ROGERS STATE UNIVERSITY
PHYSICAL PLANT

Request for Bids
Bushyhead Parking Lot Rehabilitation

Rogers State University
Claremore, OK

RFB 2425-15

ROGERS STATE UNIVERSITY
PHYSICAL PLANT

REQUEST FOR BID No.: RFB 2425-15

NON -MANDATORY PRE-BID MEETING DATE / TIME: February 12, 2025 at 10:00 am
PRE-BID MEETING LOCATION: Claremore Campus – Physical Plant - Conference Room

BID DUE DATE:
March 14, 2025
BID OPENING
TIME:
10:00am*
BID OPENING LOCATION: Claremore Campus – Physical Plant - Conference Room

*Bids received more than ninety-six (96) hours before the time set for receiving bids as well as bids received after the time set for receipt of bids will not be considered and will be returned unopened.

SEALED BIDS ARE TO BE SENT TO:
1701 W. Will
Rogers Blvd.
Claremore, OK
74017
Attention: Christie Lamberson – Procurement Coordinator
RE: RFB 2425-15 – Bushyhead Parking Lot Rehabilitation

Bid documents may be obtained by calling the purchasing contact listed below. Project documents can also be obtained online at http://www.rsu.edu/about/offices-services/purchasing/bids-proposals/. Sealed Bids are to be turned into the purchasing contact listed below before the due date and time. Late bids may be returned and not considered as a valid response. Contractors are encouraged to respond with a no-bid if they do not wish to be considered for this opportunity but do wish to remain on the active contact list. Electronic or unsealed bids are not acceptable.

UNIVERSITY CONTACTS:

Contractors are encouraged to contact the using Division's personnel to obtain clarification of the technical requirements of this "Request for bid". However, any modification to the requirements of this "Request for bid" must be enacted by the issuance of a written addendum from the Purchasing Department. Conflicting instructions given by personnel within the using Division, that are not substantiated by a written addendum issued by the Purchasing Department, will not be binding upon the University.

	For information regarding the general provisions of this 'Request for bid', contact:	For clarification of the technical requirements of this 'Request for bid', contact:
NAME:	**Christie Lamberson, Procurement Coordinator**	**Karl Reynolds Physical Plant Director or George Proctor Assistant Director**
TELEPHONE No.:	**918.343.7790**	**918-343-7818**
FAX No.:	**918.343.7817**	**918-343-7808**
E-MAIL ADDRESS:	**clamberson@rsu.edu**	**kreynolds@rsu.edu or gproctor@rsu.edu**

NON-MANDATORY PRE-BID MEETING:

1. Contractors are encouraged to attend a pre-bid meeting on February 12, 2025 at 10:00 am at the Claremore Campus – **Physical Plant - Conference Room**. This meeting will include a tour of the proposed site located on the Claremore Campus.

BID STATUS AND SUBMISSION INFORMATION:

1. Rogers State University shall have the right to reject any or all bids and solicit contractors again as herein provided if the best interests of the people of the State of Oklahoma would be best served by so doing. Further, the University reserves the right to award on an all or none basis, by item or groups of items in order to achieve the overall lowest cost.

2. Offers may be withdrawn at any time prior to the closing date, but no respondent may withdraw a bid after that date.

3. RFBs must demonstrate an understanding of the scope of service to be provided and the ability to accomplish the tasks set forth and must include information that will enable the University to determine the respondent's overall qualifications.

4. Any bid received by Rogers State University or an officer or employee thereof after the time set for the opening of bids may be returned unopened and not considered as a valid response to the RFB.

5. The University reserves the right to request additional information or clarification on any matter included in the bid.

6. All signatures must be affixed and notarized on the forms and attachments provided in this bid.

7. All bids shall be sealed and opened only at the time and place mentioned herein.

8. Submission of a bid will constitute an incontrovertible representation by the contractor; that (s) he has complied with every requirement of this bid.

9. The University reserves the right to waive minor informalities in bids and to split the award if in the best interest of the University.

CONDITIONS:

1. The University reserves the right to require the successful contractor to execute a written agreement for the provision of the product(s) and / or service(s) offered as a result of this bid solicitation. The resulting contract will incorporate this RFB solicitation, the response thereto, all additional agreements and stipulations, and the results of any final negotiations. All of these documents will constitute the final contract.
2. The contract shall contain all specifications, terms, and conditions in the bid and the bid form except as amended in the 'Award Notice'.
3. All changes to the contract must be mutually agreed to, in writing, prior to execution.
4. The parties hereby agree that no trade usage, prior course of dealing or course of performance under other contracts shall be a part of this agreement or shall be used in the interpretation or construction of this agreement.
5. Any exceptions taken by the contractor which are not included in the 'Award Notice' will not be part of the contract.
6. No delay or failure to enforce any provision of this agreement shall constitute a waiver or limitations of the University's rights under any resulting contract.
7. By submitting a bid to Rogers State University, the Contractor is required to adhere to and submit the following forms at the time of the bid submittal:

    a. The contractor agrees to comply with Equal Employment Opportunity and Affirmative Action requirements as stipulated in Executive Order 11246 and Executive Order 11375 (see attached).

    b. Oklahoma laws require each contractor submitting a competitive offer to the State of Oklahoma for goods or services to furnish a notarized sworn 'Statement of Non-Collusion' (seeattached).

    c. Each contractor shall execute and forward a 'Business Relationship Affidavit' with the bid (see attached).

d. Oklahoma laws require each contractor submitting an offer to the State of Oklahoma for goods or services to furnish a notarized sworn "Sex Offender Affidavit" (seeattached).

e. Oklahoma laws require each contractor submitting an offer to the State of Oklahoma for goods or services to furnish a Bid Bond. (see attached)

8. By submitting a bid to Rogers State University, the contractor is required to adhere to and submit the following forms at the time of contract:

a. Successful Suppliers shall, prior to beginning any work under any contract that may result under this RFP, as applicable, or as required by State or Federal law, acquire and have in effect minimum insurance coverage as set forth in the following table. The said minimum amounts are not intended to limit and do not or reduce any Supplier's liability:

Coverage Type:	Minimum Amount:
Workers' Compensation	Statutory
Commercial General Liability Insurance	$1,000,000
Property Damage	$1,000,000
Auto-Owned, Hired and Non-Owned	$1,000,000
Per-Occurrence for All Claimants and Coverage	$2,000,000

b. Successful Suppliers shall carry on their work in accordance with the requirements of the workers compensation law of the State of Oklahoma, and shall not reject the provisions thereof during the life of the contract. Successful Suppliers shall also protect themselves using liability coverage against any and all claims for damages to persons or property which may arise out of operations under the contract, whether such operations be by the contractor, subcontractor, or anyone directly employed by either of them.

c. Prior to commencement of work under any contract which may result from this RFP, Successful Suppliers shall purchase and maintain property insurance coverage for the full insurable value of the property at the site of such work. If the policy evidencing such insurance coverage stipulates a deductible amount, Successful Suppliers shall pay the difference attributable to such deductible in any payments made by the insurance carrier on claims paid by such carrier. The University will not purchase insurance relative to this RFP unless otherwise stated herein.

9. Successful Suppliers shall file certificates of such insurance with the University, and such related coverage shall be subject to the University's approval.

10. Rogers State University is exempt from State Sales Tax and Federal Excise Tax. The exemption authority is Oklahoma State Tax Code, Title 68, OS 1981, Article 13, Section 1356 and Federal Tax Exempt No. 736017987.

11. It is mutually agreed by and between the University and the contractor that the University's acceptance of the contractor's offer by the issuance of an 'Award Notice' shall create a contract between the parties thereto.

12. In the event of a conflict between the terms and conditions of the bid and information submitted by a contractor, the terms and conditions of this bid and resulting "contract" will govern.

13. **Termination for Cause -** The University may terminate the Contract for default or other just cause with a 30-day written request and upon written approval from the procuring agency. The University may terminate the Contract for default or any other just cause upon a 30-day written notification to the contractor.
The University may terminate the Contract, in whole not in part, without penalty or expense, at the end of any fiscal year of the University, if the legislature or other appropriate governmental entity fails to allocate sufficient funds to the University for the payments required or activities contemplated under the Contract.

The University may terminate the Contract immediately, without a 30-day written notice to the supplier, when violations are found to be an impediment to the function of an agency and detrimental to its cause, when conditions preclude the 30-day notice, or when the procuring agency determines that an administrative error occurred prior to Contract performance.

If the Contract is terminated, the University shall be liable only for payment for products and/or services delivered and accepted.

14. **Termination for Convenience -** The University may terminate the Contract, in whole or in part, for convenience if the procuring agency determines that termination is in the University's best interest. The procuring agency shall terminate the Contract by delivering to the supplier a Notice of Termination for Convenience specifying the terms and effective date of Contract termination. The Contract termination date shall be a minimum of 60 days from the date the Notice of Termination for Convenience is issued by the procuring agency.

15. To the extent applicable by Okla. Stat. Ann. tit. 25, §1313, or Exec. Order No. 12989, 8 USCA §1324a (Feb. 13, 1996) as amended in 73 Fed. Reg. 33285 (June 6, 2008), Consultant or Contractor certifies that it is registered with and participates in the Status Verification System (SEVIS"). Further, in accordance with Okla. Stat. Ann. tit. 68, §2385.32, Consultant or Contractor verifies that it and its employees are authorized to work in the United States in accordance with the employment authorization found in 8 U.S.C. §1324(a)(4)."

16. Public Record

    After response acceptance and execution of all contracts and agreements resulting from this RFB, each Respondents bid will become public record and will be available by written request to RSU Purchasing Department. 1701 W Will Rogers Blvd, Claremore, OK 74017, FAX 918-343-7817.

GRATUITIES AND KICKBACKS.

1. A Rogers State University official or employee, or their immediate relatives, shall not accept anything of value whether in the form of a gift, service, loan, donation or promise from any person which may impair his or her independence of judgment or action in the performance of his or her official duties.

2. No donation or payment of a gratuity or kickback shall be made by or on behalf of any person and be accepted by any Rogers State University official or employee as an inducement or reward for the action in procuring the award of any contract or order.

INDEMNIFICATION REQUIREMENTS.

1. The following requirements are mandatory for protecting the interests of the University:

2. The successful contractor shall keep the University free and clear from all liens asserted by any person or firm for any reason arising out of the furnishing of services or materials by or to the contractor.

3. The successful contractor shall indemnify and hold the University harmless from all contractors' performance under the resulting contract.

4. The resulting contract shall be construed under the laws of the State of Oklahoma and venue in any action to enforce the contract shall be in a court of competent jurisdiction in Oklahoma.

5. The actions of the successful contractor with third parties are not binding upon the University. The contractor is not a division of the University.

6. The Contractor shall protect and indemnify the University, its officers, and agents against any claims of liability arising from or based on any violation thereof.

OBSERVING LAWS AND REGULATIONS.

1. The Contractor shall remain fully informed of, and shall faithfully observe, all laws, national and state, and all ordinances and regulations affecting the responsibility to the University, or affecting the rights of his / her employees.

2. Provider shall not discriminate because of race, color, religion, sex, age, national origin, sexual orientation, genetic information, disability or status as a Vietnam veteran, as defined and prohibited by applicable law, in any of its policies, practices or procedures. In addition, each party affirms that it is an equal opportunity and affirmative action

employer and shall comply with all applicable federal, state and local laws and regulations including, but not limited to, Executive Order 11246 as amended by 11375 and 12086; 12138; 11625; 11758; 12073; the Rehabilitation act of 1973, as amended; the Vietnam Era Veterans Readjustment Assistance Act of 1975; Civil Rights Act of 1967; Immigration Reform and Control Act of 1986; Public Law 95-507; the Americans With Disabilities Act and any additions or amendments thereto.

3. Provider shall participate in the E-Verify program as required by Oklahoma statutes to enforce the provision of Oklahoma's immigration law to prove the legal status of the provider's employees. The E-Verify website is: http://www.uscis.gov/portal/site/uscis/menuitem.eb1d4c2a3e5b9ac89243c6a7543f6d1a/?vgnextoid=75bce2e261405110VgnVC M1000007718190aRCRD&vgnextchannel=75bce2e261405110VgnVCM1000007718190aRCRD.The E-Verify program, formerly known as the Department of Homeland Security's Basic Pilot Program or the Employment Eligibility Verification System, is jointly administered by the Department of Homeland Security through the United States Citizenship and Immigration Services and the Social Security Administration. This Program allows participating employers to verify whether newly hired employees are authorized to work in the United States by checking the information provided by the employees on their Form I-9 against the Department of Homeland Security through the United States Citizenship and Immigration Services, and the Social Security Administration databases.

QUALIFICATIONS OF CONTRACTORS.

1. Rogers State University may make such investigations as deemed necessary to determine the ability of the contractor to perform the work or provide a product, and the contractor shall furnish to Rogers State University all such information and data for this purpose.

2. Rogers State University reserves the right to reject any bid if the evidence submitted by, or investigation of, such contractor fails to satisfy that they are qualified to carry out the obligations of the contract and to complete the work or provide the product contemplated therein.

3. Each contractor must be prepared to submit, within five (5) days of the University's request, written evidence such as financial data, previous experience and evidence of authority to conduct business in the jurisdiction where the project is located.

RECOMMENDEDPREPARATION:

Before submitting a bid, it is recommended that each interested party perform the following actions:

1. Visit the site to familiarize himself / herself with local conditions that may in any manner affect cost, progress, or performance of the work.

2. Familiarize himself / herself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress, or performance of the work.

3. Make any investigations and tests the contractor may deem necessary to determine his/her bid for performance of the work in accordance with the time, price, and other terms and conditions of the contract documents.

4. Determine the bid documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the work.

5. Ensure all information required herein be submitted with the bid response. Failure to provide the information may result in rejection of the offer.

BID SUBMISSION FORMAT:

1. Each contractor shall include all requirements, terms or conditions they may have and shall not assume that an opportunity will exist to add such matters after the bid has been submitted. Unacceptable terms and conditions added by the contractor may cause the University to award to another contractor, despite other factors of the evaluation.

BID SECURITY:

1. Each Bid must be accompanied by a certified or cashier's check, or bid bond in an amount equal to five percent (5%) of the total amount of the Bid and all Alternates as a guarantee that, if awarded the contract, the Bidder will execute the contract and furnish bonds and insurance as required. The State reserves the right to hold the bid security of the three (3) lowest Bidders until the successful Bidder has executed the contract and furnished the required bonds and proof of insurance. No bid security is required if the total of the Base Bid and Alternates is Fifty Thousand Dollars ($50,000.00) or less.

ASSURANCE OF COMPLETION

1. Unless otherwise provided in State law, the successful bidder shall furnish an assurance of completion prior to the execution of any contract under this solicitation in the form of a performance, payment, and defect bond in a penal sum of 100 percent of the contract price; or, as may be required or permitted by State law;

2. Bonds must be obtained from guarantee or surety companies acceptable to the U.S. Government and authorized to do business in the State of Oklahoma where the work is to be performed.

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BID FORM
BUSHYHEAD PARKING LOT REHABILITATION

TO: ROGERS STATE
University Claremore,
Rogers County,
Oklahoma

To Whom It May Concern,

Having Carefully Examined the Specifications and Having Visited the Site & Examined all Conditions Affecting the Work, the Undersigned Proposes to Furnish All Labor, Materials, and Incidentals Called for by Said Documents for Complete Services Described Herein:

TOTAL BASE PRICE FOR PARKING LOT REHABILITATION
The Undersigned Agrees to Perform all Work Required by the Request for bid for the sum of:

($_____)

(_____Dollars)
(Amount shall be shown in both words and figures; in case of discrepancy, the amount in writing shall govern.)

BID GUARANTEE

For bids including all alternates, totaling in excess of $50,000.00, a 5% security in the sumof_____Dollars ($____), in the form of_____Is submitted herewith in accordance with the Specifications.

ACKNOWLEDGMENT OF ADDENDA (if applicable):

Addendum No. 1 Date_____Addendum No. 2 Date_____Addendum No. 3 Date_____

I hereby certify that I have the author
ity to submit an offer of pricing on behalf of my company and that I have read and understand the terms and conditions of the bid.

_____ _____
(Typed or Printed Name) (Signature)

_____ _____
(Title) (Date)

_____ _____
(Company Name) (Federal Identification #)

_____ _____
(Company Address) (Company Telephone Number) (Company

_____ _____
City, State & Zip Code) (Company Fax Number

Subscribed and sworn to before me this_____day of_____, 2____.

_____ _____
(Notary Public (or Clerk or Judge) My Commission Expires):

Check-list of Items required at the time of bid submittal:

- ☐ Bid Bond
- ☐ Signed and notarized copy of the entire bid request
- ☐ Addendum (if any)
- ☐ Business-relationship affidavit
- ☐ Non-collusion affidavit
- ☐ Equal Employment Opportunity and Affirmative Action affidavit
- ☐ Sex Offenders Affidavit

Failure to provide necessary documents and/or bonds will invalidate your bid submittal.

Non Collusion Affidavit

State Of: _____

County Of: _____

_____, _____, of lawful age being first
duly sworn, on (Name) (title)

oath says that:

1 (s)he is the duly authorized agent of_____, the contractor and/or Contractor submitting the bid and/or procuring the contract which is attached to this statement, for the purpose of certifying the facts pertaining to the existence of collusion among contractors and between contractors and state officials or employees, as well as, facts pertaining to the giving or offering of things of value to the government personnel in return for special consideration in the letting of any contract to which this statement is attached;

2 (s)he is the fully aware of the facts and circumstances surrounding the making of the bid and/or the procurement of the contract to which this statement is attached and has been personally and directly involved in the proceedings leading to the submission of such bids; and

3 Neither the contractor nor anyone subject to the contractor's direction or control has been a party:

a) to any collusion among contractors in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from submitting a bid;
b) to any collusion with any state official or employee as to quantity, quality or price in the prospective contract, or as to any other terms of such prospective contract, or as to any other terms of such prospective contract, nor
c) in any discussions between contractors and any state official concerning exchange of money or other thing of value for special consideration in letting of a contract,
d) to paying giving or donating or agreeing to pay, give or donate to any officer or employee of the State of Oklahoma, any money to other thing of value, either directly or indirectly, in procuring the contract to which this statement is attached.

Subscribed and sworn before me this_____day of_____, 2_____.

_____
NOTARY PUBLIC (or CLERK or JUDGE)

(My commission expires)

Business Relationship Affidavit

BUSINESS RELATIONSHIPS AFFIDAVIT

STATE OF_____)
_____) SS. COUNTY OF_____)

_____, Lawful age, being first duly sworn, on oath says that (s)he is the agent authorized by the vendor to submit the attached bid. Affiant further states that the nature of any partnership, joint venture, or other business relationship presently in effect or which existed within one (1) year prior to the date of this statement with the architect, engineer, or other party to the project is as follows:

_____
_____
_____

Affiant further states that any such business relationship presently in effect or which existed within one (1) year prior to the date of this statement between any officer or director of the preparing company and any officer or director of the architectural or engineering firm or other party to the project is as follows:

_____
_____
_____

Affiant further states that the names of all persons having any such business relationships and the positions they hold with their respective companies or firms are as follows:

_____
_____
_____

(If none of the business relationships herein above mentioned exist, affiant should so state.)

_____

Subscribed and sworn to before me this _____ day of _____

_____, 2_____.

_____ _____
Notary Public (or Clerk or Judge) (My Commission Expires):

Executive Order 11246

IMPORTANT: THIS MUST BE READ, SIGNED, AND RETURNED WITH BID

Certificate of Compliance with Executive Order 11246 (as amended) for Contracts in Excess of $10,000.

In entering into any resulting contract over $10,000, the Contractor agrees to comply with the Equal Employment Opportunity requirements stipulated in Executive Order 11246 as amended by Executive Order 11375. These specific requirements state:

1. "Equal Opportunity Clause"

During the performance of this/these contract(s) the contractor agrees as follows:

A. The contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to the following:

Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; lay-off or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

B. The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color or national origin.

C. The contractor will send to each labor union or representative or workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under Section 204 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

D. The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965 and the rules, regulations and relevant orders of the Secretary of Labor.

E. The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations and orders.

F. In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be cancelled, terminated or suspended in whole or part and the contractor may be declared ineligible for further government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

G. The contractor will include the provisions of Paragraphs A through G in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 207 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor.

The contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the contractor may request the United States to enter such litigation to protect the interests of the United States.

Executive Order 11246

(Continued)

2. Certification of Non-segregated Facilities

By the submission of this bid and/or acceptance of purchase order(s) during the above period, the contractor, offeror, applicant, or subcontractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained.

He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The contractor, offeror, applicant, or subcontractor agrees that a breach of this certification is a violation of the equal opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the equal opportunity clause; that he will retain such certifications in his files; and that he will forward the following notice to such proposed subcontractors (except where the proposed subcontractors have submitted identical certifications for specific time periods).

3. Disabled Veteran and Vietnam Era Veteran Affirmative Action Program Requirements

In entering into any contract which exceeds $10,000, the contractor agrees to comply with Disabled Veteran and Vietnam Era Veteran Affirmative Action Program Requirements as stipulated in Public Law 93-508 and all amendments thereto. Failure to comply with the requirements of Public Law 93-508, Title 41, CFR60-250 and Title 41, CFR60-741 and all amendments thereto shall be deemed a material breach of this agreement and shall subject this contract to cancellation and rescission at the option of the University of Oklahoma. Copies of the applicable portions of this law are available from the University of Oklahoma Purchasing Office if required.

CERTIFICATION

If awarded this contract

_____

(Company)

agrees to comply with the provisions in Clauses I, II and III above.

_____

(Signature)

_____

(Date)

_____

(Title)

SECTION 00660

SEX OFFENDERS AFFIDAVIT

IMPORTANT: THIS MUST BE READ, SIGNED, AND COMPLETED AT THE TIME OF CONTRACT

Sex Offenders Affidavit

State of _____

SS.

County of _____

The undersigned (Architect, Supplier, Engineer or Supervisory Official), of lawful age, being duly Sworn, on oath says that no employee allowed to be working on School Premises under the Authority of the undersigned, has been convicted in this state, the United States or another state of:

Any sex offense subject to the Sex Offenders Registration Act in this state or subject to another state/s or the federal sex offender registration; or

Any felony offense except as provided in Subsection C of Section 4, 70 O.S 1991, Section 6-101.48 or when ten (10) years has elapsed since the date of the original conviction or the employee has received a Presidential or Gubernatorial pardon for the criminal offense.

(Contractor or Supplier) (Signature)

Subscribed and Sworn to Before Me this

_____Day of_____, _____

Notary Public_____

My Commission Number:_____

My Commission Expires:_____

SECTION 01010
SUMMARY OF WORK

1.1 WORK INCLUDED

1. The scope of this project is to remove and replace the Bushyhead parking lot.

2. See attached project specification and drawings for specific work details.

A. **QUALITY ASSURANCE**
Prior to start of work, contractor will provide "shop drawings" and a copy of manufacturer's installation recommendations for all products or systems that require a submittal, as indicated in the project manual.

B. **EXAMINATION OF SITE**
Failure to Visit Site will not relieve Contractor from necessity of furnishing materials or performing work that may be required to complete work in accordance with the project manual without additional cost to RSU.

C. **CONTRACTOR USE OF PREMISES**

1. Contractor's may utilize University provided utilities.
2. Restrict access to extent required, allowing for ongoing activities at site.
3. Operations of Contractor are limited to areas where work is indicated.
4. Take precautions to allow for continued operations including public access and other outside activities on the occupied portions of the site.
5. Schedule and coordinate such operations with RSU Physical Plant Director.

END OF SECTION

SECTION 01015
EXISTING CONDITIONS

1.1 EXISTINGCONDITIONS

A. Dimensions: Contractor shall verify dimensions at site for built-in work, and for work adjoining that of other trades and for dimensions shown to existing structures or installations.

B. Possession, use, and responsibility for site: Keep the building site free of rubbish at all times. Remove all waste and site debris promptly.

C. Existing conditions: In submitting a bid, Contractor acknowledges that he/she has visited the site and reviewed existing conditions. While every attempt has been made to identify locations of work items, the Contractor is to remedy as specified all problems discovered that are of the same nature as Work Items listed in the Specifications.

D. Demolition:

1. Contractor shall use extreme care in the demolition, removal, repair or relocation of existing items in order to protect remaining items from damage. Replace any items or areas so damaged with matching, new items of equal quality.

