the final mixture meets the requirements of the JMF. HMA mixtures containing more than 15% but less than 25% RAP, need to take into account the gradation of the RAP but also the asphalt binder grade. If the contractor desires to increase the use of RAP, the request must be made and approved by the engineer/ owner in writing specifying the amount of RAP to be used in the mixture, prior to submitting the mixture for preliminary approval.

E. Asphalt Binder. Performance Graded asphalt binders are listed in Table 1.002.4, Typical Asphalt Binders for Colorado, and shall meet the requirements listed in Table 1.002.5, Properties for Performance Graded (PG) Binders. Any asphalt binder supplied must be from an approved source. An approved source for asphalt binders has to be certified by the Colorado Department of Transportation.

Table 1.002.4 Typical Asphalt Binders for Colorado

Traffic Condition	Non-modified Binders	Modified Binders
Low	PG 58-28	PG 58-34
Moderate	PG 64-22	PG 64-28
High		PG 76-28
Trails and Pathways	PG 58-28	
Parking Lots	PG 64-22	

Note: Any other Performance Grade binder allowed shall meet the Asphalt Institute's SP-1 binder specification. The grade of PG binder used in plant produced material may be changed by 1 (6 degree C) temperature grade on either the high or low end from that used in the mix design without requiring a new mix design. For example, if the mix design used a PG 64-22, then a PG 58-28 would be allowed without verification.

Note to Engineer: Due to the large variation in geography, elevation, traffic loadings and climate in Colorado, care should be given to select the right Performance Graded (PG) asphalt binder. Engineers should work with the local asphalt producers to understand the local issues of asphalt binder availability, use, economics, and plant production capability.

Table 1.002.5 Properties of Performance Graded Asphalt Binders

Property	PG Graded Binder Requirements					AASHTO Test No.
	58-34	58-28	64-22	64-28	76-28	
Original Binder Properties						
Flash Point Temperature, °C, minimum	230	230	230	230	230	T 48
Viscosity at 135 °C, Pa•s, maximum	3	3	3	3	3	TP 48
Dynamic Shear, Temperature °C, where $G^*/\sin @ 10 \text{ rad/sec} \geq 1.00 \text{ kPa}$	58	58	64	64	76	TP 5
Ductility, 4°C (5cm/min) cm, minimum				50		T 51
Toughness, joules, minimum				12.4		CP L-2210 ¹
Tenacity, joules, minimum				8.5		CP L-2210 ¹
RTOF Residue Properties AASHTO T 240						
Mass Loss, percent maximum	1	1	1	1	1	T 240
Dynamic Shear, Temperature °C where $G^*/\sin @ 10 \text{ rads} \geq 2.20 \text{ kPa}$	58	58	64	64	76	TP 5
Elastic Recovery, 25 °C, percent minimum					50	CP L-2211 ¹ Method A
Ductility, 4 °C (5 cm/min) cm, minimum				25		T 51
Pressure Aging Vessel Residue Properties, Aging Temperature 100 °C PP 1						
Dynamic Shear, Temperature °C where $G^*/\sin @ 10 \text{ rads} \leq 5000 \text{ kPa}$	16	19	25	22	28	TP 5
Creep Stiffness, @ 60 s, test Temp. In °C	-24	-18	-12	-18	-18	
S, maximum, MPa	300	300	300	300	300	TP 1
m-value, minimum	0.3	0.3	0.3	0.3	0.3	TP 1
Direct Tension, Temp. in °C, @ 1mm/min. where failure strain $\geq 1.0\%$	-24	-18	-12	-28	-18	TP 3

¹CDOT Test Method

The Contractor shall provide to the Owner acceptable "Certification of Compliance" of each applicable asphalt binder grade that will be used on the project. Binder grades other than those shown above shall not be used unless the proposed binder and the mix design are approved by the engineer.

- 1. Prime Coat Material Requirements.** Prime coat material shall either be an Emulsified Asphalt Prime Coat or a Penetrating Priming Stabilizer. Emulsified Asphalt Prime Coat and Penetrating Priming Stabilizer shall conform to the requirements in Table 1.002.6 Requirements for Prime Coat Materials.

Note to Engineer: Emulsions used as a prime coat will have very little penetration, if any, into the layer they are placed on, therefore, the use of an emulsion as a prime coat should not be considered as an acceptable alternative and should be discouraged.

Table 1.002.6 Requirements for Prime Coat Materials

Asphalt Emulsion Prime			Penetrating Priming Stabilizer			
Property	Requirement	AASHTO Test #	Property	Requirement		AASHTO Test #
				Max.	Min.	
Saybolt Furol Viscosity at 50 °C (122 °F), s	15 -150	T 59	Flash (T.O.C.). °C (°F)	38 (100)		T 79
Settlement	1% Max.	T 59	Saybolt Furol Viscosity at 50 °C (122 °F), s	30	100	T 72
% Residue	65% Min.	T 59 to 260 °C (500 °F)	Kinematic Viscosity at 60 °C, mm/s (140 °F, centistokes)	60	212	T 201
Oil Distillate by Volume %	7% Max.	T 78	Residue by evaporation, %	55		T 59
Test on Residue from Distillation:			Tests on Residue:			
Solubility in Trichloroethylene, %	97.5 Min.	T 44	Penetration, 25 °C (77 °F), 5 sec, mm	25		T 49
Tests on Residue from Cutback Distillation to 360 °C (680 °F):			Softening Point Ring & Ball, °C (°F)		71 (160)	7 53
Viscosity, 60 °C, mm/s (140 °F, centistokes)	3000 (3000) Min.	T 202				

2. Tack Coat Material Requirements. Tack coat material shall be an Emulsified asphalt conforming to AASHTO M 140 or M 208 for the designated grades.

F. Material Acceptance. Prior to the delivery of materials to the job site, the Contractor shall submit certification tests to the engineer, for his approval, showing all materials to be used on the project meet the appropriate specification. The certification shall show the appropriate test(s) for each material, the test results and a statement that the materials meet the appropriate specification. If the Engineer request samples of the materials for verification testing prior to and/or during the production of the HMA mixture, the Contractor shall deliver the requested materials to the owner's designated representative within 2 days of receiving the request.

1.003 Hot Mix Asphalt Mixture Composition. The HMA mix shall be composed of well-graded aggregate, mineral filler, anti-stripping agent (if required and approved) and asphalt binder.

A. Mixture Design. The Contractor shall submit the mix design (JMF) to the Engineer for his approval seven (7) days prior to the beginning of paving operations. The mix design(s) of each mixture(s) to be used on the project shall be approved prior to the start of any paving operation. The mix design(s) shall be developed using the CDOT Superpave mix design procedures and shall be stamped by an engineer licensed in the State of Colorado practicing in this field.

The Contractor shall submit as part of the mixture design the following items:

1. Source(s) of materials.
2. Aggregate gradation, specific gravity, source and description of individual aggregates and the final mixture blend.
3. Aggregate physical properties.
4. Source and grade of Performance Graded binder along with certification of binder.
5. Proposed JMF: aggregate and additive blending, final gradation shown on a 0.45 power graph, optimum binder content.

6. Mixing and compaction temperatures.
7. N_{ini} and N_{des}
8. Mixture properties determined at the minimum of four binder contents and interpolated at optimum and graphs showing mixture properties versus binder content.
9. Anti-stripping agent - product name and manufacturer.
10. Percent of RAP if used in the mixture.

The mix design(s) shall meet the requirements of Table 1.002.2 Aggregate Master Range Table for Hot Mix Asphalt Mixtures, Table 1.002.6 Binder Grades of HMA Mixtures, Table 1.003.1 Superpave Mixture Properties and Table 1.003.2 Voids in Mineral Aggregate. The HMA mixture(s) will be designed for the traffic level, nominal aggregate size and binder grade designated or as specified in the Special Provisions.

