Technical
Specifications for
The Construction of

NEW MEXICO STATE UNIVERSITY
LAS CRUCES, NEW MEXICO
Parking Lot 52 & 77B
Remove & Replace

JULY 2021

OWNER:

New Mexico State University
Las Cruces Campus
1780 E University Ave
Las Cruces, New Mexico 87020

ENGINEER:

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MOLZENCORBIN
ENGINEERS | ARCHITECTS | PLANNERS

ENGINEER OF RECORD

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The technical material and data contained in the specifications were prepared under the supervision and direction of the undersigned, whose seal as a Professional Engineer, licensed to practice in the State of New Mexico, is affixed below.

_____ N.M.P.E. No. 12423

All questions about the meaning or intent of these documents shall be submitted only to the Engineer of Record, stated above, in writing.

TECHNICAL SPECIFICATIONS

DIVISION 01 – GENERAL REQUIREMENTS

DIVISION 03 - CONCRETE

DIVISION 31 – EARTHWORK IMPROVEMENTS

DIVISION 32 – EXTERIOR IMPROVEMENTS

SECTION 01 00 01

SPECIFICATION FORMAT

PART 1 GENERAL

1.01 FORMAT

A. The Division 1 through 48 Specifications are written in imperative and abbreviated form. This imperative language is directed at the Contractor, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting “shall”, “the Contractor shall”, and “shall be” or similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words “shall be” are to be placed by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, the Contractor shall fulfill (perform) all indicated requirements whether stated imperatively or otherwise.

B. All equipment and facilities shall be furnished, installed, and constructed by the Contractor to provide the Owner with complete, ready to use components, systems, and facilities. All necessary materials and Work required to accomplish this are the responsibility of the Contractor alone, whether or not specifically indicated on the Drawings or stated in the Specifications.

C. The various Sections of the Division 1 through 48 Specifications may contain references to standards, other specification sections, or items that do not apply to the Work covered in this project. These inappropriate references are to be considered irrelevant and ignored by the Contractor. If conflicts arise from erroneous references or lack of references to standards or other specification sections, Engineer will determine the relevancy of the apparent conflicts.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 11 00

SUMMARY OF WORK

PART 1 GENERAL

1.01 WORK INCLUDED

A. Project titled Parking Lot 52 & 77B entails reconstruction of the paved surface, parking lots located on the NMSU campus in Las Cruces, NM, as called out on plans

1.02 DESCRIPTION OF WORK

A. Base Bid Clarification: The Base Bid includes all elements of construction shown for the complete and operational construction of this project except those items indicated as Additive Alternates.

B. Bid Lots will be used to award parking lots to contract in their entirety. The number of bid lots awarded will depend on funding and all bid lots may not be awarded.

1.03 CONTRACT

A. The Work shall be performed under lump sum bid items and reimbursable allowances.

1.04 SUMMARY OF REFERENCES

A. Work of the Contract can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specifications Sections, Drawings, addenda, and modifications to the Contract Documents issued subsequent to the initial print of the Project Manual and including, but not necessarily limited to printed material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon, including weather conditions and other forces outside the Contract Documents.

1.05 CONTRACTOR USE OF PREMISES

A. The immediate premises of the work will be at the disposal of the Contractor during the construction period.

1.06 SCHEDULING CONSTRAINT

A. Work must be completed by the contract date.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 EXECUTION

A. General: Immediately after award of the Contract, thoroughly and clearly advise all necessary personnel as to the nature and extent of the project.

END OF SECTION

SECTION 01 12 16

WORK SEQUENCE

PART 1 GENERAL

1.01 WORK SEQUENCE

A. Installation of traffic control devices for the reconstruction of the paved surface on parking lots designated to be repaired.
   1. Contractor shall remove all parking bumpers prior to surfacing of the parking lot.
   2. Removal and disposal of existing pavement section to the depth required for installation of the proposed pavement
   3. Place base course and asphalt as shown on the details.
   4. Layout striping and coordinate with NMSU parking department prior to striping.
   5. Install new sign posts and foundations as indicated on the plans if required.
   6. Upon completion of the parking lot surfacing and striping the contractor shall reinstall the parking bumpers as shown or directed by NMSU.
   7. Reinstall signs and coordinate with NMSU for reopening of lot.
   8. Contractor is responsible for all traffic control devices, placement and maintenance.

B. Installation of traffic control devices for lots 52 & 77B.
   1. Contractor shall remove all parking bumpers prior to surfacing of the parking lot.
   2. Removals of asphalt and base material.
   3. Reconstruct sidewalk and curb.
   4. Upon completion of the parking lot surfacing and striping the contractor shall reinstall the parking bumpers as shown or directed by NMSU.
   5. Reinstall signs and coordinate with NMSU for reopening of lot.
   6. Contractor is responsible for all traffic control devices, placement and maintenance.

C. It is the intent to compete all lots awarded to the successful bidder. The sequence in which these lots are to be completed will be up to the contractor as approved by NMSU. Multiple lot closures will be allowed but only with written approval by NMSU and coordination with the building tenant.

D. Stripe as shown and coordinate any differences with NMSU parking department.

E. The contractor will be required to meet the schedule set forth in the contract including lot closure coordination.

F. The individual lots shall be completed prior to beginning the next lot, unless otherwise directed.

1.02 SUBSTANTIAL COMPLETION

A. Refer to Section 01 77 00 – Contract Closeout, for description of Substantial Completion.

1.03 ADJUSTMENTS TO SEQUENCING REQUIREMENTS

A. The Owner may require the Contractor to make adjustments to the requirements of this Section to accommodate unforeseen conditions and situations. Reasonable adjustments shall be made by the Contractor at no additional cost to the Owner or additional Contract Time.

1.04 TIME EXTENSIONS FOR ABNORMAL AND UNFORSEEABLE WEATHER (ADVERSE WEATHER DELAYS)

A. This provision specifies the procedure for the determination of time extensions for abnormal and unforeseeable weather in accordance with General Conditions. In order for the Engineer to award a time extension under this clause, the following conditions must be satisfied:
   1. The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.
   2. The abnormal and unforseeable weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

B. The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

Monthly Anticipated Adverse Weather Delay
Work Days Based on 5-Day Work Week

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
1	1	1	1	1	1	3	4	3	3	1	1

C. An actual adverse weather day must prevent work for 50 percent or more of the Contractor's workday, delay work critical to the timely completion of the project, and be documented by the Contractor. The Owner's representative observing the construction shall determine on a daily basis whether or not work can proceed on a given date, within 2 calendar days of that date. The Owner will use the above written notification in determining the number of working days for which work was delayed during each month.

D. The number of actual adverse weather delay days shall include days impacted by actual adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month, and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph (B), above, the Engineer will convert any qualifying delays to calendar days, giving full consideration for equivalent fair weather work days, and issue a modification in accordance with the General Conditions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 14 02

UTILITY OBSTRUCTIONS

PART 1 GENERAL

1.01 WORK INCLUDED

A. General provisions for handling utility obstructions and relocations.

1.02 UTILITIES SHOWN ON DRAWINGS

A. The Engineer has made reasonable effort to show the general location of existing underground and overhead utility lines on the Drawings.

B. There may be utilities in locations other than that shown on the Drawings. The Contractor is required to:
   1. Perform potholing to verify existing utility locations, whether identified on the Drawings or not, prior to construction.
   2. Repair any damage to existing utilities caused by Contractor.

C. This work will be considered incidental Work to the Contract Documents' bid items.

1.03 RELOCATION OF OVERHEAD UTILITIES

A. Determine in advance of construction operations if overhead utility lines, support structures, poles, guys, etc., whether shown on the Drawings or not, will obstruct construction operations. If any obstruction to construction operations is evident, coordinate with the appropriate utility company to remove or relocate the utility obstructions. Any charges by any utility company for removal or relocation of overhead utilities are the sole responsibility of the Contractor at no additional cost to the Owner.

1.04 RELOCATION OF UNDERGROUND UTILITIES

A. Determine in advance of construction operations locations of all underground utilities (gas, telephone, fiber optic cable, electrical, cable TV, water, sewer), whether shown on the Drawings or not, that may interfere with Contractor's construction operations.

B. All Underground Utilities Except Water and Sewer Lines: Coordinate with the appropriate utility company to remove or relocate the existing utilities which interfere with construction. Utility company charges for relocating these existing utilities will be paid from the utility line relocation allowance listed on the Bid Proposal.

C. Water and Sewer Lines:
   1. Adjust alignment on any waterline which Contractor is constructing to avoid existing underground utility lines and/or to maintain a minimum three feet of

cover; Take other measures necessary (encasement of water or sewer line, change of pipe material, etc.) to protect new and existing lines.

2. Adjust alignment of all existing waterlines as appropriate or required to avoid interference with:
   a. new sewer lines, or;
   b. new structures, or;
   c. new roadway, or;
   d. to maintain at least three feet of cover over existing waterlines unless otherwise approved in writing by Engineer.
3. Incidental work to be performed at no additional cost to Owner: All work required to adjust alignment of new waterlines around any existing waterlines or sewer lines, or other measures necessary to protect new and existing lines.

1.05 CONTRACTOR RESPONSIBILITIES

A. Contractor is responsible for complying with New Mexico State Excavation Law prior to performing any excavations. Contractor shall obtain utility location line spots through NM ONE CALL 811 prior to performing any excavations.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 14 03

REGULATORY REQUIREMENTS

PART 1 GENERAL

1.01 APPLICABLE CODES AND ORDINANCES

A. All Work shall conform to the current versions of all applicable building, mechanical, plumbing, and electrical codes.

B. Contractor is responsible for acquiring all applicable building, mechanical, plumbing, and electrical permits related to this project.

C. Comply with all local laws, ordinances, and regulations which may impact Contractor's work.

1.02 OSHA REQUIREMENTS

A. All equipment and facilities provided, including but not limited to, handrails, guardrails, grating, hoists, equipment guards, ladders, etc., shall meet OSHA requirements whether or not such requirements are specifically indicated or described in the Contract Documents.

B. Any conflicts between OSHA requirements and Contract Documents shall be brought to the attention of the Engineer on a timely basis for resolution.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 14 16.01

COORDINATION WITH PUBLIC AND UTILITY INTERRUPTIONS

PART 1 GENERAL

1.01 PUBLIC ACCESS

A. Provide for continuous public access to all residences, businesses, and properties via existing roads, alleys, and driveways whenever practical.

B. Provide alternate public access to all residences, businesses, and properties in coordination with affected residents and occupants when existing access arrangements must be disrupted by Contractor's work whenever practical.

C. Notify public at least three (3) calendar days in advance of interrupting public access.

1.02 UTILITY INTERRUPTIONS

A. Coordinate any water shut-off operation with the Owner not less than three (3) working days prior to initiating any work affecting existing water utilities. Limit water service shut-off to four (4) hours. Keep Owner informed of work areas on a daily basis, and specifically notify Owner of areas where fire hydrants will be out of service.

B. Notify all customers at least three (3) calendar days in advance of interrupting utility service.

C. Keep interruptions of utility service at a minimum as to number of users and duration.

1.03 NOTICES

A. Construction Notices Before Construction:
   1. Delivered not more than seven (7) calendar days nor less than four (4) calendar days prior to actual physical construction on each line or line segment.
   2. Corrected notices delivered if construction does not start within 48 hours of date given in notice.
   3. Written notice to state:
      a. Contractor's name, address, and local telephone number.
      b. Nature of work to be done.
      c. Disruption residents or businesses might expect.
      d. Expected duration of construction.
      e. Contractor's local telephone number to which complaints may be made during normal working hours.
      f. Contractor's local telephone number to which emergency conditions can be reported during non-working periods.

B. Construction Notices After Construction:
   1. Delivered not more than seven (7) calendar days following construction on each line or line segment.
   2. Written notice to state:
      a. Contractor's name, address, and telephone number.
      b. Thank residents and businesses for cooperation and report work is completed in applicable area.

C. Special Notices:
   1. Inform residents and businesses personally and by written notice whenever access to property will be impaired or utility service will be interrupted, stating scheduling of such action.

D. Notice Delivery:
   1. Hand delivery to each resident and business adjacent to or which may be reasonably expected to be affected by construction.
   2. Do not deliver notices in mail boxes or mail slots. Use other delivery methods such as door hangers.

1.04 SCHEDULE OF SPECIAL REQUIREMENTS FOR THIS PROJECT

A. Provide all notices included above.

B. Coordinate with NMSU facilities services and Parking Department on all activities.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED

END OF SECTION

SECTION 01 14 19

USE OF SITE

PART 1 GENERAL

1.01 AVAILABLE SITES

A. Sites and easement limits available for the construction of the project are shown on the Drawings. Contractor shall not utilize any land not indicated as being available without the written approval of the applicable land owner.

B. If the Contractor requires the entire width of right-of-way or easement for construction, it shall be the Contractor's responsibility to have a licensed land surveyor establish the right-of-way line where it is not apparent.

1.02 PROTECTION AND RESTORATION

A. All existing features and improvements to or on easements shall be restored by the Contractor equivalent to those existing prior to construction at no additional cost to the Owner. Compliance with special requirements or considerations indicated on the Drawings for the use of easements shall be the Contractor's responsibility at no additional cost to the Owner.

B. Trees within construction easement shall be preserved to maximum practical extent, unless specifically indicated in the Drawings.

1.03 SPECIAL CONSTRUCTION METHODS

A. Special and hand construction methods may be required to remain within the available easements. Such methods shall be used by the Contractor at no additional cost to the Owner.

B. Other Contractors could be working on related work at or near the site; therefore, the Contractor is expected to cooperate and provide adequate access to all other working parties at or near the site.

C. Staging yard and use of NMSU Property must be coordinated with NMSU project manager. Contractor is responsible for restoration and repairs of NMSU property that is used for staging, transferring of materials and storage. If needed the contractor shall provide a temporary containment liner for mixing and/or transferring of bituminous material from tanker to distributor. The contractor is responsible for all cleanup of any spills to the satisfaction of NMSU and the regulatory agency. This shall be done at no addition charge to the owner.

1.04 STAGING AREAS

A. Staging area will be provided by the Owner within the campus.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Measurement and Payment

B. Schedule of Values

C. Application for Payment

1.02 ADDITIONAL REQUIREMENTS

A. Agreement and corresponding Bid.

B. Conditions of the Contract: Progress payments and final payments.

1.03 MEASUREMENT AND PAYMENT

A. Unit Price Items:
   1. Estimated Quantities:
      a. Estimated quantities in Bid Form are approximate and used only for:
         1) Basis for estimating probable cost of Work.
         2) Comparison of Bids submitted for Work.
      b. Actual Work done or materials furnished under Unit Price item may differ from estimated quantities.
      c. Basis of payment: Actual amount of Work as determined by applying the appropriate Unit Price as Bid.
   2. Removal and Replacement:
      a. When itemized in the Bid Schedule, payment to include all work and materials including removal, hauling and disposal, and replacement.
      b. Pavement:
         1) Payment for trench pavement replacement to be to the limits specified in Section 32 09 00 – Removal and Replacement of Existing Surfaces, or as indicated on Drawings.
         2) Payment for pavement replacement required for water service line connections and water meter installations shall be incidental to each connection detail.
      c. Sidewalks:
         1) There will be no additional payment for replacement of sidewalks unless itemized on Bid Schedule.
      d. Gravel Surfaces: There will be no additional payment for replacement of gravel surfaces.
   3. New Curb, Gutter, Sidewalks, and Drivepads:

a. Measurement for curb and gutter shall be by linear foot and shall be measured along the flow line of the gutter and next to the curb face. Deductions will be made for catch basins and inlet castings and no change in contract unit price will be made due to depressions for driveway accommodations. Driveway depressions will be located in the field by the Engineer after consultation with the property owners.

b. Measurement for concrete curb and gutter, sidewalk, drivepads, and valley gutters shall be as called for on the bid form. Payment for curb and gutter, sidewalk, drivepads, and valley gutters shall be at the contract unit price per unit of measure called for on the bid form and such price and payment shall be in full compensation for furnishing all material, labor, equipment, and in performing all operations and incidentals necessary to complete the Work. The bid price shall include all pertinent Work, including subgrade preparation.