2. Where operations involve the demolition, removal or repair of existing items in the exterior envelope of existing structures, the Contractor shall provide temporary protection as required to maintain the structure in a weather tight, structurally sound, environmentally stable condition at the end of each day and/or end of activity that is associated with these operations.

END OF SECTION

1.1 QUALITY ASSURANCE

A. Reference Standards: For products or workmanship specified or indicated by association, trade or Federal Standards comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. No provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change duties and responsibilities of RSU or Contractor or any of their consultants, agents or employees from those set forth in Contract Documents, nor shall it be effective to assign to Physical Plant Director any duty or authority to supervise or direct furnishing or performance of Work or any duty or authority to undertake responsibilities contrary to provisions of General Conditions.

C. Where wording of referenced standard is permissive, or where requirements of more than one reference standard apply, provide under more restrictive and higher requirement.

D. Comply with recommendations of reference standards even though they are not mandatory in standard.

E. Notify Physical Plant Director of any conflicts between referenced standards and requirements specified in Specifications or indicated on Drawings before proceeding with work.

F. Detailed Requirements: Be familiar with and verify detailed requirements of referenced standards to verify that items and their installation provided under Work of this Contract meet or exceed standard's requirements.

G. Tolerances: Tolerances may vary from standards of different sections. Make adjustments necessary to assure proper fitting of different elements. Tolerances may be plus or minus as indicated but in sum shall be compensating, not cumulative.

H. Effective Date: Date of standard is that in effect as of documents date except when specific date is specified or when standard is part of applicable code which includes edition date.

I. Copies: When required by individual sections obtain copy of standard. Maintain copy at job site during work.

J. Certificates: When required by Contract Documents, or when requested in writing by Physical Plant Director, submit Certificate of Compliance or Manufacturer's Certificate that materials or workmanship, or both comply with requirements of referenced standard.

SECTION 01200
PROJECTMEETINGS

PART 1 GENERAL

1.1 REQUIREMENTSINCLUDED

A. Participation IS NOT required in pre-bid conference

B. Participation IS required at preconstruction conference.

C. Contractor administration of progress meetings and pre-installation conferences required.

1.2 RELATEDREQUIREMENTS

A. Section 01010 – Summary of Work
B. Section 01015 – Existing Conditions
C. Section 01091 – Reference Standards
D. Section 01340 – Submittals
E. Section 01600 - Material and Equipment
F. Section 01700 - Contract Close Out

1.3 PREBID AND PRECONSTRUCTION CONFERENCES

A. RSU Physical Plant Director will administer pre-bid conference at RSU offices for clarification of RSU and Contractor responsibilities in use of site and for review of administrative procedures. The bidders will then be taken to the site to review the buildings.

B. RSU Contract Administrator will administer the preconstruction conference at RSU offices. Project start and completion date will be determined and other administrative procedural responsibilities will be reviewed.

1.4 PROJECTMEETINGS

Schedule and administer Project meetings through progress of the Work as deemed necessary by the RSU Physical Plant Director.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01340
SUBMITTALS

PART 1 - GENERAL

1.1 MANUFACTURED ARTICLES:

Manufactured articles, materials, equipment to be applied, installed, connected, erected, used, cleaned, conditioned as directed by manufacturer's printed instructions unless otherwise specified. Where materials are specified by more than one name for one use, select any of those specified. Keep copies of such printed recommendations at job site, and deliver one to RSU.

1.2 CONSTRUCTION SCHEDULE:

Within seven (7)) days of award of contract or initial endorsement, submit for approval, construction schedule to RSU Physical Plant Director.

1.3 SUBCONTRACTOR LIST:

Prepare a list of proposed subcontractors including material suppliers. Submit for approval before sub-contracts are awarded. No sub-contractors to be employed on work unless approved by RSU.

1.4 CHANGE ORDERS:

If during construction, RSU authorizes additional work, contractor will provide detailed estimates listing all items of labor and material with quantities and unit prices extended for each item. This applies to all sub-contract work as well as work done by the General Contractor and to all estimates.

1.5 SHOP DRAWINGS AND SAMPLES:

Transmit each shop drawing, sample, or submittal to RSU with Contractor's transmittal form or letter, not by sub-contractor's or supplier's form. Identify each item submitted with Contractor's name, date, project, material, quantity and other pertinent data.

1.6 SHOP DRAWINGS - SUBMITTAL

A. Material list identifying materials and equipment to be used. Submit not less than three (3) copies to RSU for approval. Materials found to be acceptable and not requiring further clarification shall be approved on basis of the materials listed. Materials rejected must be re-submitted as an amendment to the material list. Material requiring the submittal of additional information will be marked for second stage submittal. Material list shall include:

   1. Specification sub-section number and title.
   2. Manufacturers, type, model and size.
   3. Identification of vendor for specifically fabricated items such as structural or miscellaneous steel, reinforcing, doors and frames, millwork, etc.

B. Samples, colors, patterns, textures for approval or selection: Submit all materials required for color selection or approval.
   No selections possible by RSU until all materials received so complete coordination possible. Submit sufficient samples to show range of shades, tones, values, pattern, texture and other features as specified or directed. Label or tag each sample or set of samples indicating:

   1. Manufacturer, brand name, catalog or manufacturer's no.
   2. Project title.
   3. Intended use.

Two copies manufacturer's catalog sheets showing illustrated cuts of items furnished, scale details, sizes, dimensions, capacities, controls, performance characteristics, wiring diagrams and all other pertinent information. One copy of approved and/or disapproved submissions will be returned to Contractor. Contractor shall make corrections as required and furnish two corrected copies to RSU and others as needed.

SECTION 01600
MATERIAL AND EQUIPMENT

1.1 REQUIREMENTSINCLUDED

A. Products
B. Transportation and Handling
C. Storage and Protection
D. Product Option
E. Substitutions

1.2 RELATEDREQUIREMENTS

A. Section 01010 – Summary of Work
B. Section 01015 – Existing Conditions
C. Section 01090 – Reference Standards
D. Section 01340 – Submittals
E. Section 01700 - Contract Close Out

1.4 PRODUCTS

A. Products include material, equipment, and systems.

B. Comply with Specifications and referenced standards as minimum requirements.

1.5 TRANSPORTATION AND HANDLING

A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.

B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.

C. Contractor shall be aware of vandalism and theft and is advised not to leave tools or materials unattended at the job site.

1.6 STORAGE AND PROTECTION

Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.

1.7 PRODUCT OPTIONS

A. Products specified by naming one or more manufacturers with a provision for substitution: Submit a request for substitution for any manufacturer not specifically named.

1.8 SUBSTITUTIONS

A. All products proposed for use, including those specified by required attributes and performance shall require approval of RSU before being incorporated into the work. Do not substitute materials, equipment, or methods unless substitution has been specifically approved by RSU.

B. Submit to RSU, according to the requirements of this section, all substitution requests ten (10) days prior to bid opening date. Substitutions are reviewed for general compliance with specifications. The Contractor is responsible for conforming quantities, dimensions, site conditions, coordinating with other trades and complying with applicable building codes and local ordinances.

C. RSU will determine acceptability of proposed substitution, and will notify Contractors of acceptable or rejection in writing within a reasonable time.

END OF SECTION

SECTION 01700
CONTRACTCLOSE-OUT

1.1 REQUIREMENTSINCLUDED

A. Close-Out Procedures.

B. Project Record Documents.

1.2 CLOSE-OUTPROCEDURES

When Contractor considers work has reached final completion, submit written certification that Contract Documents have been reviewed, Work has been inspected, and that work is complete in accordance with Contract Documents and is ready for RSU to inspect.

1.3 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Remove waste and surplus materials, rubbish, and construction facilities from the Project and from the site. Contractor shall not use waste containers at the site.

C. Clean exterior surfaces exposed to view of all foreign substances.

D. Clean interior surfaces exposed to view; remove temporary labels, stains and foreign substances.

1.4 PROJECT RECORD DOCUMENTS

A. Store documents separate from those used for construction. Keep documents current; do not permanently conceal work until required information has been recorded.

B. At Contract Close-Out:

1. Submit documents with transmittal letter containing date, Project title, Contractor's name and address, list of documents, and signature of Contractor.

2. Submit set of drawings reflecting changes as indicated on Project Record Drawings.

3. Warranty – Contractor shall provide a One (1) year warranty for all materials and labor associated with the content of the contract.

END OF SECTION

PART 1 GENERAL

1.1 WORK INCLUDED

A. Perform demolition work per plans and specifications.
B. Contractor shall perform all utility locates prior to demolition and/or excavations. Contractor will be responsible for any damage incurred to utilities.
C. Remove and dispose of all demolition debris from the University property.

PART 2 PRODUCTS -NOT

USED PART 3 EXECUTION

3.1 PROTECTION

A. Contractor shall use extreme care in the demolition, removal, repair or relocation of existing items in order to protect remaining items from damage. Replace any item or areas so damaged with matching, new items of equal quality.

B. Where operations involve the demolition, removal or repair of existing items in the exterior envelope of existing structures, the Contractor shall provide temporary protection as required to maintain the structure in a stable condition at the end of each day and/or end of activity that is associated with these operations.

C. Do not close or obstruct egress width to any building or site exit. If egress is to be closed or obstructed contractor is to provide temporary means of egress.

D. Rogers State University reserves the right to replace or repair any damaged item, article, building, lawn, shrubs, trees, vehicles, etc. , at the Contractors expense, in the event of the Contractor's failure to do so. Rogers State University has the obligation to notify the Contractor prior to any action.

3.2 DEMOLITION

A. Remove existing asphalt, concrete curb and gutter, parking bumpers, landscaping and other structures as identified. Take care to not damager existing structures or surfaces. Contractor is responsible for the protection of existing property. Contractor will replace or repair University property damaged by Contractor Sub-Contractors of the Contractor, at no addition cost to the University.

3.3 CLEAN UP

A. Remove all debris immediately from the job site.

END OF SECTION

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CA#: 32 Expires: 2026/06/30

SECTION 31 1000

SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Removing existing vegetation.
2. Clearing and grubbing.
3. Stripping and stockpiling topsoil.
4. Removing above- and below-grade site improvements.
5. Demolition, removal, and abandonment of existing private utilities.
6. Temporary erosion- and sedimentation-control measures.
7. Tree Protection

B. Related Sections:

1. Section 31 2000: Earth Moving.

1.3 DEFINITIONS

A. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction, and indicated on Drawings.

E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, as indicated on construction drawings.

F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

G. Geotechnical Report: Geotechnical Engineering report prepared by GFAC Engineering, Tulsa, OK (GFAC Project No. G2024065) dated September 9, 2024.

H. Geotechnical Engineer: GFAC Engineering, 8155 East 46th Street, Tulsa, Oklahoma, 73105, P 918.622.7021

I. Geotechnical Testing Agency: to be appointed by Contractor. Geotechnical Testing Agency shall be qualified per requirements of ASTM E329 and ASTM D3740 for testing indicated. Documentation of said qualifications shall be submitted to Engineer for review and approval prior to performance of work.

1.4 MATERIAL OWNERSHIP

A. Except for stripped topsoil and other materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 SUBMITTALS

A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.

B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.6 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.

2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Owner.

C. Salvable Improvements: Carefully remove items indicated to be salvaged and store on-site or at Owner-specified location. Use of salvaged items in completing the scope of work shall be subject to Engineer’s review and approval of the condition of said items prior to installation.

D. Utility Locator Service: Notify OKIE (811 or 1-800-522-6543) for area where Project is located before site clearing.

E. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

F. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 31 2000 "Earth Moving."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction. Contractor is responsible for reestablishing survey control points (at Contractor’s expense) if survey control points are disturbed.

B. Locate and clearly identify trees, shrubs, and other vegetation to remain or to be relocated. Flag each tree trunk at 54 inches above the ground.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to Construction Drawings, Storm Water Pollution Prevention Plan and the AHJ.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

E. Contractor shall obtain City and State required Earth Change permits.

3.3 TREE AND PLANT PROTECTION

A. General: Protect trees and plants remaining on-site per plans.

B. The following practices are prohibited within tree and plant protection zones:
1. Storage of construction materials, debris or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping material around trees or plants unless otherwise indicated.

C. Do not direct vehicle or equipment exhaust towards tree and plant protection zones.

D. Prohibit heat sources, flames, ignition sources and smoking within or near protection zones.

E. Replace trees, shrubs and other vegetation indicated to remain or be relocated that are damaged by construction or relocation/reinstallation operations.

3.4 EXISTING PRIVATE UTILITIES

A. Active Services:

1. Prior to performing work, contact service provider and identify/locate any utilities to be protected/preserved in order to maintain service to active facilities. Noted shall be protected/preserved for duration of contract or until such time service from new utilities can be established.

2. Coordinate sealing, capping and/or disconnection of any portions of utility systems to be preserved from portions of the system to be either removed or abandoned. Said work shall be completed by service provider or, in the case of private utilities, by the Contractor.

3. Coordinate any interruptions in service from the above activities with Owner. Contractor shall provide a minimum of 48-hours' notice to Owner prior to anticipated interruption. Do not proceed with interruption in service without documented permission from Owner.

B. Demolition and Removal:

1. Confirm with Service Provider that portions of utilities to be removed have been disconnected, purged and/or de-energized.

2. Extents (Plan): Demolish and remove utilities that are within 10-ft of footprint indicated for new construction

3. Extents (Elevation): Demolish and remove utilities that are within 36-in vertically of the lowest elevation of any overlying excavations required in conjunction with the scope of the project.

4. Fill any resulting voids and/or excavations with satisfactory soil materials according to backfill requirements in Section 31 2000.

5. Additional Requirements:
   a. Piping: Disconnect piping at unions, flanges, valves or fittings.
   b. Wiring Ducts: Disassemble into unit lengths and remove plug-in and disconnecting devices.

c. Overhead Utilities: Communication and electrical facilities mounted to overhead poles shall be removed by the Service Provider. Contractor responsibilities shall include:
   1) Requesting and scheduling the removal of overhead facilities with each service provider as required.
d. Electrical Transformers shall be removed by Service Provider. Contractor responsibilities shall include:
   1) Contacting Service Provider and requesting/coordinating removal of transformer.
   2) Demolition and removal of concrete pads associated with electrical transformer installation.

C. Abandonment:
1. Confirm with Service Provider that portions of utilities to be abandoned have been disconnected, purged and/or de-energized.
2. Extents (Plan): Abandon utilities that are more than 10-ft outside of footprint indicated for new construction.
3. Additional Requirements:
   a. Overhead Utilities: Contractor responsible for the removal of any abandoned poles. Poles shall be demolished and removed in their entirety.
   b. Sanitary and Storm Sewer Collection Systems:
      1) Abandoned Piping: Close open ends of abandoned underground piping indicated to remain in place. Include closures strong enough withstand hydrostatic and earth pressures that may results after ends of abandoned piping have been closed. Use with procedure below:
         a) Close open ends of piping with at least 8-inch think, brick masonry bulkheads.
      2) Abandoned Structures: Excavate around structure as required and use either procedure below:
         a) Remove structure in its entirety and close open ends of remaining piping.
         b) Remove top of manhole down to at least 36-inches below lowest below existing grade. Backfill with Satisfactory Soil Material to existing grade per Section 31 2000. Concrete rubble resulting from structure demolition shall not be removed from site and shall not be utilized as fill material.
   c. Water and Gas Distribution Systems:
      1) Close open ends of abandoned underground piping indicated to remain in place. Include closures strong enough to withstand hydrostatic and earth pressures that may result after ends of abandoned piping have been closed. Use either procedure below:
         a) Close open ends of piping with at least 8-inch thick, brick masonry bulkheads.
         b) Close open ends of piping with threaded metal caps, plastic plugs or other acceptable methods suitable for size and type of material being closed. Do not use wood plugs.
      2) Valves and other appurtenances shall be demolished and removed in their entirety.

3.5 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Grind down stumps and remove roots, obstructions, and debris to a depth of 36 inches below exposed subgrade.

3. Use only hand methods for grubbing within protection zones.
4. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material per requirements of Geotechnical Report.

3.6 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to a depth of 6 inches in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects more than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 72 inches.
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus topsoil to allow for respreading deeper topsoil.

D. Contractor responsible for watering disturbed areas as required to reduce and/or eliminate dust generated from construction activities.

3.7 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

C. Items identified to remain property of the Owner shall be stored on-site.

END OF SECTION 31 1000

SECTION 31 2000
EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Preparing subgrades for slabs-on-grade, walks and pavements.
2. Excavating and backfilling trenches for utilities and pits for buried utility structures.
3. Excavating and backfilling for buildings and structures.

1.3 RELATED SECTIONS

1. Section 31 1000: Site Clearing.
2. Section 31 2319: Dewatering.
3. Section 31 5000: Excavation Support and Protection.

1.4 REFERENCED STANDARDS

A. Latest version or edition shall apply unless otherwise noted.

1. American Society of Testing and Materials (ASTM) International
   a. C33, Standard Specification for Concrete Aggregates.
   b. C94, Standard Specification for Ready-Mixed Concrete.
   c. C150, Standard Specification for Portland Cement.
   d. C260, Standard Specification for Air-Entraining Admixtures for Concrete.
   e. C618, Standard Specification for Coal Fly Ash and Raw or Calcined Natural Poozzolan for Use in Concrete.
   f. C869, Standard Specification for Foaming Agents Used in Making Preformed Foam for Cellular Concrete.
   g. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600kN-m/m3)).
   h. D2487, Standard Practice for Classification of Soils for Engineering Purposed (Unified Soil Classification System).
   i. D2922, Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
   j. D3740, Standard Practice for Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
   k. D4318, Standard Test Methods for Liquid Limit, Plastic Limit and Plasticity Index of Soils.
   l. D6913, Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis.
   m. E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing or Special Inspection.

1.5 DEFINITIONS

A. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

B. CLSM: Controlled Low Strength Material.

C. Drainage Aggregate: Aggregate material used in construction of sub-drainage features.

D. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

E. Fill: Soil materials used to raise existing grades.

F. Geotechnical Report: Geotechnical Engineering report prepared by GFAC Engineering, Tulsa, OK (GFAC Project No. G2024065) dated September 9, 2024.

G. Geotechnical Engineer: GFAC Engineering, 8155 East 46th Street, Tulsa, Oklahoma, 73105, P 918.622.7021

H. Geotechnical Testing Agency: to be appointed by Contractor. Geotechnical Testing Agency shall be qualified per requirements of ASTM E329 and ASTM D3740 for testing indicated. Documentation of said qualifications shall be submitted to Engineer for review and approval prior to performance of work.

I. SWPPP: Storm Water Pollution Prevention Plan.

J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

K. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.

L. Treated Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below base course or topsoil materials.

M. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.6 INFORMATIONAL SUBMITTALS

A. Material Test Reports: Contractor shall coordinate and request the following reports from the Geotechnical Testing Agency for each type of soil encountered on-site and soil material proposed for fill and backfill:

1. Classification according to ASTM D2487.
2. Laboratory compaction curve according to ASTM D698.
3. Liquid Limit.
4. Plastic Limit according to ASTM D4318.
5. Sieve Analyses according to ASTM D6913.

B. Field Quality Control Inspection and Test Reports.

1.7 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: Qualified according to ASTM E329 and ASTM D3740 for testing indicated.

1.8 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.

2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.

1. Do not proceed with work on adjoining property until directed by Owner.

C. Utility Locator Service: Notify Oklahoma One Call System (1-800-522-6543) before beginning earth moving operations.

D. Do not commence earth moving operations until temporary tree and plant measures, temporary erosion and sedimentation control measures specified in Section 31 1000 “Site Clearing” are in place.

E. Geotechnical Report: Read and review the Geotechnical Report for an analysis of existing soil conditions and engineering recommendations.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: Free of organic or other deleterious material, maximum particle size less than 3-inches.

1. Liquid Limit less than 50.

2. Plasticity Index less than 30.

C. Unsatisfactory Soils: Soils containing rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter. Unsatisfactory soils also include satisfactory soils not meeting the following requirements.

1. Fill Placement: 95% maximum dry density per Standard Proctor, placement moisture content at or above optimum value.

D. Aggregate Base:

1. Materials Covered: These Specifications cover the aggregate for use in the construction of aggregate base courses, backfill and surfacing.
2. General Requirements: Aggregate material shall be provided and placed in accordance with Oklahoma Department of Transportation 2009 Standard Specifications for Highway Construction - Section 303.

E. Sand: Fine aggregate per ASTM C33. Fine aggregate material shall be provided in accordance with Oklahoma Department of Transportation 2009 Standard Specifications for Highway Construction - Section 701.05.

F. Drainage Aggregate: Narrowly graded mixture of washed crushed stone or crushed or uncrushed gravel. Gradation of material subject to associated drainage conduit perforation schedule.

2.2 ACCESSORIES

A. CLSM: Self-compacting, flowable concrete material produced from the following:

1. Portland Cement: ASTM C150, Type I.

2. Fly Ash: ASTM C618, Class C or F.

3. Normal-Weight Aggregate: ASTM C33, 3/8-inch nominal maximum aggregate size.

4. Foaming Agent: ASTM C869.

5. Water: ASTM C94/C94M.

6. Air-Entraining Admixture: ASTM C260.

B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.

B. Protect and maintain erosion and sedimentation controls during earth moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
    a. 24 inches outside of concrete forms other than at footings.
    b. 12 inches outside of concrete forms at footings.
    c. 6 inches outside of minimum required dimensions of concrete cast against grade.
    d. 6 inches beneath bottom of concrete slabs-on-grade.

3.4 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

2. Contractor shall over-excavate beneath limits of proposed slab, as required. See Geotechnical Report for additional guidance regarding the limits of this over-excavation.

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.6 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

3.7 SUBGRADE INSPECTION

A. Notify Architect when excavations have reached required subgrade.

B. In the presence of the Geotechnical Testing Agency, proofroll subgrade with a tandem-axle dump truck weighing at least 25 tones to locate any soft or unstable zones. The proofrolling should involve overlapping passes in mutually perpendicular directions.

1. Where rutting or pumping is observed during proofrolling, the unstable soils should be overexcavated and replaced with an approved satisfactory soil material.

C. If Geotechnical Testing Agency determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in work.

E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.8 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.

1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Engineer.

3.9 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.

6. Removing temporary shoring and bracing, and sheeting.
7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.11 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers per requirement of the Geotechnical Report.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.12 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction per requirements of Geotechnical Report.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.

B. Maintain moisture up until the placement of concrete in structural areas.

3.13 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers per requirements of Geotechnical Report.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil materials per requirements of Geotechnical Report.

3.14 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus ½ inch.
3. Pavements: Plus or minus ½ inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of ½ inch when tested with a 10-foot straightedge.

3.15 VEHICULAR PAVEMENTS

A. Perform work only on subgrades free of mud, frost, snow or ice.

B. Shape and compact subgrade to elevations and grades specified in the Construction Drawings. Appropriate subgrade elevation shall be a function of the paving recommendations documented in the Geotechnical Report and the paving material selected by the Owner.

C. Treated Subgrade has been specified as part of the proposed paving section by the Geotechnical Engineer. Contractor shall scarify and amend compacted subgrade with specified material as required.

1. Amendment rates specified in Geotechnical Report are an estimate. Contractor shall engage the Geotechnical Testing Agency to complete necessary testing prior to the start of amendment activities as required to confirm estimated amendment rates specified in the Geotechnical Report.

D. Compact Stabilized Subgrade to required elevations and grades indicated by Construction Drawings. Final thickness of Stabilized Subgrade and Aggregate Base shall be greater than or equal to that specified in Geotechnical Report.

3.16 CONCRETE WALKS

A. Place drainage course on subgrades free of mud, frost, snow, or ice.

B. Place sand course under walks as follows:
1. Shape sand course to required crown elevations and cross-slope grades.
2. Place sand course 6 inches or less in compacted thickness in a single layer.
3. Place sand course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.

C. Compact sand course at optimum moisture content to required grades, lines, cross sections and thickness indicated on plans.

3.17 FIELD QUALITY CONTROL

A. Special Inspections: Contractor shall engage Geotechnical Testing Agency to perform all Special Inspections related to soils inspections, excavation and compaction required by Code.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies unless more frequent tests are required in the geotechnical report:
1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 5,000 sq. ft. of paved area, but in no case fewer than three tests.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.18 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.19 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 31 2000

SECTION 32 12 16
ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Hot-mix asphalt paving.
2. Pavement-marking paint.

