

**CITY OF PHOENIX, ARIZONA
OFFICE OF THE CITY ENGINEER
DESIGN AND CONSTRUCTION PROCUREMENT**



PROJECT SPECIFICATIONS AND CONTRACT DOCUMENTS

ARPA LOCAL DRAINAGE MITIGATION PACKAGE 3

DESIGN-BID-BUILD

**PROJECT NO. PW26220003 22ND AVE & LOWER BUCKEYE RD PROJECT
NO. ST83140112 ARPA 22ND AVE & LOWER BUCKEYE RD PROJECT NO.
ST83140117 ARPA 18TH ST & PINCHOT AVE
PROJECT NO. ST83140118 ARPA WESTWOOD 23RD AVE & DEVONSHIRE
PROJECT NO. ST83140124 48TH PLACE & EAST FLOWER ST**

PROCUREPHX PRODUCT CATEGORY CODE 912000000

RFx 6000001687

AGREEMENT _____



For Project No: ST83140118



For Project No.'s: ST83140112,
ST83140117, ST83140124



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CALL FOR BIDS

CITY OF PHOENIX ARPA LOCAL DRAINAGE MITIGATION PACKAGE 3 DESIGN-BID-BUILD

**PROJECT NO. PW26220003, ST83140112 ARPA, ST83140117 ARPA,
ST83140118 ARPA, ST83140124 ARPA**

**PROCUREPHX PRODUCT CATEGORY CODE 912000000
RFx 6000001687**

**BIDS WILL BE DUE: WEDNESDAY, NOVEMBER 13, 2024 AT 2:00 P.M.
SUBMITTED INTO THE DESIGN AND CONSTRUCTION PROCUREMENT BID BOX
LOCATED ON THE 1ST FLOOR LOBBY OF THE PHOENIX CITY HALL BUILDING,
200 W. WASHINGTON STREET, PHOENIX, ARIZONA, 85003**

**BIDS WILL BE READ: WEDNESDAY, NOVEMBER 13, 2024 AT 2:00 P.M.
ON 5TH FLOOR, ROOM 5 WEST
PHOENIX CITY HALL
200 W. WASHINGTON STREET
PHOENIX, AZ 85003-1611
*All times are local Phoenix time**

SCOPE OF WORK

The City of Phoenix is seeking a qualified contractor to provide construction services for the five ARPA Local Drainage Mitigation projects listed below. These projects are being combined into one package to deliver efficiencies and obtain economies of scale.

This project will utilize federal funds and is subject to the requirements of Federal Regulations under the American Rescue Plan Act (ARPA) program. Participation in the Disadvantaged Business Enterprise Program is highly encouraged.

No DBE goal has been established for this project.

The City of Phoenix, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252.42 U.S.C. §§ 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

PROJECT NO. PW26220003 22ND AVENUE & LOWER BUCKEYE ROAD PAVEMENT

Project Description:

The City is replacing and improving the parking lot for the City Clerk Customer Service Center, located at 2640 South 22nd Avenue. The existing pavement contains numerous longitudinal and transverse cracks along with settled areas of pavement. The settled areas are being replaced with improved aggregate base and asphalt sections, along with improved drainage and permanent erosion protection along the south end of the parking lot.

Scope of Work:

The scope of work involves re-paving 6,400 SQ. YD. of the existing parking lot for City Clerk Customer

Service Center site, re-routing an existing 12" storm drain to a proposed underground stormwater storage facility, and provide slope and erosion protection at the south end of the parking lot adjacent to W. Lower Buckeye Road.

PROJECT NO. ST83140112 22ND AVENUE & LOWER BUCKEYE ROAD

Project Description:

The City is constructing an onsite stormwater collection system for the City of Phoenix Printing Services facility located at 2640 South 22nd Avenue to address local flooding concerns. The proposed system consists of new catch basins, connector pipes, underground retention storage facility, new drywells and maintenance to existing drywells. All proposed construction will occur onsite.

Scope of Work:

The scope work includes construction of two (2) area drain catch basins that will collect runoff in the parking lot and lateral pipes that will convey this runoff to an underground retention storage facility. A portion of the parking lot pavement will be removed, and the area will be re-graded, and then re-paved to create low points for drainage collection. The work will also include the construction of two (2) dual chambered drywells and the connection to one (1) existing drywell that will be used to directly drain the underground retention storage facility. In addition, three (3) existing drywells located in the parking lot north of the proposed construction site will require maintenance to enhance their effectiveness. The temporary removal, storage and reinstallation of existing parking lot lighting is the only utility relocation anticipated for this construction.

PROJECT NO. ST83140117 18TH STREET & PINCHOT AVENUE

Project Description:

The City is constructing a storm drain in 18th Street that will begin just south of Earl Drive and will extend to the south to Catalina Drive and then west within Catalina Drive to 16th Street where it will tie into an existing 16th Street storm drain via a new manhole. The construction includes three (3) catch basins within 18th Street to address local drainage issues between Earl Drive and Catalina Drive.

Scope of Work:

The scope of work includes construction of 18-inch and 24-inch storm drain pipes, storm drain manholes, concrete collars, three (3) catch basins and lateral pipes. Two catch basins are located on the west side of 18th Street north of Pinchot Avenue and one is located on the east side 18th Street south of Pinchot Avenue. Pavement cut policies apply to the project and pavement work areas. The work area within 16th Street and 18th Street will be refinished with micro-surface treatment and the work areas within Catalina Drive will be refinished with slurry seal treatment.

PROJECT NO. ST83140118 WESTWOOD N 23RD AVENUE & DEVONSHIRE ROAD

Project Description:

The City is constructing 3 catch basin laterals on the east side of 23rd Avenue north of Indian School Road and the Grand Canal north to Heatherbrae Drive to address localized drainage issues. 23rd Avenue from Indian School Road to Earl Drive is an arterial roadway that supports commuting traffic to and from Interstate 17 and supports local traffic for the abundance of residence along the corridor. The new catch basin laterals connect to an existing storm drain line running north to south on the west side of 23rd Avenue.

Scope of Work

The scope of work includes construction of three (3) catch basins and lateral pipes between Indian School Road and Heatherbrae Drive on 23rd Avenue. The 3 catch basins are located on the north bound side of the roadway. The work also includes reconstruction of curb and gutter, sidewalk, pavement, and ADA sidewalk ramps. Relocation of restrained joint water service pipes and a fire hydrant is included in the scope of the work. Pavement cut policies apply to the project and pavement work areas will be refinished with slurry seal coat. Removal and replacement of existing fence at pipe t-connections to the existing storm drain line in 23rd Avenue is included in the work. The project package includes temporary construction

easement limits for the fence replacement and painting per the bid package specifications. Security fencing or other temporary fencing during the temporary removal of permanent fences is included. Utility relocations have occurred at the locations of new catch basins and lateral pipes. The project scope of work includes the relocation of water service lines which are to be moved with the project per the plans.

PROJECT NO. ST83140124 48TH PLACE & EAST FLOWER STREET

Project Description:

The City is constructing a storm drain with two (2) new catch basins at the southwest corner of 48th Place and Flower Street. The storm drain will extend to the southwest within a drainage easement located along the east and south property lines of a residential lot and then to the west across 48th Street where it will tie into the existing Old Cross Cut Canal box culvert.

Scope of Work:

The scope of work includes construction of a 30-inch storm drain pipe, storm drain manholes, two (2) catch basins and lateral pipes. The new catch basins are located in 48th Place just north of Flower Street and will replace the existing catch basins which will be removed, and the existing 12-inch outlet pipe will be plugged and abandoned. The work also includes reconstruction of curb and gutter, sidewalk, pavement, concrete apron, and driveway. Construction within the residential lot includes miscellaneous removals and replacements including landscape and irrigation, orange trees, extruded curb, block wall and decomposed granite. Relocation of a water service line and a restrained joint water line are included in the scope of the work. The existing waterline will be cut and plugged. Pavement cut policies apply to the project and pavement work areas. The work area within 48th Street will be refinished with micro-surface treatment and the work areas within 48th Place and Flower Street will be refinished with cool pavement asphalt treatment per the special provisions. A Temporary Construction Easement (TCE) has been developed to facilitate construction activities on the residential lot. The existing Old Cross Cut Canal box culvert is owned and operated by the Flood Control District of Maricopa County and the construction plans have been approved by them for a construction permit to tie into this facility.

PRE-BID MEETING

A pre-bid meeting will be held on Friday, October 25, 2024, at 9:00 a.m., at 200 W. Washington Street, City Hall, 5th Floor, Conference Room PCH5 West. At this meeting, staff will discuss the scope of work, general contract issues and respond to questions from the attendees. As City staff will not be available to respond to individual inquiries regarding the project scope outside of this pre-bid meeting, it is strongly recommended that interested firms send a representative to the pre-bid meeting.

REQUEST FOR BID PACKET

On Thursday, October 17, 2024, the bid packet may be downloaded from the City of Phoenix's eProcurement site at:

<https://eprocurement.phoenix.gov/irj/portal>

(OR)

the City of Phoenix's "Solicitations" web page as. The web address is:

<https://solicitations.phoenix.gov>

Firms receiving a copy of the bid packet through any other means are strongly encouraged to download the bid packet from the City webpage.

Firms must be registered in eProcurement <https://www.phoenix.gov/finance/vendorsreg> as a vendor.

GENERAL INFORMATION

The City reserves the right to award the contract to the lowest responsible responsive bidder or all bids will be rejected, as soon as practicable after the date of opening bids.

The City of Phoenix will provide reasonable accommodations for alternate formats of the bid packet by calling Bobbie Hobart at (602) 534-8352 or calling TTY 711. Requests will only be honored if made within the first week of the advertising period. Please allow a minimum of seven calendar days for production.

Questions pertaining to process or contract issues should be directed to Bobbie Hobart at (602) 534-8352 or bobbie.hobart@phoenix.gov.

Jeffrey Barton
City Manager

Eric J. Froberg, PE
City Engineer

Published: Arizona Business Gazette
Date: October 17, 2024
Date: October 24, 2024
Districts: 3, 4, 6, 7, 8

INFORMATION FOR BIDDERS

1. **102 BIDDING REQUIREMENTS AND CONDITIONS**, Add the following to **MAG and COP Supplement to MAG Section 102 BIDDING REQUIREMENTS AND CONDITIONS**:

INFORMATION FOR BIDDERS

A. **QUESTIONS ON PLANS AND SPECIFICATIONS**

Neither the Engineer nor the City of Phoenix shall be held responsible for any oral instructions. Any changes to the plans and specifications will be in the form of an addendum. All Addenda will be posted online within the project folder at the following website:

<https://eprocurement.phoenix.gov/irj/portal>

OR

<https://solicitations.phoenix.gov>

For additional information prior to submitting your bid, contact:

Plans, Technical/Special Provisions, Proposal or Specifications:

NAME: Bobbie Hobart, Design and Construction Procurement

ADDRESS: 200 W. Washington Street, 5th Floor, Phoenix, AZ 85003-1611

PHONE: (602) 534-8352 E-MAIL: bobbie.hobart@phoenix.gov

DBE Utilization contact:

Equal Opportunity Department: (602) 262-6790

All questions regarding the plans and specifications must be received (in writing) at a minimum seven calendar days prior to bid opening. Questions received after that time may not be given any consideration.

B. **REQUEST FOR SUBSTITUTIONS**

Paragraph A, B, and C of MAG Section 106.4 are deleted and the following paragraphs substituted:

1. The Engineer will consider written request(s), by a prime bidder only, for substitution(s) which is/are considered equivalent to the item(s) specified in the Contract documents. The written request will be considered only if it is received at least twelve calendar days prior to the established bid date. Notification of acceptable substitutions will be made by addendum issued no fewer than seven calendar days prior to the established bid date. (A.R.S. 34-104)
2. The prime bidder, at his own expense, shall furnish the necessary data of substitution and validate that the physical, chemical, and operational qualities of each substitute item is such that this item will fulfill the originally specified required function.
3. The substitution, if approved, will be authorized by a written addendum to the Contract documents and will be made available to all bidders. The bid date and the scheduled completion time will not be affected by any circumstances developing from this substitution.
4. The request will be submitted to Design and Construction Procurement, Attention Bobbie Hobart, 5th fl. Washington Street, Phoenix, Arizona 85003-1611 or via email bobbie.hobart@phoenix.gov

C. **BID BOND**

Bidders must submit a properly completed proposal guarantee in the form of certified check, cashier's check, or surety bond on the form provided, for an amount not less than ten percent of the total amount bid included in the proposal as a guarantee that the contractor will enter into a contract to perform the proposal in accordance with the plans and specifications. Surety bonds submitted for this project shall be provided by a company which has been rated "A- or better for the prior four quarters" by the A.M. Best Company. ***A bid will be deemed non-responsive if not accompanied by this guarantee.***

The surety bond shall be executed solely by a surety company or companies holding a certificate of authority to transact surety business in the State of Arizona, issued by the Director of the Department of Insurance pursuant to Title 20, Chapter 2, Article 1. The surety bond shall not be executed by an individual surety or sureties even if the requirements of Section 7-101 are satisfied. The certified check, cashier's check, or surety bond will be returned to the contractors whose proposals are not accepted, and to the successful contractor upon the execution of a satisfactory bond and contract.

When providing a Surety Bond, ***failure to provide an "A- or better for the prior four quarters" bond will result in bid rejection.***

D. **LIST OF MAJOR SUBCONTRACTORS AND SUPPLIERS & LIST OF ALL SUBCONTRACTORS AND SUPPLIERS**

A bid will be deemed non-responsive if not accompanied by a properly completed and signed L.O.S.-1 "List of Major Subcontractors and Suppliers" form.

To assist in eliminating the practice of bid shopping on City construction projects, the Bidder shall list all Major Subcontractors and Suppliers to whom the Bidder intends to contract with that are equal to or greater than 5% of the base bid. The list of Major Subcontractors and Suppliers will be provided on the L.O.S.-1 "List of Major Subcontractors" form. Failure to properly complete and sign this form will result in bid rejection. This form is due with the bid.

If substantial evidence exists that bid shopping occurred on this project, the Bidder will be ineligible to bid on City or City-affiliated construction projects for a period of one year.

The list of All Subcontractors and Suppliers shall be provided on the L.O.S.-2 "List of All Subcontractors and Suppliers" form. This form is due three calendar days after bid opening by 5:00 p.m. All bidders will be required to submit the L.O.S.-1 form. The three lowest bidders will be required to submit the L.O.S.-2 form. If the L.O.S.-2 form is not submitted by the post-bid deadline, the Bidder will still be required to submit the document prior to award. If the Bidder fails to submit the required L.O.S.-2 form by the post-bid deadline, the Bidder's bid bond may be placed in jeopardy because the City may make a claim against the Bidder's bid bond for the cost difference between the lowest responsive and responsible Bidder's bid and the next lowest bid (and any additional costs involved in awarding the contract to the next lowest responsive and responsible bidder).

E. **BID SUBMITTAL**

The properly completed bid documents along with the ten percent bid guarantee shall be submitted in a sealed envelope. The outside of the envelope shall be marked as follows:

Bid of (Firm's Name, Address and Phone Number)

For: ARPA Local Drainage Mitigation Package 3 Design-Bid-Build

City of Phoenix Project Numbers: PW26220003, ST83140112 ARPA, ST83140117 ARPA , ST83140118 ARPA and ST83140124 ARPA

Sealed bids will be submitted to the bid box located on the first floor of the Phoenix City Hall

Building, 200 W. Washington Street, Phoenix, Arizona, 85003 prior to the time and date specified for bid opening.

F. **BID WITHDRAWALS**

MAG Section 102-10, Withdrawal or Revision of Proposal, is hereby deleted and the following paragraph is submitted:

“No bidder may withdraw or revise a proposal after it has been deposited with the City except as provided in Phoenix City Code Chapter 2, Section 190.2. Proposals, read or unread, will not be returned to the bidders until after determination of award has been made.

G. **ADDENDA**

Acknowledge all addenda; a bid will be deemed non-responsive if all issued addenda for this project are not acknowledged in writing on Page P. -1.

The City of Phoenix shall not be responsible for any oral responses or instructions made by any employees or officers of the City of Phoenix regarding bidding instructions, plans, drawings, specifications or contract documents. A verbal reply to an inquiry does not constitute a modification of the Invitation for Bid. Any changes to the plans, drawings and specifications will be in the form of an addendum.

It shall be the responsibility of the prospective bidder to determine, prior to the submittal of its bid, if any addenda to the project have been issued by Design and Construction Procurement. All addenda issued shall be acknowledged by the bidder on Page P-1. All addenda (if any) will be available online within each project's folder at the following website:

<https://eprocurement.phoenix.gov/irj/portal>

(OR)

the City of Phoenix's "Solicitations" web page. The web address is:

<https://solicitations.phoenix.gov>

The contractors and/or consultants are responsible for ensuring they have all addenda and/or notifications for all projects they are submitting on. Prospective bidders are strongly encouraged to check the Design and Construction Procurement website to ascertain if any addenda have been issued for the project.

H. **BID SUBMITTAL CHECKLIST**

All firms must be registered in the City's Vendor Management System prior to submitting a bid. For new firms – the City will send an email to your firm with a vendor number within two days of submitting the request. The vendor number needs to be included on the cover of the bid proposal package/envelope. Information on how to register with the City is available at:

<https://www.phoenix.gov/finance/vendorsreg>

BID SUBMITTAL CHECKLIST

This checklist is provided to remind bidders of several of the required elements of the bid packages. It is not intended to be a comprehensive list of all of the contract documents. Bidders are encouraged to review all of the Bid Instructions to determine compliance therein.

- Acknowledge all addenda? (Page P.-1)

- Completed all of the Bid Proposal forms? (Pages P-1 to P-9 and P.S.-1)
- Included your Bid Bond (rated A- or better for the prior four quarters) or Guarantee Cashier's Check? (Page S.B.-1)
- Completed Certification with Regard to Equal Opportunity Clause for Contractor and Subcontractors (E.E.O.C.-1)
- Completed Documentation of DBE Small Business Outreach Efforts Form EO2, Columns A through D; Instructions are found in Section IV on pages DBEC-4 to 6 (Form EO2)
- Completed List of Major Subcontractors and Suppliers form? (Page L.O.S.-1)
- Buy American Certificate (Page B.A.C.-1)
- Non-Collusion Affidavit (Page N.C.A.-1)
- Certification of Non-Segregated Facilities (Page N.S.F.-1)

PLEASE DO NOT SUBMIT THE ENTIRE SPECIFICATION BOOK WHEN SUBMITTING YOUR BID. INCLUDE ONLY THE REQUIRED BIDDING DOCUMENTS.

POST-BID SUBMITTAL CHECKLIST

The three lowest bidders must submit completed contracts documents listed below, no later than three calendar days after bid opening by 4:00 p.m. The documents must be submitted to Design and Construction Procurement, 5th Floor, or can be sent by email to bobbie.hobart@phoenix.gov.

- Completed List of All Subcontractors and Suppliers form (L.O.S.-2)
- Completed Documentation of DBE Small Business Outreach Efforts with supporting documentation, Columns E and F (Form EO2); Instructions and supporting documentation are found in Section IV on pages DBEC-4 to 6 (Form EO2)
- Completed Small Business Utilization Commitment (Form EO3)
- Bidders Disclosure Statement (Pages B.D.S.-1 to 4)
- Submit Affidavit of Identity (if you are a sole proprietor) (Page A.O.I.-1)

PRIOR TO CONTRACT EXECUTION

- Contractor must provide proof of license required to perform the work.
- Verification of Experience Modification Rate (EMR) – the awarded company will be required to provide an EMR verification letter from the insurance company prior to contract execution.

***ALL DOCUMENTS NOTED AS REQUIRED IN SUBCONTRACTS MUST BE INCLUDED IN EVERY SUBCONTRACT THAT IS UPLOADED INTO THE B2G SYSTEM.**

I. PERMITS

CITY RESPONSIBILITY – The City will be responsible for City of Phoenix review and permit(s) fees for building and demolition permits. The City will also pay review fees for grading and

drainage, water, sewer, and landscaping. The City will also pay for utility design fees for permanent services.

CONTRACTOR RESPONSIBILITY – The Contractor will be responsible for all other permits and review fees not specifically listed above. The Contractor is responsible for the cost of water meters, water and sewer taps, fire lines and taps, and all water bills on the project meters until the project is accepted. Arrangements for construction water are the Contractor's responsibility.

The Contractor may elect to use a City fire hydrant for its source of construction water only if an existing water service connection is unavailable or inadequate. The Contractor will be required to comply with Phoenix City Code Section 37-13A.

The Contractor is specifically reminded of the need to obtain the necessary environmental permits or file the necessary environmental notices. Copies of these permits and notices must be provided to the City's Project Manager prior to starting the permitted activity. In the case of Fire Department permits, a copy of the application for permit will also be provided to the Project Manager. This provision does not constitute an assumption by the City of an obligation of any kind for violation of said permit or notice requirements.

J. **DBE PARTICIPATION**

See EPRISE LPA Sub-Recipient with Goal and Contractor Compliance Agreement Assurances sections.

K. **BUSINESS AND OPERATION LICENSES, PERMITS AND CERTIFICATIONS REQUIRED**

It is the responsibility of the bidder to determine whether it has the appropriate contracting licenses to perform the work. The City will make the award, if any, to the lowest responsive, responsible bidder who has the proper licenses. For all projects except Federal-aid funded projects, the bidder must have the proper licenses at the time the bid is submitted to the City. On Federal-aid funded projects, the bidder is not required to have the licenses at the time of bidding, but it must procure the licenses before award can be made, and no later than 60 days after the date bids are opened. Licensing information is available from the Arizona Registrar of Contractors.

Prior to award of the contract, the successful bidder must provide Design and Construction Procurement its Contractor's License Classification and number, its City of Phoenix Privilege License number and Federal Tax Identification number.

Bidder shall submit the Bidder's Disclosure Statement as set forth in Pages B.D.S. - 1 to B.D.S. - 4 within three calendar days of bid opening by 5:00 p.m. Bidder will be deemed non-responsive and the bid rejected if Bidder fails to submit a substantially completed Bidder's Disclosure Statement as specified above.

L. **TAX LIABILITIES; DISCLOSURE OF CONVICTIONS AND BREACH(ES) OF CONTRACT**

On or before the award of the contract for this project, the successful bidder shall: (i) file all applicable tax returns and shall make payment for all applicable State of Arizona and Maricopa County Transaction Taxes (ARS Sec. 41-1305) and City of Phoenix Privilege License Taxes (Phoenix City Code Sec.14-415); (ii) disclose any civil fines, penalties or any criminal convictions, other than for traffic related offenses, for violation of federal, state, county or city laws, rules or regulations including, but not limited to, environmental, OSHA, or labor compliance laws (collectively "Laws") by Bidder, Bidder's directors, managing members, responsible corporate officers or party who will be responsible for overseeing and administering this project (collectively "Bidder"); and (iii) disclose any material breach(s) of an agreement with the City of Phoenix, any termination for cause or any litigation involving the City of Phoenix occurring within the past three calendar years. Unless provided otherwise in this solicitation, the

successful bidder shall be deemed non-responsible and the bid rejected for any of the following: (i) Bidder's civil or criminal conviction, other than for traffic related offenses, for a violation of Laws within the past three calendar years; (ii) liability or culpability resulting in payment of fines or penalties in the cumulative total amount of \$100,000 or greater for a violation of "Laws" within the past three calendar years; (iii) material breach of a City of Phoenix agreement, termination for cause or litigation with the City of Phoenix within the past three calendar years; and (iv) Bidder's failure to disclose the information as required by this provision. Further, after award of contract, in addition to any other remedy, Bidder's failure to remit proper taxes to the City of Phoenix may result in the City withholding payment pursuant to Phoenix City Charter Chapter XVIII, Section 14 until all delinquent taxes, interest, and penalties have been paid.

State and Local Transaction Privilege Taxes:

In accordance with applicable state and local law, transaction privilege taxes may be applicable to this transaction. The state and local transaction privilege (sales) tax burden is on the person who is conducting business in Arizona and the City of Phoenix. The legal liability to remit the tax is on the person conducting business in Arizona. Any failure by the Contractor to collect applicable taxes from the City will not relieve the Contractor from its obligation to remit taxes.

It is the responsibility of the prospective bidder to determine any applicable taxes. The City will review the price or offer submitted and will not deduct, add or alter pricing based on taxes.

If you have questions regarding tax liability, seek advice from a tax professional prior to submitting bid. Once your bid is submitted, the Offer is valid for the time specified in this Solicitation, regardless of mistake or omission of tax liability.

If the City finds over payment of a project due to tax consideration that was not due, the Contractor will be liable to the City for that amount, and by contracting with the City agrees to remit any overpayments back to the City for miscalculations on taxes included in a bid price.

For purposes of A.R.S. 42-5075(P), this contract is subject to A.R.S. Title 34.

Tax Indemnification:

Contractor will, and require the same of all subcontractors, pay all federal, state and local taxes applicable to its operation and any persons employed by the Contractor. Contractor will, and require the same of all subcontractors, hold the City harmless from any responsibility for taxes, damages and interest, if applicable, contributions required under federal, and/or state and local laws and regulations and any other costs including transaction privilege taxes, unemployment compensation insurance, Social Security and Worker's Compensation.

Tax Responsibility Qualification:

Contractor may be required to establish, to the satisfaction of City, that any and all fees and taxes due to the City or the State of Arizona for any License or Transaction Privilege taxes, Use Taxes or similar excise taxes, are currently paid (except for matters under legal protest).

Contractor agrees to a waiver of the confidentiality provisions contained in the City Finance Code and any similar confidentiality provisions contained in Arizona statutes relative to State Transaction Privilege Taxes or Use Taxes.

Contractor agrees to provide written authorization to the City Finance Department and to the Arizona State Department of Revenue to release tax information relative to Arizona Transaction Privilege Taxes or Arizona Use Taxes in order to assist the Department in evaluating Contractor's qualifications for and compliance with contract for duration of the term of contract.

M. STANDARD SPECIFICATIONS AND DETAILS

Except as otherwise required in these specifications, bid preparation and construction of this project shall be in accordance with all applicable Maricopa Association of Governments' (MAG) Uniform Standard Specifications and Uniform Standard Details, latest edition, the City of Phoenix Supplements to the MAG Uniform Standard Specifications and Details, and latest edition.

N. PRECEDENCE OF CONTRACT DOCUMENTS

In case of a discrepancy or conflict, the precedence of contract documents is as follows:

1. Change Orders or Supplemental Agreements
2. Addenda
3. Contract Specifications/Special Provisions/Technical Provisions
4. The Plans
5. COP Supplement to MAG Standard Specifications and Details, latest edition
6. MAG Standard Specifications and Details, latest edition

The precedence of any Addenda falls within the category of which it represents. The bid items and special provisions shall take precedence over the quantities shown on the plans. Items shown on the plans but not shown in the bid items shall be considered informational and cost shall be incidental and included in the bid items.

O. CONFIDENTIALITY OF PLANS & SPECIFICATIONS

Any plans generated for this project must include the following statement in the Title Block on every page: "Per City of Phoenix City Code Chapter 2, Section 2-28, these plans are for official use only and may not be shared with others except as required to fulfill the obligations of Contractor's contract with the City of Phoenix."

P. AUDIT AND RECORDS

Records of the Contractor's direct personnel payroll, bond expenses, and reimbursable expenses pertaining to this Project, and records of accounts between the City and Contractor shall be kept on the basis of generally accepted accounting principles and must be made available to the City and its auditors for up to five years following Final Acceptance of the Project.

The City, its authorized representative, and/or any federal agency, reserves the right to audit the Contractor's records to verify the accuracy and appropriateness of all cost and pricing data, including data used to negotiate the Contract and any change orders.

The City reserves the right to decrease Contract price and/or payments made on this Contract and/or request reimbursement from the Contractor following final contract payment on this Contract if, upon audit of the Contractor's records, the audit discloses the Contractor has provided false, misleading, or inaccurate cost and pricing data.

The Contractor shall include a similar provision in all of its Agreements with subcontractors and suppliers providing services or supplying materials under the Contract Documents to ensure that the City, its authorized representative, and/or the appropriate federal agency has access to the Subcontractor's and Supplier's records to verify the accuracy of all cost and pricing data.

The City reserves the right to decrease the Contract price and/or payments made on this Contract and/or request reimbursement from the Contractor following final contract payment on this Contract if the above provision is not included in the Subcontractor's and Supplier's contracts, and one or more Subcontractors or Suppliers refuse to allow the City to audit their records to verify the accuracy and appropriateness of cost and pricing data.

If, following an audit of this Contract, the audit discloses the Contractor has provided false, misleading or inaccurate cost and pricing data, and the cost discrepancies exceed 1% of the total Contract billings, the Contractor shall be liable for reimbursement of the reasonable, actual cost of the audit.

Q. IMMIGRATION REFORM AND CONTROL ACT

Compliance with Federal Laws Required. Contractor understands and acknowledges the applicability of the Immigration Reform and Control Act of 1986 and the Drug Free Workplace Act to it. Contractor agrees to comply with these Federal Laws in performing under this Agreement and to permit City inspection of its personnel records to verify such compliance.

R. LEGAL WORKER REQUIREMENTS

The City of Phoenix is prohibited by A.R.S. § 41-4401 from awarding a contract to any contractor who fails, or whose subcontractors fail, to comply with A.R.S. § 23-214(A). Therefore, Contractor agrees that:

1. Contractor and each subcontractor it uses warrants their compliance with all federal immigration laws and regulations that relate to their employees and their compliance with § 23-214, subsection A.
2. A breach of a warranty under paragraph 1 shall be deemed a material breach of the contract that is subject to penalties up to and including termination of the contract.
3. The City of Phoenix retains the legal right to inspect the papers of any Contractor or subcontractor employee who works on the contract to ensure that the Contractor or subcontractor is complying with the warranty under paragraph 1.

S. CONTRACTOR AND SUBCONTRACTOR WORKER BACKGROUND SCREENING

Contractor agrees that all Contractor's and subcontractors' workers (collectively "Contract Worker(s)") pursuant to this Agreement will be subject to background and security checks and screening (collectively "Background Screening") at Contractor's sole cost and expense, unless otherwise provided for in the scope of work. Contractor's background screening will comply with all applicable laws, rules and regulations. Contractor further agrees that the background screening is necessary to preserve and protect the public health, safety and welfare. The City requires a completed Contract Worker Badge/Key/Intrusion Detection Responsibilities Agreement for each Contract Worker who requires a badge or key.

Background Screening Risk Level: The City has established two levels of risk: Standard and Maximum risk. The current risk level and background screening required is **N/A**. If the scope of work changes, the City may amend the level of risk, which could require the Contractor to incur additional contract costs to obtain background screens or badges.

CONFIDENTIALITY AND DATA SECURITY: All data, regardless of form, including originals, images and reproductions, prepared by, obtained by, or transmitted to Contractor in connection with this Agreement is confidential, proprietary information owned by the City. Except as specifically provided in this Agreement, the Contractor shall not disclose data generated in the performance of the service to any third person without the prior written consent of the City Manager or his/her designee.

Contractor agrees to abide by all current applicable legal and industry data security and privacy requirements and to notify the City immediately if the scope of work changes or personal

identifying information or information subject to the Payment Card Industry Standards becomes part of the Agreement.

Contractor agrees to comply with all City information security and technology policies, standards, and procedures when accessing City networks and computerized systems whether onsite or remotely.

A violation of this Section may result in immediate termination of this Agreement without notice. The Obligations of Contractor under this Section shall survive the termination of this Agreement.

SECURITY INQUIRIES: Contractor acknowledges that all of the employees that it provides pursuant to this Contract shall, at Contractor's expense, be subject to background and security checks and screening at the request of the City. Contractor shall perform all such security inquiries and shall make the results available to the City for all employees considered for performing work (including supervision and oversight) under this Contract. City may make further security inquiries. Whether or not further security inquiries are made by the City, City may, at its sole, absolute and unfettered discretion, accept or reject any or all the employees proposed by the Contractor for performing work under this Contract. Employees rejected by the City for performing services under this Contract may still be engaged by Contractor for other work not involving the City. An employee rejected for work under this Contract shall not be proposed to perform work under other City contracts or engagements without the City's prior approval.

The City, in its sole discretion, reserves the right, but not the obligation to:

- require an employee/prospective employee of the Contractor to provide fingerprints and execute such other documentation as may be necessary to obtain criminal justice information pursuant to A.R.S. 41-1750 (G) (4);
- act on newly acquired information whether or not such information should have been previously discovered;
- unilaterally change its standards and criteria relative to the acceptability of Contractor's employees and/or prospective employees; and
- object, at any time and for any reason, to an employee of Contractor performing work (including supervision and oversight) under this Agreement. Contractor will bear the costs of all inquiries requested by the City.

T. LAWFUL PRESENCE REQUIREMENT

Pursuant to A.R.S. §§ 1-501 and 1-502, the City of Phoenix is prohibited from awarding a contract to any natural person who cannot establish that such person is lawfully present in the United States. To establish lawful presence, a person must produce qualifying identification and sign a City-provided affidavit affirming that the identification provided is genuine. This requirement will be imposed at the time of contract award. This requirement does not apply to business organizations such as corporations, partnerships or limited liability companies.

U. LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED)

If practical, the contractor shall provide an easily accessible area to serve the construction site that is dedicated to the separation, collection and storage of materials for recycling including (at a minimum) paper, glass, plastics, metals, and designate an area specifically for construction and demolition waste recycling. The contractor must provide documentation that the materials have been taken to a Maricopa County approved recycling facility.

V. CITY OF PHOENIX EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENT

1. In order to do business with the City, Contractor must comply with Phoenix City Code, 1969, Chapter 18, Article V, as amended, Equal Employment Opportunity Requirements. Contractor will direct any questions in regard to these requirements to the Equal Opportunity Department, (602) 262-6790.
2. Any Contractor in performing under this contract shall not discriminate against any worker, employee or applicant, or any member of the public, because of race, color, religion, sex, national origin, age, or disability nor otherwise commit an unfair employment practice. The Contractor shall ensure that applicants are employed, and employees are dealt with during employment without regard to their race, color, religion, sex, national origin, age, or disability and will adhere to a policy to pay equal compensation to men and women who perform jobs that require substantially equal skill, effort, and responsibility, and that are performed within the same establishment under similar working conditions. Such action shall include but not be limited to the following: Employment, promotion, demotion or transfer, recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training; including apprenticeship. The Contractor further agrees that this clause will be incorporated in all subcontracts with all labor organizations furnishing skilled, unskilled and union labor, or who may perform any such labor or services in connection with this contract.

If the Contractor employs more than thirty-five employees, the following language shall apply as the last paragraph to the clause above:

The Contractor further agrees not to discriminate against any worker, employee or applicant, or any member of the public, because of sexual orientation or gender identity or expression and shall ensure that applicants are employed, and employees are dealt with during employment without regard to their sexual orientation or gender identity or expression.

3. *Documentation.* Contractor may be required to provide additional documentation to the Equal Opportunity Department affirming that a nondiscriminatory policy is being utilized.
4. *Monitoring.* The Equal Opportunity Department shall monitor the employment policies and practices of suppliers and lessees subject to this article as deemed necessary. The Equal Opportunity Department is authorized to conduct on-site compliance reviews of selected firms, which may include an audit of personnel and payroll records, if necessary.

W. PROTEST PROCEDURES

Any bidder who has any objections to the awarding of a contract to any bidder by the City of Phoenix, pursuant to competitive bidding procedures, shall comply with Phoenix City Code Chapter 2, Section 188."

X. DATA CONFIDENTIALITY

As used in the Contract, "data" means all information, whether written or verbal, including plans, photographs, studies, investigations, audits, analyses, samples, reports, calculations, internal memos, meeting minutes, data field notes, work product, proposals, correspondence and any other similar documents or information prepared by, obtained by, or transmitted to the Contractor or its subcontractors in the performance of this Contract.

The parties agree that all data, regardless of form, including originals, images, and reproductions, prepared by, obtained by, or transmitted to the Contractor or its subcontractors in connection with the Contractor's or its subcontractor's performance of this Contract is confidential and proprietary information belonging to the City.

Except as specifically provided in this Contract, the Contractor or its subcontractors shall not

divulge data to any third party without prior written consent of the City. The Contractor or its subcontractors shall not use the data for any purposes except to perform the services required under this Contract. These prohibitions shall not apply to the following data provided the Contractor or its subcontractors have first given the required notice to the City:

1. Data which was known to the Contractor or its subcontractors prior to its performance under this Contract unless such data was acquired in connection with work performed for the City;
2. Data which was acquired by the Contractor or its subcontractors in its performance under this Contract and which was disclosed to the Contractor or its subcontractors by a third party, who to the best of the Contractor's or its subcontractor's knowledge and belief, had the legal right to make such disclosure and the Contractor or its subcontractors are not otherwise required to hold such data in confidence; or
3. Data which is required to be disclosed by virtue of law, regulation, or court order, to which the Contractor or its subcontractors are subject.

In the event the Contractor or its subcontractors are required or requested to disclose data to a third party, or any other information to which the Contractor or its subcontractors became privy as a result of any other contract with the City, the Contractor shall first notify the City as set forth in this section of the request or demand for the data. The Contractor or its subcontractors shall give the City sufficient facts so that the City can be given an opportunity to first give its consent or take such action that the City may deem appropriate to protect such data or other information from disclosure.

The Contractor, unless prohibited by law, within ten calendar days after completion of services for a third party on real or personal property owned or leased by the City, the Contractor or its subcontractors shall promptly deliver, as set forth in this section, a copy of all data to the City. All data shall continue to be subject to the confidentiality agreements of this Contract.

The Contractor or its subcontractors assume all liability for maintaining the confidentiality of the data in its possession and agrees to compensate the City if any of the provisions of this section are violated by the Contractor, its employees, agents or subcontractors. Solely for the purposes of seeking injunctive relief, it is agreed that a breach of this section shall be deemed to cause irreparable harm that justifies injunctive relief in court. Contractor agrees that the requirements of this Section shall be incorporated into all subcontracts entered into by Contractor. A violation of this Section may result in immediate termination of this Contract without notice.

Personal Identifying Information-Data Security

Personal identifying information, financial account information, or restricted City information, whether electronic format or hard copy, must be secured and protected at all times. At a minimum, Contractor must encrypt and/or password protects electronic files. This includes data saved to laptop computers, computerized devices or removable storage devices.

When personal identifying information, financial account information, or restricted City information, regardless of its format, is no longer necessary, the information must be redacted or destroyed through appropriate and secure methods that ensure the information cannot be viewed, accessed, or reconstructed.

In the event that data collected or obtained by Contractor or its subcontractors in connection with this Contract is believed to have been compromised, Contractor or its subcontractors shall immediately notify the Project Manager and City Engineer. Contractor agrees to reimburse the City for any costs incurred by the City to investigate potential breaches of this data and, where applicable, the cost of notifying individuals who may be impacted by the breach.

Contractor agrees that the requirements of this Section shall be incorporated into all subcontracts entered into by Contractor. It is further agreed that a violation of this Section shall

be deemed to cause irreparable harm that justifies injunctive relief in court. A violation of this Section may result in immediate termination of this Contract without notice. The obligations of Contractor or its subcontractors under this Section shall survive the termination of this Contract.

Y. **PROJECT MANAGEMENT INFORMATION SYSTEM (UNIFIER)**

The Street Transportation Department's Design and Construction Management (DCM) Project Manager may determine that use of UNIFIER will be required during this contract. The following information provides a guideline for utilization. Any questions related to the requirements of UNIFIER should be directed to the DCM Project Manager.

1. The contractor will be required to maintain all project records in electronic format. The City provides an Application Service Provider (ASP) web-based project management database which the contractor will be required to utilize in the fulfillment of the contract requirements. Although this electronic platform does not fulfill this requirement in its entirety, the contractor will be required to utilize this platform as the basis for this work.
2. The contractor can expect to use this ASP to process all primary level tri-partite contract documents related to the design or construction phase of the Project including but not limited to: requests for interpretation/information, potential Change Orders, construction meeting minutes, Submittals, Design Professional's supplemental instructions, and Payment Requests.
3. The contractor will be required to process information into electronic digital form. In order to fulfill this requirement, the contractor shall provide all necessary equipment to perform the functions necessary to generate, convert, store, maintain, connect to web-based ASP and transfer electronic data.
4. The contractor shall provide a computerized networked office platform with broadband internet connectivity. Wired or wireless is acceptable. This platform shall function well in a web-based environment utilizing an internet browser compatible with the City UNIFIER ASP system.

UNIFIER training will be provided through the City of Phoenix. Contact information will be provided to the firms under contract, to establish the set up with a log-in and password.

Z. **CONTRACTOR AND SUBCONTRACTOR RECORDS**

The contractor, subcontractors and all suppliers shall keep and maintain all books, papers, records, files, accounts, reports, bid documents with backup data, including electronic data, and all other material relating to the contract and project for five years following completion and acceptance of the work.

All the above material shall be made available to the City for auditing, inspection and copying and shall be produced, upon request.

The contractor shall insert the above requirement in each subcontract, purchase order and lease agreement and shall also include in all subcontracts a clause requiring subcontractors to include the above requirement in any lower-tier subcontract, purchase order or lease agreement.

AA. **FEDERAL IMMIGRATION AND NATIONALITY ACT**

The contractor, including all subcontractors, shall comply with all federal, state and local immigration laws and regulations, as set forth in Arizona Executive Order 2005-30, relating to

the immigration status of their employees who perform services on the contract during the duration of the contract. The Agency shall retain the right to perform random audits of contractor and subcontractor records or to inspect papers of any employee thereof to ensure compliance.

By submission of a bid, the contractor warrants that the contractor and all proposed subcontractors are and shall remain in compliance with all federal, state and local immigration laws and regulations relating to the immigration status of their employees who perform services on the contract. The Agency may, at its sole discretion, require evidence of compliance from the contractor or subcontractor. Should the Agency request evidence of compliance, the contractor or subcontractor shall have ten working days from receipt of the request to supply adequate information. The City will accept, as evidence of compliance, a showing by the contractor or subcontractor that it has followed the employment verification provisions of the Federal Immigration and Nationality Act as set forth in Sections 274A and 274B of that Act, including implementation of regulations and agreements between the Department of Homeland Security and the Social Security Administration's verification service. The contractor shall include the requirements of the provisions of ADOT Standard Specifications Subsection 107.19 in all its subcontracts.

Failure to comply with the immigration laws or to submit proof of compliance constitutes a material breach of contract. The City will reduce the contractor's compensation by \$10,000 for the initial instance of non-compliance by the contractor or a subcontractor. Should the same contractor or subcontractor commit subsequent violations within a two-year time-period from the initial violation, the contractor's compensation will be reduced by \$50,000 for each violation. The third instance by the same contractor or subcontractor within a two-year period may result, in addition to the \$50,000 reduction in compensation, in removal of the offending contractor or subcontractor, suspension of work in whole or in part or, in the case of a third violation by the contractor, termination of the contract for default. In addition, the City may debar a contractor or subcontractor who has committed three violations within a two-year period for up to one year. For purposes of this paragraph, a violation by a subcontractor does not count as a violation by the contractor.

Any delay resulting from a sanction under this subsection is a non-excusable delay. The contractor is not entitled to any compensation or extension of time for any delays or additional costs resulting from a sanction under this subsection.

BB. PROJECT STAFFING

Key Personnel: Before starting work, Contractor must submit detailed résumés of key personnel involved in that work for City's approval (which City will not unreasonably withhold). If Contractor later desires to change key personnel involved in that work, Contractor must submit detailed résumés of the new personnel for City's approval (which City will not unreasonably withhold).

Qualified Staff: Contractor must maintain an adequate and competent staff of qualified persons—as City may determine in its sole discretion—during performance of this Master Agreement. If City in its sole discretion determines that any of Contractor's staff is objectionable, Contractor must take prompt corrective action or replace that staff with new personnel, subject to City's approval.

Third-Party Employment Brokers: Contractor and Subcontractors will not utilize a third-party labor broker for any construction worker under this Agreement. The Contractor and Subcontractors must be the employers of record for its construction staff under this Agreement.

CC. NO ISRAEL BOYCOTT

If this Contract is valued at \$100,000 or more and requires Contractor (a company engaging in for-profit activity and having ten or more full-time employees) to acquire or dispose of services, supplies, information technology, or construction, then Contractor must certify and agree that it does not and will not boycott goods or services from Israel, pursuant to Title 35, Chapter 2, Article 9 of the Arizona Revised Statutes. Provided that these statutory requirements are applicable, Contractor by entering this Contract now certifies that it is not currently engaged in, and agrees for the duration of the Contract to not engage in, a boycott of goods or services from Israel.

DD. NO FORCED LABOR OF ETHNIC UYGHURS

If this Contract requires Contractor (a company engaging in for-profit activity and having ten or more full-time employees) to acquire or dispose of services, supplies, information technology, goods, or construction, then pursuant to Title 35, Chapter 2, Article 10 of the Arizona Revised Statutes Contractor must certify and agree that it and any contractors, subcontractors, or suppliers it utilizes do not and will not use the forced labor of ethnic Uyghurs in the People's Republic of China or any goods or services produced by such forced labor. Provided these statutory requirements are applicable, Contractor, by entering this Contract, now certifies it is not currently engaged in, and agrees for the duration of the Contract to not engage in, (a) the use of forced labor of ethnic Uyghurs in the People's Republic of China; (b) the use of any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China; or (c) the use of any contractors, subcontractors, or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China.

EE. COMPLIANCE WITH LAWS

Contractor must comply with all existing and subsequently enacted federal, state and local laws, ordinances and codes, all applicable ADA requirements, regulations that are, or become applicable to this Agreement, and be in general conformance with PROWAG guidance. If a subsequently enacted law imposes substantial additional costs on Contractor, a request for an amendment may be submitted pursuant to this Agreement. Contractor is also required to certify its compliance with all applicable laws and Contractor must pass along these requirements to its Subcontractors. If any of Contractor's certifications is found to be false, the City may terminate this Agreement or impose other remedies due to the false certification.

GG. HEAT MITIGATION

Per Phoenix City Code G-7241, effective April 25, 2024, any Contractor whose employees and contract workers perform work in an outdoor environment under this contract must keep on file a written heat safety plan. The City may request a copy of this plan and documentation of all heat safety and mitigation efforts currently implemented to prevent heat-related illnesses and injuries in the workplace. The plan must also be posted where it is accessible to employees. At a minimum, the heat safety and mitigation plan and documentation required under this provision shall include each of the following as it relates to heat safety and mitigation:

- 1.1 Availability of sanitized cool drink water free of charge at locations that are accessible to all employees and contract workers.
- 1.2 Ability to take regular and necessary breaks as needed and additional breaks for hydration.
- 1.3 Access to shaded areas and/or air conditioning.
- 1.4 Access to air conditioning in vehicles with enclosed cabs. All such vehicles must contain functioning air conditioning by no later than May 1, 2025.

- 1.5 Effective acclimatization practices to promote the physiological adaptations of employees or contract workers newly assigned or reassigned to work in an outside environment.
- 1.6 Conduct training and make it available and understandable to all employees and contract workers on heat illness and injury that focuses on the environmental and personal risk factors, prevention, how to recognize and report signs and symptoms of heat illness and injury, how to administer appropriate first aid measures and how to report heat illness and injury to emergency medical personnel.

The Contractor further agrees that this clause will be incorporated in all subcontracts with subconsultants, sublicensees or sublessees who may perform labor or services in connection with this contract. Additionally, the Contractor agrees to require all subcontractors, sublicensees or sublessees to include this clause in all contracts with any third party who is contracted to perform labor or services in connection with this contract. It is the obligation of the Contractor to ensure compliance by its subcontractors.

SUPPLEMENTARY CONDITIONS

1. **103 AWARD AND EXECUTION OF CONTRACT**, Add the following to **Subsection 103.3 AWARD OF CONTRACT**:

Contract award will be made to a responsive and responsible bidder based on the low total base bid or on the low combination of the total base bid and any selected alternate(s), whichever is in the best interest of the City. If unit pricing is required in the proposal, the extensions and additions will be verified to assure correctness. Award will be based on the revised total if any errors are found. Additionally, the Contractor will meet the minimum SBE subcontracting goal set for this contract or have been granted a full or partial waiver of the goal. The City expressly reserves the right to cancel this agreement without recourse or prejudice to Contractor until all parties have executed the agreement in full.

Any bidder that currently contracts with the City must be in good standing for its proposal to be considered responsive. For the purpose of this Invitation to Bid, good standing means compliance with all contractual provisions, including payment of financial obligations

2. **103 AWARD AND EXECUTION OF CONTRACT**, Add the following to **Subsection 103.5, REQUIREMENT OF CONTRACT BONDS**:

1. PERFORMANCE BOND AND LABOR AND MATERIAL BOND

Prior to the execution of a contract, the successful bidder must provide a performance bond and a labor and material bond, each in an amount equal to the full amount of the contract. Each such bond shall be executed by a surety company or companies holding a certificate of authority to transact surety business in the State of Arizona issued by the Director of the Department of Insurance. A copy of the Certificate of Authority shall accompany the bonds. The Certificate shall have been issued or updated within two years prior to the execution of the Contract. The bonds shall be made payable and acceptable to the City of Phoenix. The bonds shall be written or countersigned by an authorized representative of the surety who is either a resident of the State of Arizona or whose principal office is maintained in this state, as required by law, and the bonds shall have attached thereto a certified copy of Power of Attorney of the signing official. If one Power of Attorney is submitted, it shall be for twice the total contract amount. If two Powers of Attorney are submitted, each shall be for the total contract amount. Personal or individual bonds are not acceptable. Failure to comply with these provisions will be cause for rejection of the bidder's proposal.

2. BONDING COMPANIES

All bonds submitted for this project shall be provided by a company which has been rated "A- or better for the prior four quarters" by the A. M. Best Company. **Failure to provide an "A- or better for the prior four quarters" bond will result in bid rejection.**

3. **103 AWARD AND EXECUTION OF CONTRACT**, Delete **Subsection 103.6, CONTRACTOR'S INSURANCE** in its entirety and substitute the following:

103.6.1 General:

Contractor and subcontractors must procure insurance against claims that may arise from or relate to performance of the work hereunder by Contractor and its agents, representatives, employees and subconsultants. Contractor and subcontractors must maintain that insurance until all their obligations have been discharged, including any warranty periods under this Contract.

The City in no way warrants that the limits stated in this section are sufficient to protect the Contractor

from liabilities that might arise out of the performance of the work under this Contract by the Contractor, its agents, representatives, employees, or subcontractors and Contractor may purchase additional insurance as they determine necessary.

1. SCOPE AND LIMITS OF INSURANCE

Contractor must provide coverage with limits of liability not less than those stated below. An excess liability policy or umbrella liability policy may be used to meet the liability limits provided that (1) the coverage is written on a "following form" basis, and (2) all terms under each line of coverage below are met:

1. **Commercial General Liability – Occurrence Form**

Policy must include bodily injury, property damage, broad form contractual liability and XCU coverage.

General Aggregate	\$2,000,000
Products – Completed Operations Aggregate	\$1,000,000
Personal and Advertising Injury	\$1,000,000
Each Occurrence	\$1,000,000

a. The policy must name the City of Phoenix as an additional insured with respect to liability for bodily injury, property damage and personal and advertising injury with respect to premises, ongoing operations, products and completed operations, and liability assumed under an insured contract arising out of the activities performed by, or on behalf of the Contractor, related to this Contract.

b. Coverage must include XCU coverage.

c. There shall be no endorsement or modification which limits the scope of coverage or the policy limits available to the City of Phoenix as an additional insured.

d. City of Phoenix is an additional insured to the full limits of liability purchased by the Contractor.

e. The Contractor's insurance coverage must be primary and non-contributory with respect to any insurance or self-insurance carried by the City.

f. Contractor's policies must be endorsed to provide an extension of the completed operations coverage for a period of nine years.

2. **Automobile Liability**

Bodily injury and property damage for any owned, hired, and non-owned vehicles used in the performance of this Contract.

Combined Single Limit (CSL)	\$1,000,000
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a. The policy must be endorsed to include The City of Phoenix as an additional insured with respect to liability arising out of the activities performed by, or on behalf of the Contractor, related to this contract.

b. City of Phoenix is an additional insured to the full limits of liability purchased by the Contractor.

c. The Contractor's insurance coverage must be primary and non-contributory with respect to any insurance or self-insurance carried by the City.

3. **Worker's Compensation and Employers' Liability**

Workers' Compensation	Statutory
Employers' Liability	
Each Accident	\$100,000
Disease – Each Employee	\$100,000
Disease – Policy Limit	\$500,000

a. Policy must contain a waiver of subrogation against the City of Phoenix.

b. This requirement does not apply when a Contractor or subcontractor is exempt under A.R.S. §23-902(E), **AND** when such Contractor or subcontractor executed the appropriate sole proprietor waiver form.

4. **No Builders' Risk Insurance required.**

2. NOTICE OF CANCELATION

For each insurance policy required by the insurance provisions of this Contract, the Contractor must provide to the City, within five business days of receipt, a notice if a policy is suspended, voided or cancelled for any reason. Such notice must be mailed, emailed or hand delivered to Design and Construction Procurement, 200 W. Washington Street, 5th Floor, by certified mail, return receipt requested.

3. ACCEPTABILITY OF INSURERS

Insurance is to be placed with insurers duly licensed or authorized to do business in the state of Arizona and with an "A.M. Best" rating of not less than B+ VI. The City in no way warrants that the required minimum insurer rating is sufficient to protect the Contractor from potential insurer insolvency.

4. VERIFICATION OF COVERAGE

Contractor must furnish the City with certificates of insurance (ACORD form or equivalent approved by the City) as required by this Contract. The certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf.

All certificates and any required endorsements are to be received and approved by the City before work commences. Each insurance policy required by this Contract must be in effect at or prior to commencement of work under this Contract and remain in effect for the duration of the project. Failure to maintain the insurance policies as required by this Contract or to provide evidence of renewal is a material breach of contract.

All certificates required by this Contract must be sent directly to Design and Construction Procurement via email at **str.title34.procure@phoenix.gov**. **The City project number, contract number and project description must be noted on the certificate of insurance.** The City reserves the right to require complete copies of all insurance policies required by this Contract, at any time. **DO NOT SEND CERTIFICATES OF INSURANCE TO THE CITY'S RISK MANAGEMENT DIVISION.**

5. SUBCONTRACTORS

Contractor's certificates shall include all subcontractors as additional insureds under its policies **OR** Contractor shall be responsible for ensuring and verifying that all subcontractors have valid and collectable insurance. At any time throughout the life of the contract, the City of Phoenix

reserves the right to require proof from the Contractor that its subcontractors have insurance coverage. All subcontractors providing services included under this Contract's Scope of Services are subject to the insurance coverages identified above and must include the City of Phoenix as an additional insured. In certain circumstances, the Contractor may, on behalf of its subcontractors, waive a specific type of coverage or limit of liability where appropriate to the type of work being performed under the subcontract. Contractor assumes liability for all subcontractors with respect to this Contract.

6. APPROVAL

Any modification or variation from the insurance coverages and conditions in this Contract must be documented by an executed contract amendment.

103.6.2 Defense and Indemnification:

To the maximum extent allowed by law, including Title 34 A.R.S., Contractor ("Indemnitor") agrees to defend, indemnify, and hold harmless the City of Phoenix and its officers, officials (elected or appointed), agents and employees (and any jurisdiction or agency issuing permits for any work included in the project, and its officers, agents and employees) ("Indemnitee") from any and all claims, actions, liabilities, damages, losses or expenses, (including but not limited to court costs, attorney fees, expert fees, and costs of claim processing, investigation and litigation) of any nature or kind whatsoever ("Losses") caused or alleged to be caused, in whole or in part, by the wrongful, negligent or willful acts, or errors or omissions of Indemnitor or any of its owners, officers, directors, members, managers, agents, employees, or subcontractors (Indemnitor's Agents") arising out of or in connection with this Contract. This defense and indemnity obligation includes holding Indemnitee harmless for any Losses or other amount arising out of or recovered under any state's workers' compensation law or arising out of the failure of Indemnitor or Indemnitor's Agents to conform to any federal, state or local law, statute, ordinance, rule, regulation, or court decree. Indemnitor's duty to defend Indemnitee accrues immediately at the time a claim is threatened or a claim is made against Indemnitee, whichever is first. Indemnitor's duty to defend exists regardless of whether Indemnitor is ultimately found liable. Indemnitor must indemnify Indemnitee from and against any and all Losses, except where it is proven that those Losses are solely as a result of Indemnitee's own negligent or willful acts or omissions. Indemnitor is responsible for primary loss investigation, defense and judgment costs where this indemnification applies. In consideration of the City's award of this Contract, Indemnitor agrees to waive all rights of subrogation against Indemnitee for losses arising from or related to any work performed by Indemnitor or Indemnitor's Agents for the City of Phoenix under this Contract. The obligations of Indemnitor under this provision survive the termination or expiration of this Contract.