Table 1.003.1 Superpave Volumetric Mixture Properties

Test Property	Traffic Levels		
	Trails and Pathways	Low, Moderate, Parking Lots	High
Traffic Level - Design period ESALs	< 100,000	< 3 million	>3 million
Initial Gyration, N_{ini}	6	7	8
Air voids @ N_{ini} (FOR INFORMATION ONLY)	-	-	-
Air voids @ N_{des}		3% to 5%	
Design gyration, N_{des}	50	75	100
Hveem Stability, CP-L 5106	NA	28 min.	30 min.
Voids Filled w/Asphalt, VFA, MS-2	70 - 80	65 - 78	65- 75

Table 1.003.2 Voids in Mineral Aggregate

Nominal Maximum Particle Size ¹	Minimum VMA - %		
	Design Air Voids - %		
	3.0	4.0	5.0
½"	13.7	14.7	15.7
¾"	12.7	13.7	14.7
1"	11.7	12.7	13.7

¹The nominal maximum particle size is one sieve size larger than the first sieve to retain more than 10 percent

If the Contractor proposes to use RAP in the HMA mixture(s), the resulting mixture(s) must meet the same requirements as a mixture(s) that do not contain RAP. The RAP shall be of uniform quality. The maximum size of the RAP shall be 95% passing the 1½" sieve prior to the introduction into the mixer.

B. Plant Mix Production Verification. Mixture(s) being produced by the plant shall be verified prior to the start of the placement of the mixture(s). Verification shall be performed by a **LabCAT Level C** certified technician(s) to verify the volumetric properties of the mixture(s). If the mixture(s) has been produced for another project within the last 90 days, verification results from that project can be submitted for this verification. Superpave mix design volumetric tolerances for the approved HMA mixture(s) shall be within the limits shown in Table 1.003.3.

Table 1.003.3 HMA Mixture Design Verification Tolerances

Property	Tolerance
Air Voids	± 1.2%
VMA	± 1.2%
Asphalt binder content	± 0.5%
Stability	Applicable minimum

1.004 Hot Mix Asphalt Pavement Construction.

A. Pre-paving Meeting. Prior to the start of the paving operation, all key parties involved in the supply, haul, placement, compaction, inspection and quality control and quality acceptance (QC/QA) of the HMA pavement shall attend a pre-paving meeting to go over procedures and acceptance of the HMA pavement. The meeting may be scheduled by the Engineer. Areas of responsibility and contact names and phone numbers will be shared.

B. Paving Schedule. The Contractor shall arrange the work in such a manner as to cause a minimum of inconvenience to the traveling public and the abutting property owners. The Contractor shall submit to the Engineer a plan of this operation. In general, the Contractor shall be allowed to proceed as he proposes. However, the Engineer/ Owner retains the authority to request the Contractor to schedule the proposed operation in another manner if such a change in schedule is to the benefit of the owner and beneficial to the interests of a good project provided the Engineer / Owner can substantiate the changes to the contractor and the contractor agrees with the proposed changes in schedule or methods. The Contractor shall arrange to have the haul vehicles operate over roads which will not be damaged by such vehicles when ever possible. The Contractor shall provide all necessary Traffic Control in conformity with the current MUTCD requirements. Traffic Control shall be paid for as specified in the Contract Documents

C. Weather Restrictions. The HMA mixture shall be place only on properly constructed surfaces that are dry, unfrozen surfaces and only when weather conditions allow for proper handling and compacting of the mixture. The HMA shall be placed in accordance with the temperature limits shown in Table 1.004.1 and only when weather conditions permit the pavement to be properly placed and compacted as determined by the Engineer. Placement and compaction of the HMA may be accomplished at temperatures less that shown in Table 1.004.1 when meeting the compaction requirements stated herein can be obtained. Temperature requirements may be reviewed on a project by project basis by the Engineer / Owner at the request of the contractor, to facilitate placement of Hot Mix Asphalt.

Table 1.004.1 HMA Pavement Placement Temperature Limitations

Paving Course	Thickness	Minimum Surface and Air Temperature °F
Surface	All	40*
Subsurface	< 3"	40
Subsurface	≥ 3"	32

* - denotes modified asphalt binder HMA surface mixes shall be placed at a minimum of 50 °F air temperature.

D. HMA Production Facilities. The HMA plant used to produce the asphalt aggregate mixture shall meet the requirements of AASHTO M 156 and shall have adequate capacity and be maintained in good mechanical condition. The plant shall control dust, smoke, or other contaminants such that it meets the Colorado Air Quality Control Act, Title 25, Article 7, CRS and all regulations promulgated thereunder.

1. Truck Scales. When necessary and paid for by the ton, the HMA mixture shall be weighed on approved scales furnished by the Contractor or on public scales at the Contractor's expense. Such scales shall be inspected and sealed as required by local laws or requirements as often as necessary to assure their accuracy. No load shall be above the legal limit.

2. Inspection of Plant. The Engineer or his authorized representative shall have access, at all times, to all areas of the plant for checking the adequacy of the equipment; inspecting the operation of the plant; verifying weights, proportions and material properties and checking the temperatures maintained in the preparation of the mixtures.

3. Storage. HMA mix may be stored provided that the characteristics of the mixture are not altered by such storage. If storing or holding of the mixture causes segregation, excessive heat loss, or adversely affects the quality of the finished product, corrective action shall be taken. Unsuitable mixture, as determined by laboratory testing and inspection to determine the mixture does not meet the project requirements, shall be disposed of at the Contractors expense. Use of surge bins or storage bins for temporary storage of hot HMA mixtures will be permitted as follows:

1. The HMA mixture may be stored in surge bins for period of time not to exceed 3 hours.
2. The HMA mixture may be stored in insulated storage bins for a period of time not to exceed 45 hours, unless approved.
3. The mix drawn from the bins shall meet the same requirements as the mix loaded directly into trucks. If the Engineer determines by laboratory testing and inspection to determine the mixture does not meet the project requirements, that there is an adverse effect on the quality of the finished product due to the temporary storage, corrective action shall be taken. Unsuitable mixture, as determined by laboratory testing and inspection to determine the mixture does not meet the project requirements, shall be disposed of at the Contractor's expense.

E. Hauling Equipment. Trucks used for hauling HMA mixtures shall have tight, clean and smooth metal beds. To prevent the mixture from adhering to them, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution or other approved release agent material. Each truck shall have a suitable cover to protect the mixture from adverse weather and to maintain temperature of the mixture when required by project specifications, state or local requirements, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds may be insulated or heated and covers shall be securely fastened when required and used.

F. Placement Equipment. Pavers shall be self-propelled, with an activated screed assemblies, heated as necessary, to spread and finish the HMA mixture to the specified width, thickness, smoothness and grade shown. The pavers shall have sufficient power to propel themselves and the hauling equipment without adversely affecting the finished pavement surface.

The receiving hopper of the paver shall have sufficient capacity to permit a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed without segregation. The screed shall effectively produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture.

The paver shall be capable of operating at consistent speeds to apply the mixture in an even, continuous layer avoiding stop and go operations whenever possible. If an automatic grade and slope control device is used, the paver shall be equipped with a control system capable of automatically maintaining the specified screed elevation. The control system shall be automatically actuated from a reference line or through a system of mechanical sensors or sensor-directed mechanisms which will maintain the paver screed at a predetermined transverse slope and at the proper elevation to obtain the required surface. The controls shall be capable of maintaining the screed at the desired transverse slope within ± 0.1 percent.