1.3 RELATED SECTIONS

A. Section 31 10 00: Site Clearing.

B. Section 32 20 00: Earth Moving.

1.4 REFRENCED STANDARDS

A. Latest version or edition shall apply unless otherwise noted.

1. ASTM International
   a. D3666, Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials.
2. The Asphalt Institute, “Asphalt Paving Manual”, Manual Series No. 8, Third Edition, April 1978.
3. American Association of State Highway and Transportation Officials (AASHTO)
   a. T209, Standard Method of Test for Theoretical Maximum Specific Gravity (Gmm) and Density of Hot Mix Asphalt (HMA).
   b. M248, Standard Specification for Ready-Mixed Traffic Paints.
4. Oklahoma Department of Transportation (ODOT), Standard Specifications for Highway Construction.
   a. Section 408, Prime Coat.
   b. Section 402, Bituminous Surface Treatment.
   c. Section 708, Plant Mix Bituminous Bases and Surfaces.
5. Federal Specification (FS)
   a. TT-P-1952, Safety Coatings.

1.5 DEFINITIONS

A. Geotechnical Report: Geotechnical Engineering report prepared by GFAC Engineering, Tulsa, OK (GFAC Project No. G2024065) dated September 9, 2024.

B. Geotechnical Engineer: GFAC Engineering, 8155 East 46th Street, Tulsa, Oklahoma, 73105, P 918.622.7021

C. Geotechnical Testing Agency: to be appointed by Contractor. Geotechnical Testing Agency shall be qualified per requirements of ASTM E329 and ASTM D3740 for testing as indicated. Documentation of said qualifications shall be submitted to Engineer for review and approval prior to performance of work.

D. ODOT Specifications: Oklahoma Department of Transportation, Standard Specifications for Highway Construction (latest edition).

E. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

1.6 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

1. Job-Mix Designs: For each job mix proposed for the Work.

B. Material Certificates: For each paving material, from manufacturer.

C. Material Test Reports: For each paving material.

1.7 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to ASTM D3666 for testing indicated.

B. Regulatory Requirements: Comply with materials, workmanship and other applicable requirements of the Oklahoma Department of Transportation for asphalt paving work and the HIS CO/COTR for pavement-marking work.

1. Measurement and pavement provisions and safety program submittals included in standard specifications do not apply to this Section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.

B. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.9 PROJECT CONDITIONS

A. Environmental Limitations | Asphalt: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure of if the requirements of Section 402 of ODOT Specifications are not met.

B. Environmental Limitations | Pavement-Marking: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient of surface temperature of 40 deg F (4.4 deg C) for alkyd materials and not exceeding 95 deg F (35 deg C).

PART 2 - PRODUCTS

2.1 GENERAL

A. Paving recommendations provided in the Geotechnical Report have indicated the use of materials meeting the requirements of ODOT Specifications. Specific section numbers of the reference document have been provided below as appropriate. The Contractor shall be required to retain and review said document to ensure all material requirements are met.

2.2 AGGREGATES

A. Coarse Aggregate: ODOT Specifications, Section 708.

B. Fine Aggregate: ODOT Specifications, Section 708.

C. Mineral Filler: ODOT Specifications, Section 708.

2.3 ASPHALT MATERIALS

A. Asphalt Binder: ODOT Specifications, Section 708.

B. Asphalt Cement: ODOT Specifications, Section 708.

C. Prime Coat: ODOT Specifications, Section 708.03.

D. Tack Coat: ODOT Specifications, Section 708.03.

E. Water: Potable.

2.4 AUXILIARY MATERIALS

A. Sand: ODOT Specifications, Section 708. Per requirements for Type A and B.

2.5 MIXES

A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant complying with the following requirements:

1. Base Course: ODOT Specifications, Section 708, Type S3.
2. Surface Course: ODOT Specifications, Section 708, Type S4.

2.6 PAVEMENT-MARKING PAINT

A. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with AASHTO M248, Type N; colors complying with FS TT-P-1952.

1. Color: As indicated.

B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, Type II, with drying time of less than 30 minutes.

1. Color: As indicated.
2. Comply with manufacturer's application instructions, with special attention to relative humidity & temperature requirements at time of application.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.

B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph (5 km/h).
2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 25 tons.
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by CO/COTR, and replace with compacted backfill or fill as directed.

C. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

B. Where aggregate base course is to be placed more than 7 days prior to asphalt placement, prime coat shall applied per the paragraph below OR the aggregate base course shall be re-compacted to proper density, immediately prior to asphalt placement

C. Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate as specified by ODOT Specifications, Section 408. Apply enough material to penetrate and seal but not flood surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.
3. In those jurisdictions where prime coat is not allowed, use tack coat instead.

3.3 PREPARATION OF ASPHALTIC CEMENT

A. The asphaltic cement shall be heated at the paving plant to a temperature of two hundred seventy-five degrees F (275F) to three hundred twenty-five degrees F (325F).

3.4 PREPARATION OF MINERAL AGGREGATES

A. A mineral aggregates shall be dried and heated at the paving plant so that when delivered to the mixer they shall be at a as low a temperature as is consistent with proper mixing and laying and in no case to exceed three hundred twenty-five degrees F (325F). Aggregated may be fed simultaneously into the same drier but in such case, immediately after heating, they shall be screened into the bin sizes specified. Oversize material, crushed after passing through the drier shall not be incorporated into the mixer without again being heated and dried.

3.5 PREPARATION OF BITUMINOUS MIXTURE

A. The hot aggregated prepared as prescribed above shall be accurately measured and conveyed into a mixer in the proportionate amounts of each aggregate required to meet the specified grading.

B. The mixture shall be made by first charging the mixer with mineral aggregate and filler and mixing these dry for a period of from five (5) to twenty (20) seconds after which the asphaltic cement shall be added and the mixing continued for a period of not less than thirty (30) seconds, or longer, if necessary to produce a homogeneous mixture in which all particles of the mineral aggregate are uniformly coated.

3.6 LOADING AND TRANSPORTATION OF MIXTURE

A. The mixture shall be transported from the paving plant to the work in tight vehicles with metal bottom previously cleaned of all foreign materials. When directed by the Engineer the vehicles shall be suitably insulated and each load shall be covered with canvas or other suitable material of sufficient size to protect it from weather conditions. The inside surface of all vehicles used for hauling mixtures may be lightly lubricated with a thin oil or soap solution just before loading, but excess of lubricant will not be permitted. No loads shall be sent out so late in the day as to interfere with spreading and compacting the mixture during daylight unless artificial light satisfactory to the Engineer is provided.

3.7 TACK COAT

A. Before the asphaltic mixture is laid, the surface upon which it is to be placed shall be cleaned thoroughly to the satisfaction of the Engineer and if indicated on the plans, shall be given a uniform tack coat application with asphalt of the type shown herein. This tack coat shall be applied, as directed by the Engineer, with an approved sprayed at the rate of note to exceed 0.10 gallon per square yard of surface. All contact surfaces of curbs and gutters, manholes and other structures shall be painted with a thin uniform coat of asphaltic material used for the tack coat in case no tack coat is shown on the plans, curbs and other structures shall be painted with a thin uniform coating of emulsified asphalt.

3.8 PLACING ASPHALTIC MIXTURES

A. The asphaltic mixture shall be laid at a temperature from two hundred twenty-five degrees F (225F) to three hundred degrees F (300F) and only upon an approved base which is dry. The mixture shall be delivered on the job at minimum workable temperature that will produce the density herein specified after final compaction.

B. When existing paving is to be resurfaced to a crown section not conforming to that of the original paving, the asphaltic concrete leveling course shall be placed in lifts beginning at the point on the existing slab requiring the greatest addition of material and by the addition of successive lifts of material, gradually shaping the crow to conform to that required in the finished slab. The last increment of material shall consist of a uniform thickness of an asphaltic concrete wearing surface.

C. When the asphaltic mixture is placed in a narrow strip along the edge of an existing pavement, or used to level up small areas of an existing pavement, or placed in small irregular areas where the use of a finishing machine is not practical, the finishing machine may be eliminate, when authorized by the Engineer, provided a satisfactory surface can be obtained by other approved methods.

D. Immediately after an course is screeded, and before compaction is started, the surface shall be checked, and any inequalities adjusted, all fat sandy accumulation from the screen removed by a lute, and all fat spots in any course removed and replaced with satisfactory material. Irregularities in alignment and grade along the outside edge shall be corrected by the addition or removal of mixtures before the edge is compacted.

E. The mixtures shall be distributed into place by means of shovel and lute in a loose layer of uniform density and correct depth. Shovelers and rakers shall work skillfully together so that the finished product will require a minimum amount of rework after the first compactive effort.

F. Placing of mixture shall be as continuous as possible and the roller shall pass over the unprotected edge of the fresh laid mixture only when the laying of this course is to be discontinued for such length of time as to permit the mixture to become chilled.

G. Thickness of compacted course shall be not more than 3ight inches (8") in depth. Thickness will be reduced by Engineer, if the required densities cannot be obtained.

H. Forms will not be required when the finishing machines is of such type as not to require forms for grade control. When forms are required they shall have a thickness equal to the compacted surface course and shall remain in place until final surface finishing, other than rolling, has been completed.

I. In placing a level-up course with the spreading and finishing machine, the forms, binder twine or cord, shall be set to line and grade established by the Engineer. When directed by the Engineer, level-up shall be spread with an approved motor patrol grader.

J. Fillets, spandrels and other large areas which cannot be laid with a machine shall be placed in accordance with Section W-IV, "Fillets, Spandrels and other Large Handworked Areas", in the Asphalt Paving Manual.

3.9 JOINTS

A. Longitudinal and transverse joints shall be made in such a manner that a smooth, strong, neat union is obtained, between the respective lanes or lane ends. They shall be made by the methods and procedures outlined in Section W-III, "Joints" of the Asphalt Paving Manual or some other method acceptable to the Engineer. Longitudinal joints shall conform to the tolerances defined in Section W-III 1-a (3) or Section W-III b (3) "Alignment", of the manual.

B. Transverse or longitudinal joints accumulating mud, dust or foreign matter shall be trimmed back to the satisfaction of the Engineer so that a proper bond of asphaltic concrete will be obtained. Longitudinal joints with an undue dust film shall be tacked with an approved tack coat before the adjoin lane is place.

C. Joints with PC Concrete such as curbs, gutters and pavements shall be made to conform to Section W-III, "Asphaltic Concrete to Portland Cement Joints" in the Asphalt Paving Manual. Joints with manholes, valve boxes and inlet grates shall be made to conform to sections as shown on the sheet of details.

3.10 COMPACTION

A. Rolling shall be done in such a manner that a surface will be obtained meeting the tolerance for smoothness and density requirements specified and all roller marks shall be eliminated.

B. The target density for compaction shall be 94 percent of the maximum theoretical density shown on the latest laboratory mix design report for the percent asphalt content recommended except in situation as described below. Tests to establish the maximum theoretical density of the plant mixture shall be performed as often as necessary to ensure an accurate value is used in the calculation of roadway density.

C. The average roadway density shall be not less than the target density.

D. Individual roadway densities more than two percent (2%) below the target densities will not be accepted. It is the intent that the contractor achieve uniform compaction at or above the target

density. The difference from the high to low percent density tested shall not exceed four percent (4%).

E. When Type B, M or D asphalt concrete is placed on an existing surface that has not received full-width milling, in a plan thickness of two inches (2") or less, the average target density shall be ninety-three percent (93%) of maximum theoretical density.

F. When the existing surface has been milled full-width, or if a leaving course has been placed prior to the overlay, the average target density shall be ninety-four (94%) percent of maximum theoretical density, (Type B, M or D).

G. When Type E asphalt concrete is placed, the minimum density shall be ninety-one (91%) percent of maximum theoretical density. In the interest of appearance and practicality, density tests on the pavement may be waived by the Engineer for resurface courses.

H. A self-propelled pneumatic roller may be required by the Engineer to obtain the specified density and surface texture.

3.11 TESTING AND CORRECTING SURFACE

A. The riding qualities of the finished surface shall be satisfactory to the Engineer. In case of dispute, the remaining provisions of the standard specifications shall apply.

B. For the purpose of testing the finished surface, a ten (10') foot straightedge shall be available on the work. Depressions which may develop after the first rolling shall be remedied by loosening the surface depressions not being noticeable until the final compaction has been made, the surface course shall be removed and sufficient new material laid to form a true even surface.

C. The finished pavement surface shall comply with ODOT Specifications, Section 401.04.

1. Such portions of the completed pavement as are defective in finish, density or composition or that do not comply in all respects with the requirements of these specifications shall be taken up, removed and replaced with suitable material properly laid in accordance with these specifications.

D. Prior to the acceptance of the pavement, the pavement shall be flooded with a sufficient quantity of water to show it areas of ponding exist. All areas of ponding in excess of one-fourth inch (1/4") in depth and any length of curb and gutter that ponds in excess of one-fourth inch (1/4") in depth shall be removed and replaced by the Contractor and at the Contractor's expense.

1. The water may be applied by tank truck or with fire hose if a fire hydrant is available. The water shall be applied as directed by the Engineer and all expenses borne by the Contractor.

2. When it is necessary to remove and replace a section of curb and gutter any remaining portion of the curb and gutter adjacent to joints that is less than ten (10') feet in length shall also be removed and replaced by the Contractor and at the Contractor's expense.

3.12 TESTING

A. Description: It is the intent of this specification that the pavement shall be constructed strictly in accordance with the thickness recommended in the Geotechnical Report. Where any pavement is found not so constructed, the following rules relative to core drilling pavement and replaced of the faulty pavement shall govern.

1. General: The asphaltic pavement base and surface course will be accepted by the engineer on a "Lot" by "Lot" base. A "Lot" is considered to be 2,000 tons or part thereof or one (1) day of plant production.

2. Acceptance Testing: The acceptance testing of a "Lot" will be performed by a qualified testing laboratory approved by the Engineer.

3. Tests Results Reports: Test reports shall be emailed to the Engineer.

4. Asphaltic Mix Design: Asphaltic concrete mix design and initial job-mix formula are the responsibility of the Contractor and shall be submitted to the Engineer for approval. A new mix design is required should the material source change or results with the job-mix formula prove unsatisfactory.
5. Sampling and Testing: Sampling and testing of the asphaltic concrete at the job site shall be in accordance with the following schedule:
    a. Asphalt Extraction and Gradation: One (1) per 1,000-tons asphalt pavement.
    b. Roadway Density of Asphalt Mix: Four (4) per 2,000-tons asphalt pavement or as directed by Engineer.
    c. Hveem Stability Test and Density of Molded Specimen: One (1) per 2,000-tons asphalt pavement.
    d. Maximum Theoretical Specific Gravity of Asphalt Mix: One (1) per 2,000-tons asphalt pavement.
6. Acceptance: Acceptance of all asphaltic concrete lifts (new construction and overlays) shall be based on density per the following schedule, and in accordance with ODOT Specification, Section 411.04.K(2):
    a. Greater than 1-1/2 inches in thickness:
        1) The target density of each lot shall be 94 percent (unless specified otherwise by the Engineer) of the maximum Theoretical Specific Gravity at the Job Mix Formula asphalt content determined by the most recent specific gravity of the bituminous paving mixture in accordance with the AASHTO T209. The roadway density of each lot will be the average of test on three (3) separate specimens taken within the limits of the area represented by the lot. The locations and times of test specimens collection shall be established by the Engineer or his/her representative.
        2) The approved testing laboratory shall cut test specimens for each lot from the pavement by sawing or coring a specimen having a minimum size of four (4”) inches on the cut side or diameter. The cost cutting specimens and satisfactorily repairing the specimens areas shall be paid by the Contractor. Repairing the specimen area with asphalt will be the responsibility of the contractor. Density may be on the specimens or through use of nuclear density gauges. The use of a nuclear density gauge or testing on the specimens shall be at the discretion of the Engineer.
        3) Acceptance will be based on tests by the approved testing laboratory and the decision of the Engineer. The minimum density of 92 percent and maximum density of 97 percent are the acceptable levels of density (unless otherwise specified by the Engineer).
    b. All Lifts Less Than 1-1/2 inches in Thickness: The acceptance of asphaltic concrete lifts that are less than 1-1/2 inches in thickness will be at the discretion of the Engineer.

B. Core Drilling Pavement: All pavements shall be cored and measured for thickness at (minimum of three) such points as the Engineer may select in each lot of paving.
1. Should any core show a deficiency of more than 0.25 inches check cores shall be taken each way in the lane so deficient, as directed by the Engineer, until the thickness of pavement is not more than 0.25 inch deficient.
2. All costs in connection with core drilling the pavement and refilling the core holes shall be borne by the Contractor. Core holes shall be filled in an acceptable manner with material matching the pavement from which the cores were cut. The coring of the pavement shall be performed by an Owner approved testing lab.

3. Paving installed by the Contract that is not within 10% of the total thickness recommended by the Geotechnical Report shall be removed and replaced at the Contractor's expense.
4. No additional pavement over the contract unit price will be made for any slab the average thickness of which, determine as hereinafter provided, exceeds the thickness shown on the plans.
5. The thickness of the slab will be determined by average of 9 point gauge jig measurement of the thickness of adjacent cores, and the average thickness determined from each pair of adjacent cores shall apply to the length of lane between those cores. The last deficient core and the first core of satisfactory thickness shall be averaged what deduction in payment will be made from the length of lane lying between them.
6. If the Contractor believes that the cores and measurements taken are not sufficient to indicate fairly the actual thickness of pavement, he/she may request that additional cores and measurements be taken. The cost of additional cores and measurement will be paid by the Contractor. Cores will not be spaced closer than ten (10') feet.

3.13 PAVEMENT MARKING

A. Verify that pavement is dry and in suitable condition to being pavement marking according to manufacturer's written instructions.

B. Proceed with pavement marking only have after unsatisfactory conditions have been corrected.

C. Do not apply pavement marking paint until layout, colors and placement have been verified with the Engineer.

D. Allow paving to age for a minimum of 30 days before starting pavement marking.

E. Sweep and clean surface to eliminate loose material and dust.

F. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 miles (0.4 mm).

1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to pavement. Mask an extended area beyond edges of each stencil to prevent paint application beyond the stencil. Apply paint so that it cannot run beneath the stencil.

3.14 PROTECTING AND CLEANING

A. Protect pavement markings from damage and wear during remainder of construction period.

B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.15 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPS-approved landfill.

1. Do not allow milled materials to accumulate on-site.

END OF SECTION

SECTION 32 1313

CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Driveways.
2. Curbs and gutters and flumes.
3. Walks.

1.3 RELATED SECTIONS

A. Section 31 2000: Earth Moving.

B. Section 32 1373: Concrete Paving Joint Sealants.

1.4 REFERENCED STANDARDS

A. Latest version or edition shall apply unless otherwise noted.

1. American Association of State Highway and Transportation Officials (AASHTO)
   a. M31, Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
   b. M45, Standard Specification for Aggregate for Masonry Mortar.
   c. M53, Axle-Steel Deformed and Plain Bars for Concrete Reinforcement.
   d. M80, Standard Specifications for Coarse Aggregate for Hydraulic Cement Concrete.
   e. M85, Standard Specification for Portland Cement.
   f. M302, Standard Specification for Slag Cement for Use in Concrete and Mortar.
   g. M240, Standard Specification for Blended Hydraulic Cement.
   h. T2, Standard Method for Sampling of Aggregates.
   i. T11, Standard Method of Test for Material Finer Than No. 200 Sieve in Mineral Aggregated by Washing.
   j. T21, Standard Method of Test for Organic Impurities in Fine Aggregates for Concrete.
   k. T26, Standard Method of Test for Quality of Water to Be Used in Concrete.
   l. T27, Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.
   m. T71, Standard Method of Test for Effect of Organic Impurities in Fine Aggregate on Strength of Mortar.
   n. T96, Standard Method of Test for Resistance of Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
   o. T103, Standard Method of Test for Soundness of Aggregated by Freezing and Thawing.
   p. T112, Standard Method of Test for Clay Lumps and Friable Particles in Aggregate.
   q. T113, Standard Method of Test Lightweight Pieces in Aggregate.
   r. T161, Standard Method of Test for Resistance of Concrete to Rapid Freezing and Thawing.
2. American Concrete Institute (ACI)
   a. 117, Specification for Tolerances for Concrete Construction and Materials.
   b. 211, Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
   c. 301, Specifications for Structural Concrete.
   d. 306, Cold Weather Concreting.

e. CP-1, Technical Workbook for ACI Certification of Concrete Field Testing Technician-Grade 1.

3. American Society of Testing and Materials (ASTM) International
   a. A780, Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
   b. C171, Standard Specification for Sheet Materials for Curing Concrete.
   c. C172, Standard Practice for Sampling Freshly Mixed Concrete.
   d. C881, Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
   e. C1077, Standard Practice for Agencies Testing Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation.
   f. E329, Standard Specification for Agencies Engaged in Construction Inspection, Testing or Special Inspection.
4. Concrete Reinforcing Steel Institute (CRSI)
   a. Manual of Standard Practice.

1.5 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

1.6 ACTION SUBMITTALS

A. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results or other circumstances warrant adjustments.

1.7 INFORMATIONAL SUBMITTALS

A. Material Certificates: For the following, from manufacturer:
   1. Cementitious materials.
   2. Steel reinforcement and reinforcement accessories.
   3. Applied finish materials.
   4. Bonding agent or epoxy adhesive.
   5. Admixtures.
   6. Curing Compounds.
   7. Joint Fillers.

B. Material Test Reports: For each of the following:
   1. Aggregates. Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

C. Field quality-control reports.

1.8 QUALITY ASSURANCE

A. Detectable Warning Installer Qualifications: An employer of workers trained and approved by manufacturer of stamped concrete paving systems.

B. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

   1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

C. Testing Agency Qualifications: Qualified according to ASTM C1077 and ASTM E329 for testing indicated.

   1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

D. ACI Publications: Comply with ACI 301 unless otherwise indicated.

1.9 PROJECT CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Environmental Limitations | Pavement-Marking: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient of surface temperature of 40 deg F (4.4 deg C) for alkyd materials and not exceeding 95 deg F (35 deg C).

PART 2 - PRODUCTS

2.1 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bend forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.2 STEEL REINFORCEMENT

A. Recycled Content: Provide steel reinforcement with an average recycled content of steel so postconsumer recycled content plus one-half of pre-consumer recycled content is not less than 25 percent.

B. Reinforcing Bars: ASTM A615, Grade 60; deformed.

C. Reinforcing Bars: For concrete reinforcement and dowel bars used in the work.
1. Billet Steel: Grade 40 per AASHTO M31.
2. Axle Steel: Grade 40 per AASHTO M53.

D. Galvanized Reinforcing Bars: ASTM A767, Class II zinc coated, hot-dip galvanized after fabrication and bending: with ASTM A615, Grade 60; deformed bars.

E. Epoxy-Coated Reinforcing Bars: ASTM A775 or ASTM A934; with ASTM A615, Grade 60; deformed bars.

F. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.

G. Joint Dowel Bars: ASTM A615, Grade 60 plain-steel bars; zinc coated (galvanized) after fabrications according the ASTM A767, Class I coating. Cut bars true to length with ends square and free of burrs.

H. Epoxy-Coated, Joint Dowel Bars: ASTM A775; with ASTM A615, Grade 60, plain-steel bars.

I. Bar Supports: Bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars, welded wire reinforcement and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic or precast concrete of greater compressive strength than concrete specified and as follows:
1. Clean reinforcement of loose rust and mill scale, earth, ice and other bond-reducing materials.
2. Arrange, space and securely tie bars and bar supports to hold reinforcement in positon during concrete placement. Maintain minimum cover to reinforcement.
3. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
4. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

J. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.

K. Zinc Repair Material: ASTM A780.

2.3 CONCRETE MATERIALS

A. Concrete material shall be provided and placed in accordance with Oklahoma Department of Transportation 2019 Standard Specifications for Highway Construction, Sections 414 and 701.

B. Exposed Aggregate: Selected, hard, and durable; washed; free of materials with deleterious reactivity to cement or that cause staining; from a single source, with gap-graded coarse aggregate as follows:

1. Aggregate Sizes: 3/4 to 1 inch (19 to 25 mm) nominal.

C. Air-Entraining Admixture: ASTM C 260.

D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.4 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182.

B. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
    a. BASF Construction Chemicals, LLC; Confilm.