4. **104 SCOPE OF WORK**, Add the following to **Section 104.1 WORK TO BE DONE**:

The following environmental commitment measures are required to be followed. Refer to Environmental Clearance Letter section for additional information and guidance.

The project mitigation measures are not subject to change without written approval from City of Phoenix Office of the City Engineer. The Contractor shall follow all the requirements of the permits specified herein and comply with the project special provisions, as well as the MAG Uniform Standard Specifications for Public Works, as well as all applicable local environmental requirements.

PROJECT NO. ST83140112 Drainage Improvement: 22nd Ave & Lower Buckeye Rd:

Asbestos & Lead Paint Testing (City HBM Policy)

- Per the City of Phoenix Hazardous Building Materials (HBM) Policy as well as Environmental Protection Agency (EPA) and Occupational Safety & Health Association (OSHA) requirements, asbestos and lead paint testing of materials planned for disturbance must be conducted prior to start of construction.
- Compliance with the City of Phoenix HBM Policy for this project may be achieved either through utilizing a certified asbestos and lead inspector through your contract or utilizing the Office of the City Engineer's Environmental Section which oversee on-call contracts for these inspection services. Please contact Tariq Abdellatif at 602-534-5628 or tariq.abdellatif@phoenix.gov for additional information.

Clean Water Act Section 402 / Phoenix Code 32C

- Less than 1 acre of ground disturbance will occur during project work. The contractor must comply with Phoenix City Code 32C.

Natural Resources

- Impacts to vegetation are not expected. Due to the proximity of landscaped vegetation, the Migratory Bird Treaty Act (MBTA) flyer shall be provided to the contractor prior to the start of construction. The MBTA flyer is attached.

Clean Water Act Section 404/401

- No potential Waters of the U.S. are present in the affected project area. No Clean Water Act Section 404 permitting is required.

Archaeology

- No known archaeological sites are located within this project area.
- No archaeological work is necessary for this project. However, if any archaeological materials are encountered during construction, all ground-disturbing activities must cease within 10 meters of the discovery and the City of Phoenix Archaeology Office must be notified immediately and allowed time to properly assess the materials.

Historic Preservation

- There is a historic structure in the vicinity of the project that is not expected to be impacted by the project. No archaeological surveys or nest surveys are required.

PROJECT NO. ST8314017 Drainage Improvements: 18th Street & Pinchot Avenue:

Asbestos & Lead Paint Testing (City HBM Policy)

- Per the City of Phoenix Hazardous Building Materials (HBM) Policy as well as Environmental Protection Agency (EPA) and Occupational Safety & Health Association (OSHA) requirements, asbestos and lead paint testing of materials planned for disturbance must be conducted prior to start of construction.
- Compliance with the City of Phoenix HBM Policy for this project may be achieved either through utilizing a certified asbestos and lead inspector through your contract or utilizing the Office of the City Engineer's Environmental Section which oversee on-call contracts for these inspection services.

services. Please contact Tariq Abdellatif at 602-534-5628 or tariq.abdellatif@phoenix.gov for additional information.

Clean Water Act Section 402 / Phoenix Code 32C

- Less than 1 acre of ground disturbance will occur during project work. The contractor must comply with Phoenix City Code 32C.

Natural Resources

- Impacts to vegetation are not expected. Due to proximity to landscape vegetation, the contractor shall review the attached Migratory Bird Treaty Act (MBTA) construction flyer. Nest surveys are required.

Clean Water Act Section 404/401

- No potential Waters of the U.S. are present in the affected project area. No Clean Water Act Section 404 permitting is required. A RID canal is nearby but will not be impacted by the project.

Archaeology

- A portion of this project area is located within the 250-ft buffer zone of AZT:12:256(ASM) (Grand Canal Ruins), a large prehistoric village that contains human burials. Also, a projected prehistoric canal alignment crosses this project area. According to our records and those of AZSITE, the state's repository of archaeological information, no previous archaeological projects have been conducted within this project.
- **The City of Phoenix Archaeology Office requires archaeological monitoring of ground-disturbing activities associated with this project within 250 feet of AZ T:12:256(ASM) and within 50 feet of the projected prehistoric canal.** Archaeological data recovery excavations may be necessary based upon the results of the monitoring. A qualified archaeologist* must make this determination in consultation with the City of Phoenix Archaeologist.
- Please contact the Office of the City Engineer, Environmental Quality Specialist Andrea Love (andrea.love@phoenix.gov) or James Marshall (james.marshall@phoenix.gov) to arrange for archaeological monitoring 2-3 months before construction takes place. This process can take up to 40 days if an Arizona State Museum permit is required.

Historic Preservation

- The City of Phoenix Historic Preservation Office has reviewed the project limits and scope as of June 2022 and have a finding of "No Adverse Effect".

PROJECT NO. ST8314018 Drainage Improvements: Westwood 23rd Aveue & Devonshire Avenue:

Asbestos & Lead Paint Testing (City HBM Policy)

- Per the City of Phoenix Hazardous Building Materials (HBM) Policy as well as Environmental Protection Agency (EPA) and Occupational Safety & Health Association (OSHA) requirements, asbestos and lead paint testing of materials planned for disturbance must be conducted prior to start of construction.
- Compliance with the City of Phoenix HBM Policy for this project may be achieved either through utilizing a certified asbestos and lead inspector through your contract or utilizing the Office of

the City Engineer's Environmental Section which oversee on-call contracts for these inspection services. Please contact Tariq Abdellatif at 602-534-5628 or tariq.abdellatif@phoenix.gov for additional information.

Clean Water Act Section 402 / Phoenix Code 32C**Note**

- Less than 1 acre of ground disturbance will occur during project work. The contractor must comply with Phoenix City Code 32C.

Natural Resources

- Impacts to vegetation are not expected. Due to proximity to landscape vegetation, the contractor shall review the attached Migratory Bird Treaty Act (MBTA) construction flyer.

Clean Water Act Section 404/401

- No potential Waters of the U.S. are present in the affected project area. No Clean Water Act Section 404 permitting is required.

Archaeology

- No known archaeological sites are located within the project area.
- No archaeological work is necessary for this project. However, if any archaeological materials are encountered during construction, all ground-disturbing activities must cease within 10 meters of the discovery and the City of Phoenix Archaeology Office must be notified immediately and allowed time to properly assess the materials.

Historic Preservation

- No historic neighborhoods or structures will be adversely affected by this project.

PROJECT NO. ST83140124 Drainage Improvements: 48th Place & East Flower Street:

Asbestos & Lead Paint Testing (City HBM Policy)

- Per the City of Phoenix Hazardous Building Materials (HBM) Policy as well as Environmental Protection Agency (EPA) and Occupational Safety & Health Association (OSHA) requirements, asbestos and lead paint testing of materials planned for disturbance must be conducted prior to start of construction.
- Compliance with the City of Phoenix HBM Policy for this project may be achieved either through utilizing a certified asbestos and lead inspector through your contract or utilizing the Office of the City Engineer's Environmental Section which oversee on-call contracts for these inspection services. Please contact Tariq Abdellatif at 602-534-5628 or tariq.abdellatif@phoenix.gov for additional information.

Clean Water Act Section 402 / Phoenix Code 32C**Note**

- Less than 1 acre of ground disturbance will occur during project work. The contractor must comply with Phoenix City Code 32C.

Natural Resources

- Impacts to vegetation are not expected. Due to proximity to landscape vegetation, the contractor shall review the attached Migratory Bird Treaty Act (MBTA) construction flyer.

Clean Water Act Section 404/401

- No potential Waters of the U.S. are present in the affected project area. No Clean Water Act Section 404 permitting is required.

Archaeology

- No known archaeological sites are located within the project area.
- No archaeological work is necessary for this project. However, if any archaeological materials are encountered during construction, all ground-disturbing activities must cease within 10 meters of the discovery and the City of Phoenix Archaeology Office must be notified immediately and allowed time to properly assess the materials.

Historic Preservation

- No Historical structures or neighborhoods were mapped in the immediate vicinity or adjacent to the project area.

PROJECT NO. PW26220003-1 Asphalt replacement: 22nd Avenue & Lower Buckeye Road:

Asbestos & Lead Paint Testing (City HBM Policy)

- Per the City of Phoenix Hazardous Building Materials (HBM) Policy as well as Environmental Protection Agency (EPA) and Occupational Safety & Health Association (OSHA) requirements, asbestos and lead paint testing of materials planned for disturbance must be conducted prior to start of construction.
- Compliance with the City of Phoenix HBM Policy for this project may be achieved either through utilizing a certified asbestos and lead inspector through your contract or utilizing the Office of the City Engineer's Environmental Section which oversees on-call contracts for these inspection services. Please contact Tariq Abdellatif at 602-534-5628 or tariq.abdellatif@phoenix.gov for additional information.

Clean Water Act Section 402 / Phoenix Code 32C

- Less than 1 acre of ground disturbance will occur during project work. The contractor must comply with Phoenix City Code 32C.

Natural Resources

- Impacts to vegetation are not expected. Due to the proximity of landscaped vegetation, the Migratory Bird Treaty Act (MBTA) flyer shall be provided to the contractor prior to the start of construction. The MBTA flyer is attached.

Clean Water Act Section 404/401

- No potential Waters of the U.S. are present in the affected project area. No Clean Water Act Section 404 permitting is required.

Archaeology

- No known archaeological sites are located within this project area.
- No archaeological work is necessary for this project. However, if any archaeological materials are encountered during construction, all ground-disturbing activities must cease within 10 meters of the discovery and the City of Phoenix Archaeology Office must be notified immediately and allowed time to properly assess the materials.

Historic Preservation

- There is a historic structure in the vicinity of the project that is not expected to be impacted by the project. No archaeological surveys or nest surveys are required.

The following civil engineering tasks are required on each of the projects:

ST83140112 Drainage Improvements: 22nd Avenue & Lower Buckeye Road

The scope of work involves construction of storm drain system with an underground precast concrete modular vault for stormwater storage, grated catch basins, storm drain connector pipes, new drywells, existing drywell maintenance and pavement re-construction.

ST83140117 Drainage Improvements: 18th Street & Pinchot Avenue

The scope of work for this project includes construction of storm drain lateral system along:

- Catalina Drive & Pinchot Avenue

The work involves construction of 18" storm drain lateral system with three catch basins and three manholes in Pinchot Drive and an 18" and 24" storm drain in Catalina Drive that will tie into a new manhole on an existing 60" Storm Drain in 16th Street.

ST83140118 Drainage Improvements: Westwood 23rd Avenue & Devonshire Avenue

The scope of work for this project includes construction of storm drain lateral system along:

- Indian School Road and 28th Street

The work involves construction of 18" storm drain lateral system with two catch basins and a new manhole tied into an existing 30" storm drain system flowing west within Indian School Road.

ST83140124 Drainage Improvements: 48th Place & East Flower Street

The scope of work for this project includes construction of storm drain lateral system at the Intersection of 48th Place and East Flower Drive, through a drainage easement located along the east and south sides of the residential lot located at 4809 East Flower Street, across 48th Street to the west and tying into the existing Old Cross Cut Canal concrete box culvert.

The work involves construction of a 30" storm drain system, two catch basins, four manholes and a connection to an existing box culvert. In addition, the work will include miscellaneous landscape restoration, concrete and block wall removal and replacement and a waterline relocation at the intersection of 48th Place & East Flower Drive.

PW26220003-1 Asphalt Replacement: 22nd Ave & Lower Buckeye Rd

The scope of work involves re-paving 6,400 SQ. YD. of the existing parking lot for City Clerk site, re-routing an existing 12" storm drain to a proposed underground stormwater storage facility, and provide slope and erosion protection at the south end of the parking lot adjacent to W. Lower Buckeye Rd.

5. **104 SCOPE OF WORK, Add** the following to **Subsection 104.1.2 MAINTENANCE OF TRAFFIC:**

ADA AND ANSI ACCESS OF PREMISES DURING CONSTRUCTION

Contractor shall maintain existing ADA and ANSI accessibility requirements during construction activities in an occupied building or facility. ADA and ANSI accessibility requirements shall include, but not be limited to, parking, building access, entrances, exits, restrooms, areas of refuge, and emergency exit paths of travel. Contractor shall be responsible for the coordination of all work to minimize disruption to building occupants and facilities.

6. **104 SCOPE OF WORK, Add** the following to **Subsection 104.1.4 CLEANUP AND DUST CONTROL:**

The Contractor shall use a power pick-up broom as part of the dust control effort. No separate measurement or payment will be made for cleanup or dust control, or for providing a power pick-up broom on the job.

7. **105 CONTROL OF WORK, Add** the following to **Subsection 105.1, AUTHORITY OF THE ENGINEER:**

1. **CONTRACT ADMINISTRATION**

The definition of "Engineer" shall read as follows:

"Engineer": All references to "Engineer" in these contract bid documents, including the MAG Specifications, shall mean City Engineer.

2. **PRECONSTRUCTION CONFERENCE**

After completion of the contract documents, to include bonds, insurance and signatures and prior to the commencement of any work on the project, the Street Transportation Department, DCM Division, (telephone 602-4952050), will schedule a Pre-Construction Conference. This will be held at 1034 East Madison Street, Phoenix, Arizona.

Construction administration will be provided by City of Phoenix, Street Transportation Department, Design and Construction Management (DCM) Division.

The purpose of this conference is to establish a working relationship between the Contractor, utility firms and various City agencies. The agenda will include critical elements of the work schedule, submittal schedule, cost breakdown of major lump sum items, payment application and processing, coordination with the involved utility firms, emergency telephone numbers for all representatives involved in the course of construction and establishment of the notice to proceed date. The Contractor shall also provide copies of all purchase orders and/or contracts with DBE subcontractors and suppliers used to meet the subcontract goal programmed for this project.

Minimum attendance by the Contractor shall be a responsible company/corporate official, who

is authorized to execute and sign documents on behalf of the firm, the job superintendent and the Contractor's safety officer.

3. **AUTHORIZATION OF THE ENGINEER**

The City may, at its discretion and without cause, order the Contractor in writing to stop and suspend work. Immediately after receiving such notice, the Contractor shall discontinue advancing the work specified under this Agreement.

Such suspension shall not exceed one hundred and eighty (180) consecutive days during the duration of the project.

The Contractor may seek an adjustment of the contract price and time, if the cost or time to perform the work has been adversely impacted by any suspension or stoppage of work by the City.

8. **105 CONTROL OF WORK, Add** the following to **Subsection 105.2 PLANS AND SHOP DRAWINGS:**

The Contractor shall submit as many of the required shop drawings and product data submittals at the Pre-Construction meeting as practical and possible. All shop drawings and product data submittals shall be submitted sufficiently in advance to allow adequate time for City review(s) and approval. The Contractor shall submit early enough to allow enough time for reviews based on the assumption that a submittal may be marked "Revise and Resubmit" or "Rejected", requiring the Contractor to modify the submittal and resubmit for additional review(s) until acceptance.

A separate transmittal shall be used for each specific item type, class of material or equipment for which a submittal is required. Multiple items under one transmittal will only be allowed when the items taken together constitute a complete manufacturer's package or are so functionally related that the entire package should be reviewed as a whole. The contractor shall submit six (6) hard copies of each shop drawing for review. **Email or FAX submittals will not be accepted.**

The Contractor shall allow up to four (4) weeks for City review for each submittal. Some submittals may be simple and straightforward and may not require the full four (4) weeks, but other more complex submittals may take the full four (4) weeks.

9. **105 CONTROL OF WORK, Add** the following to **Subsection 105.7 COOPERATION BETWEEN CONTRACTORS**

Other Contractors are expected to be working in or near the area of this contract. The Contractor shall conduct his work as specified in MAG Section 105.7.

10. **105 CONTROL OF WORK, Delete** **Subsection 105.8 CONSTRUCTION STAKES, LINES AND GRADES** and substitute the following

Description

The work under this section shall consist of furnishing all materials, personnel and equipment necessary to perform all surveying, staking and verification of the accuracy of all points which have been provided by the Engineer in the project plans.

Included in this work shall be all calculations required for the satisfactory completion of the project in conformance with the plans and specifications. The work shall be done under the direction of a registered professional surveyor employed by the Contractor.

Measurements of all removals and pay quantity items will be the responsibility of the Engineer.

When utility adjustments are a part of the contract, the Contractor shall perform and be responsible for locating, tying and untying all manholes and valves that are discovered during the course of the contract. The Contractor shall set all survey points, stakes and references necessary for carrying out all such adjustments.

During installation and/or relocation of new water lines, valves, water meters and service connections, fire hydrants, sewer lines, sewer taps, clean outs, manholes, and other similar assets, the contractor will record the final as-built location and provide additional information related to cost, manufacturer and model numbers in a form provided by the Engineer.

The Contractor shall furnish all traffic control, including flagging for survey and staking operations. Traffic control shall be in accordance with the requirements of the City of Phoenix Barricade Manual.

The Contractor will keep field notes in bound field books. These books will be available for inspection by City personnel at all times and shall become the property of the City of Phoenix upon completion of the project.

Construction Staking Requirements

Staking will be performed in accordance with the City of Phoenix's Survey Section Standard Requirements for Staking, As-Builts and Quantity Calculations, plus any special addenda provided by the Engineer. The Contractor will provide to the Engineer in writing, for the Engineer's approval, any special procedures that will be used for construction survey staking completion.

The project plans will include all the required benchmark and horizontal information to establish survey control on the project site and to complete the proper layout of the work. The project will identify two City of Phoenix Benchmarks, and where applicable, identify additional temporary benchmarks at other convenient locations. After the Contractor has verified the accuracy of the control points established by the City, the Contractor shall set all stakes necessary for construction in accordance with the City of Phoenix Survey Section Standard Requirements.

If errors are discovered during the verification process and control points do not agree with the information shown in the plans, the Contractor shall promptly notify the Engineer in writing, and explain the problem in detail. The Engineer will advise the Contractor of any corrective actions which may be necessary.

If errors are discovered during the verification process and control points do not agree with the geometrics shown in the plans, the Contractor shall promptly notify the Engineer in writing, and explain the problem in detail. The Engineer will advise the Contractor of any corrective actions which may be necessary.

The Contractor shall exercise care in the preservation of stakes, references, benchmarks and shall reset them when they are damaged, lost, displaced or removed.

Any discrepancies in grade, alignment, locations or dimensions detected by the Contractor shall be brought to the attention of the Engineer by letter. No changes in the project plans will be allowed without the approval of the Engineer.

The Engineer reserves the right to make inspections and random checks of any portion of the staking and layout procedure. If, in the Engineer's opinion, the work is not being performed in the manner that will assure proper control and accuracy, the Engineer will order any or all of the staking and layout work redone at no additional cost.

If any portion of the Contractor's staking and layout work is ordered redone, resulting in additional rechecking by the Engineer, the City shall be reimbursed for all costs for such additional checking. The amount of such costs will be deducted from the Contractor's progress payment.

Inspection of the Contractor's layout by the Engineer and the acceptance of all or any part of it shall not relieve the Contractor of their responsibility to secure the proper dimensions, grades and elevations for the work.

Record Drawings

The Contractor shall maintain a record drawing (redlines) at the job site. These shall be kept legible and current and shall show all changes or work added in a contrasting, reproducible color. Two weeks prior to issuance of substantial completion, the Contractor shall submit, prior to final inspection, corrected drawings showing the location of all utility services, controller, pipe, valves and wiring. The Engineer shall be the sole judge as to the acceptability of the record plans and receipt of an acceptable set is a pre-requisite for final payment.

Prior to final acceptance, the Contractor will provide a complete as-built set, sealed by a Registered Professional, showing all field modifications and final elevation, stations and offset of the completed improvements. For construction related to sewer, and water facilities, and other utilities, as-built information may be requested at the Engineer prior to completion of as-builts at no additional cost. The as-built shall be prepared in accordance with the requirements of this section and other applicable special provisions for this project. Additional As-built requirement can be found on the Streets Transportation Department Website, under the Community Reference Materials.

Measurement

Construction surveying and layout will be measured as a single complete unit of work.

A contingency item, Two-person survey party will be measured by the hour to the nearest half (1/2) hour. This item will only be measured for payment when the Engineer requires extra work. The Engineer will require field notes and/or invoice to validate the additional time.

Payment

Payment for construction surveying and layout will be by the lump sum. No additional payment will be made for maintaining record drawings, preparation of final as-builts, and other work identified under this section.

The item of two-person survey party is a contingent item and is established for the purpose of compensating the Contractor for additional staking and layout required as a result of extra work ordered by the Engineer. Payment will be made at the predetermined unit price shown on the bidding schedule for the survey party or parties used. The Engineer will be the sole judge as to whether the additional work shall be performed by the Contractor or by City forces. The amount per hour for a two-person survey party includes the cost of all work necessary to complete the extra work.

No payment will be made for the resetting of stakes, references, benchmarks and other survey control.

11. 105 CONTROL OF WORK, Add the following to Subsection 105.15 ACCEPTANCE, paragraph (B) Final Acceptance:

1. SUBSTANTIAL COMPLETION

The work may be judged substantially complete when all construction, including all applicable ADA requirements, has been completed with the possible exception of final inspection punch

list work. The purpose of granting or acknowledging substantial completion is to stop contract time. This is particularly important to the Contractor if contract time is exhausted or nearly so and/or punch list work is anticipated to extend beyond the allotted time. Granting of substantial completion will eliminate the possibility of incurring liquidated damages or additional liquidated damages beyond the substantial completion date, whichever case may apply.

In the event that the Engineer grants substantial completion, the Contractor shall have thirty (30) days thereafter to complete punch list work, unless additional time is granted--in writing--by the Engineer. In no case shall a Contractor be granted more than thirty (30) days to complete punch list work, unless there are extenuating circumstances such as delay in shipment of a specialized piece of equipment, labor strike, or other circumstances beyond the Contractor's control which would necessitate a further time extension.

2. PENALTY FOR FAILURE TO COMPLETE PUNCH LIST WORK WITHIN SPECIFIED TIME

In the event the Contractor fails to complete the punch list work within thirty (30) days following the contract completion date, or in the case of specialized situations within the additional time allotted by the Engineer, the Contractor may be declared in default, and the Engineer may order the work completed by others.

In the event of default, as described herein, the Engineer shall withhold from the Contractor's final payment, an amount equal to at least twice the estimated cost of the remaining work. In addition, the Engineer shall withhold the retention deducted from contract progress payments until all punch list work has been satisfactorily completed, whereupon twice the amount of the actual cost of completing the work shall be deducted from the Contractor's final payment and the remaining funds, if any, including the contract retention, shall be released in accordance with the conditions set forth in contract retention.

3. CONTRACT RETENTION

This project shall not be considered complete until all work has been completed, including punch list work. Under no circumstances shall a Contractor receive any portion of the legally retained progress payments until the City has granted a final acceptance and/or acknowledged substantial completion. The following conditions shall apply to each case:

1. Substantial Completion: The Engineer may reduce outstanding contract retention to not less than one (1) percent of the total contract amount, upon granting substantial completion, if the value of the punch list work is estimated to be less than one (1) percent of the total contract.
2. Project Acceptance: Project acceptance implies that all punch list work is done and the improvements have been accepted by the City. Under these conditions, the retention will be fully released to the Contractor subject only to the signing of the standard claims affidavit and hold harmless clause required for all contracts.
3. Final Release of Contract Retention and/or Release of More Than Ninety (90) Percent of the Contract Funds: Prior to final payment and release of monies retained and/or in the case of substantial completion where the Contractor has requested a reduction in contract retention, the Contractor will be required to sign a claims affidavit agreeing to hold the City harmless from any and all claims arising out of the contract.

12. 106 CONTROL OF MATERIALS: Add the following new paragraphs:

106.17 Construction Materials:

A construction material, when used on a federal-aid construction project shall comply with the

requirements of Build America, Buy America (BABA) Act specified in Title IX, Subtitle A, Part 1, Sections 70901 and 70911-70918 (Pub. L. No. 117-58 §§ 70901; §§ 70911-70918) of the Infrastructure Investment and Job Act (IIJA).

A “construction material” that is permanently incorporated on the project shall include an article, material, or supply that is or consists primarily of the following:

1. Non-ferrous metals;
2. Plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables);
3. Glass (including optic glass);
4. Lumber; or
5. Drywall.

Items manufactured through a combination of either two or more materials listed above, or at least one of the materials listed above and a material not listed shall be considered as a manufactured product, rather than as a construction material.

Build America, Buy America provisions specified for manufactured products in Section 70912(6)(B) of the IIJA, do not apply to federal-aid construction projects per FHWA’s existing statutory requirement applicable to manufactured products. A “manufactured product” is considered to be an item that undergoes one or more manufacturing processes before the item can be used on a federal-aid construction project.

Construction materials shall not include cement and cementitious materials; bituminous materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives.

All construction materials shall be produced in the United States. This means, all manufacturing processes to produce the construction materials shall occur in the United States. All manufacturing processes for construction materials shall mean the final manufacturing process and the immediately preceding manufacturing stage for the construction material.

The contractor shall furnish the Engineer with Certificates of Compliance, conforming to the requirements of Subsection 106.05 of the specifications, which shall state that the construction materials incorporated in the project meet the requirements specified herein. Certificates of Compliance shall also certify that all manufacturing processes to produce construction materials occurred in the United States.

Convict-produced materials are prohibited in accordance with the requirements of 23 CFR 635.417.

13. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**, Add the following to **Subsection 107.1, LAWS TO BE OBSERVED, paragraph (C)**:

While every effort has been made to Blue Stake all known utilities, and to research and show on the plans all existing underground utilities based on the best available information, it shall be the Contractor’s responsibility to locate and pothole all existing utilities sufficiently in advance of anticipated new underground construction to identify any potential conflicts and allow reasonable time for the Engineer to determine solutions. Any claims for additional compensation or work required due to the Contractor’s non-compliance with this provision shall not be considered for payment by the City.

14. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**, Add the following new paragraphs to **Subsection 107.1, LAWS TO BE OBSERVED**:

(A) FAIR TREATMENT OF WORKERS

The Contractor shall keep fully informed of all Federal and State laws, County and City ordinances,

regulations, codes and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any way affect the conduct of the work. He shall at all times observe and comply with all such laws, ordinances, regulations, codes, orders and decrees; this includes, but is not limited to laws and regulations ensuring fair and equal treatment for all employees and against unfair employment practices, including OSHA and the Fair Labor Standards Act (FLSA). The Contractor shall protect and indemnify the Contracting Agency and its representatives against any claim or liability arising from or based on the violation of such, whether by himself or his employees.

(B) DESERT TORTOISE MITIGATION

As stated in the Arizona Interagency Desert Tortoise Team (AIDTT) Management Plan (1996), if a desert tortoise is found in a project area, activities should be modified to avoid injuring or harming it. If activities cannot be modified, tortoises in harm's way should be moved in accordance with Arizona Game and Fish Department's "Guidelines for Handling Sonoran Desert Tortoises Encountered on Development Projects", revised October 23, 2007 (or the latest revision), included in these contract provisions. Taking, possession, or harassment of a desert tortoise is prohibited by State law, unless specifically authorized by Arizona Game and Fish Department.

(C) BURROWING OWLS MITIGATION – MIGRATORY BIRD TREATY ACT OF 1918

While no burrowing owls have been seen at the project site, small animal burrows likely used by rodents and cottontail rabbits are present. In the event that burrowing owls are found on the site, the project shall comply with the Migratory Bird Treaty Act of 1918 and relocate the birds prior to grading. A contact for relocation of burrowing owls is Bob Fox or Greg Clark of Wild at Heart, 31840 North 45th Street, Cave Creek, AZ 85331, 480-595-5047.

15. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC, Add** the following to **Subsection 107.2, PERMITS:**

1. **STORM WATER POLLUTION PREVENTION PLAN AND AZPDES PERMIT**

Any project that disturbs 1 acre or more of the ground surface requires the Contractor to obtain an AZPDES permit and prepare a SWPPP. This project **does** require an AZPDES permit and SWPPP.

2. **DUST PERMIT**

Any project that disturbs more than 1/10 acre of soil requires an earthmoving permit from Maricopa County. Information and forms can be found at:

www.maricopa.gov/aq/divisions/permit_engineering/applications/Default.aspx

To facilitate and encourage strict compliance with the Maricopa County Air Pollution Control Regulations pertaining to fugitive dust control, the Contractor shall submit the following documentation to the Engineer at the Pre-Construction meeting prior to conducting any earth moving or dust generating activities under the Contract.

- a. Copy of a valid Maricopa County Earth Moving (Dust Control) Permit applicable to the work or services under the Contract.
- b. Copy of the Dust Control Plan applicable to the work or services under the Contract.
- c. Documentation that all of the Contractor's on-site project managers have received the Comprehensive or Basic dust control training as required by Maricopa County Rule 310 based on project disturbed acres.

For construction sites where 5-acres or more are disturbed, the Contractor shall designate and identify to the City an individual who has completed the dust control training as required for the site Dust Control Coordinator. The Dust Control Coordinator shall be present on-site all times that earth moving or dust generating activities are occurring and until all ground surfaces at the site have been stabilized.

For construction sites less than 1-acre, the Contractor shall designate an individual who has completed Basic Training to be on site at all times that earth moving or dust generating activities are occurring.

The Contractor shall notify the Engineer within twenty-four (24) hours of any inspection, Notice of Violation, or other contact by the Maricopa County Air Quality Department with it or any of its subcontractors regarding the work or services under the Contract. A copy of any written communications, notices or citations issued to Contractor or any of its subcontractors regarding the work or services under the Contract shall likewise be transmitted to the Engineer within twenty-four (24) hours.

The Contractor shall prevent any dust nuisance due to construction operations in accordance with MAG Specifications, Section 104.1.3, Cleanup and Dust Control. The Contractor shall use a power pick-up broom as part of the dust control effort. No separate measurement or payment will be made for cleanup or dust control, or for providing a power pick-up broom on the job.

The Contractor agrees to indemnify and reimburse the City for any fine, penalty, fee or monetary sanction imposed on the City by Maricopa County arising out of, or caused by the performance of work or services under the Contract. The Contractor shall remit payment of the reimbursable sum to the City within thirty (30) days of being presented with a demand for payment from the City.

3. TEMPORARY RESTRICTION AND CLOSURE SYSTEM (TRACS) PERMIT

The Contractor shall obtain a TRACS permit for any construction that restricts access (partial or complete closures) on Major/Collector public streets, or complete closures on Local streets, sidewalks, bike lanes and alleys. The Contractor shall obtain this permit in accordance with the City of Phoenix Traffic Barricade Manual, latest edition. The Contractor shall follow all requirements of the TRACS permit during construction. The Contractor shall obtain this permit before the Notice to Proceed date. Any construction delays caused by non-compliance with the TRACS permit or the City of Phoenix Traffic Barricade Manual requirements shall be the responsibility of the Contractor.

4. DEMINIMUS DISCHARGE PERMIT

As required, if the Contractor anticipates the discharge of any amount of water from the City water or wastewater system during construction, the Contractor shall be responsible for obtaining a DeMinimus Permit from the Arizona Department of Environmental Quality (ADEQ) for any discharge that will reach "waters of the U.S.", either directly or indirectly, and complying with all requirements of that permit. This includes all compliance reporting required by the permit. No separate payment will be made for obtaining or complying with this permit.

5. OTHER PERMITS

The Contractor may be required to obtain other permits from other agencies, such as the Arizona Department of Transportation (ADOT) or the Flood Control District of Maricopa County (FCDMC) before beginning work or restricting traffic in their right-of-way. The Contractor will be required to obtain these permits and comply with their requirements.

16. 107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC, Revise the title of Subsection

107.4 ARCHAEOLOGICAL REPORTS to 107.4 ARCHAEOLOGICAL MONITORING AND DISCOVERIES, and add the following:

Archaeological monitoring may be required within the limits of the project during construction. The Contractor must coordinate all ground disturbing work with the archaeologist(s) and provide a current work schedule to facilitate the archaeologist's investigation and monitoring of all ground disturbing work within the area(s) of interest. When archaeological materials are discovered, the Contractor must stop work immediately within a 10-meter zone of the discovery, secure the area, and immediately notify the on-site archaeologist(s) who must then contact the City Archaeology Office (602-495-0901) or the Street Transportation Environmental Section at 602-534-3747, who will coordinate with the City Archaeology Office. The Contractor must not recommence work in the area of discovery until directed in writing by the City Archaeology Office.

If suspected archaeological materials are discovered during construction without an archaeologist present, the Contractor must stop work immediately within a 10-meter zone of the discovery, secure the area, and immediately notify the City Archaeology Office (602-495-0901). The Contractor must not recommence work in the area of discovery until directed in writing by the City Archaeology Office.

In 1990, the Arizona legislature amended two state laws (Arizona Antiquities Act & State Historic Preservation Act) that protect human burials and associated artifacts on both private and state land. As specified in these laws and rephrased below:

1) A person shall not knowingly excavate in or upon any historic or prehistoric archaeological site, except when acting as a duly authorized agent of an institution or corporation organized for scientific, research or land use planning purposes. [Arizona Revised Statute §41-841(A) - Archaeological Discoveries] Any person, institution or corporation violating any provision of this article is guilty of a class 2 misdemeanor. [A.R.S. §41-846 - Violation]

2) A person who knowingly excavates in violation of A.R.S. §41-841 is guilty of a class 5 felony pursuant to Arizona Criminal Code- Title 13. A second or subsequent violation under this subsection is a class 3 felony. [A.R.S. 17 .OJ - Excavating Certain Sites].

A class 5 felony carries potential penalties of up to two years in prison. If a City of Phoenix (City) project may impact historic or pre-historic archaeological resources, the guidelines described above must be adhered to. Therefore, no subsurface disturbance activities related to this without having an archaeological consultant on-site prior to and during this project's ground disturbance activities.

The City of Phoenix Office of the City Engineer is requesting that the Project Archaeological Requirements Acknowledgment Form is completed for all City sponsored or managed projects involving ground subsurface disturbance activities in areas that may include archaeological resources, as determined by the City of Phoenix Archaeology Office (CAO). If archaeological monitoring is required on a project, a City Archaeological Monitoring Acknowledgment form will be provided for your review and signature. The guidelines and the provisions in the Terms and Conditions of the Archaeological Monitoring Form must be followed as prescribed on the form and referenced above in this section. Penalties for non-compliance are detailed on the Archaeological Monitoring Form. Failure to comply with the requirements of this acknowledgment form and the City contract may constitute a breach of contract

17. 107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC, Modify Subsection 107.8, USE OF EXPLOSIVES as follows:

Replace the words "Uniform Fire Code" with "Phoenix Fire Code".

18. 107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC, Add the following to Subsection 107.8, USE OF EXPLOSIVES:

NO BLASTING will be allowed on this project.

19. **107 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC**, Add the following to **Subsection 107.11, CONTRACTOR'S RESPONSIBILITY FOR UTILITY PROPERTY AND SERVICES**:

1. **UNDERGROUND FACILITIES**

The Contractor will make whatever investigation it deems necessary to verify the location of underground utility facilities. If such facilities are not in the location shown in the drawings, then (regardless of whether this is discovered prior to or during construction) the contractor's remedies, if any, pursuant to Art. 6.3, Chapter 2, Title 40, A.R.S. (A.R.S. 40360.21 through 40360.32, "Underground Facilities"), shall be the contractor's sole remedy for extra work, delays and disruption of the job, or any other claim based on the location of utility facilities. Locations of utility facilities shown on drawings furnished by the City are to be regarded as preliminary information only, subject to further investigation by the contractor. The City does not warrant the accuracy of these locations, and the contractor, by entering into this contract, expressly waives and disclaims any claim or action against the City under any theory for damages resulting from location of utility facilities.

The Contractor shall be responsible for obtaining all Blue Stake utility location information, and for performing all requirements as prescribed in A.R.S. 40-360.21 through .29, for all underground facilities, including those that have been installed on the current project, until the project is accepted by the City.

At least two (2) working days prior to commencing any excavation, the Contractor shall call the BLUE STAKE CENTER, between the hours of 7:00 a.m. and 4:30 p.m., Monday through Friday for information relative to the location of buried utilities. The number to be called is as follows:

Maricopa County (602) 263-1100

2. **UTILITY-RELATED CONSTRUCTION DELAY DAMAGES CLAIM PROCEDURES**

The following procedure is intended to provide a fair and impartial process for the settlement of construction delay claims associated with unknown or improperly located utility facilities.

The Contractor shall immediately notify, in writing, the Project Engineer of any potential utility-related delay claim.

The Contractor shall immediately notify the appropriate liaison of the affected utility verbally, followed by a written notification.

The Contractor shall coordinate an investigation of the situation with the affected utility and the City's Utility Coordinator. After resolution, the Contractor will provide written notification of the settlement of the claim to all affected parties. If the affected utility makes a decision to handle negotiations for a claim, their personnel will be responsible for monitoring the project and all negotiations with the Contractor regarding the claim.

The Contractor shall determine to document requirements of the affected utility for their acceptance of responsibility for the claims. The Contractor shall provide four (4) copies of the required documentation to the utility involved and two (2) copies of this documentation to the Project Engineer. The Contractor shall obtain written confirmation from the utility company involved of their documentation requirements.

3. **PROTECTION OF WATER TRANSMISSION MAINS**

This project is expected to work in the vicinity or cross 24-inch and larger water transmission mains. The contractor shall be responsible to develop and implement a Maintenance of Plant Operations (MOPO) as required by the guidelines included in these specifications as well as the other requirements found on the current Design Standards Manual for Water and Wastewater Systems. The MOPO will outline the safety measures to be taken to complete the work and maintain the integrity of the transmission main. As part of any contingency measures, the contractor to perform repairs will need to develop approved repair procedures and show experience in the repair of large transmission mains.

Request to dewater applicable transmission mains must be approved by the Water Services Department Shutdown Committee. Contractor is advised that shutdown requests are subject to water supply availability and typically require a four month review period.

Any damage to the transmission mains during construction shall be repaired by the Contract at no additional cost to the City.

The contractor shall be responsible for all required subsurface investigation, limited construction methods, water and dewatering operations, contingency repair planning and implementation, proper disinfection and pressure testing, additional CLSM backfill, design and construction of temporary pipe support measures, as well as the need to have a section of matching diameter steel pipe with proper pressure rating. There will be no additional compensations for the developing and implementation of the MOPO, and related activities. The cost is considered included in the other construction bid items.

20. 108 COMMENCEMENT, PROSECUTION AND PROGRESS. Add the following to Subsection 108.2, SUBLETTING OF CONTRACT:

(F) PROMPT PAYMENT

1. Contractor Payment to Subcontractor or Supplier

Contractor shall pay its subcontractors or suppliers within seven (7) calendar days of receipt of each progress payment from the City. The Contractor shall pay for the amount of work performed or materials supplied by each subcontractor or supplier as accepted and approved by the City with each progress payment. In addition, any reduction of retention by the City to the Contractor shall result in a corresponding reduction to subcontractors or suppliers who have performed satisfactory work. Contractor shall pay subcontractors or suppliers the reduced retention within fourteen (14) days of the payment of the reduction of the retention to the Contractor. No Contract between Contractor and its subcontractors and suppliers may materially alter the rights of any subcontractor or supplier to receive prompt payment and retention reduction as provided herein. If the Contractor fails to make payments in accordance with these provisions, the City may take any one or more of the following actions and Contractor agrees that the City may take such actions: (1) to hold the Contractor in default under this agreement; (2) withhold future payments including retention until proper payment has been made to subcontractors or suppliers in accordance with these provisions; (3) reject all future bids from the Contractor for a period not to exceed one year from substantial completion date of this project; or (4) terminate agreement.

2. Alternative Dispute Resolution Between Contractor and Subcontractor or Supplier

If Contractor's payment to a subcontractor or supplier is in dispute, Contractor and subcontractor or supplier agree to submit the dispute to any one of the following dispute resolution processes within fourteen (14) calendar days from the date that any party involved gives written notice to the other party(ies): (1) binding arbitration; (2) a form of alternative dispute resolution (ADR) agreeable to all parties; or (3) a City of Phoenix facilitated mediation. When disputed claim is resolved through ADR or otherwise, the Contractor and subcontractor

or supplier agree to implement the resolution within seven (7) calendar days from the resolution date.

3. Inspection and Audit

Contractor, its subcontractors and suppliers shall comply with A.R.S. 35-214 and the City shall have all rights and remedies to inspect and audit the records and files of Contractor, subcontractor or supplier, as afforded the State of Arizona in accordance with the provisions of A.R.S. Section 35-214.

4. Non-Waiver

Should the City fail or delay in exercising or enforcing any right, power, privilege, or remedy under this Section, such failure or delay shall not be deemed a waiver, release, or modification of the requirements of this Section or of any of the terms or provisions thereof.

5. Inclusion of provisions in Subcontracts

Contractor shall include these prompt payment provisions in every subcontract, including procurement of materials and leases of equipment for this Agreement.

6. No Third-Party Benefits or Rights

Nothing contained in this Agreement is intended to benefit or confer any rights on any person or entity not a party to this Agreement, and no such person or entity, including but not limited to other Contractors, subcontractors or suppliers, may assert any claim, cause of action, or remedy against the City hereunder.

21. 108 COMMENCEMENT, PROSECUTION AND PROGRESS, Add the following to Subsection 108.4, CONTRACTOR'S CONSTRUCTION SCHEDULE:

No later than one (1) week after the Pre-Construction meeting (or one week after the Notice to Proceed date is firmly established), the Contractor shall submit to the Engineer, two (2) copies of a detailed Critical Path Model (CPM) chart outlining the detailed progress of all major and critical elements of the project by weeks, from beginning of project to end. The chart shall begin at the established Notice to Proceed date and progress on a calendar basis, week by week, to the end of the project.

The Contractor shall submit updated CPM charts as required by the Engineer. This shall typically be on a monthly basis. The required submittals of updated CPM charts may be less frequent than monthly, if approved by the Engineer.

Neither the City nor the Engineer shall accept liability or responsibility for the reasonable or workable nature of the CPM schedules prepared and submitted by the Contractor—that responsibility shall remain with the Contractor.

22. 108 COMMENCEMENT, PROSECUTION AND PROGRESS, Replace the first paragraph of Subsection 108.5, LIMITATION OF OPERATIONS:

The Contractor shall conduct the work at all times in such a manner and sequence that will assure the least interference with traffic and inconvenience to the public. The Engineer may require the Contractor to finish a section on which work is in progress before work is started on any additional sections if the opening of such section is essential to public convenience.

The Contractor shall begin construction with the work shown on the plan set labeled as project

ST83140124 48th PL & FLOWER ST, and the work shall progress in a prompt manner until all the work on this location is completed. The contractor shall coordinate and cooperate with the property owner to maintain access and use of the premises, mitigating impacts and inconveniences to the property owner at no additional cost.

The Contractor shall submit their preferred sequence to complete all four project locations (Project PW26220003 and ST83140112 are considered as two phases of one location). Unless approved in writing by the Engineer, the Contractor may not work at more than one of the four identified project locations identified in the bid package. If sequencing needs to be modified for some reason, Contractor shall inform the Engineer and obtain prior approval before changing sequencing.

23. 108 COMMENCEMENT, PROSECUTION AND PROGRESS, Add the following to Subsection 108.5, LIMITATION OF OPERATIONS:

1. WORK HOURS

Regular working hours shall be defined as one 8-1/2 hour shift per day, Monday through Friday, exclusive of City holidays.

Work in excess of regular working hours shall be defined as overtime. For overtime which becomes necessary, the Contractor shall make a written request to the Engineer at least eight (8) calendar days before the desired overtime. The request shall include the duration, dates, times, reason for overtime, and a statement of the consequences if overtime is not approved.

The Contractor shall not schedule any overtime work which requires inspection, survey, or material testing without written permission from the Engineer two (2) working days before the proposed overtime work. The Engineer reserves the right to deny the requested overtime. If an overtime request is denied, the Engineer may extend the contract time at no additional cost to the City, including extended overhead costs.

Unscheduled Overtime

Overtime that is not requested and approved in accordance with the above procedure shall be defined as unscheduled overtime. All costs (including appropriate overhead) shall be paid by the Contractor by deduction from the contract.

Emergency Overtime

An emergency is defined as work required for a situation that is not within the Contractor's control.

With the Engineer's approval, the Contractor will be permitted to work overtime without being responsible for paying the City's costs.

2. NIGHT WORK

Any proposed night work will be done in accordance with all City of Phoenix Ordinances. Night work will only be allowed upon submittal and approval of After-Hours Work in the Right-of-Way application. The Contractor will submit a comprehensive plan at the Preconstruction Conference that details the steps and methods of noise reduction during night working hours. This plan will address, but not be limited to the following: backup alarms, equipment noise, scheduling of excessively noisy construction phases, and material delivery times. Spotters, in lieu of backup alarms, may be required at night.

There will be no separate measurement or payment for work related to this item, the cost being considered incidental to the cost of contract items.

24. **108 COMMENCEMENT, PROSECUTION AND PROGRESS, Add the following to Subsection 108.10, FORFEITURE AND DEFAULT OF CONTRACT:**

City's Right to Perform and Terminate for Convenience

If the City provides the Contractor with a written order to provide adequate maintenance of traffic, adequate cleanup, adequate dust control or to correct deficiencies or damage resulting from abnormal weather conditions, and the Contractor fails to comply in a time frame specified, the City may have work accomplished by other sources at the Contractor's expense.

If Contractor persistently fails to (i) provide a sufficient number of skilled workers, (ii) supply the materials required by the Contract Documents, (iii) comply with applicable Legal Requirements, (iv) timely pay, without cause, Sub-consultants and/or Subcontractors, (v) prosecute the Contract Services with promptness and diligence to ensure that the Contract Services are completed by the Contract Time, as such times may be adjusted, or (vi) perform material obligations under the Contract Documents, then the City, in addition to any other rights and remedies provided in the Contract Documents or by law, shall have the rights set forth below.

Upon the occurrence of an event set forth above, City may provide written notice to Contractor that it intends to terminate the Agreement unless the problem cited is cured, or commenced to be cured, within seven (7) days of Contractor's receipt of such notice.

If Contractor fails to cure, or reasonably commence to cure, such problem, then City may give a second written notice to Contractor of its intent to terminate within an additional seven (7) day period.

If Contractor, within such second seven (7) day period, fails to cure, or reasonably commence to cure, such problem, then the City may declare the Agreement terminated for default by providing written notice to Contractor of such declaration.

Upon declaring the Agreement terminated pursuant to the above, City may enter upon the premises and take possession, for the purpose of completing the Work, of all materials, equipment, scaffolds, tools, appliances and other items thereon, which have been purchased or provided for the performance of the Work, all of which Contractor hereby transfers, assigns and sets over to City for such purpose, and to employ any person or persons to complete the Work and provide all of the required labor, services, materials, equipment and other items.

In the event of such termination, Contractor shall not be entitled to receive any further payments under the Contract Documents until the Work shall be finally completed in accordance with the Contract Documents. At such time, the Contractor will only be entitled to be paid for Work performed and accepted by the City prior to its default.

If City's cost and expense of completing the Work exceeds the unpaid balance of the Contract Price, then Contractor shall be obligated to pay the difference to City. Such costs and expense shall include not only the cost of completing the Work, but also losses, damages, costs and expense, including attorneys' fees and expenses, incurred by the City in connection with the re-procurement and defense of claims arising from Contractor's default.

If the City is found to have improperly terminated the Agreement for cause or default, the termination shall be converted to a termination for convenience in accordance with the provisions of this Agreement.

25. **108 COMMENCEMENT, PROSECUTION AND PROGRESS, Add the following to Subsection 108.11, TERMINATION OF CONTRACT:**

TERMINATION FOR CONVENIENCE

The Owner for its own convenience has the right for any reason and at any time to terminate the contract and require the Contractor to cease work hereunder. Such termination shall be effective at the time and in the manner specified in the notification to the Contractor of the termination. Such termination shall be without prejudice to any claims which the Owner may have against the Contractor. In the event of a termination for convenience, the Contractor shall be paid only the direct value of its completed work and materials supplied as of the date of termination, and Contractor shall not be entitled to anticipated profit or anticipated overhead or any other claimed damages from the Owner, Architect or the Engineer. If the City is found to have improperly terminated the Agreement for cause or default, the termination shall be converted to a termination for convenience in accordance with the provisions of this Agreement.

CANCELLATION OF CONTRACT FOR CONFLICT OF INTEREST

All parties hereto acknowledge that this agreement is subject to cancellation by the City of Phoenix pursuant to the provisions of Section 38511, Arizona Revised Statutes.

26. **109 MEASUREMENTS AND PAYMENTS, Add** the following to **Subsection 109.4.3, DUE TO EXTRA WORK:**

ALLOWANCE FOR EXTRA WORK

Contract allowance items are provided for the purpose of encumbering funds to cover the costs of possible change order work. The amount of the allowance item is determined by the Engineer and is not subject to individual bid pricing. All bidders shall incorporate the amount preentered in the bid proposal and shall reflect the same in the total amount bid for this project.

This allowance item provides an estimated funding to cover unforeseen changes that may be encountered and corresponding extra work needed to complete the contract per plan. Unforeseen extra work, if any, shall be as approved by the Engineer; for example, extension of unit bid prices, negotiated price or time and material, in accordance with MAG Specification Section 109.4 and 109.5.

It shall be understood that this allowance item is an estimate only and is based on change order history of similar projects. It shall not be utilized without an approved contract change order. It is further understood that authorized extra work, if any, may be less than the allowance item.

27. **109 MEASUREMENTS AND PAYMENTS, Add** the following to **Subsection 109.4 COMPENSATION FOR ALTERATION OF WORK:**

109.4.7 CHANGE ORDERS

Owner reserves the right to decrease adjustments made in any change order if, upon audit of Contractor's records, the audit discloses contractor provided false or inaccurate cost and pricing data in negotiating the change order. In enforcing this provision, the parties shall follow the procedure provided in the Federal Acquisition Regulation (FAR) clause 52.214-27, found in 48 CFR Part 52.

28. **109 MEASUREMENTS AND PAYMENTS Subsection 109.7, PAYMENT FOR BOND ISSUE AND BUDGET PROJECTS,** Delete the first three paragraphs in their entirety and replace with the following **Subsection 109.7, PAYMENT FOR BOND ISSUE AND BUDGET PROJECTS:**

1. PARTIAL PAYMENTS

The contracting agency will make a partial payment to the Contractor on the basis of an approved estimate prepared by the Engineer or the Contractor for work completed and

accepted through the preceding month. The notice to proceed date, which is designated for the specific project involved, will be used as the closing date of each partial pay period. Payment will be made no later than fourteen (14) days after the work is certified and approved. City shall review payment requests and make recommendation of approval or denial within seven (7) calendar days.

2. PAYMENT RETENTION

At the start of construction, ten percent of all pay requests shall be retained by the City to guarantee complete performance of the contract. When the work is fifty percent complete, this amount may be reduced to five percent providing that construction progress and quality of work is acceptable to the City. Any funds which are withheld from the contractor will be paid no later than sixty days after completion of the contract and settlement of all claims.

In lieu of retention, the contractor may provide as a substitute, an assignment of money market accounts, demand deposit accounts, or time certificates of deposit (CDs) from a bank licensed by Arizona, securities guaranteed by the United States, securities of the United States, the State of Arizona, Arizona counties, Arizona municipalities, Arizona school districts, or shares of savings and loan institutions authorized to transact business in Arizona. These securities are referred to as "Qualified Securities."

Qualified Securities deposited in lieu of retention must be deposited into a separate account with a bank having a branch located in the City of Phoenix and be assigned exclusively for the benefit of the City of Phoenix pursuant to the City's form of escrow and/or deposit agreement

Escrow Agreement and Deposit Agreement forms may be obtained from the Contract Specialist assigned to the project.

29. **109 MEASUREMENTS AND PAYMENTS**, Delete Table 109-1 in **Subsection 109.9, DOLLAR VALUE OF MAJOR ITEM**, and substitute the following:

<u>CONTRACT AMOUNT</u>	<u>MAJOR ITEM IS DEFINED AS ANY ITEM EQUAL TO OR GREATER THAN THE FOLLOWING</u>
Up to \$1 million	\$15,000 or 3%, whichever is greater
\$1 million to \$3 million	3% of the original contract amount to a maximum of \$75,000.00
\$3 million to \$5 million	2.5% of the original contract amount to a maximum of \$90,000.00
Over \$5 million	1.5% of the original contract amount to a maximum of \$125,000.00

CONTINGENCY ITEMS

Contingency items which fall under the definition of a major item are subject to negotiation if decreased by more than twenty (20) percent.

Contingency items shall not increase more than twenty (20) percent without being subject to renegotiation, regardless of the percentage of that item relative to the total contract amount.

30. **110 NOTIFICATION OF CHANGED CONDITIONS AND DISPUTE RESOLUTION**, Add the following to **Subsection 110.1 GENERAL**:

SOILS INFORMATION

The material boring logs and seismic refraction survey data shown on the plans or included in these specifications are included for the Contractor's convenience only. It is not intended to imply that the character of materials shown in the logs is representative throughout the project. **The soil borings are indicative of the soil characteristics only at the location and to the depth of each of the borings.**

Even if not specifically shown in the geotechnical information provided, the Contractor may encounter large cobbles, boulders, caliche, conglomerate, hard rock, perched groundwater, historic or prehistoric cultural resources, or other differing site conditions on this project. **No additional compensation will be made for any differing site condition that may be encountered.**

SPECIAL PROVISIONS

1. Add the following new Section, **232 STORM WATER POLLUTION PREVENTION – BEST MANAGEMENT PRACTICES:**

Description

Implementation of "Best Management Practices" (B.M.P.'s) to reduce stormwater pollution shall be undertaken by the Contractor on a multi-tiered, most cost-effective approach. The Contractor shall utilize the lowest-cost acceptable B.M.P. available to address each type of potential stormwater pollution situation encountered on the project. Should this prove ineffective in resolving the stormwater pollution problem, additional, higher-cost B.M.P.'s may need to be employed, upon approval by the City.

Construction Requirements

Typical multi-tiered B.M.P. approaches to construction operations may include:

A. ROADWAY SUBGRADE EXCAVATION:

1. Tier I - The excavated area will create, in effect, a temporary retention area. This may provide adequate control of storm runoff to prevent sediment from leaving the site. Pumping or other methods utilized to drain the excavation shall employ filter fabric or other filtering method to remove sediment before leaving the site or entering the storm drain system.
2. Tier II - Catch basin inlet protection (utilizing filter fabric, gravel, etc.) may be necessary should Tier I controls prove inadequate. Care shall be exercised to ensure that Tier II B.M.P.'s do not result in blockage of drainage and resultant flooding of adjacent properties.

B. OPEN PIPELINE TRENCHES:

1. Tier I - The open trench itself will act as a temporary retention area. The Contractor shall provide a low-cost, readily-installed/removed temporary device on the open end of the pipe to prevent sediment-laden stormwater from entering the pipe. This may consist of a temporary "plug" incorporating filter fabric, a temporary weir, or other device capable of removing sediment before allowing stormwater to enter the pipe. Care must be taken to prevent damming of floodwaters in the excavation that could result in "floating" the pipe.
2. Tier II - If Tier I protection does not prove satisfactory, the Contractor may need to install straw bales, sandbag berms, or temporary diversion dikes around the perimeter of the open excavation to prevent sediment-laden stormwater from entering the open excavation. Due to installation/removal time, such devices need only be installed during periods of likely precipitation and runoff. Earthen dikes are the preferred alternate, due to ease of installation and removal. Care must be taken to assure that runoff is not blocked to the extent that flooding of adjacent properties will result.