4. Other Unit Price Items:

a. Unit complete in place and ready for use including all Work.

B. Lump Sum Items: Payment for all lump sum bid items includes all Work, labor, and materials required to provide a complete ready to use installation.

C. Materials:

1. Payment for materials delivered but not fully incorporated in project only made if such materials are included in the Schedule of Values and if such materials are available for inspection at Contractor's jobsite yard.
2. For small projects for which a schedule of values is not required, payment for materials delivered but not fully incorporated in the project will only be made if such materials are available for inspection at Contractor's jobsite yard, and for which invoices are presented to Engineer.
3. Payment for materials delivered but not fully incorporated into the project is only allowed if made without any Contractor markup or any other associated fees.

D. Allowance Items: Contractor's actual costs for allowance items listed in Section 01 21 00 based on invoices received for actual time and materials expenses.

E. Incidental Work:

1. All Work, labor, materials, appurtenances, activities, and requirements to complete the facilities complete in place and ready for use, and to comply with all requirements and conditions of the Contract Documents are considered incidental Work to the Contract Documents' bid items. No separate, additional or special payment will be due the Contractor for incidental Work.
2. Above, on, or below ground obstructions, utilities, features or improvements which interfere with the Work or which must be moved, removed and/or restored to accomplish the Work are considered as incidental Work for which separate payment will not be made if separate bid items or allowances are not specifically given for such in the Contract Documents.

3. Striping centerline shall be considered incidental to the paving and, therefore, no separate measurement or payment will be made unless there is a specific bid item for such.
4. Field survey of existing roadway prior to removal of asphaltic paving.
5. Traffic control work, signs, and devices unless otherwise specifically provided in the Bid Schedule.
6. New permanent traffic signing, if shown on Drawings, unless otherwise specifically provided in the Bid Schedule.
7. Final adjustment of existing or new manhole rims, water valves, water meter lids, and fire hydrants to new finished grade, unless otherwise specifically provided in the Bid Schedule.
8. Removal and/or replacement of sidewalk, curb and gutter, driveway pavement, medians, and gravel surface are considered incidental to work.
9. Pipe identification tape and marker posts.
10. Repair of existing water service lines of 1-inch and smaller.
11. Repair of existing sewer service laterals of 4-inch and smaller.
12. Removing, protecting, stock piling parking bumpers and reinstalling once the surfacing operation is complete.
13. All clearing and disposal costs.
14. Parking lot sweeping and removal of all debris.
15. Compliance with requirements of storm water discharge permit as specified by USEPA and as specified in these Contract Documents.
16. Material Testing and field engineering.

F. Operation and Maintenance Manual: For equipment requiring operation and maintenance manuals, no payment for installation of said equipment will be made to the Contractor until final operation and maintenance manuals have been submitted and accepted by the Engineer.

G. Mobilization, Insurance and Bonds: Bid item amount is shown on the Bid Form.

H. Demobilization and Submittal of All Closeout Documents: Bid item is shown on the Bid Form. Fifty percent of bid item will not be paid until Contractor has completed all closeout submittals to Engineer as specified in Section 01 77 00 – Contract Closeout.

1.04 SCHEDULE OF VALUES

A. Requirements Included:
1. Submit to the Engineer a Schedule of Values allocated to the various portions of the Work, within ten (10) days after start of Contract Time.
2. Upon request of the Engineer, support the values with data which will substantiate their correctness.
3. The Schedule of Values, unless objected to by the Engineer, shall be used only as the basis for the Contractor's Application for Payment.

B. Form and Content of Schedule of Values:

1. Type schedule on 8-1/2 in. x 11 in. white paper; Contractor's standard forms and automated printout will be considered for approval by Engineer upon Contractor's request. Identify schedule with:
    a. Title of Project and location.
    b. Engineer and Project number.
    c. Name and address of Contractor.
    d. Contract designation.
    e. Date of submission.
2. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing values for progress payments during construction. Schedule shall include all Work shown on Drawings and indicated in Specifications. Schedule shall be subdivided by categories with subtotals shown for each bid item listed in the Bid.
3. Follow the table of contents of this Project Manual as the format for listing component items.
    a. Identify each line item with the number and title of the respective major section of the specifications.
    b. List items paid via allowances separately from the rest of the Work and at the end of the Schedule.
4. For each major line item list subvalues of major products or operations under the item.
5. Each of the various portions of the Work (excluding allowance items) listed in the Schedule of Values shall include a directly proportional amount of the Contractor's overhead and profit.
6. The unit values of the materials or equipment for which progress payments will be requested prior to installation and demonstration shall be broken down into:
    a. Cost of the material or equipment, delivered and unloaded at the site, with taxes paid.
    b. Installation costs, including Contractor's overhead and profit.
    c. Shakedown and demonstration of equipment and/or systems.
    d. Operator training and/or manufacturer's inspection and/or certifications if required.
7. The unit quantity for bulk materials shall include an allowance for normal waste.
8. The sum of all values listed in the schedule shall equal the total amount of Contract.
9. No payment will be made exclusively for Contractor's preparation of submittals.

1.05 APPLICATIONS FOR PAYMENT

A. Requirements Included:
1. Submit Applications for Payment to Engineer in accordance with the schedule established by conditions of the Contract and Agreement between Owner and Contractor.

B. Format and Data Required:

1. Cover and signature page: As provided by Engineer.
2. Sheet size: 8.5” x 11” or 8.5” x 14”.
3. Payment items: Follow approved schedule of values.
4. Preparation: Typed or machine printed.
5. Columns Included:
    a. Bid or payment item (from schedule of values)
    b. Unit
    c. Contract:
        1) Contract or scheduled unit price
        2) Quantity
        3) Total price
    d. Previously completed:
        1) Quantity
        2) Total price
    e. Completed this period:
        1) Quantity
        2) Total price
    f. Total to date:
        1) Quantity
        2) Total price
6. Contractor’s standard format can be used if it meets these requirements or is approved by the Engineer.
7. Submit draft payment applications electronically in Microsoft “EXCEL” spreadsheet format to Engineer for review. Include all supporting documents in e-mail to Engineer. Note: Payment applications in .pdf format for review purposes are not allowed.

C. Preparation of Application for Each Progress Payment:
1. Application Form:
    a. Fill in required information, including that for Change Orders executed prior to date of submittal of application.
    b. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.
    c. Execute certification with signature of a responsible officer of Contract firm.
2. Continuation Sheets:
    a. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.
    b. Fill in dollar value in each column for each scheduled line item when Work has been performed or products stored.
    c. List each Change Order executed prior to date of submission, at the end of the continuation sheets.
    d. List by Change Order Number and description, as for an original component item of Work.

D. Substantiating Data for Progress Payments:
1. Submit with each copy of application:

a. Properly identified invoices supporting requests for materials payments.
b. Properly identified invoices for inspection testing allowance payments.
c. Labor standards certificate in accordance with example form to be provided by Engineer.
d. If required by Engineer, certificate of payment of all suppliers and subcontractors for which payment has previously been received from Owner, in accordance with example form to be provided by Engineer.
e. Copy of construction schedule showing progress to date.

E. Preparation of Application for Final Payment:
1. Fill in application form as specified for progress payments.
2. Provide certificate of payment of all suppliers and subcontractors.
3. Provide release of lien certificates from all subcontractors.

F. Submittal Procedure:
1. Review quantities and obtain concurrence of Engineer's field representative before submission.
2. Submit Applications for Payment to Engineer at the times stipulated in the Agreement.
3. Number: Five (5) printed copies of each final, executed application, unless otherwise agreed to at the Pre-Construction Conference.
4. When Engineer finds Application properly completed and correct, he will transmit certificate for payment to Owner, with copy to Contractor.

PART 2 PRODUCT (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 GENERAL

1.01 MEETINGS

A. Contractor to attend at no additional cost to Owner.

B. Preconstruction conference to be scheduled by Engineer.

C. Progress or special meetings as deemed necessary and scheduled by Owner or Engineer.

D. Special and final inspections by Owner or Engineer when requested.

1.02 SCHEDULE OF SPECIAL REQUIREMENTS FOR THIS PROJECT

A. A meeting with the NMSU OFS and Parking Department shall be scheduled prior to beginning of each lot or as deemed necessary by NMSU.

B. Project meeting shall be scheduled, coordinated at no additional cost to the owner.

C. Contractor responsible for preparing progress meeting agenda, send out meeting invitations, conduct the meeting and provide minutes of the meeting at no additional cost to Owner.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 13

CONSTRUCTION SCHEDULES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Promptly after award of the Contract, prepare and submit to Engineer estimated initial baseline construction progress schedules for the Work.

B. Submit revised progress schedules.

C. Schedule subject to approval of Engineer.

D. Schedule construction working hours.

1.02 FORM OF SCHEDULES

A. Basis of Schedule: Critical path network analysis of construction activities.

B. Format of Graphic Display of Schedule Submitted to Engineer:
1. Gantt horizontal bar chart as a printed copy or in pdf electronic file format, as specified herein.
2. Horizontal Time Scale: Identify the first work day of each week.
3. Provide separate horizontal bar for each activity. In general, subdivide activities into sub-activities having durations no more than 15 working days, so that progress can be easily tracked.
4. List the activities in chronological order according to the start date of each activity.
5. Indicate durations and start/stop dates for each activity.
6. Indicate the predecessor and successor activities for each activity.
7. Identify which activities are on the critical path.

1.03 CONTENT OF SCHEDULES

A. Activities: Show the complete sequence of construction by activity.
1. Include activities for:
   a. Preparation of submittals for major equipment items.
   b. Procurement of major equipment items.
   c. Mobilization.
   d. Preparation of operation and maintenance manuals for major equipment items.
   e. Shakedown/startup testing.
   f. Punchlist work.
   g. Preparation of closeout documents.

h. Any sequence or scheduling constraints specified in Section 01 12 16 – Sequence of Work.

B. Milestones: Indicate milestone dates for:
1. Notice to Proceed.
2. Notice of Substantial Completion.
3. Final Completion.

1.04 PROGRESS REVISIONS

A. Indicate effective date of revision and show progress of each activity to date of submission.

B. Show changes occurring since previous submission of schedule:
1. Major changes in scope.
2. Activities modified since previous submission.
   a. Revised projections of progress and completion.
   b. Revised critical path activities.
   c. Other identifiable changes.

C. Provide a narrative report as needed to define:
1. Problem areas, anticipated delays, and the impact on the schedule.
2. Corrective action to be taken.

1.05 SUBMISSIONS

A. Submit initial baseline schedules within fifteen (15) days after start of Contract Time.
1. Engineer will review schedules and return review comments within 10 days after receipt.
2. If required, resubmit within 7 days after return of review copy.

B. Submit updated schedules to show actual progress of Work with each application for payment: Section 01 29 00 – Payment Procedures.

C. Submit revised progress schedules when requested by Engineer or whenever project is more than 5% behind approved schedule as determined by monthly request for payment.

1.06 DISTRIBUTION

A. Distribute copies of the initial baseline and monthly updated schedules as follows:
1. Engineer’s Review Copy: One (1) printed copy or electronic file in .pdf format.
2. Engineer’s Record Copy: Four (4) printed copies.

1.07 CONSTRUCTION WORKING HOURS SCHEDULING

A. Notify Engineer at least 48 hours in advance of any work to be done outside of usual working hours or any change in usual working hours.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 23

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Shop Drawings

B. Product Data

C. Samples

D. Contractor Responsibility

E. Engineer Responsibility

F. Schedule of Submittals

1.02 RELATED WORK/REQUIREMENTS SPECIFIED ELSEWHERE

A. Conditions of the Contract: Definitions and Additional Responsibilities of Parties

1.03 SHOP DRAWINGS

A. Present drawings in a clear and thorough manner.
   1. Sufficient detail to show kind, size, and arrangement and function of component materials and devices.

B. Minimum sheet size: 8-1/2” x 11”

1.04 PRODUCT DATA

A. Preparation:
   1. Provide information required in individual Sections.
   2. Where sheets are reproduced from a pamphlet, catalog, or similar publication, print the manufacturer’s name and the title of the publication on each sheet, or set of sheets, if it is not already on the sheet.
   3. Clearly mark each copy to identify applicable products or models by either neatly encircling pertinent data and marking the circle with an arrow or by crossing out all extraneous data, with black, indelible ink. Do not use highlighter because it will not reproduce well.
   4. For items that may be installed at multiple locations throughout the project, such as pipe materials, valves, other pipe appurtenances, and field coatings, indicate in a cover letter where each item is intended to be installed.
   5. Show performance characteristics and capacities.

6. Show dimensions and clearances required.
7. Indicate weights of major components.
8. Indicate materials of construction.
9. Do not prepare submittal materials from facsimile (FAX) copies of product data unless specifically authorized by Engineer.
10. Material described on Drawings but not shown in the Specifications: Provide cut sheets as a minimum, or as called for on the Drawings.

B. Installation data for all materials and equipment for which operation and maintenance manuals will not be provided. Also provide installation data with shop drawing prior to delivery of equipment, if specified in the equipment Section.
1. Provide manufacturer's installation instructions and recommendations.
2. Provide referenced standards for installation.

C. Manufacturer's standard schematic drawings, diagrams, descriptions and information:
1. Modify to delete information that does not apply to Work.
2. Supplement to provide information specifically applicable to the Work.

1.05 SAMPLES

A. Samples shall be of sufficient size and quantity to clearly illustrate:
1. Functional characteristics of the project, with integrally related parts and attachment devices.
2. Full range of color, texture, and pattern.

B. Include identification on each sample, with full project information.

1.06 CONTRACTOR RESPONSIBILITIES

A. If substitutions of materials are proposed, conform to Section 01 25 00 – Substitution Procedures.

B. Submit exactly the required quantity of materials.

C. Review Shop Drawings, Product Data, Certificates, Electrical Schematics, Electrical Connection Diagrams, Test Reports, Installation Instructions, Samples, and similar required submittal materials for completeness and accuracy prior to submission. Return unsatisfactory submittal materials to the supplier or manufacturer for correction.

D. Determine and Verify:
1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and similar data.
4. Conformance with Specifications.
5. Conflicts with other items of construction past, present, or future.
6. Submittal materials are legible.

E. Coordinate each submittal with requirements of the Work and of the Contract Documents.

F. Notify the Engineer in writing, at time of submission, of any deviations in submittal from Contract requirements.

G. Begin no fabrication or work that requires submittals until return of submittals with Engineer's final review.

1.07 SUBMITTAL PROCEDURES

A. Make submittals promptly and in such sequence as to cause no delay in the Work.

B. Execute and attach “Contractor Submittal Form” to each submittal. Sample form is attached to the end of this Section. Sign, date, and forward the Form and the Contractor reviewed submittal materials to the Engineer.

C. Number submittals by respective section number followed by an “S” for submittals, “P” for preliminary O&M, and “F” for final O&M.

D. Include a copy of the respective Specification Section(s). For each paragraph of the Specifications, confirm that the submittal complies and include a tab and sheet number where the information can be found for each paragraph of the Specification. If the submittal does not comply with a paragraph, identify as such and provide an explanation why it does not. If this information is not provided with each submittal and preliminary O&M, then the Engineer will return as “Not Reviewed”. Final O&Ms are excluded from this requirement.