E. Curing Compound: AASHTO M 148, Type 2 or Type 1-D.

2.5 RELATED MATERIALS

A. Non-bituminous Joint Fillers: ASTM D 1752, self-expanding cork in preformed strips.

B. Bituminous Joint Fillers: ASTM D 1751, non-extruding and resilient type, in accordance with ODOT 2019 Standard Specifications for Highway Construction, Section 701.08.B.(2).

C. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

D. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

E. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

F. Chemical Surface Retarder: Water-soluble, liquid, set retarder with color dye, for horizontal concrete surface application, capable of temporarily delaying final hardening of concrete to a depth of 1/8 to 1/4 inch (3 to 6 mm).

2.6 PAVEMENT MARKINGS

A. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with AASHTO M248, Type N; colors complying with FS TT-P-1952.
   1. Color: As indicated.

B. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, Type II, with drying time of less than 30 minutes.
   1. Color: As indicated.
   2. Comply with manufacturer's application instructions, with special attention to relative humidity & temperature requirements at time of application.

2.7 CONCRETE MIXTURES

A. Concrete mix designs shall be provided for the concrete class shown in the plans in accordance with Oklahoma Department of Transportation 2019 Standard Specifications for Highway Construction, Sections 701 and 702.

B. Do not place any concrete until the mix design is approved. Submit new mix designs if the mix design is rejected by the Engineer, the source of any material changes or the mix design produces unacceptable workability or production test results.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

D. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

E. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Furnish batch certificates for each batch discharged and used in the Work.
   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

F. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
   1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
   2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
   3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding. Proof-rolling activities shall be completed per the requirements of the Geotechnical Report.
   1. Correct subbase with soft spots and areas of pumping or rutting exceeding a depth of 1-inch according to requirements in Section 31 2000 "Earth Moving".

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

B. Proceed with installation only after all subgrades have been prepared per the requirements of Section 31 2000 “Earth Moving” and all unsatisfactory conditions have been corrected.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

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

E. Zinc-Coated Reinforcement: Use galvanized-steel wire ties to fasten zinc-coated reinforcement. Repair cut and damaged zinc coatings with zinc repair material.

F. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.

G. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch (50-mm) overlap of adjacent mats.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.

2. Provide tie bars at sides of paving strips where indicated.

3. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

4. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.

5. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.

2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows to match jointing of existing adjacent concrete paving:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 3/8-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
   a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.
2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
   a. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.
3. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms.

Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement dowels and joint devices.

H. Screed paving surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.

K. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.

L. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

2. Do not use frozen materials or materials containing ice or snow.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

M. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

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

2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.

2. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

3.8 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by a combination of these:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:

   a. Water.
   b. Continuous water-fog spray.
   c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas that have been subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.9 **PAVING TOLERANCES**

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 3/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-foot long, unleveled straightedge not to exceed 1/2 inch.
4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
5. Lateral Alignment and Spacing of Dowels: 1 inch.
6. Vertical Alignment of Dowels: 1/4 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
8. Joint Spacing: 3 inches.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.10 PAVEMENT MARKING

A. Verify that pavement is dry and in suitable condition to being pavement marking according to manufacturer’s written instructions.

B. Proceed with pavement marking only have after unsatisfactory conditions have been corrected.

C. Do not apply pavement marking paint until layout, colors and placement have been verified with the Engineer.

D. Allow paving to age for a minimum of 30 days before starting pavement marking.

E. Sweep and clean surface to eliminate loose material and dust.

F. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 miles (0.4 mm).
   1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to pavement. Mask an extended area beyond edges of each stencil to prevent paint application beyond the stencil. Apply paint so that it cannot run beneath the stencil.

3.11 FIELD QUALITY CONTROL

A. Testing Agency: Contractor shall engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the schedules provided by Geotechnical Engineer, Testing Agency and/or Owner.

C. Test results shall be reported in writing to Engineer and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

D. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

E. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.

F. Concrete paving will be considered defective if it does not pass tests and inspections.

G. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

H. Prepare test and inspection reports.

3.12 REPAIRS AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with Portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 1313

SECTION 32 1373

CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Joint fillers and sealers for Portland cement concrete.

1.3 RELATED SECTIONS

A. Section 32 1313: Concrete Paving.

1.4 REFERENCED STANDARDS

A. Latest version or edition shall apply unless otherwise noted.

1. American Association of State Highway and Transportation Officials (AASHTO)
    a. M33, Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
    b. M153, Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers Concrete Paving and Structural Construction.
    c. M213, Standard Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
    d. M200, Standard Specification for Epoxy Protective Coatings.
    e. M220, Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.
2. American Society of Testing and Materials (ASTM) International
    a. C501, Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Title by the Taber Abraser.
    b. C579, Standard Test Method for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings and Polymer Concretes.
    c. C793, Standard Test Method for Laboratory Accelerated Weathering on Elastomeric Joint Sealants.
    d. C882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete By Slant Shear.
    e. C884, Standard Test Method for Thermal Compatibility Between Concrete and an Epoxy-Resin Overlay.
    f. C1193, Standard Guide for Use of Joint Sealants.
    g. D570, Standard Test Method for Water Absorption of Plastics.
    h. D638, Standard Test Method for Tensile Properties of Plastics.
    i. D792, Standard Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
    j. D2240, Standard Test Method for Rubber Property – Durometer Hardness.
    k. D2393, Test Method for Viscosity of Epoxy Resins and Related Components.
3. Oklahoma Department of Transportation (ODOT, OHD)
    a. L-3, Methods of Test for Skin-Over Time of Silicone Sealants.
    b. L-4, Methods of Test for Non-volatile Content of Silicone Sealants.
    c. L-6, Methods of Test for Non-volatile Content of Silicone Sealants.
    d. L-21, Method of Test for Cold Applied, Two Component, Polymer Type Joint Sealing Compounds.

1.5 PRECONSTRUCTION TESTING

A. Preconstruction Compatibility and Adhesion Testing: Contractor shall submit to joint-sealant manufacturers information regarding materials that will contact or affect joint sealants.

1. Use manufacturer's standard test method to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
3. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
4. Testing will not be required if joint-sealant manufacturers submit joint-preparation data that are based on previous testing, not older than 24 months, of sealant products for compatibility with and adhesion to joint substrates and other materials matching those submitted.

1.6 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Pavement-Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

C. Product Certificates: For each type of joint sealant and accessory, from manufacturer.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for joint sealants.

E. Preconstruction Compatibility and Adhesion Test Reports: From joint-sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility with and adhesion to joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain each type of joint sealant from single source from single manufacturer.

1.8 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:
1. Provide joint sealants, backing materials and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.
2. All products subject to compliance with these and ODOT specifications.

2.2 COLD-APPLIED JOINT SEALANTS

A. Single-Component, Self-Leveling, Silicone Joint Sealant for Concrete: ASTM D 5893, Type SL.

2.3 HOT-APPLIED JOINT SEALANTS

A. Hot-Applied, Single-Component Joint Sealant for Concrete: ASTM D 3406.

2.4 JOINT-SEALANT BACKER MATERIALS

A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.

B. Round Backer Rods for Cold- and Hot-Applied Joint Sealants: ASTM D 5249, Type 1 is required if hot-applied joint sealants are to be used; otherwise, ASTM D 5249, Type 3 may be used; provide product of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

2.5 PRIMERS

A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.

B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.

B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install joint-sealant backings of kind indicated to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of joint-sealant backings.
2. Do not stretch, twist, puncture, or tear joint-sealant backings.
3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install joint sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place joint sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:

1. Remove excess joint sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.

F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING

A. Clean off excess joint sealant or sealant smears adjacent to joints as the Work progresses, by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

3.6 PAVEMENT-JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Joints within cement concrete pavement

1. Joint Location:
   a. Expansion and isolation joints in cast-in-place concrete pavement.
   b. Contraction joints in cast-in-place concrete slabs.
   c. Other joints as indicated.
2. Silicone Joint Sealant for Concrete.
3. Hot-Applied Joint Sealant for Concrete.

B. Joint-Sealant Application: Joints between cement concrete and asphalt pavement

1. Joint Location:
   a. Joints between concrete and asphalt pavement.
   b. Joints between concrete curbs and asphalt pavement.
   c. Other joints as indicated.
2. Hot-Applied Joint Sealant for Concrete and Asphalt.

END OF SECTION 32 1373

SECTION 32 92 00
TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sodding.

1.2 DEFINITIONS

A. Duff Layer: The surface layer of native topsoil that is composed of mostly decayed leaves, twigs, and detritus.
B. Finish Grade: Elevation of finished surface of planting soil.
C. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
D. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
E. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
F. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
G. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
H. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
I. Surface Soil: Whatever soil is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.3 QUALITY ASSURANCE

A. Sod Producer: Company specializing in sod production and harvesting, with minimum three years experience.

B. Sod: Sod shall have sufficient root development to support its own weight without tearing when suspended vertically by holding the upper two corners, free of weeds and undesirable native grasses.
C. Contractor to have minimum of 3 years experience in sodding.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver sod on pallets or in rolls. Protect exposed roots from dehydration.
B. Do not deliver more sod than can be laid within twenty-four (24) hours.
C. Deliver fertilizer in waterproof bags showing weight, chemical analysis and name of manufacturer.
D. Store materials in accordance with manufacturer's recommendation and as directed by the Construction Manager.

1.5 COORDINATION

A. Coordinate the work of this section with installation of any underground piping, conduit or wiring, and grading.
B. Coordinate the work of this section with the installation of plant material and irrigation system.
C. Closely coordinate all work with grading, paving and other site work.

1.6 WARRANTY / ACCEPTANCE

A. Complete installation shall be guaranteed by the installer against defects of material and workmanship, for a period of thirty days, beginning with the date of substantial completion/acceptance.
B. It is the responsibility of the Contractor to install a dense lawn of permanent grasses as specified. Finished lawn is to have a smooth, even surface.
C. All sodded areas shall have no bare spots or unacceptable cover. Bare spots shall be resodded to meet original specifications.
D. Inspection: Once all sodding is complete and in accordance with specifications, notify Construction Manager for inspection. For sod, make requested repairs, including repairing grade and topdressing joints. Thirty-day maintenance period / warranty will begin when all corrections have been made and approved at a reinspection (if necessary).

1.7 MAINTENANCE SERVICE

A. Maintain installed sod until acceptance, and then for an additional 30-day period. Maintenance shall include mowing, edging, watering, fertilizing and weed treatment as necessary to keep the sod healthy.

PART 2 - PRODUCTS

2.1 BERMUDA GRASS SOD

A. ASPA approved, nursery grown, “Common” Bermuda sod with strong fibrous root system capable of growth and development when planted; free of stones, burned or bare spots; containing no more than ten (10) weeds per one hundred (100) square feet. Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.

2.2 HARVESTING SOD

A. Machine cut sod and load on pallets in accordance with ASPA guidelines.
B. Cut sod in area not exceeding one square yard, with minimum of one half (1/2) inch and maximum one (1) inch topsoil base.

2.2 FERTILIZERS

A. Commercial Fertilizer: 10-20-10 (N-P-K ratio) granular fertilizer:

2.3 PESTICIDES

A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

PART 3 - EXECUTION

3.1 TURF AREA PREPARATION

A. Subgrades: Loosen subgrade to a minimum depth of 6 inches (150 mm) Remove stones larger than 2 inches (50 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Apply fertilizer directly to subgrade before loosening and thoroughly blend with top soil.
2. Do prepare subgrade if frozen, muddy, or excessively wet.
3. Remove stones larger than 1-1/2 inches (38 mm)in any dimension and sticks, roots, trash, and other extraneous matter.

B. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.2 SODDING

A. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across angle of slopes exceeding 1:3.

2. Anchor sod on slopes exceeding 1:6 with wood pegs, or steel staples, spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.

C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches (38 mm) below sod.

3.3 TURF MAINTENANCE

A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain height appropriate for species without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings.

C. Apply pesticides and other chemical products and biological control agents in accordance with authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

3.4 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Engineer:

1. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

END OF SECTION 32 92 00

GEOTECHNICAL ENGINEERING REPORT
PROPOSED PARKING LOT RECONSTRUCTION
1760 CAMDEN STREET
CLAREMORE, OKLAHOMA

PROJECT NO. G2024065

September 9, 2024

8155 E. 46th Street Tulsa, Oklahoma 74145 **p:** 918.622.7021

September 9, 2024
Project No.: G2024065

Mr. George Proctor
Rogers State University
1701 West Will Rogers Boulevard
Claremore, Oklahoma 74017

Subject: **Geotechnical Engineering Report**
Proposed Parking Lot Reconstruction
1760 Camden Street
Claremore, Oklahoma

Dear Mr. Proctor:

GFAC has completed the authorized geotechnical engineering evaluation for the above-referenced project. The purpose of the geotechnical study was to explore and evaluate the subsurface conditions at various locations on the site and develop geotechnical design and construction recommendations for the project. The attached GFAC report contains a description of the findings of our field exploration and laboratory testing program, our engineering interpretation of the results with respect to the project characteristics, and our geotechnical site development and foundation design recommendations as well as construction guidelines for the planned project.

Recommendations provided herein are contingent on the provisions outlined in the ADDITIONAL SERVICES and LIMITATIONS sections of this report. The project Owner should become familiar with these provisions in order to assess further involvement by GFAC and other potential impacts to the proposed project.

We appreciate the opportunity to be of service and are prepared to provide the recommended additional services. Please call us if you have any questions concerning this report.

Respectfully submitted,
GFAC TEXAS PLLC
Certificate of Authorization #8119; Exp. 6/30/2025

LICENSED PROFESSIONAL ENGINEER
DALE L. KELLEY II
9 Sept 2024
21521
OKLAHOMA

Dale L. Kelley II, P.E.
Oklahoma: 21521

Brian K. Marick, P.E.
Principal Engineer

8155 E. 46th Street Tulsa, Oklahoma 74145 **p:** 918.622.7021

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GEOTECHNICAL ENGINEERING REPORT
PROPOSED PARKING LOT RECONSTRUCTION
1760 CAMDEN STREET
CLAREMORE, OKLAHOMA
GFAC PROJECT NO. G2024065
EXECUTIVE SUMMARY

Site:

- We understand that an existing parking lot located near 1760 Camden Street in Claremore, Oklahoma will be reconstructed. The parking lot is located south of the soccer fields and east of the library on the campus of Rogers State University. Demolition and complete reconstruction of the parking lot is planned.
- The project site is currently occupied by an asphaltic concrete parking lot. The ground surface at the project site is covered with asphalt.
- All fill to be utilized at the site shall be approved by the Geotechnical Engineer.
- Based on lab testing performed, the on-site soils are suitable for use as structural fill at the project site.
- A portion of the soils encountered at the site appear to have a high sand and/or silt content. These types of soils are highly moisture sensitive and may become unstable with minor variations in moisture content or when subjected to repeated construction traffic. Close moisture control during compaction operations will be required to reduce the potential for pumping of these soils.
- The subsurface conditions encountered across the entire site are favorable for the development of perched groundwater conditions. In a "perched' groundwater condition, precipitation will infiltrate the upper lower plasticity more permeable soils and sit (perch) on the underlying less permeable bedrock.
- Near surface lower consistency/relative density soils extended to an approximate depth on the order of 2 ½ to 3 feet at the location of Boring B-2. If encountered at the time of construction, removal and replacement of these lower consistency/relative density soils will be required to provide adequate and uniform support for the proposed pavements and a subgrade suitable for fill placement.
- It has been assumed that minimal earthwork, i.e. maximum cuts and fills of less than 1 feet, will be required at the site to achieve finish grades.

Pavements:

- Light duty and heavy duty pavements will be constructed at the site. In addition to the driving lanes and parking stalls, a dumpster pad will be constructed in the southeast corner of the parking lot.
- Traffic data was not provided. Typical pavement sections are provided.
- The pavement subgrade will consist of native soils, evaluated and approved existing fill, and newly placed structural fill.
- The pavement subgrade shall be scarified, moisture conditioned and recompacted to a minimum depth of 8 inches.
- A minimum of 6 inches of aggregate base material, such as ODOT Aggregate Base Type "A", should be placed below the pavement.

The information stated above is a brief summary of the recommendations presented within this report. The report should be reviewed in its entirety for proper implementation of the recommendations.

GEOTECHNICAL ENGINEERING REPORT
PROPOSED PARKING LOT RECONSTRUCTION
1760 CAMDEN STREET
CLAREMORE, OKLAHOMA

1. INTRODUCTION

1.1 GENERAL

GFAC has completed the authorized geotechnical engineering evaluation for the Proposed Parking Lot Reconstruction located near 1760 Camden Street in Claremore, Oklahoma. This report includes our recommendations related to the geotechnical aspects of the project design and construction. Conclusions and recommendations presented in the report are based on the subsurface information encountered at the location of our exploration and the provisions and requirements outlined in the ADDITIONAL SERVICES and LIMITATIONS sections of this report.

1.2 PROPOSED CONSTRUCTION

We understand that an existing parking lot located near 1760 Camden Street in Claremore, Oklahoma will be reconstructed. The parking lot is located south of the soccer fields and east of the library on the campus of Rogers State University. Demolition and complete reconstruction of the parking lot is planned. It is our understanding the parking lot will be reconstructed with either asphalt or concrete.

Light duty and heavy duty pavements will be constructed at the site. In addition to the driving lanes and parking stalls, a dumpster pad will be constructed in the southeast corner of the parking lot. Traffic data was not provided. Typical pavement sections will be provided.

A grading plan was not available at the time this report was prepared. For the purpose of this report, it has been assumed that maximum cuts and fill of less than 1 foot will be required to achieve finish grades at the project site.

Recommendations related to retaining walls, retention/detention basins, embankment slopes, and slope stability are beyond the scope of services for this study.

The scope of the engineering evaluation for this study, as well as the conclusions and recommendations in this report, were based on our understanding of the project as described above. If pertinent details of the project have changed or otherwise differ from our descriptions, we must be notified and engaged to review the changes and modify our recommendations, if needed.

2. SITE CONDITIONS

2.1 SITE DESCRIPTION

We understand that an existing parking lot located near 1760 Camden Street in Claremore, Oklahoma will be reconstructed. The proposed project location is indicated on Plate 1 included in APPENDIX A.

We understand that an existing asphalt parking lot located near 1760 Camden Street in Claremore, Oklahoma will be reconstructed. The existing asphalt pavement exhibited various types of distress including but not limited to alligator cracking, rutting, as well as transverse and longitudinal cracking. The parking lot is located south of the soccer fields and east of the library on the campus of Rogers State University. Demolition and complete reconstruction of the parking lot is planned.

Existing utilities in the vicinity of the site include, but most likely are not limited to, a water line to the northwest and a gas line and an underground electric line to the south. Additional utilities are likely present in the vicinity of the site.

2.2 SUBSURFACE CONDITIONS

The following presents a general summary of the major strata encountered at the project site during our subsurface exploration. Specific subsurface conditions encountered at the boring locations are presented on the respective logs in APPENDIX A. The stratification lines shown on the logs and section represent the approximate boundaries between material types; in situ, the transitions may vary or be gradual.

Surficial Materials: A 3 to 4 1/2 inches thick layer of asphaltic concrete pavement underlain by a 6-inches thick layer of crushed limestone gravel that appeared to be mixed with lean clay and silt was encountered at the ground surface at the boring locations.

Existing Fill: Existing fill consisting of lean clay with silt was encountered below the pavement materials and continued to an approximate depth of 1.3 feet and 1.4 feet in Borings B-1 and B-2, respectively. The fill materials may extend into other areas of the site and to depths in excess of that encountered in our borings.

Native Soils: Native soils consisting of lean clay with varying amounts of sand, silt and gravel was encountered below the crushed limestone gravel layer and/or existing fill materials and continued to an approximate depth ranging from 3.1 to 3.4 feet.

Bedrock: Sandstone and/or shale bedrock was encountered below the fill and the native soils in the borings. The bedrock appeared to be highly weathered or weathered. Table 2.2 presents the approximate depth at which weathered bedrock was first encountered within the borings.

Table 2.2 – Bedrock Information

Boring No.	Bedrock Depth, feet
B-1	3.4
B-2	3.1
B-3	3.3
B-4	3.3

2.3 GENERAL SITE GEOLOGY

According to the "Engineering Classification of Geologic Materials – Division Eight" from the Oklahoma Highway Department, 1970, the project site appears to be located within an area designated as the Senora Unit (Psn).

This unit consists predominantly of shale containing some thin bedded to massive buff sandstone and two beds of limestone. The shale is black to gray, fissile, and contains considerable clay shale. The sandstones are up to 25 feet thick. The limestones are 2 to 8 feet thick, hard, and massive.

The Senora unit varies in thickness. It is about 160 feet thick in northern Craig County, 300 to 350 feet in southern Craig County, 200 feet thick in northern Rogers County, and 140 feet thick in southern Rogers County.

It outcrops in Craig, Mayes, Nowata, Rogers, and Tulsa Counties of Division 8. The sandstones form escarpments and hills, while the shales form slightly rolling plains and valleys.

2.4 GROUNDWATER OBSERVATIONS

Groundwater observations were made both during and after completion of drilling operations. The borings remained dry both during drilling and immediately following the drilling operations. Extended water level readings were not taken.

The materials encountered in the borings have a wide range of hydraulic conductivity and observations over an extended period of time may show the presence of groundwater. Use of piezometers would be required to better define current groundwater conditions and groundwater level fluctuations with time. Fluctuations of groundwater levels can occur due to seasonal variations in the amount of rainfall, runoff, and other factors not evident at the time the borings were performed. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

The subsurface conditions encountered across the site are favorable for the development of perched groundwater conditions. In a "perched' groundwater condition, precipitation will infiltrate the upper lower plasticity/non-plastic more permeable soils and sit (perch) on the underlying less permeable bedrock or higher plasticity clay soils. Generally, perched water is of limited volume and can be controlled with typical dewatering methods. However, it should be noted, that depending upon site grades, the subsurface stratigraphy, and the volume of water, more sophisticated dewatering methods/equipment may be required if a perched ground water condition is encountered at the time of construction. During wet seasons, the perched groundwater can cause the upper layers of soils to become soft and unstable.

3. ANALYSIS AND DISCUSSION

3.1 GENERAL

Based on the results of our evaluation, it is our professional opinion that the proposed project site could be developed for the proposed building using conventional grading and foundation construction techniques.

3.2 SITE DEVELOPMENT

3.2.1 Demolition

Demolition shall include removal of sidewalks, pavements, utilities, curbs, and any other structures present within the proposed project site. All debris resulting from the demolition process shall be removed from the project site. Areas disturbed during demolition should be thoroughly evaluated by the geotechnical engineer prior to placement of structural fill. All disturbed soils should be undercut prior to placement of structural fill. Structural fill should be placed in the excavations created by the demolition/removal process in accordance with the recommendations presented in Section 4.3 of this report. Use of construction debris as fill material should not be allowed. It is anticipated that reworking of the upper portion of the materials present below the existing pavements will be required.

3.2.2 Existing/Possible Fill

Existing fill consisting of lean clay with silt was encountered below the pavement materials and continued to an approximate depth of 1.3 feet and 1.4 feet in Borings B-1 and B-2, respectively. The fill materials may extend into other areas of the site and to depths in excess of that encountered in our borings.

Based on the testing and laboratory observation of the existing fill material completed in conjunction with the preparation of this report, the existing fill material, minus any

deleterious materials, would be suitable for use as structural fill at the project site. Unsuitable existing fill material, that which contains deleterious materials, or unstable existing fill encountered during mass grading should be undercut full depth and be replaced with structural fill. Additional testing of the existing fill materials should be completed as part of the initial part of the construction process.

3.2.3 Existing Utility Trenches and Proposed Utilities

Existing utilities encountered during construction within the zone of influence of proposed construction areas should be relocated/abandoned as part of the site development. All existing utility lines within the proposed building footprint should be relocated to areas outside of the proposed construction. Excavations created by removal of the existing lines should be cut wide enough to allow for the use of heavy construction equipment to compact backfill. If the lines are to be left in place, thorough evaluation of the backfill will be required.

All underground utility lines for the proposed project should be located outside the zone of influence of proposed foundations; that is a zone extending from the bottom edge of the footing at a slope of 1 Horizontal to 1 Vertical, 1(H):1(V). If utility lines are within the zone of influence of the foundations, settlements in excess of those presented in this report may occur.