C. BACKFILLED PIPELINE TRENCHES:

1. Tier I - As with roadway subgrade excavations, pipeline trenches which have been backfilled but not yet paved will be several inches lower than adjacent pavement areas, and will

therefore act as temporary retention areas.

2. Tier II - If the "retention" provided by the backfilled area does not prevent sediment-laden runoff from leaving the excavated area, perimeter controls such as silt fence, straw bales, sandbag berms, or gravel filter berms may need to be installed around the downstream edge(s) of the backfilled area. As with open trenches, the selection of the appropriate measure, extent of its application, and time period during which it is needed will be dependent upon cost, site conditions, ease of installation/removal, and likelihood of precipitation/runoff. Again, care must be taken to ensure that diversion of stormwater onto adjacent properties does not result from these installations.

Another stormwater control method, which the Contractor may need to consider, is limiting the amount of area disrupted and therefore subject to sediment-laden stormwater runoff at any one time. Should such project phasing prove necessary due to the failure of other B.M.P.'s, the Contractor shall revise his construction activities accordingly, at no additional cost to the City.

Standards for installation of the above B.M.P.'s are provided in the Flood Control District of Maricopa County's "Drainage Design Manual for Maricopa County, Arizona, Volume III, Erosion Control". Installation and operation of B.M.P.'s shall be in accordance with that manual.

There shall be no separate measurement or payment for preparing or developing Storm Water Pollution Prevention Plans, or for preparing NOI's or NOT's or obtaining an AZPDES Permit, all these costs being considered incidental to the cost of the project.

Use of individual BMP items shall conform to the Contractor's approved Storm Water Pollution Prevention Plan (SWPPP).

Measurement and Payment

This project includes a pay item "ALLOWANCE FOR STORMWATER POLLUTION PREVENTION BEST MANAGEMENT PRACTICE (BMP'S)". The amount of this allowance is determined by the Engineer and is not subject to individual bid pricing. All bidders shall incorporate the amount pre-entered in the bid proposal and shall reflect the same in the total amount bid for this project.

Payment for various types of necessary BMP's shall be made from this allowance based on approved invoiced cost of the materials only, plus taxes, and a maximum 15 percent markup for overhead and profit. There will be no separate measurement or payment for the preparation or development of the Storm Water Pollution Prevention Plan; labor or equipment necessary to install, maintain or remove the BMP materials; moving existing BMP materials from one location to another on the same project; or constructing BMP swales or berms, all of these costs being considered incidental to the cost of the project.

2. **301 SUBGRADE PREPARATION**: Add the following to **Subsection 301.1, DESCRIPTION**:

The work under Subgrade Preparation consists of all excavating and grading work necessary to bring the existing surface to the section specified on the plans prior to the covering of the prepared subgrade with pavement base materials.

3. **301 SUBGRADE PREPARATION**, Delete **Subsections 301.7, MEASUREMENT, and 301.8, PAYMENT**, and substitute the following:

301.7 MEASUREMENT:

There will be no separate measurement for subgrade preparation. Measurements shown on the plans are for informational purposes.

301.8 PAYMENT

There will be no separate payment for subgrade preparation. The cost of all subgrade preparation shall be included with the cost of the removal and replacement of asphalt, curb, gutter, valley gutter, sidewalk, or other bid item.

4. **331 PLACEMENT AND CONSTRUCTION OF ASPHALT EMULSION MICRO-SURFACING TREATMENTS,**
Add the following to **Subsection 331.1 GENERAL:**

Pursuant to City of Phoenix Street Pavement Cut Policy, a micro seal pavement treatment must be applied to the half width of an arterial or collector street or the full width of a local street. The treatment must extend a minimum of 25 feet in both directions from the pavement cut(s).

Delete **Subsections 331.8, MEASUREMENT, and 331.9, PAYMENT,** and substitute the following:
331.8 MEASUREMENT:

Measurement for micro seal pavement treatment will be by the square yard, complete in place, including crack sealing per MAG 337.

331.9 PAYMENT

Payment for micro seal pavement treatment will be made under the bid item "MICROSEAL COAT & CRACK SEALING"

5. **332 PLACEMENT AND CONSTRUCTION OF ASPHALT EMULSION SLURRY SEAL TREATMENTS,** Add the following to **Subsection 332.1 GENERAL:**

Pursuant to City of Phoenix Street Pavement Cut Policy, a slurry seal pavement treatment must be applied to the half width of an arterial or collector street or the full width of a local street. The treatment must extend a minimum of 25 feet in both directions from the pavement cut(s). Type IV slurry seal shall be used on an arterial and collector streets and Type III slurry seal shall be used on a local street. For all pavement cut repair areas, crack fill and seal must be applied between existing and new pavement areas prior to any pavement treatment.

On Project ST8314024 On 48th Place and on East Flower Street, cool pavement product is to be substituted for slurry seal and micro seal coatings. The cool pavement shall be installed in accordance with the City of Phoenix "Cool Pavement Street Cut Guidance", March 2021.

Delete **Subsections 332.8, MEASUREMENT, and 332.9, PAYMENT,** and substitute the following:
332.8 MEASUREMENT:

Measurement for slurry seal pavement treatment and cool product on 48th PI and on East Flower St will be by the square yard, complete in place, including crack sealing per MAG 337.

332.9 PAYMENT

Payment for slurry seal pavement treatment will be made under the bid item "SLURRY SEAL COAT & CRACK SEALING". Payment for cool pavement treatment on 48th PI & East Flower St will be made under the bid item

“APPLY COOL PAVEMENT ASPHALT TREATMENT”

6. **336 PAVEMENT MATCHING AND SURFACING REPLACEMENT**, Add the following to **Section 336 PAVEMENT MATCHING AND SURFACING REPLACEMENT**:

PERMANENT PAVEMENT REPLACEMENT (ASPHALT CONCRETE)

Description

This special provision shall override the construction notes for pavement section shown on the plans. The pavement replacement sections shall be as follows:

Residential Street: 5 inches Type C-3/4 (two lifts) on 100% compacted native subgrade; or 2 inches Type D-1/2 on 3 inches Type C-3/4 on 100% compacted native subgrade; whichever best fits specific project needs.

Collector Street: 2 inches Type D-1/2 on 6 inches Type C-3/4 (two lifts) on 100% compacted native subgrade.

Major Arterial Street: 2 inches Type D-1/2 on 7 inches Type C-3/4 (two lifts) on 100% compacted subgrade.

The following pavement replacement sections shall apply to project ST83140112 22nd Ave & Lower Buckeye Rd:

Parking Lot Pavement: 3 inches Type C-3/4 on 6-inches of Aggregate Base Course

The following pavement replacement sections shall apply to project ST83140117 18th St & Pinchot Ave:

16th St: 6 inches Type C-3/4 (two lifts) on 6-in of Aggregate Base Course or match existing thickness if greater

Catalina Dr and Pinchot Ave: 5 inches Type C-3/4 (two lifts) on 6-in of Aggregate Base Course or match existing thickness if greater

The following pavement replacement sections shall apply to project ST83140118 Westwood 23rd Ave & Devonshire:

Jackson St: 10 inches Type C-3/4 (three lifts) over 7-in of Aggregate Base Course

16th Pl: 3 inches of Type C-3/4 over 6-in of Aggregate Base Course

Madison St: 4 inches of Type C-3/4 (two lifts) over 10-in of Aggregate Base Course

All other pavement sections will remain as per plans.

The following pavement replacement sections shall apply to project ST83140124 48th Pl & East Flower St:

48th St: 6 inches Type C-3/4 (two lifts) on 8-in of Aggregate Base Course or match existing thickness if greater

48th Place & Flower St: 5 inches Type C-3/4 (two lifts) on 100% compacted native subgrade

The following pavement replacement sections shall apply to project PW26220003-1 22nd Ave & Lower Buckeye Rd:

Parking Lot Pavement: 3 inches Type C-3/4 on 21-inches of Aggregate Base Course

Parking Lot Pavement Heavy Traffic Area: 4 inches Type C-3/4 on 21-inches of Aggregate Base Course

Measurement and Payment

Measurement and payment for permanent pavement replacement will be by the square yard, complete in place, including all necessary subgrade preparation and tack coat. In computing the pay quantity for trench patch pavement replacement, the field measurement along the centerline of the trench and the trench pay width as listed in MAG 336 will be used. When the longitudinal trench is only partially in the pavement, adjustments in the pay width will be made by the Engineer. Where required, Aggregate Base Course will be paid by the square yard for the thickness identified on these special provisions.

There will be no separate measurement or payment for trench backfill. The cost of the backfill is considered included in the cost of the pipe.

Payment will be made under bid items "ASPHALT CONCRETE FOR PERMANENT PAVEMENT REPLACEMENT"

7. **337 ASPHALT PAVEMENT CRACK SEALING AND CRACK FILLING**, Add the following to **Subsection 337.1 GENERAL**:

Crack sealing and crack filling must be applied to all pavement receiving a pavement treatment.

Delete **Subsections 337.6, MEASUREMENT, and 337.7, PAYMENT**, and substitute the following:
331.8 MEASUREMENT:

No separate measurement or payment will be made for crack sealing or crack filling. Payment will be made under the pavement treatment type.

8. **340 CONCRETE CURB, GUTTER, SIDEWALK RAMPS, DRIVEWAY AND ALLEY ENTRANCE**, Add the following to **Subsection 340.2.1 Detectable Warnings**; **Subsection 340.3.1 Detectable Warnings**; **Subsection 340.5 MEASUREMENT**; and **Subsection 340.6 PAYMENT**:

Add the following to **MAG Subsection 340.2.1 Detectable Warnings**:

Detectable warning material will meet the latest ADA requirements. Approved detectable warning material manufacturers include the following:

- a. Strongo, TekWay Dome-Tiles
- b. Tuftile, Cast Iron ADA Detectible Warning Plates
- c. Neenah Foundry, Cast Iron Detectable Warning Plate

Alternate materials may be submitted subject to review and approval prior to use. All detectable warnings will be of the same type and color within the project limits, unless otherwise specified.

Add the following subsection **MAG Subsection 340.2.1.1 Color and Contrast**:

Unless shown otherwise on the plans, the color of the detectable warning tiles to be used shall be terracotta color on grey concrete and yellow color on colored concrete sidewalk ramps – color to be approved by the Engineer.

Add the following to **MAG Subsection 340.3.6 Detectable Warnings:**

Detectable warning plates will be installed per manufacturer's recommended specifications. The layout of plates will be determined by the Contractor, and if necessary, pre-cut as needed prior to beginning the installation process to meet ADA placement requirements. Plates will not be cut to less than half their size. Plates will be cut as recommended by the manufacturer.

Add the following to **Subsection 340. 5 MEASUREMENT and 340.6 PAYMENT:**

Sidewalk Ramps, Measurement and Payment

Sidewalk ramps will be constructed in accordance with Phoenix Standard Details or special details called out on the plans.

Payment for sidewalk ramps will be made under the bid items for "CONCRETE CURB RAMP by Standard Detail "CURB AND GUTTER", and "VALLEY GUTTER, and will include all costs for labor, materials, equipment, forming, placement and finishing for complete sidewalk ramp installation. The cost of any special curb at the back of sidewalk ramps will be measured by the square foot and paid for as "CONCRETE CURB RAMP". The cost of installing truncated domes is included in the cost of "CONCRETE CURB RAMP".

Concrete Driveway and Sidewalk Slab Connections, Measurement and Payment

This work will consist of constructing concrete driveway and sidewalk slab connections to match existing at locations shown on the plans or requested by the Engineer. The slab thickness will conform to the applicable driveway or sidewalk detail.

Measurement and payment for this work will be made per square foot complete and in place for the appropriate pay item "CONCRETE DRIVEWAY ENTRANCE", "CONCRETE SIDEWALK" or "CONCRETE APRON".

Mountable Curb and Gutter, Measurement and Payment

Mountable curb and gutter will be constructed in accordance with MAG Detail 220-2, Type E, where shown on the plans.

Measurement will be made per linear foot complete in place, and payment will be made under the bid item for "COMBINED CONCRETE CURB AND GUTTER, STD. DETAIL 220, TYPE 'A', H=6" and "COMBINED CONCRETE CURB AND GUTTER, STD. DETAIL 220, TYPE 'A', H=4".

9. **345 ADJUSTING FRAMES, COVERS, VALVE BOXES, AND WATER METER BOXES**, Revise **Subsection 345.1 DESCRIPTION**, **Subsection 345.5 MEASUREMENT**, and **Subsection 345.6 PAYMENT** as follows:

Delete **Subsection 345.1 DESCRIPTION** in its entirety, and substitute the following:

Adjustment of manhole frames, covers, clean outs, valve boxes, survey monument boxes (and water meter boxes if located in the pavement) to finish grade shall be done AFTER placement of the final surface course pavement.

Any missing manhole frames or covers and water valve or survey monument box hardware (such as lids, for example) shall be reported in writing to the Engineer during the initial lowering process to allow arrangements to be made to obtain replacement hardware. Missing hardware that is properly reported to the Engineer will be

supplied to the Contractor by the City of Phoenix or the appropriate private utility company.

Replacement of any missing hardware that was not reported to the Engineer initially as specified, that comes up missing later when these facilities are brought back up to finish grade, shall be the full responsibility of the Contractor, at no additional cost to the City.

In addition, all manhole frames and covers, water valve and survey monument boxes or other related hardware removed by the Contractor during the lowering process shall be maintained in a secure area, and the Contractor shall bear full responsibility for this hardware material. Any hardware lost by the Contractor shall be replaced in-kind, at no additional cost to the City.

All areas of existing pavement removed for adjustments that will be subjected to traffic prior to placement of final concrete collar rings shall be temporarily filled with hot-mix Type D-1/2 asphalt and roller-compacted flush with the adjacent pavement. There shall be no separate measurement or payment for this temporary hot-mix asphalt or placement or subsequent removal, the cost being considered incidental to the cost of the adjustment.

After removal of asphalt pavement in the area of adjustment, and prior to placement of the final concrete collar ring around the frame or valve box (as shown on City of Phoenix Detail P-1391 and MAG Detail 422), the asphalt pavement in proximity of the adjustment shall be rolled with a self-propelled, steel wheel roller.

The concrete collar ring around the frame or valve box shall be circular, and shall be a minimum of eight (8) inches thick, placed flush with the adjacent new pavement surface. At a minimum, concrete shall be MAG Class 'AA' on all paved streets. All concrete shall be obtained from plants approved by the Engineer.

A single No. 4 rebar hoop shall be placed in each adjustment collar. The hoop diameter shall be such that its placement is centered between the edge of the manhole frame or valve box, and the outside edge of the concrete collar. The depth of the hoop shall be such that it is centered in the thickness of the collar. Each concrete ring shall be scored radially at quarter-circle points. Score lines shall be 1/4-inch wide by 1/2-inch deep. The concrete collar surface shall be rough broom-finished. All pavement removed for adjustments shall be replaced with concrete.

Traffic shall not be allowed on the collars until the concrete has reached a minimum compressive strength of 2500 psi on residential streets, and 3000 psi on collector and major streets. On major streets, the Contractor shall use "high-early" cement in the concrete mix, approved by the Engineer, to minimize delay in re-opening the street to traffic.

Prior to commencing work on the adjustments, the Contractor shall submit a written adjustment plan and schedule to the Engineer for approval. At the request of the City, the contractor will provide access to all services under construction at no additional cost.

Sewer manhole frames and covers shall be matched, kept together, and replaced to their original locations. The Contractor shall remove existing asphalt, chip seal, or other materials from all sewer manhole covers and water valve box lids to be adjusted on this project. The Contractor's method for removal shall be approved by the Engineer prior to actual work. Cover cleaning shall be completed prior to adjustment of frames. Also, all water valve risers shall be thoroughly cleaned to fully expose the valve operating nut.

QUARTER SECTION MAPS FOR WATER AND SEWER LINES

The Contractor may obtain up to three sets of waterline and sewerline quarter section maps for the streets included in this project after the contract is awarded and issued. To order the maps, the Contractor shall bring an official contract specification book and a list of desired quarter section maps to the Technical Support

Services counter on the 8th Floor of City Hall, 200 W. Washington Street. Up to three sets of maps will be provided at no cost to the Contractor. If more than three sets are requested, the Contractor shall purchase the additional sets.

WATER VALVE AS-BUILTS

Upon completion of water valve box adjustments, the Contractor shall provide one complete accurate and clearly legible set of as-built waterline Quarter Section maps to the Engineer. The Contractor shall mark and color code all water valves on the maps as follows:

Blue- All valves shown on the Q.S. map found and adjusted.

Yellow- All valves shown on the Q.S. map but not found in the field.

Red- Any valve not shown on the Q.S. maps but discovered and adjusted. (Draw valve symbol on map at appropriate location and provide offset and location dimensions for valves in this category.)

Delete **MAG Subsections 345.5 MEASUREMENT and 345.6 PAYMENT** and substitute the following:

345.5 MEASUREMENT

Measurement for adjustments shall be per each respective item.

345.6 PAYMENT

No separate measurement or payment will be made for maintaining access and exposing existing valve frame and cover or survey monuments to finished grade.

There will be no separate measurement or payment for adjusting NEW manhole frame & covers, valve boxes, sewer clean-out frame & covers or water meter boxes constructed with the project. Payment for adjusting these new facilities is considered included in the price bid for the appropriate new item.

10. **401 TRAFFIC CONTROL**, Add the following to **Subsection 401.4 TRAFFIC CONTROL MEASURES**:

SEQUENCE OF CONSTRUCTION

The sequence of construction shall conform to the requirements of the Special Traffic Regulations.

The project shall follow a phasing plan approved by the Engineer. All lanes shall be maintained on a paved surface at all times during construction. This may be accomplished by using existing, new, or temporary asphalt pavement. Trenches shall be completely backfilled and either paved with temporary asphalt pavement or covered with metal plating as necessary to comply with this requirement and the "Special Traffic Regulations".

Night work will **not** be allowed on this project, unless required by the City. If the City requires work to be done at night, it will be done at no additional cost to the City.

The right to direct the sequence of construction is a function vested solely with the Engineer. Prior to commencement of the work, the Contractor shall prepare and submit to the Engineer, a written phasing plan and work schedule for the project. This plan and work schedule shall be submitted to the Engineer at the Preconstruction Conference for review.

When approved, the phasing plan and work schedule shall not be changed without the written consent of the Engineer. Orderly procedure of all work to be performed under this contract shall be the full responsibility of the Contractor. The work schedule shall include the hours per day and the days per week that the Contractor plans to work on the project site.

11. **401 TRAFFIC CONTROL**, add the following to **Subsection 401.5 GENERAL TRAFFIC REGULATION**:

TRAFFIC REGULATIONS

- A. The following shall be considered Arterial streets:
16th Street

The following shall be considered Collector streets:
48th Street, 18th Street

The following shall be considered Local streets:
48th Place, East Flower Street, Catalina Drive

- B. All traffic and/or traffic control devices on this project shall be provided, maintained and/or controlled as specified in the City of Phoenix Traffic Barricade Manual, latest edition and addendums thereof.
- C. Permission to restrict City streets, sidewalks and alleys (street closure permits) shall be requested as specified in the City of Phoenix Traffic Barricade Manual, latest edition and addendums thereof.
- D. Unless otherwise provided for in the following "Special Traffic Regulations", all traffic on this project shall be regulated as specified in the City of Phoenix Traffic Barricade Manual, latest edition and addendums thereof.
- E. No deviation to the "Special Traffic Regulations" will be allowed or implemented unless submitted to the Engineer for review and approval two (2) weeks prior to proposed work.
- F. Only City of Phoenix certified contractors can set, move, or remove temporary traffic control devices (signs, barricades, etc.). This annual certification can be scheduled by calling 602-262-6235.
- G. Civil Sanctions for temporary traffic control violations apply as follows:

Civil Sanction Per Day	Violation Description
\$1,500	Creating an eminent risk of death or injury to the public within the public right-of-way
\$1,000	Restricting the right-of-way without proper certification or a right-of-way temporary use permit
\$1,000	Restricting traffic during peak traffic hours as described in the <u>Traffic Barricade Manual</u> without authorization
\$1,000	Failing to correct or cure a violation, as listed in this schedule, within the time period stated on the warning notice

\$1,000	Restricting traffic at signalized intersections without any work occurring
\$500	Closing a sidewalk improperly or closing a sidewalk without proper certification or closing a sidewalk without a right-of-way temporary use permit
\$500	Violating the restriction limits, times and locations, of the right-of-way temporary use permit
\$500	Missing or improper use of advance warning signs
\$500	Missing or improper use of barricades and channelizing devices
\$250	Leaving advanced warning signs facing traffic after restriction has been removed – per one traffic direction
\$250	Leaving traffic control devices in the right-of-way twenty-four hours after right-of-way temporary use permit expires, unless a request for a permit extension is received by the City prior to the expiration of such permit
\$250	Use of “unacceptable” quality traffic control devices as described in the Traffic Barricade Manual
\$250	Rendering a bus stop inaccessible without relocating it or making other accommodations

H. Parking Meter Fees: To take a parking meter out of service requires a \$35 application fee and \$10 per meter per day.

12. **401 TRAFFIC CONTROL, Add** the following to **Subsection 401.5 GENERAL TRAFFIC REGULATION:**

SPECIAL TRAFFIC REGULATIONS

Any Restrictions and/or Closures will only be approved based on scope of work.

Traffic restrictions are not permitted on Arterial/Collector streets during peak traffic hours (6:00 a.m. to 8:30 a.m. and 4:00 p.m. to 6:30 p.m. weekdays). Outside of these hours the following applies:

Arterial Streets

Minimum number of travel lanes to be open to through traffic:

- a. If more than four lanes exist:.....Two will be open each way
- b. If four or less lanes exist:One will be open each way
- c. On one-way streets:.....Two lanes open

At signalized intersections, a minimum of four lanes (two each way) plus left-turn lanes will be maintained open from 8:30 a.m. to 4:00 p.m., and from 6:30 p.m. to 6:00 a.m., Monday through Fridays including weekends unless otherwise noted within the approved TRACS permit issued to the contractor.

Collector Streets

A minimum of two travel lanes (one each way) will be open to through traffic.

At signalized intersections, a minimum of two lanes (one each way) plus left-turn lanes will be maintained

open from 8:30 a.m. to 4:00 p.m., and from 6:30 p.m. to 6:00 a.m., Monday through Fridays including weekends unless otherwise noted within the approved TRACS permit issued to the contractor.

Pre-construction Field Meeting

Prior to requesting a TRACS Permits, the Contractor must coordinate in advance with the construction inspector to schedule a pre-construction field visit. The following personnel shall attend the meeting: Contractor, contracted barricade company, construction inspector and right-of-way inspector.

Nighttime Regulations

To minimize disruption to traffic, crews may be requested to work at night during off-peak hours. In this case, an after-hours permit will be required to authorize work in residential areas. Permits may be granted for up to 30 days for hours including nights, weekends, and holidays and are issued under Phoenix City Code 23-14 for building and roadway construction by the Planning and Development and Street Transportation departments, respectively. The purpose of the permits is to authorize work yet minimize loud and disturbing noises in residential areas due to construction or maintenance activities.

Variable Message Boards

Variable Message Boards (VMB) shall be provided on this project, 24 hours per day, from up to 10 days prior to any roadway closures and from at least 5 days prior to; maintaining a single thru lane at a signalized intersection, restricting left turn movement or 24-hour lane restrictions. The VMB shall remain in place until all roadway traffic restrictions are removed or approval from the area Right-of-Way Inspector.

Special Sign Requirements

The Contractor shall provide, install and maintain advance notification, public informational and directional access signs (for businesses, churches, hospitals, schools, etc.) that may be required by the Engineer. These signs may include, but are not limited to, portable changeable message signs, radar/speed sensing trailers, and other applicable Intelligent Transportation System type devices. The cost shall be included in the bid item for Traffic Control Devices.

No Parking Signs

When used, temporary NO PARKING signs must be placed 72 hours in advance for notification.

Signs should be spaced 80 feet apart for collector and arterial streets. On local Streets, a minimum of one (1) sign must be placed in front of each affected resident not to exceed 80 feet.

Signs must be clearly marked with "Date" to "Date" and the time period of the no parking.

NO PARKING Signs must be new and not reused, dates and times must be legible.

Contractor must provide Parking enforcement a picture of the placement of the no parking sign with a date and time stamp on the picture.



Police Officer Requirements

Off-duty police officers are required for construction projects as defined in the most recent edition of the City of Phoenix Traffic Barricade Manual and TRACS permit. The Contractor must competitively procure off-duty police with vendors who are Authorized Traffic Coordinators with the City of Phoenix Police Department or Phoenix Police Department off-duty detail.

The following requirements must be included in the procurement:

1. Hourly fees charged
2. Administrative fees (administrative fees to be charged as a part of the hourly rate, not billed separately)
 - a. Pay applications requesting reimbursement for Off Duty Police hours worked will be accompanied with itemized documentation indicating officer name, date worked, hours worked, time of day worked and location.
 - b. For audit purposes, contractor's files will contain documentation from the successful off duty vendor that the above items are accounted for in the vendor's price proposal.

The Contractor shall provide one off-duty police officer, as defined in the City of Phoenix Traffic Barricade

Manual, at signalized intersections affected from 6:00 a.m. to 6:30 p.m. weekdays, and during working hours nights and weekends when traffic is restricted (as described in the Traffic Barricade Manual).

When construction activities do not restrict traffic through the intersections, police officer hours may be reduced or suspended at the direction of the ROW Inspector.

Signalized Intersection Requirements

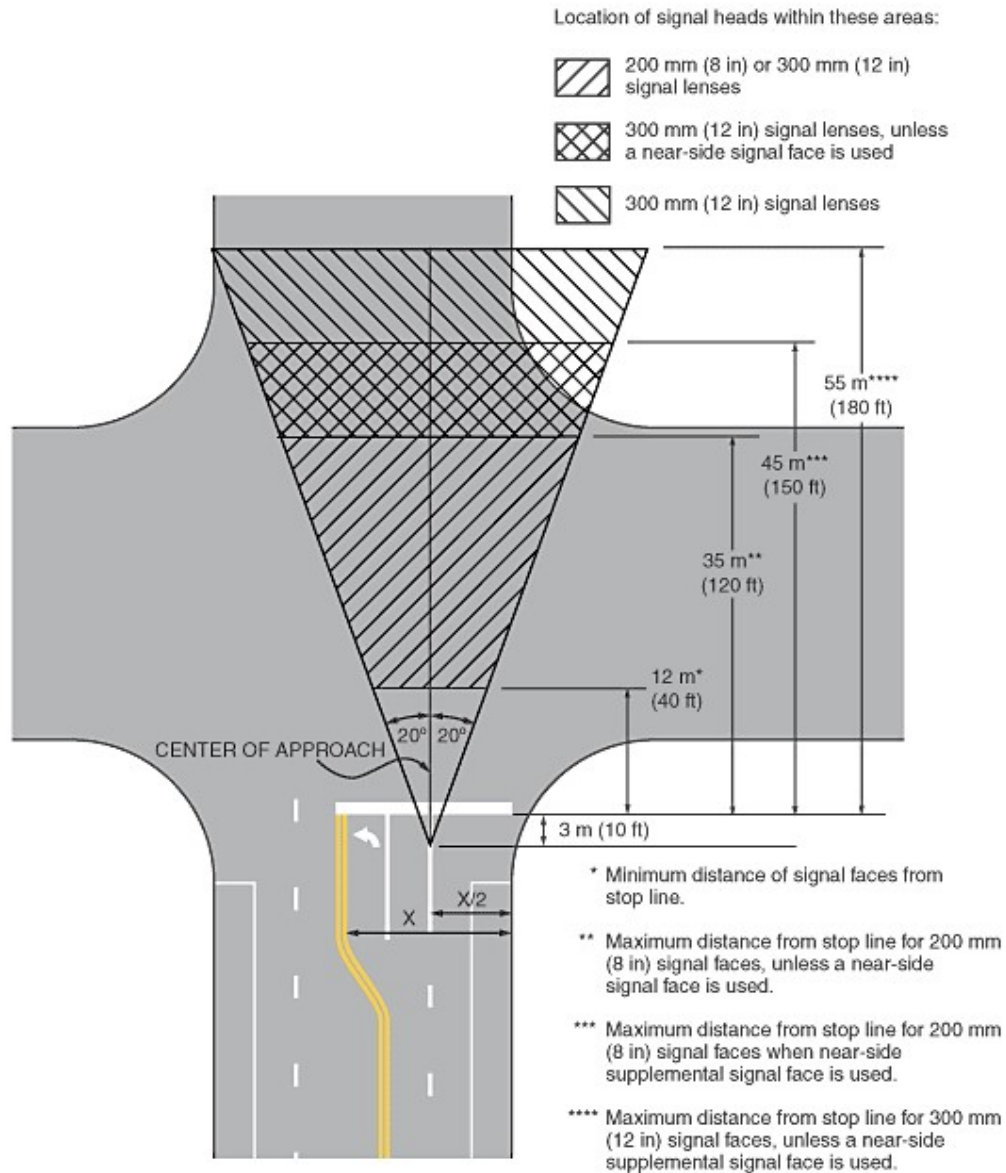
When left turns are prohibited at signalized intersections with left-turn arrow indications or when working in vicinity of a signalized intersection, the contractor will coordinate with the project inspector five days in advance and provide a written schedule indicating days, times and specific locations where left turns will be prohibited or where signals will be interrupted. The project inspector will notify the City Traffic Signal Shop (phxtmc@phoenix.gov) at least 72 hours in advance to make arrangements for arrow indications to be turned off or to coordinated signals being affected by the construction.

The contractor shall maintain the project inspector informed of any schedule changes or when work will be completed. When the work has been completed the inspector will immediately notify Traffic Signal Shop (phxtmc@phoenix.gov) so they can reactivate the left-turn arrow.

Traffic Signal Head Visibility Requirements

The contractor shall maintain a "40-degree Cone-of-Vision" at all intersections, for full view of the intended traffic. If during construction, traffic will be positioned in such a manner that the driver cannot see a minimum of two (2) traffic signal head indications within 20-degrees either side of straight ahead (40-degree Cone-of-Vision), immediately contact the Signal Engineer at 602-262-4693 prior to the start of any work.

Figure 4D-2. Horizontal Location of Signal Faces



Note: This figure illustrates the horizontal location of signal faces.

Local Access Requirements

The Contractor shall maintain local access to all side streets, access roads driveways, alleys, and parking lots at all times and shall notify residents 72 hours in advance of any restrictions which will affect their access. The Contractor shall restore the access as soon as possible. If the primary access cannot be restored in a timely manner, the Contractor shall provide an alternative which shall be pre-determined with the residents prior to imposing any restrictions. Any local street restrictions imposed shall be such that local area traffic circulation is maintained.

Business Access Requirements

Access shall be maintained to adjacent businesses at all times during their hours of operation. Access may be maintained by such measures as constructing driveways in half sections, or by providing bridging over new concrete. Properties with multiple driveway access will not have more than one driveway access restricted at any given time. While the one driveway is restricted, access to the other adjacent driveways will be maintained and unrestricted. Access to adjacent driveways shall be provided during all non-working hours. Any business restrictions shall be coordinated with the affected business in writing at least fourteen (14) days prior to imposing restrictions.

Pedestrian Access Requirements

The Contractor shall ensure that all sidewalks on this project remain in compliance with all the issues outlined by the American Disabilities Act of 1990. All pedestrian-walking areas, whether paved or unpaved, shall be maintained open and safely or a suitable pedestrian detour route will be provided. Such measures as backfilling or ramping at a 12:1 slope to existing sidewalks, or providing alternate sidewalk areas adjacent to existing sidewalks may be used. Right-of-Way inspector may also request an ADA/Pedestrian plan for any proposed sidewalk restrictions or closures. In high pedestrian use areas, the Engineer may request temporary hard-surface walkways, and/or covered pedestrian walkways to be installed at no additional cost to the City.

Frontage Road Access Requirements

Local access shall be maintained at all times on frontage roads. Frontage roads shall not be used for through traffic, equipment parking, material storage, or spoil stockpile area. Frontage road closures shall follow the same special provisions as described in "Local Access Requirements".

School Access Requirements

The Contractor shall provide clean and safe school zones, crosswalks, and walkways for students attending nearby schools during all hours of school use.

This may require backfilling trenches, temporary pavement, shoring, plating, or pedestrian bridges with handrails across open trenches.

In addition to school zones and crosswalks, the Contractor shall maintain accessibility to all school bus routes during all hours of school use. The Contractor shall notify the school Principal(s) and the school Transportation Director at least fourteen (14) days prior to any restrictions, and shall restore access as soon as possible.

Church Access Requirements

The Contractor shall maintain a high level of access to churches during all hours of church use. The Contractor shall coordinate any access restrictions with the clergy at least fourteen (14) days prior to any restrictions, and shall restore access as soon as possible.

Hospital Access Requirements

The Contractor shall maintain the Emergency entrance to nearby Hospitals by way of a paved lane for emergency vehicles at all times for the duration of the project. The Contractor shall coordinate any access restrictions with the hospital administrator at least fourteen (14) days prior to any restrictions, and shall restore access as soon as possible.

Fire Station Access Requirements

The Contractor shall maintain emergency vehicle access to and from the fire station at all times. The Contractor shall coordinate with the Fire Station Commander at least seven days prior to any restrictions and shall restore access as soon as possible.

Police Station Access Requirements

The Contractor shall maintain emergency vehicle access to and from nearby police stations at all times. The Contractor shall coordinate with the Police Station Commander at least seven days prior to any restrictions and shall restore access as soon as possible.

City Park Access Requirements

The Contractor shall maintain access to nearby parks during park hours. Any restrictions shall be coordinated with the appropriate Parks District Supervisor at least seven days in advance, and full access shall be restored as soon as possible.

Recreational Trail Crossing

The Contractor shall maintain the trail crossings safely open at all times, and shall maintain all special trail signs required.

Canal Access Road Requirements

Canal access and maintenance roads shall remain open at all times.

Any work that may affect this project shall be coordinated with the appropriate Agency contact at least 14 working days in advance.

Coordination With Other Agency Projects

The Contractor will coordinate and schedule work to minimize disruption or conflicts with nearby agency projects.

Any work that may affect this project will be coordinated with the appropriate Agency contact at least 14 days in advance.

Sanitation Pick-up

The Contractor shall provide sanitation pick-up for affected residents by relocating trash containers, or by providing alternative measures acceptable to the Sanitation Division of the City Public Works Department (602-256-3310).

Special Events

Should there be special events scheduled to take place during the construction of this project, it is the responsibility of the Contractor to coordinate their Construction schedule around the special event. No compensation for delays associated with special events will be considered.

Bus Stops

The Contractor shall maintain all existing bus stop locations on this project in a safe manner, or provide alternate bus stop locations and related directional signage as required by the Inspector. Relocation of bus stops shall be coordinated through the area. Relocation of bus stops shall be coordinated through the City of Phoenix Public Transit Department, contact 602-534-6284 or 602-262-4087.

Flagging of Traffic

No flagging of traffic will be permitted during the peak traffic hours of 6:00 a.m. to 8:30 a.m. and 4:00 p.m. to 6:30 p.m. weekdays. If construction requires, intermittent flagging will be allowed from 8:30 a.m. to 4:00 p.m., if approved by City project inspector, to facilitate access for heavy construction equipment.

Traffic Control Plans

The Contractor shall submit a traffic control plan for approval, showing placement of all traffic control devices, including all conflicting signs to be covered/removed or relocated, or other features that may conflict with the placement of temporary signage. This plan shall be professionally drawn on a reproducible medium, and shall be submitted to the Engineer two (2) weeks prior the contract start time or at the Pre-Construction conference, whichever occurs first.

Holiday Season Requirements

Restrictions near retail shopping areas on Major or Collector streets during the Holiday Season from November 23rd to January 1st will not be approved without pre-approval from the RMP Inspector. Contractor shall plan and coordinate their work schedule around this holiday season requirement.

Temporary Traffic Control Zone and Safety

At the Pre-Construction conference, the Contractor will designate an employee, other than the Project Superintendent, who is knowledgeable in the principles and methods of proper traffic control and safety. This employee will be available on the project site during all periods of construction to coordinate and maintain safe, acceptable and effective temporary barricading whenever construction affects traffic. This person will be authorized to receive and fulfill instructions from the Engineer and will supervise and direct traffic control. Instructions and information given by the Engineer to this person will be considered as having been given to the Contractor.

Failure to maintain temporary traffic control devices in accordance with the City of Phoenix Traffic Barricade Manual, latest edition, the approved Traffic Control Plan, and directives by the Engineer will result in suspension of work and/or civil sanctions until deficiencies are corrected to the satisfaction of the Engineer.

Safety Fencing Requirement for Trenches and Excavations

The Contractor will provide safety construction fencing around all open trenches and excavations during all non-working hours.

The Contractor will provide for the safety and welfare of the general public by adequately fencing all excavations and trenches that are permitted by the Engineer to remain open when construction is not in progress.

Fencing will be securely anchored to approved steel posts located six feet on centers, having a minimum height of six feet, and will consist of wire mesh fabric of sufficient weight and rigidity to adequately span a maximum supporting post separation of six (6) feet.

The fencing, when installed about the periphery of excavations and trenches, will form an effective barrier against intrusion by the general public into areas of construction. Fencing will not create sight distance restrictions or visual obstructions. At all times when construction is not in progress, the Contractor will be responsible for maintaining the fencing in good repair, and upon notification by the Engineer, will take immediate action to rectify any deficiency. Prior to the start of any excavating or trenching required for the execution of the proposed work, the Contractor will submit to the Engineer for approval, detailed plans showing types of materials and methods of fabrication for the protective fencing.

There will be no separate measurement or payment for furnishing, installing, or maintaining protective fencing. The cost will be considered incidental to the cost of the pipe and/or structures.

TRAFFIC CONTROL FOR SIGNING AND STRIPING BY CITY FORCES

The City of Phoenix Traffic Services Division (TSD) may complete the signing and striping work for the project. When the Contractor is ready for final signing and striping, he shall notify the Engineer and make a request for the City Forces to complete the work. TSD will not schedule the signing and striping until they inspect the Site and see that the final pavement treatment is applied. It may take up to 16 weeks to complete the final signing and striping. During that time, the Contractor shall keep all traffic control devices in place, according to the approved traffic control plan, until their removal is approved by the Engineer. The Engineer may request a new traffic control plan or changes to the traffic control during this period. The Contractor shall make requested changes at no additional cost. No separate measurement or payment will be made for the extended duration of traffic control devices between the time that the Contractor makes the request until the time of completion of the work by City Forces. The work shall be included in the bid item "TRAFFIC CONTROL DEVICES".

13. **401 TRAFFIC CONTROL, Add** the following to **Subsection 401.10 PAYMENT:**

ALLOWANCE FOR UNIFORMED, OFF-DUTY LAW ENFORCEMENT OFFICER

Projects ST83140112 and ST83140117 and ST83140124 and PW26220003 include a lump sum "ALLOWANCE FOR UNIFORMED, OFF-DUTY LAW ENFORCEMENT OFFICER". The amount of this allowance is determined by the Engineer and is not subject to individual bid pricing. All bidders shall incorporate the amount pre-entered in the bid proposal and shall reflect the same in the total amount bid for this project.

Payment for uniformed, off-duty law enforcement officers shall be made from this allowance based on approved invoiced cost plus taxes, and a maximum 10 percent markup for overhead and profit.

TRAFFIC CONTROL

Payment for traffic control will be on a lump sum basis under the bid item "Traffic Control Devices".

14. Add the following new **Section 402 ADDITIONAL CONSTRUCTION REQUIREMENTS** as follows:

402.1 FIELD DOCUMENTATION

The Contractor shall document existing conditions within the project area prior to construction. Documentation shall be video tape. The video tape shall not be made from a moving vehicle. One copy of the video tape shall be furnished to the City prior to the start of construction. The cost of the videotaping shall be considered incidental to the cost of the project. No separate measurement or payment shall be made for this item.

402.2 CONTRACTOR COMMUNICATION INFORMATION

The Contractor shall provide a mobile phone to his on-site Project Superintendent to ensure that the Engineer

can reach the Contractor's Superintendent. This mobile phone must be accessible by local land-line telephone service. The Superintendent's mobile phone shall remain in service for the duration of the project, and these phone numbers shall be included on the Contractor's list of emergency phone numbers submitted at the pre-construction conference.

402.3 TRENCH PLATING

In paved areas where vehicles will be driving over trench plating, the plates shall be set to match flush with existing pavement on all sides. Setting plates on top of the pavement surface and installing temporary asphalt ramps around them will not be allowed.

402.4 TRENCHING IN RIGHT OF WAY

The Contractor shall not be allowed to stockpile trench material or store any equipment the right-of-way. The Engineer may consider allowing storing the main track hoe in a nearby local street and the contractor shall secure temporary 6' chain link fence around the track hoe during non-working hours.

402.5 MAXIMUM OPEN TRENCH

No more than 330 linear feet of open trench shall be allowed on any major streets. The open trench is defined as trench that is not backfilled up to the sub-grade level or deeper than 1-ft from adjacent pavement grade. Trenches across driveways, and where required for traffic control, shall be plated to maintain access. The cost of these plates shall be considered incidental to the project.

402.6 CAST-IN-PLACE PIPE RESTRICTION

Cast-in-place pipe shall not be allowed as an alternate.

402.7 POWER BROOM

The Contractor may be instructed by the Engineer to provide additional pavement cleaning (in parking lots, or other locations) above and beyond the normal expected cleanup and dust control required by MAG Section 104.1.3. If requested by the Engineer, the Contractor shall clean the requested areas with a power pick-up broom.

Use of the power pick-up broom in the special requested areas only shall be measured and paid for on an hourly basis under the bid item, 'ALLOWANCE FOR EXTRA WORK'.

402.8 PUBLIC INFORMATION SERVICES

The City of Phoenix shall provide a public information specialist for the community relations program on this project.

The Contractor shall cooperate with the City's public information specialist firm in the preparation of newsletters, advanced notification for service disruptions, answering questions from the public, etc. He shall also provide schedule update information to the specialist.

The Contractor shall provide representatives as needed for all meetings with the public throughout the contract period.

The City will pay public information service costs associated with approved contract time extensions; however,

if the Engineer determines that delays were caused by the Contractor, the additional costs for public information services shall be deducted from the Contractor's final pay request.

402.10 POLLUTION AWARENESS MARKERS

Pollution Awareness Markers (PAM's) shall be installed by the Contractor for all new catch basins and for each existing catch basin within the project limits that does not have a PAM. The PAM's will be supplied to the Contractor by the City. PAM's shall be installed at the location identified by the Engineer. For existing catch basins, flat PAM's will be supplied, and the contractor shall clean the surface with a wire brush, apply appropriate adhesive to the back of the marker, and apply the marker to the clean surface. For new catch basins, PAM's with feet will be supplied, and the Contractor shall install them as the catch basin is cast.

15. **430 LANDSCAPING AND PLANTING**, Replace **Subsection 430.15 MEASUREMENT AND PAYMENT** with the following:

330.15 MEASUREMENT AND PAYMENT

Measurement and payment for the landscaping and irrigation system restoration will be made based on the lump sum price bid and shall be full compensation for furnishing all labor, material, tools and equipment and for performing all work necessary to complete the landscaping and irrigation system restoration operation under the bid item " MISCELLANEOUS LANDSCAPE AND IRRIGATION RESTORATION".

Add the following new **Section 432 PLANT SALVAGE** as follows:

432.1 TAGGING AND INVENTORY OF TREES TO BE RELOCATED

The Contractor shall prepare a detailed inventory of the existing plants identified for boxing, maintenance and replanting. The Contractor shall consider the following factors for determining which plants should be included on the inventory list:

Species of tree

Size of tree, including trunk caliper

Required box size

Condition of the plant (presence of disease, physical damage, etc.)

Appearance of the tree

Condition of the root structure.

The caliper size of the trunk shall be measured at a point approximately 4-inches to 12-inches above the crown of the trunk. Measurements shall exclude all dead wood. The caliper measure shall be established using the following formulas:

Standard Tree: Circumference of trunk divided by 3.14

Multi Trunks: $C1 + C2 + C3 + \dots$ divided by 3.14, OR $D1 + D2 + D3 \dots$

C = Circumference of tree trunk

D = Diameter of trunk

The Contractor shall tag all trees that are determined will be successful relocations. The tags shall be durable weather-proof tags which are able to hold water-proof ink. The Contractor shall provide the Engineer a complete listing of the trees, and their qualifications for being suitable transplant candidates. The tags shall be coded to correspond with the plant listing, and shall indicate the specie, caliper, and proposed box size. The tags shall be attached securely to an interior limb that is scheduled to remain.

Measurement and Payment

There shall be no separate measurement or payment for tagging and inventory of trees. The cost for tagging and inventory of trees shall be considered incidental to the cost of tree boxing, moving, maintaining and replanting the boxed trees.

432.2 BOXING, MOVING, MAINTAINING, AND PLANTING BOXED TREES

Description

The Contractor shall furnish all labor, material and equipment required to prune, hand dig, box, lift, move onsite outside of construction area, maintain and replant trees in accordance with the project plans and these specifications.

General

The plants shall be pruned, boxed, moved, and maintained by a Contractor that specializes in, and has proven success in transplanting the type of plants required by these plans and specifications. These required qualifications shall be represented on the job site at all times. The Contractor shall present certification papers demonstrating proof of past experience and success to the Engineer and Landscape Architect upon request. Certification shall include a project list indicating past plant relocation projects; clients for whom the Contractor performed these relocations; the types and quantities of plants moved; the mortality rates for these projects; the time of year that the work was performed; and a brief narrative describing the daily operations of each job.

All work performed by the Contractor shall be done within the limits of the project as defined by the project plans and specifications. The Contractor shall fence, flag or stake areas or features to be protected on or adjacent to the project as directed by the Engineer. The Contractor shall restore the work area to as good or better condition as before construction began. In addition, the Contractor shall repair or replace, in kind, any plant; geologic, natural, or man-made features disturbed or destroyed during the transplanting operations within or outside the limits of the project to the satisfaction of the Engineer.

The Contractor shall keep a daily log of all activities on the project. The daily log shall contain a record of the following items for each boxed tree:

ID number of the tree
Species of the tree
Caliper size of the tree
Box size for the tree
Dates when side boxing, bottoming and moving occurred

The Contractor shall perform an investigation of all underground features, soil, rock, and area conditions using approved methods and equipment. If, upon this investigation, a determination is made that a tagged tree may have a decreased chance of being successfully boxed and relocated, the Contractor shall contact the Engineer for a decision on whether the plant will be relocated. Individual decisions will be made for each tree in question. Substitution, or other possible alternatives may be discussed at this time. The Contractor shall keep a written record of all discussions and decisions.

Movement of trees for the project shall be in compliance with all State and local requirements. The Contractor shall be responsible for obtaining all necessary permits and tags for moving trees and materials. Permits and tags shall be readily available and displayed to the Engineer upon request.

The Contractor shall prune trees to be relocated such that the amount of foliage will be proportionate to the root system when the tree is boxed. Pruning shall be done such that an aesthetic framework of branches is left, preserving the size and best features of the tree, and providing a future balanced appearance.

Procedure

The Contractor shall identify the major limbs to be removed from each plant using flagging tape. The Engineer shall be notified prior to actual removal of limbs for approval.

Pruning shall be done so that equal amounts of foliage are removed from all sides of the plant to give a balanced look. Where there are unusual shapes and structures to the plants, remove foliage and branches to accentuate any features.

Cuts shall be made as smooth as possible and flush with trunks. Cuts are to be made to allow minimal damage to the cambium layer of the tree and expose minimum weakness.

The Contractor shall have a Lindane/Anti-transpirant chemical combination applied by a Certified Pesticide Applicator after pruning to prevent damage by wood borers and increase moisture retention of the foliage. This chemical mix shall be applied again three (3) weeks after the initial application.

Box sizes shall be determined by plant inventory if included with the project. For other projects, the box size shall be based on the caliper size of the trunk and the following specifications:

The box size shall be indicated on flagging tape attached to the plant.

Box sizes not specifically determined by tree inventory shall be based on the following:

<u>Trunk Diameter</u>	<u>Box Size</u>	<u>Trunk Diameter</u>	<u>Box Size</u>
0"-2 1/2"	24"	8 1/2"-11"	5
2"-3 1/2"	30"	11"-13"	60"
3"-5"	36"	12"-15"	66"
5"-7"	42"	14"-17"	72"
6 1/2"-9 1/2"	48"	16"-20"	78"

Side boxing shall be done to expose and preserve a rectilinear root ball to be enclosed by four (4) tapered box sides with minimum damage to root system.

Procedure

Measure the top of the root ball to be exposed and mark the outline to facilitate digging.

Dig a trench around the plant using the outline as the inside dimension. Taking into consideration the direction the box is to be tipped during bottoming, adjust the orientation of the box accordingly.

All trees to be boxed shall be hand dug using a hand-held shovel.

Carefully cut the roots cleanly, using appropriate sharp tools, flush with the side of the root ball as they are encountered.

Gradually cut the root ball inward as the trench progresses to accommodate the taper of the box.

When the trench reaches the depth of the box, place box sides in the trench and check the fit around root ball. Trim root ball as necessary.

Attach box side around root ball with nails.

Secure box sides with banding. Banding shall be 3/4" x .025 steel straps minimum.

Pack dirt tightly into any space between box sides and root ball.

Water thoroughly and repack from lower sides and bottom as needed.

Plants shall be left sideboxed for up to three (3) weeks. Watering shall be done as needed depending on the season or as otherwise instructed by the Engineer.

Provide tag number and caliper of tree on the box itself which corresponds to the tag on the tree.

Material specifications for construction of box sides are to be based on storage and transportation requirements. The following guidelines are for plants that are to be lifted upright as opposed to being tipped. If plants are to be tipped, the Contractor shall modify the materials used to withstand the additional stress of being tipped. The Engineer shall be notified for approval of modification of boxing material.

Horizontal box members:	1" material up to 60" box
	2" material over 60" box

Vertical members:	1" material up to 48" box
	2" material over 48" box

1" material shall be minimum standard 1 x 12 #5 pine

2" material shall be minimum standard 2 x 6 or 2 x 12 economy grade

Topwood shall be placed to minimize movement of the plant and its root system. Anchor securely to box to reduce loss of soil during transportation and handling. Topwood shall be tight against trunk but not so tight as to cause scarring.

Procedure

Measure 2 x 4 or 2 x 6 wood to fit the width of box and cut.

Place wood on each side of trunk. Nail wood to plant trunk and box sides.

Place cross members and additional supporting wood as necessary to stabilize plant and root ball based on size and orientation of tree.

Nail 1-inch material across top of root ball, minimum two (2) boards in each direction up to 54-inch box sizes. Use 2-inch material for boxes 60-inches and over.

The plant shall be bottomed after cutting the remaining roots, minimizing the loss of soil from the bottom of the root ball.

Procedure

Determine direction that the plant is to be tipped. Direction shall be chosen so that no damage is done to the lower branches of the plant being moved, or other nearby plants or obstacles.

Place a stake a safe distance from trench in the direction the plant is to be tipped. Attach a "come along" and one end of chain to the stake. Wrap other end of chain around box and secure. Cinch chain until taut.

Gradually undercut beneath the root ball. Cut tap roots cleanly as they are encountered.

Frequently test tautness of chain. When possible, begin to tip the box over in the direction of the stake. When box begins to tip, place a safety brace against bottom of box to prevent box from falling in case of stake or chain failure.

As box is tipped back, nail bottom strips to box sides. Bring banding up along all four (4) sides and over top of box. Tighten banding and secure with crimper.

Dirt lost during bottoming process shall be repacked from lower sides to minimize disturbance to the root ball.

Lower box down to its original orientation.

The boxed plants shall be carefully removed and transported to a holding yard approved by the Engineer and Landscape Architect.

Procedure

If a backhoe or front loader is used, place chain around box and secure to bucket of machine. Tilt bucket back and lift out of hole.

If a crane is used, place two (2) cables cross-wise around box and attach to hook. Lift out of hole. Care shall be taken to route the cables so that branches are not broken when the slack is taken up by lifting.

The Contractor is responsible for providing optimum conditions for the plant to overcome transplant shock and maintain viability throughout the storage period. The Contractor shall provide a fenced and secure holding yard to protect the plant materials from vandalism and/or theft.

Procedure

The Contractor is responsible for maintenance and watering of the boxed trees throughout the storage and maintenance period. The Contractor shall be responsible for making applications for water meters from the City of Phoenix, and for setting up a drip irrigation system to water the trees for the duration of the maintenance period (at no additional cost to the City of Phoenix).

Watering shall be done as needed, depending on the season, to keep the boxed trees alive.

Periodically check root ball for excessive run-off caused by cavities in soil and holes in box sides. Repack soil and repair box as necessary from lower sides of box causing minimal damage to the root ball.

Check for insect activity at least once a week. A Certified Pesticide Applicator shall apply Lindane as needed to control wood borer. Foliar chemical applications shall be made as needed to control other damaging insects.

Contact the Engineer and Landscape Architect prior to all chemical applications.

If the Contractor, at any time during the maintenance period, is aware of a decline in the condition of the boxed trees, the Engineer and Landscape Architect shall be notified immediately for an inspection.

Contractor shall apply a slow release fertilizer as needed to maintain a healthy appearance and condition of the boxed trees for the duration of the maintenance period. The fertilizer shall be approved by the Engineer prior to application.

The Contractor shall maintain the boxed trees in a weed-free condition, and all suckers shall be kept trimmed at the base of the plant.

The accepted mortality rate for the boxed trees shall be 0% of the total number of plants. An inspection will be done by the Engineer and Landscape Architect at the end of the maintenance period to determine the number of trees that are alive and healthy. Plants that die shall be replaced in size and kind by the Contractor at no cost to the City. Any replacement trees shall be approved by the Landscape Architect at the source prior to having them delivered. Replacement trees shall be given a 100% guarantee. The Contractor shall be responsible for disposal of dead plants to an off-site location at no cost to the City.

Measurement and Payment

Measurement and payment for boxing, moving, maintaining and planting boxed trees will be made based on the unit price bid per each under the bid item "REMOVE & REPLACE ORANGE TREES".

432.3 PLANTING BOXED TRANSPLANT TREES

The Contractor shall notify the Engineer at least two (2) working days in advance to secure approval of the equipment to be used for planting. The Contractor shall size new planting pits as follows:

<u>Box Size</u>	<u>Size of Planting Pit (cross-wise distance at top and bottom of pit)</u>
24"	30"
30"	36"
36"	42"
42"	48"
48"	60"
54"	66"
60"	72"
72"	84"
78"	90"

84"
96"

92"
108"

Planting pits for boxes larger than indicated shall be approved by the Engineer and Landscape Architect. New planting pits shall be filled half-way with water prior to placement of the tree in the pit. Prepared soil mix per MAG Section 430.5.6 shall be used, as well as Vitamin B-1 solution to prevent transplant shock.

The Engineer and Landscape Architect shall be present at the time the trees are set and positioned in the new planting pit.

The boxed plants shall be carefully lowered into the pit using approved equipment. At no time shall a plant be pushed or dropped into the pit.

The planting pit is to be backfilled progressively as the box sides are being removed to minimize damage to the root ball and to prevent it from collapsing.

The Contractor shall be responsible for truck watering the trees at planting and as needed depending on seasonal conditions and needs of the plant until a permanent automatic irrigation system is installed or other arrangements are made and approved by the Engineer and Landscape Architect.

Trees that have been stored onsite and replanted shall be guaranteed at 100%. Trees that die during the replanting and subsequent maintenance period shall be replaced in size and kind by the Contractor at no cost to the City. All replacement trees shall be approved by the Landscape Architect at the source prior to planting. Replacement plants shall be given a 100% guarantee. Replacement trees shall also be planted in accordance with these specifications. The Contractor shall be responsible for disposal of the dead plant materials off-site at no additional cost to the City of Phoenix.