If the Contractor fails to obtain and maintain the specified surface tolerances, the paving operations shall be suspended until satisfactory corrections, repairs, or equipment replacements are made.

G. Compaction Equipment. The hot mix asphalt shall be compacted by rolling. Both steel wheel and pneumatic tire rollers may be required. The number and type, and weight of rollers furnished shall be sufficient to obtain the required density while the mixture is in a workable condition. Compaction shall begin immediately after the mixture is placed and be continuous until the required density is obtained. When the mixture contains unmodified asphalt cement (PG 58-28 or PG 64-22) or modified (PG 58-34), and the surface temperature falls below 185°F, further compactive effort should not be applied unless approved. If the mixture contains modified asphalt cement (PG 78-28 or PG 64-28) and the surface temperature falls below 230°F, further compactive effort should not be applied unless approved. All roller marks should be removed with the finish rolling. Use of vibratory rollers with the vibrator on should not be used during surface course final rolling and will not be permitted on any rolling on bridge decks covered with a waterproofing membrane. Pavement shall be compacted to a density of $94\% \pm 2\%$ of the maximum theoretical density, determined according to theoretical maximum density (CDOT procedure CP-51 may be referenced). Field density determinations by bulk specific gravity of compacted bituminous mixtures using SSD specimens (CDOT procedure CP-44 may be referenced) or density and relative compaction of in-place bituminous pavement mixtures by the nuclear method (CDOT procedure CP-81 may be referenced). The use of equipment which causes excessive crushing of the aggregate will not be permitted.

H. Hot Mix Asphalt Mixture Production. The HMA mixture shall be produced in a plant meeting the requirements of Section 1.004 C. The dried aggregates and asphalt binder shall be combined in the plant in the quantities required to meet the job mix formula.

1. Preparation of the Asphalt Binder. The asphalt binder shall be heated in a manner that will avoid local overheating and provide a continuous supply of the HMA material to the plant at a uniform temperature. The temperature of the asphalt binder delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles but shall not exceed the maximum temperature prescribed by the asphalt refiner.

2. Preparation of the Aggregate. The aggregate for the mixture shall be dried and heated prior to introduction into the mixer or mixing area of the drum. The temperature of the aggregate and mineral filler shall not exceed 350 °F when the asphalt is added. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

When hydrated lime is required to achieve complete and uniform coating of the aggregate by the asphalt binder it shall be added to the aggregate in the form of either a slurry or a dry form and then thoroughly mixed in an approved pug mill. The slurry shall contain a minimum of 70% water by weight. If dry hydrated lime is used, it shall be added to the wet aggregate at a minimum of 2% above saturated surface dry and then mix thoroughly in an approved pug mill. Care should be taken to not add more moisture to the aggregate than required to insure proper coating.

3. Preparation Hot Mix Asphalt Mixture. The heated and dried aggregates and the asphalt binder shall be combined by weight in the mixer in the amount specified by the job mix formula. The materials shall be mixed until the aggregate is completely and uniformly coated, and the asphalt cement is uniformly distributed throughout the aggregate. Baghouse fines shall be fed back to the mixing plant in a uniform and continuous manner to maintain uniformity in the mixture. The baghouse, fines feeder, auger, and related equipment, shall be in good working condition and operated in accordance with manufacturer's recommendation. If visual inspection and testing determines that non-uniform operation of the equipment is producing a mixture which does not meet the project specification paving operations may be suspended until the Contractor takes appropriate action.

The temperature of the HMA mixture, for different asphalt binder grades, when discharged from the plant shall be within the maximum and minimum limits shown in Table 1.004.2. The HMA mixture shall be produced at the lowest temperature within the specified temperature range that produces a workable mix and provides for uniform coating of aggregates (95 percent minimum in accordance with AASHTO T 195), and allows the required compaction to be achieved.

Table 1.004.2 HMA Mixture Mixing Temperature Limits

Asphalt Binder Grade	Minimum Discharge Temperature	Maximum Discharge Temperature
PG 58 - 28	275 °F	305 °F
PG 64 - 22	290 °F	320 °F
PG 64 - 28	300 °F	330 °F
PG 76 - 28	320 °F	350 °F

The temperature of the mixture delivered to the paver hopper shall not be less than 235 °F for unmodified material and not less than 275 °F for modified material. All loads shall be delivered continuously in covered vehicles as required by state, or local regulations or by project requirements.

I. Preparation of the Underlying Surface. The HMA mixture shall be place on a prepared surface. Prior to the placing of the mixture, irregularities in the underlying surface shall be brought to uniform grade and cross section. The surface shall be cleaned of all dust and debris. A prime or tack coat shall be applied if required by the Special Provisions.

Contact surfaces of curbing, gutters, manholes, valve boxes and other structures coming in contact with the HMA mixture shall be coated with a uniform coating of asphaltic material prior to the placement of the HMA mixture against them.

1. Prime Coat. This work consists of preparing and treating the surface that will be receiving the HMA mixture in accordance with these specifications and in conformity with the lines shown on the plans or established by the Engineer.

The asphaltic material for all prime coats shall meet the requirements of Section 1.002.E.2.

Note to Engineer: When specifying materials to be used on a project the engineer should be aware of the availability of the specific material and how it should be used. Manufacturers recommendations should be followed for the uses of any material.

Prime coats shall be applied in accordance with the manufacturers recommendation or when weather conditions would prevent the proper construction of the prime coat.

The Contractor shall provide equipment for heating and uniformly applying the prime coat material. The distributor or equipment for applying the prime coat shall be capable of uniformly spraying the material at even temperature and uniform pressure on variable widths of surface up to 15 feet in width at readily determined and controlled rates from 0.3 to 0.4 gallons per square yard at an allowable variation from any specified rate of ± 0.02 gallons per square yard.

The prime coat shall be applied in a uniform and continuous spread. When traffic is maintained, not more that ½ of the width of the section shall be treated in one application, or sufficient width shall be left to adequately handle traffic. Care shall be taken so the application of the prime coat materials the junctions of spreads is not in excess of the specified quantity. Excess material shall be removed or distributed. Prime coat shall not be place on any surface where traffic will travel on the freshly applied material.

The rate of application, temperatures and areas to be treated shall be as stated in the Special Provision or as directed by the Engineer and shall be approved prior to the application of the prime coat.

Note to Engineer/ Owner: Emulsions used as a prime coat will have very little penetration, if any, into the l;ayer they are placed on, therefore, the use of an emulsion as a prime coat should not be considered as an acceptable alternative and should be discouraged

2. Tack Coat. This work consists of preparing and treating the surface that will be receiving the HMA mixture in accordance with these specifications and in conformity with the lines shown on the plans or established by the Engineer. Before applying the tack coat, surfaces shall be thoroughly cleaned of all dirt and other debris to insure adequate bond between tack surface and HMA mat. The surface shall be allowed to cure to permit drying and setting of the tack coat prior to the paving operation.

The asphaltic material for all tack coats shall meet the requirements of Section 1.002.E.3. The emulsified asphalt shall be diluted 1:1 with water and applied at 0.20 ± 0.01 gallons per squared yard of diluted material.

Tack coats shall not be applied (1) when the surface to receive the tack coat is wet or when weather conditions would prevent the proper construction of the tack coat.

The Contractor shall provide equipment for heating and uniformly applying the tack coat material. The distributor or equipment for applying the tack coat shall be capable of uniformly spraying the material at even temperature and uniform pressure on variable widths of surface up to 15 feet in width at readily determined and controlled rates from 0.05 to 0.1 gallons per square yard. The amount of tack to be placed will vary depending on the condition of the surface on which the tack will be applied. A dry, cracked surface will require a greater amount of tack coat compared to a flushed or bleeding surface. The coating should be similar for all surfaces.