3.2.4 Scarification, Moisture Conditioning and Compaction

Following demolition and any required undercutting (see Section 3.5), the exposed subgrade should be scarified, moisture conditioned, and recompacted in preparation for fill placement. Extremely wet or unstable areas that hamper compaction of the subgrade may require undercutting and replacement with structural fill or discing and aeration may be required to lower moisture contents to levels that will allow proper compaction of the exposed grade.

3.2.5 Proofrolling and Correction of Unstable Areas

Following moisture conditioning and prior to placement of structural fill, the exposed grade should be proofrolled. Proofrolling of the subgrade aids in identifying soft (lower consistency/loose) or disturbed areas. Unsuitable areas identified by the proofrolling operation should be: 1) undercut and replaced with structural fill, 2) scarified, aerated, and recompacted, 3) stabilized in place with shot/crushed rock with a maximum diameter of 6 inches, or 4) spanned through the use of bi-axial geogrid, depending upon the nature/location of the unstable/disturbed area. The actual method of stabilization would depend upon the area that is to be stabilized (i.e.; building pad, pavements, etc.). Proofrolling can be accomplished through use of a fully-loaded, tandem-axle dump truck or similar equipment providing an equivalent subgrade loading.

3.2.6 Sand and Silt Content

A portion of the soils encountered at the site have a high sand and/or silt content. These types of soils are highly moisture sensitive and may become unstable with minor variations in moisture content or when subjected to repeated construction traffic. If these soils are unstable at the time of construction, they will need to be undercut and replaced with structural fill, or be stabilized in place. Close moisture control during compaction operations will be required to reduce the potential for pumping of these soils.

3.2.7 Perched Groundwater

Though not encountered at the time of the subsurface exploration, the site is favorable for development of “perched” groundwater in the near surface soils above the underlying shale bedrock. Depending upon the amount of precipitation that falls prior to and during the construction of the proposed facility, a perched groundwater condition may develop. Depending upon the amount of perched groundwater present, the near surface soils could become soft and unstable with repetitive construction traffic. Typically, “perched” groundwater can be controlled with typical dewatering methods.

It should be noted that the combination of silty sand soils and the favorable condition to develop a “perched” groundwater condition, soft/unstable soils should be anticipated to be encountered at the time of reconstruction of the parking lot.

3.2.8 Lower Consistency/Relative Density Soils

Near surface lower consistency/relative density soils extended to an approximate depth on the order of 2 ½ to 3 feet at the location of Boring B-2. If encountered at the time of construction, removal and replacement of these lower consistency/relative density soils will be required to provide adequate and uniform support for the proposed pavements and a subgrade suitable for fill placement. It should be noted that these lower consistency/relative density soils may extend to other areas of the site and to deeper depths than indicated in this report.

3.3 EXCAVATIONS

3.3.1 General

All excavations must comply with applicable local, state and federal safety regulations. ***The responsibility for excavation safety and stability of temporary construction slopes lies solely with the contractor.*** We are providing this information below solely as a service to our client. Under no circumstances should this information provided be interpreted to mean that GFAC is assuming responsibility for construction site safety or the contractors activities, such responsibility is not being implied and should not be inferred.

3.3.2 Excavations

It is anticipated that excavations for the project will generally be in newly placed structural fill, existing fill, and native soils above the groundwater level. Excavations within these materials should be possible with conventional excavation equipment. Deeper excavations may extend into the sandstone and shale bedrock. The soil materials and the highly weathered to weathered sandstone and shale bedrock with a

Standard Penetration Resistance (N) value of less than 25 blows per foot can generally be excavated with conventional heavy equipment such as backhoes, scrapers, loaders, etc. Excavation of harder, less weathered sandstone and shale bedrock will most likely be difficult and may require the use of single-tooth rippers mounted on large tractors such as a Caterpillar D-8 or larger, rock buckets mounted on backhoes/trackhoes, or other rock excavating techniques to complete the excavations. Excavation of these materials in confined excavations may be difficult.

3.3.3 Excavation Slopes and Construction Considerations

Excavations should be cut to a stable slope or be temporarily braced, depending upon the excavation depths and the subsurface conditions encountered. ***Temporary construction slopes should be designed in strict compliance with the most recent governing regulations.*** Stockpiles should be placed well away from the edge of the excavation and their heights should be controlled so they do not surcharge the sides of the excavation. Surface drainage should be carefully controlled to prevent flow of water into the excavations. Construction slopes should be closely observed for signs of mass movement: tension cracks near the crest, bulging at the toe, etc. If potential stability problems are observed, a geotechnical engineer should be immediately contacted.

3.4 STRUCTURAL FILL

Based on the conditions encountered in the borings and the results of the laboratory testing on-site soils are suitable for use as structural fill at the project site. Additional testing and observation at the time of construction is recommended to further evaluate these materials prior to use as structural fill. All imported material shall meet the requirements as outlined in Section 4.3.

3.5 CLIMATIC CONDITIONS AND CONSTRUCTION CONSIDERATION

Weather conditions will influence the site preparation required. In spring and late fall, following periods of rainfall, the moisture content of the near-surface soils may be significantly above the optimum moisture content. Excessive moisture could seriously

impede grading by causing an unstable subgrade condition. Typical remedial measures include aerating the wet subgrade, removal of the wet materials and replacing them with dry materials, reinforcing the subgrade with geotextiles/geogrid or applying lime, cement kiln dust (CKD), or Class “C” fly ash as a drying agent.

If construction of the project is to be performed during winter months, appropriate steps should be taken to prevent the soils from freezing. In no case should the fill, foundations, or other flat work be placed on or against frozen or partially frozen materials. Frozen materials shall be removed and replaced with a suitable material. Frozen materials shall not be included in any compacted fills.

3.6 PAVEMENTS AND PAVEMENT SUBGRADE PREPARATION

Traffic data was not available, typical pavement sections have been provided. The pavement subgrade should be prepared in accordance with Sections 4.2 and 4.3 of this report which are intended to develop subgrades that are suitable for pavements. These recommendations include that all material imported to the project site meet the requirements outlined in Section 4.3.

Based upon the subsurface conditions at the site, the pavement subgrade will likely consist of a combination of native soils, evaluated and approved existing fill, and newly placed structural fill. In areas that are to receive fill and/or where soil materials are exposed at the pavement subgrade elevation, the soil materials shall be scarified, moisture conditioned, and recompacted to a minimum depth of 8 inches.

Construction traffic on the pavements was not considered in the pavement sections provided in Table 4.4. If construction scheduling dictates the pavements will be subject to traffic by construction equipment/vehicles, the thickness may need to be reconsidered to include the effects of the additional traffic loading.

The pavement subgrade should be sloped to provide rapid drainage. This includes the underlying subgrade soils since the granular base material readily transmits water. The granular section should be graded to pipe underdrains, adjacent storm sewer inlets, or

drainage ditches to provide drainage from the granular section. Water allowed to pond on or adjacent to the pavement could saturate the subgrade and cause premature pavement deterioration.

Disturbance, desiccation, and/or wetting of the subgrade between grading and paving can result in deterioration of the previously completed subgrade. A non-uniform subgrade can result in poor pavement performance and local failures relatively soon after pavements are constructed.

We recommend that the pavement subgrades be proofrolled and the moisture content and density of the top 12 inches of subgrade be checked within two days prior to commencement of actual paving operations. If any significant event, such as precipitation, occurs after proofrolling, the subgrade should be reviewed by qualified geotechnical engineering personnel immediately prior to placing the pavement. The subgrade should be in its finished form at the time of the final review.

3.7 LANDSCAPING AND SITE GRADING CONSIDERATIONS

Provisions should be made to reduce the potential for large moisture changes within pavement subgrade soils located adjacent to landscape areas, to reduce the potential for subgrade movement. Positive drainage away from the pavement areas should be incorporated into the design plans. Ponding of water adjacent to or on the pavement areas could contribute to significant moisture increases in the subgrade soils and subsequent heaving.

Consideration should also be given to limiting landscaping and irrigation adjacent to the pavement areas. Trees and large bushes can develop intricate root systems that can draw moisture from the subgrade soils, causing them to shrink during dry periods of the year. Desiccation of soils below pavement can result in settlement of shallow foundations.

4. RECOMMENDATIONS

4.1 GENERAL

Based on the results of our evaluation, it is our professional opinion that the proposed project site could be developed for the proposed building using conventional grading and pavement construction techniques. Recommendations regarding geotechnical aspects of the project design and construction are presented below.

The recommendations submitted herein are based, in part, upon data obtained from our subsurface exploration. The nature and extent of subsurface variations that may exist at the proposed project site will not become evident until construction. If variations appear evident, then the recommendations presented in this report should be evaluated. In the event that any changes in the nature, design, location or depth of the proposed structure are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed and our recommendations modified in writing.

4.2 SITE PREPARATION

We recommend the following for site preparation:

1. Demolition shall include removal of sidewalks, pavements, utilities, curbs, and any other structures present within the proposed project sites. All disturbed soils shall be undercut prior to placement of structural fill.

2. Following demolition and any required undercutting operations, the exposed subgrade should be scarified, moisture conditioned, and recompacted to a minimum depth of 8 inches.

3. The exposed subgrade should be proofrolled with a fully loaded, tandem-axle dump truck. Unsuitable areas identified by the proofrolling operation should be:

1) undercut and replaced with structural fill, 2) scarified, aerated, and recompacted, 3) stabilized in place with shot/crushed rock with a maximum diameter of 6 inches, or 4) spanned through the use of bi-axial geogrid, depending upon the nature/location of the soft areas. The method in which unsuitable areas are corrected would depend upon the location of the unsuitable areas and the conditions encountered at the site at the time of construction.

4. A portion of the soils encountered at the site have a high sand and/or silt content. These soils are sensitive to fluctuations in moisture content and can become unstable with slight increases in moisture content. Depending upon the moisture content of these soils at/during the time of construction these materials may need to be stabilized in place, dried out, or undercut and replaced with structural fill. The subsurface conditions at the site are favorable for the development of a "perched" groundwater conditions. After precipitation events, unstable soils should be anticipated.

5. Near surface lower consistency/relative density soils extended to an approximate depth on the order of 2 ½ to 3 feet at the location of Boring B-2. If encountered at the time of construction, removal and replacement of these lower consistency/relative density soils will be required to provide adequate and uniform support for the proposed pavements and a subgrade suitable for fill placement.

4.3 STRUCTURAL FILL

We recommend the following for structural fill:

1. **ON-SITE SOILS** – Based on the conditions encountered in the borings and the results of the laboratory testing, the on-site soils are suitable for use as structural fill at the project site. Additional testing and observation at the time of construction is recommended to further evaluate these materials prior to use as structural fill.

2. **OTHER IMPORTED MATERIAL** – We recommend the following criteria for imported materials to be used within the pavement area:

    a. The material should consist of approved materials, free of organic matter (organic content less than 4 percent) and debris. Approved materials are defined as those soils classified by ASTM D 2487 as CL, GC, SC, and SP.

    b. A maximum Liquid Limit of 50 and a maximum Plasticity Index (PI) of less than 30.

3. All fill material should have a maximum particle size of 3 inches.

4. All fill should be placed in lifts having a maximum loose lift thickness of 9 inches.

5. All fill shall be compacted to a minimum of 95 percent of the material's maximum dry density as determined by ASTM D 698, standard Proctor compaction.

6. The moisture content of the clay fill (Plasticity Index > 10) at the time of compaction should be within a range of 0 to 4 percent above optimum moisture content as defined by the standard Proctor compaction procedure.

7. For clay fills having lower plasticities (Plasticity Index < 10) and sand, it may be necessary to use a moisture range of 2 percent below to 2 percent above optimum moisture content.

8. The moisture content of any dense graded aggregate base placed within the building pads should be at a moisture content required to help facilitate compaction to a minimum of 98 percent of the material’s maximum dry density.

9. In addition to the compaction requirements, the soil must be stable (i.e. no “rutting” or “pumping”) under construction traffic prior to placement of additional fill or constructing foundations, floor slabs, pavements.

4.4 PAVEMENTS

The pavement sections included in Table 4.4 are provided for consideration for use at the project site.

Table 4.4 – Pavement Sections

Pavement Area	Minimum Asphaltic Concrete (ACC) Design Thickness, Inches	Minimum Portland Cement Concrete (PCC) Design Thickness, Inches
Standard Duty (Parking Areas Passenger Vehicles Only	AC with Granular Base 2.0 AC Surface Course[1] 2.5 AC Base Course[2] 6.0 Aggregate Base[3] Geotextile Separator Fabric[4] 8.0 Recompacted Subgrade	Portland Cement Concrete 5.0 PCC[3] 6.0 Aggregate Base[4] Geotextile Separator Fabric[5] 8.0 Recompacted Subgrade
Heavy Duty (Access Lanes Passenger Vehicles Only)	AC with Granular Base 2.0 AC Surface Course[1] 3.5 AC Base Course[2] 6.0 Aggregate Base[3] Geotextile Separator Fabric[4] 8.0 Recompacted Subgrade	Portland Cement Concrete 6.0 PCC[3] 6.0 Aggregate Base[4] Geotextile Separator Fabric[5] 8.0 Recompacted Subgrade
Dumpster Pad		Portland Cement Concrete 7.0 PCC[3] 6.0 Aggregate Base[4] Geotextile Separator Fabric[5] 8.0 Recompacted Subgrade

1 ODOT "Standard Specifications for Highway Construction" Section 708, Type S4
2 ODOT "Standard Specifications for Highway Construction" Section 708, Type S3
3 ODOT "Standard Specifications for Highway Construction" Section 701.
4 ODOT "Standard Specifications for Highway Construction" Section 703.01, Type A.
5 AASHTO M288 Class 2 and Appendices A1 and A3. (Optional)

1. The moisture content and density of pavement subgrade should be checked within two days prior to paving operations.

2. The pavement subgrade should be proofrolled prior to paving operations. Soft and unstable soils identified during proofrolling operations should be undercut or stabilized.

3. Lower consistency/relative density soils exposed at the pavement subgrade elevation should be corrected as indicated in Section 4.2. If lower

consistency/relative density soils extend to depths greater than 18 inches, we should be contacted to determine if modifications to the recommendations would be warranted.

4.5 EXCAVATIONS

All excavations and excavation retention systems are the sole responsibility of the Contractor and should be in accordance with Oklahoma State law, and design by a licensed professional engineer. Attention is drawn to OSHA Standards 29 CFR - 1926 Subpart P for guidance in the design of such systems.

5. ADDITIONAL SERVICES

5.1 PLANS AND SPECIFICATIONS REVIEW

We recommend that GFAC conduct a general review of the final plans and specifications to evaluate that our earthwork and foundation recommendations have been properly interpreted and implemented during design. In the event GFAC is not retained to perform this recommended review, we will assume no responsibility for misinterpretation of our recommendations.

5.2 CONSTRUCTION OBSERVATION AND TESTING

We recommend that all earthwork during construction be monitored by a representative of GFAC. These observations should include site preparation, placement of all engineered fill and trench backfill, construction of slab subgrades, and all foundation excavations. The purpose of these services would be to provide GFAC the opportunity to observe the soil conditions encountered during construction, evaluate the applicability of the recommendations presented in this report to the soil conditions encountered, and recommend appropriate changes in design or construction procedures if conditions differ from those described herein.

The following section outlines geotechnical engineering and construction testing services necessary to implement the recommendations presented in this report. The following services should be provided by a qualified testing firm:

1. An experienced engineering technician should observe the subgrade throughout the proposed construction areas immediately following demolition and undercutting to identify areas requiring additional undercutting and to evaluate the suitability of the exposed surface for fill placement.

2. An experienced engineering technician should monitor and test all fill placed within the pavement areas to determine whether the type

of material, moisture content and degree of compaction are within recommended limits.

3. An experienced engineering technician should observe the moisture conditioning and proofrolling of the subgrade prior to placement of structural fill to evaluate the suitability of the exposed surface for fill placement.

4. The condition of the pavement subgrade should be evaluated immediately prior to construction of the pavements to determine whether the moisture content of subgrade soils and condition of soils are as recommended. Proofrolling would aid in evaluation of the pavement subgrade soils.

6. LIMITATIONS

Recommendations contained in this report are based on our field observations and subsurface explorations, limited laboratory tests, and our present knowledge of the proposed construction. It is possible that subsurface conditions could vary between or beyond the points explored. If subsurface conditions are encountered during construction that differ from those described herein, we should be notified immediately in order that a review may be made and any supplemental recommendations provided. If the scope of the proposed construction, including the proposed loads or structural locations, changes from that described in this report, our recommendations should also be reviewed.

We have prepared this report in substantial accordance with the generally accepted geotechnical engineering practice as it exists in the site area at the time of our study. No warranty is expressed or implied. The recommendations provided in this report are based on the assumption that an adequate program of tests and observations will be conducted by GFAC during the construction phase in order to evaluate compliance with our recommendations. The scope of our services did not include any environmental assessment or exploration for the presence of hazardous or toxic materials in the soil, surface water, groundwater or air, on, below or around this site.

This report may be used only by owner and only for the purposes stated, within a reasonable time from its issuance, but in no event later than three years from the date of report. Land use, site conditions (both on-site and off-site), regulations, or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify GFAC of such intended use. Based on the intended use of the report, GFAC may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release GFAC from any liability resulting from the use of this report by any unauthorized party and client agrees to defend, indemnify and hold harmless GFAC from any claim or liability associated with such unauthorized or non-compliance.

APPENDIX A

PLATE 1 – SITE VICINITY MAP
PLATE 2 – BORING LOCATION DIAGRAM
BORING LOGS

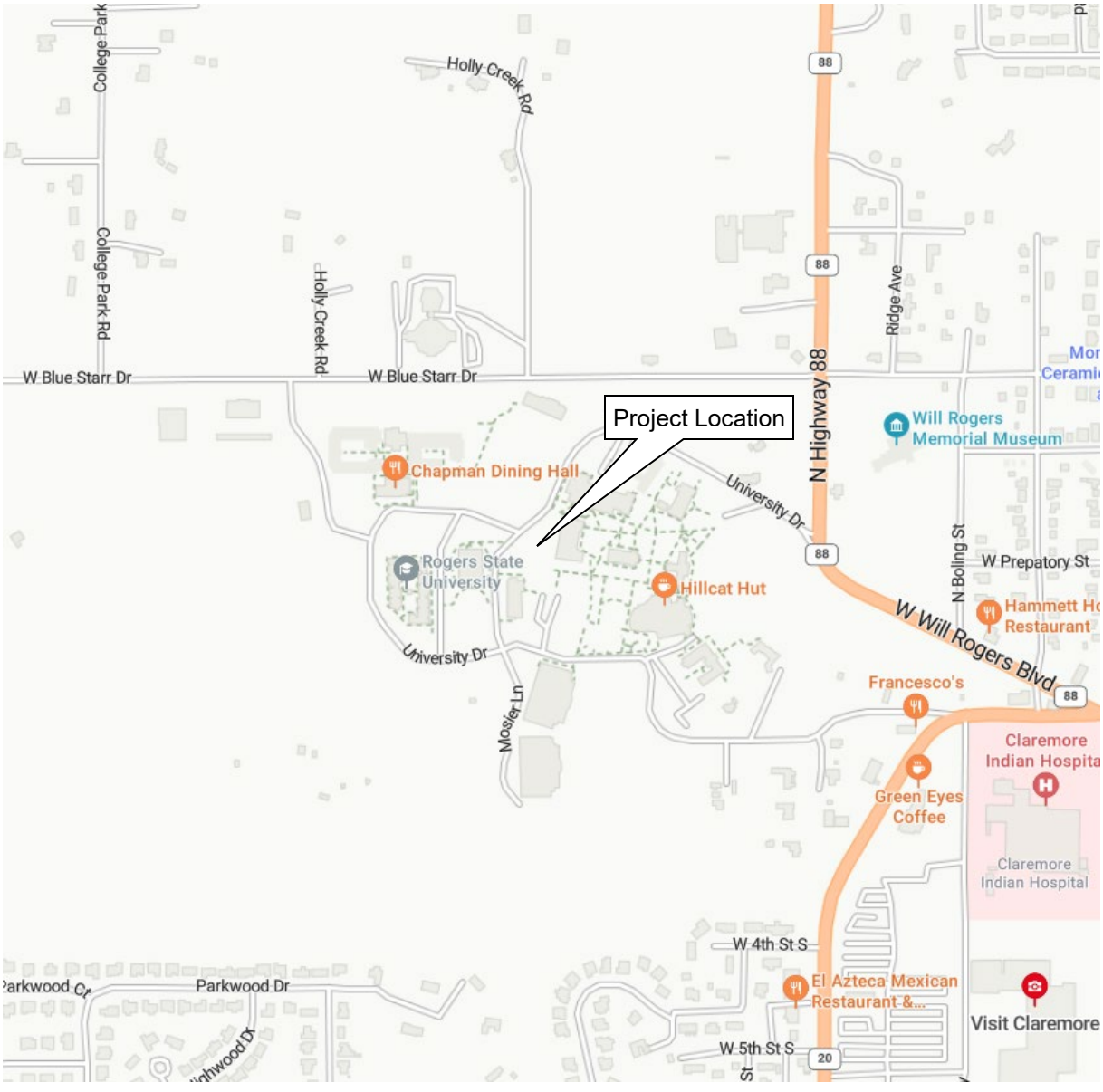
FIELD EXPLORATION PROGRAM

The fieldwork for this study was performed on August 30, 2024. The exploration consisted of a total of four (4) borings that were extended to approximate depths ranging from 4.3 to 5 feet below the existing pavement surface. Representatives of GFAC established the boring locations in the field. Distances were measured with a tape or a measuring wheel. Right angles were estimated. Elevations at the boring locations were not determined. Locations of the borings should be considered accurate only to the degree implied by the methods used to obtain them.

The drilling operations were performed by GFAC using a truck-mounted (CME 55), rotary drill and solid stem augers to advance the borings. Representative samples were obtained using the split-barrel sampling procedures in general accordance with ASTM D 1586. The split-barrel sampling procedure utilizes a standard 2-inch O.D. split-barrel sampler that is driven into the bottom of the boring with a 140-pound auto-hammer falling a distance of 30 inches. The number of blows required to advance the sampler the last 12 inches of a normal 18 inch penetration is recorded as the Standard Penetration Resistance Value (N). These "N" values are indicated on the boring logs at their depth of occurrence and provide an indication of the consistency and hardness of the material.

Boring logs included in this appendix, present such data as soil and bedrock descriptions, depths, sampling intervals and observed groundwater conditions. Conditions encountered in each of the borings were monitored and recorded by the field engineer. Field logs included visual classification of the materials encountered during drilling, as well as drilling characteristics. Our final boring logs represent the engineer's interpretation of the field logs combined with laboratory observation and testing of the samples. Stratification boundaries indicated on the boring logs were based on observations during our fieldwork, an extrapolation of information obtained by examining samples from the borings and comparisons of soils with similar engineering

characteristics. Locations of these boundaries are approximate, and the transitions between soil and bedrock types may be gradual rather than clearly defined.



N

Not to Scale

GFAC ENGINEERING

Site Vicinity Map

Proposed Parking Lot Reconstruction
1760 Camden Street
Claremore, Oklahoma
Project G2024065 September 3, 2024

Plate 1

GFAC ENGINEERING

Boring Location Diagram

Proposed Parking Lot Reconstruction
1760 Camden Street
Claremore, Oklahoma
Project G2024065 September 3, 2024

Plate 2

GFAC Texas PLLC
8155 East 46th Street
Tulsa OK 74145
Telephone: 918-622-7021

GFAC ENGINEERING

BORING NUMBER B-1

CLIENT Rogers State University
PROJECT NAME Proposed Parking Lot Reconstruction
PROJECT NUMBER G2024065
PROJECT LOCATION 1760 Camden Street, Claremore, OK
DATE STARTED 8/30/24 **COMPLETED** 8/30/24
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GFAC
GROUND WATER LEVELS:
DRILLING METHOD CFA 6"
AT TIME OF DRILLING --- Dry
LOGGED BY PWV **CHECKED BY** DLK
AT END OF DRILLING --- Dry
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	Texas Cone Penetrometer	BLOW COUNTS (N VALUE)	Uncon. Strength (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		ASPHALT - 4 inches											
		Crushed Limestone Gravel, Lean Clay with silt, moist, dark brown											
		FILL - Lean Clay with silt, moist, dark olive, dark gray											
		LEAN CLAY, moist, stiff, dark brown, orange trace gray	SS 1	89		3-3-5 (8)			23	42	17	25	93
2.5		WEATHERED SANDSTONE, poorly cemented, brown, orange trace gray	SS 2	86		33-50/ 3.25"			13				
		SANDSTONE, cemented, brown trace orange											

Bottom of borehole at 4.3 feet.