1.08 RESUBMISSION REQUIREMENTS

A. Make corrections/changes in the submittals to comply with comments made by the Engineer and resubmit until final review.
   1. Attach Engineer’s comments from previous submittal annotated with action taken in the current submittal.

B. Number resubmittals as identified in paragraph entitled “Submittal Procedures”, and follow with a numeric value which identifies the number of resubmittals pertaining to that specific submittal.

C. Shop Drawings and Product Data:
   1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
   2. Indicate any changes that have been made other than those requested by the Engineer.

D. Samples: Submit new samples as required for initial submittal.

E. Specifically direct attention in writing to revisions other than the corrections called for by the Engineer on previous submittals.

F. Include a copy of previous "Contractor Submittal Forms".

G. Include a copy of previous Engineer's comments, marked to show Contractor's responses. If not provided, submittal will be returned as "Rejected/Resubmit."

H. Furnish all applicable information in the resubmittal, including information on material that was favorably reviewed. Upon request, the Engineer will return all but one of the original submittals for reuse by the Contractor.

I. Partial resubmittals are allowed, but following favorable review of the partial resubmittal, provide complete resubmittals including all favorably reviewed material.

1.09 DISTRIBUTION

A. Copy and distribute submittals returned by Engineer marked "No Exception Taken" or "Make Corrections Noted":
   1. Job site file.
   2. Job site record documents file.
   3. Subcontractors and suppliers as appropriate.

B. If returned by Engineer, distribute samples marked "No Exception Taken" or "Make Corrections Noted" as directed by the Engineer.

1.10 ENGINEER RESPONSIBILITIES

A. Review submittals with reasonable promptness as specified herein in the Timeliness subsection.

B. Return submittals with completed Contractor Submittal Form with signature and attach review comments if needed.

C. Return one copy of submittal to Contractor.

D. Submittal Review Status Categories:
   1. "NO EXCEPTION TAKEN" – Reviewed for general conformity to the requirements of the Contract Documents. Quantities shown not verified. Contractor's full responsibility is in no way relieved by this action.
   2. "MAKE CORRECTIONS NOTED" – Reviewed and noted for general conformity to requirements of the Contract Documents. Quantities shown not verified. Contractor's responsibility is in no way relieved by this action. Resubmittal is not required, provided Contractor concurs with, accepts, and complies with A/E's comments.
   3. "REVISE & RESUBMIT" – Reviewed and not accepted. Provide missing information, make corrections as noted, and resubmit full submittal.

4. "REJECTED/RESUBMIT" – Reviewed or partially reviewed and not accepted. Resubmit information in conformance with the Contract Documents.
5. "RECEIPT ACKNOWLEDGED" – Submittal for Section is not required or submittal is being held by A/E for coordination of work with that of another Section.

E. Return submittals with only cursory review and marked "Revise & Resubmit" or "Rejected/Resubmit" when:
1. It becomes apparent the submittal is not acceptable,
2. The submittal has not been thoroughly reviewed by the Contractor,
3. Submittal does not cover all of a Section,
4. Submittal improperly contains information for more than one Section, or
5. Submittal is illegible.

F. Return resubmittals only containing partial information.

G. Discard submittal copies in excess of those scheduled.

1.11 LIMITS OF ENGINEER'S RESPONSIBILITY

A. Engineer's review does not constitute acceptance or responsibility for accuracy of dimensions or quantities.

B. Engineer's review does not relieve the Contractor from meeting requirements of the Contract Documents.

C. Engineer's review does not constitute approval for any deviation from the Contract Documents unless such deviations are specifically stated as such on the submittal and specifically allowed by the Engineer by specific written notification for each such variation.

D. Engineer's review does not relieve the Contractor from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the Contractor's Responsibilities portion of this Section.

E. Engineer's review will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate approval of the assembly in which the item functions.

1.12 PAYMENT AND TIME FOR REVIEW OF EXCESSIVE SUBMITTALS

A. Submittals after first resubmittal:
1. Owner will charge Contractor for all of Engineer's review time and costs at Engineer's standard billing rates through a credit by Change Order.
2. Reviewed by Engineer at convenience of the Engineer.

1.13 FORMAT

A. Furnish individual submittal packages for each Section. Include a separate Contractor Submittal Form for each Section.

B. The Contractor may elect to make a single submittal for all Sections supplied by a single manufacturer/supplier. Such single submittal must conform to the following:
   1. Index the submittal with tabs with one and only one Section under a single tab.
   2. Include a separate Contractor Submittal Form for each Section.
   3. Identify submittal packages on the front or on the first page with the Owner's name, the project name, the Contractor's name, the subcontractor's name, the date, and the contents of the binder, including the Specification Section(s), title(s), and number(s).

C. Minimum Acceptable Binding Methods:
   1. Submittals of no more than six sheets per set, including cover sheets: Staple in sets.
   2. Submittals of seven to 25 sheets per set: Punch sheets and assemble in a soft-cover binder with 3-hole metal fold-down clips to hold pages or in a ring binder.
   3. Submittals of 26 to 75 sheets: Punch sheets and assemble in a hard-cover ring binder.
   4. Submittals of more than 75 sheets: Punch sheets and assemble in a hard-cover D-ring binder.
   5. Fold 11-inch by 17-inch drawings to fit into bound sets of submittals.
   6. Furnish drawings larger than 11 inches by 17 inches folded and inserted in pockets in the binders. Provide a complete index in the submittal literature set.

1.14 TIMELINESS

A. As a minimum, the Contractor shall allow the following number of calendar days for submittal process:

	Engineer's Review Time
Initial Submittal	10
Resubmittal	5
Operation and Maintenance Manuals	20

   1. Engineer's Review Time is the time the submittal is in the Engineer's office.
   2. The Engineer will process first those items with higher priority based on a written request from the Contractor.

B. Turnaround time for complex submittals (such as process equipment systems with multiple components, mechanical systems, electrical equipment, instrumentation control systems, and electrical process and instrumentation drawings) may exceed the total indicated in 1.14A.

C. Materials, equipment, supplies, or labor to install such materials or equipment for which submittals have not been marked “No Exception Taken” or “Make Corrections Noted” are not eligible for payment and such materials and equipment shall not be allowed on the job site.

1.15 PROJECT RECORD DOCUMENTS

A. If the equipment installed deviates in any way from the submittal for the equipment, then submit copies of submittals that are corrected to show actual equipment supplied.

1.16 ATTACHMENTS TO THIS SECTION

A. Contractor Submittal Form

1.17 REQUIRED SUBMITTALS

A. Quantity, submit in **one** of the following formats:
   1. Electronic Format:
      a. Submittals in electronic searchable .pdf format are allowed.
      b. Engineer’s submittal review will be returned to Contractor in electronic format.
      c. After an electronic submittal is accepted by the Engineer as final, submit one (1) printed copy to Engineer to retain for field use.
      d. Any additional printed copies received will be discarded by Engineer.
      e. Refer to Section 01 78 39 – Project Record Documents for submittal of one printed record set of submittals at Contract close-out.
   2. Or Printed Format:
      a. For submittals in printed format only, submit five (5) copies. Engineer will retain four (4).
      b. Engineer will return one (1) copy to Contractor.
      c. Any additional copies received will be discarded by Engineer.

B. See individual Specification Sections for description of required submittals.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

#	**CONTRACTOR SUBMITTAL FORM**	
Specification No. Title/Description:	Project:	Contractor's Submittal No.: Date: Product Description:
	CONTRACTOR:	Dates of any previous submissions:
	Subcontractor / Supplier:	Manufacturer:
	Specification No.:	Drawing Nos.:
	Are there any deviations to the Contract Documents? ☐ No ☐ Yes (Explain and Identify:)	
	Undisclosed deviations/modifications do not relieve the Contractor from the obligation to provide the specified product and detail of installation, and may be cause for rejection of the Work. Deviations and modifications must be listed here or in a separate Request for Substitution.	

CONTRACTOR'S CERTIFICATION: This submittal has been reviewed by the Contractor in compliance with Submittal Procedures of the CONTRACT DOCUMENTS' SPECIFICATIONS. Any deviations or substitutions to the CONTRACT DOCUMENTS have been identified above and submitted in compliance with the CONTRACT DOCUMENTS.

If this is a re-submittal, identify on a sheet(s) attached to this form all responses to comments on the previous submittal and all changes other than those specifically requested by the A/E on the previous submittal.

Signed _____ Date:

A/E'S REVIEW RESPONSE

(*Refer to Submittal Specification for explanation of categories.*)

Date Received:	No. Copies Received:
☐ **NO EXCEPTION TAKEN**	
☐ **MAKE CORRECTIONS NOTED**	
☐ **REVISE & RESUBMIT**	
☐ **REJECTED/RESUBMIT**	
☐ **RECEIPT ACKNOWLEDGED**	
By:	Date:
Date Returned:	No. Copies Returned:
A/E'S COMMENTS, IF ANY:	
A/E'S ATTACHMENTS, IF ANY:	

Note: DO NOT combine items from different specification sections into one submittal unless called for in the Section. If provisions in the "General Conditions" conflict with this form, the provisions as stated in the "General Conditions" shall prevail.

MOLZENCORBIN
ENGINEERS | ARCHITECTS | PLANNERS
2701 Miles Road SE, Albuquerque, NM 87106

SECTION 01 42 13

ABBREVIATIONS AND ACRONYMS

PART 1 GENERAL

1.01 SPECIAL

A. A/E – Architect/Engineer

B. EPA - United States Environmental Protection Agency.

C. NMED - New Mexico Environment Department.

D. OSE – Office of State Engineer

E. OSHA - Occupational Safety and Health Administration.

1.02 OTHER

A. As indicated on the Drawings, as apparent from the Drawings, or in accordance with standard practice.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 42 19

REFERENCE STANDARDS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Abbreviations and acronyms used in Contract Documents to identify reference standards.

1.02 QUALITY ASSURANCE

A. Application: When a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes establish stricter standards.

B. Publication Date: The publication in effect on the date of bid, except when a specific publication date is specified.

1.03 ABBREVIATIONS, NAMES, AND ADDRESSES OF ORGANIZATIONS

A. Obtain copies of referenced standards direct from publication source, when needed for proper performance of Work, or when required for submittal by Contract Documents.

AA	Aluminum Association 818 Connecticut Avenue, NW Washington, D.C. 20006
AASHTO	American Association of State Highway and Transportation Officials 444 North Capital Street, NW Washington, DC 20001
ABMA	American Bearing Manufacturers Association (formerly Anti-friction Bearing Manufacturers Association) 2025 M. Street, NW, Suite 800 Washington, DC 20036-3309
ACI	American Concrete Institute Box 19150 Reford Station Detroit, MI 48219

ADAAG	Americans with Disabilities Accessibility Act Guidelines www.access-board.gov/adaag
ADC	Air Diffusion Council 230 North Michigan Avenue Chicago, IL 60601
AGMA	American Gear Manufacturers Association 1001 N. Fairfax Street, Suite 500 Alexandria, VA 22314-1587
AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740
AISC	American Institute of Steel Construction 1221 Avenue of the Americas New York, NY 10020
AISI	American Iron and Steel Institute 1000 16 Street, NW Washington, DC 20036
ANSI	American National Standards Institute 1430 Broadway New York, NY 10018
APWA	American Public Works Association 1313 E. 60th Street Chicago, IL 60637
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 345 East 47 Street New York, NY 10017
ASME	American Society of Mechanical Engineers 345 East 47 Street New York, NY 10017
ASTM	American Society for Testing and Materials International 1916 Race Street Philadelphia, PA 19103

AWI	Architectural Woodwork Institute 1411 S. Rimpau Avenue, Suite 213 Corona, CA 92879-7500
AWWA	American Water Works Association 6666 W. Quincy Avenue Denver, CO 80235
AWS	American Welding Society 2501 NW 7 Street Miami, FL 33125
CBM	Certified Ballast Manufacturers 1422 Euclid Avenue Cleveland, OH 44115
CPSC	Consumer Products Safety Commission www.cpsc.gov
CRSI	Concrete Reinforcing Steel Institute 180 North LaSalle Street, Suite 2110 Chicago, IL 60601
CSA	Canadian Standards Association 178 Rexdale Boulevard Rexdale, Ontario, Canada M9W 1R3
DHI	Door and Hardware Institute 7711 Old Springhouse Road McLean, VA 22102
EEI	Edison Electric Institute 1111 19 Street, NW Washington, DC 20036
ETL	Electrical Testing Laboratories 2319 Dorris Place Los Angeles, CA 90031
FM	Factory Mutual www.fmglobal.com

FS	Federal Specification General Services Administration Specifications and Consumer Information Distribution Section (WFSIS) Washington Navy Yard, Bldg. 197 Washington, DC 20407 www.fss.gsa.gov/pub/fed-specs.cfm
GA	Gypsum Association 1603 Orrington Avenue Evanston, IL 60201
HI	Hydraulic Institute 6 Campus Drive, First Floor North Parsippany, NJ 07054-4405
IBC	International Building Code published by International Code Council 500 New Jersey Avenue, NW, 6th floor Washington, DC 20001
ICEA	Insulated Cable Engineers Association P.O. Box P South Yarmouth, MA 02664
IEEE	Institute of Electrical and Electronics Engineers 345 East 47 Street New York, NY 10017
ISA	Instrument Society of America 67 Alexander Drive P.O. Box 12277 Research Triangle Park, NC 27709
MIL	Military Specification Naval Publications and Forms Center 5801 Tabor Avenue Philadelphia, PA 19120
NACE	National Association of Corrosion Engineers P.O. Box 21830 Houston, TX 77218

NEC	National Electric Code Batterymarch Park P.O. Box 9101 Quincy, MA 02269
NEMA	National Electrical Manufacturers' Association 2101 L Street, NW Washington, DC 20037
NESC	National Electric Safety Code 345 East 47 Street New York, NY 10017
NFPA	National Fire Protection Association 470 Atlantic Avenue Boston, MA 02210
NFPA	National Forest Products Association 1619 Massachusetts Avenue, NW Washington, DC 30036
NMBC	New Mexico Building Code Code Regulations Licensing Department Construction Industries Divisions 725 St. Michaels Drive Santa Fe, NM 87504
NRCA	National Roofing Contractors Association www.nrca.net
NSF	National Sanitation Foundation International P.O. Box 130140 789 N. Dixboro Road Ann Arbor, MI 48105
NWWDA	National Wood Window and Door Association P.O. Box 34518 Memphis, TN 38184
OSHA	Occupational Safety & Health Administration www.osha.gov
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, IL 20076
PCI	Prestressed Concrete Institute

	20 North Wacker Drive Chicago, IL 60606
SDI	Steel Door Institute 712 Lakewood Center North Cleveland, OH 44107
SIGMA	Sealed Insulating Glass Manufacturer's Association 111 East Wacker Drive Chicago, IL 60601
SJI	Steel Joist Institute 1703 Parham Road Suite 204 Richmond, VA 23229
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association, Inc. 8224 Old Court House Road Vienna, VA 22180
SSPC	The Society for Protective Coatings (formerly Steel Structure Painting Council) 40 24th Street, 6th Floor Pittsburgh, PA 15222-4656 (877) 281-7772
UBC	Uniform Building Code International Conference of Building Officials 5360 Workman Mill Road Whittier, CA 90601-2298
UL	Underwriters' Laboratories, Inc. 333 Pfingston Road Northbrook, IL 60062
UPC	Uniform Plumbing Code International Association of Plumbing/Mechanical Officials 20001 Walnut Drive, South Walnut, CA 91789-2825

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 45 16.14

DIGITAL VIDEO RECORDING

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Digital video record entire area affected by construction prior to construction.

B. Perform additional digital video recording during project as directed by Engineer.

C. Have digital video files available with viewing facilities for viewing by Engineer, Owner, and Contractor when requested.