Measurement and Payment

There shall be no separate measurement or payment for planting boxed transplant trees. The cost of replanting the boxed trees shall be considered incidental to the cost of boxing, moving, maintaining, and planting the boxed trees.

16. 505 CONCRETE STRUCTURES, Add the following Subsection 505.1.1.1 PRECAST CONCRETE MODULAR VAULT DRAINAGE STORAGE SYSTEM :

Item description

The Contractor shall refer to the engineer's plans for the precast concrete modular vault drainage storage system for dimensions and design notes.

The Contractor may install a precast concrete modular vault drainage storage system conforming to the following specifications:

Precast Concrete Modular Vault Materials and Design

The Contractor shall be responsible for all modifications needed to conform with the installation and construction as shown on the construction plans.

Modular sections that have been damaged in shipment will be rejected at the point of delivery. The manufacturer will be required to take damaged sections back to the plant for proper repair (if acceptable to the City of Phoenix), or provide a replacement unit at no additional cost to the City of Phoenix (including hauling and potential installation contractor delay claims).

The design of the precast concrete modular vault shall conform to the following design specifications:

1. Live Loading Criteria:

- A. AASHTO HS-20-44 Design Truck (with impact at 0.50ft minimum cover)
- B. Lateral Live Load Surcharge: 80 psf (to 8.00ft depth)
- C. No lateral surcharge(s) from any adjacent buildings, walls, foundations, or any additional site elements.

2. Soil Loading Criteria:

- A. Soil cover depth: 0.50ft (Min.) - 5.00ft (Max.)
- B. Soil unit weight: 120 pcf
- C. Assumed water table elevation: below bottom of precast units
- D. Required allowable bearing pressure: 3,000 psf
- E. Equivalent lateral fluid pressure, active: 45 pcf (drained)
- F. Equivalent lateral fluid pressure, at-rest: 60 pcf (drained)
- G. Equivalent lateral fluid pressure, passive: 150 pcf (drained)
- H. Assumed coefficient of friction: 0.40
- I. Seismic lateral earth pressure: Not Applicable

4. Concrete (Normal Weight):

- A. Min. 28-Day Compressive Strength: 6,000 psi
- B. Cement: ASTM C150

5. Steel Reinforcement: ASTM A615 / A706 (Grade 60), ASTM A1064 (Grade 80)

6. Reference Standards: ASTM C913 & C890, ACI 318-14

Shop drawings and calculations for all designs shall be submitted to the Engineer at least 6 weeks prior to manufacturing for review and approval. Computer printouts of the designs are acceptable, provided information is supplied verifying that the adapted computer program complies with the specified design criteria. Testing of the individual vault sections will not be required, but materials certification and testing will be required

for the concrete and reinforcing steel, as well as an affidavit of compliance for the completed vault modular sections.

Lifting devices may project above the surfaces of the sections after placement, provided they do not interfere with the backfilling of the culvert, the structural section of the new roadway or curb and gutter, or the placement of utility crossings. Lift holes may be cast in the top slab to handle the box culvert sections, in accordance with ASTM standards.

The maximum allowable tolerances or deviations for precast vault sections shall be in accordance with ASTM Standards. In addition, the precast vault sections shall conform with the following requirements:

1. Slab and Wall Thickness - Dimensional variations causing "stepping" of more than 1/4-inch between any interior or exterior wall surfaces from one vault to the next shall not be allowed.
2. Length of Opposite Surfaces - Variations in laying lengths of two opposite surfaces of the box section shall not exceed 1/4-inch for all box sizes.
3. Tongue and Groove Dimensions - The depths of the tongue and groove (bell and spigot) on the ends of each box section shall not exceed the manufacturer's design depth dimensions by more than 1/4-inch around the entire perimeter.

Any dimensional deviations beyond allowable tolerances will not be accepted. The manufacturer will be required to correct the product to within tolerance, or the product will be rejected and the manufacturer be required to provide replacement at no additional cost to the City of Phoenix (including hauling and potential installation contractor delay claims). The City of Phoenix will have the final decision on acceptability of any non-conforming or "repaired" product.

Bedding and Backfill for Precast Concrete Modular Vault

Bedding: Precast concrete modular vault sections shall be bedded on native soil shall be level and compacted adequately to allow for required bearing capacity. For closed bottom modules, a minimum 2-inch-thick layer of sand must be placed under the modules for leveling purposes and an 8 oz. non-woven geotextile fabric must be used as a separation layer around the system. For open bottom modules, a crushed aggregate bearing layer to a depth in accordance with manufacturer's guidelines is required. Material shall be clean, durable crushed aggregate (e.g., #57 per ASTM C33) and compacted as directed by the engineer. An 8 oz. non-woven geotextile fabric must be used as a separation layer around the aggregate material.

Measurement and Payment

Precast Concrete Modular Vault Drainage Storage System: Measurement and payment for the Precast Concrete Modular Vault Drainage Storage System shall be by the cubic foot of storage volume installed.

Payment will be made under the bid item for "PRECAST CONCRETE MODULAR VAULT DRAINAGE STORAGE SYSTEM", and shall be compensation in full for constructing and placing the precast concrete modular vault drainage storage system as shown on the plans and as specified, including all materials, excavation, bedding, backfill, compaction, lifting and vault placing machinery, gasket joint sealer, mortar, labor, and any modifications called for on the plans to provide a complete installation.

17. Add the following to **MAG Subsection 505.12 PAYMENT:**

CATCH BASINS & PIPE COLLARS

Storm drain catch basins and pipe collars shall be paid for at the unit price bid for each type of catch basin and pipe collar size, as represented by the respective bid item, regardless of dimensional or other differences occurring within a particular type. The unit price to be paid under these items shall be compensation in full for furnishing and placing catch basin structures as shown on the plans and as specified, including, when applicable, all removal and replacement of existing curb, gutter and sidewalk, concrete, reinforcing steel, forming, vibrating, finishing, curing, access opening frame and cover, embedded angles, grating, anchor bolts, structural excavation, backfill, compaction, pavement replacement and any necessary modifications of catch basin structures during construction. Where shown on the plans, the Contractor shall install 3inch diameter standard strength iron pipe through the catch basin. This pipe shall project a minimum of 6inches past the outside wall.

18. Add the following to **MAG Subsection 510 CONCRETE BLOCK MASONRY, Subsection 510.2.1 ABLOCK WALL REMOVE AND REPLACE:**

Item description

The contractor shall remove and replace in-kind any private block wall that is undermined by trenching or other related construction activities. The contractor shall replace the removed block wall limits with an exact matching block wall at no additional cost to the City.

The contractor shall follow section 107.9 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE for construction near block walls. Property and landscaping shall be restored to its original state at no additional cost to the City.

The contractor shall paint the block wall within the limits of the work areas to match in kind the existing block wall paint color and texture. The paint shall be weatherproof and meet the requirements of MAG Standard Specification Section 530 Painting.

The contractor shall submit shop drawings to the Engineer for review and approval of block wall replacement materials.

The Contractor shall avoid damaging any pipes, conduits or duct bank facilities during excavation, foundation and bedding placement, and trench backfilling and compaction.

Measurement and Payment:

The Contractor will include all associated costs in the unit bid price for the removal and replacement of block walls during construction. The fence replacement is measured as SF per the plans.

19. Add the following to **MAG Subsection 515, under Subsection 515.2.1.1 METAL FENCE REMOVE AND REPLACE:**

Item description

The contractor shall remove, salvage, and replace in-kind any private fence that is undermined by trenching or other related construction activities. If the existing fence cannot be salvaged, mended, and restored to its original condition per section 107 of the Standard Specifications, the contractor shall replace the removed fence limits with an exact matching fence at no additional cost to the City.

The contractor shall follow section 107.9 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE for construction near private residential fences. Property and landscaping shall be restored to its original state at no additional cost to the City.

The contractor shall paint the metal fence within the parcel limits of the work areas to match in kind the existing fence paint color and texture. The paint shall be weather proof and meet the requirements of MAG Standard Specification Section 530 Painting.

The contractor shall submit shop drawings to the Engineer for review and approval of fence replacement materials and fabrication.

The Contractor shall avoid damaging any pipes, conduits or duct bank facilities during excavation, foundation and bedding placement, and trench backfilling and compaction.

Measurement and Payment:

The Contractor will include all associated costs in the unit bid price for the removal and replacement of private fences during construction. The fence replacement is measured as EACH per the plans.

20. **601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**, Add the following to **Subsection 601.2.6 Grading and Stockpiling** after the first paragraph:

During excavation, material suitable for backfilling during the days production shall be piled in an orderly manner, a sufficient distance back from the edges of trenches, to avoid overloading and to prevent slides or cave-ins. Material unsuitable for backfilling, or excess material, shall be hauled from the job site and disposed of by the Contractor.

21. **601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**, Add the following to **Subsection 601.2.7 Shoring and Sheeting**:

The Contractor shall do such trench bracing, sheathing or shoring necessary to perform and protect the excavation as required for safety and conformance to governing laws. The bracing, sheathing or shoring shall not be removed in one operation, but shall be done in successive stages as determined by the Engineer to prevent overloading of the pipe during backfilling operations. The cost of the bracing, sheathing or shoring and the removal of same shall be included in the unit price for the pipe.

22. **601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**, Add the following to **Subsection 601.2.8 Open Trench**:

Except where otherwise noted in the special provisions, or approved in writing by the Engineer, the maximum length of open trench, where the construction is in any stage of completion (excavation, pipe laying or backfilling), shall not exceed 1,320 feet in the aggregate at any one location. The open trench is defined as trench that is not backfilled up to the sub-grade level or deeper than 1-ft from adjacent pavement grade.

Any excavated area shall be considered open trench until all backfill material is placed and compacted up to 1-ft below adjacent grade. With the approval of the Engineer, pipe laying may be carried on at more than one separate location, the restrictions on open trench applying to each location. Trenches across streets shall be completely backfilled as soon as possible after pipe laying.

Substantial steel plates with adequate trench bracing shall be used to bridge across trenches at street crossings where trench backfill and temporary patches have not been completed during regular work hours. Safe and convenient passage for pedestrians shall be provided. The Engineer may designate a passage to be provided at any point he deems necessary.

STRUCTURAL MONITORING PLAN

The contractor shall submit a plan to prevent and monitor potential damage to the adjacent structure and property amenities located at 4809 E Flower Street to the engineer, for approval. The plan shall also include the implementation of a monitoring system capable of determining if any elevation change, settlement, or excessive vibration occurs to the residential structure during construction of the open trench on the property. The monitoring system shall be in use when the contractor is working on the property. The plan shall address the hold points and action plan the contractor will follow if the monitoring system detects impacts to the structure and surroundings. At all times, the contractor shall take necessary actions and complete the work in a prudent manner to avoid damage to the property.

There will be no measurement or payment for the structure monitoring plan and installation of systems. The Contractor will include all associated costs in the unit bid price for the pipe installation.

23. **601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**, Add the following new **Subsection 601.2.9 Pavement and Concrete Cutting and Removal:**

601.2.9 Pavement and Concrete Cutting and Removal: Where trenches lie within the Portland cement concrete section of streets, alleys, driveways or sidewalks, etc., such concrete shall be sawcut to neat, vertical, true lines in such a manner that the adjoining surface will not be damaged. The minimum depth of cut shall be 1 ½ inches or ¼ of the thickness, whichever is greater.

Asphalt pavement shall be clean-cut with approved equipment and by approved methods in accordance with the requirements of Section 336.

No ripping or rooting will be permitted outside limits of cuts. Surfacing materials removed shall be hauled from the job site immediately and will not be permitted in the backfill.

Saw cutting will not be paid for separately but will be considered incidental to the removal and replacement pay item it is associated with.

24. **601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**, Add the following to **Subsection 601.3.3 Bedding for Storm Sewers Maintained by the City of Phoenix:**

All Controlled Low Strength Material (CLSM) shall be provided by a commercial-source. No on-site mixing or addition of cement to aggregate base course slurry in transit mixers will be allowed.

25. **601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**, Add the following to **Subsection 601.3.4 Backfill:**

BACKFILL TYPE REQUIREMENTS FOR PIPE TRENCHES

Type "B" backfill, as shown on City of Phoenix Detail P1200, shall be used for all mainline pipe installations across major, collector, or other signalized intersections. At a minimum, the extent of the Type "B" backfill shall be from curb-return-to-curb-return through the intersection, unless noted otherwise on the plans or in the special provisions. Type "B" backfill shall also be used for all lateral pipe connections in ALL streets. Type "A-Modified" backfill (suitable native material as specified in City of Phoenix Supplement to MAG Specification Section 601.3.2, except that no piece larger than 3 inches will be allowed), as shown on City of Phoenix Detail P1200, may be used at all other locations, from the top of bedding to the specified pavement subgrade level, unless noted otherwise on the plans or in the special provisions. There is no separate measurement or payment for pipe backfill. The cost is considered included in the bid price for furnishing and installing the pipe.

The pavement replacement section shall be as specified on the plans or in the special provisions, and shall be paid for by the square yard or by the ton, whichever is indicated in the special provisions and on the bid proposal.

26. **601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**, Add the following new **Subsection 601.4.5 Cutting Newly Placed Pavement for Pipe Installation:**

601.4.5 Cutting Newly Placed Pavement for Pipe Installation: In the event temporary or base course pavement must be cut in order to install pipe, the cost of sawcutting, removing and replacing the asphalt shall be considered incidental to the cost of the pipe.

27. **601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**, Add the following new **Subsection 601.6 PROTECTION OF EXISTING UTILITIES:**

601.6.1 Utilities: Unless otherwise shown on the plans or stated in the specifications, all utilities, underground or overhead, shall be maintained in continuous service throughout the entire contract period. The Contractor shall be responsible and liable for any damages to or interruption of service caused by the construction.

If the Contractor desires to simplify his operation by temporarily or permanently relocating or shutting down any utility or appurtenance, he shall make the necessary arrangements and agreements with the owner and shall be completely responsible for all costs concerned with the relocation or shutdown and reconstruction. All property shall be reconstructed in its original or new location as soon as possible and to a condition at least as good as its previous condition. This cycle of relocation or shutdown and reconstruction shall be subject to inspection and approval by both the Engineer and the owner of the utility.

The Contractor shall be entirely responsible for safeguarding and maintaining all conflicting utilities that are shown on the plans (Sections 107 and 105 apply). This includes overhead wires and cables and their supporting poles whether they are inside or outside of the open trench. If, in the course of work, a conflicting utility line that was not shown on the plans is discovered, the Contracting Agency will either negotiate with the owner for relocation, relocate the utility, change the alignment and grade of the trench or as a last resort, declare the conflict as "extra work" to be accomplished by the Contractor in accordance with Section 104.

601.6.2 Irrigation Ditches, Pipes and Structures: The Contractor shall contact the owners of all irrigation facilities, and make arrangements for necessary construction clearances and/or dry-up periods.

All irrigation ditches, dikes, headgates, pipe, valves, checks, etc., damaged or removed by the Contractor, shall be restored to their original condition or better, by the Contractor at no additional cost to the Contracting Agency.

601.6.3 Building, Foundations and Structures: Where trenches are located adjacent to building, foundations and structures, the Contractor shall take all necessary precaution against damage to them. The Contractor shall be liable for any damage caused by the construction.

Except where authorized in the special provisions or in writing by the Engineer, water settling of backfill material in trenches adjacent to structures will not be permitted.

There will be no separate measurement or payment for this work. The Contractor will include all associated costs in the unit bid price for the pipe installation.

601.6.4 Permanent Pipe Support Options and Encasements: Where 18-inch or larger mainline pipes (or other pipes as directed by the Engineer) cross under existing sanitary sewerlines (vitrified clay pipe 12-inches or smaller), the Contractor shall permanently support the sanitary sewerline per MAG Detail 403-1, 403-2 or 403-3. If the ductile iron pipe replacement option is used (403-3), and the required crossing length is more than one joint of pipe, concrete pipe supports as detailed in MAG Details 403-1 or 403-2 shall be used in addition to the ductile iron pipe. For a single joint of standard 20-foot-long ductile iron pipe replacement, the maximum trench width allowed at the point of the sewer line crossing shall be 9-feet, unless otherwise directed by the Engineer. Mechanical or restrained joints shall be required on all multiple-joint ductile iron pipe crossings.

Where waterlines, reclaimed waterlines or sanitary sewer lines (new or existing) cross over or under each other, pipeline encasements shall be provided as necessary in accordance with MAG Detail 404.

When the ductile iron pipe replacement option is used for the sewer lines, the new pipe shall be properly blocked at each end with one or more bricks resting on undisturbed or 95% compacted soil haunches outside the trench walls to prevent differential settlement.

The interior of all ductile iron pipe used for sewer lines shall be coated per the specification 751, "CIPP LINING FOR DUCTILE IRON PIPE USED FOR SEWER LINES" in the Water Services Department Design Standards Manual.

Upon completion of a sanitary sewer line support or encasement, including backfilling and compacting, but prior to permanent pavement replacement, the Contractor shall request, through the Engineer, a televising of the line by the City Water Services Department to ensure proper line and grade of the sanitary sewer pipe. If the pipe is out of alignment, it shall be the Contractor's responsibility to remedy the situation at no cost to the City.

If the sanitary sewer line is less than 8-inches in diameter, the Contractor shall provide the necessary equipment and televise the line to determine proper pipe alignment. The Engineer shall be present during the televising, and a video tape of the televising shall be made for the City Water Services Department for confirmation that the pipe is properly aligned. The cost of televising the line and preparing the video tape shall be included in the bid price paid for the pipe support or encasement.

Permanent pipe supports shall be paid for at the unit price bid for each unit installed regardless of type. Encasements shall be paid for at the unit price bid per linear foot installed regardless of type. The unit price bid for either item of work shall be compensation in full for providing complete and satisfactory permanent pipe supports or encasements, including ductile iron pipe and fittings, concrete, reinforcing steel, forming, vibrating, any required earthwork, televising and videotaping, and any other incidental items necessary.

601.6.5 Electronic, Telephonic, Telegraphic, Electrical, Oil and Gas Lines: During trenching operations, underground facilities such as electronic, telephonic, telegraphic, electrical, oil and gas lines shall be supported and protected by the Contractor. Support for plastic pipes shall be continuous along the bottom of the pipe. Support for metal pipe and electrical conduit may be continuous or nylon webbing may be used for suspension at no greater than ten-foot intervals.

The Contractor shall avoid damaging any pipes, conduits or duct bank facilities during excavation, foundation

and bedding placement, and trench backfilling and compaction.

601.6.6 Measurement and Payment:

There will be no measurement or payment for the work of protecting utilities. The Contractor will include all associated costs in the unit bid price for the pipe installation.

Permanent Pipe support for Sanitary Sewerlines will be made under bid item "Permanent Pipe Support, MAG Standard Details 403-1, 403-2, or 403-3", regardless of the cost of the option used. The cost for each pipe crossing support shall include any CIPP lining if the Ductile Iron pipe section is used.

28. **601 TRENCH EXCAVATION, BACKFILLING AND COMPACTION**, Add the following new **Subsection 601.7 CONTRACTOR CERTIFICATION OF INSTALLATION PROCEDURES:**

601.7 CONTRACTOR CERTIFICATION OF INSTALLATION PROCEDURES

When requested in the Special Provisions or by the Engineer prior to installation, the Contractor shall furnish to the Contracting Agency an affidavit (certification) from the pipe manufacturer (or his designee) stating that the Contractor is familiar with the manufacturer's suggested installation methods and procedures and the installation complies with those procedures and is consistent with MAG requirements.

Also, when required in the Special Provisions or requested by the Engineer, the pipe manufacturer or his designee will review the Contractor's methods and procedures for pipe installation in the field. The Contractor will make any adjustments in the installation as recommended by the manufacturer or his representative. If necessary, the Contractor may be required to reinstall or provide corrections to pipe installed prior to the field review at no cost to the Agency. Once the manufacturer or his representative has reviewed the Contractor's installation methods and the Contractor has adjusted his installation methods as recommended by the same, the manufacturer or his representative shall furnish to the Contracting Agency an affidavit (certification) that the Contractor's installation methods and procedures, at the time of the review, complied with the manufacturer's installation practices. The affidavit must provide the name of the manufacturer's representative witnessing the pipe installation.

29. **610 WATERLINE CONSTRUCTION**, Add the following to **Subsection 610.4 CONSTRUCTION METHODS:**
WATER MAIN REALIGNMENT

In the event of unavoidable conflict between proposed construction and an existing water main, the Contractor shall vertically and/or horizontally realign the water main in accordance with COP Detail P1370 and Section 610 and restrained joint length requirements of MAG STD Detail 303. No concrete thrust blocks will be allowed. All pipe shall be ductile iron with restrained joints. Existing Asbestos Cement Pipe shall be removed and properly disposed of, and the pipe shall be replaced with new ductile iron with restrained joints to achieve required restrained lengths.

The water main realignment shall include, but not be limited to, excavation, backfill, compaction, pipe, fittings, offsets, couplings, sleeves, joint restraint and hardware. The realigned water main shall be visually inspected for leaks under line pressure prior to backfilling. The contractor shall as-built all realignments in accordance with the requirements of WSD Engineering Standard DCE-D01 and provide the information on the final as-builts.

The Contractor shall arrange with the Engineer to have the line shut down in order to perform the work. At no cost to the Contractor, the City Water Services Department will provide necessary valve cuttings, take the line out of service and flush the relocated line prior to placing it back in service. The contractor may require multiple shutdowns to complete the work of realignment and minimizing impacts to the water meter customers. The

contractor shall request quarter section maps from the Water Services Department to identify all water mains and service connections within the limits of the water realignment.

Materials for water main realignment shall be ductile iron in accordance with COP Supplement to MAG Subsection 750.2 DUCTILE IRON WATER PIPE.

Measurement and Payment

Measurement will be made per each realignment constructed, inclusive of replacement of pipes to achieve required restrained joints, for the various water main sizes encountered.

On project ST83140124, Payment for realignment of water mains will be made at the unit price bid per each under bid item " 6" DUCTILE IRON WATER PIPE & FITTINGS, RESTRAINED, FURNISH & INSTALL". Measurement will include the additional pipe removal and replacement to achieve required restrained lengths on both sides of the realignment.

30. **610 WATER LINE CONSTRUCTION**, Add the following to **Subsection 610.7 VALVES**:

LOCATING, CLEANING AND INSTALLING WATER VALVE BOX DEBRIS CAP WITH LOCATOR COIL

The Contractor shall furnish and install a debris cap with a locator coil in all new water valve boxes installed; in all existing water valve boxes adjusted to grade; and in all other existing water valve boxes within the project limit right-of-way, even if not called out for adjustment to grade. The debris cap shall be in accordance with City of Phoenix Supplement to MAG Detail P-1165 and shall include a locator coil.

Prior to installation of the debris cap, valve risers shall be thoroughly cleaned, fully exposing the operating nut. In addition, the Contractor shall attempt to locate all unexposed water valves within the project limits, as indicated by City of Phoenix Water Services Department water valve Quarter-Section maps. In attempting to locate unexposed valve boxes, the Contractor shall excavate a minimum depth of eighteen (18) inches from the surface. Unexposed valve boxes found shall be brought up to finish grade; cleaned to fully expose the operating nut; and a debris cap with locator coil shall be installed.

Measurement for debris caps furnished and installed in water valve boxes (adjusted to grade or not) shall be per each unit, including locating and cleaning. The Contractor shall obtain the appropriate Water Services Department water valve Quarter-Section maps at Phoenix City Hall, 200 W. Washington Street, 8th Floor, at no additional cost to the City, and shall make a diligent effort to locate all existing unexposed water valves shown on these maps. The Contractor shall clearly mark all unexposed water valve boxes actually located on record plans and copies of the water valve Quarter-Section maps showing specific found location information, and these plans shall be provided to the Engineer. The cost for the Contractor to extend any risers on found unexposed valve boxes to bring them up to finish grade shall also be considered incidental.

No separate payment will be made for this work in paved and unpaved areas. The work shall be considered incidental to "ADJUST EXISTING TYPE A WATER VALVE, STANDARD DETAIL P-1391 and P-1391-1".

There will be no separate measurement or payment for any labor, materials or equipment used in attempting to locate valves shown on the Quarter-Section maps that are not actually found. Valve locating attempts that do not produce any resulting "finds" shall be considered incidental.

31. **610 WATER LINE CONSTRUCTION**, Add the following to **Subsection 610.10 CONNECTION TO EXISTING MAINS**:

WATER MAIN SHUTDOWN

For shutdowns that are necessary to accomplish the work, the Contractor shall make written request to Water Distribution at least three (3) calendar weeks before the shutdown. Requests shall specify location, size of line, duration, date, and time for each shutdown. Within one (1) week, Water Distribution will schedule shutdown and give written notification to the Contractor. Any schedule revisions requested by the Contractor must be in writing. Water Distribution's revised schedule will be available within one (1) week. The City does not guarantee a totally dry line. The Contractor shall be prepared to de-water as necessary to accomplish the work.

The Contractor shall be responsible for maintaining accessibility to the valve operating nuts for all valves within the project boundaries. Failure to maintain accessibility to valves shall be cause for canceling shutdown, and the Contractor will be required to request a revised schedule.

The Water Services Department is indemnified for any and all resultant costs incurred by the Contractor such as, but not limited to traffic control, delays, loss of incentives, standby and penalties if the Contractor did not properly request a shutdown; failure to maintain accessibility to valves; or if the Contractor's scheduled work did not progress to the anticipated shutdown schedule.

Measurement and Payment

On project ST83140124, Payment for connecting to the existing waterline will be made at the unit price bid per each under bid items "CONNECTION TO EXISTING 6" WATERLINE".

32. **610 WATER LINE CONSTRUCTION**, Add the following to **Subsection 610.11(D) METER SERVICE CONNECTIONS**:

HORIZONTAL BORING FOR METER SERVICE CONNECTIONS

For meter service pipes 1-inch or larger in diameter, the maximum bore hole size permissible shall be twice the internal diameter of the service line being installed. For meter service pipes smaller than 1-inch in diameter, the maximum borehole size shall be two (2) inches in diameter.

33. **610 WATER LINE CONSTRUCTION**, Add the following to **Subsection 610.19 MEASUREMENT AND PAYMENT**:

(I) Ductile Iron Fittings: Any additional waterline fittings that become necessary during construction, beyond what is shown on the plans for water main construction; and any fittings needed for new fire hydrant installations, shall be paid for separately under the bid item, "ALLOWANCE FOR EXCESS DUCTILE IRON FITTINGS, FURNISH AND INSTALL". Payment for these fittings shall be made from this allowance based on approved invoiced cost of the materials only, plus bonds, insurance and taxes, and a maximum 15 percent markup for overhead and profit. All other waterline fittings as shown on the plans shall be considered incidental to the cost of the water pipe.

34. **618 STORM SEWER CONSTRUCTION WITH PRE-CAST CONCRETE PIPE, HIGH DENSITY POLYETHYLENE PIPE, OR STEEL REINFORCED POLYETHYLENE PIPE**:

Revise all references to the term, "storm sewer" to read, "storm drain."

35. **618 STORM SEWER CONSTRUCTION WITH PRE-CAST CONCRETE PIPE, HIGH DENSITY POLYETHYLENE PIPE, OR STEEL REINFORCED POLYETHYLENE PIPE**,

Add the following to **Subsection 618.7 PAYMENT:**

- (A) Pipe Plugs: Pipe plugs, per MAG Detail 427, shall be paid for at the unit price bid for each plug, and price shall be compensation in full for providing complete, satisfactory pipe plugs including brick or block work, concrete, grout or mortar, vitrified clay or plastic plugs, band seal couplings, any required earthwork, end-of-pipe marker, or any other incidental items necessary.
- (B) Storm Sewer: Storm drain pipe shall be paid for at the unit price bid for linear foot, based on the storm sewer pipe size. This shall be full compensation for furnishing all labor, materials, tools, and equipment to install the pipe, complete in place as specified, including backfill, prefabricated tees and bends, excavation, backfilling, compaction, shoring, sheeting and bracing, testing, and all incidental work not specifically covered in other pay items.
- (C) Connection to Box Culvert: The storm drain connection to existing box culvert will be made at the unit price bid per each under proposal item "CONNECT STORM SEWER LATERAL TO EXISTING BOX CULVERT PER PLAN". The unit price to be paid under these items shall be compensation in full for constructing the connection as shown on the plans and as specified, including any required earthwork, concrete, reinforcing steel, forming, vibrating, finishing, curing, excavation, backfill, compaction and any pavement replacement in excess of the applicable pay widths assigned to the adjacent pipes or any other incidental items necessary.

36. **620 STORM SEWER CONSTRUCTION WITH CAST-IN-PLACE CONCRETE PIPE:**

Revise all references to the term "storm sewer" to read "storm drain."

37. **625 MANHOLE CONSTRUCTION AND DROP SEWER CONNECTIONS,** Add the following new **Subsection 625.1 3 DRYWELLS:**

Construction shall consist of furnishing all materials and constructing drywells complete in place as detailed on the plans including primary chamber, settling chamber, liners, materials, pipes, and any incidentals thereto, at locations shown on the plans.

Maintenance of existing Maintenance should include removal of all sediment, cleaning of all filters and screens and replacement of chemical absorbents. Removed material should be disposed of at a landfill or facility that is approved to accept it.

38. **625 MANHOLE CONSTRUCTION AND DROP SEWER CONNECTIONS,** Add the following to **Subsection 625.2 MATERIALS:**

Per City of Phoenix Water Services Department, "MAG Standard Detail 425: 24" Aluminum Manhole Frame and Cover" is **not approved** and shall not be used in the City of Phoenix.

39. **625 MANHOLE CONSTRUCTION AND DROP SEWER CONNECTIONS,** Add the following to **Subsection 625.3.1 MANHOLES:**

If steps are inadvertently installed, they shall be removed, and the holes shall be filled with epoxy or Class "B" concrete.

40. **625 MANHOLE CONSTRUCTION AND DROP SEWER CONNECTIONS,** Add the following to **Subsection 625.3.1, MANHOLES:**

SANITARY SEWER MANHOLE ADJUSTMENTS

On all existing sewer manholes adjusted to new finish grade, the entire new portion of the adjusted manhole shall be seal coated in accordance with COP Supplement to MAG Specification Sections 626 and 627.

41. **625 MANHOLE CONSTRUCTION AND DROP SEWER CONNECTIONS, Delete** the first paragraph in **Subsection 625.5 PAYMENT** and replace with the following:

Manholes shall be paid for at the unit price bid for each type, as represented by the respective bid item, regardless of dimensional or other differences occurring within a particular type. The unit price to be paid under these items shall be compensation in full for furnishing and placing manhole structures as shown on the plans and as specified, including concrete, reinforcing steel, forming, vibrating, finishing, curing, cast iron manhole frame and cover, frame adjustment to grade, structural excavation, backfill, compaction and any pavement replacement in excess of the applicable pay widths assigned to the adjacent pipes.

Drywells shall be paid for at the unit price bid for each type, under the bid items 'DRY WELL PER DETAIL ON SHEET 5'; and 'DRY WELL PRIMARY CHAMBER PER DETAIL ON SHEET 5', regardless of dimensional or other differences occurring within a particular type. The unit price to be paid under these items shall be compensation in full for furnishing and placing drywells as shown on the plans and as specified, including concrete, reinforcing steel, forming, vibrating, finishing, curing, cast iron manhole frame and cover, frame adjustment to grade, structural excavation, backfill, compaction and any pavement replacement in excess of the applicable pay widths assigned to the adjacent pipes.

Drywell maintenance on existing drywells shall be paid for at the unit price bid for each under the bid item "PERFORM MAINTENANCE SERVICE ON EXISTING DRYWELLS" and shall include removal of all sediment, cleaning of all filters and screens and replacement of chemical absorbents.

42. **631 WATER TAPS AND METER SERVICE CONNECTIONS, Add** the following **Subsection 631.3 Excavation and Backfill:**

Bedding and backfill shall be full depth ABC for water services installed under pavement using open trench method. The cost of the ABC material, labor and compaction shall be included in the cost of the water service work.

43. **631 WATER TAPS AND METER SERVICE CONNECTIONS, Add** the following new **Subsection 631.9 REPLACEMENT, EXTENSION AND RELOCATION OF EXISTING WATER SERVICES AND METERS** as follows:

631.9 REPLACEMENT, EXTENSION AND RELOCATION OF EXISTING WATER SERVICES AND METERS

Extension or Replacement of Existing Water Service Lines

The Contractor shall replace or/and extend existing water service lines at the stations listed in these specifications or on the plans in accordance with Detail P-1342. The Engineer will determine when the existing lines are unsatisfactory and must be replaced. Generally, existing copper in good condition with sufficient cover will be extended. Water service lines other than copper shall be replaced.

The water service shall include, but is not limited to, locating the present tap, trenching, bedding, backfilling, disconnecting the existing service pipe from the corporation stop, furnishing and installing new service pipe, new appurtenant fittings, new curb stop and new meter coupling, and re-connection to the meter. The existing tapping

saddle and corporation stop shall remain, but the Contractor shall not use any other salvaged service connection components. If the saddle is a single strap, the saddle shall be replaced with a double strap saddle. In the event there is no tapping saddle, The Contractor shall install one. The cost of the saddle and reinstallation of the corporation stop shall be considered incidental to the water service replacement.

Inserts or adapters required to connect to the corporation stop are available at the Water Services Department yard at no cost to the Contractor. The Contractor must obtain a written order (AVO) from the Engineer before picking up said items.

Bedding and backfill shall be full depth aggregate base course. Payment for furnishing and compacting the aggregate base course shall be included in the bid item for replacing or extending existing water services.

The Contractor shall schedule his work so that no open trenches are left overnight.

Materials for water service connections shall conform to MAG Section 754 and City of Phoenix Supplement 610.4.4 and 610.4.5. Joints in the copper tubing shall be made by the use of approved fittings, properly soldered or by means of approved compression fittings such as flared joints or pack joints.

Water Meter Relocation

Water meter relocation consists of disconnecting the meter, moving the meter, meter box and cover from the existing location to the new location and reconnecting in accordance with Details P-1342 and P-1363. The meter box and cover shall be set to match the grade at the new location.

Any water meter boxes and/or covers damaged by the Contractor during course of construction shall be replaced in kind at the Contractor's expense.

It is anticipated that some water meter boxes and/or covers may require replacement due to prior damages not due to the fault of the Contractor. The Water Services Department will furnish replacement water meter boxes and covers at no cost; however, the Contractor must first obtain a written order (Field Directive) from the Engineer. Then, at no additional cost to the City, the Contractor shall pick up the specified number of units from the Water Distribution Warehouse located at 2500 S. 22nd Avenue.

Water meter boxes and covers shall be Type 1, 2 or 3 in accordance with MAG Details 310, 311, 312, and 320 and P-1315.

All materials and fittings shall conform to the requirements of Section 610 and 754. No salvaged service connection components shall be used.

Measurement and Payment

Measurement for extending and/or replacing water services will be made to the nearest linear foot from the point of connection to the existing line or corporation stop, whichever is applicable, to the curb stop.

On project ST83140124, payment for extending and/or replacing water services will be made at the unit price bid per linear foot under the bid item 1" INCH WATER SERVICE REPLACEMENT PER SPECIAL PROVISIONS".

44. Add the following new **Section 635 ABANDONMENT AND REMOVAL OF EXISTING WATER FACILITIES** as follows:

635 ABANDONMENT AND REMOVAL OF EXISTING WATER FACILITIES

635.1 ABANDONMENT OF EXISTING WATERLINE

Existing waterlines shown on the plans to be abandoned shall be done after all water services have been disconnected. The Water Services Department will locate and mark the specific locations where the water lines are to be abandoned. The Contractor shall expose the existing water main to be abandoned and cut and plug as required on the plans.

For connections where an existing tee, cross or tapping sleeve and valve, or corporation stop exists at the main, the Contractor shall remove the tee, cross or tapping sleeve and valve or corporation stop and replace the water main in accordance with City of Phoenix Standard Detail P1344. For locations where a "Cut and Plug" is called for on the plans, the Contractor shall provide a cut and plug on the existing pipe in accordance with City of Phoenix Standard Detail P1343. Cutting, plugging and filling the existing waterline will be made at the unit price bid per each under bid items "CUTTING AND PLUGGING EXISTING WATERLINE" and "ABANDON-IN-PLACE & PLUG 6" WATERLINE (FILL WITH LOW STRENGTH GROUT)". Measurement and payment for this work will be made at the unit price bid per each for these bid items and shall include all labor and material necessary to complete this item in place.

Concrete and asphalt concrete pavement removal and replacement for curbs, sidewalks, driveways, etc. necessary to complete this work shall be considered incidental to the abandonment work and shall be included in the cost for each abandonment. Pavement replacement, if any, shall be paid for under a separate bid item for that work.

45. 702 BASE MATERIALS Add the following to MAG Section 702 BASE MATERIALS:

All Select Material specified on the plans and Standard Details shall be Type "A" in accordance with Table 702-1.



Credit: DesertUSA.com/animals/cliff-swallow.html



City of Phoenix
STREET TRANSPORTATION DEPARTMENT

Migratory Bird Treaty Act

(Applies to many birds in Phoenix)

The purpose of this flyer is to provide City of Phoenix employees and contractors with basic knowledge to reduce the risk of impacting species protected by the Migratory Bird Treaty Act.

Migratory Bird Treaty Act (MBTA)

Under the Migratory Bird Treaty Act of 1918, as amended, listed birds and their parts (including eggs, feathers, and nests) are fully protected. They are also protected under Arizona State Law, Title 17-101, Title 17-235, and Title 17-236. The MBTA states that it is illegal to:

- Pursue, hunt, take, capture, kill, possess, sell, purchase, barter, import, export, or transport any migratory bird, or any part, nest, or egg of any such bird.
 - 'Take' is defined as to "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect."

More information regarding the MBTA can be found at:

- <http://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php>
- <https://www.fws.gov/laws/lawsdigest/migtrea.html>

Where/When are they active?

- The nests of birds protected by the MBTA can be found in many places, including trees, shrubs, cacti, cattails, on the ground, in holes in the ground and on man-made structures including culverts, bridges, buildings, etc.
- The breeding cycle of most birds in Phoenix occurs between February 1 and August 31, although there are a few species that may nest outside that period. Some birds may be present year-round and others migrate, often during the late summer/early autumn period.

How to avoid impacting birds protected by the MBTA:

- If your project might impact active bird nests/burrows, work with one of the contacts below during the design process to make appropriate arrangements before the project activity begins. Necessary actions may include active nest surveys, seasonal restrictions, or obtaining a project-specific relocation permit from the U.S. Fish and Wildlife Service.
- When actively working, be aware of your surroundings. If you see a nest that appears active (chirping, aggressive or distracting adult bird behavior, eggs present, etc.) **STOP WORK** within 30 feet of the area and call one of the contacts below.

Questions? Work may impact birds protected by the MBTA? Contact a City of Phoenix Street Transportation Department Environmental Quality Specialist:

Andrea Love 602-495-6718 or via e-mail at <andrea.love@phoenix.gov>

James Marshall 602-534-3747 or via e-mail at <james.marshall@phoenix.gov>

Updated December 8, 2022



City of Phoenix
STREET TRANSPORTATION DEPARTMENT

Western Burrowing Owl

(*Athene cunicularia*)

The purpose of this flyer is to provide City of Phoenix employees and contractors working on City projects with basic knowledge to reduce the risk of impacting western burrowing owls.

Legal Status:

The western burrowing owl is protected under the Migratory Bird Treaty Act of 1918, as amended. All migratory birds and their parts (including eggs, feathers, and nests) are fully protected. They are also protected under Arizona State Law, Title 17-101, Title 17-235, and Title 17-236.

Species Description:

- Small, ground-dwelling owl (mass of approx. 5 oz.)
- Length: 7.6-9.9 inches, with long legs
- Wingspan: approx. 23 inches
- Round head, lacks ear tufts
- Distinct oval facial ruff, framed by a broad, puffy white eyebrow
- Bright yellow iris

Where are they found?

- Dry, open, short grass, treeless plains
- Human dominated landscapes such as:
 - Golf courses, airports
 - Agricultural fields, vacant lots
- Depends on other animals to construct burrows

Identifying an active burrow

- Western burrowing owls use burrows constructed by ground squirrels, badgers, coyotes, tortoises, etc., or may use pipes, culverts, and ditches.
- They may “decorate” the entrance to a burrow with cow, horse, or dog manure, feathers, vegetation, and trash items
- An active burrow may (not always) have owl excrement (“whitewash”) and/or pellets near the entrance

How to avoid impacting western burrowing owls:

- Scan ahead as you work
- **If western burrowing owls or potentially active burrows observed, STOP WORK and MOVE at least 100 feet away from the owl or occupied burrow before resuming work**
 - Do not harass or “shoo” the owl away
- If the project cannot avoid or stay outside 100 feet of the owl or active burrow, call contact listed below

Questions? Need to work within 100 feet of a western burrowing owl or active burrow? Contact a City of Phoenix Street Transportation Department Environmental Quality Specialist:

Andrea Love 602-495-6718 or via e-mail at <andrea.love@phoenix.gov>

James Marshall 602-534-3747 or via e-mail at <james.marshall@phoenix.gov>

Sources: Arizona Department of Transportation Environmental Planning Group Western Burrowing Owl Awareness Flyer
Arizona Game and Fish Department Animal Abstract: Western Burrowing Owl. Heritage Data Management System

Updated December 8, 2022



Credit: AGFD



City of Phoenix
STREET TRANSPORTATION DEPARTMENT

Sonoran Desert Tortoise

(Gopherus morafkai)

The purpose of this flyer is to provide City of Phoenix employees and contractors working on City projects with basic knowledge to reduce the risk of impacting Sonoran Desert tortoise.

Legal Status:

The Sonoran Desert tortoise is a Tier 1A Species of Greatest Conservation Need in the State of Arizona, as defined by the Arizona Game and Fish Department (AGFD) and is a Candidate Species under the Endangered Species Act.

Species Description:

- Length: 8-15 inches
- Bottom shell yellowish and not hinged
- Hind limbs stocky and elephantine
- High-domed, brownish shell with a pattern and prominent growth lines
- Flattened forelimbs for digging, covered with conical scales

Where are they found?

- Rocky, steep slopes and lower mountain slopes
- Native desert scrubland
- Between 904 and 4,198 feet in elevation
- Washes and valley bottoms may be used in dispersal

Where are they active?

- Sonoran Desert tortoise spend the bulk of time in burrows, which provide protection from heat and cold
- Emerge from burrows on rocky slopes, desert scrub or grassland to feed, bask and breed, mostly during the monsoon season

How to avoid impacting Sonoran Desert tortoise:

- Scan ahead as you work
- ***If Sonoran Desert tortoise observed, STOP WORK, call the contact below and allow the tortoise to leave under its own power***
- Do NOT pick up or handle the Sonoran Desert tortoise unless the tortoise is in imminent danger. Improper handling can result in tortoise death. If a tortoise must be moved, strictly adhere to the following AGFD guidelines (rev. 9/22/2014): <https://s3.amazonaws.com/azgfd-portal-wordpress/PortalImages/files/wildlife/2014%20Tortoise%20handling%20guidelines.pdf>.
- When working in Sonoran Desert tortoise habitat, check for tortoises under parked vehicles before driving

Questions? Concerns? Think your project will impact Sonoran Desert tortoise? Contact the City of Phoenix Street Transportation Department, Environmental Services:

Andrea Love 602-495-6718 or via e-mail at <andrea.love@phoenix.gov>

Greta Halle 602-534-6030 or via e-mail at <greta.halle@phoenix.gov>



Clean Water Act Section 404 Initial Assessment Form

Project Number ST83140124-1 Project Manager Ryan Bentz
Project Name 48th Place and East Flower Street Storm Drain Mitigation
Department PWD Division Floodplains Date 6/21/2022
Location 48th Place and East Flower Street

Type of Activity

Pipeline	<input checked="" type="checkbox"/>	Catch basins, Storm Drains
Street (paving, curb, etc.)	<input checked="" type="checkbox"/>	Curb/Gutter, Paving
Repair	<input type="checkbox"/>	New construction
Other	<input checked="" type="checkbox"/>	Sidewalks, Geotech, Potholing

Further Project Description

In the vicinity of E Flower Street and N 48th Place, replace existing 12-in storm drain with 36-in storm drain. construct new valley gutters on N 50th St at E Mulberry Dr and E Flower St. Reconstruct curb returns and sidewalk ramps to create a high point on E Mulberry Dr and E Flower St.

Are Any of the Following Present?

Desert Wash or Drainageway	<input type="checkbox"/>	N/A
Potentially Suitable Habitat(1)	<input checked="" type="checkbox"/>	landscaped vegetation, parkland
Wetland	<input type="checkbox"/>	N/A

Recommendations / Comments (To be completed by reviewer)	
404 Permit Required?	No
List Potentially Applicable NWP's	N/A
Need Jurisdictional Delineation?	No
Need Biology Report?	No
Need Consultant?	No
<i>1) The Old Crosscut Canal is adjacent to the project area to the west but is piped in this location and will not be impacted. No other potential Waters of the U.S. observed during aerial review. No Section 404 permitting required.</i>	
<i>2) Landscaped vegetation is present and may be impacted by project activities. Construction should avoid impacts to vegetation to the extent practicable. The MBTA construction flyer shall be provided to the contractor prior to the start of work.</i>	
<i>3) Less than 1 acre of ground disturbance is anticipated to occur; if correct, no AZPDES Construction General Permit is not required. Regardless of acreage, the contractor must comply with Phoenix City Code 32C.</i>	
<i>4) If the scope of work or project footprint changes, the project must be reassessed for potential impacts.</i>	
Signature <u>T. D. Ballew</u>	Date <u>7/1/2022</u>

(1) Potentially suitable habitat for federal or state listed species such as southwestern willow flycatchers, yuma clapper rails or burrowing owls; OR any kind of quality riparian or desert vegetation.

American Rescue Plan Act Program – Local Drainage Mitigation Project

Project: North 48th Place and East Flower Street

(Council District 6)

Scope: Replace existing 12-in storm drain with 36-in storm drain, construct new valley gutters on N 50th St at E Mulberry Dr and E Flower St. Reconstruct curb returns and sidewalk ramps to create a high point on E Mulberry Dr and E Flower St.

Proposed Improvements



GAVAN & BARKER Memorandum / 48th Place and Flower Street / 2020

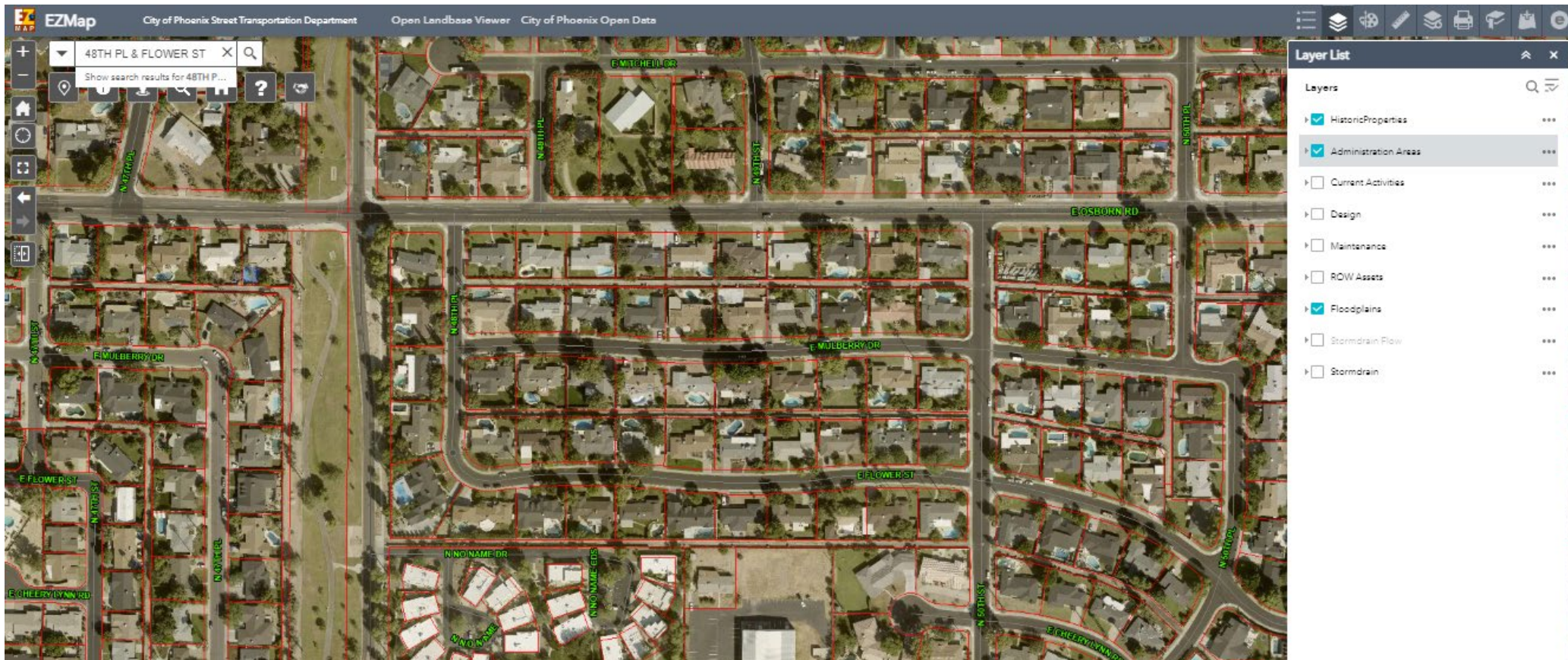
Project Background Notes:

The City of Phoenix received a drainage complaint from residents who reside on East Flower Street which assert that storm water runoff accumulates at the intersection which overtops the curb flooding their homes and their two adjacent neighbors.

There have been recent changes which have exasperated the flooding problem, they include the construction of new homes, removal of flood irrigation yards (*original flood irrigated lots retained most of the runoff, where new sprinkler irrigated yards are graded to the street*) and the construction of block walls.

The intersection of 48th Pl and Flower St is the concentration point of the local 17.8 acre watershed.

48th Place & Flower Street Drainage Mitigation Plan EZ Map Review





Clean Water Act Section 404 Initial Assessment Form

Project Number ST83140117-1 Project Manager Ryan Bentz
Project Name E Pinchot Avenue and N 18th Street Drainage Improvements
Department PWD Division Floodplains Date 6/21/2022
Location E Pinchot Avenue and N 18th Street

Type of Activity

Pipeline	<input checked="" type="checkbox"/>	Catch basins, Storm Drains
Street (paving, curb, etc.)	<input checked="" type="checkbox"/>	Curb/Gutter, Paving
Repair	<input type="checkbox"/>	New construction
Other	<input checked="" type="checkbox"/>	ADA ramps, Sidewalks, Potholing

Further Project Description

In the vicinity of E Pinchot Avenue and N 18th Street, reconstruct of the 18th Street & Pinchot Avenue intersection, install multiple catch basins and tie into new storm drain along 18th Street from E Pinchot Avenue to Catalina Drive then west to 16th Street to help alleviate flooding to the residents.

Are Any of the Following Present?

Desert Wash or Drainageway	<input type="checkbox"/>	N/A
Potentially Suitable Habitat(1)	<input checked="" type="checkbox"/>	landscaped vegetation
Wetland	<input type="checkbox"/>	N/A

Recommendations / Comments (To be completed by reviewer)

404 Permit Required? No

List Potentially Applicable NWP N/A

Need Jurisdictional Delineation? No

Need Biology Report? No

Need Consultant? No

1) *No potential Waters of the U.S. observed during aerial review; no Section 404 permitting required.*

2) *Landscaped vegetation is present and may be impacted by construction. Avoid impacts to vegetation to the extent practicable. The MBTA construction flyer shall be provided to the contractor prior to the start of work.*

3) *If 1 acre or more of ground disturbance will occur, the contractor must evaluate the need for an AZPDES Construction General Permit. Regardless of acreage, the contractor must comply with Phoenix City Code 32C.*

4) *If the scope of work or project footprint changes, the project must be reassessed for impacts.*

Signature  Date 7/1/2022

(1) Potentially suitable habitat for federal or state listed species such as southwestern willow flycatchers, yuma clapper rails or burrowing owls; OR any kind of quality riparian or desert vegetation.

American Rescue Plan Act Program – Local Drainage Mitigation Project

Project: Pinchot Ave & 18th St Drainage Improvements

(Council District 4)

Scope: Reconstruction of the 18th St & Pinchot Ln intersection, install multiple catch basins and tie into new storm drain along 18th St from E Pinchot Ln to Catalina then west to 16th St to help alleviate flooding to the residents.

Proposed Improvements



Kennedy/Jenks Consultants / 19th Street and Avalon Avenue Drainage Study 2006 / Combination of Alternatives

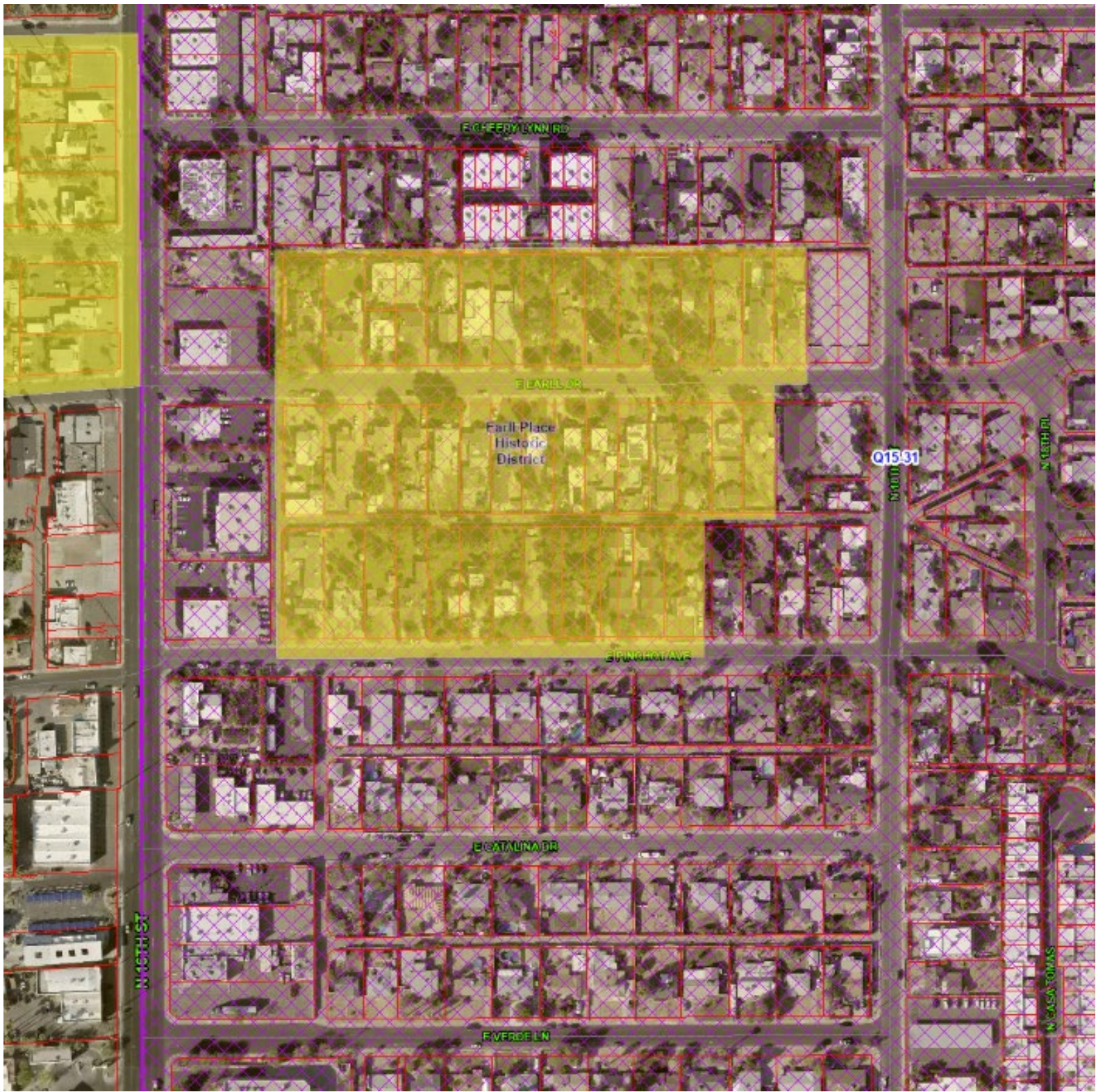
Project Background Notes:

The City of Phoenix received three separate drainage complaints which were investigated

According to the complaints, structures at 1731 East Pinchot Avenue and 2951 North 18th Street became flooded from stormwater runoff during heavy storms.