GFAC Texas PLLC
8155 East 46th Street
Tulsa OK 74145
Telephone: 918-622-7021

GFAC ENGINEERING

BORING NUMBER B-2

CLIENT Rogers State University
PROJECT NAME Proposed Parking Lot Reconstruction
PROJECT NUMBER G2024065
PROJECT LOCATION 1760 Camden Street, Claremore, OK
DATE STARTED 8/30/24 **COMPLETED** 8/30/24
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GFAC
GROUND WATER LEVELS:
DRILLING METHOD CFA 6"
AT TIME OF DRILLING --- Dry
LOGGED BY PWV **CHECKED BY** DLK
AT END OF DRILLING --- Dry
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	Texas Cone Penetrometer	BLOW COUNTS (N VALUE)	Uncon. Strength (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		ASPHALT - 4-1/2 inches											
		Crushed Limestone Gravel, Lean Clay with silt, moist, dark brown											
		FILL - Lean Clay with silt, moist, dark gray											
		LEAN CLAY, moist, soft, tan, orange	SS 1	89		0-1-2 (3)			24				
2.5		WEATHERED SANDSTONE, poorly cemented, brown, orange trace gray, red	SS 2	83		22-22-12 (34)			15	21	20	1	94
5.0		WEATHERED SHALE, soft, brown, orange, gray											

Bottom of borehole at 5.0 feet.

GFAC Texas PLLC
8155 East 46th Street
Tulsa OK 74145
Telephone: 918-622-7021

GFAC ENGINEERING

BORING NUMBER B-3

CLIENT Rogers State University
PROJECT NAME Proposed Parking Lot Reconstruction
PROJECT NUMBER G2024065
PROJECT LOCATION 1760 Camden Street, Claremore, OK
DATE STARTED 8/30/24 **COMPLETED** 8/30/24
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GFAC
GROUND WATER LEVELS:
DRILLING METHOD CFA 6"
AT TIME OF DRILLING --- Dry
LOGGED BY PWV **CHECKED BY** DLK
AT END OF DRILLING --- Dry
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	Texas Cone Penetrometer	BLOW COUNTS (N VALUE)	Uncon. Strength (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		ASPHALT - 3-1/2 inches											
		Crushed Limestone Gravel, Lean Clay with silt, moist, dark brown											
		LEAN CLAY with trace sand, moist, medium stiff to stiff, olive, gray trace orange	SS 1	83		3-3-6 (9)			19	46	17	29	86
2.5		WEATHERED SANDSTONE, poorly cemented, orange, brown											
		WEATHERED SANDSTONE, poorly cemented, dark red, gray	SS 2	89		45-24-18 (42)			13				
5.0		WEATHERED SANDSTONE with shale seams, poorly cemented, brown, gray, yellow											

Bottom of borehole at 5.0 feet.

GFAC Texas PLLC
8155 East 46th Street
Tulsa OK 74145
Telephone: 918-622-7021

GFAC ENGINEERING

BORING NUMBER B-4

CLIENT Rogers State University
PROJECT NAME Proposed Parking Lot Reconstruction
PROJECT NUMBER G2024065
PROJECT LOCATION 1760 Camden Street, Claremore, OK
DATE STARTED 8/30/24 **COMPLETED** 8/30/24
GROUND ELEVATION _____ **HOLE SIZE** 6 inches
DRILLING CONTRACTOR GFAC
GROUND WATER LEVELS:
DRILLING METHOD CFA 6"
AT TIME OF DRILLING --- Dry
LOGGED BY PWV **CHECKED BY** DLK
AT END OF DRILLING --- Dry
NOTES
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	Texas Cone Penetrometer	BLOW COUNTS (N VALUE)	Uncon. Strength (psf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	FINES CONTENT (%)
0.0		ASPHALT - 3 inches											
		Crushed Limestone Gravel, Lean Clay with silt, moist, dark gray											
		LEAN CLAY with silt and gravel, moist, soft to medium stiff, dark gray	SS 1	89		2-3-6 (9)			26	27	14	13	89
2.5		LEAN CLAY with trace sand, moist, stiff, brown, gray, orange, red											
		WEATHERED SANDSTONE with shale seams, poorly cemented, brown, gray, orange	SS 2	93		10-12-50/ 2"			21				
		SANDSTONE, cemented, gray, dark orange											

Bottom of borehole at 4.7 feet.

APPENDIX B

LABORATORY TESTING PROGRAM

LABORATORY TESTING PROGRAM

GENERAL

Laboratory tests were performed on select, representative samples to evaluate pertinent engineering properties of these materials. We directed our laboratory testing program primarily toward classifying the subsurface materials, and measuring index values of the on-site materials. Laboratory tests were performed in general accordance with applicable standards, and the results are presented on the respective boring logs. The laboratory testing program consisted of the following:

- **Moisture content tests** ASTM D 2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- **Atterberg limits tests** ASTM D 4318, Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- **No. 200 sieve, ASTM D 1140,** Standard Test Methods for Amount of Material in Soils Finer Than the No. 200 Sieve
- **Visual classification** ASTM D 2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)

CLASSIFICATION

All samples were examined in field by a geotechnical engineer using visual and manual procedures. The samples were classified in general accordance with the Unified Soil Classification System, and are shown on the boring logs.

Bedrock units encountered in the borings were described based on visual classification of disturbed auger cuttings and recovered samples, as well as drilling characteristics. Core samples may reveal other rock types.

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL MAINTAIN AND REPAIR ANY DAMAGE TO STORM WATER POLLUTION CONTROL DEVICES AS SOON AS PRACTICAL AFTER THE DISCOVERY OF THE DAMAGE.
2. THE CONTRACTOR SHALL USE WHATEVER MEASURES NECESSARY TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM FLOWING ONTO ADJACENT PROPERTIES. THIS CAN BE ACCOMPLISHED BY TEMPORARY SEDIMENT PONDS, SILT FENCES, WIRE AND BURLAP FENCES, OR BARRIERS OF CEDAR TREES AND/OR BALES OF STRAW.
3. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL EROSION, CONSERVATION, AND SILTRATION REQUIREMENTS.
4. THE CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES (BMP'S) AS REQUIRED. ADDITIONAL BMP'S SHALL BE IMPLEMENTED AS DICTATED BY FIELD CONDITIONS, AT NO ADDITIONAL COST TO OWNER, THROUGHOUT ALL PHASES OF CONSTRUCTION.
5. THE CONTRACTOR SHALL KEEP PAVEMENT AREAS FREE OF ANY MUD OR EXCAVATION WASTE FROM TRUCKS OR OTHER EQUIPMENT.
6. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY EROSION CONTROL STRUCTURES UPON COMPLETION OF CONSTRUCTION AND THE ESTABLISHMENT OF SUFFICIENT PERMANENT STABILIZATION TO PREVENT EROSION.
7. THE CONTRACTOR SHALL INSTALL SOLID SLAB SOD, UNLESS OTHERWISE NOTED, TO OBTAIN STABILIZATION OF DISTURBED AREAS AS REQUIRED BY THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH THE CONSTRUCTION AND EROSION CONTROL SCHEDULES.
8. THE CONSTRUCTION AND PLACEMENT OF EROSION AND SEDIMENT CONTROL DEVICES SHALL BE TIMED IN CONJUNCTION WITH THE PROGRESS OF GENERAL CONSTRUCTION. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE INSPECTED AND MAINTAINED, AS PREVIOUSLY SET FORTH HEREIN, UNTIL ALL AREAS OF CONSTRUCTION HAVE BEEN STABILIZED.
9. THE CONTRACTOR SHALL BEGIN PERMANENT STABILIZATION OF COMPLETED AREAS OF CONSTRUCTION AS SOON AS IS PRACTICAL.
10. STABILIZED CONSTRUCTION ENTRANCES SHALL BE REQUIRED AT ALL POINTS WHERE CONSTRUCTION OR EMPLOYEE VEHICLES ENTER OR LEAVE THE CONSTRUCTION OR STAGING AREAS. THE STABILIZED CONSTRUCTION ENTRANCES ARE INTENDED TO PREVENT THE TRACKING OF MUD ONTO PUBLIC STREETS OUTSIDE THE CONTROLLED CONSTRUCTION AREAS.
11. THE STABILIZED CONSTRUCTION ENTRANCES SHALL BE CONSTRUCTED OF TWO INCH (2") STONE, OR RECLAIMED/RECYCLED CONCRETE OF SIMILAR SIZE, A MINIMUM OF SIX INCHES (6") THICK PLACED ON FILTER CLOTH.
12. THE STABILIZED CONSTRUCTION ENTRANCES SHALL BE A MINIMUM OF TWENTY FEET (20') IN WIDTH (BUT NOT LESS THAN FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCUR) AND AT LEAST FIFTY FEET (50') IN LENGTH.
13. ALL SURFACE WATER FLOWING OR DIVERTED TOWARD STABILIZED CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL THEN A MOUNTABLE BERM WITH FIVE TO ONE (5:1) SLOPES WILL BE PERMITTED.
14. THE WHEELS OF VEHICLES LEAVING THE CONSTRUCTION AREAS SHALL BE CLEANED OF MUD PRIOR TO LEAVING THE CONSTRUCTION OR STAGING AREAS. WHEN WHEEL WASHING IS REQUIRED IT SHALL BE PERFORMED IN AN AREA STABILIZED WITH STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
15. ANY MUD, SEDIMENT, EXCAVATION WASTE, ETC., DROPPED, WASHED, SPILLED, OR TRACKED FROM THE CONSTRUCTION OR STAGING AREAS ONTO STREETS OUTSIDE OF THE CONSTRUCTION AREAS SHALL BE REMOVED IMMEDIATELY.
16. PERIODIC INSPECTION AND INSPECTION AFTER SIGNIFICANT RAINFALL SHALL BE MADE OF THE CONSTRUCTION ENTRANCES AS PREVIOUSLY SET FORTH HEREIN.
17. SILT FENCE SHALL BE USED TO CONTROL SEDIMENTATION FROM SURFACE RUNOFF AROUND THE PERIMETER OF THE WORK AREA AS NECESSARY.
18. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING THE SILT FENCE BARRIER AROUND THE LIMITS OF CONSTRUCTION AND AS SHOWN ON THE EROSION PLAN, DURING CONSTRUCTION, UNTIL ALL WORK IS COMPLETE AND VEGETATION IS REESTABLISHED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND SUBJECT TO FREQUENT INSPECTION OF ALL METHODS AND MATERIALS FOR EROSION PROTECTION, AND SHALL REPLACE ANY ITEM CONSIDERED DEFECTIVE BY THE ENGINEER IN A TIMELY MANNER.
19. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY WILL BE STOPPED FOR AT LEAST 14 DAYS SHALL BE TEMPORARILY SEEDED, SODDED, OR OTHERWISE STABILIZED UNTIL CONSTRUCTION RECOMMENCES.
20. DISTURBED PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITY HAS PERMANENTLY STOPPED SHALL BE PERMANENTLY SODDED, UNLESS OTHERWISE NOTED. THESE AREAS SHALL BE SODDED NO LATER THAN 14 DAYS FROM THE LAST CONSTRUCTION ACTIVITY OCCURRING.
21. ONSITE AND OFFSITE SOIL STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION THROUGH IMPLEMENTATION OF BMP'S.
22. CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH WORKING DAY. THIS INCLUDES BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF TEMPORARY OR FINAL DRIVING SURFACES.

SITE DEMOLITION NOTES:

1. SCOPE OF WORK SHALL INCLUDE REMOVAL OF ALL EXISTING OBJECTS REQUIRED FOR PROJECT CONSTRUCTION. REMOVED ITEMS THAT ARE NOT DENOTED FOR SALVAGE SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF IN AN APPROVED MANNER. UNLESS OTHERWISE SPECIFIED, ALL EXCAVATION IS UNCLASSIFIED AND SHALL INCLUDE ALL MATERIALS ENCOUNTERED.
2. UNLESS NOTED FOR REMOVAL, EXISTING TREES SHALL NOT BE DISTURBED. ALL TREE REMOVALS SHALL BE APPROVED BY THE OWNER PRIOR TO DEMOLITION.
3. EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATED BASED ON RECORD DRAWINGS OR HORIZONTAL LOCATIONS FLAGGED IN THE FIELD. ALL VERTICAL LOCATIONS ARE APPROXIMATE DEPTH ONLY. THE ENGINEER DOES NOT GUARANTEE THE ACCURACY OF UTILITIES INFORMATION. FIELD VERIFY THE PRESENCE, TYPE, SIZE, LOCATION AND DEPTH OF ALL EXISTING UTILITIES IN THE PROJECT AREA PRIOR TO CONSTRUCTION. NOTIFY THE OWNER AND ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING AND GRUBBING THE SITE. UNSUITABLE EXCAVATED MATERIALS AND ALL WASTE RESULTING FROM CLEARING AND GRUBBING SHALL BE DISPOSED OFF-SITE.
5. THE REMOVAL OF ANY UTILITY LINE, SERVICE, APPURTENANCE, AND STRUCTURE SHALL BE COORDINATED WITH THE OWNER OF THE RESPECTIVE UTILITY.
6. ALL PAVEMENT REMOVAL SHALL BE FULL DEPTH. PAVEMENT REMOVAL ADJACENT TO EXISTING PAVEMENT, TO REMAIN, SHALL BE SAW-CUT IN STRAIGHT LINES, FULL DEPTH.
7. SIDEWALK REMOVALS SHOULD OCCUR TOWARDS THE END OF DEMOLITION. NEW SIDEWALK SHALL BE INSTALLED AS SOON AS POSSIBLE AFTER THE REMOVAL OF OLD SIDEWALK IN ORDER TO MAINTAIN OPERATIONS WITH MINIMAL INTERRUPTION IN SERVICE.
8. ALL DEBRIS FROM REMOVAL OPERATIONS SHALL BE REMOVED FROM THE SITE AT THE TIME OF EXCAVATION. STOCKPILING OF DEBRIS SHALL NOT BE PERMITTED.
9. CONTRACTOR SHALL BACKFILL ANY VOIDS RESULTING FROM STRUCTURES, VEGETATION, AND OBJECTS REMOVED. FILL SHALL BE PLACED IN ACCORDANCE WITH GEOTECHNICAL REPORT RECOMMENDATIONS FOR THIS SITE (SEE SITE GRADING NOTES).
10. ALL EXISTING STRUCTURES, PAVEMENTS AND UTILITIES DESIGNATED TO REMAIN SHALL BE ADEQUATELY PROTECTED FROM DAMAGE THAT MIGHT OTHERWISE OCCUR DUE TO CONSTRUCTION OPERATIONS. CONTRACTOR SHALL BE LIABLE FOR DAMAGE TO ANY STRUCTURES, UTILITIES OR PAVEMENTS RESULTING FROM THE CONTRACTOR'S OPERATIONS. CONTRACTOR SHALL TAKE PHOTOS OF EXISTING CONDITIONS PRIOR TO BEGINNING CONSTRUCTION.
11. DURING CONSTRUCTION, ALL FIRE HYDRANTS, VALVE BOXES, FIRE OR POLICE CALL BOXES AND OTHER EXISTING UTILITY CONTROLS SHALL BE LEFT INTACT, UNOBSTRUCTED AND ACCESSIBLE UNLESS NOTED ON THE PLAN.
12. THE CONTRACTOR MUST FILE A "NOTICE OF INTENT" WITH THE OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY AND THE AUTHORITY HAVING JURISDICTION, PRIOR TO COMMENCING EARTHWORK, CLEARING OR DEMOLITION OPERATIONS. CONTRACTOR IS RESPONSIBLE FOR PREPARATION OF STORMWATER POLLUTION PREVENTION PLAN, IF REQUIRED.
13. EXISTING DRAINAGE STRUCTURES & PIPES, TO REMAIN, SHALL BE CLEANED OF SILT & DEBRIS AND INSPECTED FOR ANY STRUCTURAL DEFICIENCIES.
14. ABIDE BY ALL FEDERAL, STATE AND LOCAL CODES FOR THE DEMOLITION AND DISPOSAL OF ALL MATERIALS. CEC SHALL NOT BE LIABLE FOR ANY DEMOLITION PROCEDURES, SCHEDULING, OR DISPOSAL OF ANY MATERIALS.
15. THE SAFETY OF THE PROJECT SITE IS THE RESPONSIBILITY OF THE CONTRACTOR. ALL CONSTRUCTION SIGNING, SAFETY FENCE, OR OTHER ITEMS NEEDED FOR PROTECTION OF THE GENERAL PUBLIC SHALL BE PROVIDED AT THE CONTRACTOR'S EXPENSE.

SITE CONSTRUCTION NOTES:

1. ALL WORK PERFORMED AND MATERIALS SUPPLIED SHALL CONFORM TO THE AUTHORITY HAVING JURISDICTION'S STANDARD AND SPECIFICATIONS. IF AHJ STANDARDS AND SPECIFICATIONS DO NOT APPLY, ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE OKLAHOMA DEPARTMENT OF TRANSPORTATION 2019 STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND SPECIAL PROVISIONS. PROJECT SPECIFICATIONS GOVERN OVER STANDARD SPECIFICATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING ALL UTILITY COMPANIES AND GOVERNMENTAL AGENCIES WHO MIGHT HAVE UTILITY LINES ON OR ABOUT THE PREMISES, OR WHO MIGHT BE AFFECTED BY THE CONSTRUCTION. THE CONTRACTOR SHALL ALSO COORDINATE HIS ACTIVITIES WITH THE UTILITY COMPANIES TO ENSURE COMPLIANCE WITH THE PROJECT SCHEDULE. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO LOCATE AND PROTECT EXISTING UTILITY LINES, AND SHALL REPAIR ANY DAMAGES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS OWN CONSTRUCTION STAKING. CONTRACTOR TO OBTAIN CAD DRAWING FILE FROM ENGINEER FOR SITE CONSTRUCTION STAKING.
4. ALL CURB DIMENSIONS, RADIUS CALLOUTS AND ELEVATIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
5. ALL SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
6. ALL PAVEMENT STRIPING SHALL BE APPLIED IN TWO COATS, FOUR (4) INCHES WIDE, WHITE, AND ARE DIMENSIONED AS CENTER-TO-CENTER OF EACH STRIPE UNLESS SHOWN OTHERWISE ON PLANS.
7. ASSURE A SMOOTH FIT AND CONTINUOUS GRADE WITH EXISTING PAVEMENT. WHERE NEW CONCRETE PAVING IS TO ABUT EXISTING PAVEMENT, THE CONTRACTOR SHALL CONSTRUCT A THICKENED EDGE.
8. UNLESS OTHERWISE STATED IN THE GENERAL CONDITIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FAILED TESTS. THE RESULTS OF THE TESTS SHALL BE FORWARDED TO THE PROJECT ENGINEER FOR HIS REVIEW AND APPROVAL.
9. UNLESS OTHERWISE DIRECTED THE CONTRACTOR SHALL PROVIDE A MEDIUM TO FINE BROOM FINISH ON ALL CONCRETE WALKS, RAMPS, STAIRS AND PAVED SURFACES.
10. CONTRACTOR TO NOTIFY DESIGN ENGINEER IF ANY PLAN DISCREPANCIES ARISE IN THE FIELD DURING CONSTRUCTION.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING THE NECESSARY WORK ORDERS AND PERMITS FROM THE LOCAL AHJ AND/OR THE STATE OF OKLAHOMA, INCLUDING PROVISIONS OF BONDS AND INSURANCE AS REQUIRED.
12. THE PROJECT SHALL BE CONSTRUCTED WITHOUT CLOSING THE EXISTING PUBLIC OR PRIVATE ROADWAYS, DRIVEWAYS, OR SIDEWALKS TO LOCAL OR THROUGH TRAFFIC. IF ROAD CLOSURE IS REQUIRED IT SHALL BE APPROVED BY THE AUTHORITY HAVING JURISDICTION AND THE OWNER.
13. PRIOR TO FINAL ACCEPTANCE, ALL EXPOSED PAVED SURFACES (INCLUDING CURBS) SHALL BE CLEANED OF ALL DISCOLORATION SUCH AS ASPHALT STAIN, TIRE MARKS, AND OTHER DISFIGUREMENT.
14. CONTRACTOR IS RESPONSIBLE FOR ALL FIRE LANE STRIPING & SIGNAGE, AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION.
15. SIDEWALK RAMPS AND ACCESSIBLE PARKING AREAS SHALL BE CONSTRUCTED TO MEET THE ADA ACCESSIBILITY GUIDELINES. GRADES IN ACCESSIBLE PARKING AREAS SHALL NOT EXCEED 2% IN ANY DIRECTION. CROSS SLOPE ON SIDEWALK SHALL NOT EXCEED 2%. LONGITUDINAL SLOPE ON SIDEWALK SHALL NOT EXCEED 5% EXCEPT AS SPECIFICALLY SHOWN IN PLANS.
16. CONDUCT AS-BUILT MEASUREMENTS AND SUBMIT DOCUMENTATION TO THE OWNER PRIOR TO FINAL ACCEPTANCE.

SITE CONSTRUCTION NOTES (CONT'D):

SITE GRADING NOTES:

1. PROPOSED CONTOURS DEPICT FINAL PAVING ELEVATION. ADJUST SUBGRADE AS NECESSARY FOR PAVEMENT THICKNESS.
2. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL ENGINEERING REPORT PROVIDED BY GFAC ENGINEERING DATED 9/9/2024 FOR SITE AND SUBSURFACE CONDITIONS, SITE AND BUILDING PAD PREPARATION, AND PAVEMENT RECOMMENDATIONS AND CONSTRUCTION SPECIFICATIONS. ANY INCONSISTENCIES BETWEEN THE GEOTECHNICAL ENGINEERING REPORT AND THESE DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF ENGINEER FOR RESOLUTION.
3. AFTER PERFORMING ANY REQUIRED CUTS AND PRIOR TO PLACEMENT OF FILL, THE SITE SHALL BE PROOFROLLED WITH A 20 TO 25 TON PNEUMATIC-TIRED VEHICLE TO LOCATE ANY ZONES THAT ARE SOFT OR UNSTABLE. WHERE RUTTING OR PUMPING IS OBSERVED DURING PROOFROLLING, THE UNSTABLE SOILS SHALL BE OVER-EXCAVATED AND REPLACED WITH FILL IF THE SOILS CAN NOT BE MOISTURE CONDITIONED AND EFFECTIVELY COMPACTED IN PLACE.
4. THE BUILDING AREA SUBGRADE SOILS AND ANY AREA THAT WILL RECEIVE FILL SHALL BE SCARIFIED AND COMPACTED TO A DEPTH OF 8 INCHES. THE MOISTURE CONTENT OF THE SCARIFIED SOIL SHALL BE ADJUSTED TO 0-4% ABOVE ITS OPTIMUM VALUE, AS DETERMINED BY THE STANDARD PROCTOR TEST METHOD (ASTM D-698), PRIOR TO BEING COMPACTED TO AT LEAST 95 PERCENT OF ITS MAXIMUM DRY DENSITY.
5. STRUCTURAL FILL SHALL BE FREE OF ORGANIC MATTER AND DEBRIS, AND BE LOW VOLUME CHANGE SOIL CONSISTING OF COHESIVE MATERIALS HAVING A LIQUID LIMIT LESS THAN 50 AND A MAXIMUM PLASTICITY INDEX LESS THAN 30. FILL SHALL BE PLACED IN LIFTS NOT EXCEEDING 9 INCHES IN LOOSE THICKNESS, AND COMPACTED TO AT LEAST 95% OF ITS MAXIMUM DRY DENSITY AND AT OR ABOVE THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE STANDARD PROCTOR TEST METHOD (ASTM D-698).
6. UNLESS OTHERWISE STATED, THE CONTRACTOR SHALL COORDINATE AND ORDER ALL TESTING IN CONJUNCTION WITH EARTHWORK OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FAILED TESTS. THE RESULTS OF THE TESTS SHALL BE FORWARDED TO ENGINEER FOR REVIEW AND APPROVAL. THE SOILS LABORATORY SHALL DETERMINE THE SUITABILITY OF EXISTING SITE MATERIAL PRIOR TO BEGINNING FILL OPERATIONS.
7. CONTRACTOR SHALL TAKE ALL PREVENTIVE MEASURES NECESSARY TO ELIMINATE, REDUCE, OR ALLEVIATE ANY DUST NUISANCE IN THE WORK AREA.
8. EXISTING CONTOURS AND SPOT ELEVATIONS ARE CORRECT PER SURVEY DATED 11/06/2024. CONTRACTOR SHALL VERIFY ELEVATIONS PRIOR TO COMMENCING CONSTRUCTION AND NOTIFY ENGINEER OF ANY DISCREPANCIES.
9. CONTRACTOR SHALL ADJUST THE GRADES OF ALL EXISTING VALVE BOXES AND COVERS, FIRE HYDRANTS, MANHOLES, METER BOXES, TRAFFIC BOXES, AND OTHER UTILITIES TO MEET THE SPECIFICATIONS OF EACH UTILITY COMPANY.
10. ALL TOPSOIL SHALL BE REMOVED AND STOCKPILED IN AN AREA DESIGNATED BY OWNER. UPON COMPLETION OF CONSTRUCTION, A MINIMUM OF 6 INCHES OF TOPSOIL SHALL BE SPREAD OVER AREAS DISTURBED DURING CONSTRUCTION. CONTRACTOR SHALL SOD THESE AREAS, UNLESS OTHERWISE NOTED. SODDED AREAS SHALL BE MAINTAINED BY PROVIDING THE NECESSARY FERTILIZER AND WATER UNTIL THE VEGETATION AND ROOT GROWTH IS SUBSTANTIALLY ESTABLISHED.
11. CUT OR FILL SLOPES SHALL BE 4:1 MAX UNLESS NOTED OTHERWISE.
12. ENSURE POSITIVE DRAINAGE AWAY FROM ALL SIDES OF ALL BUILDINGS (EXISTING & PROPOSED) THROUGHOUT ALL PHASES OF CONSTRUCTION.