D. Digital video recording requirement part of Contractor's general overhead for which separate payment shall not be made.

1.02 EQUIPMENT REQUIREMENTS

A. Digital Video Camera Equipment:
1. Recording Media: DVD.
2. Format: Digital files compatible with standard playback equipment, and as agreed upon beforehand with Owner.
3. Color picture.
4. Audio, clear narration in English of significant features observed during recording.
5. Zoom lens.
6. Indexing of locations on discs for easy reference.
7. File downloading capability: To a personal computer (PC) that operates on Microsoft operating system of Windows XP or higher.

B. Video Viewing System:
1. Screen: 26 inches (diagonal dimension) or greater.
2. Color picture.
3. Audio.
4. Indexing of locations on discs for easy reference.
5. Slow motion.
6. Stop frame for viewing single picture.
7. Reversing.
8. Compatible with digital recording equipment.

C. Discs:
1. Catalogued, cross-referenced, indexed.

1.03 SYSTEM OPERATOR REQUIREMENTS

A. Familiar and experienced with equipment and equipment operations.

1.04 AVAILABILITY

A. Recording equipment and operator available on-site within 0.5 hours of Engineer's request during Contractor's normal working hours if scheduled.

B. Viewing system and appropriate discs available at meetings as scheduled or when requested by Engineer.

C. Deliver one (1) complete set of files to the Owner upon acceptance by the Engineer.

1.05 DIGITAL VIDEO RECORDING REQUIRED IF SCHEDULED

A. All streets, alleys, curbs, culverts, vaults, manholes, areas, locations where construction will be done:
   1. Both directions along utility line or street to be constructed or reconstructed.
   2. Maximum speed of camera movement 4 feet per second.
   3. Lateral and close-up view of any features or facilities that may be affected by construction.
   4. Not more than 14 calendar days prior to actual construction.
   5. Include data documentation on disc.
   6. Audio explanation of significant features observed during recording.
   7. Recording results acceptable to Engineer.
   8. Special documentation if requested by Engineer.

B. Drainage Documentation:
   1. Following general rainfall over area.
   2. Prior to any construction if practical.
   3. All areas where work will be performed.
   4. Recorded to document general preconstruction drainage patterns, problems, street surface conditions, and related items.
   5. On request of Engineer.

1.06 SCHEDULE OF REQUIRED DIGITAL VIDEO RECORDING

A. Provide digital video recording as outlined in Part 1.05 A.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 45 23

OWNER-FURNISHED TESTING LABORATORY SERVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Owner will furnish services of an independent testing laboratory to perform specified services and testing associated with soil gradation, soil density, concrete, and asphalt.

B. The Owner will charge the Contractor for all re-tests of previously failed tests and tests requested for the convenience of the Contractor.

1.02 ADDITIONAL REQUIREMENTS

A. Each specification section listed: Laboratory tests that will be performed and standards for testing.

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel in advance and provide access to Work.

B. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete and other material mixes which require control by the testing laboratory.

D. Furnish copies of Product test reports as required.

E. Furnish Incidental Labor and Facilities:
1. To provide access to Work to be tested.
2. To obtain and handle samples at the Project site or at the source of the product to be tested.
3. To facilitate tests.
4. For storage and curing of test samples.

F. Notify testing laboratory at least 48-hours in advance of all testing required by job progress or conditions, or the Engineer.

G. Provide on-site facilities as required for initial curing of concrete cylinders.

H. Submit all test reports to Engineer within seven (7) calendar days after test has been performed.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 51 00

TEMPORARY UTILITIES

PART 1 GENERAL

1.01 WATER

A. Water required for construction may be drawn from Owner's water system at the commercial rates for construction.

B. Contractor is not allowed to sell water to other users.

1.02 ELECTRICITY

A. Contractor is responsible for all costs associated with providing temporary power to the construction areas to accomplish the Work. See Section 01 91 01 – Treatment Plant Shakedown Operations, paragraph 1.02.D for additional information.

1.03 OTHER

A. All other temporary utilities required to accomplish the Work to be the responsibility of and at the Contractor's sole expense.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 55 00

TRAFFIC REGULATION

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Provide, operate and maintain equipment, services and personnel, with traffic control and protective devices as required to expedite public vehicular traffic flow and access on haul routes, at site entrances, on-site access road, parking areas, and any areas affected by construction operations.

B. Remove temporary equipment and facilities when no longer required, restore grounds to original, or to specified conditions.

1.02 RELATED REQUIREMENTS

A. Section 01 56 00 – Barriers

B. Section 01 14 16.01 – Coordination with Public

C. Section 01 14 16.02 – Public Access and Coordination

D. Section 01 33 23 – Shop Drawings, Product Data, and Samples

1.03 SUBMITTALS

A. Section 01 33 23 – Shop Drawings, Product Data, and Samples
   1. Qualifications of person who prepares the Traffic Control Plan (TCP).
   2. Submit Traffic Control Plan to Engineer.

1.04 TRAFFIC CONTROL SIGNALS AND SIGNS

A. Submit proposed Traffic Control Plan (TCP) prior to implementation:
   1. Full conformance with the Department of Transportation “Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD),” latest edition.
   2. TCP shall be prepared by a person possessing one of the following current certifications:
      a. Traffic Control Supervisor (TCS) certified by the American Traffic Safety Services Association (ATSSA).
      b. Design and operation of Work Zone Traffic Control course credits offered by the National Highway Institute.
      c. Work Zone Temporary Traffic Control Technician certified by the International Municipal Signal Association (IMSA).
   3. The person who prepares the TCP shall visit the project site prior to preparing the TCP.

B. Provide traffic control and directional signs for all closures and detours, mounted on barricades or standard posts with warning flashing lights. Any deviation from "MUTCD" requires prior approval of Engineer.

1.05 CONSTRUCTION PARKING CONTROL

A. Control Contractor's and construction personnel's private vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles or Owner's operations.

1.06 SPECIAL REQUIREMENTS FOR THIS PROJECT

A. Provide traffic and detour controls and signs as required on Drawings and as necessary to meet the requirements of this Section, Section 01 14 16.01 – Coordination with Public and Utility Interruptions.

B. The Contractor shall have a responsible person on site during working hours and on call during non-working hours to inspect and maintain project traffic control.

C. All non-applicable signing shall be removed or covered completely with an opaque non-light transmitting material. All remaining, non-applicable traffic control devices are to be removed.

D. Parking lot closure signs and specialty signs indicating that lot will be closed from beginning on "Date", and updated if needed.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 56 00

BARRIERS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Furnish, install, and maintain suitable barriers as required to prevent public entry, and to protect the public, Work, and existing facilities; remove when no longer needed or at completion of Work.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

A. Materials may be new or used, suitable for the intended purpose, but must not violate requirements of applicable codes and standards.

2.02 BARRIERS

A. Materials to Contractor's option, as appropriate to serve required purpose.

PART 3 EXECUTION

3.01 GENERAL

A. Install facilities of a neat and reasonable uniform appearance, structurally adequate for required purposes.

B. Maintain barrier during entire construction period.

C. Relocate barriers as required by progress of construction.

D. Provide barriers to protect the public from excavations and hazardous conditions and operations.

E. If a trench or excavation, where accessible to the public, is left open at night or weekends, it must be barricaded with flashing lights.

3.02 FENCES

A. Fence Location:
   1. Locate fence to enclose substantially entire Project site or that portion the Contractor establishes as required to encompass entire Project construction operation.
   2. Locate vehicular entrance gates in suitable relation to construction facilities; and to avoid interference with traffic on public thoroughfares.

B. Chainlink Fence:
   1. Fence not generally required for sewer lines, waterlines, and street work.
   2. Fence generally required for treatment plant, pump stations, and similar facilities.

3.03 REMOVAL

A. Completely remove barricades, including foundations, when construction has progressed to the point that they are no longer needed.

B. Clean and repair damage caused by installation, fill and grade areas of the site to required elevations and slopes, and clean the area.

END OF SECTION

SECTION 01 57 00

TEMPORARY CONTROLS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Provide and maintain methods, equipment, and temporary construction, as necessary to provide controls over environmental conditions at the construction site and related areas under Contractor's control; remove physical evidence of temporary facilities at completion of Work.

1.02 NOISE CONTROL

A. Limit to practical extent.

B. Limit to normal working hours when practical.

1.03 DUST CONTROL

A. Provide positive methods and apply dust control materials to minimize raising dust from construction operations, and provide positive means to prevent airborne dust from dispersing into the atmosphere.

1.04 WATER CONTROL

A. Provide methods to control surface water to prevent damage to the Project, the site, or adjoining properties.
   1. Control fill, grading and ditching to direct surface drainage away from excavations, pits, tunnels and other construction areas; and to direct drainage to proper runoff.

B. Provide, operate and maintain hydraulic equipment of adequate capacity to control surface water.

C. Dispose of drainage water and dewatering water in a manner to prevent flooding, erosion or other damage to any portion of the site or to adjoining areas. Any public agency or private landowner arrangements, permits, or other approvals required for the discharge of water are the sole responsibility of the Contractor.

1.05 PEST CONTROL

A. As found necessary during construction.

1.06 RODENT CONTROL

A. Provide rodent control as necessary to prevent infestation of construction or storage

area.

1. Employ methods and use materials which will not adversely affect conditions at the site or on adjoining properties.
2. Should the use of rodenticides be considered necessary, submit an informational copy of the proposed program to Owner with a copy to Engineer. Clearly indicate:
    a. The area or areas to be treated.
    b. The rodenticides to be used, with a copy of the manufacturer's printed instructions.
    c. The pollution preventive measures to be employed.

B. The use of any rodenticide shall be in full accordance with the manufacturer's printed instructions and recommendations and applicable laws and regulations.

1.07 DEBRIS CONTROL

A. Maintain all areas under Contractor's control free of extraneous debris.

B. Initiate and maintain a specific program to prevent accumulation of debris at construction site, storage and parking areas, or along access roads and haul routes.

1. Provide containers for deposit of debris as specified in Section 01 74 00 – Cleaning and Waste Management.
2. Prohibit overloading of trucks to prevent spillages on access and haul routes.
    a. Provide periodic inspection of traffic areas to enforce requirements.

C. Schedule periodic collection and disposal of debris as specified in Section 01 74 00 – Cleaning and Waste Management.

1. Provide additional collections and disposals of debris whenever the periodic schedule is inadequate to prevent accumulation.

1.08 POLLUTION CONTROL

A. Provide methods, means and facilities required to prevent the discharge of hazardous substances from construction operations.

B. Perform emergency measures required to report, contain and transport harmful substance discharges or spills by complying with Federal and State regulations.

C. Take special measures to prevent harmful substances from entering public waters.

1. Prevent disposal of wastes, effluents, chemicals or other such substances adjacent to streams, or in sanitary or storm sewers.

D. Provide systems for control of atmospheric pollutants.

1. Prevent toxic concentrations of chemicals.
2. Prevent harmful dispersal of pollutants into the atmosphere.

1.09 EROSION CONTROL

A. Plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation.
   1. Hold the areas of bare soil exposed at one time to a minimum.
   2. Provide temporary control measures such as berms, dikes, drains, straw bales, silt fences, and wattles.

B. Construct fills and waste areas by selective placement to eliminate surface silts or clays which will erode.

C. Periodically inspect earthwork to detect any evidence of the start of erosion, apply corrective measures as required to control erosion.

1.10 SECURITY CONTROL

A. Provide temporary padlocks during construction on gates, hatches, doors, panels, and boxes having hasps. Coordinate with Owner to install specified permanent padlocks at completion of project.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Provide and Pay for Field Engineering Services Required for Project:
   1. Survey work required in execution of Project.
   2. Engineering work for civil, structural or other professional engineering services specified or required to execute Contractor's construction methods.

1.02 QUALIFICATIONS OF SURVEYOR OR ENGINEER

A. Survey work during construction may be completed by the Contractor. However, all locations/elevations must be verified at the completion of the contract by a qualified land surveyor registered in the state in which the construction is being done. Final survey data shall be documented on the Record Drawings.

B. Engineering work by qualified professional engineer registered in the state in which the construction is being done.

1.03 SURVEY REFERENCE POINTS

A. Original basic horizontal and vertical control points for the Project are those designated on Drawings.

B. Locate existing control points, re-establish original control points, protect control points prior to starting site work, and preserve all permanent reference points during construction.
   1. Make no changes or relocations without prior written notice to Engineer.
   2. Report to Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
   3. Require surveyor to replace Project control points which may be lost or destroyed.
   4. Establish replacements based on original survey control.

C. Reconfirm all existing and original vertical elevation control points prior to the use of such points for project surveying. Reference control point for such reconfirmation is shown on Drawings.

D. Refer any apparent discrepancies to Engineer for resolution. Surveyor to assist Engineer with field work required for resolution of such apparent discrepancies.

1.04 PROJECT SURVEY REQUIREMENTS

A. Establish lines and levels, locate and lay out, by instrumentation and similar

appropriate means:

1. Site improvements:
2. Stakes for grading, fill and topsoil placement.
3. Utility slopes and invert elevations.
4. Batter boards for structures.
5. Building foundation, column locations, and floor levels.
6. Controlling lines and levels required for mechanical and electrical trades.

B. From time to time, verify layouts by same methods as required for control of the Work and when requested by the Engineer.

C. The Contractor shall take reasonable efforts to protect all existing property corners, permanent bench marks, right-of-way markers, government established monuments, and similar reference points. If any must be disturbed, the monuments must be referenced before removal and replaced as soon as work in the area is completed. Referencing and replacing shall be done by a licensed surveyor, and in the case of U.S.G.S. monuments and NMDOT right-of-way markers, shall be a first order survey work.

1.05 RECORDS

A. Maintain a complete, accurate log of all control and survey work as it progresses.

B. On completion of improvements, prepare record drawings showing all dimensions, locations, and elevations of construction.

1.06 SUBMITTALS

A. Submit name and address of surveyor and professional engineer to Engineer.

B. Submit documents certifying current registration of surveyor and engineer.

C. On request of Engineer, submit documentation to verify accuracy of field engineering work.

D. Survey data and computations for all Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 74 00

CLEANING AND WASTE MANAGEMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Execute cleaning, during progress of the Work, and at completion of the Work, as required by General Conditions.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract

B. Each Specification Section: Cleaning for specific products or work.

1.03 DISPOSAL REQUIREMENTS

A. Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 PRODUCTS

2.01 MATERIALS

A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 EXECUTION

3.01 DURING CONSTRUCTION

A. Execute periodic cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.

B. Provide on-site containers for the collection of waste materials, debris and rubbish.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.02 DUST CONTROL

A. Clean interior spaces prior to the start of finish painting and continue cleaning on an as-needed basis until painting is finished.

B. Schedule operations so that dust and other contaminants resulting from cleaning process will not fall on wet or newly-coated surfaces.

3.03 FINAL CLEANING

A. Type 1 – For Buildings:
   1. Employ skilled workmen for final cleaning.
   2. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.
   3. Wash and shine glazing and mirrors.
   4. Polish glossy surfaces to a clear shine.
   5. Ventilating Systems:
      a. Clean permanent filters and replace disposable filters if units were operated during construction.
      b. Clean ducts, blowers and coils if units were operated without filters during construction.
   6. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
   7. Prior to final completion, or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire Work is clean.

B. Type 2 – For Grounds and Exposed Concrete Work:
   1. Broom clean exterior paved surfaces; rake clean other ground surfaces.
   2. Broom clean all concrete slabs.
   3. Remove grease, mastic, adhesives, dust, dirt, stains, labels and other foreign materials from all piping systems surfaces and equipment.
   4. Prior to final completion or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces and all work areas to verify that the entire Work is clean.