1901 East Avalon Drive reported poor drainage along the street.

Pinchot Avenue & 18th Street Drainage Mitigation Plan EZ Map Review



City of Phoenix
Street Transportation Department



Clean Water Act Section 404 Initial Assessment Form

Project Number ST83140118-1 Project Manager Ryan Bentz
 Project Name Westwood N 23rd Ave and W Devonshire Ave
 Department PWD Division Floodplains Date 6/22/2022
 Location N 23rd Ave and W Devonshire Ave

Type of Activity

Pipeline	<input checked="" type="checkbox"/>	Catch basins, Storm Drains
Street (paving, curb, etc.)	<input checked="" type="checkbox"/>	Curb/Gutter, Paving
Repair	<input type="checkbox"/>	New construction
Other	<input checked="" type="checkbox"/>	Potholing

Further Project Description

In the vicinity of North 23rd Avenue & West Devonshire Ave, install catch basins on the east side of 23rd Avenue and connect to the existing storm drain.

Are Any of the Following Present?

Desert Wash or Drainageway	<input type="checkbox"/>	N/A
Potentially Suitable Habitat(1)	<input checked="" type="checkbox"/>	Landscaped vegetation
Wetland	<input type="checkbox"/>	N/A

Recommendations / Comments (To be completed by reviewer)	
404 Permit Required?	No
List Potentially Applicable NWP's	N/A
Need Jurisdictional Delineation?	No
Need Biology Report?	No
Need Consultant?	No
<p>1) No potential Waters of the U.S. present. No Section 404 permitting required.</p> <p>2) Impacts to vegetation are not expected. Due to the proximity of landscaped vegetation, provide the Migratory Bird Treaty Act flyer to the contractor prior to the start of construction.</p> <p>3) Less than 1 acre of ground disturbance will occur. The contractor must comply with Phoenix City Code 32C.</p> <p>4) If the project footprint or scope of work changes, the project must be reassessed for potential impacts.</p>	
Signature _____	Date _____

(1) Potentially suitable habitat for federal or state listed species such as southwestern willow flycatchers, yuma clapper rails or burrowing owls; OR any kind of quality riparian or desert vegetation.

American Rescue Plan Act Program – Local Drainage Mitigation Project

Project: Westwood – North 23rd Avenue and West Devonshire Avenue

(Council District 4)

Scope: Install catch basins on the east side of 23rd Avenue and connect to the existing storm drain.

Proposed Improvement Plan





W GLENROSA AVE

N NO NAME

N NO NAME

N 21ST DR

N 22ND AVE

N 21ST AVE

W HEATHERBRAE DR

W DEVONSHIRE AVE

N 23RD DR

N 22ND DR

N 23RD AVE

Arizona Education Association

W INDIAN SCHOOL RD

Grand Canal

N 22ND AVE

W AMELIA AVE

W CREST CIR

W AMELIA AVE

City of Phoenix Street Transportation Department

Wood, Patel & Associates, Inc.
602.335.8500
www.woodpatel.com

August 13, 2024
WP# 225395
Page 1 of 4
See Exhibit "A"

LEGAL DESCRIPTION
ST83140124 4809 E Flower Street
Temporary Construction Easement

A portion of Lot 51, Orange Valley Estates, recorded in Book 61, page 47, Maricopa County Records (MCR), lying within Section 29, Township 2 North, Range 4 East, of the Gila and Salt River Meridian, Maricopa County, Arizona, more particularly described as follows:

COMMENCING at the west quarter corner of said Section 29, a 3-inch City of Phoenix (COP) brass cap flush, from which the southwest corner of said section, a 3-inch COP brass cap flush, bears South 00°12'04" West (basis of bearing), a distance of 2640.56 feet;

THENCE along the west line of said section, South 00°12'04" West, a distance of 627.07 feet;

THENCE leaving said west line, South 89°47'56" East, a distance of 88.20 feet, to the west line of said Lot 51 and the **POINT OF BEGINNING**;

THENCE leaving said west line, South 89°43'21" East, a distance of 37.92 feet;

THENCE North 63°27'02" East, a distance of 6.09 feet;

THENCE North 62°52'31" East, a distance of 14.29 feet;

THENCE South 31°28'52" East, a distance of 2.05 feet;

THENCE North 62°48'27" East, a distance of 25.00 feet;

THENCE North 26°27'47" West, a distance of 11.81 feet;

THENCE North 63°03'16" East, a distance of 11.04 feet;

THENCE South 29°15'31" East, a distance of 1.64 feet,

THENCE North 62°59'25" East, a distance of 7.32 feet;

THENCE North 26°45'33" West, a distance of 1.58 feet;

THENCE North 62°57'58" East, a distance of 25.84 feet;

THENCE North 26°21'30" West, a distance of 6.44 feet;

THENCE North 63°05'13" East, a distance of 5.74 feet;

THENCE North 27°09'15" East, a distance of 4.36 feet;

THENCE North 29°23'43" East, a distance of 36.78 feet, to the northeasterly line of said Lot 51 and a point of intersection with a non-tangent curve;

THENCE along said northeasterly line, southeasterly along said non-tangent curve to the left, having a radius of 100.00 feet, concave northeasterly, whose radius bears North 42°56'36" East, through a central angle of 11°42'53", a distance of 20.45 feet, to the most easterly corner of said Lot 51 and a point of intersection with a non-tangent line;

THENCE leaving said northeasterly line, along the southeasterly line of said Lot 51, South 31°17'33" West, a distance of 125.34 feet, to the southeast corner of said Lot 51;

THENCE leaving said southeasterly line, along the south line of said Lot 51, North 89°39'55" West, a distance of 87.16 feet, to the southwest corner of said Lot 51;

Legal Description
ST83140124 4809 E Flower Street
Temporary Construction Easement

August 13, 2024
WP# 225395
Page 2 of 4
See Exhibit "A"

THENCE leaving said south line, along said west line of Lot 51, North 00°12'37" East, a distance of 25.26 feet, to the **POINT OF BEGINNING**.

Containing 5,278 square feet or 0.1212 acres, more or less.

This parcel description is based on the Final Plat of Orange Valley Estates, recorded in Book 61, page 47, MCR and client provided information and is located within an area surveyed by Wood, Patel & Associates, Inc. during the month of February, 2024. Any monumentation noted in this parcel description is within acceptable tolerance (as defined in Arizona Boundary Survey Minimum Standards dated 02/14/2002) of said positions based on said survey.

Y:\WP\Parcel Descriptions\2022\225395 COP 48th Pl. & Flower TCE Easement L02 08-13-24.docx





WEST QUARTER CORNER
SECTION 29, T2N, R4E
3" BRASS CAP FLUSH
POC



0 30 60

48TH STREET
(BASIS OF BEARING)
S00°12'04"W 2640.56'

627.07'

OSBORNE ROAD

LOT 52

48TH PLACE

LOT 51

APN:128-14-051

DOC. 2023-0469133 MCR
OWNERS: CHRISTOPHER &
BRITTANY OWINGS
4809 E FLOWER STREET
PHOENIX, AZ, 85018

L15
L14
L13
L11
L10
L8
L7
L6
L5
L4
L3
L2
L19

POB

L1

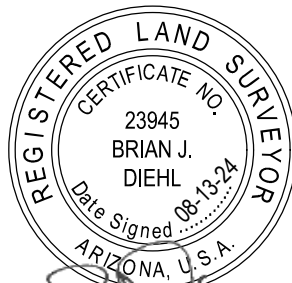
FLOWER STREET

LOT 50

L18

ALLEY

SOUTHWEST CORNER
SECTION 29, T2N, R4E
3" COP BRASS CAP FLUSH



EXPIRES 09-30-26

EXHIBIT - APN: 128-14-051

**ST83140124 4809 E FLOWER STREET
TEMPORARY CONSTRUCTION
EASEMENT**

DR: JAG	CK: BJD	SHEET	TOTAL
DATE: 08/13/24	REV:	NO.	SHEETS
SCALE: 1"=80'		3	4

Z:\2022\225395\SURVEY\LEGAL\5395-LO1.DWG

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S89°47'56"E	88.20'
L2	S89°43'21"E	37.92'
L3	N63°27'02"E	6.09'
L4	N62°52'31"E	14.29'
L5	S31°28'52"E	2.05'
L6	N62°48'27"E	25.00'
L7	N26°27'47"W	11.81'
L8	N63°03'16"E	11.04'
L9	S29°15'31"E	1.64'
L10	N62°59'25"E	7.32'

LINE TABLE		
LINE	BEARING	DISTANCE
L11	N26°45'33"W	1.58'
L12	N62°57'58"E	25.84'
L13	N26°21'30"W	6.44'
L14	N63°05'13"E	5.74'
L15	N27°09'15"E	4.36'
L16	N29°23'43"E	36.78'
L17	S31°17'33"W	125.34'
L18	N89°39'55"W	87.16'
L19	N00°12'37"E	25.26'

CURVE TABLE					
CURVE	DELTA	RADIUS	ARC	CHORD BEARING	CHORD
C1	47°52'57"	100.00'	83.57'	S34°49'48"E	81.16'

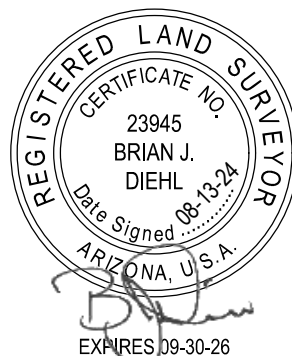


EXHIBIT – APN: 128-14-051

**ST83140124 4809 E FLOWER STREET
TEMPORARY CONSTRUCTION
EASEMENT**


DR: JAG	CK: BJD	SHEET	TOTAL
DATE: 08/13/24	REV:	NO.	SHEETS
SCALE: NTS		4	4

RIGHT-OF-WAY AREA CALCULATIONS

Project No.: ST83140124

APN: APN:128-14-051

Street Address: 4809 E FLOWER ST, PHOENIX, AZ 85018

Type of acquisition	Symbol	Area of Exist. Parcel		Area to be Acquired		Area Remaining	
		Sq. Ft.	Acres	Sq. Ft.	Acres	Sq. Ft.	Acres
Exist. Parcel		19811.26	0.455			19811.26	0.455
Temporary Construction Easement				5278.17	0.121		

Computations: (Note if calculation are determined from electronic COP DXF QS Maps using AutoCAD Software; otherwise, show calculation below)

SEE ATTACHED CALCULATION SHEET

SEE ATTACHED SKETCH OF PARCEL



AREA CALC PAGE 1 OF 1

08/13/24

Wood, Patel & Associates, Inc.
602.335.8500
www.woodpatel.com

July 26, 2024
WP# 225395
Page 1 of 3
See Exhibit "A"

LEGAL DESCRIPTION
ST83140124 4809 E Flower Street
Drainage Easement

A portion of Lot 51, Orange Valley Estates, recorded in Book 61, page 47, Maricopa County Records (MCR), lying within Section 29, Township 2 North, Range 4 East, of the Gila and Salt River Meridian, Maricopa County, Arizona, more particularly described as follows:

COMMENCING at the west quarter corner of said Section 29, a 3-inch City of Phoenix (COP) brass cap flush, from which the southwest corner of said section, a 3-inch COP brass cap flush, bears South 00°12'04" West (basis of bearing), a distance of 2640.56 feet;

THENCE along the west line of said section, South 00°12'04" West, a distance of 630.07 feet;

THENCE leaving said west line, South 89°47'56" East, a distance of 88.20 feet, to the west line of said Lot 51 and the **POINT OF BEGINNING**;

THENCE South 89°43'21" East, a distance of 80.40 feet;

THENCE North 31°18'25" East, a distance of 60.78 feet;

THENCE North 62°57'58" East, a distance of 1.80 feet;

THENCE North 26°21'30" West, a distance of 1.12 feet;

THENCE North 31°18'25" East, a distance of 48.25 feet, to the easterly line of said Lot 51 and a point of intersection with a non-tangent curve;

THENCE along said easterly line, southeasterly along said non-tangent curve to the left, having a radius of 100.00 feet, concave northeasterly, whose radius bears North 41°10'57" East, through a central angle of 09°12'58", a distance of 16.09 feet, to a point of intersection with a non-tangent line;

THENCE South 31°18'25" West, a distance of 118.74 feet;

THENCE North 89°43'21" West, a distance of 89.45 feet, to said west line;

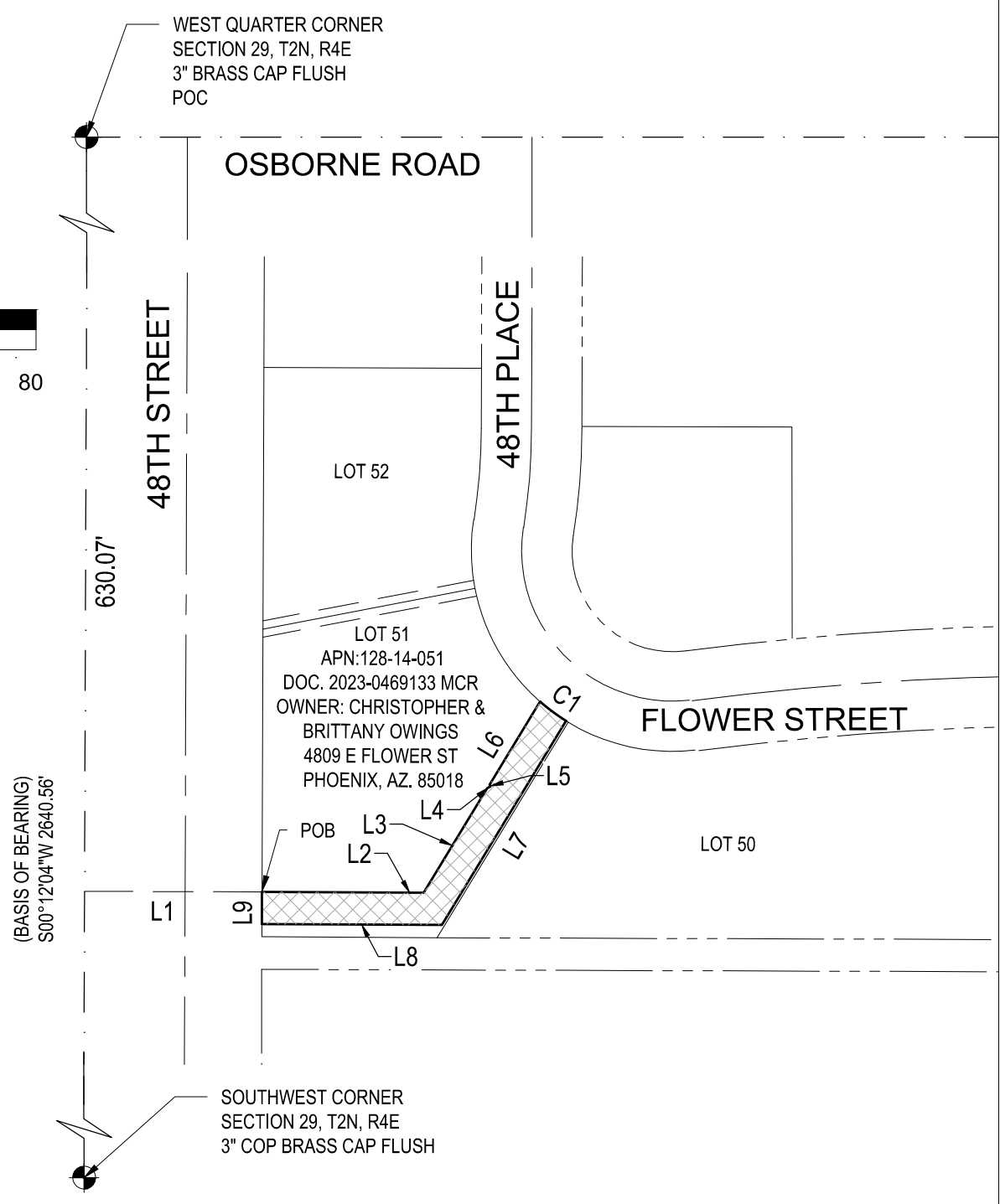
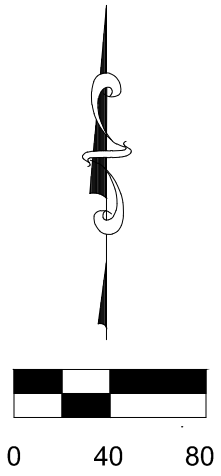
THENCE along said west line, North 00°12'04" East, a distance of 16.00 feet, to the **POINT OF BEGINNING**.

Containing 3,194 square feet or 0.0733 acres, more or less.

This parcel description is based on the Final Plat of Orange Valley Estates, recorded in Book 61, page 47, MCR and client provided information and is located within an area surveyed by Wood, Patel & Associates, Inc. during the month of February, 2024. Any monumentation noted in this parcel description is within acceptable tolerance (as defined in Arizona Boundary Survey Minimum Standards dated 02/14/2002) of said positions based on said survey.

Y:\WP\Parcel Descriptions\2022\225395 COP 48th Pl. & Flower Drainage Easement L01 07-26-24.docx





EXPIRES 09-30-26

EXHIBIT - APN: 128-14-051

ST83140124 4809 E FLOWER STREET

DR: JAG	CK:	SHEET NO.	TOTAL SHEETS
DATE: 07/26/24	REV:	2	3
SCALE: 1"=80'			

Z:\2022\225395\SURVEY\LEGAL\5395-LO1.DWG

Z:\2022\225395\SURVEY\LEGAL\5395-LO1.DWG

LINE TABLE		
LINE	BEARING	DISTANCE
L1	S89°47'56"E	88.20'
L2	S89°43'21"E	80.42'
L3	N31°18'25"E	60.78'
L4	N62°57'58"E	1.80'
L5	N26°21'30"W	1.12'
L6	N31°18'25"E	48.25'
L7	S31°17'33"W	125.34'
L8	N89°43'21"W	89.45'
L9	N00°12'04"E	16.00'

CURVE TABLE					
CURVE	DELTA	RADIUS	ARC	CHORD BEARING	CHORD
C1	9°12'58"	100.00'	16.09'	S53°25'32"E	16.07'



EXPIRES 09-30-26

EXHIBIT – APN: 128-14-051

ST83140124 4809 E FLOWER STREET


DR: JAG	CK:	SHEET	TOTAL	
DATE: 07/26/24	REV:	NO.	SHEETS	
SCALE: NTS		3	3	

RIGHT-OF-WAY AREA CALCULATIONS

Project No.: ST83140124

APN: APN:128-14-051

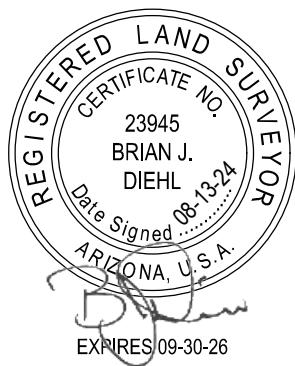
Street Address: 4809 E FLOWER ST, PHOENIX, AZ 85018

Type of acquisition	Symbol	Area of Exist. Parcel		Area to be Acquired		Area Remaining	
		Sq. Ft.	Acres	Sq. Ft.	Acres	Sq. Ft.	Acres
Exist. Parcel		19811.26	0.455			19811.26	0.455
DRAINAGE EASEMENT				3193.64	0.073		

Computations: (Note if calculation are determined from electronic COP DXF QS Maps using AutoCAD Software; otherwise, show calculation below)

SEE ATTACHED CALCULATION SHEET

SEE ATTACHED SKETCH OF PARCEL



AREA CALC PAGE 1 OF 1

08/13/24

RIGHT-OF-WAY AREA CALCULATIONS

Project No.: ST83140124

APN: APN:128-14-051

Street Address: 4809 E FLOWER ST, PHOENIX, AZ 85018

Type of acquisition	Symbol	Area of Exist. Parcel		Area to be Acquired		Area Remaining	
		Sq. Ft.	Acres	Sq. Ft.	Acres	Sq. Ft.	Acres
Exist. Parcel		19811.26	0.455			16617.62	0.382
DRAINAGE EASEMENT				3193.64	0.073		

Computations: (Note if calculation are determined from electronic COP DXF QS Maps using AutoCAD Software; otherwise, show calculation below)

SEE ATTACHED CALCULATION SHEET

SEE ATTACHED SKETCH OF PARCEL



EXPIRES 09-30-26

AREA CALC PAGE 1 OF 1

07/26/24

Parcel Closure Report

DRAINAGE EASEMENT

North:903,971.54241690'

East:681,707.86878380'

Segment# 1: Line

Course: S89° 43' 20.5563"E

Length: 80.40108598'

North: 903,971.15283980'

East: 681,788.26892594'

Segment# 2: Line

Course: N31° 18' 24.8011"E

Length: 60.78474276'

North: 904,023.08710260'

East: 681,819.85400627'

Segment# 3: Line

Course: N62° 57' 57.5866"E

Length: 1.80235538'

North: 904,023.90630775'

East: 681,821.45943078'

Segment# 4: Line

Course: N26° 21' 29.8075"W

Length: 1.11960080'

North: 904,024.90950957'

East: 681,820.96234723'

Segment# 5: Line

Course: N31° 18' 24.8011"E

Length: 48.25359436'

North: 904,066.13720483'

East: 681,846.03596908'

Segment# 6: Curve

Length: 16.08519271'

Radius: 100.00000000'

Delta: 9°12'58.0916"

Tangent: 8.05998207'

Chord: 16.06785758'

Course: S53° 25' 31.9268"E

Course In: N41° 10' 57.1189"E

Course Out: S31° 57' 59.0274"W

RP North: 904,141.39877278'

East: 681,911.88197420'

End North: 904,056.56289842'

East: 681,858.93979420'

Segment# 7: Line

Course: S31° 18' 24.8011"W

Length: 118.74314102'

North: 903,955.10919126'

East: 681,797.23826389'

Wood, Patel & Associates, Inc.

City of Phoenix 48th and Flower

WP# 225395

Page 2 of 2

July 26, 2024

Segment# 8: Line

Course: N89° 43' 20.5563"W

North: 903,955.54260474'

Length: 89.44805690'

East: 681,707.79125703'

Segment# 9: Line

Course: N0° 12' 03.9623"E

North: 903,971.54252046'

Length: 16.00001427'

East: 681,707.84741486'

Perimeter: 432.65915333'

Error Closure: 0.00000004

Error North : 0.000000016

Area: 3,193.81Sq.Ft.

Course: N62° 45' 17.6838"W

East: -0.000000031

Precision 1: 10,816,478,833.50000000



STEPHEN RICHER

20240089215 02/22/2024 11:27

ELECTRONIC RECORDING

159910ESMT001-6-1-1--

159910-ESMT-001

When recorded, hold for:
City of Phoenix
Real Estate Division
Acquisition Section
251 West Washington Street
Phoenix, AZ 85003

ATTN:

TEMPORARY CONSTRUCTION EASEMENT

Exempt under A.R.S. 11-1134-A2

ST63140118

REN - 13201

Streets

QS 17-23

KNOW ALL MEN BY THESE PRESENTS:

That for the consideration of One Dollar (\$1.00) and other valuable consideration, the duly authorized undersigned, Arizona Pathways of Life, Unity and Love, Inc. an Arizona corporation as to the Legal Title; and Beacon Baptist Church, an Arizona Non-Profit Corporation as to the Equitable Title, GRANTOR(s), hereby grants to the City of Phoenix, a municipal corporation of the State of Arizona, GRANTEE, a temporary easement for construction purposes within that certain real property situated in Maricopa County, Arizona, described as follows:

**FOR LEGAL DESCRIPTION SEE EXHIBIT "A" ATTACHED
HERETO AND MADE A PART HEREOF BY REFERENCE.**

This temporary construction easement shall commence upon written notification of the pending start of construction and shall automatically terminate at the completion of construction of the Westwood - 23rd Ave. & Devonshire Project.

IN WITNESS WHEREOF, the GRANTOR(s), has/they affixed his/her/their signature(s).

Dated this 9th day of February, 2024.

Arizona Pathways of Life, Unity and Love, Inc. an Arizona corporation

By: Ellen J. Gardner, President
Ellen J. Gardner, President and Chief Executive Officer

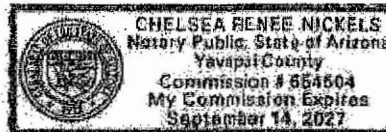
Beacon Baptist Church, an Arizona Non-Profit Corporation

Signed in Counterpart
By: Anthony Ray Garcia, President

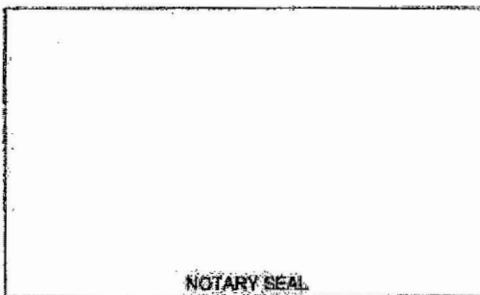
**DO NOT WRITE, STAMP, EMBOSS OR PLACE ANY MARKS WHATSOEVER OUTSIDE THE MARGIN LINES OF THIS INSTRUMENT
OR THE MARICOPA COUNTY RECORDER MAY NOT RECORD IT, PURSUANT TO A.R.S. 11-480**

ACKNOWLEDGEMENT

STATE OF Arizona)
COUNTY OF Yavapai) SS



On this, the 9th day of February, 2024, before me, the undersigned officer personally appeared Ellen J. Gardner who acknowledged themselves to be President and Chief Executive Officer of Arizona Pathways of Life, Unity and Love, Inc. an Arizona corporation as to the Legal Title, and that, as such officer being duly authorized to do so, executed the foregoing instrument for the purposes contained by signing the name of the corporation, by themselves as such officers.



Chelsea Renee Nickels
NOTARY PUBLIC

My Commission Expires September 14, 2027

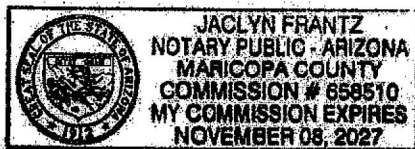
Title or Type of Document	Temporary Construction Easement
Date of Document	February 9, 2024
Number of Pages	Five (5)
Additional Signers Not Listed	None

DO NOT WRITE, STAMP, EMBOSS OR PLACE ANY MARKS WHATSOEVER OUTSIDE THE MARGIN LINES OF THIS INSTRUMENT OR THE MARICOPA COUNTY RECORDER MAY NOT RECORD IT, PURSUANT TO A.R.S. 11-480

ACKNOWLEDGEMENT

STATE OF Arizona)
COUNTY OF Maricopa) SS

On this, the 12th day of February, 2024, before me, the undersigned officer personally appeared **Anthony Ray Garcia** who acknowledged themselves to be **President of Beacon Baptist Church**, an **Arizona Non-Profit Corporation as to the Equitable Title**, and that, as such officer being duly authorized to do so, executed the foregoing instrument for the purposes contained by signing the name of the corporation, by themselves as such officers.



NOTARY SEAL

Jaclyn Frantz
NOTARY PUBLIC

My Commission Expires 11/8/2027

Title or Type of Document	Temporary Construction Easement
Date of Document	February 12, 2024
Number of Pages	Five (5)
Additional Signers Not Listed	None

DO NOT WRITE, STAMP, EMBOSS OR PLACE ANY MARKS WHATSOEVER OUTSIDE THE MARGIN LINES OF THIS INSTRUMENT
OR THE MARICOPA COUNTY RECORDER MAY NOT RECORD IT, PURSUANT TO A.R.S. 11-480 ESMT-CORP-FORM 8/23

LEGAL DESCRIPTION
APN: 154-28-009C
TEMPORARY CONSTRUCTION EASEMENT (TCE)

A parcel of land located in the Southwest Quarter of Section 24 Township 2 North, Range 2 East, of the Gila and Salt River Meridian, Maricopa County, Arizona, also being a portion of the land described as Parcel No. 1 in Document 2015-0490141, records of Maricopa County, Arizona, more particularly described as follows:

Commencing at the South Quarter corner of said Section 24, from which the Center Quarter corner of said Section 24, bears North 00 degrees 16 minutes 40 seconds West (Basis of Bearings), a distance of 2631.58 feet;

THENCE along the south line of the Southwest Quarter of said Section 24, South 89 degrees 25 minutes 32 seconds West, a distance of 53.11 feet to the centerline of 23rd Avenue;

THENCE leaving said south line, and along said centerline, North 00 degrees 21 minutes 22 seconds East, a distance of 330.03 feet;

THENCE leaving said centerline, North 89 degrees 38 minutes 38 seconds West, a distance of 30.00 feet the west Right-of-Way line of 23rd Avenue, the Southeast corner of said Parcel No. 1, and the **Point of Beginning**;

THENCE along the south line of said Parcel No. 1, South 89 degrees 26 minutes 49 seconds West, a distance of 4.47 feet;

THENCE leaving said south line, North 00 degrees 28 minutes 03 seconds East, a distance of 148.76 feet to the north line of said Parcel No. 1;

THENCE along said north line, North 89 degrees 27 minutes 28 Seconds East, a distance of 4.18 feet to the west Right-of-Way line of 23rd Avenue, and the Northeast corner of said Parcel No. 1;

THENCE along said west Right-of-Way line, South 00 degrees 21 minutes 22 seconds West, a distance of 148.76 feet to the **Point of Beginning**.

Said parcel contains 642.82 square feet, or 0.015 acres, more or less.



CAMPBELL AVE.

24.00'(R)
N89°35'56"E

C 1/4
CORNER
SECTION
24
T2N, R2E
FD. BCHH

APN: 154-28-009C
PARCEL NO. 1
DOC. 2015-0490141 MCR
OWNER: BEACON BAPTIST
CHURCH
4126 N. 23RD AVE.
PHOENIX, AZ. 85015

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N89°38'38"W	30.00'
L2	S89°26'49"W	4.47'
L3	N00°28'03"E	148.76'
L4	N89°27'28"E	4.18'
L5	S00°21'22"W	148.76'

L4

2301.94'(C)

2631.97'(C)

23RD AVE.

N00°21'22"E

30' ROW
PER DKT.
14112, PAGE
233, MCR

P.O.B.

L1

L2

330.03'(C)

S89°25'32"W
53.11'(C)

S 1/4
CORNER
SECTION
24
T2N, R2E
FD. BCHH

INDIAN SCHOOL ROAD



0 15 30



EXHIBIT - APN: 154-28-009C

AZTEC TYPSA

501 N. 4TH STREET, SUITE 300, PHOENIX, AZ 85008
Tel (602) 454-0402 Fax (602) 454-0403
website: www.aztec.us

DR: GLG	CK:	SHEET	TOTAL
DATE: 07/20/23	REV:	NO.	SHEETS
SCALE: 1"=30'		1	1

STEPHEN RICHER

20240065910 02/08/2024 04:01

ELECTRONIC RECORDING

159818ESMT001-7-1-1--

159818-ESMT-001

When recorded, hold for:
City of Phoenix
Real Estate Division
Acquisition Section
251 West Washington Street
Phoenix, AZ 85003

ATTN:

TEMPORARY CONSTRUCTION EASEMENT

Exempt under A.R.S. 11-1134-A2

ST83140118

REN - 13202

Streets

QS 17-23

KNOW ALL MEN BY THESE PRESENTS:


That for the consideration of One Dollar (\$1.00) and other valuable consideration, the duly authorized undersigned, **Andres Quinonez and Irma Quinonez, husband and wife and Claudia Quinonez, a single woman as joint tenants with right of survivorship**, GRANTOR(s), hereby grants to the City of Phoenix, a municipal corporation of the State of Arizona, GRANTEE, a temporary easement for construction purposes within that certain real property situated in Maricopa County, Arizona, described as follows:

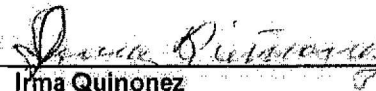
**FOR LEGAL DESCRIPTION SEE EXHIBIT "A" ATTACHED
HERETO AND MADE A PART HEREOF BY REFERENCE.**

This temporary construction easement shall commence upon written notification of the pending start of construction and shall automatically terminate at the completion of construction of the Westwood - 23rd Ave. & Devonshire Project.

IN WITNESS WHEREOF, the GRANTOR(s), has/have affixed his/her/their signature(s).

Dated this 5th day of January, 2024.

By: 
Andres Quinonez

By: 
Irma Quinonez

By: 
Claudia Quinonez

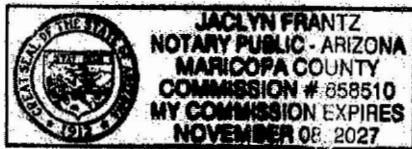
DO NOT WRITE, STAMP, EMBOSS OR PLACE ANY MARKS WHATSOEVER OUTSIDE THE MARGIN LINES OF THIS INSTRUMENT
OR THE MARICOPA COUNTY RECORDER MAY NOT RECORD IT, PURSUANT TO A.R.S. 11-480

ESMT-IND-FORM 23

ACKNOWLEDGEMENT

STATE OF Arizona)
COUNTY OF Maricopa) SS

This instrument was acknowledged before me this 5th day of January, 20 24
by Andres Quinonez.



NOTARY SEAL

Jaclyn Frantz
NOTARY PUBLIC

My Commission Expires 11/8/2027

Title or Type of Document	Temporary Construction Easement
Date of Document	<u>January 5</u> , 20 <u>24</u>
Number of Pages	Seven (7)
Additional Signers Not Listed	None

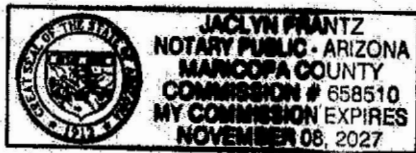
DO NOT WRITE, STAMP, EMBOSS OR PLACE ANY MARKS WHATSOEVER OUTSIDE THE MARGIN LINES OF THIS INSTRUMENT
OR THE MARICOPA COUNTY RECORDER MAY NOT RECORD IT, PURSUANT TO A.R.S. 11-480

ESMT-IND-FORM 8/23

ACKNOWLEDGEMENT

STATE OF Arizona)
COUNTY OF Maricopa) SS

This instrument was acknowledged before me this 5th day of January, 20 24
by Irma Quinonez.



NOTARY SEAL

Jaclyn Prantz
NOTARY PUBLIC

My Commission Expires 11/8/2027

Title or Type of Document	Temporary Construction Easement
Date of Document	<u>January 5</u> , 202 <u>4</u>
Number of Pages	Seven (7)
Additional Signers Not Listed	None

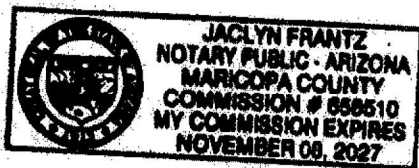
DO NOT WRITE, STAMP, EMBOSS OR PLACE ANY MARKS WHATSOEVER OUTSIDE THE MARGIN LINES OF THIS INSTRUMENT
OR THE MARICOPA COUNTY RECORDER MAY NOT RECORD IT, PURSUANT TO A.R.S. 11-480

ESMT-IND-FORM 8/23

ACKNOWLEDGEMENT

STATE OF Arizona)
COUNTY OF Maricopa) SS

This instrument was acknowledged before me this 5th day of January, 20 24,
by Claudia Quinonez.



NOTARY SEAL

Jaclyn Frantz
NOTARY PUBLIC

My Commission Expires 11/8/2027

Title or Type of Document	Temporary Construction Easement
Date of Document	<u>January 5</u> , 20 <u>24</u>
Number of Pages	Seven (7)
Additional Signers Not Listed	None

DO NOT WRITE, STAMP, EMBOSS OR PLACE ANY MARKS WHATSOEVER OUTSIDE THE MARGIN LINES OF THIS INSTRUMENT
OR THE MARICOPA COUNTY RECORDER MAY NOT RECORD IT, PURSUANT TO A.R.S. 11-480 ESMT-IND-FORM 8/23

LEGAL DESCRIPTION
APN: 154-28-004A
TEMPORARY CONSTRUCTION EASEMENT (TCE)

Two parcels of land located in the Southwest Quarter of Section 24 Township 2 North, Range 2 East, of the Gila and Salt River Meridian, Maricopa County, Arizona, also being a portion of the land described in Document 2005-1552418, records of Maricopa County, Arizona, more particularly described as follows:

PARCEL 1

Commencing at the South Quarter corner of said Section 24, from which the Center Quarter corner of said Section 24, bears North 00 degrees 16 minutes 40 seconds West (Basis of Bearings), a distance of 2631.58 feet;

THENCE along the south line of the Southwest Quarter of said Section 24, South 89 degrees 25 minutes 32 seconds West, a distance of 53.11 feet to the centerline of 23rd Avenue;

THENCE leaving said south line, and along said centerline, North 00 degrees 21 minutes 22 seconds East, a distance of 687.62 feet;

THENCE leaving said centerline, North 89 degrees 38 minutes 38 seconds West, a distance of 25.00 feet the intersection of the west Right-of-Way line of 23rd Avenue and the north Right-of-Way line of Devonshire Avenue, being the Southeast corner of said parcel of land described in Document 2005-1552418, records of Maricopa County, Arizona, and the **Point of Beginning**;

THENCE along the south line of said parcel of land, South 89 degrees 28 minutes 07 seconds West, a distance of 21.96 feet to **Point "A"**;

THENCE leaving said south line, North 44 degrees 04 minutes 09 seconds East, a distance of 23.07 feet;

THENCE North 00 degrees 27 minutes 47 seconds East, a distance of 5.58 feet;

THENCE South 89 degrees 37 minutes 56 seconds East, a distance of 3.11 feet;

THENCE North 00 degrees 22 minutes 04 seconds East, a distance of 87.26 feet;

THENCE South 89 degrees 38 minutes 43 seconds East, a distance of 2.88 feet to the west Right-of-Way line of 23rd Avenue;

THENCE along said west Right-of-Way line, South 00 degrees 21 minutes 22 seconds West, a distance of 109.17 feet to the **Point of Beginning**.

Said **PARCEL 1** contains 515,20 square feet, more or less.

Together with;

PARCEL 2

Commencing at **Point "A"**;

THENCE along the south line of said parcel of land, South 89 degrees 28 minutes 07 seconds West, a distance of 41.26 feet to the **Point of Beginning**;

THENCE continuing along said south line, South 89 degrees 28 minutes 07 seconds West, a distance of 3.00 feet;

THENCE leaving said south line, North 00 degrees 00 minutes 00 seconds East, a distance of 25.55 feet;

THENCE North 90 degrees 00 minutes 00 seconds East, a distance of 3.00 feet;

THENCE South 00 degrees 00 minutes 00 seconds East, a distance of 25.52 feet to the **Point of Beginning**.

Said **PARCEL 2** contains 76.60 square feet, more or less.

Total combined **PARCEL 1** and **PARCEL 2** contain 591.80 square feet, or 0.014 acres, more or less.





APN: 154-28-004A
 DOC. 2005-1552418 MCR
 OWNER: QUINONES,
 ANDRES/IRMA
 2306 W. DEVONSHIRE AVE.
 PHOENIX, AZ. 85015

DEVONSHIRE AVE.

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N89°38'38"W	25.00'
L2	S89°28'07"W	21.96'
L3	N44°04'09"E	23.07'
L4	N00°27'47"E	5.58'
L5	S89°37'56"E	3.11'
L6	N00°22'04"E	87.26'
L7	S89°38'43"E	2.88'
L8	S00°21'22"W	109.17'
L9	S89°28'07"W	41.26'
L10	S89°28'07"W	3.00'
L11	N00°00'00"E	25.55'
L12	N90°00'00"E	3.00'
L13	S00°00'00"E	25.52'

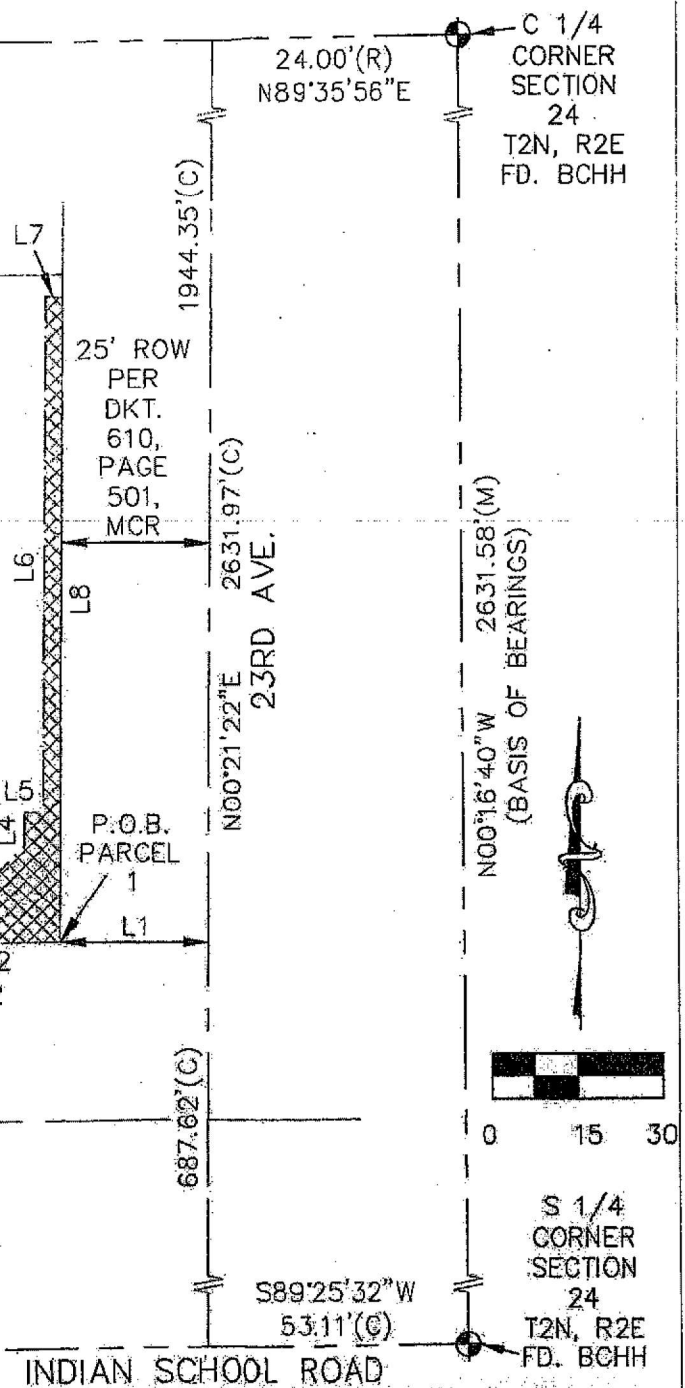


EXHIBIT - APN: 154-28-004A

AZTEC 

501 N. 44TH STREET, SUITE 300, PHOENIX, AZ. 85008
 Tel (602) 454-0402 Fax (602) 454-0403
 website: www.aztec.us

DR: GLG	CK:	SHEET	TOTAL
DATE: 07/20/23	REV:	NO.	SHEETS
SCALE: 1"=30'		1	1

20240049290 01/31/2024 11:01

ELECTRONIC RECORDING

159753ESMT001-5-1-1--

159753-ESMT-001

When recorded, hold for:
City of Phoenix
Real Estate Division
Acquisition Section
251 West Washington Street
Phoenix, AZ 85003

ATTN:

TEMPORARY CONSTRUCTION EASEMENT

Exempt under A.R.S. 11-1134-A2

ST83140118

REN - 13203

Streets

QS 17-23

KNOW ALL MEN BY THESE PRESENTS:

That for the consideration of One Dollar (\$1.00) and other valuable consideration, the duly authorized undersigned, **Laura DeLoera**, GRANTOR(s), hereby grants to the City of Phoenix, a municipal corporation of the State of Arizona, GRANTEE, a temporary easement for construction purposes within that certain real property situated in Maricopa County, Arizona, described as follows:

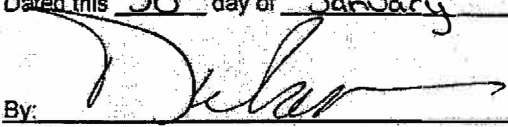
**FOR LEGAL DESCRIPTION SEE EXHIBIT "A" ATTACHED
HERETO AND MADE A PART HEREOF BY REFERENCE.**

This temporary construction easement shall commence upon written notification of the pending start of construction and shall automatically terminate at the completion of construction of the Westwood - 23rd Ave. & Devonshire Project.

IN WITNESS WHEREOF, the GRANTOR(s), has/have affixed his/her/their signature(s).

Dated this 30th day of January, 2024.

By:

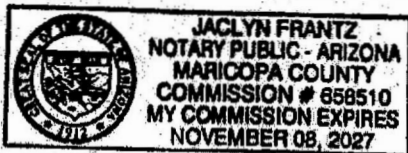

Laura DeLoera

DO NOT WRITE, STAMP, EMBOSS OR PLACE ANY MARKS WHATSOEVER OUTSIDE THE MARGIN LINES OF THIS INSTRUMENT
OR THE MARICOPA COUNTY RECORDER MAY NOT RECORD IT. PURSUANT TO A.R.S. 11-480 ESMT-IND-FORM 8/23

ACKNOWLEDGEMENT

STATE OF Arizona)
COUNTY OF Maricopa) SS

This instrument was acknowledged before me this 30th day of January, 20 24
by Laura DeLoera.



NOTARY SEAL

Jaclyn Frantz
NOTARY PUBLIC

My Commission Expires 11/8/2027

Title or Type of Document	Temporary Construction Easement
Date of Document	<u>January 30</u> , 20 <u>24</u>
Number of Pages	Five (5)
Additional Signers Not Listed	None

DO NOT WRITE, STAMP, EMBOSS OR PLACE ANY MARKS WHATSOEVER OUTSIDE THE MARGIN LINES OF THIS INSTRUMENT
OR THE MARICOPA COUNTY RECORDER MAY NOT RECORD IT, PURSUANT TO A.R.S. 11-480 ESMT-IND-FORM 8/23

LEGAL DESCRIPTION
APN: 154-28-004B
TEMPORARY CONSTRUCTION EASEMENT (TCE)

A parcel of land located in the Southwest Quarter of Section 24 Township 2 North, Range 2 East, of the Gila and Salt River Meridian, Maricopa County, Arizona, also being a portion of the remainder of land described as Parcel No. 1 in Document 2000-0677939, records of Maricopa County, Arizona, more particularly described as follows:

Commencing at the South Quarter corner of said Section 24, from which the Center Quarter corner of said Section 24, bears North 00 degrees 16 minutes 40 seconds West (Basis of Bearings), a distance of 2631.58 feet;

THENCE along the south line of the Southwest Quarter of said Section 24, South 89 degrees 25 minutes 32 seconds West, a distance of 53.11 feet to the centerline of 23rd Avenue;

THENCE leaving said south line, and along said centerline, North 00 degrees 21 minutes 22 seconds East, a distance of 872.56 feet;

THENCE leaving said centerline, North 89 degrees 38 minutes 38 seconds West, a distance of 25.00 feet to the west Right-of-Way line of 23rd Avenue, the Southeast corner of said Parcel No. 1, and the **Point of Beginning**;

THENCE along the south line of said Parcel No. 1, South 89 degrees 30 minutes 47 seconds West, a distance of 2.59 feet;

THENCE leaving said south line, North 00 degrees 38 minutes 11 seconds East, a distance of 65.81 feet;

THENCE North 89 degrees 32 minutes 13 seconds West, a distance of 3.31 feet;

THENCE North 00 degrees 27 minutes 47 seconds East, a distance of 6.00 feet;

THENCE South 89 degrees 32 minutes 13 seconds East, a distance of 3.33 feet;

THENCE North 00 degrees 38 minutes 11 seconds East. A distance of 26.21 feet to the north line of said Parcel No. 1;

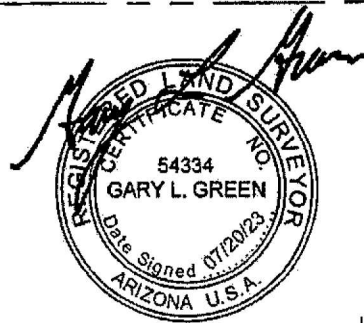
THENCE along said north line, North 89 degrees 30 minutes 47 seconds East, a distance of 2.11 feet to the west Right-of-Way line of 23rd Avenue, and the northeast corner of said Parcel No. 1;

THENCE along said west Right-of-Way line, South 00 degrees 21 minutes 22 seconds West, a distance of 98.01 feet to the **Point of Beginning**.

Said parcel contains 250.52 square feet, or 0.006 acres, more or less.



CAMPBELL AVE.



0 15 30

APN: 154-28-004B
REMAINDER
PARCEL NO. 1
DOC. 2000-0677939 MCR
OWNER: LAURA DELOERA
4206 N. 23RD AVE.
PHOENIX, AZ. 85015

L8
L7
L6
L5
L4
L3
L2
L1
L9

25' ROW
PER
DKT.
610,
PAGE
501,
MCR

P.O.B.

24.00'(R)
N89°35'56"E

1759.41'(C)

2631.97'(C)
N00°21'22"E
23RD AVE.

872.56'(C)

S89°25'32"W
53.11'(C)

INDIAN SCHOOL ROAD

C 1/4
CORNER
SECTION
24
T2N, R2E
FD. BCHH

2631.58'(M)
N00°16'40"W
(BASIS OF BEARINGS)

S 1/4
CORNER
SECTION
24
T2N, R2E
FD. BCHH

LINE TABLE		
LINE	BEARING	DISTANCE
L1	N89°38'38"W	25.00'
L2	S89°30'47"W	2.59'
L3	N00°38'11"E	65.81'
L4	N89°32'13"W	3.31'
L5	N00°27'47"E	6.00'
L6	S89°32'13"E	3.33'
L7	N00°38'11"E	26.21'
L8	N89°30'47"E	2.11'
L9	S00°21'22"W	98.01'

EXHIBIT - APN: 154-28-004B



501 N. 44TH STREET, SUITE 300, PHOENIX, AZ. 85008
Tel(602)454-0402 Fax(602)454-0403
website: www.aztec.us

DR: GLG	CK:	SHEET	TOTAL
DATE: 07/20/23	REV:	NO.	SHEETS
SCALE: 1"=30'		1	1

Archaeology Assessment Result

Project Name: 48th Place & East Flower Street Storm Drain Mitigation

ST83140124

Project Location: 48th Pl & E Flower St

Project Sponsor: PWD Floodplains (Ryan Bentz)

Review Agencies: City of Phoenix

Survey

Monitoring

Testing

Data Recovery

Comments:

No known archaeological sites are located within this project area.

Recommendations:

No archaeological work is necessary for this project. However, if any archaeological materials are encountered during construction, all ground-disturbing activities must cease within 10 meters of the discovery and the City of Phoenix Archaeology Office must be notified immediately and allowed time to properly assess the materials.

Reviewed By: Rebecca Hill, M.A., for

Date: 7/5/2022

Laurene Montero, M.A.



Archaeology Assessment Result

Project Name: E Pinchot Avenue and N 18th Street Drainage Improvements

ST83140117-1

Project Location: N 18th St, Pinchot Ave to Catalina Dr; Catalina Dr., 16th St to 18th St

Project Sponsor: Streets (Ryan Bentz; James Marshall)

Review Agencies: City of Phoenix

Survey

X Monitoring

Testing

Data Recovery

Comments:

A portion of this project area is located within the 250-ft buffer zone of AZ T:12:256(ASM) (Grand Canal Ruins), a large prehistoric village that contains human burials. Also, a projected prehistoric canal alignment crosses this project area. According to our records and those of AZSITE, the state's repository of archaeological information, no previous archaeological projects have been conducted within this project area.

Recommendations:

The City of Phoenix Archaeology Office recommends archaeological monitoring of ground-disturbing activities associated with this project within 250 feet of AZ T:12:256(ASM) and within 50 feet of the projected prehistoric canal. Archaeological data recovery excavations may be necessary based upon the results of the monitoring. A qualified archaeologist* must make this determination in consultation with the City of Phoenix Archaeologist.

Reviewed By: Rebecca Hill, M.A., for

Date: 7/5/2022

Laurene Montero, M.A.



This assessment contains restricted information. Do not release to the general public.
Saving the past for the future...

*A qualified archaeologist will hold an Arizona Antiquities Act Blanket Permit from the Arizona State Museum.

Archaeology Assessment Result

Project Name: Westwood N 23rd Ave & W Devonshire Ave

ST83140118

Project Location: 23rd Ave & Devonshire Ave

Project Sponsor: PWD Floodplains (Ryan Bentz; Andrea Love)

Review Agencies: City of Phoenix

Survey

Monitoring

Testing

Data Recovery

Comments:

No known archaeological sites are located within this project area.

Recommendations:

No archaeological work is necessary for this project. However, if any archaeological materials are encountered during construction, all ground-disturbing activities must cease within 10 meters of the discovery and the City of Phoenix Archaeology Office must be notified immediately and allowed time to properly assess the materials.

Reviewed By: Rebecca Hill, M.A., for

Date: 7/5/2022

Laurene Montero, M.A.





RETURN TO: Street Transportation Department
PDP Environmental Section
200 West Washington, 5th Floor
Phoenix, AZ 85003

PROJECT HISTORIC ASSESSMENT REQUEST

Date response is needed by: 7/18/2022
Street Transp. Environmental Projects Coordinator: James Marshall Phone Number: 602-534-3747
Today's Date: 6/21/2022 Project Construction Date: 4/26/2023
Cost Center No.: ST83140117-1
Project Name: E Pinchot Avenue and N 18th Street Drainage Improvements
Project Location: (street address or area):
E Pinchot Avenue and N 18th Street

Plans attached ☒ Yes ☐ No Plans _____ % Complete Quarter Section attached? ☐ Yes ☒ No

New Right of Way? ☐ YES ☒ NO If YES, from whom? N/A

Type of Work That Will Be Done:

<input type="checkbox"/> AC Patchback	<input checked="" type="checkbox"/> Catch basins	<input type="checkbox"/> Bus bay installation/repair
<input checked="" type="checkbox"/> ADA ramps	<input type="checkbox"/> Culverts	<input type="checkbox"/> Bus bay relocation (temporary/permanent)
<input type="checkbox"/> Bike Lanes	<input type="checkbox"/> Outfalls	<input type="checkbox"/> Bridge/Overpass
<input checked="" type="checkbox"/> Curb/Gutter	<input checked="" type="checkbox"/> Storm Drains	<input type="checkbox"/> Bulbout/Chicanes
<input type="checkbox"/> Medians	<input type="checkbox"/> Retention / Detention Basins	<input type="checkbox"/> Landscaping
<input checked="" type="checkbox"/> Paving	<input type="checkbox"/> Irrigation	<input type="checkbox"/> Multi-use Path
<input type="checkbox"/> Roundabout	<input type="checkbox"/> Fire Hydrants (new/relocate)	<input type="checkbox"/> Street lights
<input checked="" type="checkbox"/> Sidewalks	<input type="checkbox"/> Potable waterline	<input type="checkbox"/> Other Utilities _____
<input type="checkbox"/> Street Widening	<input type="checkbox"/> Sanitary sewer	<input type="checkbox"/> Other _____
<input type="checkbox"/> Geotech Investigations	<input checked="" type="checkbox"/> Potholing	

Detailed Project Description:

In the vicinity of E Pinchot Avenue and N 18th Street, reconstruct of the 18th Street & Pinchot Avenue intersection, install multiple catch basins and tie into new storm drain along 18th Street from E Pinchot Avenue to Catalina Drive then west to 16th Street to help alleviate flooding to the residents.