The prime coat shall be applied in a uniform and continuous spread. When traffic is maintained, not more than $\frac{1}{2}$ of the width of the section shall be treated in one application, or sufficient width shall be left to adequately handle traffic. Care shall be taken so the application of the tack coat materials at the junctions of spreads is not in excess of the specified quantity. Excess material shall be removed or distributed. Tack coat should not be placed on any surface where traffic will travel on the freshly applied material.

The rate of application, temperatures and areas to be treated shall be as stated in the Special Provision or as directed by the Engineer and shall be approved prior to the application of the prime coat.

Prime and Tack Coat Requirements. The contractor shall be required to use **CSS-1h** emulsified asphalt material for the tack coat. The tack coat will be applied at the rate specified by the manufacturer.

The requirements for a Prime Coat (if used) shall conform with 1.002 E.2 Prime Coat Materials.

a. Asphalt Cement. Asphalt Cement should be permitted to be used for "Tack Coat". This material "sets up" immediately, tracks less than, and is generally less expensive than the emulsified asphalt.

J. Patching. When patching existing pavement all unsuitable material shall be removed. The excavated area shall be backfilled with base material to the thickness as directed in the plans or by the Engineer and compacted to the specified density for the contracted project. The HMA patch shall be a minimum of four (4) inches or equal to the existing pavement thickness, whichever is greater.

Existing pavement may be rough cut initially in conjunction with trenching; however, a square even vertical cut shall be made in the existing HMA pavement after placement of backfill and prior to pavement replacement. The square vertical cut shall be made at a minimum of six (6) inches back from the trench line into good pavement. Before placement of the new pavement, the cut edges shall be thoroughly cleaned and a tack coat shall be uniformly and evenly applied to the vertical faces. The patch shall be made by placing hot mix asphalt upon the compact base material and thoroughly compacted to the required density.

In large patches or whenever possible, a self-propelled paving machine shall be used to place the HMA mixture. In small patches, the HMA mixture shall be hand placed or placed with a spreader box without separation of the mixture. The material shall be placed to the grade and thickness required to allow for compaction after rolling. The HMA material shall be compacted using the number, weight and type of compactors required to provide 92 % to 96 % of the maximum density of the mixture (AASHTO T 209). Rolling shall continue until all roller marks are eliminated and no further compression is possible in the pavement. After rolling the surface a straight-edge or a string line shall be used to check grade and riding quality of the patch.

K. Hauling of HMA Mixture. Transporting the HMA mixture from the plant to the job site shall be done in vehicles meeting the requirements of Section 1.004.D. The Contractor shall have an adequate number of vehicles so delivery of the HMA mixture can be continuous with a minimum of interruptions of material to the paving equipment in order for a continued non-stop paving operation and before the temperature of the HMA material falls below the temperatures stated in 1.004.H.3 or satisfactory compaction temperature. Deliveries shall be planned so the placing and compaction of all the mixture prepared for one day's operation can be completed during daylight, or unless adequate artificial lighting is provided by the Contractor and approved by the Engineer. Hauling over newly placed mixture shall not be permitted until the mixture has been compacted as specified and allowed to cool sufficiently so vehicular traffic does not damage or deform the final lift.

L. Placing of HMA Mixture. The HMA mixture shall be placed using equipment meeting the requirements in Section 1.004.E to the established grade and required thickness over the entire width or partial width as practicable.

The mixture shall be laid upon an approved surface, spread and struck off to obtain the required grade and elevation after compaction. The Thickness of the mixture being placed should be such that after compaction is achieved, the finished mat will be even with the existing adjacent mat. Raking is discouraged and should not be allowed if it is causing segregation in the mat. Casting or raking that causes any segregation will not be permitted.

On areas where the use of mechanical spreading and finishing equipment is impracticable, the mixture shall be carefully dumped, spread, raked, screeded, and luted by hand tools to achieve the required compacted thickness. Carefully move or minimally work the HMA mix with the use of rakes, lutes, or shovels to avoid segregation. Mixtures made with modified asphalt cement require more rapid completion of handwork areas than for normal mixtures. Hauling and placement sequences shall be coordinated so that the paver is in constant motion. Excessive starting and stopping should be avoided. If stopping and starting of the paving operation can not be avoided, it should be done as rapidly as possible within reason. A construction joint shall be placed any time the paver completes a days production or for breaks in the paving operation, if the screed drops enough to cause a surface dip in violation of Section 1.004.M.1.b. or the mat temperature falls enough that the compaction can not be obtained as specified.

When echelon paving is permitted and approved by the Engineer, production of the mixture shall be maintained so pavers can be used in echelon to place the wearing course in adjacent lanes.

The mixture shall be laid upon the approved base surface, spread and struck off to the grade and elevation required. Pavers shall be used to distribute the mixture over the entire surface except where hand placing is necessary.

On areas where the use of mechanical pavers cannot be used, the mixture shall be spread, raked and luted by hand tools. When materials is shoveled, no "slinging" of the shovel will be permitted. The hand placed material shall be smoothed and placed in a manner to achieve the required compacted thickness. If the machine laid mixture has been rolled, then the hand laid mixture shall be smoothed and placed in a manner to achieve the required compacted thickness. The majority of the raker's work shall be done with a lute rather than a tined rake.

1. Segregation. The Engineer will delineate the segregated areas to be evaluated and inform the Contractor of the location and extent of these areas within two calendar days, excluding weekends and holidays, of placement.

In each segregated area or group of areas to be evaluated, the Contractor shall take five 10" cores at random locations designated by the Engineer. In accordance with CP 75, the Contractor shall also take five 10" cores at random locations designated by the Engineer in non-segregated pavement adjacent to the segregated area. These cores shall be within 30 feet of the boundary of the segregated area and in the newly placed pavement. The coring shall be in the presence of the Engineer and the Engineer will take immediate possession of the cores. The Contractor may take additional cores at the Contractors expense.

Gradation of the aggregate of the cores will be determined by the Engineer in accordance with CP 46.

The core aggregate gradations from the segregated area will be compared to the core aggregate gradations of the corresponding non-segregated area.

Two key sieves of the core gradations from the segregated area will be compared to the core gradations from the corresponding non-segregated area to determine the difference. If differences for both key sieves exceed the allowable difference specified in the table below, the area is segregated.

Table for Segregation Determination

Mix Grading	Key Sieves	Allowable Difference, %
SX	#8, #4	9
S	#8, #4	9

Segregated areas in the top lift shall be removed and replaced, full lane width, at the Contractor's expense. The Engineer may approve a method equivalent to remove and replace that results in a non-segregated top lift. Segregated areas in lifts below the top lift, that are smaller than 50 square feet per 100 linear feet of lane width, will be corrected by the Contractor at the Contractor's expense in a manner acceptable to the Engineer. Segregated areas larger than 50 square feet per linear feet per 100 linear feet of lane width in any lift shall be removed and replaced, full lane width, by the Contractor at the Contractor's expense.

If the area is determined to be segregated, the coring will be at the expense of the Contractor. If the area is determined to be non-segregated, the Engineer shall reimburse the Contractor \$2,000 for obtaining the ten cores.

2. Lift Thickness. Each lift of uncompacted Hot Mix Asphalt pavement shall be of uniform thickness. The minimum compacted lift thickness shall be three times the nominal maximum aggregate size of the mixture. The maximum lift thickness shall be 3 inches unless the Contractor can demonstrate his ability to achieve required compaction of thicker lifts.

The final lift, when placed adjacent to guttering, shall extend ¼ to ½ inch above the lip of the gutter when compacted for a catch curb and gutter and shall be even with a spill curb and gutter at the time of construction.