3.04 SCHEDULE

A. Type 2 shall be done for this project.

END OF SECTION

SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Comply with requirements stated in Conditions of the Contract and in Specifications for administrative procedures in closing out the Work.

1.02 RELATED REQUIREMENTS

A. Conditions of the Contract. Fiscal provisions, legal submittals and additional administrative requirements.

B. Section 01 29 00 – Payment Procedures

C. Section 01 33 23 – Shop Drawings, Product Data, and Samples

D. Section 01 78 23 – Operation and Maintenance Data

1.03 SUBSTANTIAL COMPLETION

A. When Contractor considers the Work is substantially complete, Contractor shall submit to Engineer:
   1. A written notice that the Work, or designated portion thereof, is substantially complete.
   2. A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, Engineer will make an inspection to determine the status of completion. If acceptable to Engineer and Owner, Engineer will notify Contractor in writing. Work is substantially complete when:
   1. All systems are complete and functional.
   2. All final Operation and Maintenance Manuals have been accepted.
   3. Any required shakedown testing periods have been completed.
   4. Utilities, alarms, electrical, area lighting, monitoring, controls, drains, piping, paving, and related components are in place and completed.
   5. Facilities can be put to intended use.
   6. Owner is able to use for intended use at no additional cost to Owner.

C. Should Engineer determine that the Work is not substantially complete:
   1. Engineer will promptly notify the Contractor in writing, giving the reasons therefor.
   2. Contractor shall remedy the deficiencies in the Work, and send a second written notice of substantial completion to the Engineer.
   3. Engineer will reinspect the Work.

4. Owner may charge Contractor for all of Engineer's reinspection time and costs at Engineer's standard billing rates through a credit by Change Order.

D. Contractor's warranty start date for equipment systems will be the date of Substantial Completion accepted by the Engineer/Owner for that specified equipment system.

E. After the Engineer and Owner have accepted the Work, or designated portion thereof, Owner will assume responsibility for operation and maintenance of the facilities and equipment, or designated portion thereof.

1.04 FINAL INSPECTION

A. When Contractor considers the Work is complete, Contractor shall submit written certification that:
1. Contract Documents have been reviewed.
2. Work has been inspected for compliance with Contract Documents.
3. Work has been completed in accordance with Contract Documents.
4. Equipment and systems have been tested in the presence of the Owner's representative and are operational.
5. Work is completed and ready for final inspection.

B. Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should Engineer consider that the Work is incomplete or defective:
1. Engineer will promptly notify the Contractor in writing, listing the incomplete or defective work.
2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Engineer that the Work is complete.
3. Engineer will reinspect the Work.

D. When the Engineer finds that the Work is acceptable under the Contract Documents, Engineer will request the Contractor to provide closeout submittals as listed in subsection 1.06.

1.05 REINSPECTION FEES

A. Should Engineer perform reinspections due to failure of the Work to comply with the claims of status of completion made by the Contractor:
1. Owner will compensate Engineer for such additional services.
2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.06 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

A. Evidence of compliance with requirements of governing authorities.

B. Warranties and Bonds: To requirements of General Conditions.

C. Evidence of Payment and Release of Liens: To requirements of General and Supplemental Conditions.

D. Consent of Surety: To requirements of General Conditions.

E. Project Record Documents: To requirements of Section 01 78 39.

F. Operating and Maintenance Data: To requirements of Section 01 78 23.

G. Instructions to Owner's Personnel: To requirements of Section 01 79 01.

H. Spare Parts and Maintenance Materials: To requirements of Section 01 78 44.

1.07 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to Engineer.

B. Statement shall reflect all adjustments to the Contract Sum:
1. The original Contract Sum.
2. Additions and deductions resulting from:
    a. Previous Change Orders
    b. Allowances
    c. Unit Prices
    d. Deductions from uncorrected Work
    e. Deductions for liquidated damages
    f. Deductions for reinspection payments
    g. Other adjustments
3. Total Contract Sum, as adjusted
4. Previous payments
5. Sum remaining due

C. Engineer will prepare a final Change Order, reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.08 FINAL APPLICATION FOR PAYMENT

A. After receiving written notification from the Engineer that Contractor has completed all requirements specified in subsections 1.03, 1.04, 1.06, and 1.07, Contractor shall submit the final Application for Payment in accordance with procedures and requirements stated in the Contract Documents.

B. Contractor shall provide the consent of surety to final payment when submitting the application for final payment.

C. Contractor shall provide all other documents specified in Supplementary Conditions SC-14.07.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

A. Maintain one (1) printed record copy of the following record documents at the site for the Owner:
   1. Drawings
   2. Engineer's response to Requests for Information (RFIs)
   3. Engineer Field Orders or written instructions
   4. Accepted Shop Drawings, Product Data and Samples
   5. Field Test records
   6. Receipts for delivery of items to Owner

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in Contractor's field office apart from documents used for construction.
   1. Provide files and racks for storage of documents.
   2. Provide locked cabinet or secure storage space for storage of samples.

B. File documents and samples in accordance with specification format.

C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by Engineer and Owner.

1.03 MARKING DEVICES

A. Provide felt tip marking pens for recording information in the color code designated by Engineer.

1.04 RECORDING

A. Label each document "PROJECT RECORD" in neat, large printed letters.

B. Record information concurrently with construction progress.
   1. Do not conceal any work until required information is recorded.

C. Drawings: Legibly mark to record actual construction:
   1. Changes made by addenda.
   2. Depths of various elements of foundation in relation to finish first floor datum.

3. Horizontal and vertical locations of underground utilities and appurtenances, including bends in pipes; and internal utilities and appurtenances concealed in the construction. Measure and show locations on the Record Drawings by either:
    a. Referenced to permanent surface features or referenced to visible and accessible features of the structure.
    b. Or tabulate and plot coordinates on the Record Drawings measured using survey grade GPS or GNSS to an accuracy of 0.1 meter (4 inches) using a baseline tied into the project coordinate system control points.
4. Field changes of dimension and detail.
5. Changes made by Field Order or by Change Order.
6. Details not on original Contract Drawings.
7. For sewer lines: Invert elevations at manholes, line and manhole alignment and locations, and location of each service line referenced by distance from downstream manhole and distance from sewer centerline to end of service line.

1.05 SUBMITTALS

A. At Contract close-out, deliver Record Documents to Engineer for the Owner.

B. Submit to-scale dimensioned electronic drawing files of major equipment items installed that were not the design basis manufacturer. Drawings shall show general arrangement plan and sections. Drawing files shall be in AutoCAD dwg format.

C. Accompany submittals with transmittal letter in duplicate, containing:
1. Date
2. Project title and number
3. Contractor’s name and address
4. Title and number of each Record Document
5. Signature of Contractor or his authorized representative

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

PART 4 PAYMENT

4.01 RECORD DRAWINGS

A. Project record documents are incidental Work to the Contract Documents’ bid items for which no separate payment will be made.

B. No payment will be made to the Contractor for any portion of the Work for which the project record documents are not complete.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 WORK INCLUDED

A. Cast-In-Place Concrete

B. Reinforcing Steel

C. Forms

D. Admixtures

E. Embedments

1.02 ADDITIONAL REQUIREMENTS SPECIFIED ELSEWHERE

A. Section 01 45 23: Testing Laboratory Services.

1.03 SUBMITTALS

A. Shop Drawings and Product Data:
1. Concrete mix design.
2. Proposed admixtures, per ACI 318.
3. Reinforcing bar lists, fabrication, and placement drawings for structures.
4. Concrete accessories.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Storage:
1. Cement and fly ash:
   a. Store in moisture-proof enclosures.
   b. Do not use if caked or lumpy.
2. Aggregate:
3. Store to prevent segregation and inclusion of foreign materials.
4. Reinforcing steel: Store on supports which will keep it from contact with the ground.
5. Rubber and plastic materials:
   a. Store in a cool place.
   b. Do not expose to direct sunlight.

PART 2 PRODUCTS

2.01 MATERIALS

A. Forms:
1. The form work shall be designed in accordance with ACI 347.
2. Chamfer strips: Clear white pine, surface against concrete planed.
3. Form Coating: Industrial lubricants “Nox-crete Form Coating”, “L&M Debond”, Protex “Pro-Cote”, Richmond “Rich Cote”, or Engineer reviewed equivalent.
4. Form ties: Removable end, permanently embedded body type not requiring auxiliary spreaders, with cones on outer ends, embedded portion 1” minimum back from concrete face. If not provided with threaded ends, constructed for breaking off ends without damage to concrete.
5. Earth cuts shall not be used as forms for vertical surfaces, unless indicated on project drawings.

B. Reinforcing Steel:
1. Bars: ASTM A615, Grade 60.
2. Welded wire fabric: ASTM A185 or A497.
3. Bar supports: PS7; CRSI Class B, fabricated from galvanized wire.

C. Concrete:
1. Cement: ASTM C150, Type I or II. Use Type III only with prior written approval of Engineer.
2. Fly ash: ASTM C618, Class F, except loss on ignition not more than 5%
3. Fine aggregate: Clean, natural sand, ASTM C33.
4. Coarse aggregate: Crushed rock, natural gravel or other inert granular material, ASTM C33 except clay and shale particles no more than 1%.
5. Water: Clean, fresh and potable.
6. Admixtures:
    a. Retarder: ASTM C494, Type D; Grace “Duratard-HC”, Master Builders “Pozzolith 300-R”, Protex “Protard”, Sika Chemical “Plastiment”, or Engineer reviewed equivalent.
    b. Plasticizer: ASTM C494, Type A; Grace “WRD A-HC”, Master Builders “Rheobuild 1000”, Sika Chemical “Plastocrete”, or Engineer reviewed equivalent.
    c. Air entraining agent: ASTM C260; Grace “Darex AEA”, Master Builders “AE 90”, Protex “AES”, Sika Chemical “AEK”, or Engineer reviewed equivalent.
    d. Water reducing agent ASTM C494, Type A; Master Builders “Pozzolith 322-N”, or Engineer reviewed equivalent.

D. Accessories:
1. Polyethylene film: PS17, 6 mil.
2. Membrane curing compound and floor sealer: FS TT-C-600, Type 1; chlorinated rubber, minimum 18% solids; Grace “Dekote”, Process Solvent

"Concrete Treatment ALX-9", Protex "Triple Seal Series CRD-18", TK Product "Tri-Kote TK-18", or Engineer reviewed equivalent.

3. Expansion and contraction joint: Elastic
   a. Rubber: Dumbell, 9" wide, 3/8 thick with 3/4" bead on each end, WR Grace, U.S. Rubber, William or Engineer reviewed equivalent.
   b. PVC: Ribbed or serrated, 9" wide, 3/8" thick with "U" or "O" bulb closed center section, WR Grace, WR Meadows, Vinylex or Engineer reviewed equivalent.
4. Exterior expansion joint material: Asphalt impregnated fiberboard: ASTM D994.
5. Bond break joint material: 30 lb. asphalt saturated felt, ASTM D226.
6. Interior slab construction joint material: Preformed 20 gage steel or as indicated on Drawings.

2.02 CONCRETE MIX

A. Comply with ASTM C94.

B. Water to Cementitious Material Ratio: Maximum 0.50.

C. Slump: Maximum 4.0", unless otherwise scheduled.

D. Compressive Strength: 28 days - 4000 psi, unless otherwise scheduled or shown on the Drawings.

E. Volumetric Air Content: 4.5% to 7.5%, air may be omitted for interior slabs to be trowel finished.

F. Admixtures:
1. Content, batching method, and time of introduction in accordance with the manufacturer's recommendations for compliance with this Specification.
2. Include a water reducing admixture.
3. Calcium chloride shall not be used.

G. Coarse Aggregate:
1. Maximum nominal dimension:
2. 3/4" for 8" concrete members.

H. Consistency:
1. Suitable for the placement conditions.
2. Slump uniform.
3. Aggregate floating uniformly throughout the concrete mass.
4. Flow sluggishly when vibrated or spaded.
5. Adjust mix in field, with Engineer's approval, as required to meet specifications.

2.03 FABRICATION

A. Reinforcing Steel:
   1. Fabricate in accordance with ACI 315 and 318 except as specified or indicated on Drawings.
   2. Accurately fabricated.
   3. Free from loose rust, scale, and contaminants which will reduce bond.

PART 3 EXECUTION

3.01 INSTALLATION

A. Forms:
   1. In accordance with ACI 347.
   2. Mortartight.
   3. Exposed concrete surfaces free from irregularities.
   4. True to line, grades, and dimensions shown on the Drawings.
   5. Rigid and properly braced.
   6. Ties arranged so that metal will not show or discolor concrete surface.
   7. Bevel or chamfer exterior corners.
   8. Coat forms with acceptable release material.

B. Reinforcing Steel:
   1. Remove loose rust, scale, grease or any coating which may impair bond to concrete. Remove all rust that can be wiped off with a cloth.
   2. Provide supports to provide minimum cover and spacing.
   3. Provide splice lengths as required by ACI 318.

C. Embedments:
   1. Accurately placed for the purpose intended.
   2. Remove loose rust, scale, and other foreign matter before placing concrete. Remove all rust that can be wiped off with a cloth.

D. Concrete:
   1. Place before initial set has occurred, but in no event after the concrete has contained its water content for more than 30 minutes.
   2. Place concrete on compacted moist surfaces, free from standing or running water.
   3. Concrete to be conveyed and placed in an approved manner to prevent segregation of the coarse aggregate.
   4. Cold weather concreting:
      a. Comply with ACI 306.
   5. Hot weather concreting:
      a. Comply with ACI 305.

E. Expansion and Contraction Joints:
   1. Provide as indicated on the Drawings.

F. Finishing:
   1. Not required on buried surfaces.

2. No special concrete or cement mortar topping allowed for slab finish.
3. Slabs brought to true and even finish by screeding, floating, and finishing to product a smooth impervious surface, free from blemishes.
4. Unless otherwise specified or shown on the Drawings, a steel trowel finish shall be applied.
5. Excess water shall not be present when the finish is made.

G. Curing:
1. Cure concrete by approved method which will keep surfaces adequately wet or protected from moisture loss for the curing period.

H. Repairing Defective Concrete:
1. Repair defects in formed concrete surfaces within 24 hours.
2. Replace defective concrete within 48 hours.
3. Cut out and remove to sound concrete honeycombed or otherwise defective concrete.
4. Cut edges square to avoid feathering.
5. Comply with Chapter 9, ACI 301.
6. Perform repair work so as not to interfere with thorough curing of adjacent concrete.
7. Adequately cure repair work.

3.02 FIELD QUALITY CONTROL

A. Perform Field Control Test:
1. Tests by qualified personnel.
2. Make tests in presence of Engineer's representative.
3. Provide all equipment, supplies, and the services of one or more employees, as required.
4. The test frequencies specified are minimum; perform additional tests as required by the job conditions.

B. Slump: Perform a test for each load in accordance with ASTM C143.

C. Air Content: Test one (1) sample from one of each three (3) batches made and from each batch from which test cylinders are made, in accordance with ASTM C231.

D. Compression Tests:
1. Make one (1) set of four (4) cylinders from every load or batch or portion thereof.
2. Make, cure, store, and deliver cylinders in accordance with ASTM C31.
3. Mark or tag each set of test cylinders with the date and time of day the cylinders were made, the location in the work where the concrete represented by the cylinders was placed, the delivery truck or batch number, the air content, and the slump.
4. Testing laboratory will:
   a. Test one (1) cylinder in each set at 7 days.

b. Test two (2) cylinders from each set at 28 days.
c. If compressive strength does not reach specified compressive strength at 28 days, test remaining cylinder at 56 days.
d. Do not test or discard remaining cylinder until so instructed by the Engineer.
e. Engineer will evaluate in accordance with ACI 214 and 318.
f. Test in accordance with ASTM C39.