Possible Historic Elements Affected (check all that apply and specify):

☐ Bridge: N/A
☐ Canal/Canal Lateral: N/A
☐ Existing Building(s) or other structures: N/A
☐ Building or structure construction dates: N/A
☐ Landscaping: N/A
☒ Sidewalk, curb, and/or gutter:
☐ Street Lights: N/A
☐ Other: N/A
☐ Access (restricts): N/A

Land Ownership for all Project Components (check all that apply and specify):

☒ City of Phoenix: _____
☒ Federal: NOTE: Federal Funding: ARPA
☐ Private: N/A
☐ State of Arizona: N/A
☐ Other: N/A



RETURN TO: Street Transportation Department
PDP Environmental Section
200 West Washington, 5th Floor
Phoenix, AZ 85003

Federal Nexus (funding, ROW, permit, ownership)? ☒ YES ☐ NO
If YES, what Agency(s)? _____, Federal Funding: ARPA _____

Project Located In / Adjacent to a Designated or Pending Historic District or Property? ☒ YES ☐ NO
District/Property Name(s): Earll Historic District

Are any Buildings or Structures to be purchased or removed? ☐ YES ☒ NO N/A

Does project involve a canal/canal lateral? ☐ YES ☒ NO N/A

Does project impact mature landscaping? ☐ YES ☒ NO N/A

Is Historic Preservation Office involvement prior to initiation of work required? ☒ YES ☐ NO

Signed: James Marshall Date submitted: 6/21/2022
Environmental Quality Specialist

To be Completed by the Historic Preservation Office Reviewer:

Property is eligible or listed on the National Register or Phoenix Historic Property Register

☒ YES ☐ NO ☐ Eligibility Not Evaluated; No Listed Properties

Project Effect Determination (check one):

☐ "No Historic Properties Affected"

☒ "No Adverse Effect"

☐ "Adverse Effect"

☐ No further review required unless project scope is altered or changed in anyway.

HOWEVER, IF the project scope is altered after this review, please
submit a Project Historic Assessment Request Modification Form for review.

Recommendations/ Comments:

There is a conditional finding of "no adverse effect" for the project, provided plans are submitted to CHPO for review at each percentage stage.

Name (Print): Jodey Elsner

Signed:  Date review completed: 7/20/2022

DATE HISTORIC PRESERVATION OFFICE RESPONSE RECEIVED: _____



City of Phoenix

Disadvantaged Business Enterprise Program

DBE –Design Bid Build (DBB) Contract Clause Race & Gender-Neutral – Non-Negotiated

PROJECT NOS: PW26220003, ST8314011 ARPA, ST83140117 ARPA, ST83140118 ARPA and ST83140124 ARPA

CONTRACT #:

PROJECT NAME: ARPA Local Drainage Mitigation Package 3 DBB

Phoenix is one of the fastest growing, multicultural cities in the country and has shown a historical commitment to business diversity. The City and its partners strive to advance the economic growth of small businesses through its Disadvantaged Business Enterprise (DBE) Program.

The City of Phoenix DBE Program is managed and administered by the City's Equal Opportunity Department, Contract Compliance Division. Through a coordinated effort among several city departments and partner agencies, the DBE Program provides certification and opportunities in construction, purchasing, management and technical assistance, educational services, and networking.

SECTION I. DEFINITIONS

Agency means the City of Phoenix for purposes of this Contract.

Arizona Unified Certification Program (AZUCP) means a consortium of government agencies organized to provide reciprocal DBE certification within Arizona pursuant to 49 Code of Federal Regulations (CFR) Part 26. The official DBE database containing eligible DBE firms certified by AZUCP can be accessed at: <https://utracs.azdot.gov>. The certification system is called the Arizona Unified Transportation Registration and Certification System (AZ UTRACS).

Business to Government Now (B2G) means the web-based certification and compliance system used to track and monitor DBE and Small Business Participation. The B2G system can be accessed at: <https://phoenix.diversitycompliance.com>

Contract means a legally binding relationship obligating a seller to furnish supplies or services (including construction and professional services) and the buyer to pay for them.

DBE Compliance Specialist means an Agency employee responsible for compliance with this DBE Contract Clause.

EOD means the City of Phoenix Equal Opportunity Department.

Joint Venture (JV) means an association between two or more persons, partnerships, corporations, or any combination thereof, formed to carry on a single business activity. The JV is limited in scope and duration to this Contract. The resources, asset, and labor of the participants must be combined in an effort to accrue profit.

Outreach Efforts means the diligent and good faith efforts demonstrated by a Bidder to solicit participation from interested and qualified DBEs and other Small Businesses. Bidder shall identify and document potential business opportunities for DBEs and other Small Businesses, describe what efforts were undertaken to solicit DBE and Small Business participation, disclose results of negotiations with Small Businesses, and communicate and record Bidder's selection decisions relating to DBE and Small Business participants.



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Disadvantaged Business Enterprise Program

Disadvantaged Business Enterprise (DBE) means a Small Business Concern that has successfully completed the DBE certification process and has been granted DBE status by an AZUCP member pursuant to the criteria contained in 49 CFR Part 26.

Commercially Useful Function means that a DBE is responsible for executing the work of the contract and is carrying out its responsibilities by performing, managing, and supervising the work involved. If a DBE does not perform or exercise responsibility for at least 30% of the total cost of its contract with its own work force, or if the DBE subcontracts a greater portion of the work of a contract than would be expected on the basis of normal industry practice for the type of work involved, the DBE is presumed not to be performing a Commercially Useful Function.

Goods and Services Providers are firms that provide goods and services that represent a Commercially Useful Function directly to Transit as a DBE or Small Business.

Manufacturer means a firm that owns; operates or maintains a factory or establishment that produces on the premises the components, materials, or supplies obtained by the recipient, successful bidder, or Transit Vehicle Manufacturer.

Regular dealer/broker is a firm that owns, operates, or maintains a store, warehouse, or other establishment in which the materials, supplies, articles or equipment of the general character described by the specifications and required under the contract are bought, kept in stock, and regularly sold or released to the public in the usual course of business.

Supplier means a firm that engages in, as its principal business, the purchase and sale of material or supplies required for the performance of a contract. The firm must own, operate, and maintain a store, warehouse or other establishment where the supplies are bought, kept in stock, and regularly sold to the public in the usual course of business.

Small Business Concern (SBC) means, with respect to firms seeking to participate in contracts funded by the U.S. Department of Transportation (US DOT), a Small Business Concern as defined in section 3 of the Small Business Act and Small Business Administration regulations implementing the Act (13 CFR part 121), which Small Business Concern does not exceed the cap on average annual gross receipts specified in 49 CFR § 26.65(b). "Small Business" and "Small Business Concern" are used interchangeably in this DBE Contract Clause.

Small Business Enterprise (SBE) means a small business that has been determined to meet the requirements for SBE certification with the City of Phoenix and whose certification is in force at the time of the award of business by the City. A directory of currently certified SBE firms is located at <https://phoenix.diversitycompliance.com>.

Race- and Gender-Neutral (RGN) Measures means a measure or program that is or can be used to assist all Small Businesses.

Subcontract means a contract at any tier below the prime contract, including a purchase order.

Subcontractor means an individual, partnership, JV, corporation or firm that holds a contract at any tier below the prime contract, including a vendor under a purchase order.

Submitter means an individual, partnership, JV, contractor, corporation, or firm that tenders a submittal to the Agency to perform services requested by a solicitation or procurement. The submittal may be direct or through an authorized representative. (Submitter is inclusive of the terms: *Bidder, Offeror, Proposer, Respondent*, etc.).



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Responsive Submitter means a firm that has met the minimum program requirements as outlined in the solicitation and due at the time of submittal.

Successful Submitter means a firm that has been awarded the contract by the Agency to perform services or furnish supplies requested by a solicitation or procurement.

Responsible Submitter means a firm that has been selected to continue in the procurement process by the Agency.

Transit Vehicle Manufacturers (TVMs) means any manufacturer whose primary business purpose is to manufacture vehicles specifically built for public mass transportation. Such vehicles include, but are not limited to buses, rail cars, trolleys, ferries, and vehicles manufactured specifically for paratransit purposes. Producers of vehicles that receive post-production alterations or retrofitting to be used for public transportation purposes (e.g., so-called cutaway vehicles, vans customized for service to people with disabilities) are also considered transit vehicle manufacturers. Businesses that manufacture, mass-produce, or distribute vehicles solely for personal use and for sale “off the lot” are not considered transit vehicle manufacturers.

Transit Vehicle Manufacturers Goals for FTA recipients each transit vehicle manufacturer, as a condition of being authorized to bid or propose on FTA-assisted transit vehicle procurements, to certify that it has complied with the requirements of 49 CFR Part 26.49.

SECTION II. GENERAL REQUIREMENTS

A. **Applicable Federal Regulations**

This Contract is subject to DBE requirements issued by USDOT in 49 CFR Part 26. Despite the lack of a race- and gender-conscious DBE participation goal for this Contract, the Agency must track and report DBE participation that occurs as a result of any procurement, JV, goods/services, or other arrangement involving a DBE. For this reason, the Successful Bidder shall provide all relevant information to enable the required reporting.

B. **DBE Participation**

For this solicitation, the Agency has *not* established a race- or gender-conscious DBE participation goal. The Agency extends to each individual, firm, vendor, supplier, contractor, and subcontractor an equal economic opportunity to compete for business. The Agency uses race- and gender-neutral measures to facilitate participation by DBEs and Small Businesses. The Agency *encourages* each Bidder to voluntarily subcontract with DBEs and Small Businesses to perform part of the work—a Commercially Useful Function—that Bidder might otherwise perform with its own forces.

C. **Small Business Participation**

The Agency will track the participation of all approved businesses throughout the life of this contract. The Agency will count Small Business participation as authorized by federal regulations. A summary of these regulations can be found at www.ecfr.gov (49 CFR Part 26.39).

D. **DBE Certification**

Only firms (1) certified by the Agency or another AZUCP member, and (2) contracted to perform a Commercially Useful Function on scopes of work for which they are certified, may be considered to determine DBE participation resulting from RGN measures on this Contract. This DBE determination affects the Agency's tracking and reporting obligations to USDOT.



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E. Civil Rights Assurances.

As a recipient of USDOT funding, the Agency has agreed to abide by the assurances found in 49 CFR Parts 21 and 26. Each Contract signed by the Agency and the Successful Bidder, and each Subcontract signed by the Successful Bidder and a Subcontractor, must include the following assurance verbatim:

"The contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, sex, or creed in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Parts 21 and 26 in the award and administration of USDOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the City of Phoenix deems appropriate."

Note: For purposes of the required Contract and Subcontract language above, Successful Bidder is the "contractor" awarded the contract.

SECTION III. REQUIRED OUTREACH EFFORTS

The Agency has implemented outreach requirements for this Contract. Specifically, Bidders shall: (1) identify small-business-participation opportunities, including Commercially Useful Functions; (2) actively solicit proposals from small businesses; (3) evaluate small-business proposals; and (4) communicate selection decisions to small businesses, including each rejection of a small-business proposal. If a Bidder fails to conduct these Outreach Efforts or fails to submit the required documentation of Bidder's Outreach Efforts as indicated in Section IV, Parts A and B below, the Agency may determine that the Bidder is nonresponsive. A determination of non-responsiveness *disqualifies* Bidder from further consideration for the Contract award.

SECTION IV. BID REQUIREMENTS

A. Documentation due at time of bid:

All required Outreach Efforts documentation due with the bid must be submitted in a separate sealed envelope with the bid submittal.

1. Form EO2 (Outreach Efforts)

Each Bidder shall submit Form EO2 with Columns A through D completed to document their diligent and earnest Outreach Efforts.

Each Bidder shall list in Form EO2 all Small Businesses contacted by Bidder in preparing its bid. Each Bidder shall also provide the following minimum information to document its Outreach Efforts. The DBE Compliance Specialist will consider this information to determine whether Bidder has demonstrated the required Outreach Efforts:

a. Column A - Small Business Name and Contact Information

Must list each business's full legal name and contact information. Successful Bidder shall inquire to obtain the following: the number of its employees, number of years in business and its estimated range of annual gross receipts.

b. Column B - Business Status

Indicate the business status. Check all that apply, if known.

- The official DBE database containing eligible DBE and SBC firms can be accessed at: <https://utracs.azdot.gov>



City of Phoenix

Disadvantaged Business Enterprise Program

- City of Phoenix SBE Certification Directory can be accessed at:
<https://phoenix.diversitycompliance.com>

c. Column C - Scope(s) of Work Solicited

List the scope(s) of work solicited for which the small business was considered for participation in the proposal. The solicitation shall include a description of the scope(s) of work being requested.

d. Column D - Solicitation Method

Indicate the solicitation method by which each small business was contacted for your outreach efforts and provide supporting documentation. Supporting documentation must include a copy of the actual solicitation sent to Small Businesses. The solicitation may be in the form of letters or attachments to email, phone logs, newspapers and trade papers, outreach events, etc. If using a log as supporting documentation, it must include:

- List the Solicitation Method
- Name of Bidder's Representative
- Name of Company Contacted
- Name of Person Contacted
- Date and Time of Contact
- Details of the Communication

Each Bidder shall complete Columns A through D on Form EO2 in accordance with the following instructions:

1. Each Bidder shall actively contact Small Businesses for each scope of work or business opportunity selected for Outreach Efforts (**Columns A and C**).
2. Bidder's contacts with Small Businesses should occur well before the deadline for the bid to afford the firms contacted a reasonable opportunity to prepare a proposal and participate in the Contract.
3. Bidder shall ask each firm to indicate the number of its employees (**Column A**).
4. For each Small Business's annual gross receipts, Bidder shall ask the firm to indicate the gross-receipts bracket into which it fits (e.g., less than \$500,000; \$500,000 – \$1 million; \$1 – 2 million; \$2 – 5 million; etc.) rather than requesting an exact figure (**Column A**).

B. Documentation due within FIVE (5) CALENDAR DAYS of the Bid Deadline

All required Outreach Efforts documentation is due within the five (5) calendar days of the bid deadline must be submitted in a sealed envelope.

1. Form EO2 (Outreach Efforts)

Each Bidder shall submit **Form EO2 with Columns E and F** completed to document its diligent, earnest Outreach Efforts.

a. Column E - Selection Decision

Indicate the Successful Bidders selection decision for each small business that responded to the solicitation.

If selected, indicate the Dollar Value.

If not selected, provide an explanation why firm was NOT selected.



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b. **Column F - Method of Communication of Final Selection Outcome**

The Successful Bidder must notify the final selection outcome to all small businesses that responded. The supporting documentation for this notification may be in the form of an email, fax, letter, in person or a telephone log, etc. This documentation must show the following information regarding the final selection:

- List the Selection Outcome
- Name of Bidder's Representative
- Name of Company Contacted
- Name of Person Contacted
- Date and Time of Contact
- Details of the Communication

*Successful Bidder shall provide supporting documentation that shows Bidder has communicated its final selection decisions and outcomes to all Small Businesses, including those not chosen to participate in this Contract.

2. **Form EO2 Supporting Documentation**

Each Bidder shall complete and submit supporting documentation of its Outreach Efforts related to Form EO2 – as specifically related to Columns E & F.

- Within FIVE (5) Calendar Days of the Bid Deadline, Bidder shall submit all supporting documentation of Bidder's contacts with Small Businesses for each scope of work or business opportunity in regard to their Outreach Efforts.
- This documentation must include: (1) descriptions of scopes of work and business opportunities identified for Small Business participation, and (2) a copy of the actual solicitation sent to interested Small Businesses. The solicitation may be in the form of a letter, attachment to an e-mail, advertisements in newspapers and trade papers, or written communications with chambers of commerce.
- For all of the above documentation, if Bidder uses a blast e-mail or fax format, the documentation submitted must include a copy of the e-mail or fax, and Bidder must disclose all e-mail addresses and fax numbers to which the solicitation or outcome notification was sent and the date and time of the transmission. For telephone contacts, Bidder shall document the date and time of the call and the names of the respective persons representing Bidder and the Small Business.
- Bidder shall submit documentation that establishes how Bidder communicated its selection decisions and outcomes to each Small Businesses **SELECTED OR NOT SELECTED** for this Contract. This documentation may be in the form of a letter, e-mail, or a telephone log and must show the name of the person contacted and date.
- For all of the above documentation, if Bidder uses an email blast or fax format, the documentation submitted must include a copy of the e-mail or fax, and Bidder must disclose all e-mail addresses and fax numbers to which the solicitation or outcome notification was sent and the date and time of the transmission. For telephone contacts, Bidder shall document the date and time of the call and the names of the respective persons representing Bidder and the Small Business.



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Disadvantaged Business Enterprise Program

3. Form EO3 (Small Business Utilization Commitment)

Due within FIVE (5) CALENDAR DAYS of the Bid Deadline. Bidder shall complete, sign, date and submit Form EO3 within the five (5) calendar days of the bid deadline, EO3 commits Bidder to the Agency as follows:

- a. The firms indicated as "Selected" on Form EO2 – Small Business Outreach Efforts will participate in the Contract;
- b. Bidder will comply with the Race- and Gender-Neutral post-award requirements as stated in the DBE contract clause;
- c. Any and all changes or substitutions will be authorized by the Compliance Specialist before implementation; and
- d. The proposed total Small Business participation percentage is true and correct.

Bidder shall ensure that the dollar amount or percentages proposed for Small Business participation on Form EO2 equal the total percentage proposed in Form EO3.

C. Failure to Meet Outreach Requirements

The DBE Compliance Specialist will determine, in writing, whether the Bidder has satisfied all outreach requirements. If the DBE Compliance Specialist determines the Bidder failed to satisfy the outreach requirements, then the DBE Compliance Specialist may determine the bid is nonresponsive. A determination of non-responsiveness *disqualifies* Bidder from further consideration for the Contract award. The Agency shall send written notice to Bidder stating the basis for the DBE Compliance Specialist's decision.

D. Administrative Reconsideration

In the event the City determines the Bidder failed to submit required documentation to meet the Small Business Outreach Requirements, an opportunity for reconsideration of this determination will be provided. This opportunity for reconsideration will seek to obtain clarification of documentation submitted with the bid.

Within three business days of being informed by the City that the Bidder is not responsive based on insufficient demonstration and/or documentation of Outreach Efforts, the Bidder may submit its written request to:

**City of Phoenix Equal Opportunity Department
Office of the Director
200 W. Washington St., 15th Floor
Phoenix, AZ 85003**

If the request for Administrative Reconsideration is not submitted within the allotted three business days, the non-responsive Bidder shall not utilize the DBE Program submittal requirements as the basis for its future protest.

As part of this reconsideration process, the Bidder will have an opportunity to provide written clarification or argument concerning the issue of whether it met the Outreach Requirements or

provided sufficient supporting documentation of this efforts at the time of bid. As the Disadvantaged Business Enterprise Liaison Officer (DBELO) for the City, The Equal Opportunity Director shall review solely the written clarification or argument, along with any document(s) originally submitted at the time of bid. No new or revised forms or supporting documentation will be reviewed for consideration.



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The DBELO or his designee will send the Bidder a written decision on the reconsideration, explaining the basis for finding that the Bidder did or did not meet the Small Business Outreach Requirements. The result of the DBE reconsideration process is not administratively appealable and cannot be escalated or included in any other protest not related to the DBE Program.

SECTION VI. POST-AWARD COMPLIANCE REQUIREMENTS

A. Subcontracting Commitment

The small business subcontractors identified and accepted in the Small Business Outreach documents must have an executed contract* in place prior to the performance of work.

Successful Bidder shall submit to Agency, through the B2G system, all executed contracts, purchase orders, subleases, JV agreements, and other arrangements formalizing agreements between Successful bidder and all subcontractors, upon execution throughout the life of this contract.

The Successful Bidder shall not terminate any approved DBE or Small Business Subcontracts, nor shall the Successful Bidder alter the scope of work or reduce the Subcontract amount, without the DBE Compliance Specialist's prior written approval. Any request to alter a DBE or Small Business Subcontract must be submitted in writing to the DBE Compliance Specialist before any change is made. If the Successful Bidder fails to do so, the Agency may declare Successful Bidder in breach of contract.

*Executed contracts and all lower tier contracts must contain the required Civil Rights Assurances and Prompt Payment provisions.

B. Post-Award Relief from Small Business Requirements

After Contract award, the Agency will not grant relief from the proposed Small Business utilization except in extraordinary circumstances. The Successful Bidder's request to modify Small Business participation must be in writing to the DBE Compliance Specialist, which has final discretion and authority to determine if the request should be granted.

The Successful Bidder's waiver request must contain the amount of relief being sought, evidence demonstrating why the relief is necessary, and any additional relevant information the DBE Compliance Specialist should consider. The Successful Bidder shall include with the request all documentation of its attempts to subcontract with the Small Business and any other action taken to locate and solicit a replacement Small Business.

If an approved DBE allows its DBE status to expire or its DBE certification is removed during the course of the subcontract, the Agency will consider all work performed by the DBE under the original contract to count as DBE participation. No increased scopes of work negotiated after expiration or revocation of the DBE's certification may be counted. Likewise, any work performed under a Contract extension granted by the Agency may not be counted as DBE participation.

C. Counting Small Business Participation

The prime contractor may only count expenditures to AZUCP certified DBE subcontractors that perform a commercially useful function on the contract. A DBE performs a commercially useful function when it is responsible for execution of the work of the contract and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. A DBE subcontractor must perform a minimum of 30% of its subcontract value with its own



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workforce and equipment before its participation can be counted. DBEs must manage and control the performance of its contract and not be dependent on the prime's personnel and equipment to complete its work. Scope(s) of work not covered in the DBE firm's certification description **will not** be counted as DBE participation.

Commercially Useful Function & Counting of DBE Trucking/Hauling:

49 CFR Part 26.55 Section (d) defines Commercially Useful Function and the counting of DBE participation Trucking/Hauling as follows:

- The DBE must be responsible for **the management and supervision of the entire trucking operation for which it is responsible on a particular contract**, and there cannot be a contrived arrangement for the purpose achieving DBE participation.
- The DBE must itself own and operate at least one fully licensed, insured, and operational truck used on the contract.
- The DBE receives credit for the total value of the transportation services it provides on the contract using trucks it owns, insures, and operates using drivers it employs.
- The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.
- The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit for the total value of transportation services provided by non-DBE lessees not to exceed the value of transportation services provided by DBE-owned trucks on the contract. Additional participation by non-DBE lessees receives credit only for the fee or commission it receives as a result of the lease arrangement.
- Amounts paid for dump fees or materials being hauled/dumped cannot be counted as DBE participation.

Counting DBE certified Manufactures, Suppliers, and Brokers:

49 CFR Part 26.55 Section (e) permits the counting of expenditures with DBEs for materials or supplies toward DBE participation as provided in the following:

- If the materials or supplies are obtained from a **DBE manufacturer**, count 100 percent of the cost of the materials or supplies toward DBE participation,
- If the materials or supplies are purchased from a **DBE regular dealer (supplier)**, count 60 percent of the cost of the materials or supplies toward DBE participation.
- If materials or supplies purchased from a DBE which is neither a manufacturer nor a regular dealer, **(broker or manufacturer's rep.)** count the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies toward DBE participation.

If an approved DBE allows its DBE certification to expire, or the certification is revoked during the course of the Subcontract, the Agency will consider all work performed by the DBE under the original contract to count as DBE participation. No increased scope of work negotiated after expiration or revocation of the DBE's certification may be counted. Any work performed under a Contract extension granted by the Agency may not be counted as DBE participation.

D. Small Business Substitutions or Terminations

As set forth in 49 CFR Section 26.53 (f)(1)(2)(3) after Contract award, the Agency will not allow substitution or termination from the proposed Small Business utilization except in



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extraordinary circumstances. The Successful Bidder's request to modify Small Business participation must be in writing to the Phoenix DBE Compliance Specialist.

Successful Bidder's written request must set forth the amount of substitution or why termination is sought, evidence that demonstrates why it is necessary, and any additional relevant information that the Phoenix DBE Compliance Specialist should consider. The Successful Bidder shall include with the request all documentation of Bidder's attempts to subcontract with the Small Business and any other action taken to locate and solicit a replacement Small Business.

If the Small Business was approved by the Agency, the Phoenix DBE Compliance Specialist will consider whether or not the Successful Bidder has exercised diligent and good-faith efforts to find another Small Business as a replacement. The Successful Bidder shall notify the Phoenix DBE Compliance Specialist in writing of the necessity to substitute a Small Business and provide specific reason(s) for the substitution or replacement. Actual substitution or replacement of a Small Business may not occur before the Phoenix DBE Compliance Specialist's written approval has been obtained.

E. Prompt Payment of Subcontractors

The prompt payment clause shall be included in every contract and subcontract.

Per A.R.S. § 32-1129.01 the Successful Bidder must promptly pay its subcontractors, subconsultants, or suppliers **within seven (7) calendar days**. If the Successful Bidder diverts any payment received for a DBE's,

Small Business's, or other Subcontractor's work performed on the Contract or fails to reasonably account for the application or use of the payment, the Agency may declare the Successful Bidder in breach of contract.

Under the prompt-payment provisions of 49 CFR Part 26, the Successful Bidder must ensure prompt and full release of retentions to Subcontractors and suppliers when their scope of work is complete, and the Agency has paid Successful Bidder for the work. The Successful Bidder shall pay each Subcontractor's and supplier's retention no later than 30 days after the Agency has paid for the scope(s) of work, regardless if there's outstanding retention held against the Successful Bidder. If the Agency reduces the Successful Bidder's retention, the Successful Bidder shall correspondingly reduce the retentions of Subcontractors and suppliers that have performed satisfactory work.

Nothing in this section prevents the Successful Bidder from enforcing its Subcontract with a Subcontractor or supplier for defective work, late performance, and other claims arising under the Subcontract.

F. Remedies

If the Successful Bidder fails to comply with these contract provisions and the requirements set forth in 49 CFR 26.101 and 26.103, the Agency may take any one or more of the following actions:

1. Withhold future payments, including retention, until the Successful Submitter is determined to be in compliance;
2. Cancel the Contract.



City of Phoenix

Disadvantaged Business Enterprise Program

SECTION VII. RECORDS & REPORTING REQUIREMENTS

A. Records

During performance of the Contract, the Successful Bidder shall keep all records necessary to document Small Business participation. The Successful Bidder shall provide the records to the Agency within 72 hours of the Agency's request and at final completion of the Contract. The Agency will prescribe the form, manner, and content of reports. The required records may include but not limited to:

1. A complete listing of all Subcontractors and suppliers on the project;
2. Each Subcontractor's and supplier's scope performed;
3. The dollar value of all subcontracting work, services, and procurement;
4. Copies of all executed Subcontracts, purchase orders, and invoices; and
5. Copies of all payment documentation and Change Orders.

B. Reports

Successful Bidder is required to file the following payment reports in the B2G system:

1. Progress Payments:

By the 15th of ***each*** month, the Successful Bidder must enter payment information and related supporting documentation into the Agency's web-based certification and compliance reporting system.

- a. The total of all payments received from the Agency during the previous month.
- b. All payments made to Subcontractors during the previous month.

The Successful Bidder is responsible for ensuring that subcontractors confirm receipt of payment in the B2G system by the end of each month.

2. Final Payment:

Before the Agency processes the Successful Bidder's final payment and/or outstanding retention held against the Successful Bidder, the Successful Bidder shall notate in the B2G system:

- a. The payment to each subcontractor is considered "Final".
- b. Every subcontractor must confirm they have received full and "Final" payment in the B2G system.
- c. For federal reporting purposes, Attachment E must be completed and signed by the Successful Bidder and DBE firm(s) prior to Successful Bidder receiving final payment.

The Successful Bidder is responsible for ensuring that subcontractors confirm the receipt of full and "Final" payment in the B2G system.

Disadvantaged Business Enterprise (DBE) Program

DBE-Race & Gender Neutral (Non-Negotiated)

Form EO2 SMALL BUSINESS OUTREACH EFFORTS

Bidder's Name:	Contract # / Project #	Contract Name:
Email:	Phone #:	Point of Contact:

(A) Small Business Name and Contact Information	(B) Business Status	(C) Scope(s) of Work Solicited	(D) Solicitation Method	(E) Selection Decision*	(F) Communication Final Selection Outcome*
Name: Address: City, State, Zip: Number of Employees: Phone Number: Email or Fax: Number of Years in Business: Range of Annual Gross Receipts:	<input type="checkbox"/> DBE <input type="checkbox"/> SBC - Small Business Concern <input type="checkbox"/> SBE - City of Phoenix Certified <input type="checkbox"/> Unknown	List Scope(s) of Work Estimated percentage of total contract value: %	<input type="checkbox"/> E-mail Blast <input type="checkbox"/> Phone Call <input type="checkbox"/> In-Person <input type="checkbox"/> Newspaper <input type="checkbox"/> Website <input type="checkbox"/> Trade Listing <input type="checkbox"/> Outreach Event <input type="checkbox"/> Other	<input type="checkbox"/> Firm was selected Dollar Value: <input type="checkbox"/> Firm was not selected Provide explanation of why firm NOT selected _____ _____	Date Firm was Notified: <hr/> Method used to Communicate Selection: <input type="checkbox"/> Email <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> Letter <input type="checkbox"/> In person
Name: Address: City, State, Zip: Number of Employees: Phone Number: Email or Fax: Number of Years in Business: Range of Annual Gross Receipts:	<input type="checkbox"/> DBE <input type="checkbox"/> SBC - Small Business Concern <input type="checkbox"/> SBE - City of Phoenix Certified <input type="checkbox"/> Unknown	List Scope(s) of Work Estimated percentage of total contract value: %	<input type="checkbox"/> E-mail Blast <input type="checkbox"/> Phone Call <input type="checkbox"/> In-Person <input type="checkbox"/> Newspaper <input type="checkbox"/> Website <input type="checkbox"/> Trade Listing <input type="checkbox"/> Outreach Event <input type="checkbox"/> Other	<input type="checkbox"/> Firm was selected Dollar Value: <input type="checkbox"/> Firm was not selected Provide explanation of why firm NOT selected _____ _____	Date Firm was Notified: <hr/> Method used to Communicate Selection: <input type="checkbox"/> Email <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> Letter <input type="checkbox"/> In person



City of Phoenix

Disadvantaged Business Enterprise (DBE) Program

FORM EO3 SMALL BUSINESS UTILIZATION COMMITMENT (RGN)
(Due within 3 calendar days of the bid deadline.)

Project Numbers: PW2620003, ST83140112 ARPA, ST83140117 ARPA, ST83140118 ARPA, and ST83140124 ARPA	Project Title: ARPA Local Drainage Mitigation Package 3 Design-Bid-Build
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On behalf of the Successful Bidder, I certify under the penalty of perjury that the information submitted herein is true and correct:

1. The firms indicated as "Selected" in **Form EO2 Small Business Outreach Efforts**, will participate in this contract;
2. The Successful Bidder will comply with the Race- and Gender-Neutral post-award compliance requirements as stated in the DBE contract clause;
3. Successful Bidder understands and agrees that any and all changes or substitutions to subcontracts with DBE's and Small Businesses must be authorized by the Phoenix DBE Compliance Specialist prior to implementation; and
4. The following statements are true and correct:

The Proposed Total Small Business percentage on this contract will be:

_____ %

Company Name: _____

Company Mailing Address: _____

Representative Name: _____

Title: _____

Email Address: _____

Phone Number: _____

Signature: _____ Date: _____

EQUAL EMPLOYMENT OPPORTUNITY COMPLIANCE REPORTS

(Project, Training and Annual)

Federal-Aid Projects

February 1, 1977; Revised July 1, 1978; Revised November 3, 1980 Revised April 15, 1981; Revised September 7, 1983; Revised October 15, 1998; Revised August 1, 2005; Revised March 1, 2015; Revised October 20, 2015

ANNUAL REPORT:

For each contract in the amount of \$10,000 or more, and for each subcontract regardless of tier not including material suppliers, in the amount of \$10,000 or more, the contractor and each subcontractor regardless of tier shall submit an annual Equal Employment Opportunity (EEO) Report containing all the information required on Form FHWA -1391.

The staffing figures to be reported should represent the project workforce on board in all or any part of the last payroll period preceding the end of July.

The report shall be submitted no later than September 1 to the agency (contract owner) compliance officer.

**CERTIFICATION WITH REGARD TO THE PERFORMANCE OF
PREVIOUS CONTRACTS OR SUBCONTRACTS SUBJECT TO THE
EQUAL OPPORTUNITY CLAUSE AND THE FILING OF REQUIRED REPORTS
APRIL 1969**

The bidder _____, proposed subcontractor _____, hereby certifies that he has _____, has not _____, participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, and that he has _____, has not _____, filed with the Joint Reporting committee, the Director of the Office of Federal Contract Compliance, a Federal Government contracting or administering agency or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

(Company)

By: _____

(Title)

Date: _____

Note: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7b (1),) and must be submitted by bidders and proposed subcontractors only in connection with contracts and subcontracts which are subject to the equal opportunity clause. Contracts and subcontracts which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5 (Generally only contracts or subcontracts of \$10,000 or under are exempt.)

Currently, Standard Form 100 (EEO-1) is the only report required by the Executive Orders or their implementing regulations.

Information concerning Standard Form 100 (EEO-1) is available from:

Joint Reporting Committee P.O.
Box 19100
Washington, D.C. 20036-9100

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b)(1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

R7/03

Equal Employment Opportunity Clause

All contracts for all services and supplies entered into in connection with the Project or operation of the Property will contain the following provisions as required by 41 CFR § 60-1.4(b):

The applicant hereby agrees that it will incorporate or cause to be incorporated into any contract for construction work, or modification thereof, as defined in the regulations of the Secretary of Labor at 41 CFR Chapter 60, which is paid for in whole or in part with funds obtained from the Federal Government or borrowed on the credit of the Federal Government pursuant to a grant, contract, loan, insurance, or guarantee, or undertaken pursuant to any Federal program involving such grant, contract, loan, insurance, or guarantee, the following equal opportunity clause:

During the performance of this contract, the contractor agrees as follows:

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

Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff 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 setting forth the provisions of this nondiscrimination clause.

(2) 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, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or

action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

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

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

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction 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.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 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 administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance:

Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

The applicant further agrees that it will be bound by the above equal opportunity clause with respect to its own employment practices when it participates in federally assisted construction work: *Provided*, That if the applicant so participating is a State or local government, the above equal opportunity clause is not applicable to any agency, instrumentality or subdivision of such government which does not participate in work on or under the contract.

The applicant agrees that it will assist and cooperate actively with the administering agency and the Secretary of Labor in obtaining the compliance of contractors and subcontractors with the equal opportunity clause and the rules, regulations, and relevant orders of the Secretary of Labor, that it will furnish the administering agency and the Secretary of Labor such information as they may require for the supervision of such compliance, and that it will otherwise assist the administering agency in the discharge of the agency's primary responsibility for securing compliance.

The applicant further agrees that it will refrain from entering into any contract or contract modification subject to Executive Order 11246 of September 24, 1965, with a contractor debarred from, or who has not demonstrated eligibility for, Government contracts and federally assisted construction contracts pursuant to the Executive Order and will carry out such sanctions and penalties for violation of the equal opportunity clause as may be imposed upon contractors and subcontractors by the administering agency or the Secretary of Labor pursuant to Part II, Subpart D of the Executive Order. In addition, the applicant agrees that if it fails or refuses to comply with these undertakings, the administering agency may take any or all of the following actions: Cancel, terminate, or suspend in whole or in part this grant (contract, loan, insurance, guarantee); refrain from extending any further assistance to the applicant under the program with respect to which the failure or refund occurred until satisfactory assurance of future compliance has been received from such applicant; and refer the case to the Department of Justice for appropriate legal proceedings.

The City and the United States are beneficiaries of this **clause** and are entitled to enforce it.

Borrower compliance

Borrower will comply with all applicable local, state, and federal fair employment laws and regulations.

SUPPLEMENTAL TERMS AND CONDITIONS

AMERICAN RESCUE PLAN ACT STATE AND LOCAL FISCAL RECOVERY FUNDS

Uniform Guidance

SLFRF awards are subject to requirements set forth in the Uniform Guidance, 2 CFR Part 200, available at <https://www.ecfr.gov/current/title-2/subtitle-A/chapter-II/part-200?toc=1>

Suspension, & Debarment

Consultant agrees to abide by Executive Orders 12549 and 12689, Debarment and Suspension, and implementing regulations found at 2 CFR Part 180 and 31 CFR Part 19. The City may by giving written notice to Consultant, immediately terminate this Agreement if the City determines that Consultant has been debarred, suspended, or otherwise lawfully prohibited from participating in any public procurement activity, including but not limited to, being disapproved as a subcontractor of any public procurement unit or other governmental body. Consultant will include a term or condition in all related contracts and subcontracts described in 2 CFR Part 180, Subpart B that the award is subject to 2 CFR Part 180 and 31 CFR Part 19.

Award Terms and Conditions

The Award Terms and Conditions of the SLFRF financial assistance agreement (<https://home.treasury.gov/system/files/136/Financial-Assistance-Agreement-Local-governments.pdf>) sets forth the compliance obligations for Consultant pursuant to the SLFRF statute, the Uniform Guidance, Treasury's final rule, and applicable federal laws and regulations. Consultant should ensure it remains in compliance with all Award Terms and Conditions. These obligations include the following items in addition to others:

- **Conflicts of Interest.** The Consultant must disclose in writing to the City of Phoenix any potential conflict of interest affecting this agreement in accordance with 2 C.F.R. § 200.112. The City of Phoenix will disclose such conflict to Treasury.
- **Compliance with Applicable Law and Regulations.** Consultant agrees to comply with the requirements of section 603 of the American Rescue Plan Act, and regulations adopted by the Treasury pursuant to section 603(f) of the Act, and guidance issued by the Treasury. Consultant also agrees to comply with all other applicable federal statutes, regulations, and executive orders. Consultant shall provide for such compliance by other parties in any agreements it enters into with other parties relating to this award which may include, but not limited to the following:
 - Uniform Administrative Regulations, Cost Principles and Audit Requirements for Federal Awards, 2 C.F.R. Part 200;
 - OMB Guidelines to Agencies on Government wide Debarment and Suspension, 2 C.F.R. part 180;
 - Government wide Requirements for Drug-Free Workplace, 31 C.F.R. Part 20;
 - New Restrictions on Lobbying, 31 C.F.R. Part 21;
 - Generally applicable federal environmental laws and regulations;

- **Clean Air Act and Federal Water Pollution Control Act.** Consultant will comply with all applicable standards, orders or regulations Issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).
- **Equal Employment Opportunity.** Except as otherwise provided under 41 CFR Part 60, for all contracts that qualify as “federally assisted construction contracts” as defined in 41 CFR Part 60–1.3, Consultant agrees to comply with the equal opportunity clause under 41 CFR 60-1.4(b), incorporated herein by reference, and E.O. 11246, “Equal Employment Opportunity,” as amended by E.O. 11375, “Amending Executive Order 11246 Relating to Equal Employment Opportunity,” and as supplemented by regulations at 41 CFR Part 60, “Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor.”
- **Copeland “Anti-Kickback” Act.** Consultant shall comply with the Copeland “Anti-Kickback” Act (40 U.S.C. § 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, “Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States”). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.
- **Contract Works Hours and Safety Standards Act.** If the contract exceeds \$100,000 and involves the employment of mechanics or laborers, Consultant shall comply with 40 U.S.C. §§ 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. § 3702 of the Act, Consultant shall compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than 1½ times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
- **Byrd Anti-Lobbying Certification (31 U.S.C. 1352; 31 CFR Part 21).** Consultant hereby certifies, to the best of its knowledge and belief, that:
 - a. No Federal appropriated funds have been paid or will be paid, by or on behalf of Consultant, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of and Federal contract, grant,

loan, or cooperative agreement.

- b. Each contractor tier must certify to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization or influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C, 1352.
 - c. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, Consultant shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions. Such disclosures are forwarded from tier to tier up to the non-Federal award.
- **Protection for Whistleblowers.** In accordance with 41 U.S.C. § 4712, Consultant may not discharge, demote, or otherwise discriminate against an employee in reprisal for disclosing to any of the persons or entities provided below, information that the employee reasonably believes is evidence of gross mismanagement of a federal Agreement or grant, a gross waste of federal funds, an abuse of authority relating to a federal Agreement or grant, a substantial and specific danger to public health or safety, or a violation of law, rule, or regulation related to a federal Agreement (including the competition for or negotiation of an Agreement) or grant.

The list of persons and entities referenced in the paragraph above includes the following:

- i. A member of Congress or a representative of a committee of Congress;
 - ii. An Inspector General;
 - iii. The Government Accountability Office;
 - iv. A Treasury employee responsible for Agreement or grant oversight or management;
 - v. An authorized official of the Department of Justice or oversight or management;
 - vii. A court or grand jury; or
 - viii. A management official or other employee of the City, Consultant or a subcontractor who has the responsibility to investigate, discover, or address misconduct.
- **Drug-Free Workplace Act of 1988:** Consultant must comply with drug-free workplace requirements in 31 CFR Part 20, which implements the Drug-Free Workplace Act of 1988.
 - **Victims of Human Trafficking.** Consultant agrees to follow the requirements of Section 106(g) of the Trafficking Victims Protection Act of 2000, as amended (22 U.S.C. 7104) and ensure that it and none of its employees engage in server forms of trafficking in persons, procure commercial sex acts during the subaward term, used forced labor in the performance of obligations under this Agreement. Consultant agrees to notify the City immediately once it has information from any source alleging a violation of this Section.

- **Preference for Domestic Procurement.** Pursuant to 2 C.F.R. 200.322, to the greatest extent practicable, Consultant will purchase, acquire, or use goods, products or materials produced in the United States (including but not limited to iron, aluminum, steel, cement, and other manufactured products).
- **Prohibition on Certain Telecommunications Equipment.** Consultant is prohibited from obligating or expending funds to (i) procure or obtain; (ii) extend or renew a contract to procure or obtain; or (iii) enter into a contract to procure or obtain equipment, services or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. Covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities) and such other entities described in 2 C.F.R. 200.216.
- **Additional Federal Requirements.** Consultant will comply with any additional terms and conditions imposed by 2 CFR Part 200, as applicable, and any guidance issued by the U.S. Department of Treasury regarding this agreement. .

CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN

Add the following new Section, **233 STORM WATER POLLUTION PREVENTION PLAN SUBMITTAL PROCESS**

233.1 DESCRIPTION

The Contractor shall use the Arizona Department of Environmental Quality (ADEQ) Smart NOI program for all submittals located at this web address:

<https://az.gov/app/smartnoi/>

The location of this process may change and it is the responsibility of the Contractor to verify the correct web address. All fees are the responsibility of the Contractor. The Contractor shall apply for a "Stormwater Construction General Permit" with the project type "MUNICIPAL/PUBLIC".

Before any construction on site begins, the Contractor shall submit the Notice of Intent (NOI) and the SWPPP through the Smart NOI program as the sole permittee. The Contractor shall not commence any construction activities until the ADEQ send a written Notice Of Intent assigning an AZCON number.

As required by ADEQ the Contractor shall submit a Notice of Termination (NOT) through the Smart NOI program. The Contractor shall receive final payment only after receiving a written Notice of Termination Acknowledgement from ADEQ.

Projects Impacting Impaired Waters

Projects that will have any construction taking place within ¼ mile of the Salt River between 23rd Avenue and the confluence of the Gila River will impact "Impaired Waters". These projects will require the Contractor to design, implement, and evaluate a Monitoring Plan for stormwater runoff from their construction activities. The Monitoring Plan must be site specific and will be submitted to ADEQ as an appendix to the SWPPP. ADEQ is the final authority in the approval of the monitoring plan. A copy of the SWPPP and the Monitoring Plan shall be kept on-site at all times. Additional copies of the Monitoring Plan should be made available to all personnel who anticipate participating in stormwater monitoring activities. The Contractor shall have a copy of the monitoring plan, approved SWPPP, NOI, and ADEQ Authorization to Discharge posted at the jobsite prior to ground disturbance.

Subcontractors

All subcontractors shall comply with all AZPDES requirements under the supervision of the General Contractor, and shall submit a completed, signed subcontractor certification form, thereby designating themselves as co-permittees.

233.2 SAMPLE SWPPP STRUCTURE

The following is a sample outline of the City requirement for a SWPPP submittal modeled after the ADEQ Construction General Permit Checklist. It shall be the Contractor's responsibility to meet all the ADEQ requirements for a SWPPP and retain a qualified consultant to complete the SWPPP, if necessary, at no additional cost to the City.

1 SITE DESCRIPTION

- 1.1 Project Name: **CONTRACTOR SHALL FILL IN PROJECT NAME**
- Project No(s): **CONTRACTOR SHALL FILL IN PROJECT NUMBER**
- 1.2 Project Location: **CONTRACTOR SHALL FILL IN FOR PROJECT SITE LOCATION**
- 1.3 Owner's Name:

City of Phoenix, Street Transportation Department

- 1.4 Owner's Address:

200 West Washington Street, 5th Floor, Phoenix, Arizona 85003

- 1.5 Project Description: **CONTRACTOR SHALL FILL IN PROJECT DESCRIPTION**

- 1.6 Runoff Coefficient and Soils Information:

1. Overall runoff coefficient of upstream drainage area shall be unchanged by project.
2. Surface Soils Information: **(EXAMPLE ONLY, CONTRACTOR SHALL FILL IN FOR PROJECT SITE LOCATION)**

<u>SOIL UNIT</u>	<u>SOIL TYPE (USDA TEXTURE)</u>	<u>PERMEABILITY (IN./HR.)</u>
<u>Laveen</u>	<u>Loam</u>	<u>0.6-2.0</u>
<u>Mohall</u>	<u>Clay Loam</u>	<u>0.2-0.6</u>
<u>Tucson</u>	<u>Clay Loam</u>	<u>0.2-0.6</u>
<u>Vecont</u>	<u>Clay</u>	<u>0.06-0.2</u>

- 1.7 Name of Receiving Water:

EXAMPLE: SALT RIVER, CONTRACTOR SHALL FILL FOR PROJECT SITE LOCATION

2 CONTROLS

2.1 Erosion and Sediment Controls

2.1.a Stabilization Practices:

Stabilization practices on this site include:

- Permanent planting.
- Save selected existing trees.
- Decomposed granite
- **CONTRACTOR SHALL ADD OR REMOVE STABILIZATION PRACTICES AS NECESSARY**

2.1.b Structural Practices:

May include:

- Temporary retention areas (subgrade excavation areas).
- Temporary catch basin inlet protection.
- Silt fence.
- Gravel filter berm.
- Temporary diversion dike.
- Straw bale barriers.
- Sandbag berm
- **CONTRACTOR SHALL ADD OR REMOVE STABILIZATION PRACTICES AS NECESSARY**

2.1.c Narrative: Sequence of major activities.

CONTRACTOR SHALL COMPLETE NARRATIVE

2.1.d Storm Water Management: **(CONTRACTOR SHALL EDIT AS NECESSARY)**

Storm water drainage on will be provided by curb and gutter, catch basin inlets, and storm drains. No appreciable changes in runoff coefficients or in finished roadway grades will take place as a result of this project; therefore, no significant alterations of storm water drainage patterns or runoff quantities are expected.

During construction, storm water runoff will be managed by the following means, as conditions require:

- Temporary retention will be provided during roadway construction in areas excavated for subgrade.
- Silt fence, straw bales, sandbag berms, temporary diversion dikes, gravel filter berms or other BMP's as necessary to eliminate erosion may be used to prevent storm runoff from entering open storm drain pipes in excavated trenches. Temporary catch basin inlet protection may also be provided to remove sediment from drainage water before it enters the drainage system. Straw bale protection at outfall pipe locations may be employed during construction.

3 **OTHER CONTROLS**

3.1 Waste Disposal:

Waste Materials:

All waste materials including trash and construction debris from the site will be either disposed to a designated area immediately or collected and stored in securely-lidded metal dumpsters. The dumpsters will meet all local and State solid waste management regulations. The dumpsters will be emptied a minimum of once per week, or more often if necessary, and the trash will be hauled to an acceptable dump site. Lids will be closed at all times after work hours and during rain events. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedures for waste disposal. Notices stating these practices will be posted on site, and the site superintendent who manages the day-to-day site operations, will be responsible for seeing that these procedures are followed.

ENTER PHONE NUMBER AND NAME OF SITE SUPERINTENDENT

Concrete washout will only be allowed in designated areas. The hardened waste will be disposed of weekly and before final inspection of the project.

Hazardous Waste:

All hazardous waste materials will be disposed of in the manner specified by local or State regulations

or by the manufacturer. Site personnel will be instructed in these practices, and the site superintendent who manages day-to-day site operations, will be responsible for seeing that these practices are followed.

Sanitary Waste:

All sanitary sewage generated on-site will be collected from the portable units a minimum of twice per week or as required by local regulations. Units will have a berm placed around them to ensure no spillage can occur.

3.2 Off-Site Vehicle Tracking:

Traffic will be maintained on paved roadway throughout construction in order to reduce vehicle tracking of sediments. The paved street beyond the start and end of the project will be swept as often as necessary to remove any excess mud, dirt, or rock that may be tracked from the site by construction vehicles, but not less than once per week. Dump trucks hauling material to or from the construction site will be covered with tarpaulin before leaving the site.

4 DEMONSTRATION OF COMPLIANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS

The following Federal, State, and City regulations are followed in the preparation of this storm water pollution prevention plan:

- Section 402(p) of the Clean Water Act.
- Amended Section 405 of the Water Quality Act.
- "ADEQ Arizona Pollutant Discharge Elimination System General Permit for Discharge from Construction Activities to Waters of the United States, Permit AZG-2008-001."
- Flood Control District of Maricopa County "Drainage Design Manual for Maricopa County, Arizona, Volume III, Erosion Control."
- City of Phoenix Code 32C, "Storm Water Quality Protection."
- City of Phoenix "Grading and Drainage Ordinance for Purpose of Fulfilling NPDES Requirements."

5 MAINTENANCE/INSPECTION PROCEDURES

5.1 Erosion and Sediment Control Practices:

The following is a list of erosion and sediment controls to be used during the construction period:

5.1.a Stabilization practices for this site include:

- Permanent planting.
- Save selected existing trees.
- Decomposed granite.
- **CONTRACTOR TO ADD/DELETE AS NECESARRY**

5.1.b Structural practices for this site will include:

- Silt fence/straw bale barriers.
- Temporary diversion dike/gravel filter berm.
- Sandbag berm.
- Storm drain, curb and gutter, catch basins.
- Temporary catch basin inlet protection.
- Temporary retention in subgrade excavation areas.

- **CONTRACTOR TO ADD/DELETE AS NECESSARY**

5.2 Erosion and Sediment Control Maintenance and Inspection Practice:

Following is a list of the inspection and maintenance practices that will be used to maintain erosion and sediment control:

- All control measures will be inspected at least once every 7 days and within 24 hours after each rain event of 0.1 inch or greater.
- All measures will be maintained in good working order; if repair is necessary, it will be initiated within 24 hours of report. All changes will be completed within 14 days after an observation.
- Built-up sediment will be removed from silt fence when it has reduced the design capacity by 50%.
- Erosion control fabric and erosion control dikes will be inspected and any breaches promptly repaired.
- Permanent planting will be inspected for washout and healthy growth per specification requirements.
- A Compliance Evaluation Report will be made at each inspection to ensure all BMP's are functioning correctly.
- The site superintendent will be responsible for inspection, maintenance, and repair activities, and filling out the Compliance Evaluation Report.
- Personnel selected for inspection and maintenance responsibility will receive training from the site superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used on-site in good working order.
- Only one side of roadways will be excavated for subgrade preparation at a time. This area will serve as temporary retention while traffic is maintained on the paved other half of the road. This will serve to control storm water and minimize tracking of sediments.

6 INVENTORY FOR POLLUTION PREVENTION PLAN **(CONTRACTOR TO EDIT AS NECESSARY)**

The materials or substances listed below are expected to be present on-site during construction:

- | | |
|----------------------------|------------------------------|
| • Concrete | • Wood |
| • Asphaltic Concrete | • Paints |
| • Fertilizers | • Herbicide/Pesticide |
| • Petroleum-Based Products | • Soil Treatment Products |
| • Cleaning Solvents/Agents | • Other Building Materials |
| • Sealants | • Water Used in Dust Control |

6.1 Spill Prevention

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff:

6.1.a Good Housekeeping:

The following good housekeeping practices will be followed on-site during the construction period:

- An effort will be made to store only enough product required to do the immediate job.
- All materials stored on-site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under proper cover and palletized.
- Liquid products will be placed on secondary containment pallets.
- Fuel tanks will be double walled.

- Drip pans will be used under all spigots unless on secondary containment.
- Products will be kept in their original containers with the original manufacturers' label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used up before disposing of the container.
- Manufacturers' recommendations for proper use and disposal will be followed.
- The site superintendent will inspect daily to ensure proper use and disposal of materials.
- Concrete washout will only be allowed in designated areas. The hardened waste will be disposed of weekly and before final inspection of the project.

6.1.b Hazardous Products:

These practices are used to reduce the risks associated with hazardous materials:

- Products will be kept in original containers unless they are not resealable.
- Original labels and material safety data sheets will be retained.
- If surplus product must be disposed of, manufacturers', or local and State recommended methods for proper disposal will be followed.
- Products will be monitored, an inventory shall be conducted regularly, and documentation of all use and disposal shall be maintained.

6.2 Product Specific Practices:

The following product specific practices will be followed on-site:

6.2.a Petroleum Products:

All on-site vehicles will be monitored for leaks and receive regular preventative maintenance to reduce any chance of leakage. Petroleum products will be stored in tightly-sealed containers which are clearly labeled. Any petroleum substances used on-site will be applied according to the manufacturer's recommendations. Spills and leaks from vehicles will be stopped immediately. Any leaking vehicle will have a drip pan placed under the leak until the unit is repaired. Secondary containment will be provided for all petroleum products stored onsite.

6.2.b Fertilizers, Herbicide, Pesticide, Soil Treatment:

All materials used will be applied only in the minimum amounts recommended by the manufacturer or as per specification. Once applied, materials will be worked into the soil to limit exposure to storm water.

On-site storage will be covered and palletized to limit contact with storm water. The contents of any partially-used bags or containers will be transferred to a sealable plastic bin to avoid spills.

6.2.c Paints:

All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm drain system or on the ground, but will be properly disposed of according to manufacturers' instructions or State and local regulations.

6.2.d Concrete Trucks:

Concrete trucks will not be allowed to wash out or discharge surplus concrete or dump wash water other than in a designated wash-out area. The hardened waste will be disposed of weekly and before final inspection of the project.

6.3 Spill Prevention Practices:

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area on-site. Equipment and materials will include, but not be limited to, brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically designed for this purpose.
- All spills will be cleaned up immediately after discovery using dry cleanup methods.
- The spill area will be kept well-ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size—ADEQ Hotline: (602) 771-4505; City of Phoenix Hazardous Spills Emergency: 911; City of Phoenix Hazardous Spills Safety Section: (602) 262-7555.
- The spill prevention plan will be adjusted to include measures to prevent this type of spill from recurring and procedures to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
- The site superintendent shall be responsible for the day-to-day site operations, will be the spill prevention and cleanup coordinator. He will designate other site personnel who will receive spill prevention and cleanup training.

6.4 Documentation:

Documentation of all inspections, failed BMP's, corrective action and training shall be maintained onsite with the SWPPP at all times during the project, and shall be maintained for not less than three (3) years after the project is complete.

OTHER REQUIRED CERTIFICATIONS

The Contractor shall complete and submit the following certification forms to the City before construction begins:

- Permittee Certification
- Contractor Certification
- Subcontractor Certification (for all Subcontractors as necessary)
- Operator's Compliance Evaluation Report

PERMITTEE'S CERTIFICATION

As Contractor of the **ARPA Local Drainage Mitigation Package 3 Design-Bid-Build** project, I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Company

Name:

Title:

Signature:

Date:

CONTRACTOR CERTIFICATION

I certify under penalty of law that I understand the terms and condition of the General Arizona Pollutant Discharge Elimination System (AZPDES) Permit that authorizes the storm water discharges associated with industrial activities from the construction site identified as part of this certification. Further, by my signature, I understand that I am becoming a co-permittee, along with the subcontractors signing such certifications, to the general (AZPDES) Permit for the storm water discharges associated with construction activities of the **ARPA Local Drainage Mitigation Package 3 Design-Bid-Build** project. As a co-permittee, I understand that I, and my company, are legally required under the Clean Water Act, to ensure compliance with the terms and conditions of the storm water pollution prevention plan developed under the AZPDES Permit and the terms of the AZPDES Permit.