3. Joint Construction. The formation of all joints shall be made in such a manner as to ensure a continuous bond between the courses. All joints shall have the same texture, and smoothness as other sections of the mat and meet the requirements for smoothness and grade.

The roller shall not pass over the unprotected end of the freshly laid mixture except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course.

The free edge of the paved pass shall be laid as straight as possible and to the satisfaction of the Engineer. This joint, if cold, shall be tack coated prior to placement of adjacent paving.

The new compacted mat shall overlap the adjacent previous placed mat no more than 1.5 inches. Excess overlap or thickness shall not be raked or cast onto the new mat, but shall be wasted by pulling back and removing. The hot edge shall be blocked or bumped in a smooth line consistent with the previous longitudinal edge. Minor raking will only be allowed to correct major grade problems or provide mix around manholes and meter covers.

a. Longitudinal Joints. The longitudinal joint in both a new pavement and an overlay pavement layer shall offset the joint in the layer immediately below by 6 inches. In multiple lift (3 lifts or more) construction the joint in any succeeding lift shall not be placed in line of any of the previous lifts. The joints in any pavement layer shall not fall in a wheel path. When required by the Engineer, the Contractor shall submit a longitudinal joint and pavement marking plan three days prior to the Pre-Paving Conference. The plan shall show the location and configuration of the proposed longitudinal joints and pavement markings, and shall detail the methods to be used in the field to establish a control line. When required by the Engineer for alignment control purposes, the Contractor shall use a continuous string line to delineate every longitudinal joint during paving operations. All exposed string line shall be picked up and disposed of at the end of each day's paving. Paving shall not commence until the plan has been approved in writing by the Engineer.

The joints in the top layer of pavement shall be located as follows unless otherwise approved in writing by the Engineer:

1. For two lane roadways, offset 6 to 12 inches from the center of pavement and from the outside edge of the travel lanes.

2. For roadways of more than 2 lanes, offset 6 to 12 inches from lane lines and outside edge of travel lanes.
3. If exposed to traffic, a full height taper no steeper than 2:1 is permissible.

Longitudinal joints shall not cross the centerline, lane lines or edge line unless approved by the Engineer.

b. Transverse Joints. When required by the Engineer for alignment control purposes, the Contractor shall submit a transverse joint plan showing the locations and the methods to be used to construct transverse joints. The Engineer must approve such plans prior to paving. Placing of the HMA mixture shall be continuous with a minimum of transverse joints.

Rollers should not pass over the unprotected end of a freshly laid mixture. Transverse joints shall be formed by cutting back on the previous run to expose the full depth of the course. Construction of a transverse joint will be the responsibility of the contractor and can be accomplished by many different methods. Tack coat material should be applied to contact surfaces of all joints just before additional mixture is placed against the previously compacted material.

The end of transverse joints should be located so they will be constructed with a full head of mix in front of the screed. When butt joints are constructed, runoff boards shall be used to support the roller on the downstream side of the joint. All tapered sections, rounded edges and segregated areas shall be removed to achieve a vertical face at the butt joint before paving is restarted.

When a tapered joint is required for traffic access, the ramp shall be removed back to a full depth before paving is restarted.

When restarting paving operations, the paver screed should be placed on starter blocks on the completed side of the transverse joint. The starter blocks should be of such height that the thickness of the mixture being placed after compaction is achieved, the finished mat will be even with the existing adjacent mat. Raking of this joint should be minimized.

4. Compaction. The hot mix asphalt shall be compacted by rolling. Both steel wheel and pneumatic tire rollers may be required. The number and type, and weight of rollers furnished shall be sufficient to obtain the required density while the mixture is in a workable condition. Compaction shall begin immediately after the mixture is placed and be continuous until the required density is obtained. When the mixture contains unmodified asphalt cement (PG 58-28 or PG 64-22) or modified (PG 58-34), and the surface temperature falls below 185°F, further compactive effort should not be applied unless approved. If the mixture contains modified asphalt cement (PG 78-28 or PG 64-28) and the surface temperature falls below 230°F, further compactive effort should not be applied unless approved. All roller marks should be removed with the finish rolling. Use of vibratory rollers with the vibrator on should not be used during surface course final rolling and will not be permitted on any rolling on bridge decks covered with a waterproofing membrane. Pavement shall be compacted to a density of 94% ± 2% of the maximum theoretical density, determined according to theoretical maximum density (CDOT procedure CP-51 may be referenced). Field density determinations by bulk specific gravity of compacted bituminous mixtures using SSD specimens (CDOT procedure CP-44 may be referenced) or density and relative compaction of in-place bituminous pavement mixtures by the nuclear method (CDOT procedure CP-81 may be referenced). The use of equipment which causes excessive crushing of the aggregate will not be permitted.

Note to Engineer: Depending on the mix and surface it is being placed, the use of a pneumatic tire roller might not be applicable.

The Contractor shall construct a control strip with production materials and equipment and shall determine the roll pattern to meet specified density and shall follow the pattern through out the paving operation or until conditions change. The density of the compacted mat shall be checked by the Contractor on a routine basis in order to determine if the roller pattern needs adjustment so that required finished mat density meets requirements.

Compaction shall begin immediately after the mixture is placed and be continuous until the required density is obtained. Compaction below a mat temperature of 185 °F will be permitted if compaction requirements have not been met and compaction can be accomplished without causing damage to the pavement.

The Contractor shall prevent the HMA mixture from adhering to the rollers by using detergent or other approved material.

The speed of the roller shall, at all times, be suitable to avoid displacement of the hot mixture and be effective in compaction. Any displacement occurring as a result of reversing the direction of the roller or from any other cause shall be corrected as quickly as possible.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand tampers or small mechanical hand compactors.

Any mixture that becomes loose and broken, mixed with dirt, contains extensive check-cracking or in any way is defective shall be removed and replaced with fresh HMA mixture and immediately compacted to conform to the surrounding area at the Contractor's expense. Skin patching should be discouraged and used only with the approval of the Engineer.

All roller marks shall be removed with the finish rolling. Use of vibratory rollers with the vibrator on will not be permitted during the final rolling of the surface course.

Pavement shall be compacted to a density of $94 \pm 2\%$ of the maximum theoretical density (CDOT CP-51 may be referenced).

M. Material Testing, Acceptance and Inspection. Acceptance of the work can be based on all or part of the following characteristics of the Hot Mix Asphalt mixture and completed pavement as well as Contractor's quality control test results, and specified in the project specific documents.

- Binder grade certification
- Binder Content
- Aggregate gradation
- Air Voids
- Voids in Mineral Aggregate (VMA)
- Mat density
- Mat smoothness

To determine conformance with the requirements herein, the Owner shall be responsible for acceptance testing for asphalt content, gradation and mat density. For projects greater than 20,000 tons of HMA, the owner may also be responsible for acceptance testing for air voids, voids in mineral aggregate (VMA), surface smoothness and mat density. Quality control testing of plant produced materials for material gradation and asphalt content shall be performed by the Contractor. All failing test shall be immediately reported to the Engineer. Test results from each day's production shall be completed and submitted to the Engineer within one day.

Personnel performing sampling and testing of Hot Mix Asphalt mixtures in the lab and field shall possess the appropriate LabCat Certification or combination of certifications for all sampling and testing performed issued by the Rocky Mountain Asphalt Education Center.

1. Acceptance Testing. Acceptance testing frequency and tolerance limits are shown in Table 1.004.3. Quality Control (QC) testing shall be done by the Contractor. Quality Assurance (QA) testing shall be done by the owner. The Agency shall have a fully and properly equipped asphalt laboratory or shall hire an independent testing laboratory for acceptance testing.