5. 4" dia. x 8" cylinders may only be used under the following conditions:
   a. Coarse aggregate size for all mixes used on the project do not exceed 1" maximum size, and
   b. Test cylinders for all mixes used on the project shall be the same size.

E. Concrete used solely for blocking of water line valves or fittings will not require testing. It shall, however, be subject to acceptance by the Engineer as to its suitability.

END OF SECTION

SECTION 31 10 00

REMOVALS

PART 1 GENERAL

1.01 WORK INCLUDED

A. This work includes the removal and disposal of all obstructions, materials, and resultant debris required for the completion of construction.

1.02 REFERENCES

A. Manual on Uniform Traffic Control Devices (MUTCD).

1.03 QUALITY ASSURANCE

A. Conduct removal operations to prevent damage to adjacent property, buildings, and other facilities.

B. Any damage to adjacent property or facilities shall be promptly repaired at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 EXPLOSIVES

A. The use of explosives for removals is prohibited.

PART 3 EXECUTION

3.01 REMOVAL

A. Remove all items shown on Drawings to be removed.

B. Contractor shall not remove any other items without approval from Engineer.

C. Excavation created during removal operations shall be barricaded in accordance with MUTCD.

D. Contractor shall perform miscellaneous excavating, backfilling, and reshaping of slopes as required.

3.02 DISPOSAL

A. Contractor shall haul and dispose of all debris, rubbish, broken concrete, broken asphaltic concrete, rocks, and other material removed.

B. Disposal: In accordance with applicable State and Federal Regulations.

C. Burning of debris and rubbish will not be permitted on the project site.

END OF SECTION

SECTION 31 22 00

GRADING

PART 1 GENERAL

1.01 WORK INCLUDED

A. This work shall consist of shaping road beds and side ditches to subgrade preparation to the depths indicated on the Drawings.

1.02 REFERENCE STANDARDS

A. American Society for Testing and Materials International:
   1. ASTM D1556 – Density of Soil in Place by the Sand-Cone Method.
   2. ASTM D1557 – Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).
   3. ASTM D2167 – Density of Soil in Place by the Rubber-Balloon Method.
   4. ASTM D2216 – Laboratory Determination of Moisture Content of Soil.
   5. ASTM D6938 – In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.03 QUALITY ASSURANCE

A. Testing Laboratory:
   1. Contractor will provide material testing for quality control during earthwork operations.

1.04 JOB CONDITIONS

A. Do not construct embankments when atmospheric temperature is below 35°F.

PART 2 PRODUCTS

2.01 BORROW

A. Borrow shall consist of materials obtained from approved borrow areas designated by the Engineer for the construction of embankments.

B. Provide free of vegetation.

2.02 WASTE

A. Disposal of excess excavation shall be the responsibility of the Contractor. Excess material to be placed in location reviewed by Engineer.

2.03 EXCAVATION

A. Includes excavation, removal, backfill, and satisfactory disposal of all materials encountered in the work.

2.04 EMBANKMENT

A. Embankment construction shall consist of the formation of embankments with suitable material from on-site excavation.

PART 3 EXECUTION

3.01 GENERAL

A. Excavation and embankments for the roads shall be finished to the contours, shapes, dimensions, and elevations shown on the Drawings.

B. No materials shall be wasted without permission from the Engineer.

C. Perform clearing operations prior to beginning excavation, grading, and embankment operations.

3.02 SUBGRADE PREPARATION

A. See Section 31 23 13 – Subgrade Preparation.

3.03 GRADING

A. Provide uniform slopes and rounded changes in slope, free of low spots.

B. The degree of grade control shall not deviate from true grade and profile more than one-half inch as measured by a ten-foot straightedge.

C. Drainage:
1. Provide and maintain positive surface water drainage around and away from open excavations.
2. Keep opened excavations dry.
3. Remove free water in excavations promptly.

3.04 EMBANKMENT

A. Embankments shall meet the compaction requirements specified in Subsection 3.05.

B. No frozen material, brush, sod, or unsuitable material shall be placed in the embankments.

C. In the distribution of embankment material, avoid lenses differing substantially from the surrounding material.

D. Deliver materials to the embankment in such a manner as to result in a well and uniformly compacted embankment.

3.05 EMBANKMENT AND BACKFILL COMPACTION

A. General:
1. Compact in eight-inch loose horizontal layers.
2. Use moistened material when necessary.
3. Layers shall be uniformly compacted before a succeeding layer is placed.
4. Add water in sufficient quantity to obtain the specified compaction.
5. Do not allow free water to stand on an embankment surface.
6. Compaction shall be accomplished by approved methods and equipment.

B. Degree of Compaction:
1. Optimum density will be determined in accordance with ASTM D1557.
2. Perform compaction as follows:

Description	Percent of Maximum Dry Density to Be Not Less Than	Variation of Optimum Moisture
Embankment and backfill under roads, lift station, or where otherwise scheduled	95	+2
General area grading not included in the above	90	+2

3.06 FIELD QUALITY CONTROL

A. Field control of density of in-place material will be determined in accordance with any of the following methods:
1. Nuclear Method, ASTM D6938
2. Rubber-Balloon Method, ASTM D2167
3. Sand-Cone Method, ASTM D1556

B. Field control of moisture content will be determined in accordance with either of the following methods:
1. Nuclear Method, ASTM D6938
2. Laboratory Determination, ASTM D2216

C. In-place density and moisture tests to be taken at intervals to be determined by the Engineer.

END OF SECTION

SECTION 31 23 13

SUBGRADE PREPARATION

PART 1 GENERAL

1.01 WORK INCLUDED

A. Preparing the completed subgrade prior to placement of subsequent pavement section components to the grade and dimensions indicated on the Drawings. This is inclusive of all processing, shaping, compacting, watering, protecting and any removal and replacement of unsuitable material to prepare the subgrade satisfactorily for completion of the pavement section.

1.02 REFERENCES

A. American Society for Testing and Materials International:
   1. ASTM D1556 – Density of Soil in Place by the Sand-Cone Method
   2. ASTM D1557 – Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))
   3. ASTM D2167 – Density of Soil in Place by the Rubber-Balloon Method
   4. ASTM D2216 – Laboratory Determination of Moisture Content of Soil
   5. ASTM D6938 – In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.03 QUALITY ASSURANCE

A. Testing Laboratory:
   1. Contractor shall provide material testing for quality control during subgrade preparation.

PART 2 PRODUCTS

2.01 SUITABLE MATERIALS

A. Suitable materials shall consist of materials obtained on site reviewed by the Engineer for the purpose of subgrade preparation.

B. Any underlying soft or otherwise unsuitable material shall be removed and replaced with suitable material.

C. Provide free of vegetation.

2.02 WASTE

A. Disposal of excavated materials shall be the responsibility of the Contractor. Excess material to be placed in location designated by Owner or Engineer.

PART 3 EXECUTION

3.01 PREPARATION

A. Excavations and embankments for the roads and site grading shall be finished to the shapes, dimensions, and elevations shown on the Drawings.

B. Perform clearing operations prior to beginning excavation, grading, and embankment operations.

C. Processed, watered, and compacted to not less than 90% of modified Proctor density (ASTM D1557) at optimum moisture content ±2%, to a depth of 12” minimum.

D. Material that cannot be processed satisfactorily to meet these specifications shall be considered unsuitable.

3.02 GRADING

A. Provide uniform slopes and rounded changes in slope, free of low spots.

B. The degree of grade control shall not deviate from true grade and profile more than one-half inch as measured by a ten-foot straight edge.

C. Drainage:
1. Provide and maintain positive surface water drainage around and away from open excavations.
2. Keep opened excavations dry.
3. Remove free water in excavation promptly.

3.03 FIELD QUALITY CONTROL

A. Sample and Test:
1. At intervals not to exceed 200 feet.
2. At locations designated by the Engineer.

END OF SECTION

SECTION 32 09 00

REMOVAL AND REPLACEMENT OF EXISTING SURFACES

PART 1 GENERAL

1.01 WORK INCLUDED

A. Removal and replacement of existing asphalt and concrete paving, sidewalks, curb and gutter, and driveways removed incidental to the Work of the contract.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO T 166 – Test for Bulk Specific Gravity (Gmb) of Compacted Hot Mix Asphalt (HMA) Using Saturated Surface-Dry Specimens.
   2. AASHTO T 209 – Theoretical Maximum Specific Gravity and Density of Hot-Mix Asphalt Paving Mixtures.

B. American Society for Testing and Materials International (ASTM):
   1. ASTM D1557 – Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).
   2. ASTM D2950 – Density of Bituminous Concrete in Place by Nuclear Methods.

C. New Mexico State Department of Transportation (NMDOT):
   1. Standard Specifications for Highway and Bridge Construction.

1.03 TESTING AND INSPECTION

A. Representative samples shall be taken from each concrete truck and tested for:
   1. Slump
   2. Air entrainment
   3. Compressive strength (7 day, 14 day, 28 day) (4 cylinders per truck).

1.04 SUBMITTALS

A. Section 01 33 23 – Shop Drawings, Product Data, and Samples:
   1. Product Data.
   2. Gradations and other laboratory results.

B. Design mix for asphalt and concrete

C. Certify that materials comply with specification requirements.

D. Testing Laboratory Test Results

PART 2 PRODUCTS

2.01 MATERIALS

A. All replacement materials to be new and of same quality or better than existing.

PART 3 EXECUTION

3.01 REMOVAL

A. Asphaltic and Concrete Paving Material:
   1. Sawcut lines, the full depth of the material, straight and parallel without abrupt jogs, vertical to the surface.
   2. Broken out and removed entirely; rubble to be wasted at an approved location.

B. Sidewalks and Curb and Gutter:
   1. Sawcuts at exiting joints only.
   2. Broken out and removed entirely; rubble to be wasted at an approved location.

C. Gravel Surface and Subgrade Material:
   1. Removed entirely.
   2. May be stockpiled and reused for replacement or removed and wasted at an approved location.
   3. Material for reuse must be clean, free of debris, organic and deleterious substances, and used only with the review of the Engineer.

3.02 PREPARATION FOR REPLACEMENT

A. Subgrade materials same thickness and type as removed.

B. Subgrade compaction as shown on the Drawings, not less than 90% modified Proctor, ASTM D1557.

C. Existing gravel materials to be reused to be clean as required.

3.03 REPLACEMENT SCHEDULE

A. Replacement shall be constructed to conform to existing lines, grades, shape, thickness, and finish, unless otherwise scheduled or shown on Drawings.

B. Asphalt pavement to be placed with laydown machine when practical.

C. Mix design for asphalt pavement shall meet New Mexico Department of Transportation Department Plant Mix Bituminous Pavement (PMBP), Gradation B requirements. Unless indicated otherwise, standard section shall be 4 inches PMBP on 6 inches compacted base course and 12 inches of subgrade preparation, or as shown on plans.

D. Quality Control for Asphalt Pavement Compaction:

1. Monitor the compaction process by determining the density of the PMBP with a portable nuclear density test device in conformity with ASTM D2950. Calibration of the portable nuclear device shall be established from cut pavement samples. The density readings of the cut pavement samples shall be determined in accordance with AASHTO T 166 (weight, volume method) and the density readings of the pavement shall be determined by the portable nuclear density test device in conformity with ASTM D2950 and shall be correlated by the test lab. Conduct three density tests for each 500 sy, or fraction thereof, of each lift each day.
2. The range density for acceptance of PMBP shall be 95% (±3%) of the theoretical maximum density as determined from AASHTO T 209.

E. Concrete pavement, curb and gutter and gutter and sidewalks shall conform to Division 03, except the minimum 28-day compressive strength shall be 3,000 psi. Unless indicated otherwise, standard section shall match existing thickness (minimum 4 inches on 6 inches compacted base course and 12 inches of subgrade preparation.) Sections for concrete sidewalks do not require base course.

F. Base course mix design shall conform to the New Mexico Department of Transportation, Standard Specifications for Highway and Bridge Construction, current edition-Section 303, gradation I.

END OF SECTION

SECTION 32 11 23

AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 WORK INCLUDED

A. Placement of crushed aggregate base course to the depths and grade as indicated on the Drawings.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials:
1. AASHTO T 11 – Amount of Material Finer Than 75-um (No. 200) Sieve in Mineral Aggregates by Washing.
2. AASHTO T 27 – Sieve Analysis of Fine and Coarse Aggregates.
3. AASHTO T 89 – Determining the Liquid Limit of Soils.
4. AASHTO T 90 – Determining the Plastic Limit and Plasticity Index of Soils.
5. AASHTO T 96 – Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine.
6. AASHTO T 104, Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.

B. American Society for Testing Materials International:
1. ASTM D1557 – Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)).
2. ASTM D6938 – In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.03 QUALITY ASSURANCE

A. Allowable Tolerances:
1. Thickness: In place compacted thickness will not be acceptable if exceeding 1”, plus or minus from thicknesses shown on Drawings.
2. Surface Smoothness:
   a. Test finished surface of base course for smoothness, using a 10 ft. straightedge applied parallel to and at right angles to centerline of roadway.
   b. Check surfaced areas at intervals directed by Engineer.
   c. Surfaces will not be acceptable if exceeding 3/8” in 10 ft.

1.04 SUBMITTALS

A. Certificates:
1. Provide certificates.
2. Certify that materials comply with specification requirements.

3. Signed by material manufacturer and Contractor.

B. Samples:
1. Provide samples of materials to laboratory for testing prior to placing.

PART 2 PRODUCTS

2.01 MATERIALS

A. Aggregate for Base Course:
1. Coarse Aggregate: Sound, angular crushed stone, crushed or screened gravel.
2. Fine Aggregate: Well graded natural sand or stone screenings.
3. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting composite mixture meets the following requirements when tested in accordance with AASHTO T 11 and T 27:

Sieve Size	Percentage of Weight Passing
1”	100
3/4”	80-100
No. 4	30-60
No. 10	20-45
No. 200	3-10

4. Resistance to Abrasion: Wear of 50% or less as determined by AASHTO T 96.
5. Soundness (coarse aggregate): Loss of 18% or less as determined by AASHTO T 104 (Magnesium Sulfate).
6. Liquid Limit: 25 or less as determined by AASHTO T 89.
7. Fractured faces: 50% or more of all plus No. 4 sieve material shall have 2 fractured faces (minimum).
8. Plasticity Index: 6 or less as determined by AASHTO T 90.

PART 3 EXECUTION

3.01 PREPARATION

A. Proof Roll:
1. Proof roll prepared subgrade surface using heavy, rubber-tired rollers.
2. Check for unstable areas.
3. Check for areas requiring additional compaction.

B. Loose and Foreign Material:
1. Remove loose and foreign material from compacted subgrade surface immediately before placing aggregate base course.
2. Use power brooms or blowers, and hand brooming as required.
3. Do not displace subgrade material.

C. Moisture Content:

1. Do not place aggregate base course when the moisture content of the top 6 inches of subgrade exceeds +2% optimum as determined by ASTM D1557.

3.02 MIXING AND PLACING

A. Provide a homogeneous mixture of unsegregated and uniformly dispersed materials as placed in position for compacting.

B. Plant and equipment shall be adequate in all respects.

C. Mix and place base course materials by the following method:
1. Stationary Plant Method:
   a. Mix base course material and water in an approved mixer.
   b. Add water during mixing operation in the amount necessary to provide the optimum moisture content for placement plus or minus two percentage points.
   c. After mixing, transport the base course material to the job site while it contains the proper moisture content.
   d. Without delay, spread the base course material uniformly on the subgrade so that when compacted, it will conform to the finish thickness.

3.03 SHAPING AND COMPACTING

A. Compacted Thickness:
1. Maximum compacted thickness of any one layer: 6 inches.

B. Compact to not less than 96% of maximum dry density as determined by ASTM D1557.

C. Start rolling at the edge and proceed toward the center, except on superelevated curves, roll from the lower to the upper side.