General Contractor and Responsibility

Name: _____

Title: _____

Signature: _____

SUBCONTRACTOR'S CERTIFICATION

I certify under penalty of law that I understand the terms and conditions of the General Arizona Pollutant Discharge Elimination System (AZPDES) Permit that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification. Further, by my signature, I understand that I am becoming a co-permittee, along with the owner(s) and other contractors and subcontractors signing such certifications, to the general AZPDES permit for the storm water discharges associated with construction activities of the **ARPA Local Drainage Mitigation Package 3 Design-Bid-Build** project. As a co-permittee, I understand that I, and my company, are legally required under the Clean Water Act, to ensure compliance with the terms and conditions of the storm water pollution prevention plan developed under the AZPDES permit and the terms of the AZPDES permit.

Authorized Representative of Subcontractor: _____

Signature: _____ Date: _____

For (Subcontractor Name): _____

Construction Activities: _____

Verification of Completion and Acceptance of Subcontractor's Work

All work to be performed by

_____ (Subcontractor) as part
of the _____ (Project) has been completed and accepted. Execution of this form
absolves said subcontractor from liability for AZPDES violations which may occur subsequent to this date as a result
of activities of the general contractor or other subcontractors.

Authorized Representative of Subcontractor: _____

Signature: _____ Date: _____

For (Subcontractor Name): _____

Verified by (General Contractor): _____

Authorized Representative of General Contractor: _____

Signature: _____ Date: _____

AZG-2008-001 General Permit for Construction Activities

Operator's Compliance Evaluation Report

This project requires inspection of storm water pollution controls (BMPs) on a choice of frequency described in the General Permit, Part IV. H. Attach sheets if more space is needed.

Project: _____ Date: _____

Name & Title of Inspector: _____

Qualifications of Inspector: ☐ Attached; or ☐ Shown in Sec. _____ of the SWPPP.

☐ Periodic Inspection; or ☐ Rain Event inspection

Relevant weather information: _____

1. Location(s) of discharge from the site: ☐ None; or ☐ Description: _____

2. Location(s) of and identification of BMPs that need to be maintained; failed to operate or proved to be inadequate:

☐ None; or ☐ Description: _____

3. Location(s) where additional BMPs are needed: ☐ None; or ☐ Description: _____

4. Corrective actions required, including changes and target dates: ☐ None; or ☐ Description: _____

5. Identify all sources of non-storm water and the associated pollution control measures: ☐ None; or ☐

Description: _____

6. Identify material storage areas and evidence of, or potential for pollutant discharge from these areas: ☐ None; or

☐ Description: _____

7. Identify any other apparent incidents of non-compliance: ☐ None; or ☐ Description: _____

8. If no incidents of non-compliance are identified in items 1 through 7 above, the inspector certifies that the construction project is being operated in compliance with the SWPPP and the General Permit.

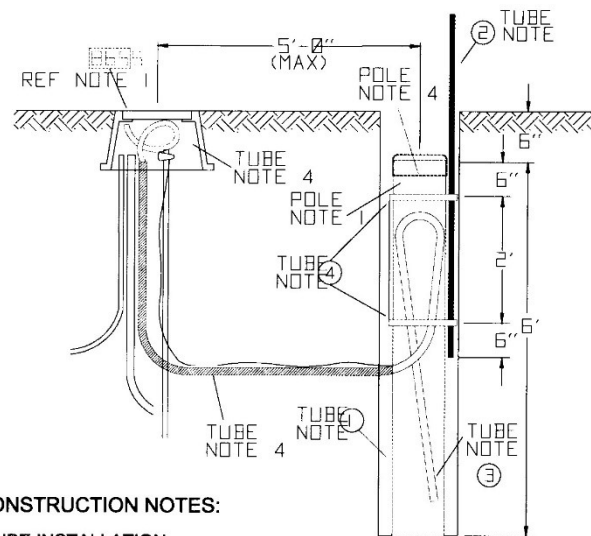
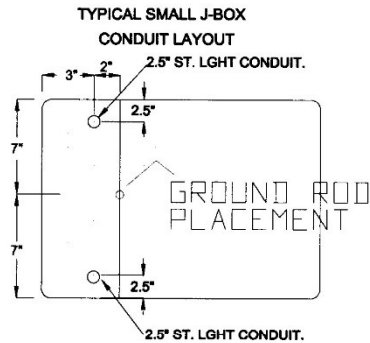
I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Certifying Signature: _____ Date: _____

Printed Name: _____

APS STREET LIGHT SONOTUBE, J-BOX, CONDUIT ETC (DWG)

1911



CONSTRUCTION NOTES:

TUBE INSTALLATION

1. DIG HOLE FOR TUBE 6'- 6" DEEP BY EITHER OF THE FOLLOWING:
A. AUGERRED HOLE (16" MAX.)
B. SLOTTED STUB-OUT TRENCH
2. PLACE RED PLASTIC LOCATOR MARKER OUTSIDE OF TUBE AND STRAP IN TWO LOCATIONS.
3. PLACE STREET LIGHT FLEXIBLE CONDUIT IN TUBE WITH 10' COILED INSIDE. DO NOT MAKE SHARP BENDS. BEND END OF CONDUIT OVER AND INSERT DOWN INTO TUBE AS SHOWN. INSPECTOR TO INSURE FLEX IS NOT KINKED.
4. INSTALL OTHER END OF FLEX IN J-BOX. LEAVE SMALL COIL TO ALLOW LEVELING FOR FINAL GRADE. BACKFILL AFTER INSPECTION IS COMPLETE.
5. COMPACT SOIL TO AT LEAST 85% AROUND TUBE.

POLE INSTALLATION

1. ELECTRONIC MARKER WILL INDICATE LID LOCATION PER BLUE STAKE MARKINGS. WORK FORCES WILL DIG DOWN TO LID, REMOVE LID AND PULL FLEX FROM TUBE.
2. INSERT END OF FLEX THROUGH ACCESS HOLE AND PUSH IT UP THROUGH HAND HOLE AS STREET LIGHT POLE IS LOWERED INTO THE TUBE.
3. HOLD POLE SECURELY WHILE BACKFILLING TO AT LEAST 85% COMPACTION. TO COMPACT POLE IN PLACE, PEA GRAVEL (<3/4") MAY BE USED NEAR THE TUBE.
4. THE MARKER BALL ATTACHED TO THE BOTTOM OF THE "SONO" TUBE LID SHOULD BE RETURNED TO STOCK.

REFERENCES:

1. FOR J-BOX SEE SPEC 8655 THRU 8663.

CODE	1911	MATERIAL LIST	
ITEM	QTY	DESCRIPTION	APN
1	20	CONDUIT 1" PVC FLEX CORR	32900891
2	1	LOCATOR U. G. SERVICE	33101586
3	1	"SONO" TUBE 6FT X12IN	64672
4	2	TIE 30" SELF LOCKING	33107350
5	2	FOAM BACKFILL	00072046

APS		Street Light Sonotube, J-Box, Conduit & Pole Installation	
WO#:		DATE:	5/14/03
BY:		SCALE:	
FILENAME:		SHEET	OF

BID PROPOSAL
CITY OF PHOENIX, ARIZONA
OFFICE OF THE CITY ENGINEER
PROJECT TITLE: ARPA LOCAL DRAINAGE MITIGATION PACKAGE 3 DBB
PROJECT NOS.: PW26220003, ST83140112 ARPA, ST83140117 ARPA, ST83140118 ARPA, ST83140124
ARPA BUDGET PROJECT

PROPOSAL to the City Engineer of the City of Phoenix.

In compliance with the Advertisement for Bids, by the City Engineer, the undersigned bidder:

(Print or Type Contractor Name and Vendor Number)

Having examined the contract documents, site of work and being familiar with the conditions to be met, hereby submits the following proposal for furnishing the material, equipment, labor and everything necessary for the completion of the work listed and agrees to execute the contract documents and furnish the required bonds and certificates of insurance for the completion of said work, at the locations and for the prices set forth on the inside pages of this form.

Understands that construction of this project shall be in accordance with all applicable Maricopa Association of Governments' (MAG) Uniform Standard Specifications and Uniform Standard Details, latest edition, and the City of Phoenix Supplements to the MAG Uniform Standard Specifications and Details, latest edition, except as otherwise required by the project plans and specifications.

No proposal may be withdrawn for a period of 50 days after opening without consent of the Contracting Agency through the body or agent duly authorized to accept or reject the proposal except in the case of federally assisted projects.

Understands that his proposal shall be submitted with a proposal guarantee of cash, certified check, cashier's check or surety bond for an amount not less than ten (10) percent of the amount bid, as referenced in the Call for Bids.

Agrees that upon receipt of Notice of Award, from the City of Phoenix, he will execute the contract documents within 10 calendar days.

Work shall be completed within 300 calendar days, beginning with the day following the starting date specified in the Notice to Proceed. The time allowed for completion of the work includes lead time for obtaining the necessary materials and/or equipment and approvals.

The bidder shall acknowledge all addenda in writing. By writing the addendum number(s) below, the bidder agrees that this proposal is computed with consideration of the specification book(s) plus any addenda.

ADDENDUM NO.

DATE

ADDENDUM NO.

DATE

BID PROPOSAL

22ND STREET & LOWER BUCKEYE ROAD

ITEM NO.	BID (OR) M NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
1	E699200	Allowance for Stormwater Pollution Prevention Best Management Practices (BMP's)	JOB	1	\$5,000.00	\$5,000.00
2	M1042007	Allowance for Extra Work	JOB	1	\$50,000.00	\$50,000.00
3	M1058000	Construction Surveying and Layout	JOB	1		
4	M1058002	2-Person Survey Party (CONTINGENT ITEM)	Hour	16		
5	M1081000	Mobilization	JOB	1		
6	M3001001	Sawcut & Remove Existing Ashpalt Pavement	Sq. Yd.	2566		
7	M3100000	Aggregate Base Course, 1'-9" Thick	Sq. Yd.	2566		
8	M3210230	Asphalt Concrete Surface Course, Type C3/4, 3" Thick	Sq. Yd.	2566		
9	M3500404	Remove Existing Light Poles And Electric Conduit/Service To Accommodate Vault Construction Store On Site And Replace Prior To Paving.	Each	2		
10	M4011903	Traffic Control Devices	JOB	1		
11	M4013000	Allowance For Uniformed, Off-Duty Law Enforcement Officer	JOB	1	\$5,000.00	\$5,000.00
12	M5051016	Precast Concrete Modular Vault Drainage Storage System	Cu. Ft.	31869		
13	M5051504	Concrete Catch Basin, Type "G", Double Grate, Mag Detail 537	Each	3		
14	M5051508	Concrete Catch Basin, Type "H", Double Grate, Mag Detail 538	Each	4		
15	M6180004	4" Storm Sewer Pipe - Sch. 40 Pvc From Primary Settling Chamber To Ex Dry Well	Lin. Ft.	79		
16	M6180015	15" Storm Sewer Pipe	Lin. Ft.	70		
17	M6180024	24" Storm Sewer Pipe	Lin. Ft.	112		
18	M6186905	24" - 22 1/2 Degree Prefabricated Bend	Each	2		
19	M6259000	Dry Well Per Detail On Sheet 3	Each	2		
20	M6259001	Dry Well Primary Chamber Per Detail On Sheet 3	Each	1		
21	M6259002	Perform Maintenance Service On Existing Dry Wells	Each	3		
ST83140112 BASE BID (ITEMS 1 THROUGH 21 - INCLUSIVE)					TOTAL	
<div style="text-align: right;">& _____/100 DOLLARS</div> <div style="text-align: center;">WRITTEN WORDS</div>						

**CITY OF PHOENIX
BID PROPOSAL**

PROJECT TITLE: ARPA Local Drainage Mitigation - Package 3 Design-Bid-Build
PROJECT NO. ST83140117 ARPA
18TH STREET & PINCHOT AVENUE

ITEM NO.	BID (OR) M NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
22	E699200	Allowance for Stormwater Pollution Prevention Best Management Practices (BMP's)	JOB	1	\$5,000.00	\$5,000.00
23	M1042007	Allowance for Extra Work	JOB	1	\$50,000.00	\$50,000.00
24	M1058000	Construction Surveying and Layout	JOB	1		
25	M1058002	2-Person Survey Party (CONTINGENT ITEM)	Hour	24		
26	M1081000	Mobilization	JOB	1		
27	M3100000	Asphalt Concrete Base Course, 6" Thick	CY	122		
28	M3360210	Sawcut, Remove And Replace A.C. Pavement	Sq. Yd.	10		
29	M3369793	Asphalt Concrete For Permanent Pavement Replacement, 3" Thick, Per Special Provisions	Sq. Yd.	695		
30	M3369796	Asphalt Concrete For Permanent Pavement Replacement, 6" Thick, Per Special Provisions	Sq. Yd.	64		
31	M3370102	Apply Crack Seal And Slurry Seal Treatment Per Mag Spec 332, And Special Provisions	Sq. Yd.	4,240.00		
32	M3370103	Apply Crack Seal And Micro-Surface Treatment Er Mag Spec 331, And Special Provisions	Sq. Yd.	2,734.00		
33	M3509997	Remove Miscellaneous Asphalt From Gutter	Each	1		
34	M4011903	Traffic Control Devices	JOB	1		
35	M4013000	Allowance For Uniformed, Off-Duty Law Enforcement Officer	JOB	1	\$15,000.00	\$15,000.00
36	M5051524	Concrete Catch Basin, Type "M" Phx Supp Detail P1569-1	Each	1		
37	M5051535	Concrete Catch Basin, Type "M-1, L=6-Ft" Phx Supp Detail P1569-1	Each	1		
38	M5051564	Concrete Catch Basin, Type "M-2, L=6-Ft And 3-Ft" Phx Supp Detail P1569	Each	1		
39	M6180018	18" Storm Sewer Pipe	Lin. Ft.	1,569.00		
40	M6180024	24" Storm Sewer Pipe	Lin. Ft.	240		
41	M6181505	Concrete Pipe Collar For 18" Pipe And Smaller, Mag Standard Detail 505	Each	2		
42	M6250005	Storm Sewer Manhole, Mag Standard Detail 522, Cop Supp. Std. Detail P-1520	Each	2		
43	M6250071	60" Storm Drain Manhole	Each	5		
ST83140117 BASE BID (ITEMS 22 THROUGH 43 - INCLUSIVE)					TOTAL	
						& _____/100 DOLLARS
WRITTEN WORDS						

**CITY OF PHOENIX
BID PROPOSAL**

PROJECT TITLE: ARPA Local Drainage Mitigation - Package 3 Design-Bid-Build

PROJECT NO. ST83140118 ARPA

WESTWOOD 23RD AVENUE & DEVONSHIRE AVENUE

ITEM NO.	BID (OR) M NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
44	E699200	Allowance for Stormwater Pollution Prevention Best Management Practices (BMP's)	JOB	1	\$15,000.00	\$15,000.00
45	M1042007	Allowance for Extra Work	JOB	1	\$100,000.00	\$100,000.00
46	M1058000	Construction Surveying and Layout	JOB	1		
47	M1058002	2-Person Survey Party (CONTINGENT ITEM)	Hour	4		
48	M1081000	Mobilization	JOB	1		
49	M3001002	Sawcut & Remove Existing Curb & Gutter	Lin. Ft.	150		
50	M3001005	Sawcut & Remove Existing Sidewalk	Sq. Ft.	420		
51	M3360224	Sawcut, Remove and Replace A.C. Pavement, C.O.P. Standard Detail P-1200	Sq. Yd.	283		
52	M3362002	Slurry Seal Coat	Sq. Yd.	1,662		
53	M3400400	Concrete Sidewalk, Std. Detail P-1230	Sq. Ft.	420		
54	M3400486	Concrete Curb Ramp, Std Details P-1240-1 , R = 20'	Sq. Ft.	247		
55	M3402201	Combined Concrete Curb and Gutter, Std. Detail 220, Type "A", H=6"	Lin. Ft.	150		
56	M3500041	Remove Pipe	Lin. Ft.	4		
57	M4011903	Traffic Control Devices	Lump Sum	1		
58	M4013003	Allowance for Uniformed, Off-duty, Law Enforcement Officer	JOB	1	\$15,000.00	\$15,000.00
59	M4201008	Remove and Replace Fence Per Plans	Each	2		
60	M5051575	Concrete Catch Basin, Type "N, Triple", Phx. Supp. Detail P-1570	Each	3		
61	M6012000	Waterline Relocation Per C.O.P Standard P1370	Each	5		
62	M6101810	3/4" or 1" Water Meter Service Connect Pipe and Fittings, Main to Meter, Furnish and Install (CONTINGENT)	Lin. Ft.	100		
63	M6101805	Water Service Connection (Main to Meter)	Each	5		
64	M6101850	Allowance for Excess Ductile Iron Fittings, Furnish and Install	JOB	1	\$5,000.00	\$5,000.00
65	M6108010	Relocate Fire Hydrant, Det. P1360 and P1362 and P1359, P1361, and MAG Specification 610 and COP Supplemental 756	Each	1		

**CITY OF PHOENIX
BID PROPOSAL**

PROJECT TITLE: ARPA Local Drainage Mitigation - Package 3 Design-Bid-Build
PROJECT NO. ST83140118 ARPA
WESTWOOD 23RD AVENUE & DEVONSHIRE AVENUE

ITEM NO.	BID (OR) M NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
66	M6108015	Relocate Water Valve	Each	1		
67	M6153013	Storm Sewer 6" Concrete Encasement	L.F.	139		
68	M6181578	Storm Sewer Lateral Pipe Connection, Special Detail 1578	Each	1		
69	M6185015	15" Rubber Gasket Reinforced Concrete Pipe, Class V	Lin. Ft.	139		
70	M6186002	15" X 15" X 15" Prefabricated Tee	Each	2		
ST83140118 BASE BID (ITEMS 44 THROUGH 70 - INCLUSIVE)					TOTAL	
						& _____/100 DOLLARS
WRITTEN WORDS						

PROJECT TITLE: ARPA Local Drainage Mitigation - Package 3 Design-Bid-Build
PROJECT NO. ST83140124 ARPA
48TH PLACE & FLOWER STREET

ITEM NO.	BID (OR) M NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
71	E699200	Allowance for Stormwater Pollution Prevention Best Management Practices (BMP's)	JOB	1	\$12,000.00	\$12,000.00
72	M1042007	Allowance for Extra Work	JOB	1	\$50,000.00	\$50,000.00
73	M1058000	Construction Surveying and Layout	JOB	1		
74	M1058002	2-Person Survey Party (CONTINGENT ITEM)	Hour	24		
75	M1081000	Mobilization	JOB	1		
76	M3001004	Sawcut & Remove Existing Apron	SF	743		
77	M3100001	Aggregate Base Course, 8" Thick	CY	5		
78	M3240060	Portland Cement Concrete Pavement, Class B, 6" Thick	SF	2,549		
79	M3360210	Sawcut, Remove And Replace Ac Pavement	SY	11		
80	M3363400	Apply Cool Pavement Asphalt Treatment	SY	345		
81	M3369795	Asphalt Concrete For Permanent Pavement Replacement, 5" Thick, Per Special Provisions	SY	56		
82	M3369796	Asphalt Concrete For Permanent Pavement Replacement, 6" Thick, Per Special Provisions	SY	56		
83	M3370100	Crack Sealing	SY	345		

**CITY OF PHOENIX
BID PROPOSAL**

PROJECT TITLE: ARPA Local Drainage Mitigation - Package 3 Design-Bid-Build
PROJECT NO. ST83140124 ARPA
48TH PLACE & FLOWER STREET

ITEM NO.	BID (OR) M NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
84	M3370103	Apply Crack Seal And Micro-Surface Treatment Per Mag Spec 331, And Special Provisions	SY	140		
85	M3400400	Concrete Sidewalk, Supp Detail P1230	SF	195		
86	M3400563	Residential Concrete Driveway Entrance, Phx Supp Detail P1255-2, 6" Thick	SF	167		
87	M3402201	Combined Concrete Curb And Gutter, Std Detail 220, Type "A", H=6"	LF	124		
88	M3402202	Combined Concrete Curb And Gutter, Std Detail 220, Type "A", H=4"	LF	59		
89	M3500020	Remove Portland Cement Concrete Sidewalk & Driveway	SF	2,549		
90	M3500042	Remove Existing 12" Storm Drain Pipe And Plug Pipe	LF	30		
91	M3500043	Remove Existing Catch Basin	EA	2		
92	M3500106	Remove Extruded Curb	LF	60		
93	M3500642	Abandon-In-Place & Plug 6" Waterline (Fill With Low Strength Grout)	LF	50		
94	M4011903	Traffic Control Devices	Lump Sum	1		
95	M4013000	Allowance For Uniformed, Off-Duty Law Enforcement Officer	JOB	1	\$5,000.00	\$5,000.00
96	M4200033	Remove And Replace Block Wall	SF	178		
97	M4304012	Decomposed Granite (Match Existing)	SY	62		
98	M4304099	Miscellaneous Landscape And Irrigation Restoration	LS	1		
99	M4321003	Remove And Replace Orange Trees	EA	3		
100	M5051554	Concrete Catch Basin, Type "M-2, L=10-Ft, L=6-Ft", Phx Supp Detail P-1569	EA	2		
101	M5052075	Concrete Apron	SF	743		
102	M6014029	Permanent Pipe Support, Mag Std Dtl 403-1	EA	1		
103	M6100341	1" Water Service Replacement	LF	20		

**CITY OF PHOENIX
BID PROPOSAL**

PROJECT TITLE: ARPA Local Drainage Mitigation - Package 3 Design-Bid-Build
PROJECT NO. ST83140124 ARPA
48TH PLACE & FLOWER STREET

ITEM NO.	BID (OR) M NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
104	M6101206	Connection To Existings 6" Waterline	EA	2		
105	M6101850	Allowance For Excess Ductile Iron Fittings, Furnish And Install	JOB	1	\$3,000.00	\$3,000.00
106	M6103006	6" Mechanical Joint Ductile Iron Water Pipe & Fittings, Furnish & Install	LF	138		
107	M6104300	Cutting And Plugging Existing Waterline	EA	2		
108	M6180024	24" Storm Sewer Pipe (Rgrcp Class III)	LF	33		
109	M6180030	30" Storm Sewer Pipe (Rgrpc Class IV)	LF	356		
110	M6250005	48" Storm Drain Manhole, Mag Std Dtl 522, Cop Std Dtl P1520	EA	4		
111	M6257002	Connect Storm Sewer Lateral To Existing Box Culvert Per Plan	EA	1		
ST83140124 BASE BID (ITEMS 71 THROUGH 111 - INCLUSIVE)					TOTAL	
						& _____ /100 DOLLARS
WRITTEN WORDS						

**CITY OF PHOENIX
BID PROPOSAL**

PROJECT TITLE: City Clerk Site Asphalt Replacement - Package 3 Design-Bid-Build
PROJECT NO. PW26220003
22ND AVENUE & LOWER BUCKEYE ROAD

ITEM NO.	BID (OR) M NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
112	E699200	Allowance for Stormwater Pollution Prevention Best Management Practices (BMP's)	JOB	1	\$5,000.00	\$5,000.00
113	M1042007	Allowance for Extra Work	JOB	1	\$50,000.00	\$50,000.00
114	M1058000	Construction Surveying and Layout	JOB	1		
115	M1058002	2-Person Survey Party (CONTINGENT ITEM)	Hour	16		
116	M1081000	Mobilization	JOB	1		
117	M2050001	Roadway Excavation including haul	Cu. Yd.	4261		
118	M2205001	Grouted Rip-Rap as Detailed	Sq. Yd.	166		
119	M3000011	Geotextile Fabric	Sq. Yd.	240		
120	M3001001	Sawcut & Remove Existing Asphalt Pavement	Sq. Yd.	5495		
121	M3100000	Aggregate Base Course, 1'-9" Thick	Sq. Yd.	6064		
122	M3210230	Asphalt Concrete Surface Course, Type C3/4, 3" Thick	Sq. Yd.	5343		
123	M3210240	Asphalt Concrete Surface Course, Type C 3/4, 4" Thick	Sq. Yd.	721		
124	M3400240	Valley Gutter, per MAG Std. 240	Sq. Ft.	2989		
125	M3402213	Vertical Curb per MAG Std. 220 Type A	Lin. Ft.	101		
126	M3402221	Vertical Curb per MAG Std. 222 Type A	Lin. Ft.	110		
127	M3500050	Remove Portland Cement Concrete Pavement	Sq. Yd.	508		
128	M3505044	4-inch White Thermoplastic Traffic Stripe	Lin. Ft.	2503		
129	M3505045	Thermoplastic Left Turn Arrow	Ea.	4		

CITY OF PHOENIX
BID PROPOSAL

PROJECT TITLE: City Clerk Site Asphalt Replacement - Package 3 Design-Bid-Build
PROJECT NO. PW26220003
22ND AVENUE & LOWER BUCKEYE ROAD

ITEM NO.	BID (OR) M NUMBER	DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
130	M4011902	ADA Sign	Ea.	1		
131	M4011903	Traffic Control Devices	Lump Sum	1		
132	M4013000	Allowance For Uniformed, Off-Duty Law Enforcement Officer	JOB	1	\$5,000.00	\$5,000.00
133	M6180012	12" Storm sewer Pipe	Lin. Ft.	102		
PW26220003 BASE BID (ITEMS 112 THROUGH 133 - INCLUSIVE)					TOTAL	
						& _____/100 DOLLARS
WRITTEN WORDS						

TOTAL BID FOR PROJECT NOS. PW26220003, ST83140112 ARPA, ST83140117 ARPA, ST83140118 ARPA, AND ST83140124 ARPA (ITEMS 1 THROUGH 133 - INCLUSIVE) \$		
		& _____/100 DOLLARS
		WRITTEN WORDS

Prepared By:

Signature

Name

Position/Title

Firm Name

PROPOSAL SUBMITTAL

Project Title: ARPA Local Drainage Mitigation Package 3 DBB
Project Nos.: PW22620003, ST83140112 ARPA, ST83140117 ARPA,
ST83140118 APRA, ST83140124 ARPA

THIS PROPOSAL IS SUBMITTED BY _____

a corporation organized under the laws of the State of _____

a partnership consisting of _____

a joint venture consisting of _____

or individual trading as _____

of the City of _____

FIRM _____

ADDRESS _____

CITY _____ CITY _____ CITY _____

PHONE _____ VENDOR
NO. _____

BY _____

Officer and Title (signature)

Officer and Title (print or type)

Date

WITNESS: If Contractor is an individual
(signature)

ATTEST: If Contractor is Corporation or Partnership
(signature and title)

SURETY BOND

City of Phoenix Project Nos.: PW26220003, ST83140112 ARPA, ST83140117 ARPA, ST83140118 APRA, ST83140124 ARPA

That we, _____, as Principal, (hereinafter called the Principal) and the _____, a corporation duly organized under the laws of the State of _____, as Surety, (hereinafter called the Surety) are held and firmly bound unto the City of Phoenix as Obligee, in the sum of ten (10) percent of the total amount of the bid of Principal, submitted by him to the City of Phoenix for the work described below, for the payment of which sum, well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents and in conformance with A.R.S. #34-201.

WHEREAS, the said Principal is herewith submitting its proposal for **ARPA LOCAL DRAINAGE MITIGATION PACKAGE 3 DESIGN-BID-BUILD**.

NOW, THEREFORE, if the City of Phoenix shall accept the proposal of the Principal and the Principal shall enter into a contract with the City of Phoenix in accordance with the terms of such proposal and give such Bonds and Certificates of Insurance as specified in the Standard Specifications with good and sufficient Surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter into such contract and give such Bonds and Certificates of Insurance, if the Principal shall pay to the City of Phoenix the difference not to exceed the penalty of the bond between the amount specified in the proposal and such larger amount for which the Obligee may in good faith contract with another party to perform the work covered by the proposal, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this _____ day of _____ A.D., 2024

Principal

Title

Mailing Address

Surety

WITNESS:

A.M. BEST RATING:

CITY OF PHOENIX
LIST OF MAJOR SUBCONTRACTORS AND SUPPLIERS

PROJECT NOS.: PW26220003, ST83140112 ARPA, ST83140117 ARPA, ST83140118 ARPA, ST83140124 ARPA
 PROJECT TITLE: ARPA LOCAL DRAINAGE MITIGATION PACKAGE 3 DBB

DESCRIPTION OF WORK OR MATERIALS (CONTRACTOR TO ENTER TRADE/SUPPLIER AREAS)	SELF-PERFORMED BY PRIME CONTRACTOR	SUBCONTRACTOR/SUPPLIER COMPANY NAME (IF NOT SELF-PERFORMED)	CONTACT PERSON	PHONE NUMBER	DOLLAR VALUE OF WORK OR MATERIALS IN BID
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				

I hereby certify by signing below that the above listed companies will be utilized to perform work on this project for an **equal to or greater than 5% of the base bid**. These companies will not be removed or replaced without prior written approval by the City of Phoenix Project Manager. The City requires that ALL vendors providing work equal to or greater than 5% of the base bid are listed or you will be disqualified. If you are self-performing work, you must still list any suppliers for materials or list any subcontractors with whom you will directly contract.

COMPANY NAME _____ SIGNATURE _____
 NAME & TITLE _____ PHONE NUMBER _____ DATE _____
 EMAIL ADDRESS _____

CITY OF PHOENIX
LIST OF ALL SUBCONTRACTORS AND SUPPLIERS

PROJECT NOS.: PW26220003, ST83140112 ARPA, ST83140117 ARPA, ST83140118 ARPA, ST83140124 ARPA
 PROJECT TITLE: ARPA LOCAL DRAINAGE MITIGATION PACKAGE 3 DBB

DESCRIPTION OF WORK OR MATERIALS (CONTRACTOR TO ENTER TRADE/SUPPLIER AREAS)	SELF-PERFORMED BY PRIME CONTRACTOR	SUBCONTRACTOR/ SUPPLIER COMPANY NAME (IF NOT SELF-PERFORMED)	CONTACT PERSON	PHONE NUMBER	DOLLAR VALUE OF WORK OR MATERIALS IN BID
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				
	<input type="checkbox"/> YES <input type="checkbox"/> NO				

I hereby certify by signing below that the above listed companies will be utilized to perform work on this project. These companies will not be removed or replaced on the project without prior written approval by the City of Phoenix Project Manager. The City requires that ALL vendors providing work are listed or you will be disqualified. If you are self-performing work, you must still list any suppliers for materials or list any subcontractors with whom you will directly contract.

COMPANY NAME _____ SIGNATURE _____

NAME & TITLE _____ PHONE NUMBER _____ DATE _____

EMAIL ADDRESS _____

BIDDER'S DISCLOSURE STATEMENT

Authorized Contact for this Disclosure Statement

Name: _____

Title: _____

E-mail: _____

Phone number: _____

List any EIN, DBA, trade name, or other identity used in the last five years, the state or country where filed, and the status (active or inactive): (if applicable): _____

Business Characteristics

Business entity type – Please check appropriate box and provide additional information:

- | | | | |
|--------------------------|-------------------------------|------------------------------|-------|
| <input type="checkbox"/> | Corporation | Date of incorporation: | _____ |
| <input type="checkbox"/> | Limited Liability Company | Date organized: | _____ |
| <input type="checkbox"/> | Limited Liability Partnership | Date of registration: | _____ |
| <input type="checkbox"/> | Limited Partnership | Date established: | _____ |
| <input type="checkbox"/> | General Partnership | Date established: | _____ |
| <input type="checkbox"/> | Sole Proprietor | How many years in business?: | _____ |
| <input type="checkbox"/> | Other (explain) | Date established: | _____ |

Was the business entity formed in the State of Arizona? Yes _____ No _____

If no, indicate jurisdiction where Business Entity was formed: _____

Business License Number and Classification: _____

Business Transaction Privilege License Number: _____

Special Use or other zoning permits required for Bidder's operation and performance of the services under this Agreement:

Is the Business Entity currently registered to do business in Arizona with the Arizona Corporation Commission? Yes_____ No_____ Not required _____ (if sole proprietor or general partnership)

Does the Business Entity have a City of Phoenix business privilege license? Yes_____ No_____ If “no” explain and provide detail such as “not required” or “application in progress” or other reason.

Is the Business Entity publicly traded? Yes_____ No_____

Is the responding Business Entity a Joint Venture? Note: If the Submitting Business entity is a Joint Venture, also submit a questionnaire for each Business Entity comprising the Joint Venture. Yes_____ No_____

Is the Business Entity’s Principal Place of Business/Executive office in Phoenix? If “no” does the Business Entity maintain an office in Phoenix? Yes_____ No_____

Provide the address and phone number for the Phoenix office. _____

Is the business certified by Phoenix as a Small Business Enterprise? Yes_____ No_____

Identify Business Entity Officials and principal Owners:

Name(s) _____ Title _____ Percentage ownership ____%(Enter 0% if not applicable).

Name(s) _____ Title _____ Percentage ownership ____%(Enter 0% if not applicable).

Name(s) _____ Title _____ Percentage ownership ____%(Enter 0% if not applicable).

Name(s) _____ Title _____ Percentage ownership ____%(Enter 0% if not applicable).

Affiliates and Joint Venture Relationships

Does the Business entity have any Affiliates? Yes_____ No_____ Attach additional pages if necessary.

Affiliate name: _____

Affiliate EIN (if available):_____.

Affiliate’s primary Business Activity:_____

Explain relationship with Affiliate and indicate percent ownership, if applicable. _____

Are there any Business Entity Officials or Principal Owners that the Business Entity has in common with this Affiliate? _____

Individual’s name:_____

Position/Title with Affiliate:_____

Has the Business Entity participated in any joint Ventures within the past three years? Yes_____ No_____

(Attach additional pages if necessary)

Joint Venture Name: _____

Joint venture EIN (if applicable): _____

Identify parties to the Joint Venture: _____

Contract History

Has the Business Entity held any contracts with the city of Phoenix in the last three (3) years? Yes _____ No _____ If "yes" attach a list.

Integrity – Contract Bidding

Within the past three (3) years, has the Business Entity or any Affiliate been suspended or debarred from any government contracting process or been disqualified on any government procurement? Yes _____ No _____

Been subject to a denial or revocation of a government prequalification? Yes _____ No _____

Been denied a contract award or had a bid rejected based upon a finding of a non-responsibility by a government entity? Yes _____ No _____

Agreed to a voluntary exclusion from bidding/contracting with a government entity? Yes _____ No _____

Initiated a request to withdraw a bid submitted to a government entity or made any claim of an error on a bid submitted to a government entity? Yes _____ No _____

Initiated a request to withdraw a bid submitted to a government entity or made any claim of an error on a bid submitted to a government entity? Yes _____ No _____

For each "Yes" answer above, provide an explanation of the issues.

Integrity – Contract Award

Within the past three (3) years has the Business Entity or any Affiliate been suspended, cancelled, or terminated for cause on any government contract? Yes _____ No _____

Been subject to an administrative proceeding or civil action seeking specific performance or restitution in connection with any government contract? Yes _____ No _____

For each "yes" answer, provide an explanation. (Attach explanation on a separate sheet of paper).

Certifications/Licenses

Within the past three (3) years, has the Business Entity or Affiliate had a revocation, suspension, or disbarment of any business or professional permit and/or license? Yes _____ No _____

If "yes" provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, relevant dates, the government entity involved, and any remedial or corrective action(s) taken and the current status of the issues.

Legal Proceedings

Within the past three (3) years, has the Business Entity of any Affiliate:

Been the subject of an investigation, whether open or closed, by any government entity for a civil or criminal violation? Yes_____ No_____

Been the subject of an indictment, grant of immunity, judgment or conviction, (including entering into a plea bargain for conduct constituting a crime)? Yes_____ No_____

Received any OSHA citation and Notification of Penalty containing a violation classified as serious or willful? Yes_____ No_____

Had a government entity find a willful prevailing wage or supplemental payment violation? Yes_____ No_____

Been involved in litigation as either a plaintiff or a defendant involving a copyright or patent infringement violation or an anti-trust violation? Yes_____ No_____

Other than previously disclosed, for the past three (3) years:

(i) Been subject to the imposition of a fine or penalty in excess of \$1000 imposed by any government as a result of the issuance of citation, summons or notice of violation, or pursuant to any administrative, regulatory, or judicial determination ; Yes_____ No_____

(ii) Been charged or convicted of a criminal offense pursuant to any administrative and/or regulatory action taken by any government entity? Yes_____ No_____

If "yes" provide an explanation of the issue(s), the Business Entity involved, the relationship to the submitting Business Entity, relevant dates, the government entity involved, and any remedial or corrective action(s) taken and the current status of the issues.

Leadership Integrity

If the Business Entity is a joint Venture Entity, answer "N/A – Not Applicable" to questions below:

Within the past three (3) years has any individual previously identified, or any other Business Entity Leader not previously identified, or any individual having the authority to sign, execute, or approve bids, proposals, contracts or supporting documentation with the City of Phoenix been subject to:

A sanction imposed relative to any business or professional permit and/or license? Yes_____ No_____

An investigation, whether open or closed, by any government entity for a civil or criminal violation for any business related conduct? Yes_____ No_____



City of Phoenix
AFFIDAVIT OF IDENTITY

Your completion of this form is required by Arizona state law. A.R.S. §§ 1-501 and -50 only if you are a sole proprietor.

I, _____ (print full name exactly as on document),
hereby affirm, upon penalty of perjury, that I presented the document marked below to the City of
Phoenix, that I am lawfully present in the United States, and that I am the person stated on the
document. (select one category only)

☐ Arizona driver license issued after 1996.

Print first four numbers/letters from license:

--	--	--	--

☐ Arizona non-operating identification license.

Print first four numbers/letters:

--	--	--	--

☐ Birth certificate or delayed birth certificate issued in any state, territory or possession
of the U.S.

Year of birth: _____; Place of birth: _____

☐ United States Certificate of Birth Abroad.

Year of birth: _____; Place of birth: _____

☐ United States Passport.

Print first four numbers/letters on Passport:

--	--	--	--

☐ Foreign Passport with United States Visa.

Print first four numbers/letters on Passport:

--	--	--	--

Print first four numbers/letters on Visa:

--	--	--	--

☐ I-94 Form with a photograph.

Print first four numbers on I-94:

--	--	--	--

☐ USCIS Employment Authorization Document (EAD).

Print first four numbers/letters on EAD:

--	--	--	--

or Perm. Resident Card (acceptable alternative):

--	--	--	--

☐ Refugee Travel Document.

Date of issuance: _____; Refugee country: _____

☐ U.S. Certificate of Naturalization.

Print first four digits of CIS Reg. No.:

--	--	--	--

☐ U.S. Certificate of Citizenship.

Date of issuance: _____; Place of issuance: _____

☐ Tribal Certificate of Indian Blood.

Date of issuance: _____; Name of tribe: _____

☐ Tribal or Bureau of Indian Affairs Affidavit of Birth.

Year of birth: _____; Place of birth: _____

Signed: _____ Dated: _____

BUY AMERICA CERTIFICATE

FOR COMPLIANCE WITH TITLE 49 USC § 5323(J)(1)
(For Procurement of Steel, Iron, or Manufactured Products)
(EXCLUDES ROLLING STOCK)

PROJECT NO. PW262003, ST83140112 ARPA, ST83140117 ARPA, ST83140118 ARPA, ST83140124 ARPA
PROJECT TITLE ARPA Local Drainage Mitigation Project Package 3 Design-Bid-Build

(Complete form and submit with bid)

The Bidder/Proposer hereby certifies that it will comply with the requirements of Title 49 USC § 53230)
(1) and the applicable regulations in 49 CFR Part 661.

Executed on _____, 2024 at _____
(Date) (City) (State)

Printed Name

Signature of Authorized

Official Title

BUY AMERICA CERTIFICATE FOR NON-COMPLIANCE WITH TITLE 49 use §. 5323(J)(1)

The Bidder/Proposer hereby certifies that it cannot comply with the requirements of Title 49 USC § 5323(j)(1), but it may qualify for an exception pursuant to Title 49 USC § 5323 (j)(2)(B) or (j)(2)(D) and the regulations in 49 CFR 661.7.

Executed on _____, 2024 at _____
(Date) (City) (State)

Printed Name

Signature of Authorized

Official Title

ARPA Local Drainage Mitigation Package 3
Design-Bid-Build

PW2622003, ST83140112 ARPA, ST83140117 ARPA, ST83140118 ARPA, AND
ST83140124 ARPA

NON-COLLUSION AFFIDAVIT

The undersigned bidder or agent, being duly sworn on oath, says that he/she has not, nor has any other member, representative, or agent of the firm, company, corporation or partnership represented by him, entered into any combination, collusion or agreement with any person relative to the price to be bid by anyone at such letting nor to prevent any person from bidding nor to include anyone to refrain from bidding, and that this bid is made without reference to any other bid and without any agreement, understanding or combination with any other person in reference to such bidding.

He/She further says that no person or persons, firms, or corporation has, have or will receive directly or indirectly, any rebate, fee gift, commission or thing of value on account of such sale.

OATH AND AFFIRMATION

I HEREBY AFFIRM UNDER THE PENALTIES FOR PERJURY THAT THE FACTS
AND INFORMATION CONTAINED IN THE FOREGOING BID FOR PUBLIC
WORKS ARE TRUE AND CORRECT.

Dated this ____ day of _____, _____

(Name of Organization)

(Title of Person Signing)

(Signature)

ACKNOWLEDGEMENT

STATE OF _____)

) ss

COUNTY OF _____)

Before me, a Notary Public, personally appeared the above named and swore that the statements contained in the foregoing document are true and correct.

Subscribed and sworn to me this _____ day of _____, _____.

Notary Public Signature

My Commission Expires: _____

CERTIFICATION OF NON-SEGREGATED FACILITIES

_____ assures Government Contractors and concerned Federal, State and Local Agencies that we do not and will not maintain or provide for our employees any segregated facilities at any of our establishments, and that we do not and will not permit our employees to perform their services at any location under or control where segregated facilities are maintained.

_____ understands that the phrase "Segregated Facilities" includes facilities which are, in fact, segregated on a basis of race, color, creed, or national origin, because of habit, local custom or otherwise.

_____ understands and agrees that maintaining or providing segregated facilities for our employees or permitting our employees to perform their services at any location under our control, where segregated facilities are maintained is a violation of the Equal Opportunity Clause required by Executive Order 12246 of September 24, 1955.

_____ further understand and agrees that a breach of the assurance herein contained subjects us to the provisions of the Orders of the Secretary of Labor and the provisions of the Equal Opportunity Clause enumerated in contracts or referenced on purchase orders by the government and government contractors.

Finally, _____ is aware that whoever knowingly and willingly makes any false, fictitious representation may be liable to criminal prosecution under 18 U.S.X. #1001.

(Signature)

Corporate Seal

(Printed Name and Title)

Company Name

Company Address

CERTIFICATION OF NON-SEGREGATED FACILITIES - 41 CFR PART 60-1.8

Notice to Prospective Federally Assisted Construction Contractors

1. A Certification of Non-segregated Facilities shall be submitted prior to the award of a federally-assisted construction contract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Clause.
2. Contractors receiving federally-assisted construction contract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of the following notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause. NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

Notice to Prospective Sub-Contractors of Requirements for Certification of Non-Segregated Facilities

1. A Certification of Non-Segregated Facilities shall be submitted prior to the award of a subcontract exceeding \$10,000, which is not exempt from the provisions of the Equal Opportunity Clause.
2. Contractors receiving subcontract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of this notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause. NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

CERTIFICATION OF NON-SEGREGATED FACILITIES

The federally-assisted construction contractor certifies that she or he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that she or he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies that she or he will not maintain or provide, for his or her employees, segregated facilities at any of his or her establishments and that she or he will not permit his or her employees to perform their services at any location under his or her control where segregated facilities are maintained. The federally-assisted construction contractor 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, restrooms, and washrooms, 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 directives or are, in fact, segregated on the basis of race, color, religion, or national origin because of habit, local custom, or any other reason. The federally-assisted construction contractor agrees that (except where she or he has obtained identical certifications from proposed subcontractors for specific time periods) she or 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 and that she or he will retain such certifications in his files.

Application

Incorporate in all construction contracts and subcontracts that exceed \$10,000. The notices should be placed within the solicitation for proposals. The actual certification should be incorporated in the contract agreement.

Reference

Executive Order 11246
41 CFR Part 60 -1.8
AC 150/5100-15, Para. 22.b.

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The Official U.S. Government System for:

Contract Opportunities

(was fbo.gov)

Contract Data

(Reports ONLY from fpds.gov)

Wage Determinations

(was wdol.gov)

Federal Hierarchy

Departments and Subtiers

Assistance Listings

(was cfda.gov)

Entity Information

Entities, Disaster Response Registry,
Exclusions, and Responsibility/
Qualification (was fapiis.gov) **NEW**

Entity Reporting

SCR and Bio-Preferred Reporting

Register Your Entity or Get a Unique Entity ID

Register your entity or get a Unique Entity ID to get started doing business with the federal government.

Get Started

Renew Entity



Check Entity Status

■ ACTIVE EXCLUSIONS

There are no active exclusion records associated to this entity by its Unique Entity ID.

Geotechnical Evaluation 22nd Avenue and Lower Buckeye Road Drainage Improvements Phoenix, Arizona

WOODPATEL

2051 West Northern Avenue, Suite 100, Phoenix, Arizona 85021

August 24, 2023 | Project No. 607516001



Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

August 24, 2023
Project No. 607516001

Mr. James G. Taillon
WOODPATEL
2051 West Northern Avenue, Suite 100
Phoenix, Arizona 85021

Subject: Geotechnical Evaluation
22nd Avenue and Lower Buckeye Road
Drainage Improvements
Phoenix, Arizona

Dear Mr. Taillon:

In accordance with our proposal dated September 19, 2022, and your authorization, Ninyo & Moore has performed a geotechnical evaluation for the above-referenced site. The attached report presents our methodology, findings, conclusions, and recommendations regarding the geotechnical conditions at the project site.

Ninyo & Moore appreciates the opportunity to be of service to you on this project.

Respectfully submitted,
NINYO & MOORE

Donald M. Tharp
Donald M. Tharp, PE
Principal Engineer



DT/SDN/tlp

Steven D. Nowaczyk
Steven D. Nowaczyk, PE
Managing Principal Engineer

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1 INTRODUCTION

In accordance with our proposal dated September 19, 2022, and your authorization, we have performed a geotechnical evaluation for the proposed drainage improvement project near the intersection of 22nd Avenue and Lower Buckeye Road in Phoenix, Arizona. The purpose of our evaluation was to assess the subsurface conditions at the project site in order to provide geotechnical recommendations for design and construction. This report presents the results of our evaluation, and our geotechnical considerations and recommendations regarding the proposed construction.

2 SCOPE OF SERVICES

The scope of our services for this project generally included:

- Reviewing readily available geotechnical data, aerial photographs, and published geologic literature, including maps and reports pertaining to the project site and vicinity.
- Reviewing available geologic literature and aerial photographs of the project site.
- Conducting a visual geologic reconnaissance of the project site.
- Establishing the test location in the field and arrange for the mark out of underground utilities through Arizona 811.
- Arranging for traffic control services to be implemented during our field work activities.
- Performing geotechnical explorations for the project, which included one boring extending to a depth of 10 below the ground surface (bgs) advanced using a CME 75 drill rig equipped with hollow-stem augers (HSAs) and logged by a Ninyo & Moore employee.
- Collecting soil samples from the boring for laboratory testing and analysis. Ninyo & Moore personnel logged the boring in general accordance with the Unified Soil Classification System and ASTM D2488 by observing cuttings and samples. The soil samples were transported to a Ninyo & Moore laboratory for testing.
- Performing laboratory testing to evaluate in-situ moisture content and dry density, particle-size gradation, Atterberg limits, maximum density, direct shear, and corrosivity characteristics (including pH, minimum electrical resistivity, and soluble sulfate and chloride contents).
- Preparing this report presenting our findings, conclusions, and recommendations regarding the design and construction of the project.

Our scope of services did not include environmental consulting services such as hazardous waste sampling or analytical testing at the site. A detailed scope of services and estimated fee for such services can be provided upon request.

3 SITE DESCRIPTION

The project site is located at the current City of Phoenix Printing Services facility. At the time of our evaluation, the site consisted of an asphalt paved parking lot. The site was bounded by a storage yard to the north, 22nd Avenue to the east, Lower Buckeye Road to the south, and a commercial building to the west.

Aerial photographs from Google Earth© indicate that the elevation at the project site ranges from roughly 1,056 to 1,058 feet, above mean sea level (MSL). The project site generally slopes north to south, with minor surface variations in elevation.

Aerial photographs dated 1937 through 2021 from the Maricopa County website and Google Earth© were reviewed for this project. Photographs prior to 1964 show the site as being used partially as an agricultural field and as part of the Salt River. By 1969, the site had undergone major grading and is seen as being used as a storage yard and staging area. By 1976, 22nd Avenue had been paved and finished. Then between 1976 and 1979 three new small buildings were built and Lower Buckeye Road just south of the site was paved. By 1982 the main building was built and part of the parking lot was paved. In 1986, the surrounding parking and storage areas were finished and the related construction materials were removed. In 1996 an east-west fence was installed through the center. The site has remained generally in its current condition since then.

4 PROJECT DESCRIPTION

We understand the project includes the construction of about 275 linear feet of 2-foot diameter storm sewer pipe connecting to pre-cast concrete underground retention vaults to capture and contain the 100-year, 2-hour retention volume with associated inlets and connector pipes. The underground retention is assumed to extend less than 20 feet deep.

5 FIELD EXPLORATION AND LABORATORY TESTING

The following sections summarize our field exploration and laboratory testing activities.

5.1 Soil Boring

On May 23, 2023, Ninyo & Moore conducted a subsurface exploration at the site in order to evaluate the subsurface conditions and to collect soil samples for laboratory testing. Our evaluation consisted of drilling, logging, and sampling of one small-diameter boring using a CME-75 truck-mounted drill rig equipped with hollow-stem augers. The boring, denoted as B-1, was planned to extended to depth of approximately 20 feet bgs; however, auger refusal

resulted in a boring termination depth of 10 feet bgs (Figure 2). Bulk and relatively undisturbed soil samples were collected at selected intervals. Descriptions of the soils encountered are presented in the boring log in Appendix A.

5.2 Laboratory Testing

The soil samples collected from our drilling activities were transported to the Ninyo & Moore laboratory in Phoenix, Arizona. Ninyo & Moore performed laboratory tests on selected samples obtained from the boring to evaluate the in-situ moisture content and dry density, particle-size gradation, Atterberg limits, maximum density, direct shear, and corrosivity characteristics (including pH, minimum electrical resistivity, and soluble sulfate and chloride contents). The in-situ moisture content and dry density results are presented on the boring log in Appendix A. A description of the laboratory testing as well as the remainder of the laboratory test results are presented in Appendix B.

6 GEOLOGY AND SUBSURFACE CONDITIONS

The geology and subsurface conditions at the site are described in the following sections.

6.1 Geologic Setting

The project site is located in the Sonoran Desert Section of the Basin and Range physiographic province, which is typified by broad alluvial valleys separated by steep, discontinuous, subparallel mountain ranges. The mountain ranges generally trend north-south and northwest-southeast. The basin floors consist of alluvium with thickness extending to several thousands of feet.

The basins and surrounding mountains were formed approximately 10 to 18 million years ago during the Mid- to Late-Tertiary. Extensional tectonics resulted in the formation of horsts (mountains) and grabens (basins) with vertical displacement along high-angle normal faults. Intermittent volcanic activity also occurred during this time. The surrounding basins filled with alluvium from the erosion of the surrounding mountains as well as from deposition from rivers. Coarser-grained alluvial material was deposited at the margins of the basins near the mountains.

The surficial geology of the site is mapped as Holocene River Alluvium (0-10 thousand years). This unit is generally characterized as unconsolidated deposits associated with modern fluvial systems. This unit consists primarily of fine-grained, well-sorted sediment on alluvial plains, but also includes gravelly channel, terrace, and alluvial fan deposits on middle and upper piedmonts. (Pearthree, P.A., Huckleberry, G., 1994).

6.2 Subsurface Conditions

Our knowledge of the subsurface conditions at the project site is based on the results of our exploratory boring and our understanding of the general geology of the area. The boring log contain our field test results, as well as our interpretation of the conditions between actual samples retrieved. Therefore, the boring log contains both factual and interpretive information. Lines delineating subsurface strata on the boring log are intended to group soils having similar engineering properties and characteristics. They should be considered approximate, as the actual transition between soil types may be gradual. Detailed stratigraphic information as well as a key to the soil symbols and terms used on the boring log is provided in Appendix A.

6.2.1 Pavement

Pavement consisting of Asphalt Concrete (AC) and Aggregate Base (AB) was encountered in our boring. AC was encountered at the surface and extended to a depth of approximately 2.5 inches in the boring. Underlying the AC, a layer of AB measuring approximately 5 inches thick was encountered.

6.2.2 Fill

Undocumented soil fill was encountered underlying the pavement in our boring. The fill, which extended to a depth of 5 feet bgs, generally consisted of dense silty, clayey sand (SC-SM) in the boring.

6.2.3 Alluvium

Native alluvial soil was encountered beneath the fill soils described above and extended to a depth of 10 feet bgs in our boring. The alluvium generally consisted of medium dense to dense silty sand (SM). Varying quantities of gravel were also observed in our boring. At a depth of 10 feet bgs, auger refusal was encountered on very dense gravel, cobbles and possible boulders in our boring.

6.3 Groundwater

Groundwater was not encountered in our boring. Based on well data from the Arizona Department of Water Resources, the depth to groundwater has been estimated to be about 190 feet bgs. Groundwater levels can fluctuate due to seasonal variations, irrigation, groundwater withdrawal or injection, and other factors.

6.4 Surface Water

The FEMA flood map for the selected area is number 04013C2115L, effective on October 16, 2013. A preliminary review of this map suggests that the project site is mapped as being in FEMA Zone X. Sites mapped in Zone X are considered areas of minimal flood hazard, having a 0.2 percent annual chance flood hazard, but which may encounter surface waters during periods of heavy precipitation.

7 GEOLOGIC HAZARDS

The following sections describe regional geologic hazards, including land subsidence, earth fissures, and faults.

7.1 Land Subsidence and Earth Fissures

Groundwater depletion, due to groundwater pumping, has caused land subsidence and earth fissures in numerous alluvial basins in Arizona. It has been estimated that subsidence has affected more than 3,000 square miles and has caused damage to a variety of engineered structures and agricultural land. From 1948 to 1983, excessive groundwater withdrawal has been documented in several alluvial valleys where groundwater levels have been reportedly lowered by up to 500 feet. With such large depletions of groundwater, the alluvium has undergone consolidation resulting in large areas of land subsidence (Schumann and Genualdi, 1986).

This site lies within the West Valley Land Subsidence Feature in the West Salt River Valley Sub-Basin of the Phoenix Active Management Area. Based on Radarsat-2 Satellite Interferometric Synthetic Aperture Radar (InSAR) Data, up to 0.8 inches of subsidence has occurred in this area between May 2010 and May 2022.

In Arizona, earth fissures are generally associated with land subsidence and pose an ongoing geologic hazard. Earth fissures generally form near the margins of geomorphic basins where significant amounts of groundwater depletion have occurred. Earth fissures form due to tensional stress caused by differential subsidence of the unconsolidated alluvial materials over buried bedrock ridges and irregular bedrock surfaces.

Based on our field reconnaissance and review of the referenced material, there are no known or exposed earth-fissures present at the subject site. The closest documented earth fissure to this site is approximately 9.5 miles to the northeast of the site (AZGS, 2019). Continued groundwater withdrawal in the area may result in subsidence of the valley and the formation of new fissures or the extension of existing fissures. In general, land subsidence and earth fissures are not considered to be a constraint to development on this project site.