Table 1.004.3 Acceptance Testing

Test	Procedure	Specification Tolerance Limits	Frequency
Asphalt Content	AASHTO T 308-01 (CP-L 5120)	as per Table 1.003.3 +/- 0.5	1 per 1000 Tons or 1 per day min.
Gradation	AASHTO T 27-99 (CP 31A)	Table 1.004.5	1 per 2000 Tons or 1 per day min.
Air Voids	AASHTO T 269-97 (CP)	+/- 1.2 of design	1/day
Void in Mineral Aggregate	CP 48-95	+/- 1.2 of design	1/day
Percent Relative Compaction	CP 51-98	94% ± 2%	1/500 tons

a. Plant-Produced Material. On projects greater than 20,000 tons of HMA, plant produced material shall be tested for air voids and voids in mineral aggregate (VMA). On projects with < 20,000 tons of HMA, plant produced material shall be tested for gradation and asphalt content. Sampling may be at the plant or at the job site. A subplot will consist of:

- production not to exceed 1000 tons
- increments of 1000 tons
- one day's production

Note to Engineer: The use of air voids and VMA testing for acceptance requires additional sampling, testing, and the use of the gyratory compactor. Coordination with industry is recommended on these projects prior to final design.

Sufficient material for preparation of test specimens shall be obtained by the Contractor in accordance with CP 41-98. Samples shall be split with the owner's materials laboratory. For projects greater than 20,000 tons, one set of laboratory compacted specimens will be prepared for each at the number of gyrations required in Table 1.003.1. Each set of laboratory compacted specimens will consist of three test portions prepared from the same sample increment. The sample of HMA mixture may be placed in an oven in a covered metal container for not more than 30 minutes to maintain heat. The material shall be compacted at the temperature as specified in the job mix formula.

Testing of plant produced material for Air Voids and VMA shall be determined in accordance with the procedures shown in Table 1.004.3. For air voids determination, the theoretical maximum specific gravity of the mixture shall be determined in accordance with CP51-98.

Gradation and asphalt content testing shall be the responsibility of the Contractor and shall be part of the Contractor's quality control testing as stated in Section 1.004.K.2.b.

Acceptance of the plant produced material for air voids and VMA shall be if the materials are within the specification limits. One or more of the tested elements outside of the acceptable limits shall be subject to an engineering review and possible corrective action.

For projects where less than three samples are required under Section 1.004.K.1.a, acceptance of the material shall be based on the individual tests meeting the tolerances shown in Table 1.004.4 along with adherence to the job mix formula.

Table 1.004.4 Acceptance Limits for Air Voids, VMA and Density

Test	Lower Specification Tolerance Limit	Upper Specification Tolerance Limit
Air Voids total mixture ¹	2.8	5.2
VMA ¹	Table 1.003.3	NA
In-Place Density (percent relative compaction)	92	96

¹For projects greater than 20,000 tons of HMA

Acceptance of the plant produced material for gradation shall be accepted if the gradation of the aggregate falls within the limits shown in Table 1.004.5. Two consecutive gradations falling outside the limits or one gradation falling outside the Suspension Limits will warrant corrective action and shall be subject to engineering review.

Acceptance of the plant produced material for binder content, shall be accepted if the binder meets the specification in Table 1.004.3 for the binder grade specified.

Table 1.004.5 Control Limits for Individual Measurements

Sieve	Action Limit	Suspension Limit
1 in.	0 %	0 %
¾ in.	± 6 %	± 8 %
½ in.	± 6 %	± 8 %
⅜ in.	± 6 %	± 8 %
No. 4	± 5 %	± 6.5 %
No. 8	± 5 %	± 6.5 %
No. 30	± 4 %	± 5.5 %
No. 200	± 2 %	± 3 %

b. Field Placed Material. Hot mix asphalt pavement shall be tested for in-place density. The lot size shall be the same as that indicated in Section 1.004.K.1 and shall be divided into equal sublots. Densities shall be determined by core sampling.

If nuclear densities measurements are allowed for acceptance of field placed material, nuclear densities shall be taken in accordance with CP81-01. The nuclear density gauge shall be calibrated to a minimum of seven cores taken from the same material. If nuclear density measurements indicate results outside the tolerance limits, cores shall be used to verify results.

Note to Engineer: Care should be taken when incorporating the above paragraph in the specifications. Size of the project should be taken into account when determining the basis for the density test correlation. Small quantities of HMA are not applicable to CP 81-01 procedure.

Core samples shall be neatly cut with a core drill or other approved equipment. The minimum diameter of the sample shall be three inches. Samples that are clearly defective, as a result of sampling, shall be discarded and another sample taken. Cores or nuclear densities shall not be taken closer than one foot from a transverse or longitudinal joint. The Contractor shall furnish all tools, labor and materials for cutting samples and filling the cored pavement. The Contractor shall be responsible for supplying the owner's materials laboratory with the core samples. Cored holes shall be filled in a manner acceptable to the Agency and within one day after sampling.

Test results of the percent of relative compaction (density) shall be determined by dividing the density reading of the nuclear density gauge or core by the maximum density of the product as determined by CP51-96. Testing frequency shall be in accordance with Table 1.004.3.

The required compacted HMA mat thickness shall be as specified on the construction plans and/or specified in the Special Conditions. Final mat thickness shall be determined by coring the compacted HMA mat. No core thickness shall be less than ninety percent (<90%) of the specified thickness on the construction plans and/or Special Conditions. When core thickness is less than ninety percent (<90%) of that specified the Contractor shall correct the situation at his expense.

Surface Smoothness of the final riding surface of all pavements are subject to testing by the 10-foot straightedge method. The Contractor shall furnish an approved 10-foot straightedge and depth gauge and provide an operator to aid the Engineer in testing the finished pavement surface. Areas to be tested shall be determined by the Engineer or the Construction Inspector. The variation between any two contacts with the surface shall not exceed 3/16 inch in 10 feet. Areas showing deviation of more than 3/16 inch shall be marked and corrected at the Contractor's expense.

2. Contractor Quality Control. The Contractor shall control all elements which affect the quality of the pavement including, but not limited to:

- Mix Design
- Aggregate Grading
- Quality of Materials
- Stockpile Management
- Proportioning
- Mixing and Transportation
- Placing and Finishing
- Asphalt Content
- Compaction
- Surface Smoothness

a. Testing Laboratory. The Contractor shall provide a fully and properly equipped asphalt laboratory or shall hire an independent testing laboratory for quality control testing. Laboratory facilities shall be kept clean and all equipment shall be maintained in proper working condition. The Owner's designated representative shall be permitted unrestricted access to inspect the Contractor's laboratory facility and witness quality control activities. The Owner's representative will advise the Contractor in writing of any noted deficiencies concerning the laboratory facility, equipment, supplies, testing personnel and testing procedures. When the deficiencies are serious enough to be adversely affecting test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

b. Quality Control Testing. The Contractor shall perform all quality control tests necessary to control the production and construction processes applicable to these specifications. Quality control test results shall be submitted to the Engineer within 24 hours of sampling. Personnel performing sampling and testing of aggregates or Hot Mix Asphalt mixtures in the lab and in the field shall possess the appropriate LabCat certification or combination of certifications issued by the Rocky Mountain Asphalt Education Center for all sampling and testing performed.

Test procedures for QC testing are shown in Table 1.004.3.

The quality control testing generally includes the following tests:

(1). Asphalt Content. One extraction test shall be performed per subplot for determination of asphalt content and shall be sampled at the same time as the VMA and air voids samples are obtained.