D. Continue blading, wetting, and rolling until a dense, smooth, unyielding and well-bonded base course is obtained for the full width and depth.

3.04 FIELD QUALITY CONTROL

A. Field control of density of in-place material will be determined in accordance with Nuclear Method, ASTM D6938.

B. Field control of moisture content of in-place material will be determined in accordance with Nuclear Method, ASTM D6938.

C. Sample and Test:
1. Each layer of base course.
2. At intervals not to exceed 200 linear feet.
3. Sampled after base course has been mixed, laid down and initial compaction operation has begun.

4. At locations directed by the Engineer.

3.05 SCHEDULE

A. New Mexico Department of Transportation crushed aggregate base course gradation I-B may be used for this project in place of the gradation and material properties specified in Part 2. Gradation and material properties must be current and certified by the New Mexico Department of Transportation. Thickness shall be as indicated on the Drawings.

END OF SECTION

SECTION 32 12 02

ASPHALTIC CONCRETE SURFACE COURSE

PART 1 GENERAL

1.01 WORK INCLUDED

A. Placement and compaction of asphaltic concrete to the dimensions, thicknesses, and grades shown on the Drawings.

1.02 RELATED WORK

A. Section 01 33 23 – Shop Drawings, Product Data, and Samples

B. Section 01 45 23 – Testing Laboratory Services

C. Section 31 22 00 – Grading

D. Section 31 23 13 – Subgrade Preparation

E. Section 32 11 23 – Aggregate Base Courses

1.03 REFERENCES

A. American Association of State Highway and Transportation Officials:
1. AASHTO T11, Amount of Material Finer Than 0.075 mm Sieve in Aggregate
2. AASHTO T27, Sieve Analysis of Fine and Coarse Aggregate
3. AASHTO T30, Mechanical Analysis of Extracted Aggregate
4. AASHTO T49, Penetration of Bituminous Materials
5. AASHTO T51, Ductility of Bituminous Materials
6. AASHTO T89, Determining the Liquid Limit of Soils.
7. AASHTO T90, Determining the Plastic Limit and Plasticity Index of Soils
8. AASHTO T96, Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine
9. AASHTO T104, Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
10. AASHTO T164, Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
11. AASHTO T165, Effect of Water on Cohesion of Compacted Bituminous Mixtures
12. AASHTO T165, Effect of Water on Cohesion of Compacted Bituminous Mixtures
13. AASHTO T167, Compressive Strength of Bituminous Mixtures
14. AASHTO T182, Coating and Stripping of Bitumen-Aggregate Mixtures
15. AASHTO M20, Penetration Graded Asphalt Cement
16. AASHTO M140, Emulsified Asphalt

17. AASHTO M226, Viscosity Graded Asphalt Cement

B. American Society for Testing and Materials:
1. ASTM C-207, Hydrated Lime for Masonry Purposes
2. ASTM C-290, Bituminous Mixing Plant Inspection
3. ASTM D1559, Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus

C. New Mexico Department of Transportation Standard Specifications for Road and Bridge Construction, Edition of 1984.
1. NMDOT SSRBC, Subsection 401.32 (1), Bituminous Mixing Plant

D. The Asphalt Institute, Manual Series:
1. AI MS-8, Asphalt Paving Manual

1.04 SUBMITTALS

A. Certificates:
1. Provide certificates.
2. Certify that materials comply with specification requirements.
3. Signed by asphalt concrete producer and Contractor.

B. Samples:
1. If required by the Engineer, provide samples of materials to laboratory for testing.

C. Mix Design:
1. To include all the necessary charts and curves.

1.05 QUALITY ASSURANCE

A. Qualifications of Asphalt Concrete Producer:
1. Use only materials which are furnished by a bulk asphalt concrete producer regularly engaged in production of hot-mix, hot-laid asphalt concrete.

B. Testing Laboratory:
1. Contractor will provide material testing for quality control during all phases of paving operations.

C. Allowable Tolerances:
1. General:
   a. 4 in. diameter pavement specimens will be taken for each completed course, from locations as directed by Engineer.
   b. Repair holes from test specimens.
2. Density:
   a. Compare density of in-place material against laboratory specimen of same asphalt concrete mixture, when subjected to 75 blows of standard Marshall hammer on each side of specimen.

b. Minimum acceptable density of in-place course material is 96% of the recorded laboratory specimen density.

3. Thickness: In-place compacted thicknesses shall be as shown on Drawings.
4. Surface Smoothness:
   a. Test finished surface of each bituminous pavement structure course for smoothness, using a l0-foot straightedge applied parallel to and at right angles to centerline of paved areas.
   b. Check surfaced areas to intervals directed by Engineer.
   c. Surfaces will not be acceptable if exceeding the following:
      1) The asphalt concrete exceeds 3/16 inch using a 10-foot straightedge.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Delivery of Materials:
1. Bituminous materials shall be loaded and shipped in sealed, insulated tank cars or tank trucks, completely free of all foreign matter. Bituminous materials contaminated by any foreign matter will be rejected.

1.07 JOB CONDITIONS

A. Weather Limitations:
1. Apply bituminous tack and prime coats only when the ambient temperature is 40°F. and when the temperature has not been below 35°F. for 12 hours immediately prior to application.
2. Do not apply tack and prime coat when the subgrade surface is wet or contains an excess of moisture which would prevent uniform distribution and the required penetration.
3. Construct each bituminous pavement structure course only when an atmospheric temperature is above 40°F. and rising, when the underlying base is dry, and when weather is not rainy, foggy, or stormy.

B. Grade Control: Establish and maintain the required lines and grades, including crown and cross-slope, for each course during construction operations.

C. Traffic Control:
1. Refer to Section 01 55 00 – Traffic Regulation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Asphaltic Concrete: Mixture of mineral aggregate and paving asphalt (asphalt cement) mixed at a central mixing plant delivered as specified:
1. Asphalt cement: As recommended in the approved job-mix formula.
2. Aggregates:
   a. Tested in accordance with the following AASHTO methods:

Mechanical Analysis	AASHTO T 30

Passing No. 200 Sieve	AASHTO T 27
Liquid Limit	AASHTO T 89
Los Angeles Abrasion	AASHTO T 96
Soundness (Magnesium Sulfate)	AASHTO T 104

b. Asphalt concrete aggregate shall have a percent of wear of 40 or less and the course aggregate shall have a soundness loss of 15 or less. All material passing the No. 40 sieve shall be non-plastic. The amount of crushing shall be regulated so that at least 75 percent, by dry weight, of the plus No. 4 sieve material shall have a minimum of 2 fractured faces.

c. Gradation requirements:

Class "A"

Sieve Size	% Passing
1"	100
3/4"	80-100
1/2"	60-90
3/8"	50-80
No. 4	33-60
No. 8	23-45
No. 40	7-20
No. 200	2-8

Class "B"

Sieve Size	% Passing
3/4"	100
1/2"	75-95
3/8"	65-85
No. 4	40-60
No. 10	32-45

Sieve Size	% Passing
No. 40	10-22
No. 200	3-8

The grading of the combined aggregates, as selected for the job mix design, shall be within the designated limits, and shall not vary from the high limit on one sieve to the low limit on the adjacent sieve, or vice versa, but shall be uniformly graded from coarse to fine. The percentages shown are based on the weight of dry aggregate only. Sieve analysis shall be made in accordance with ASTM C 136 or AASHTO T 30.

3. Proportioning: The job-mix formula designed to achieve the following test properties subject to verification by field testing:

Surface Course

Stability (Marshall - 75 Blow Briquette)	1500 lbs+
Flow (Marshall)	8-16
Percent of Voids	3-7
Percent of Voids Filled With Asphalt	75-85
Percent Asphalt Cement Content by Weight	
Optimum of Total Mix	+0.4%
Sand Equivalent	40 or more
Compaction (% of max. laboratory density)	96% minimum

4. Tolerances: If a mixture produced varies from the designated amounts by more than the following tolerances, proper changes shall be made until subsequent mixtures are within those tolerances:

Retained on No. 4 and larger sieves	+7 percent
Passing No. 4 to No. 100 sieves (incl.)	+4 percent
Passing No. 200 sieve	+2 percent
Bitumen (tank strap method)	+0.3 percent
Bitumen (extraction method)	+0.5 percent
Temperature of Mixture	+20 degrees F
Hydrated Lime	+0.3 percent

5. Voids: For the purpose of calculating the percentage of voids in total mix and voids filled with asphalt, the specific gravities of the various aggregates shall be selected as follows:
   a. When the absorption of the aggregate, as determined by applicable ASTM C 128 or ASTM C 127, is less than one percent, the apparent specific gravity shall be used.
   b. When the absorption of the aggregate, as tested by ASTM C 128 or ASTM C 127, is one percent or greater, the mean between the bulk and the apparent specific gravities shall be used.
   c. Test properties shall be determined from the average of three Marshall test specimens (or the residue from 3 test specimens).

B. Mine tailings may be incorporated into the work only with the prior specific approval of the Engineer.

C. Asphalt Cement:
1. Conform to requirements shown in AASHTO M20 or AASHTO M226, Table 1, as applicable.
2. Shall not be blended with any materials which have been subjected to cracking.
3. Shall contain no residue from non-asphaltic sources.

D. Anti-Stripping Agent: When required, an anti-stripping agent shall be added to the designated bituminous materials. Unless otherwise provided, the required amount of anti-stripping agent shall be added and mixed at the place of manufacture of the bituminous materials. Test reports will show the percentage, type, and grade of anti-stripping agent shall not be mixed with bituminous material until tested and approved by the testing laboratory in accordance with AASHTO T182. All approved anti-stripping additives shall be used on an equal percentage basis. The amount shown on the plans will be the percentage required for the standard, heat-stable, concentrated, or refinery grade of any approved additive.

E. Hydrated Lime: Hydrated lime shall conform with the requirements of ASTM C207, Type N.

F. Filler: Filler material, other than hydrated lime or portland cement, shall be approved by the testing laboratory and the Engineer.

G. Prime Coat: Prime coat shall be applied to base material and shall be regular emulsified asphalt prime (EAP) and shall conform to the requirements of AASHTO M140. Emulsified asphalt shall consist of uncracked petroleum asphalts uniformly emulsified with water and an emulsifying or stabilizing agent.

H. Tack Coat: Tack coat shall be composed of bituminous material and shall meet one of the following grades:
1. 85-100 or 120-150 penetration asphalt.
2. CSS-1 or SS-1 emulsified asphalt.
3. AC-5 or AC-10 asphalt.

PART 3 EXECUTION

3.01 SURFACE PREPARATION

A. Loose and Foreign Material:
1. Remove loose and foreign material from primed compacted aggregate base course surface immediately before placing plant mix asphalt concrete surface course.
2. Use power brooms or blowers, and hand brooming as required.
3. Do not displace aggregate base course material.

B. Prime Coat: Prime coat shall be so applied that it will penetrate and seal, but not flood, the base course surface. Any excess prime coat shall be dried up with blotter sand reviewed by the Engineer. Prime coat shall be properly cured.

C. Tack Coat: Prior to laying plant mix bitumious pavement - asphalt concrete.
1. The contact surface of all cold pavement joints, curbs, gutters, manholes, and the like, shall be cleaned and painted with tack coat just before the adjoining asphaltic concrete is placed.
2. Where multi-lift construction is called for, a light tack coat shall be used between lifts if the underlying surface has become dirty or gives other signs that

the lifts may not bond together properly without the aid of a tack coat. However, tack coat shall be used as sparingly as possible to achieve the intended purpose.

3.02 PREPARING THE MIXTURE

A. Bituminous Mixing Plant:
1. Plants used for the preparation of bituminous mixtures shall conform to the requirements of NMDOT SSRBC under Subsection 401.32(1).

B. Stockpiles:
1. Keep each component of the various-sized combined aggregates in separate stockpiles.
2. Maintain stockpiles so that separate aggregate sizes will not be intermixed and to prevent segregation.

C. Heating:
1. Heat the asphalt cement at the mixing plant to viscosity at which it can be uniformly distributed throughout mixture.
2. Use lowest possible temperature to suit temperature-viscosity characteristics of asphalt.

D. Aggregate:
1. Flames used for drying and heating shall be properly adjusted to avoid damage to the aggregate and to avoid soot on the aggregate. Immediately after heating and drying, the aggregates shall be screened into fractions and conveyed into separate compartments ready for batching and mixing with bituminous material. Two compartments shall be used for the aggregates.
2. Aggregates for the mixture shall be dried and heated to a maximum of 325ºF.

E. Mixing:
1. Accurately weigh or measure dry aggregates and weigh or meter asphalt cement to comply with job-mix formula requirements.
2. The bituminous material and aggregate shall be introduced into the mixer within the specified temperature range and the temperature of the bituminous material and that of the aggregate shall be within 25ºF of each other.
3. After the required amounts of aggregate and bituminous material have been introduced into the mixer, the materials shall be mixed until a complete and uniform coating of the particles and a thorough distribution of the bituminous material throughout the aggregate is obtained.

F. Transporting:
1. Transport bituminous mixtures from mixing site in trucks having tight, clean compartments.
2. Coat hauling compartments with a lime-water mixture or paraffin oil to prevent bituminous mixture from sticking.
3. Elevate and drain compartment of excess solution before loading mix.

4. Provide covers over bituminous mixture when transporting to protect from weather and to prevent loss of heat.
5. During periods of cold weather or for long-distance deliveries, provide insulation around entire truck bed surfaces.
6. The temperature of the mixture immediately prior to discharge from the hauling vehicle shall be within a tolerance of +15°F. to -25°F. of the specified job-mix temperature.

3.03 PLACING MIX

A. The base course shall be cleaned, inspected, and all deficiencies corrected well in front of the laydown machine. Removing deficient base course material and filling the pocket with asphaltic concrete will not generally be permitted.

B. Manhole frames and valve covers shall be adjusted to match surface course.

C. At the time of delivery to the site of the work, the temperature of mixture shall be not lower than that required to obtain the density specified.

D. When hauling time from the mixing plant to the job site exceeds two hours or when inclement weather prevails, bituminous mixtures shall be covered with tarpaulins while being hauled. The tarpaulins shall completely cover the load and be firmly tied down. Mixtures shall be delivered to site of the work without segregation of the ingredients.

E. Asphalt concrete may be placed when the temperature is 40°F and rising and the weather is favorable as determined by the Engineer. None may be placed in wet weather or on a wet surface.

F. The asphalt concrete shall be evenly spread upon the subgrade or base to such a depth that after rolling it will be of the specified cross section and grade of the course being constructed.

G. Depositing and spreading of the asphalt concrete shall be accomplished by means of self-propelled mechanical spreading and finishing machine designed especially for that purpose and which permits depositing and spreading in a strip 8 to 14 feet in width. The machine shall be equipped with a vibrating or tamping screed capable of being accurately regulated and adjusted to distribute a layer of the material to a definite predetermined thickness and template. The paving machine shall be equipped with an automatic leveling device controlled from an external guide. The initial pass for each course shall be made using a paver equipped with a 40-foot minimum external reference, except this shall not apply when asphaltic concrete is placed adjacent to concrete pavement or gutter. Subsequent passes shall utilize a matching device of 1 foot minimum length, riding on the adjacent lift.

H. Placing once commenced must be continued without interruption. No greater amount of the mixture shall be delivered in any one day than can be properly distributed and rolled during that day during dayling hours.

I. In narrow, deep, or irregular sections, intersections, turnouts, or driveways, where it is impractical to spread and finish the base and level the surface mixtures by machine methods, the Contractor may use spreading equipment or acceptable hand methods reviewed by the Engineer.