SITE UTILITY NOTES:

1. THOSE UTILITIES WHICH ARE PUBLIC SHALL BE INSTALLED BY A PROPERLY LICENSED CONTRACTOR APPROVED BY THE AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING APPROVED PLANS, WORK ORDERS, AND PERMITS REQUIRED.
2. CONTRACTOR SHALL CONTACT OKIE (1-800-522-6543) FOR LOCATING EXISTING UTILITIES PRIOR TO ANY REMOVALS OR EXCAVATION . CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND GOVERNMENTAL AGENCIES WHO MAY HAVE UTILITY LINES ON OR ABOUT THE PREMISES OR WHO MAY BE AFFECTED BY THE CONSTRUCTION.
3. ALL VALVES, MANHOLE LIDS, AND SEWER CLEAN-OUTS LOCATED IN PAVED AREAS, SHALL BE RATED FOR H-20 TRAFFIC LOADING.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ELEVATIONS AND ADJUSTING ALL COVERS AND LIDS IN PAVED AREAS TO FINISHED GRADE. ALL FIELD ADJUSTMENTS SHALL BE NOTED AND BROUGHT TO ENGINEER'S ATTENTION FOR APPROVAL.
5. CONTRACTOR SHALL RAISE OR LOWER ALL EXISTING VALVE BOXES AND COVERS, FIRE HYDRANTS, MANHOLES, METER BOXES, TRAFFIC BOXES, AND OTHER UTILITIES TO MEET THE SPECIFICATIONS OF EACH UTILITY COMPANY RESPECTIVELY.
6. UNLESS OTHERWISE STATED IN THE GENERAL CONDITIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL FAILED TESTS. THE RESULTS OF THE TESTS SHALL BE FORWARDED TO THE PROJECT ENGINEER FOR REVIEW AND ACCEPTANCE.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ERECTING AND MAINTAINING BARRICADES AND OTHER TRAFFIC WARNING DEVICES AS NECESSARY AROUND THE PERIMETER OF CONSTRUCTION AND ADJACENT TO ANY OPEN TRENCHES.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLYING WITH STATE LAWS AND FEDERAL REGULATIONS RELATING TO TRENCH SAFETY, INCLUDING THOSE WHICH MAY BE ENACTED DURING THE PERFORMANCE UNDER THIS CONTRACT. CONTRACTOR IS ADVISED THAT FEDERAL REGULATIONS 29 C.F.R. 1926.650-1926.652 HAVE BEEN, IN THEIR MOST RECENT VERSION AS AMENDED, IN EFFECT SINCE JANUARY 2, 1990. CONTRACTOR SHALL FULLY COMPLY WITH THE U.S. DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS PERTAINING TO EXCAVATIONS, TRENCHING, AND SHORING AND SHALL PROVIDE AND FAMILIARIZE ITS EMPLOYEES INVOLVED IN EXCAVATION AND TRENCHING WITH THE PROVISIONS IN OSHA PAMPHLET NUMBER 2226, EXCAVATING AND TRENCHING OPERATIONS.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL TEMPORARY UTILITIES REQUIRED FOR CONSTRUCTION.
10. CONTRACTOR SHALL KEEP OPEN TRENCH DRAINED AT ALL TIMES.
11. CONTRACTOR TO PROVIDE AS-BUILT FIELD DRAWINGS FOR ALL EXISTING AND PROPOSED UTILITIES ON SITE, PRIOR TO FINAL ACCEPTANCE.

SITE DETAIL NOTES:

1. DETAILS SHOWN ARE DESIGNED BASED ON INFORMATION FROM THE GEOTECHNICAL REPORT COMPLETED FOR THIS SITE (SEE SITE GRADING NOTES).
2. DETAILS SHOWN SHALL SUPERCEDE SPECIFICATIONS UNLESS OTHERWISE NOTED BY ENGINEER.
3. NO REVISIONS SHALL BE MADE TO DETAILS UNLESS AUTHORIZED BY ENGINEER. CONTRACTOR SHALL SUBMIT ANY CHANGES TO PROJECT ENGINEER FOR APPROVAL.

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
EASEMENT		
RIGHT-OF-WAY		
ROADWAY CENTERLINE		
ROADWAY C&G		
WATERLINE	W	W
WATERLINE FIRE	W	FIR
WATERLINE SERVICE	W	SVC
SAN. SWR. LINE	SS	SS
SAN. SWR. FORCE MAIN	FM	FM
STORM SEWER LINE	ST	ST
TELE. UNDERGROUND	TUG	TUG
FIBER OPTIC CABLE	FOC	FOC
POWER UNDERGROUND	PUG	PUG
POWER OVERHEAD	OHE	OHE
GAS LINE	G	G
UTILITY LINE (BY ATLAS)	X"U-A	
FENCE LINE	X	
5' CONTOURS	XXXX	XXXX
1' CONTOURS	XXXX	XXXX
TOP OF BANK		
TOE OF SLOPE		
FLOWLINE		
HP BREAK LINE		

	EXISTING	PROPOSED
WATER SPIGOT	⊗	⊗
WATER METER	⧓	⧓
WATER VALVE	⧖	⧖
SPRINKLER CONTROL VALVE	⊗	⊗
SPRINKLER HEAD		
FIRE HYDRANT		
FIRE DEPARTMENT CONNECTION		
GAS METER	⧓	⧓
GAS VALVE	⧖	⧖
UTILITY CLEANOUT	⊗	⊗
UTILITY MANHOLE	◯	◯
UTILITY MARKER		
DOWNSPOUT/ROOF DRAIN		

	EXISTING	PROPOSED
POWER POLE	⌀	⌀
GUY WIRE		
ELECTRIC SERVICE CONNECTION	SVC	
ELECTRIC PEDESTAL	E	
LIGHT POLE	☆	☼
PULL BOX	PB	PB
TELEPHONE PEDESTAL	T	
FIBER OPTIC PEDESTAL	FO	
BENCHMARK		
CONTROL POINT	CP	
WHEELSTOP		
ADA SIGN		
ADA SYMBOL		
BOLLARD		

BOTTOM OF DIKE	BD
BOTTOM OF WALL	BW
EXISTING FLOWLINE	*EXIST. FL*
EXISTING GROUND	*EG*
FINISH GROUND	FG
FLOWLINE	FL
GUTTER LINE	GUT
HIGH POINT	HP
TOP OF CURB	TC
TOP OF DIKE	TD
TOP OF GRATE	TG
TOP OF PAVING	TP
TOP OF SIDEWALK	TS
TOP OF WALL	TW

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beck DESIGN

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110 WEST SEVENTH, SUITE 710
TULSA, OK 74119
T: 918.583.5300
F: 918.585.1967

OKLAHOMA CITY
131 DEAN A McGEE AVE, SUITE 135
OKLAHOMA CITY, OK 73102
T: 405.232.7007

NEW YORK CITY
287 PARK AVENUE SOUTH
NEW YORK, NY 10010
T: 917.522.1703

PROJECT NUMBER:
202411
PROJECT:
RSU BUSHYHEAD PARKING LOT

CONSULTANT:
CEC
CEC CORPORATION
WWW.CONNECTCEC.COM
OK CoA# 32, EXP.: 2026-06-30
CEC PROJECT #240746

ISSUE / REVISION:

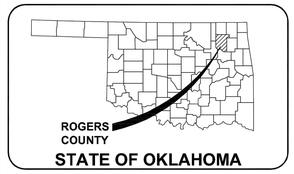
No	Description	Date

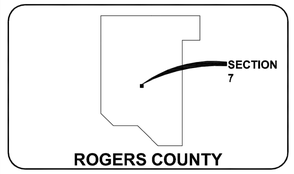
SEAL:
LICENSED PROFESSIONAL ENGINEER
ANDREW M. LIRA
01/31/2025
30865
OKLAHOMA

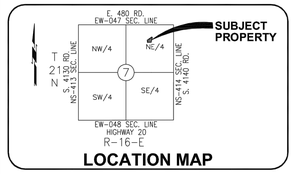
ISSUE DATE:
01.31.2025

SHEET NUMBER:
C001
NOTES & LEGEND

1/31/2025 8:45 PM







SURVEY CONTROL DATA

1. HORIZONTAL DATUM IS THE OKLAHOMA STATE PLANE COORDINATE SYSTEM, N.A.D. 83(2011) LAMBERT PROJECTION, NORTH ZONE ADJUSTED TO N.G.S. STATE PLANE COORDINATES, UTILIZING OPUS.

   A. ACCURACY - 3RD ORDER OR BETTER

2. BEARINGS:

   THE BEARINGS SHOWN HEREIN OR HEREON ARE GRID BEARINGS DERIVED FROM THE USC & GS OKLAHOMA PLANE COORDINATE SYSTEM AND ARE NOT ASTRONOMICAL.

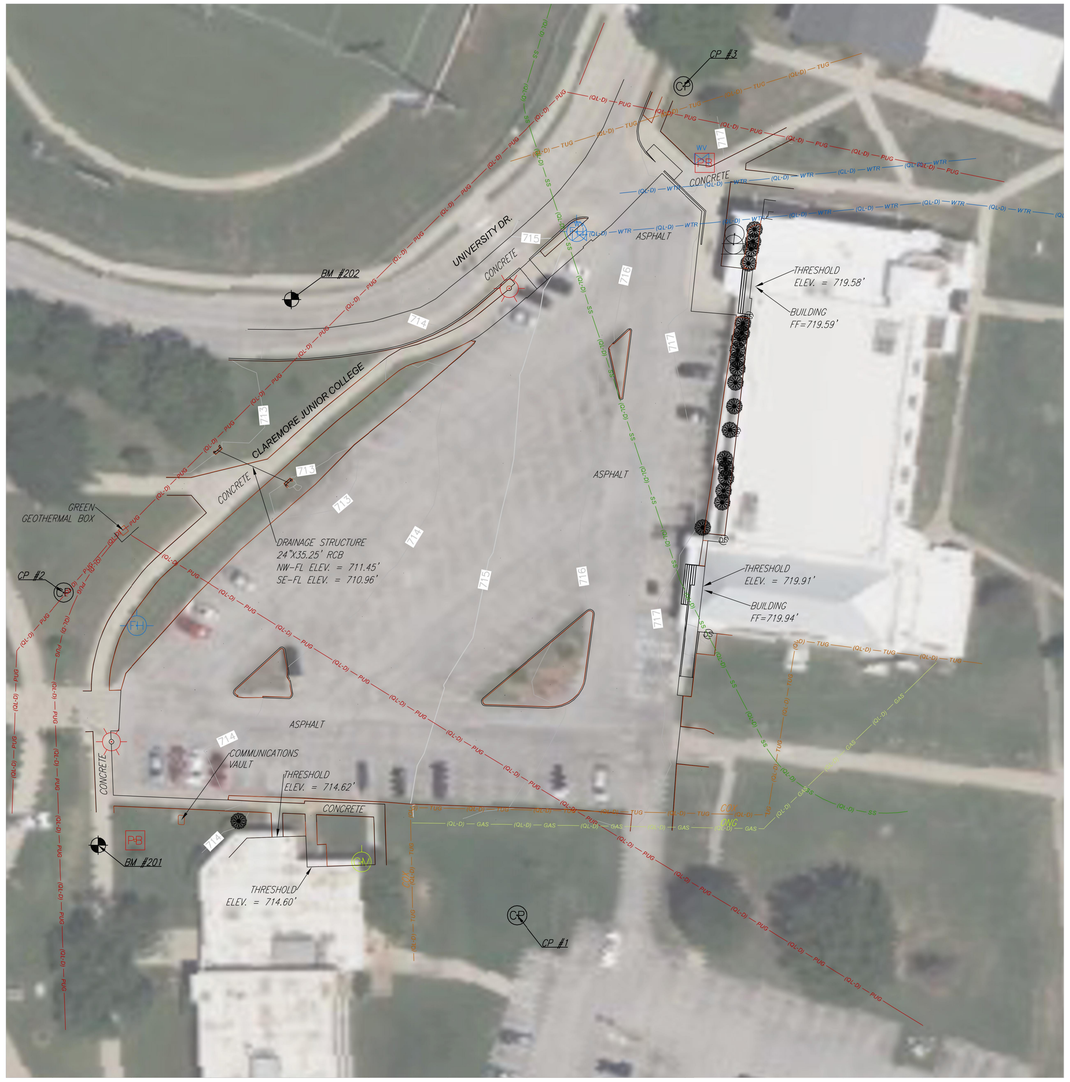
3. VERTICAL CONTROLS:

   A. LEVEL DATUM IS NGS, NAVD 88, TAKEN FROM ADJUSTED PRIMARY CONTROL UTILIZING DIFFERENTIAL LEVELING TECHNIQUES.
   B. ACCURACY - 3RD ORDER OR BETTER

GENERAL NOTES
-No utility easement research was conducted for this survey and any possible utility easement limits ARE NOT depicted.
-Benchmark Northings and Eastings are for location purposes only and are NOT to be tied to horizontal control.
-AutoCAD Insertion Scale Units (INSUNITS) are set to 2.

UTILITY NOTES
-Prior to the field survey CALL OKIE was contacted to mark utilities. However, CEC assumes no liability for utilities that were not marked or incorrectly marked. The contractor for construction is responsible for getting the utilities re-marked before performing digging operations.
-There were no underground utility lines marked via OKIE 811. However, all visible above ground utility features with the survey limits were located. The CLIENT did provide CEC with "Campus Geothermal System" plans that included a "Utility Sheet". The utility lines as shown in the drawing are based on the field identified features combined with the utility sheet. Underground utility "lines" are NOT field verified.
-Multiple Attempts were made to have utility lines marked at the project site however some utilities appear to have not been marked. Attempts were made to obtain utility Atlases from their respective utility owners.
-There is NO WARRANTY made that this survey represents a complete inventory of underground utilities, either in service or abandoned on or near the premises. The Surveyor further does not warrant that the underground utilities shown are in the exact location indicated although he does certify that they are located as accurately as possible from the information available. There has been no underground investigation performed on the premises in conjunction with this survey and the Surveyor has not physically located the underground utilities.
-Multiple utility lines and above ground utility features may be located outside of the Present Right of Way limits. Utility Easements may be associated with these features.

ROGERS STATE UNIVERSITY
TOPOGRAPHIC SURVEY
CLAREMORE, OKLAHOMA



Control Point Table

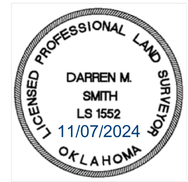
Point #	Description	Northing	Easting	Elevation
CP 1	CP 1 SET 5/8IN IP W/ CEC CONTROL CAP	488702.7168	2664533.9098	716.987'
CP 2	CP 2 SET 5/8IN IP W/ CEC CONTROL CAP	488847.3672	2664330.6765	712.92'
CP 3	CP 3 SET 5/8IN IP W/ CEC CONTROL CAP	489074.3622	2664608.3700	716.15'

Benchmark Table

Point #	Description	Northing	Easting	Elevation
BM 201	BM /KI LEVEL ADJ	488734.1	2664346.2	713.56'
BM 202	BM /KI LEVEL ADJ	488978.7	2664432.8	713.57'

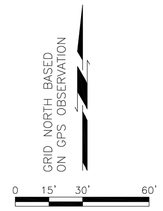
LEGEND

FENCE LINE	X		
ATLAS DETERMINED WATER	(QL-D) WTR		
ATLAS DETERMINE TELE.	(QL-D) TUG		
ATLAS DETERMINE U.G. POWER	(QL-D) PUG		
ATLAS DETERMINE GAS	(QL-D) GAS		
ATLAS DETERMINED SANITARY SEWER LINE	(QL-D) SS		
GAS METER	GM	BENCHMARK	
ELECTRIC PULL BOX	PB	CONTROL POINT	CP
LIGHT POLE		FIRE HYDRANT	FH
BUSH		WATER VALVE	WV
TREE		DOWN SPOUT	DS
SIGN			



THIS TOPOGRAPHIC SURVEY WAS COMPLETED UNDER THE SUPERVISION OF DARREN M. SMITH PLS# 1552. THIS IS NOT A LAND BOUNDARY OR PROPERTY SURVEY.

DARREN M. SMITH
PROFESSIONAL LAND SURVEYOR # 1552



CEC

CA 32
EXP. 6-30-2026

FIELD: 10-30-2024 | PARTY CHIEF: EO
DATE: 11-06-2024 | DRAWN BY: AB
REV. DATE: | REVIEWED BY: DWS
FILE NAME: ROGERS STATE TOPOGRAPHIC SURVEY.DWG

CEC CORPORATION
GEOSPATIAL DIVISION
4555 W. MEMORIAL ROAD OKLAHOMA CITY, OKLAHOMA 73142 (405) 753-4200

SHEET NO.
1 OF 1

CEC NO.
240746

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110 WEST SEVENTH, SUITE 710
TULSA, OK 74119
T: 918.583.5300
F: 918.585.1967

OKLAHOMA CITY
131 DEAN A McGEE AVE, SUITE 135
OKLAHOMA CITY, OK 73102
T: 405.232.7007

NEW YORK CITY
287 PARK AVENUE SOUTH
NEW YORK, NY 10010
T: 917.522.1703

PROJECT NUMBER:
202411
PROJECT:
RSU BUSHYHEAD PARKING LOT

CONSULTANT:
CEC
CEC CORPORATION
WWW.CONNECTCEC.COM
OK CA# 32 EXP: 2026-06-30
CEC PROJECT #240746

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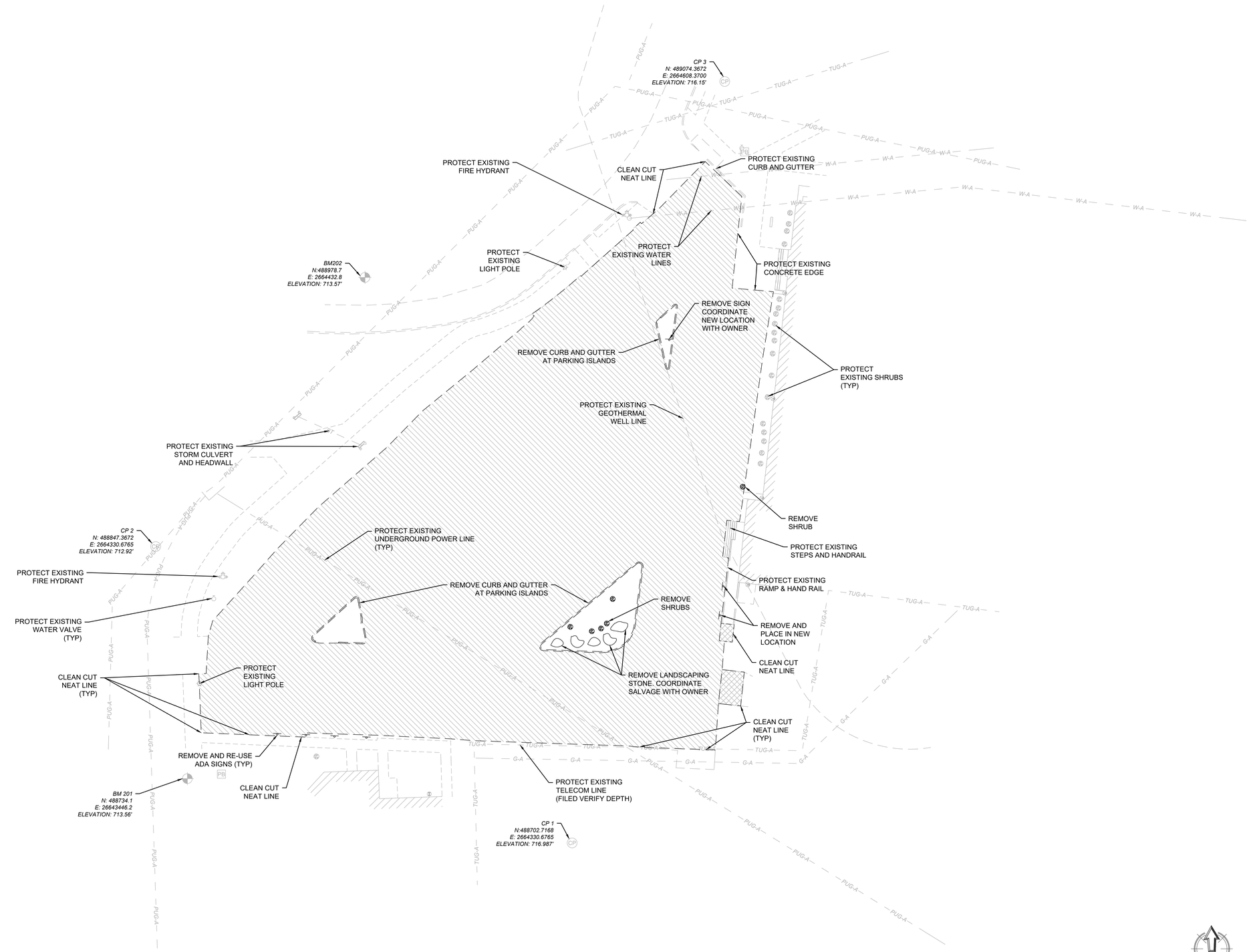
SHEET NUMBER:
C100
OVERALL EXISTING PLAN

1/31/2025 8:45 PM



LEGEND

- ASPHALT REMOVAL
- SIDEWALK REMOVAL

NORTH ARROW
SCALE 1"=20.0004'
0 20.0004' 40.0008'

1/31/2025 8:48 PM

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110 WEST SEVENTH, SUITE 710
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T: 918.583.5300
F: 918.585.1967

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T: 405.232.7007

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01/31/2025
30865
OKLAHOMA

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SHEET NUMBER:
C200
DEMOLITION PLAN

Benchmark Table				
Point #	Description	Northing	Easting	Elevation
BM 201	*BM /KI LEVEL ADJ*	*488734.1*	*2664346.2*	*713.56'*
BM 202	*BM /KI LEVEL ADJ*	*488978.7*	*2664432.8*	*713.57'*