(2). Gradation. Aggregate gradations shall be determined from mechanical analysis of extracted aggregate. When asphalt content is determined by a nuclear method, aggregate gradation shall be determined from the cold feed on drum mix or continuous mix plants or from hot bin samples on batch plants. The samples shall use actual batch weights to determine the combined aggregate gradation of the mixture.

(3). Temperatures. Temperatures shall be checked, at least twice per day, at necessary locations to determine the temperatures of the dryer, the binder in the storage tank, the mixture at the plant and the mixture at the job site.

(4). In-Place Density Monitoring. It is recommended that the Contractor conduct testing to ensure that the specified density is being achieved during the construction of the HMA pavement. A nuclear gauge shall be used to monitor the pavement density in accordance with CP81-92.

(5). Additional Testing. Any additional testing that the Contractor deems necessary to control the process may be performed at the Contractor's option.

(6). Monitoring. The Engineer and/or the owner reserve the right to monitor any of the quality control tests listed above and to perform verification sampling and testing of all materials.

(7). Sampling. When directed by the Engineer, the Contractor shall sample and test any material that appears inconsistent with similar material being sampled, unless such material is voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

N. Method of Measurement. The accepted quantities of plant mix Hot Mix Asphalt pavement will be measured by the ton for the compacted thickness of pavement specified in each pay item. Batch mass (weights) will not be permitted as a method of measurement. The tonnage shall be the mass (weight) used in the accepted pavement.

Hot Mix Asphalt pavement courses measured by the square yard will be paid for at the contract unit price per square yard. This payment shall be full compensation for all materials, tools equipment and labor necessary to complete the work under this section in accordance with the plans and these specifications. The payment shall be full compensation for prime and/or tack coats applied in accordance with these specifications.

If there is no pay item for Hot mix Asphalt pavement of the type specified it will not be measured and paid for separately but shall be included in the pay item most closely associated with the work.

O. Basis of Payment. The accepted quantities of Hot Mix Asphalt pavement will be paid for at the adjusted contract unit price for each pavement type and/or thickness listed in the bid schedule. The price will be full compensation for furnishing all materials, for preparation, mixing, placing and compaction of these materials and for all labor, equipment, tools and incidentals necessary to complete the work.

Payment for prime coat and/or tack coat shall be included in the unit price bid for Hot Mix Asphalt pavement and shall include all materials, tools, equipment and labor necessary to complete the work in accordance with the plans and specifications and as directed by the Engineer.

PART IV - SPECIAL CONDITIONS

These Special Conditions amend or supplement the General Conditions, Construction Specifications, and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect. Sections identified in these Special Conditions refer to correspondingly numbered sections of the General Conditions and Standard Specifications.

4.001 Description of Work. The work contemplated under this Contract consist of the construction of approximately *(insert approximate length of project)* miles of *(insert what type of construction, i.e. roadway reconstruction with curb, gutter and sidewalk)*.

4.002 Project Location. The project is located on *(insert the name of the roadway to be reconstructed and the limits of the project)*. The site locations are shown on the Location Map in Part V of these Contract Documents.

4.003 Bid Items and Quantities. The Bid Items and quantities listed in the Bid Schedule are the only pay items for this project. All necessary work required for the complete project are subsidiary to these items and shall be included as part of the bid price.

4.004 Completion Time. The time of completion of the Work contemplated herein shall be *(insert the number of days)* days from the date of the Notice To Proceed.

4.005 Liquidated Damages. Time is of the essence of this Contract. If the Contractor shall neglect, fail, or refuse to complete the work specified herein within the time specified in the above **Section 4.004** or any proper extension thereof granted by the Owner, the Contractor shall be liable to the Owner therefore, and does hereby agree, as part of the consideration of awarding of this Contract, to pay to the Owner, not as a penalty, but as Liquidated Damages for such breach of Contract:

1. The sum of \$*(insert a dollar amount)* for each and every day that the Contractor shall be in default after the time stipulated in the Contract for completing the Work or delivering the materials, which sum is fixed and agreed upon by and between the Contractor and the Owner as the estimated additional administrative expenses which the Owner will incur in its normal operation as a result of such delay, together with:
2. The Owner shall have the right to deduct such damages from any amount due, or that may become due, the Contractor, or to collect such damages from the Contractor or his Surety.

4.006 Overtime Work. No work shall be done between *(insert the hours that work on the project will not be permitted, i.e. 3:00 PM and 9:00 AM)* nor on Sundays or legal holidays without permission of the Owner. However, emergency work may be done without prior permission.

Night work may be undertaken as a regular procedure with the permission of the Owner; such permission, however, may be revoked at any time by the Owner if Contractor fails to maintain adequate equipment and supervision for the proper prosecution and control of the Work at night.

4.007 Legal Address. The business address of the Contractor given in the Bid Form and Contractor's office in the vicinity of the Work is hereby designated as the place to which all notices, letters, and other communication to the Contractor will be mailed or delivered. The address of the Owner appearing hereinbefore is hereby designated as the place to which all notices, letters, and other communication to the Owner shall be mailed or delivered. Either party may change his address at any time by an instrument in writing delivered to Engineer and to the other party.

4.008 Retainage. The Owner shall retain from progress payments, until payment is due under the terms and conditions governing final payment, amounts as follows:

- a. Retention of ten percent (10%) of payments authorized until the Work is 50 percent complete.

- b. Retention of five percent (5%) of payments for Work completed when the Work is between 50 percent and 90 percent complete.
- c. Retention of no additional amount when the Work is between 90 percent and 95 percent complete.
- d. When the Work is substantially complete (operational or beneficial occupancy), the retained amount shall be further reduced to five percent (5%).

Retainage shall not be reduced if the Work is behind schedule, and, subsequent to reducing retainage, the full ten percent (10%) retainage shall be reinstated any time the Works falls behind schedule.

4.009 Final Inspection and Acceptance. Upon written notice that the Contractor considers all Work complete, the Engineer shall make a final inspection with Owner and Contractor and shall notify Contractor in writing of incomplete or defective work revealed by the inspection. The Contractor shall promptly remedy such deficiencies.

After the Contractor has remedied all deficiencies to the satisfaction of the Engineer and delivered all construction records, maintenance and operating instruction, schedules, guarantees, bonds, certificates of inspection, and other documents (all as required by the Contract Documents), the Owner and Contractor shall be promptly notified in writing by the Engineer that the Work is acceptable.

4.010 Construction Facilities. Storage area and electrical energy shall be furnished at the Contractor expense and provisions for these items are the responsibility of the Contractor.

4.011 Insurance. The Contractor and Subcontractor(s) shall purchase and maintain insurance of the kind and in amounts specified herein. However, insurance requirements contained in the Contract Documents shall not be deemed to limit or define obligations of Contractor or Subcontractor(s) as provided elsewhere in the General Conditions.

Only the standard form of insurance certificate, (ACORD Certificate of Insurance, ACORD 25), will be acceptable. This completed certificate will serve as an indication to the Owner that Contractor has acquired all necessary insurance; however, the Owner may require that certified copies of the insurance policies be submitted and may refuse to execute the Contract until the applicable insurance policies are found to be acceptable.