J. Care shall be exercised in connection with the construction of joints to insure that the surface of the pavement is true to grade and cross section.

K. In making the joint along any adjoining edge such as a curb, gutter, or an adjoining pavement and after the hot mixture is placed by the finishing machine, sufficient hot material shall be carried back to fill any space left open. This joint shall be properly "set up" with the back of a rake at proper height and level to receive the maximum compression under rolling. The work of "setting up" this joint shall be performed by competent workmen who are capable of making a correct, clean, and neat joint.

L. Longitudinal and transverse joints shall be made in a careful manner. Well-bonded and sealed joints are required. Joints between old and new pavements or between successive days' work shall be carefully made in such a manner as to ensure a thorough and continuous bond between the old and new surfaces. In the case of surface course, the edge of the old surface course shall be cut back for its full depth so as to expose a fresh surface and, if necessary, to obtain a well-bonded joint, shall be painted with a tack coat after which the hot surface mixture shall be placed in contact with it and raked to a proper depth and grade. Before placing mixture against contact surfaces of curbs, gutters, headers, manholes, etc., they shall be painted with a tack coat.

3.04 COMPACTION

A. Rolling shall be commenced with a steel wheel roller along the lower edge of the area to be rolled and be continued until the edge is thoroughly compacted, after which the roller shall be gradually advanced to the crown point, both sides being rolled in a like manner. Rolling shall be continued with steel and pneumatic wheel rollers until the layer has become thoroughly compacted throughout and is true to grade and cross section.

B. Rollers shall be maintained in good mechanical condition, and those that cannot be operated without jerking or driven along a straight path shall not be used. No leakage from any roller shall be allowed to come in contact with the pavement being constructed nor shall any roller be permitted to stand motionless on any portion of the work before it has been properly compacted. Steel roller wheels shall be treated with water or oil to prevent the adherence of the asphalt concrete, and water or oil may be used on pneumatic-tired rollers but the quantity used must not be such as to be detrimental to the surface being rolled.

C. Final rolling of the top or finish course shall be accomplished with a steel wheel roller, removing all surface imperfections, including indentures made by pneumatic-tired rollers.

D. Rolling of any asphaltic concrete course shall be continued until all roller marks are eliminated and a density of at least 96% of the density of a laboratory specimen of the same mixture has been obtained.

E. In areas not accessible to the roller, the mixture shall be thoroughly compacted with hand operated mechanical tampers. Any mixture that becomes mixed with foreign materials or in any way is defective shall be removed, replaced with fresh mixture, and compacted to the density of the surrounding pavement.

3.05 FIELD QUALITY CONTROL

A. Sampling and Testing:
1. Uncompacted bituminous mixture:
   a. Asphalt Cement Content - AASHTO T-164.
   b. Penetration of Recovered Asphalt Cement - AASHTO T-49.
   c. Ductibility of Recovered Asphalt Cement - AASHTO T-51.
2. Compacted bituminous mixture (4" diameter specimen):
   a. Bulk Density - AASHTO T-166.
   b. Marshall Stability and Flow - ASTM D1559 (Modified).
3. Perform at least one test for each day's paving.

B. Field control of density of in-place material will be determined in accordance with:
1. Nuclear Method, ASTM D2950.
2. Perform at least one test at intervals not to exceed 200 linear feet.
3. At locations directed by the Engineer.

3.06 CLEANING AND PROTECTION

A. Cleaning: After completion of paving operations, clean surfaces of excess or spilled bituminous materials to the satisfaction of Engineer.

B. Protection:
1. After final rolling, do not permit vehicular traffic on bituminous pavement until it has cooled and hardened, and in no case sooner than 6 hours.
2. Provide barricades and warning devices as required to protect pavement and the general public.
3. Cover openings of structures in the area of paving until permanent coverings are placed.

3.07 SCHEDULE

A. New Mexico Department of Transportation plant mix bituminous pavement, Type 1, Gradation B may be used for this project in place of the mix design specified in Part 2. Mix design shall be current and certified by the New Mexico Department of Transportation. Thickness shall be as indicated on the Drawings.

END OF SECTION

SECTION 32 12 03.01

BITUMINOUS SURFACE TREATMENTS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Surface Preparation, crack sealing and cleaning.

B. Surface Treatments, Slurry and Fog Seal.

1.02 REFERENCES AND RELATED REQUIREMENTS

A. Section 01 33 23: Shop Drawings, Product Data and Samples

B. Section 01 45 23: Testing Laboratory Services

C. Section 01 71 23: Field Engineering

D. Section 01 57 00: Temporary Controls

E. Section 01 74 20: Fill and Waste Material

F. Section 32 12 01: Paving, Gravel, Surfacing, and Resurfacing

G. For Crack Sealing Materials also reference NMDOT Standard Specifications for Highway and Bridge Construction.

1.03 SUBMITTALS

A. Aggregate: Material certificates and laboratory analysis.

B. Bituminous Material: Material certificates for each load.

1.04 TESTING AND INSPECTION

A. Testing: Representative samples shall be taken from the laydown surface for testing in accordance with the following standard test procedures:
   1. Quantitative Extraction of Bitumen from Bituminous Paving Mixtures: ASTM D 2171.
   2. Sieve or Screen Analysis of Fine and Course Aggregates (extracted sample): ASTM C 136.
   3. Material testing as recommended by the manufacture.

PART 2 PRODUCTS

2.01 MATERIALS FOR SLURRY SEAL

A. Surface Treatment Aggregate: The aggregate shall consist of sound and durable manufactured sand, crushed stone, or a combination thereof. The aggregate shall be clean and free from vegetable matter, dirt, and other deleterious substances.

1. Sand equivalent of not less than 45% when texted in accordance with ASTM D 2419.
2. The aggregate shall show a loss of not more than 35% when tested in accordance with ASTM C131.
3. The sulfate soundness loss shall not exceed 12%, or the magnesium soundness loss shall not exceed 20% after 5 cycles when tested in accordance with ASTM C-88.
4. Aggregate shall be 100% crushed.
5. Other Surface treatment aggregate reference AASHTO methods provided below or in accordance with other approved methods:

Mechanical Analysis	AASHTO T 27
Passing No. 200 Sieve	AASHTO T 11
Liquid Limit	AASHTO T 89
Plasticity Index	AASHTO T 91
Los Angeles Abrasion	AASHTO T 96
Soundness (5 cycle-Magnesium Sulfate Solution)	AASHTO T 96

B. The combined aggregate shall conform to the gradation shown in Table 1 when tested in accordance with ASTM C 136 and ASTM C 117.

1. Surface treatment aggregate materials shall be combined in such proportions that the resulting composite blend meets the requirements of the following classes:

Sieve Designation	Percent by Weight Passing Square Mesh Sieve Gradation
No. 16	98-100
No. 18	60-80
No 20	40-65
No. 30	0-15

C. Asphalt: Polymer modified and fiber reinforced asphalt emulsion. Approved product is Seal Master - Liquid Road.

PART 3 EXECUTION

3.01 BITUMINOUS SLURRY SEAL

A. The existing surface shall be cleaned, inspected, and all deficiencies corrected well in front of the squeegee machine. Surface must be clean and free from all loose material, debris, dirt, dust.

B. Crack sealing complete and entire lot swept and clean. Crack shall be sealed with a product that is suitable to receive the surface coat without reaction and as recommended by the manufacture of the surface sealant. Clean all cracks and rout as needed remove all debris. Installation per manufactures recommendations.
   1. Approved product for this is Crafco Parking Lot Sealant, part number 34200.

C. Mixing:
   1. Mixed to manufactures recommendations, provide mix design. Approved manufactures:
      a. Seal Master - Liquid Road
      b. Or engineer approved equal.
   2. Clean oil spots caused by parked cars in the parking stalls. This is done to provide a bonding surface with old and new bituminous materials. Use a product that is physically and chemically compatible with the seal that is being used. Once applied wipe and clean as prescribed by the manufacture. Approved manufactures:
      a. Seal Master – Petro Seal Oil Spot Primer
      b. Or engineers approved equal.
   3. Shall be applied on the clean surface by an approved type of self-propelled squeegee/brush equipment so operated as to distribute the material in the quantity specified, evenly and smoothly, under a pressure necessary for proper distribution. Self propelled squeegee/brush equipment shall have at least 2 squeegee or brush devices to assure adequate distribution and penetration of product. Hand squeegees and brushes shall be acceptable in areas where practicality prohibits use of self propelled mechanized equipment. The Contractor shall provide all necessary facilities for determining the temperature of the asphaltic material in all of the heating equipment and for determining the rate at which it is applied, and for securing uniformity. The self propelled equipment shall have been recently calibrated and the Engineer shall be furnished an accurate and satisfactory record of such calibration. After beginning the work, should the yield on the asphaltic material appear to be in error, the self propelled equipment distributor shall be calibrated in a manner

satisfactory to the Engineer before proceeding.

4. Application Rate of properly mixed product shall be at a rate of 0.20 gallon per square yard per coat. Two coat applied per the manufacture recommendation..
5. Product shall not be applied when temperature is expected to drop below 50ºF at any time within a 24 hour period after application.
6. The Contractor shall be responsible for the maintenance of the surface until the work is accepted by the Engineer.
7. All storage of equipment used in storing or handling asphaltic materials shall be kept clean and in good operating condition at all times, and they shall be operated in such manner that there will be no contamination of the asphaltic material with foreign material. It shall be the responsibility of the Contractor to provide and maintain, in good working order, a recording thermometer at the storage heating unit at all times.
8. Contractor may apply material by means and methods prescribed by the manufacture as well as those described above. Contractor shall submit supporting data describing alternate methods for applying bituminous surface seals.

D. Use of NMSU Property for Storage, Transferring and Staging

1. Staging yard and use of NMSU Property must be coordinated with NMSU project manager. Contractor is responsible for restoration and repairs of NMSU property that is used for staging, transferring of materials and storage. The contractor shall provide a temporary containment liner for mixing and/or transferring of bituminous material from tanker to distributor. The contractor is responsible for all cleanup of any spills to the satisfaction of NMSU and the regulatory agency. This shall be done at no addition charge to the owner.

END OF SECTION

SECTION 32 16 01

CONCRETE CURB AND GUTTER, SIDEWALK, AND DRIVEPADS

PART 1 GENERAL

1.01 WORK INCLUDED

A. This work shall consist of the construction of portland cement concrete curb and gutter, sidewalk, and drivepads as indicated on Drawings.

1.02 REFERENCES

A. American Association of State Highway and Transportation Officials:
   1. AASHTO M33, Preformed Expansion Joint Filler for Concrete (Bituminous Type).
   2. AASHTO M153, Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
   3. AASHTO M173, Concrete Joint-Sealer, Hot-Poured Elastic Type.
   4. AASHTO M55, Welded Wire Fabric for Concrete Reinforcement.

1.03 QUALITY ASSURANCE

A. Allowable Tolerances:
   1. Finished surfaces will not be acceptable if varying from a straight line by more than 1/8 inch when checked with a 10-foot straightedge.

PART 2 PRODUCTS

2.01 PORTLAND CEMENT CONCRETE

A. See Section 03 30 00 – Cast-In-Place Concrete.

2.02 JOINT FILLERS

A. Preformed expansion joint filler - AASHTO M33 or M153.

2.03 JOINT SEALERS

A. AASHTO M173

2.04 REINFORCING

A. AASHTO M55

B. 6 x 6 – 10 x 10 welded wire fabric with supporting chairs shall be installed in all drive pads.

PART 3 EXECUTION

3.01 INSPECTION

A. Prior to placing forms, check to see that the subgrade has been compacted to the degree required by Section 31 23 13 – Subgrade Preparation.

3.02 CONCRETE

A. Formwork to be constructed in accordance with Section 03 30 00 – Cast-in-Place Concrete.

B. Construct concrete in accordance with Section 03 30 00 – Cast-in-Place Concrete.

C. Concrete shall be poured to thicknesses and dimensions shown on Drawings.

3.03 FINISHING

A. Curb and Gutter:
1. Give concrete a light broom finish with the brush marks parallel to the curb line or gutter line.

B. Sidewalk and Drivepads:
1. Give concrete a light broom finish with the bush marks perpendicular to the curb line or gutter line.

3.04 JOINTS

A. Provide Control Joints at 6’ on Center Maximum:
1. Extend joint into the concrete for at least one-third of the depth and make it approximately 1/8” wide.

B. Provide 1/2” preformed expansion joints at 36’ on center maximum, at curb returns and adjacent to buildings, walls and other immovable objects.

C. Edge all edges not specifically dimensioned with a 1/4” or a 3/8” edging tool.

D. Seal all joints.

3.05 BACKFILLING

A. Remove all forms.

B. Do not place earth backfill or pavement adjacent to curb and gutter or sidewalk until at least 7 curing days have elapsed.

C. Backfill with approved material.

D. Thoroughly compact backfill to the same density as the subgrade and at the proper

moisture content.

3.06 SCHEDULE

A. Concrete for curb and gutter, sidewalk, and drivepads on this project shall meet the following requirements:
   1. Compressive strength at 28 days: 4000psi
   2. Design slump: 4 inches maximum

END OF SECTION

SECTION 32 17 23.13

PAINTED PAVEMENT MARKINGS

PART 1 GENERAL

1.01 WORK INCLUDED

A. Painted pavement striping and marking.

1.02 SUBMITTALS

A. Paint: Product data and material certificates.

PART 2 PRODUCTS

2.01 MATERIALS

A. Striping Paint: NMSU Approved Paint Specifications:

Manufacturer/Supplier	Color	Product Information
KWAL	Zeppelin (Gray)	ID: 3164M/ 6320, Base: MB
KWAL	Black 5106 Or Black 6306	Accu-Pro Latex Zone Marking Paint Or Accu-Pro Exterior 100% Acrylic Flat
R2 Sherwin	White Traffic Paint Or White Traffic Paint	Ennis, TT-P-1952E, 985201 Or Pro-Park Waterborne Traffic Marking paint, 6503-27182 (gal)
R2 Sherwin Williams	Blue Or Blue	Ennis, EPBL-21-M-1 Waterborne Paint, 985205 Or Pro-Park Waterborne Traffic Marking Paint, 6503-27240 (gal)
Sherwin Williams	Safety Green 4085	A-100, Ultra Deep Base, Exterior Acrylic Latex, for custom color see order 7101-0065286 from 5/19/2011
Sherwin Williams	Red	Pro-Park Waterborne Traffic Marking Paint, B97RD2012 6503-27216
R2 Sherwin Williams	Yellow Traffic Paint (Product: TTP Yellow) Or Yellow	Ennis-Flint, Product Code: 985202-TXN-5P Or Pro-Park Waterborne Traffic Marking Paint, 6503-27190 (gal)

PART 3 EXECUTION

3.01 TRAFFIC LANE AND PARKING STALL MARKINGS

A. Cleaning: Sweep and clean surface to eliminate loose material and dust.

B. Application: Apply paint with mechanical equipment to produce uniform straight edges. Apply in two (2) coats at manufacturer's recommended rates.

C. Handicapped Symbols: Apply paint as above, in approved pattern, using clean-cut stencil.
   1. Black out existing as needed in parking areas not to receive seal coat.

D. Handicapped Parking Stalls: As shown on plans, details and specifications.
   1. Parking spacing for handicapped parking must meet the dimensions shown on the drawings or as directed by NMSU Parking Department. If dimensions differ upon completion the contractor will be required to restripe. Measurement acceptance will be determined by NMSU Parking Department.

E. Standard Parking stalls at NMSU shall be 9' wide by 18' deep with a 4" wide stripe white paint.

F. Directional arrows shown shall be white, contractor will be allowed to use NMSU's stencil for campus consistency.

3.02 SCHEDULE

A. Paint markings on pavement as indicated on Drawings.

END OF SECTION