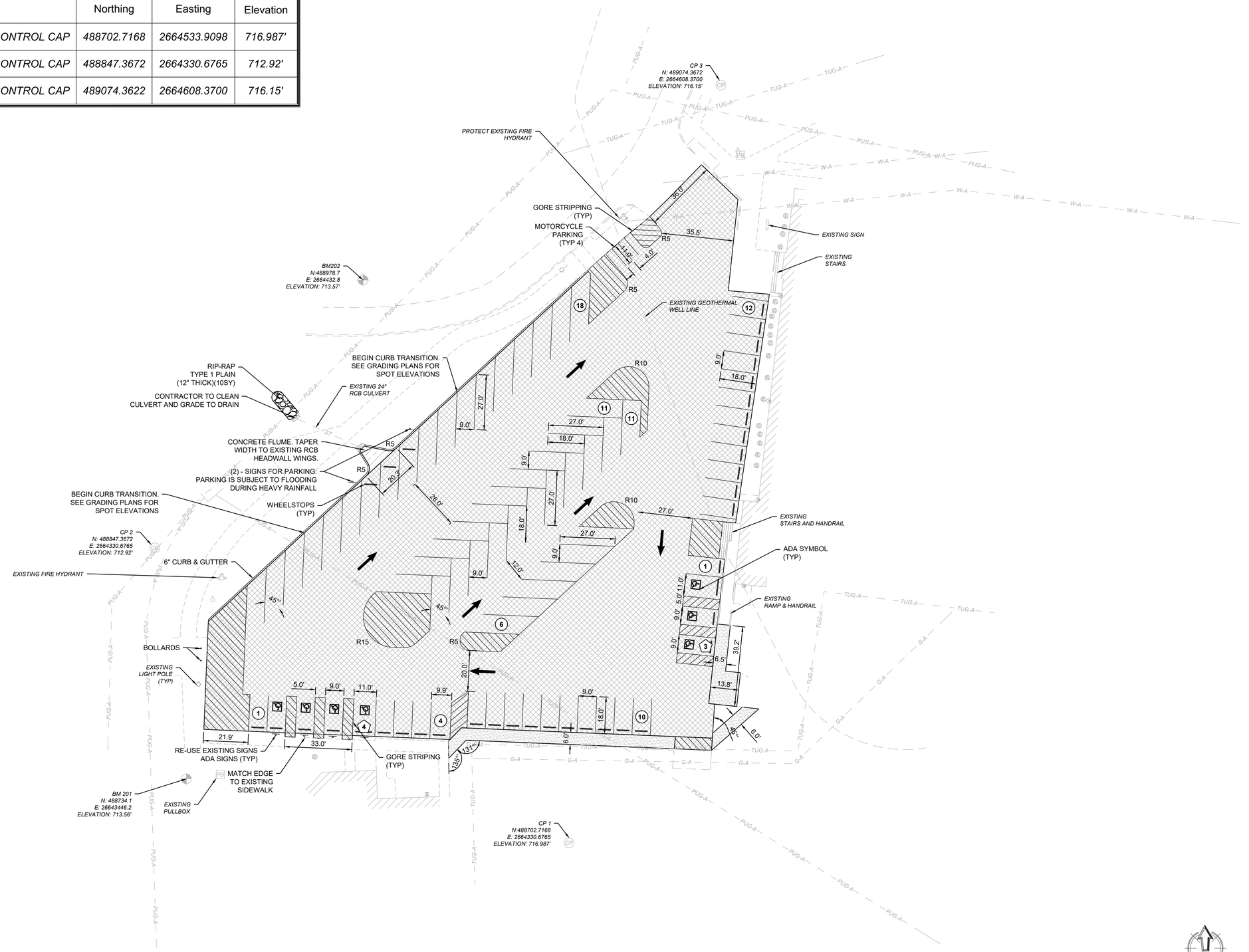
Control Point Table				
Point #	Description	Northing	Easting	Elevation
CP 1	*CP 1 SET 5/8IN IP W/ CEC CONTROL CAP*	*488702.7168*	*2664533.9098*	*716.987'*
CP 2	*CP 2 SET 5/8IN IP W/ CEC CONTROL CAP*	*488847.3672*	*2664330.6765*	*712.92'*
CP 3	*CP 3 SET 5/8IN IP W/ CEC CONTROL CAP*	*489074.3622*	*2664608.3700*	*716.15'*

PARKING TABLE	
STALL TYPE	PROPOSED
STANDARD	74
ADA	5
VAN ADA	2
TOTAL	88

*PARKING TABLE IS BASED ON PARKING LOTS AFFECTED BY THIS PROJECT AND DO NOT INCLUDE OTHER LOTS ON THE PROPERTY.

LEGEND

- EXISTING BUILDING
- LIGHT-DUTY CONCRETE
- HEAVY-DUTY ASPHALT
- SIDEWALK



NORTH ARROW
SCALE 1"=20'
0 20' 40'

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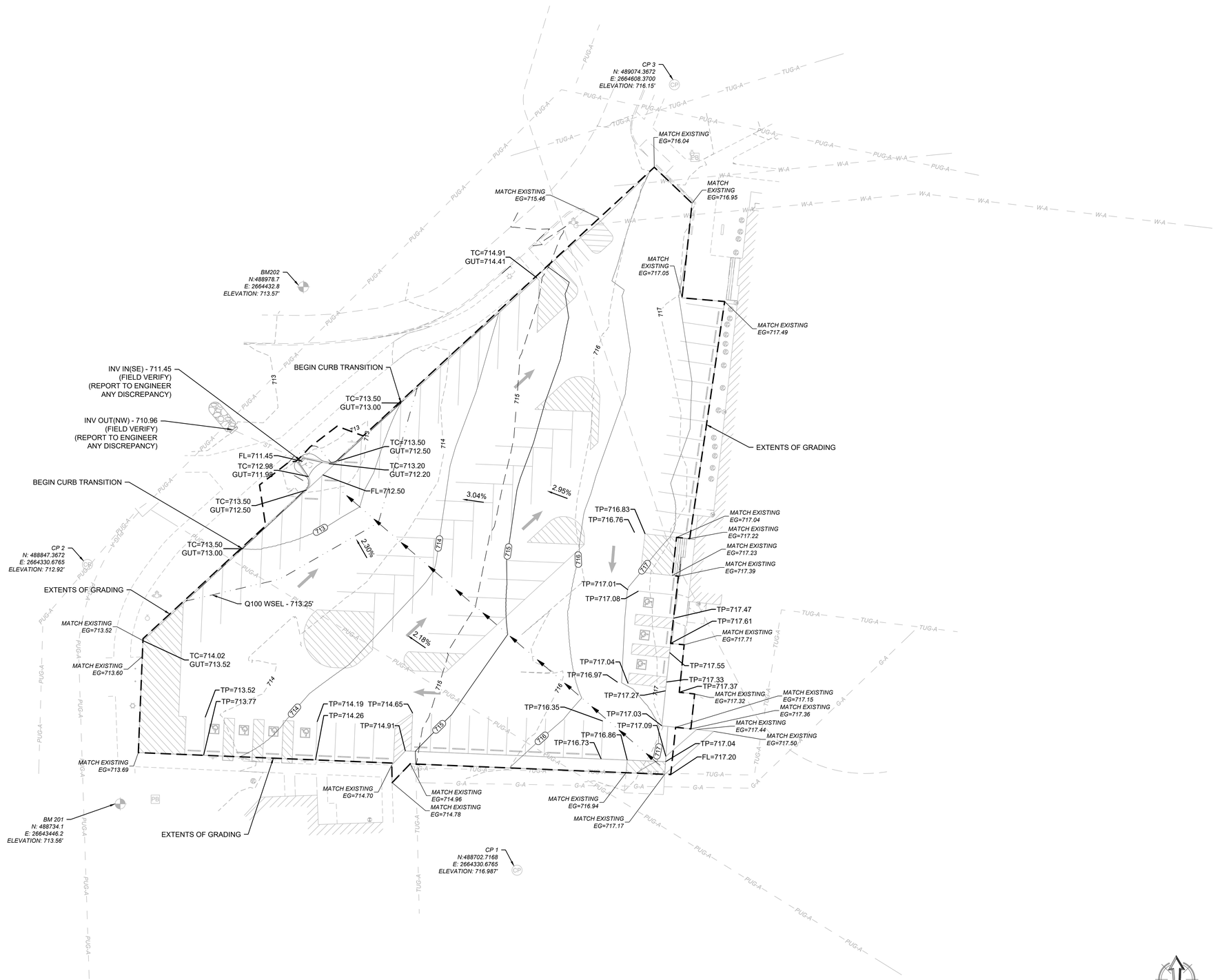
C300
SITE PLAN

1/31/2025 8:46 PM

NOTE:

PRE-EXISTING SIDEWALKS AND CROSSWALKS ADJACENT TO PROJECT EXTENTS SHALL BE EVALUATED FOR ADA COMPLIANCE.

IF WALKS ARE OUT OF COMPLIANCE, CONTRACTOR SHALL NOTIFY THE OWNER AND COORDINATE THE REPLACEMENT.



NORTH ARROW
SCALE 1"=20'
0 20' 40'

1/31/2025 8:47 PM

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OKLAHOMA CITY, OK 73102
T: 405.232.7007

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287 PARK AVENUE SOUTH
NEW YORK, NY 10010
T: 917.522.1703

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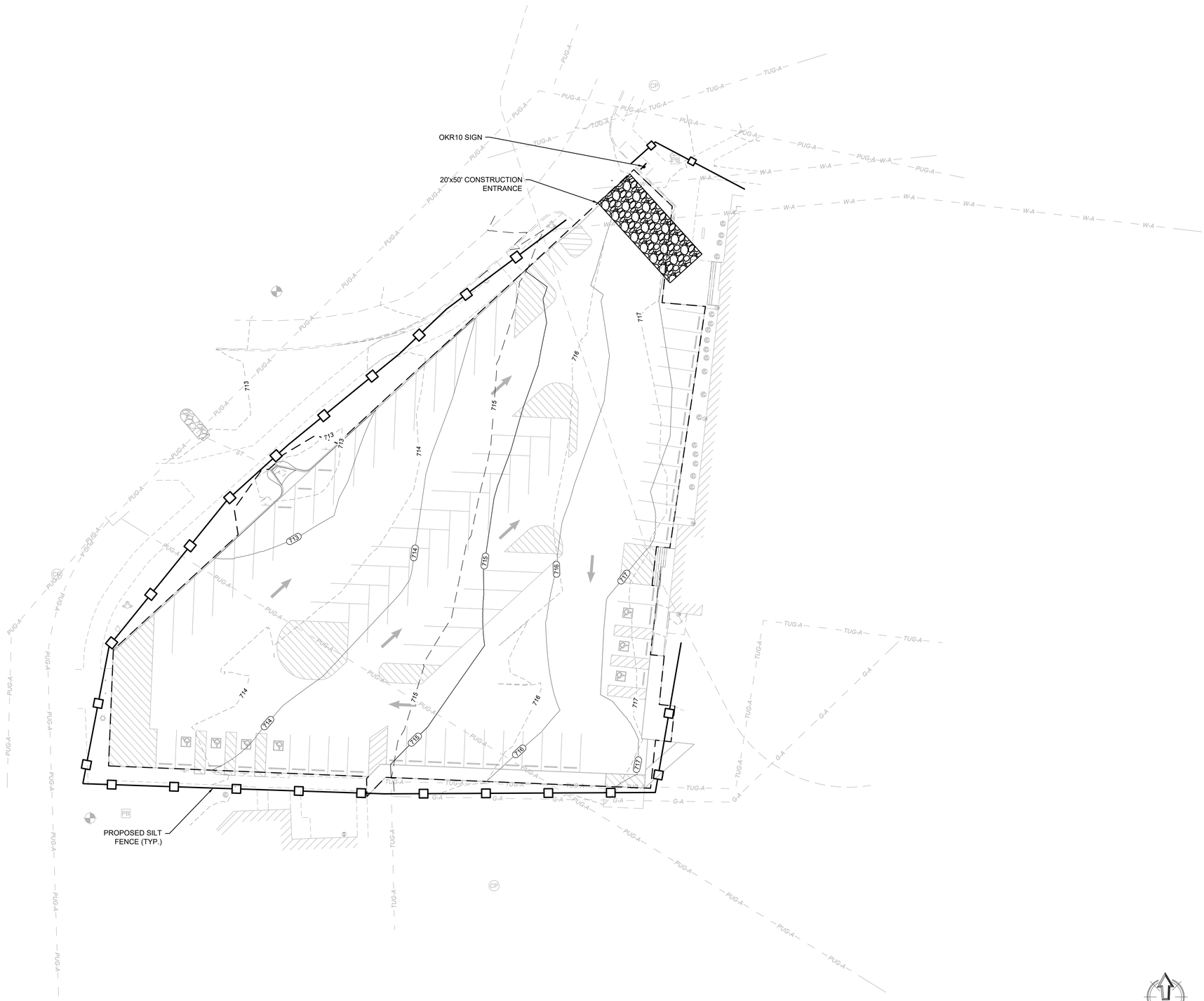
C400
GRADING PLAN



NORTH ARROW
SCALE 1"=20'
0 20' 40'

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131 DEAN A McGEE AVE, SUITE 135
OKLAHOMA CITY, OK 73102
T: 405.232.7007

NEW YORK CITY
287 PARK AVENUE SOUTH
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T: 917.522.1703

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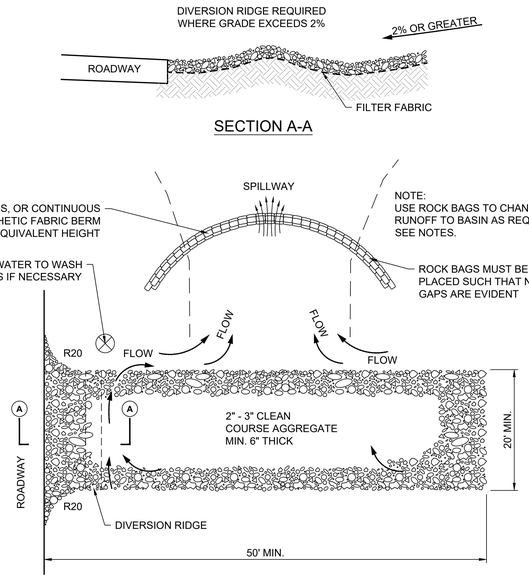
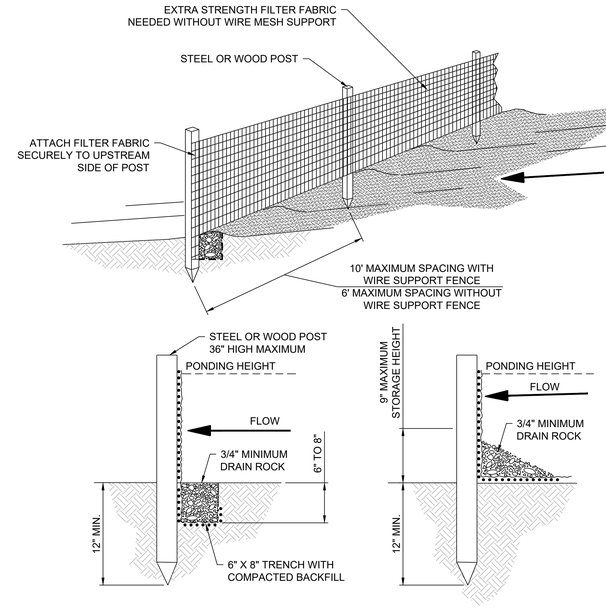
EROSION CONTROL PLAN



NOTES:

1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.
4. ROCK BAGS OR SANDBAGS SHALL BE PLACED SUCH THAT NO GAPS ARE EVIDENT.

1 CONSTRUCTION ENTRANCE DETAIL
NTS



TRENCH DETAIL

INSTALLATION WITHOUT TRENCHING

NOTES:

1. MUST BE INSTALLED PROPERLY TO AVOID NOTICE OF VIOLATION.
2. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.
3. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY. 9" MAXIMUM RECOMMENDED STORAGE HEIGHT.
4. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE TO SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.

2 SILT FENCE DETAIL
NTS

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110 WEST SEVENTH, SUITE 710
TULSA, OK 74119
T: 918.583.5300
F: 918.585.1967

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131 DEAN A McGEE AVE, SUITE 135
OKLAHOMA CITY, OK 73102
T: 405.232.7007

NEW YORK CITY
287 PARK AVENUE SOUTH
NEW YORK, NY 10010
T: 917.522.1703

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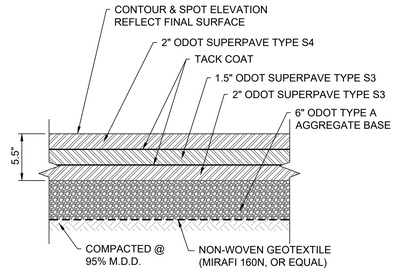
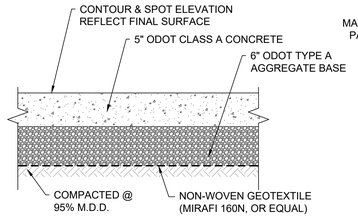
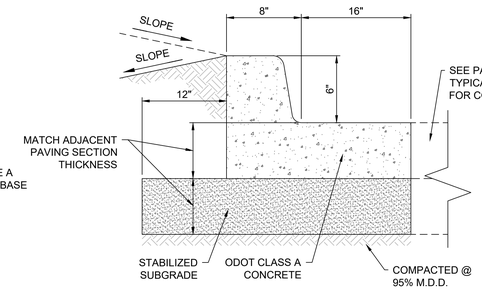
C501
EROSION CONTROL DETAILS



1 HEAVY-DUTY ASPHALT PAVEMENT
NTS - REFERENCE GEOTECH REPORT



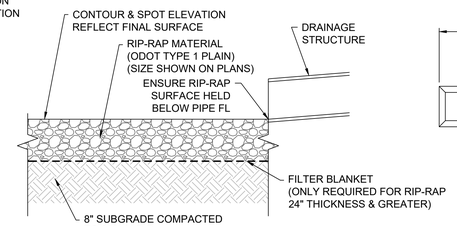
2 LIGHT-DUTY CONCRETE PAVEMENT
NTS - REFERENCE GEOTECH REPORT



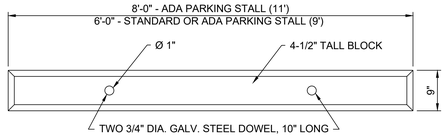
NOTES :

1. SEE CIVIL SPECIFICATIONS FOR JOINT INFORMATION.

3 CONCRETE CURB DETAIL
NTS



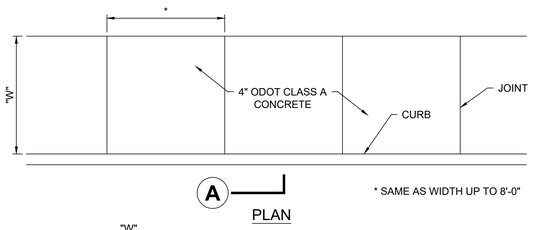
4 RIP-RAP DETAIL
NTS

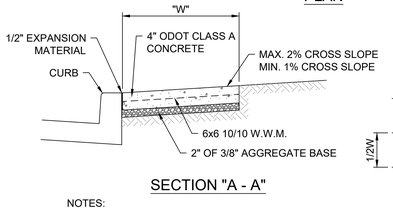


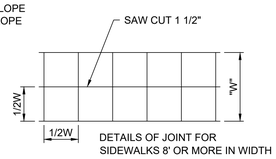
NOTE:

1. WHEELSTOP SHALL BE INSTALLED 2'-0" FROM CENTER OF WHEELSTOP TO FACE OF CURB.
2. CONCRETE TO BE ODOT CLASS A.

5 PRE-CAST CONCRETE PARKING BUMPER
NTS



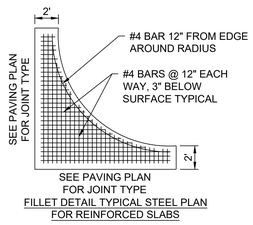




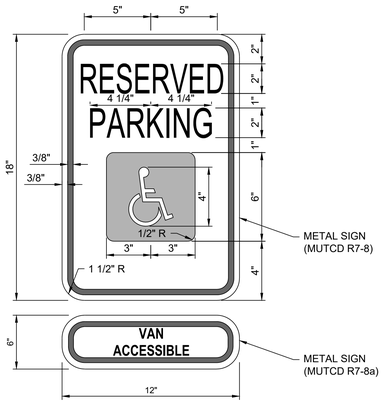
NOTES:

1. 1/2" X 4" PREMOLDED EXPANSION MATERIAL AROUND STRUCTURES IN WALK.
2. EXPANSION JOINTS MAXIMUM DISTANCE = 100', USE 1/2" X 4" PREMOLDED EXPANSION MATERIAL.
3. CONTRACTION JOINTS MAXIMUM DISTANCE = 8', SAW CUT 1-1/2" DEEP
4. SAW CUT JOINTS WITHIN 24 HOURS.
5. USE 1/2" X 4" PREMOLDED EXPANSION JOINT AT CURB.

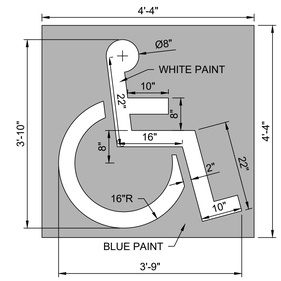
6 SIDEWALK DETAILS
NTS



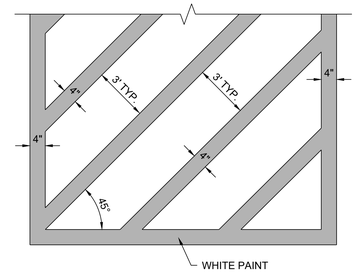
7 FILLET DETAIL
NTS



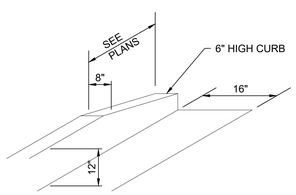
8 ADA SIGN DETAIL
NTS



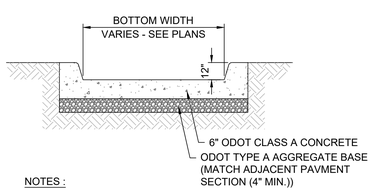
9 ADA PAVEMENT MARKING
NTS



10 ADA GORE STRIPING DETAIL
NTS



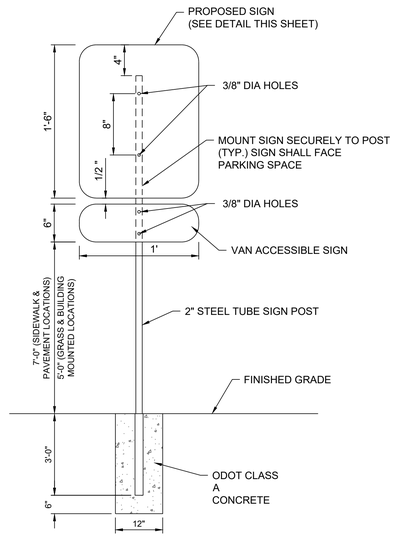
11 CURB TRANSITION
NTS



NOTES :

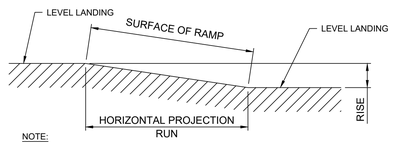
1. SEE CIVIL SPECIFICATIONS FOR JOINT INFORMATION.

12 CONCRETE OPEN FLUME DETAIL
NTS



13 ADA SIGN POST DETAIL
NTS

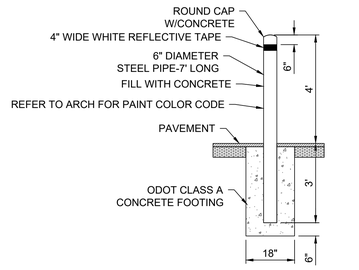
SLOPE	MAXIMUM RISE	MAXIMUM HORIZONTAL PROJECTION RUN
1:12 TO <1:15	30 INCHES	30 FEET TO 37.5 FEET



NOTE:

1. PEDESTRIAN AND CURB RAMPS TO BE CONSTRUCTED ON SITES OR IN EXISTING BUILDINGS OR FACILITIES WHERE SPACE LIMITATIONS PROHIBIT THE USE OF 1:12 SLOPE OR LESS MAY HAVE SLOPES AND RISES AS FOLLOWS:
   A. A SLOPE BETWEEN 1:10 AND 1:12 IS ALLOWED FOR A MAXIMUM OF 6 INCHES OF RISE.
   B. A SLOPE BETWEEN 1:8 AND 1:10 IS ALLOWED FOR A MAXIMUM OF THREE INCHES OF RISE.

14 SAMPLE RAMP DIMENSIONS AND COMPONENTS
NTS



15 BOLLARD DETAIL
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OKLAHOMA CITY, OK 73102
T: 405.232.7007

NEW YORK CITY
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