- a. **Workmen's Compensation Insurance:** Contractor and all levels of subcontractors shall comply with requirements of the Workmen's Compensation Act of Colorado and shall provide Workmen's Compensation Insurance to protect Contractor and all levels of subcontractors from and against any and all Workmen's Compensation claims arising from performance of Work under the Contract.
- b. **Comprehensive General Liability Insurance:** Contractor and Subcontractor(s) must procure and maintain at his own expense, until final payment by the Owner for all Work covered by the Contract, Comprehensive General Liability Insurance covering all Work to be performed under the Contract. This insurance must pay on behalf of Contractor and Subcontractor(s) all sums which Contractor and Subcontractor(s) shall become legally obligated to pay as damages because of bodily injury or property damage caused by an occurrence up to the specified limits of liability for each occurrence. This coverage must include Explosion Hazard, Collapse Hazard, and Underground Property Damage Hazard. Blanket contractual liability coverage, as well as Contractor's Protective Liability, must also be included. This insurance coverage must extend to all subcontractors and sub-subcontractors.
- c. **Comprehensive Automobile Liability Insurance:** Contractor and Subcontractor(s) must procure and maintain at his own expense, until final payment by the Owner for all Work covered by the Contract, Comprehensive Automobile Liability Insurance, which must cover Contractor and Subcontractor(s) for all sums which Contractor and Subcontractor(s) shall become legally obligated to pay as damages because of bodily injury or property damage caused by an occurrence up to the specified limits of liability for each

occurrence. Blanket contractual liability must be included. This insurance coverage must extend to all subcontractors and sub-subcontractors. Such coverage must include all automotive equipment used in the performance of the Contract, both on and off the work site, and must include non-ownership and hired cars coverage.

d. **Limits of Coverage:** The following minimum limits of coverage shall apply:

INSURANCE COVERAGE REQUIREMENTS	
Type of Coverage	Minimum Coverage Limits
Workmen's Compensation Employer's Liability	Statutory \$ 500,000.00 Each occurrence
Comprehensive General Liability Bodily injury and property damage with a combined single limit	 \$ 500,000.00 Each occurrence
Comprehensive Automobile Liability Property damage General and automobile	 \$ 500,000.00 Each occurrence \$ 500,000.00 Aggregate

- e. The insurance referred to in paragraphs 4.011b. and 4.011c. above shall be written under the Comprehensive General and Comprehensive Automobile Liability policy forms, including coverage for all owned, hired, and non-owned automobiles. The Contractor may at his option provide the limits of liability as set out above by a combination of the above described policy forms and an Umbrella Excess Liability policy. The liability policy or policies shall have any exclusions for punitive and exemplary damages removed.
- f. It is a condition of the Contract that the policy or policies afford coverage for damage to property of others arising out of the perils of Explosion, Collapse, and Damage to Underground Facilities, and it is a further condition that the policy or policies afford the same limits of liability as set out above for liability assumed under Contract including Contractual Liability. It is a condition of the Contract that the policy or policies afford Broad Form Property Damage Liability Coverage for damage to property of others in the care, custody, or control of the insured, or as to which the insured is for any purpose exercising physical control.
- g. All responsibility for payment of any sums resulting from any deductible provision, corridor, or self-insured retention conditions of the policy or policies shall remain with the Contractor and Subcontractor(s).
- h. It is a condition of the Contract that the policy or policies waive any and all Governmental Immunity as a defense in any action brought against the insured or any other party to the Contract.

4.012 Contractor's Guarantee. The Contractor shall guarantee materials and workmanship for a period of *(insert the length of time the Contractor is required to guarantee his work, i.e. 1 yr, 2 yr, etc).* The period of time shall be measured from the date of final acceptance stipulated in The General Conditions for the Work performed under the terms of this Contract.

The Owner will give written notice of observed defects with reasonable promptness. The performance Bond shall remain in full force and effect through the guarantee period.

4.013 Performance During Guarantee Period. The Owner will observe a standard procedure to request performance by the Contractor or Work covered by the Guarantee.

The Owner will inform the Contractor of the defects of which it complains, and the Contractor shall within ten (10) days begin the work of repair or replacement. Should the Contractor fail to begin such Work within ten (10) days, the Owner may make the repairs or replacements at the expense of the Contractor. If the Owner determines that immediate actions to make repairs or replacements is necessary because of emergency conditions or to prevent further loss or damage, the Owner may proceed without notice to the Contractor but at the expense of the Contractor.

Should the Owner claim by written communication before the guarantee period expires that certain defects exist and that these require repair or replacement, the guarantee period shall be automatically extended for as long as these defects exist.

4.014 Cleanup Operations. Immediately after the surfacing operation has been completed, it shall be the Contractor's responsibility to cleanup and remove all spills, excess materials and debris caused by the paving operation as quickly as possible, but no longer than 5 working days from the completion of the process.

The Contractor shall also be responsible for insuring that his personnel do not trespass on or damage any private property during the paving operation.

4.015 Notification of Public. If required by the Engineer, the Contractor shall notify abutting property owners a minimum of 15 hours prior to beginning work on the roadway. The notification shall be in writing. Re-notification will be required in the event of adverse weather or equipment breakdown which might prohibit Contractor from completing work as stated.

4.016 Schedule of Work. The Contractor shall provide to the Engineer a schedule of work prior to the start of the project. If during the progress of the work, the schedule changes, the Contractor shall notify the Engineer of such changes in advance. The Contractor shall coordinate daily work schedules or adjustments to work schedule with the project inspector no later than noon the day prior to paving operations.

4.017 Traffic Control. Traffic Control for this project shall be the responsibility of the Contractor. Payment for traffic control shall be subsidiary to other bid items. All traffic control methods used shall be in accordance with **Part VI. Traffic Controls For Street and Highway Construction and Maintenance Operations of the Manual On Uniform Traffic Control Devices**, latest edition thereof.

The Contractor shall operate in such a manner that his operations will allow at least one (1) lane of through traffic at all times.

4.018 Temporary Striping. The Contractor shall place temporary center line striping (4"x12" strips) every 50 feet. The striping material shall meet the standard specifications for striping material. Temporary center line striping shall be considered incidental to the work and the cost shall be included in the unit price bid for the **(insert the item that temporary striping will be paid under)**.

4.019 Time of Construction Commencement. The roadway section(s) which will receive the **(insert the type of surfacing that will be laid)** require base stabilization and patching. This work will be accomplished by Owner's forces. This stabilization and patching is anticipated to be completed by **(insert date that work will be completed by, by owner's forces)** weather permitting. Therefore, the Contractor will not be permitted to begin working on the work until the stabilization and patching is completed by Owner's forces.

4.020 Permanent Striping. (NOT TO BE USED IN THIS CONTRACT) Owner's forces will be installing permanent center line striping tape on the newly laid HMA mat. The striping shall be placed on the last lane prior to the Contractor's final pass with the roller in order to seat the tape flush with the finished surface. The Contractor shall adjust his lane width to accommodate the striping. The final roller pass shall include the rolling of the permanent tape.

Any cost related to the rolling of the permanent striping tape shall be considered incidental to the work and shall be included in the price bid for the surfacing.

4.021 Federal Requirements. (NOT USED IN THIS CONTRACT) This project is being funded through an agreement between the Owner and CDOT. The agreement requires the Contractor meet the applicable requirements of the attached **Federal Requirements** attached to these Contract Documents and Specifications and are hereby made a part thereof.

4.022 HMA Mixture Requirements. EXAMPLE The Hot Mix Asphalt mixture shall be designed to meet the criteria in the following table:

Hot Mix Asphalt Mixture Design Requirements - EXAMPLE Parameters Shown

Roadway Classification	<input checked="" type="checkbox"/> Arterial	<input type="checkbox"/> Collector	<input type="checkbox"/> Residential	<input type="checkbox"/> Industrial	<input type="checkbox"/> Parking Lot
Construction Application	Aggregate Gradation	Maximum RAP Quantity %	Superpave Gyration N_{design}	Asphalt Binder Grade	
Top Layer	SX	0	75	PG 76 - 28	
Intermediate Layer	S	15	75	PG 64 - 28	
Bottom Layer	SG	20	75	PG 64 - 22	
Patching	S	0	75	PG 64 - 28	
Other					

PART V - LOCATION MAP

(Insert the name of the project)