7.2 Faulting and Seismicity

The site lies within the Sonoran zone, which is a relatively stable tectonic region located in southwestern Arizona, southeastern California, southern Nevada, and northern Mexico (Euge et al., 1992). This zone is characterized by sparse seismicity and few Quaternary faults. Based on our field observations, review of pertinent geologic data, and analysis of aerial photographs, Quaternary faults are not located on or adjacent to the property.

The closest documented Quaternary fault to the site is the Carefree Fault Zone, located approximately 29 miles to the northeast of the site (Pearthree, 1998). The Carefree Fault Zone is a 12 km (7.2 mile) long series of branching north and northwest striking faults thought to have been active during the past few hundred thousand years. Recent movement along this fault was approximately 750,000 years ago during the Middle Pleistocene epoch. Approximately 2 meters of displacement occurred along this fault within middle to late Pleistocene deposits (200,000 to 750,000 years), but the Holocene deposits (<250,000 years) are not displaced. The slip-rate category of this fault is less than 0.2 millimeters per year (Pearthree, 1998).

7.3 Seismic Design Considerations

The current International Building Code (IBC) specifies that the Risk-Targeted, Maximum Considered Earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. The MCE_R ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits for near-source effects. The horizontal PGA that corresponds to the MCE_R for the site was calculated as 0.112g. The MCE_G PGA, based on the geometric mean PGA with a 2 percent probability of exceedance in 50 years, with adjustment for site class effects (PGA_M) was calculated as 0.123g. Seismic design parameters were calculated using the ATC Hazards by Location website seismic design tool.

Table 1 presents the seismic design parameters for the site in accordance with IBC guidelines and mapped spectral acceleration parameters (USGS, 2011): In accordance with the results of our field exploration, the general geology of the area, and our experience with similar materials, these ground motion values are calculated for "stiff soil" sites, which correspond to a weighted average Standard Penetration Resistance (\overline{N}) of less than 50 blows per foot and to a shear-wave velocity of approximately 600 to 1,200 fps in approximately the top 100 feet bgs. Different soil or rock types may amplify or de-amplify these values. The proposed improvements should be designed in accordance with the requirements of governing jurisdictions and applicable building codes.

Table 1 – IBC Seismic Design Criteria	
Seismic Design Factors	Value
Site Class	D
Site Coefficient, F_a	1.6
Site Coefficient, F_v	2.4
Mapped Spectral Acceleration at 0.2-second Period, S_s	0.175 g
Mapped Spectral Acceleration at 1.0-second Period, S_1	0.065 g
Spectral Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	0.28 g
Spectral Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	0.156 g
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	0.187 g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.104 g

8 GEOTECHNICAL CONSIDERATIONS

Based on the results of our subsurface evaluation, laboratory testing, and data analysis, the proposed construction is feasible from a geotechnical standpoint, provided the recommendations in this report are incorporated into the design and construction of the project, as appropriate. Geotechnical considerations include the following:

- Based on referenced material in our library, geologic hazards are not present along the project alignment.
- The soils in the upper 10± feet bgs along the project alignment generally consist of fill and native alluvial deposits composed of medium dense to dense silty clayey and silty sand. Some of these soil layers may be prone to sloughing during excavation.
- Conventional heavy-duty earthmoving construction equipment in good operating condition may be used to excavate the on-site materials in the upper 10± feet bgs. However, during our field exploration, auger refusal was encountered at a depth of 10 feet bgs on very dense gravel, cobbles and possible boulders which will be more difficult to excavate and will slow the rate of excavation.
- Sloughing of soils during construction may occur; specifically, where the excavation abuts fill soils from adjacent utilities. In addition, vibrations caused by the influence of nearby traffic may cause sloughing into excavations.
- Care should be taken during excavation. Shoring or the use of trench boxes may be needed during construction.

- Groundwater was not observed in our boring at the time of drilling. Based on published well data by ADWR groundwater has been encountered historically at approximately 190 feet bgs in the vicinity of the site. In general, groundwater is not anticipated to be a constraint to the construction of the project.
- Imported soils and soils generated from on-site excavation activities that exhibit a very low to low swell potential, have a plasticity index (PI) of 15 or less and are free of deleterious materials can generally be used as trench backfill.
- Many of the on-site soils can be re-used as trench backfill for this project.
- The results of our laboratory testing do not indicate that the on-site soils should be considered corrosive to ferrous metals. Notwithstanding the test results, the presence of corrosive soils is very common in Maricopa County and a corrosion specialist should be consulted for corrosion recommendations.
- The sulfate content of the soils presents a negligible potential for sulfate exposure to concrete.

9 RECOMMENDATIONS

The following sections present our geotechnical recommendations and were developed based on our understanding of the proposed construction, the observed subsurface conditions, and our experience with similar soils. In general, the recommendations and guidelines outlined in the Maricopa Association of Governments (MAG) Standard Specifications and Details and/or any City of Phoenix amendments should be used unless recommended differently herein.

The recommendations in this report pertain to the location where our boring was drilled. If the proposed construction is changed from that discussed herein or subsurface conditions other than those shown on the boring log (Appendix A) are observed at the time of construction, Ninyo & Moore should be retained to conduct a review of the new information and to evaluate the need for additional recommendations.

9.1 Instrumentation and Documentation

Given the proximity of the planned excavations to existing settlement sensitive features, consideration should be given to implementing documentation and instrumentation programs to evaluate design assumptions, existing conditions, and to monitor movements, levels, and deformations prior to and during construction. The monitoring programs may include the use of inclinometers, convergence points, and/or an array of surface control points. The resulting data should be reviewed and evaluated during construction. These programs should be in-place or conducted prior to the start of construction.

9.1.1 Documentation of Existing Conditions

We recommend that a pre-construction survey be performed prior to construction on pavements, residences, and structures within 50 feet of the proposed trench excavations. The pre-construction survey should consist of photographic documentation of the pavement condition, exterior portions of adjacent residences, transmission towers, and other improvements, including distress features, such as tilting, cracks and/or separations that may be present. Consideration may be given to videotaping the survey. In addition, interviews with owners should be conducted to provide knowledge of the age and type of the improvements as well as maintenance history and utility problems.

9.1.2 Lateral Movement of Shoring Support System

We recommend that inclinometers and/or survey points be established behind excavations located in areas where structures are located above a 1:1 (horizontal to vertical [H:V]) plane projected from the bottom of the proposed excavations. The inclinometers or survey points should be monitored and evaluated daily during excavation activities to provide an advanced warning system of potential problems.

9.1.3 Ground Surface Settlement

An array of ground survey points should be installed along the project alignment to monitor settlement. The survey points should be installed as close as practical to the project alignment and incrementally away from the alignment. The contractor should be responsible for maintaining the total settlement to less than ½-inch. If settlements reach ¼-inch, we recommend that a review of the contractor's methods be performed and appropriate changes be made, if needed.

Consideration should be given to placing survey monitoring points on nearby structures to monitor the performance of the structures. In this way, a record of the performance of the structures will be maintained and available. This information, in conjunction with pre-construction surveys, may help in reducing potential claims and expediting and limiting settlement of legitimate claims.

9.2 Earthwork

The following sections present our earthwork recommendations for this project. In general, MAG and any City of Phoenix construction standards and specifications are expected to apply, unless otherwise noted.

9.2.1 Excavations

Our evaluation of the excavation characteristics of the on-site materials is based on the results of our exploratory boring, site observations, and experience with similar materials. In our opinion, many of the near surface soils may be excavated or ripped using conventional heavy-duty earthmoving or excavation equipment in good operating condition; however, due to the limited number of our borings, soil conditions encountered during construction may differ from what were encountered in our boring. Additionally, during our field exploration, auger refusal was encountered at a depth of 10± feet bgs on very dense gravel, cobbles and possible boulders which will be more difficult to excavate and will slow the rate of excavation.

Equipment and procedures should be used that do not cause significant disturbance to the excavation bottoms. If the subgrade becomes disturbed, it should be compacted before placing the backfill material.

The bottoms of trench excavations should expose competent soils and should be dry and free of loose, soft, or disturbed soil. Any soft, wet, weak, or deleterious materials should be over-excavated to expose competent soils.

9.2.2 Temporary Slopes

Excavations for this project should be designed in accordance with current applicable, state, and federal trenching guidelines, including the Occupational Safety and Health Administration (OSHA) requirements for excavations presented in 29 CFR Part 1926 (Revised July 1992), Subpart P, Excavations.

For planning purposes, and according to OSHA soil classifications, a "Type C" soil should be considered for this project due to the loose and / or cohesionless (e.g., sandy and gravelly) nature of the fill and alluvial soils. In general, temporary slopes excavated in competent "Type C" soil should be inclined no steeper than 1.5:1 (H:V), however flatter slopes or shoring may be needed.

Details for open-cut slopes and shoring based on soil type and groundwater conditions are provided in the latest amended OSHA regulations. These details apply to temporary open-trench excavations up to 20 feet deep. Trenches more than 20 feet deep, or in areas where seepage is encountered should be designed by the contractor's engineer based on alignment-specific geotechnical analyses. Upon excavation, soil classifications and excavation performance should be evaluated in the field by the geotechnical consultant in accordance with the OSHA regulations.

Temporary excavations that encounter groundwater seepage or surface runoff, if any, may need shoring or dewatering. Flatter slopes or bracing should be used if excessive sloughing or raveling is observed. If material is stored or equipment is operated near an excavation, stronger shoring should be used to resist the extra pressure due to superimposed loads.

9.2.3 Temporary Shoring and Trench Boxes

Because of previously described soil conditions, the proposed depths of the excavations, and presence of existing utilities and structures (e.g., roadways, utilities, and residences), it may be preferable to temporarily shore or brace the trenches rather than using open cuts to the base of the excavations. Temporary earth retaining systems will be subjected to lateral loads resulting from earth pressures. Shored and braced trench excavations may be designed using the parameters on Figure 3.

The earth pressure values presented on Figure 3 assume that spoils from the excavation or other surcharge loads will not be placed above the excavation within a 1:1 (H:V) plane extending up and back from the base of the excavation. If spoil piles are placed closer than this to the braced excavation, the resulting surcharge loads should be considered in the bracing design. We recommend that an experienced structural engineer design the shoring system. The shoring parameters presented in this report should be considered as guidelines.

The contractor should anticipate repairing cracks in pavements adjacent to shored portions of the excavation due to anticipated lateral displacements of the shoring system. Horizontal and vertical movements of the shoring system should be monitored by a surveyor and the results reviewed by the project Geotechnical Engineer.

Trench boxes may also be a suitable alternative to laying back the side walls; however, due to the presence of loose, granular soils, the excavations may not stand open long enough to install the trench boxes. The contractor should be prepared to deal with these soil conditions and plan accordingly. Once installed, some sloughing is possible at the ends of the trench box; therefore, any loose material should be removed prior to backfilling of the trench.

9.2.4 Bottom Stability

Bottom of the excavations should be stable for the purpose of the planned construction. However, if excavations are open during a heavy rain event, the bottom of the trench may become saturated and unstable. Dewatering as discussed below may be anticipated in such events.

9.2.5 Construction Dewatering

Excavations that encounter seepage or surface run-off could be dewatered by pumping the water out and away from the excavation. Such zones may call for more aggressive means of dewatering and consultation with a qualified expert. Discharge of water from the excavations to natural drainage channels, if needed, may entail securing a special permit.

9.2.6 Backfill Material and Re-use of On-site Soils

On-site and imported soils that exhibit relatively low PI and very low to low expansive potential are generally suitable for re-use as engineered fill. Relatively low PI is defined as a PI value of 15 or less, as evaluated by ASTM D4318.

In addition, engineered fill should not include organic material, construction debris, or other non-soil fill materials. Clay lumps and rock particles should not be larger than 4 inches in dimension. This material should be disposed of off-site or in non-structural areas.

Based on MAG guidelines, the definition of “granular backfill” may be used for engineered fill for this project. Granular backfill is material in which the sum of the PI and the percent of material passing a No. 200 sieve does not exceed 23.

Engineered fill in contact with ferrous metals should also have low corrosion potential (minimum resistivity more than 2,000 ohm-cm, chloride content less than 25 parts per million [ppm]). Fill material in contact with concrete should have a soluble sulfate content of less than 0.1 percent.

Based on laboratory test results and our general observations, we anticipate that many of the on-site soils are suitable for re-use as engineered fill and trench zone backfill during construction. We suggest additional field sampling and laboratory testing be conducted by the contractor either prior to or during construction to better evaluate the quality of the on-site materials.

9.3 Pipe Bedding and Modulus of Soil Reaction (E')

We recommend that the storm sewer line be supported on 4 inches or more of granular bedding material such as sand and gravel, or crushed rock meeting the MAG Section 702 Standard Specifications (pea gravel or crushed chips are not acceptable) [Figure 4]. This bedding/pipe-zone backfill should extend 1 foot above the pipe crown. Care should be taken not to allow voids to form beneath the pipe (i.e., the pipe haunches should be continuously supported) to avoid damaging the storm sewer line. This may involve fill placement by hand or small compaction

equipment. The pipe bedding should be moisture-conditioned and compacted as discussed in this report.

The modulus of soil reaction (E') is used to characterize the stiffness of soil backfill placed on the sides of buried pipelines for the purpose of evaluating deflection caused by the weight of the backfill over the pipe. For granular backfill soils for pipes, we recommend using an E' value of 1,200 pounds per square inch (psi).

E' for native materials will vary with material type and stiffness of the trench sidewalls. Approximate values of E' for the near surface materials encountered in our boring are presented in Table 2 below:

Table 2 – Modulus of Soil Reaction (E') for Native Soils			
Trench Wall Soil Classification (USCS)	Approximate E' (psi)		
	Loose	Medium Dense	Dense
Silty Clayey and Silty Sand (SC, SC-SM)	400	700	2500

9.4 Fill Placement and Compaction

Backfill soils should be moisture-conditioned within the moisture range shown below in Table 3 and mechanically compacted to the percent compaction shown. Fill should generally be placed in 8-inch-thick loose lifts such that each lift is firm and non-yielding under the weight of construction equipment. Jetting and other forms of water consolidation are not recommended for this project.

Table 3 – Summary of Compaction Recommendations		
Description	Percent Relative Compaction per ASTM D698	Moisture Content
Pipe Bedding	95 percent	±2 percent of optimum
Granular Trench Backfill – Within 2 feet below pavement	100 percent	
AB below pavements	100 percent	
Non-Granular Trench Backfill – Within 2 feet below pavement	95 percent	
Trench Backfill – Deeper than 2 feet below pavement	95 percent	

An earthwork (shrinkage) factor of 10 to 20 percent is estimated. This shrinkage factor range represents an average of the material tested and assumes that materials excavated from the site will be placed as fill. They do not include transportation and handling losses. Potential bidders should consider this in preparing estimates and should review the available data to make their own conclusions regarding excavation conditions.

9.5 Controlled Low Strength Material (CLSM)

It is our opinion that the backfill zone may be filled with CLSM. CLSM consists of a fluid, workable mixture of aggregate, Portland cement, and water. The use of CLSM has some advantages:

- A narrower backfill zone can be used, thereby minimizing the quantity of soil to be excavated and possibly reducing disturbance to the near-by traffic;
- Relatively higher E' values may be used ($E' = 3,000$ psi);
- The support given to the connecting pipes is generally better;
- Because little compaction is needed to place CLSM, there is less risk of damaging the connecting pipes; and
- CLSM can be batched to flow into irregularities in the trench bottom and walls.

The CLSM design mix should be in accordance with current MAG or Standard Specifications for Public Works Construction standards. Additional mix design information can be provided upon request. The 28-day strength of the material should be no less than 50 psi and no more than 120 psi.

Buoyant or uplift forces on the piping should be considered when using CLSM and prudent construction techniques may result in multiple pours to avoid inducing excessive uplift forces. Sufficient time should be provided to allow the CLSM to cure before placing additional lifts of CLSM or trench backfill.

9.6 T-Top Pavement Replacement

In AC paved areas over trench excavations, we recommend the use of MAG "T-Top" Type Trench Backfill (MAG detail 200-1) with respect to the AC and AB replacement at the surface of the trench excavations, in order to reduce the potential for distress due to differential settlement and water infiltration into the subsurface. This includes the removal of AC and AB to 1 foot or more laterally beyond the extent of each side of the installation trench and extending to a depth of 1 foot or more below the bottom of the asphalt layer.

In the T-Top, the thickness of AB should be 12 inches or match either the existing or design thickness, whichever is more. We recommend a seal be placed at the saw cut joint between the patch and the existing AC. Periodic maintenance of the pavement should be performed. The AC thickness should be in accordance with any City of Phoenix design standards, or match the existing thickness, whichever is thicker.

9.7 Corrosion

The corrosion potential of the on-site materials was analyzed to evaluate its potential effect on the ferrous metals used for this project. Corrosion potential was evaluated using the results of laboratory testing on samples obtained during our subsurface evaluation that were considered representative of soils along the project alignment.

Laboratory testing consisted of pH, minimum electrical resistivity, and chloride and soluble sulfate contents. The pH and minimum electrical resistivity tests were performed in general accordance with Arizona Test 236b, while sulfate and chloride content tests were performed in accordance with Arizona Test Method 733 and 736, respectively. The results of the corrosivity tests are presented in Appendix B.

The soil pH value of the selected sample tested from our boring was 8.2 which is considered to be slightly alkaline. The minimum electrical resistivity of the sample tested in the laboratory was 2,144 ohm-cm, which is not considered to be corrosive to ferrous metals. The chloride content of the sample tested was 25 ppm, which is also not considered corrosive for ferrous materials. The soluble sulfate contents of the soil samples tested was 0.001 percent by dry weight of soil, which is considered to represent a negligible potential for sulfate exposure to concrete.

Notwithstanding the aforementioned test results and due to the limited number of chemical tests performed, as well as our experience with similar soil conditions and regional practice, we recommend that to reduce the corrosion potential of buried metallic utilities, topsoil, organic soils, soils, and mixtures of sand and clay not be placed adjacent to buried metallic utilities. Rather, we suggest that sand or gravel be placed around buried metal piping. Also, buried utilities of different metallic construction or operating temperatures should be electrically isolated from each other to minimize galvanic corrosion problems. In addition, new piping should be electrically isolated from old piping, if any, so that the old metal will not increase the corrosion rate of the new metal. A corrosion specialist should be consulted for further recommendations.

9.8 Concrete

A laboratory chemical test performed on a selected sample of on-site soils indicated a sulfate content of 0.001 percent by weight. Based on the sulfate test results and due to the limited number of chemical tests performed, as well as our experience with similar soil conditions and regional practice, we recommend that “Type II” cement be used for the construction of concrete structures at this site. Due to potential uncertainties as to the use of reclaimed irrigation water, or topsoil that may contain higher sulfate contents, pozzolan or admixtures designed to increase sulfate resistance may be considered.

The concrete should have a water-cementitious materials ratio of no more than 0.50 by weight for normal weight aggregate concrete. The structural engineer should ultimately select the concrete design strength based on the project-specific loading conditions. However, higher strength concrete may be selected for increased durability and resistance to shrinkage cracking.

9.9 Site Drainage

Positive surface drainage should be provided to divert water away from the trench zone and pavements. Surface water should not be permitted to pond over the trench zone or on pavement surfaces after construction. Water that is pumped out of the trench should be done so in an area that drains the water away from the trench.

9.10 Pre-Construction Conference

We recommend a pre-construction conference be held. Representatives of the owner, civil engineer, the geotechnical consultant, and the contractor should be in attendance to discuss the project plans and schedule. Our office should be notified if the project description included herein is incorrect, or if the project characteristics are significantly changed.

9.11 Construction Observation and Testing

During construction operations, we recommend a qualified geotechnical consultant perform observation and testing services for the project. These services should be performed to evaluate exposed subgrade conditions, including the extent and depth of overexcavation, to evaluate the suitability of proposed borrow materials for use as fill and to observe placement and test compaction of fill soils. If another geotechnical consultant is selected to perform observation and testing services for the project, we request that the selected consultant provide a letter to the owner, with a copy to Ninyo & Moore, indicating that they fully understand our recommendations and they are in full agreement with the recommendations contained in this report. Qualified

subcontractors utilizing appropriate techniques and construction materials should perform construction of the proposed improvements.

10 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

11 REFERENCES

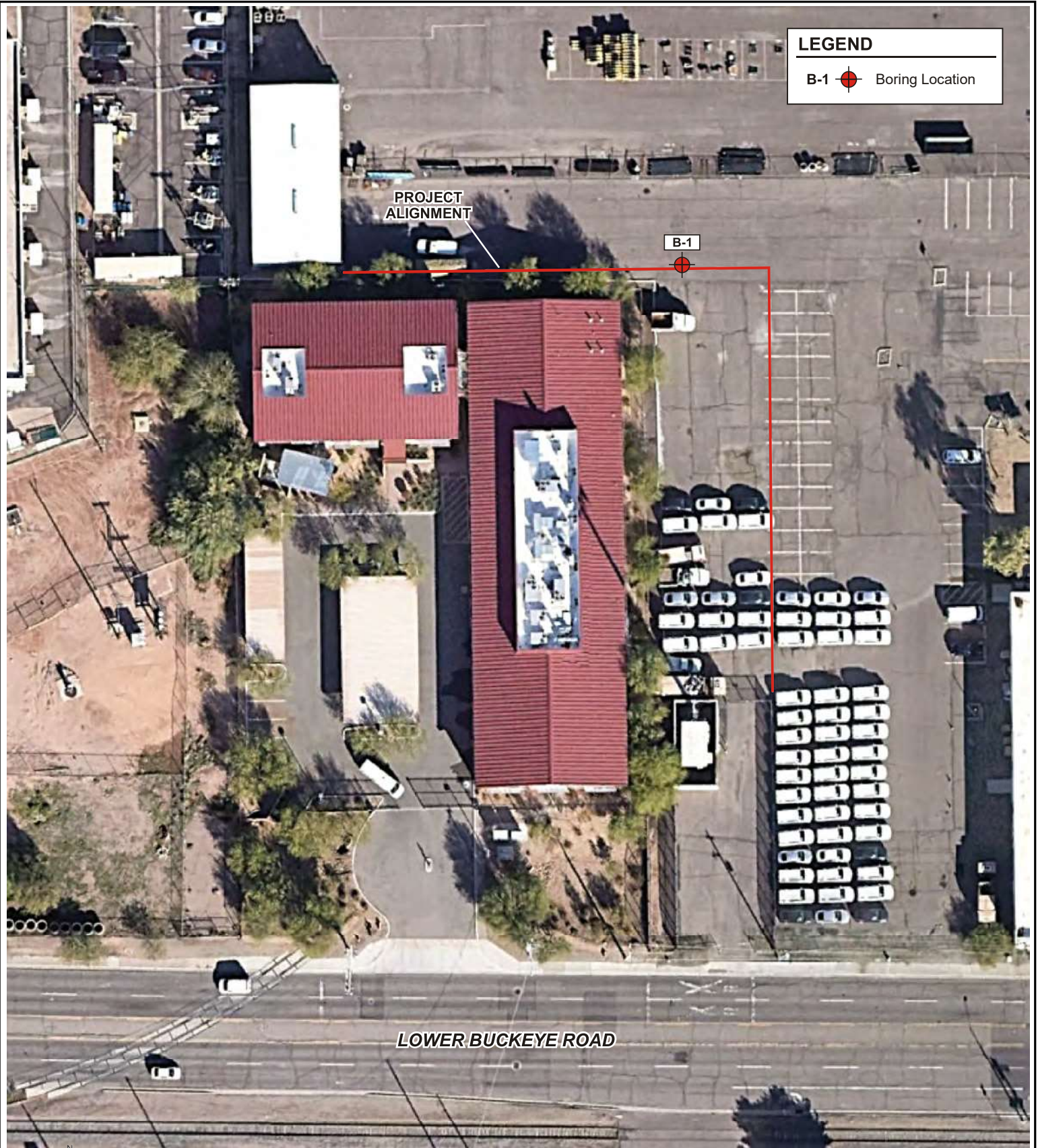
- Applied Technology Council, ATC Hazards by Location, <https://hazards.atcouncil.org/>.
- Arizona Department of Water Resources (ADWR), Hydrology Publications, <https://new.azwater.gov/hydrology/e-library>.
- Arizona Department of Water Resources (ADWR), Well Registry Application, <http://gisweb.azwater.gov/waterresourcedata>.
- Arizona Geological Survey <http://data.azgs.az.gov/hazard-viewer/>.
- ASTM International (ASTM), Annual Book of ASTM Standards.
- Euge, K.M., Schell, B.A., and Lam, I.P., 1992, Development of Seismic Acceleration Contour Maps for Arizona: Arizona Department of Transportation Report No. AZ 92-344: dated September.
- Federal Emergency Management Agency DFIRM Flood Map, Map number 04013C2120L, effective on October 16, 2013.
- Flood Control District of Maricopa County Historic Aerial Photographs, <https://gis.maricopa.gov/GIO/HistoricalAerial/index.html>.
- Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction.
- Ninyo & Moore, In-house proprietary information.
- Occupational Safety and Health Administration (OSHA), 1992 (Revised), Title 29 of the Code of Federal Regulations (CFR), Part No. 1926 - Safety and Health Regulations for Construction, Subpart P - Excavations.
- Pearthree, P.A., 1998, Quaternary Fault Data and Map for Arizona: Arizona Geological Survey, Open-File Report 98-24.
- Schumann, H.H. and Genualdi, R., 1986, Land Subsidence, Earth Fissures, and Water-level Changes in Southern Arizona: Arizona Geological Survey OFR 86-14: scale 1:500,000.
- United States Department of the Interior, Bureau of Reclamation, 2013, Method for Prediction of Flexible Pipe Deformation, Report M-25 Second Edition, Revised 2015.



FIGURES



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Source: NAVTEQ, 12/01/19.



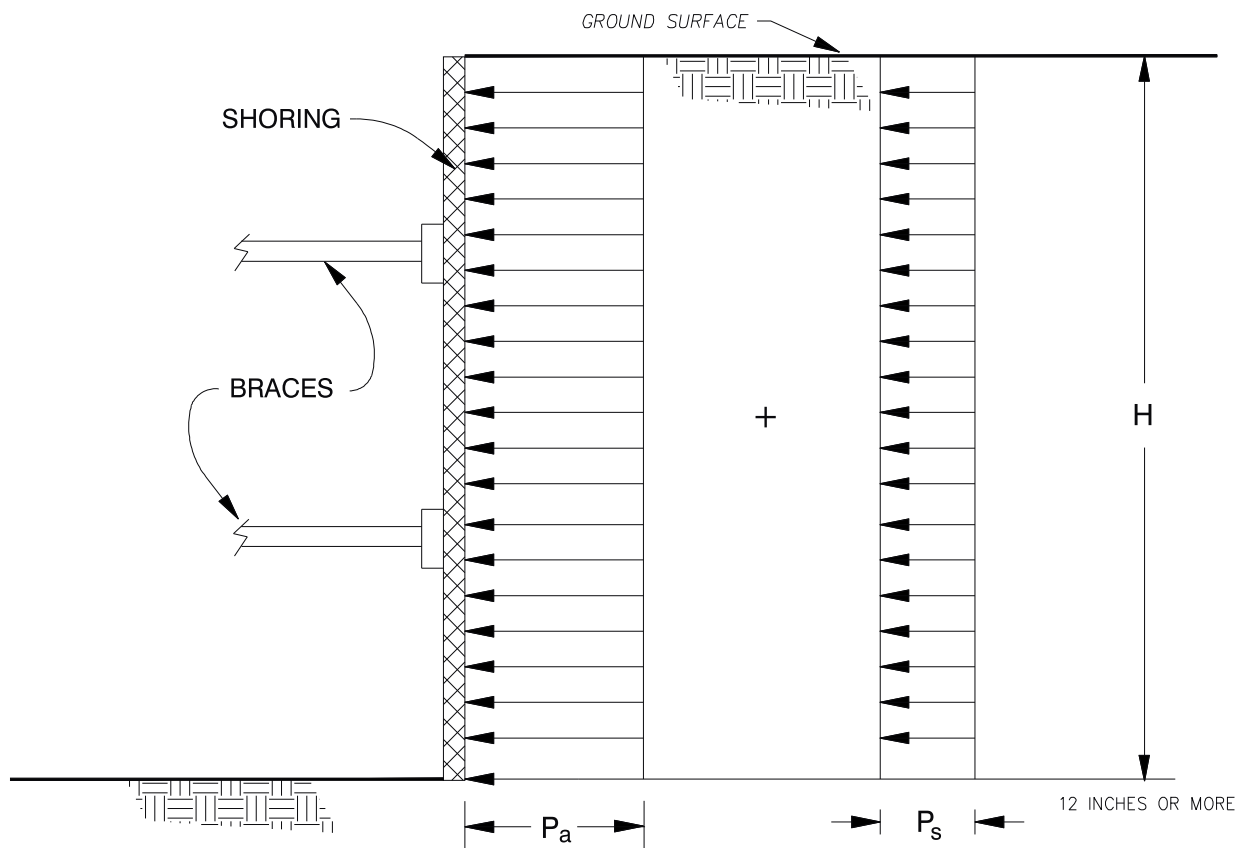
NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 2

EXPLORATION LOCATION

22ND AVENUE AND LOWER BUCKEYE ROAD DRAINAGE IMPROVEMENTS
PHOENIX, ARIZONA

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NOTES:

1. APPARENT LATERAL EARTH PRESSURE, P_a

$$P_a = 30H \text{ psf}$$
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s

$$P_s = 120 \text{ psf}$$
3. ASSUMES GROUNDWATER IS NOT PRESENT
4. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
5. H IS IN FEET

NOT TO SCALE

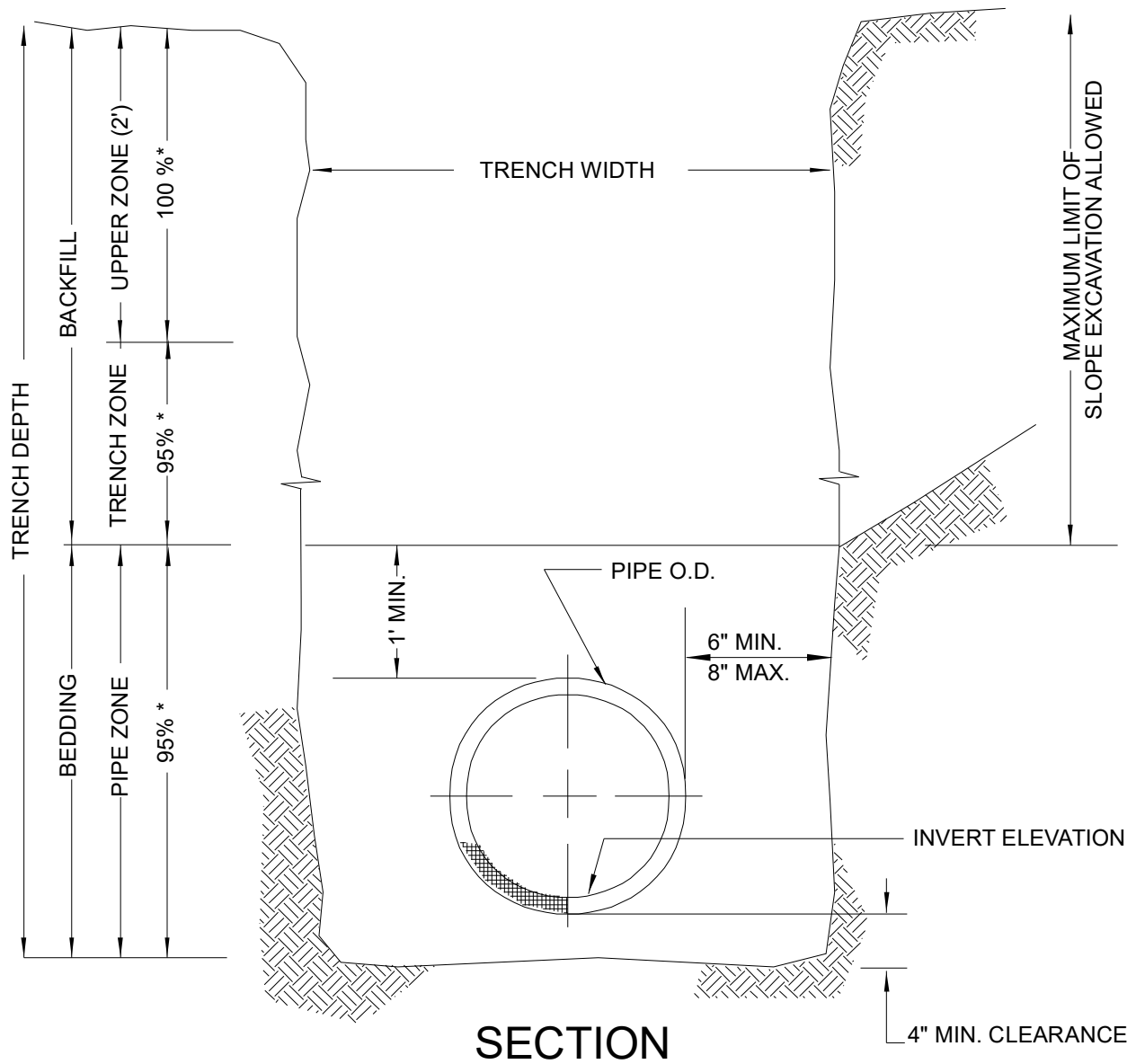
FIGURE 3

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION IN GRANULAR SOILS

22ND AVENUE AND LOWER BUCKEYE ROAD DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA

607516001 | 8/23



NOTE

* Indicates minimum relative compaction (see report for details).

Upper zone required for pavement areas only.

Diagram not drawn to scale.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 4

PIPE BEDDING GUIDELINES

22ND AVENUE AND LOWER BUCKEYE ROAD DRAINAGE IMPROVEMENTS
PHOENIX, ARIZONA

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APPENDIX A

Boring Log

APPENDIX A

BORING LOG

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory boring. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler

Disturbed drive samples of earth materials were obtained by means of a SPT sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven up to 18 inches into the ground with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the log are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed, and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler

The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D3550. The approximate length of the fall, the weight of the hammer or bar, and the number of blows per foot of driving are presented on the boring log as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

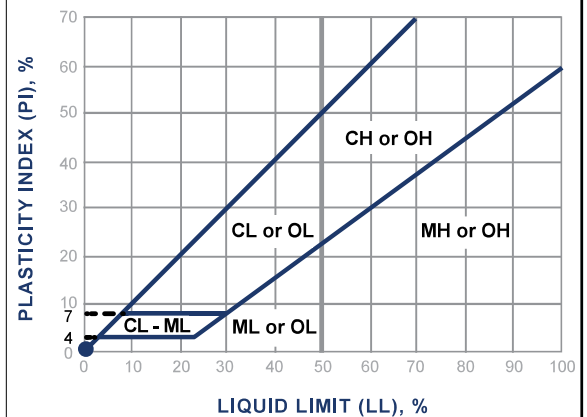
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve	GRAVEL more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	SILT and CLAY liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
		Highly Organic Soils	PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.075 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.075"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consistency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

BORING LOG EXPLANATION SHEET

DEPTH (feet)	Bulk Driven SAMPLES	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
0							Bulk sample.
							Modified split-barrel drive sampler.
							No recovery with modified split-barrel drive sampler.
							Sample retained by others.
							Standard Penetration Test (SPT).
5							No recovery with a SPT.
		XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
							No recovery with Shelby tube sampler.
							Continuous Push Sample.
10							Seepage.
							Groundwater encountered during drilling.
							Groundwater measured after drilling.
						SM	MAJOR MATERIAL TYPE (SOIL):
						CL	Solid line denotes unit change.
							Dashed line denotes material change.
15							Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Shear Bedding Surface
20							The total depth line is a solid line that is drawn at the bottom of the boring.

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>5/23/23</u> BORING NO. <u>B-1</u> GROUND ELEVATION <u>1,057' ± (MSL)</u> SHEET <u>1</u> OF <u>1</u> METHOD OF DRILLING <u>CME-75, 8" Diameter Hollow-Stem Auger (GSI)</u> DRIVE WEIGHT <u>140 lbs. (Automatic Trip Hammer)</u> DROP <u>30"</u> SAMPLED BY <u>LPS</u> LOGGED BY <u>LPS</u> REVIEWED BY <u>DT</u> DESCRIPTION/INTERPRETATION
	Bulk	Driven						
0								ASPHALT CONCRETE: Approximately 2 1/2 inches thick. AGGREGATE BASE: Approximately 5 inches thick. FILL: Dark brown, dry, dense, silty, clayey SAND.
			45	4.5	126.7		SC-SM	
			14					
5							SM	ALLUVIUM: Brown, dry, medium dense, silty SAND.
			12					
			54	1.7	121.2			Few to little gravel. @ 10 feet: Augers refusal; coarse gravel; cobbles and possible boulders.
10								Total Depth = 10 feet. (Refusal) Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 5/23/23 shortly after completion of drilling.
								Notes: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
								The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
15								
20								

FIGURE A- 1



APPENDIX B

Laboratory Testing

APPENDIX B

LABORATORY TESTING

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D2488. Soil classifications are indicated on the log of the exploratory boring in Appendix A.

In-Place Moisture and Density Tests

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory boring was evaluated in general accordance with ASTM D2937. The test results are presented on the log of the exploratory boring in Appendix A.

Gradation Analysis

Gradation analysis tests were performed on a selected representative soil sample in general accordance with ASTM D422. The grain-size distribution curve is shown on Figure B-1. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

Atterberg Limits

Atterberg Limits Tests were performed on selected representative fine-grained soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figure B-2.

Maximum Dry Density

Tests were performed on selected representative soil samples to evaluate the laboratory compaction characteristics in general accordance with ASTM D698. These test results were utilized to evaluate the relationship between maximum dry density and optimum moisture content for soils compacted using standard effort. The test results are shown on Figure B-3.

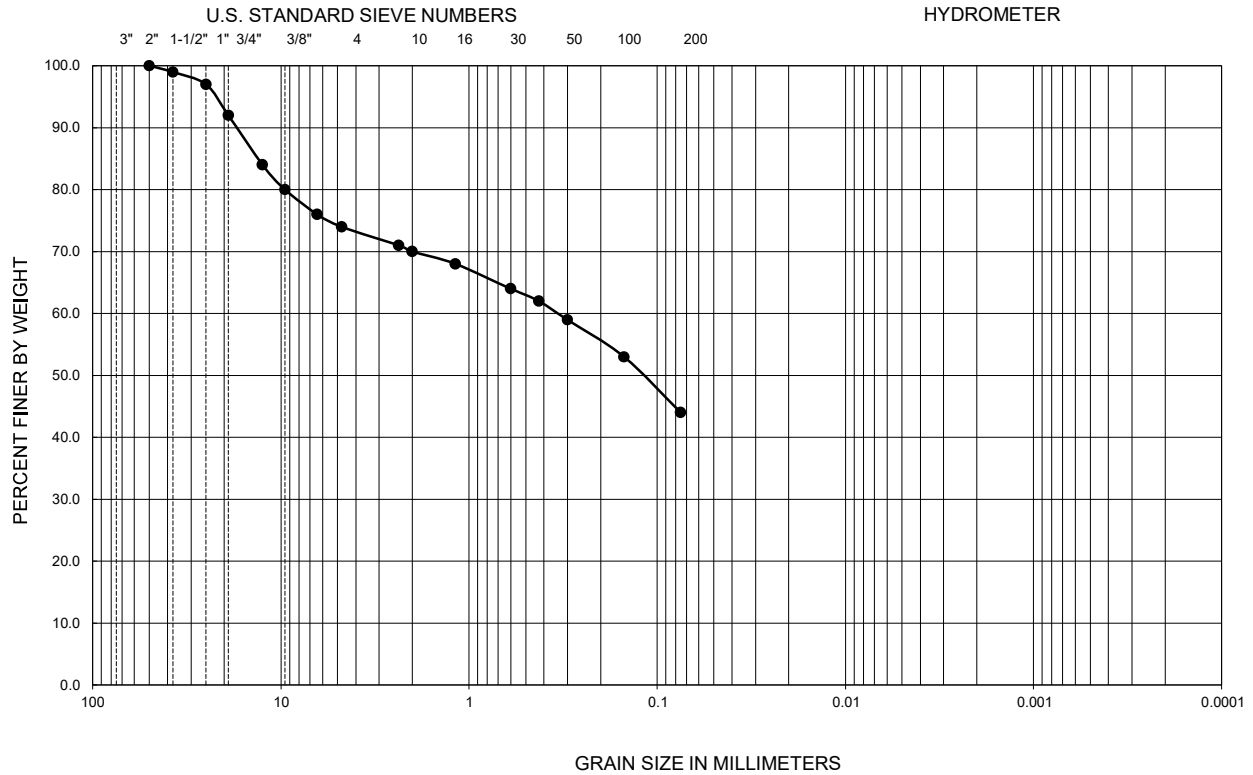
Direct Shear Tests

Direct shear testing was performed on a relatively undisturbed sample in general accordance with ASTM D3080 to evaluate the shear strength characteristics of selected materials. The sample was inundated during shearing to represent adverse field conditions. The results are shown on Figure B-4.

Soil Corrosivity Tests

Soil pH and minimum resistivity tests were performed on a representative sample in general accordance with Arizona test method, ARIZ 236c. The chloride content of the selected sample was evaluated in general accordance with ARIZ 736. The sulfate content of the selected sample was evaluated in general accordance with ARIZ 733. The test results are shown on Figure B-5.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

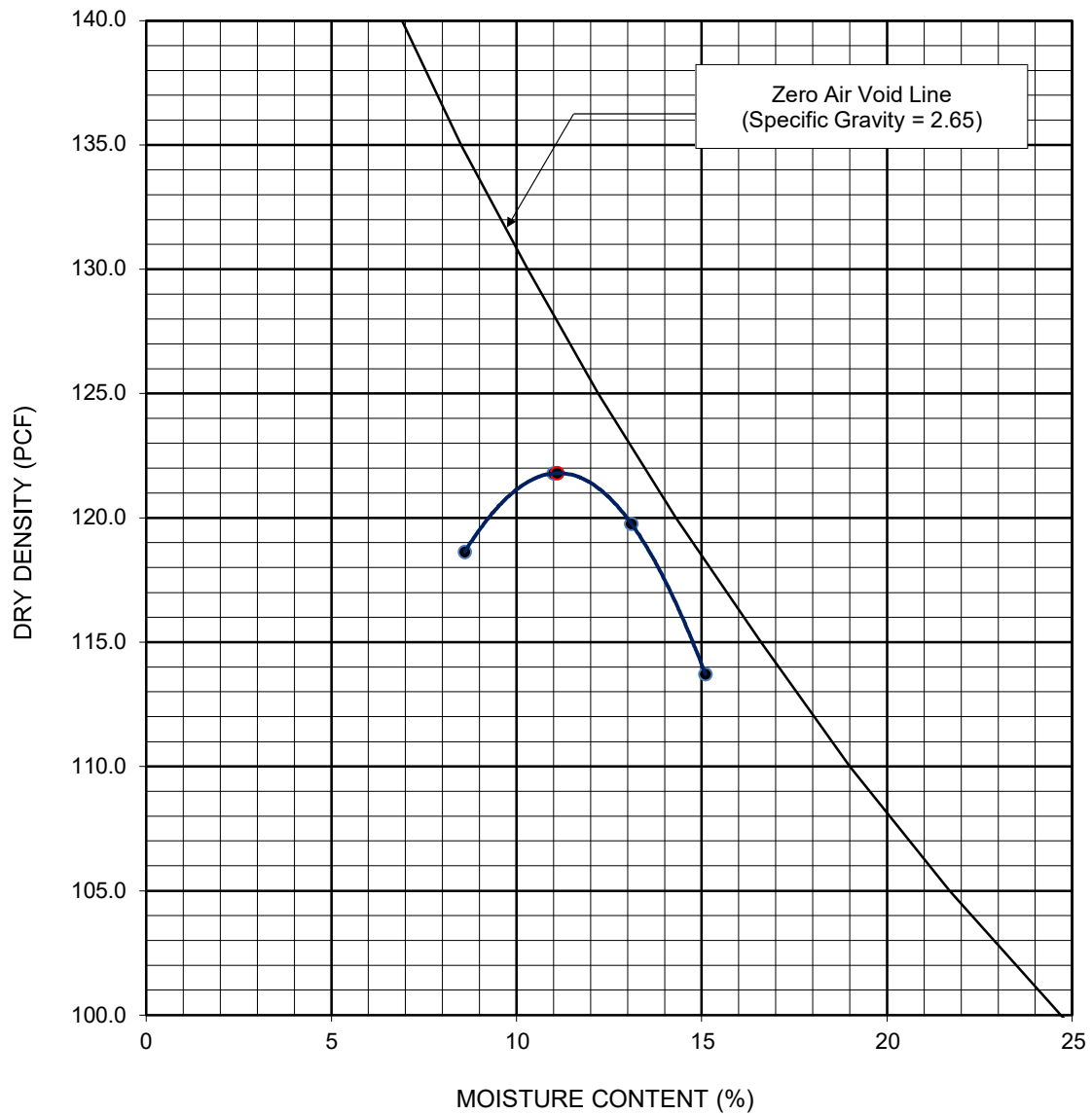


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (percent)	USCS
●	B-1	1-5'	23	16	7	--	--	0.34	--	--	44.0	SC-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-1

GRADATION TEST RESULTS



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-1	1-5'	SC-SM	121.8	11.1
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			131	8

PERFORMED IN GENERAL ACCORDANCE WITH

☐ ASTM D 1557

☒ ASTM D 698

METHOD

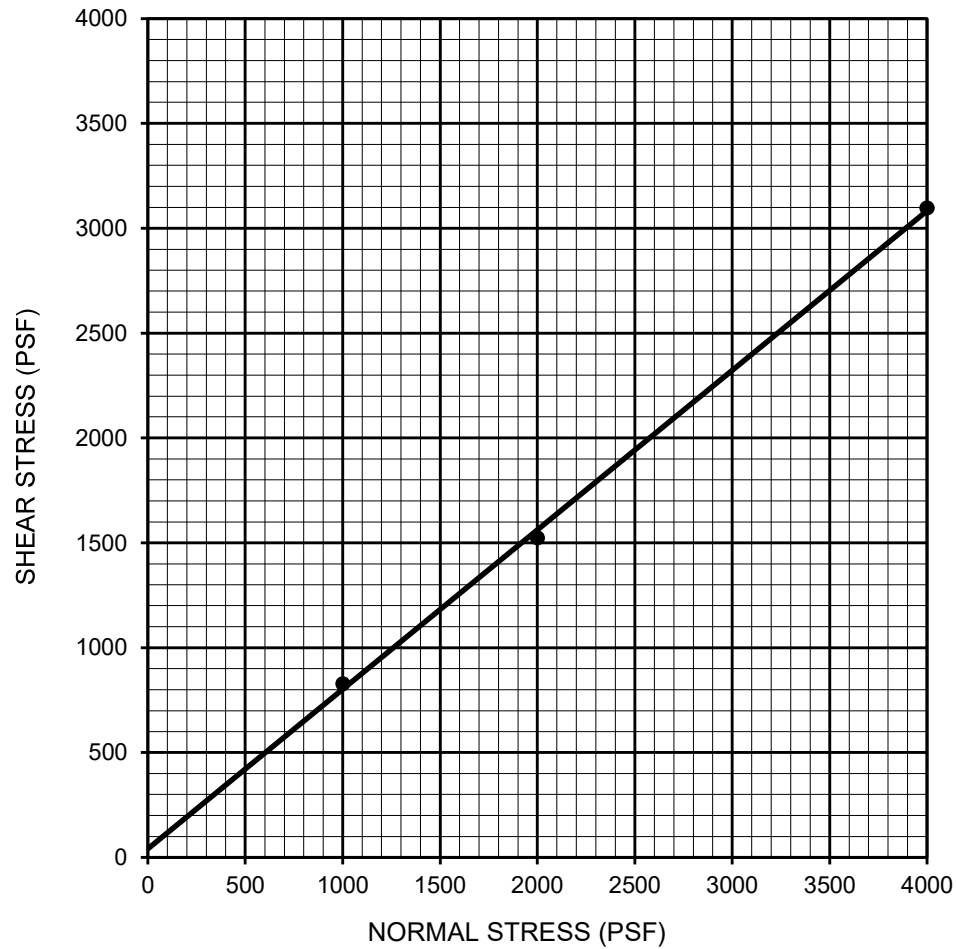
☒ A

☐ B

☐ C

FIGURE B-3

MAXIMUM DENSITY RESULTS



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
--		B-1	1-2.5'	Peak	42	37	SC-SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-4

DIRECT SHEAR TEST RESULTS

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH ¹	RESISTIVITY ¹ (Ohm-cm)	SULFATE CONTENT ² (ppm) (%)		CHLORIDE CONTENT ³ (ppm)
B-1	1-5'	8.2	2,144	10	0.001	25

¹ PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 236e

² PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 733b

³ PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 736b

FIGURE B-5

CORROSIVITY TEST RESULTS

22ND AVENUE AND LOWER BUCKEYE ROAD DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA



3202 East Harbour Drive | Phoenix, Arizona 85034 | p. 602.243.1600

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ninyoandmoore.com

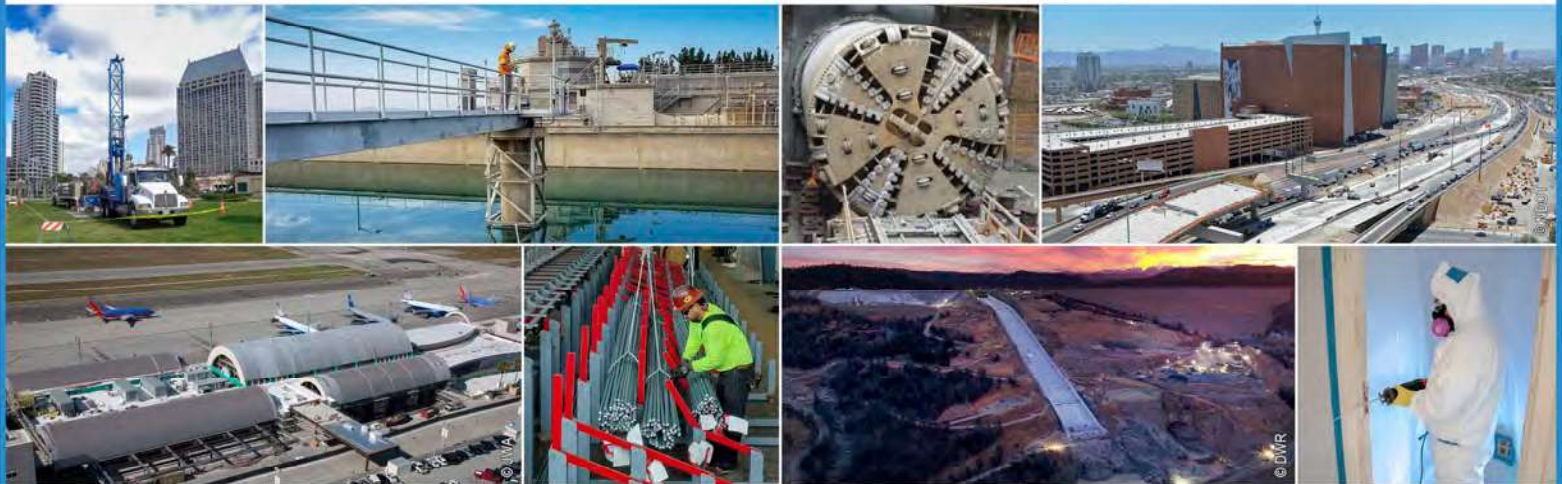
Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Geotechnical Evaluation Pinchot Avenue and 18th Street Drainage Improvements Phoenix, Arizona

WOODPATEL

2051 West Northern Avenue, Suite 100, Phoenix, Arizona 85021

August 24, 2023 | Project No. 607516003



Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

August 24, 2023
Project No. 607516003

Mr. James G. Taillon, CFM
WOODPATEL
2051 West Northern Avenue, Suite 100
Phoenix, Arizona 85021

Subject: Geotechnical Evaluation
Pinchot Avenue and 18th Street
Drainage Improvements
Phoenix, Arizona

Dear Mr. Taillon:

In accordance with our proposal dated September 19, 2022, and your authorization, Ninyo & Moore has performed a geotechnical evaluation for the above-referenced site. The attached report presents our methodology, findings, conclusions, and recommendations regarding the geotechnical conditions at the project site.

Ninyo & Moore appreciates the opportunity to be of service to you on this project.

Respectfully submitted,
NINYO & MOORE

Donald M. Tharp

Donald M. Tharp, PE
Principal Engineer

DT/SDN/tlp



Steven D. Nowaczyk

Steven D. Nowaczyk, PE
Managing Principal Engineer

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4 – Pipe Bedding Guidelines

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A – Boring Logs
B – Laboratory Testing

1 INTRODUCTION

In accordance with our proposal dated September 19, 2022, and your authorization, we have performed a geotechnical evaluation for the proposed drainage improvement project near the intersection of Pinchot Avenue and 18th Street in Phoenix, Arizona. The purpose of our evaluation was to assess the subsurface conditions at the project site in order to provide geotechnical recommendations for design and construction. This report presents the results of our evaluation, and our geotechnical considerations and recommendations regarding the proposed construction.

2 SCOPE OF SERVICES

The scope of our services for this project generally included:

- Reviewing readily available geotechnical data, aerial photographs, and published geologic literature, including maps and reports pertaining to the project site and vicinity.
- Review available geologic literature and aerial photographs of the project site.
- Conducting a visual geologic reconnaissance of the project site.
- Establishing the test locations in the field and arrange for the mark out of underground utilities through Arizona 811.
- Arranging for traffic control services to be implemented during our field work activities.
- Performing geotechnical explorations for the project, which included two borings extending to a depth of 20 feet below the ground surface (bgs), advanced using a CME 75 drill rig equipped with hollow-stem augers (HSAs) and logged by a Ninyo & Moore employee.
- Collecting soil samples from the borings for laboratory testing and analysis. Ninyo & Moore personnel logged the borings in general accordance with the Unified Soil Classification System and ASTM D2488 by observing cuttings and samples. The soil samples were transported to a Ninyo & Moore laboratory for testing.
- Performing laboratory testing to evaluate the in-situ moisture content and dry density, particle-size gradation, Atterberg limits, maximum density, consolidation, direct shear, swell, and corrosivity characteristics (including pH, minimum electrical resistivity, and soluble sulfate and chloride contents).
- Preparing this report presenting our findings, conclusions, and recommendations regarding the design and construction of the project.

Our scope of services did not include environmental consulting services such as hazardous waste sampling or analytical testing at the site. A detailed scope of services and estimated fee for such services can be provided upon request.

3 SITE DESCRIPTION

The project site is located near the intersection of Pinchot Avenue and 18th Street in Phoenix, Arizona. At the time of our evaluation, the site consisted of an asphalt paved road and alley. The site was bounded by Pinchot Avenue to the north, 18th Street to the east, Catalina Drive to the south, and an unnamed, north-south alley to the west.

Aerial photographs from Google Earth© indicate that the elevation at the project site ranges from roughly 1,124 to 1,119 feet, above mean sea level (MSL). The project site generally slopes east to west, with minor surface variations in elevation.

Aerial photographs dated 1937 through 2021 from the Maricopa County website and Google Earth© were reviewed for this project. Photographs prior to 1949 show part of the site as being used as an agricultural field and part of the site being occupied by the Salt River. By 1949, the site had undergone major grading and a few houses were built. By 1953, Pinchot Avenue, Catalina Drive and 18th Street were paved, and more houses had been built in the neighborhood. With the exception of minor urban residential infilling, the site has remained generally in its current configuration since then.

4 PROJECT DESCRIPTION

The project includes the reconstruction of the aforementioned intersection; installation of multiple catch basins; and a tie into a new storm drain along 18th Street from Pinchot Avenue to Catalina Drive, and then west to 16th Street to help alleviate flooding of the nearby residences. About 1,500 linear feet of storm drain, that is assumed to extend less than 20 feet deep is planned.

5 FIELD EXPLORATION AND LABORATORY TESTING

The following sections summarize our field exploration and laboratory testing activities.

5.1 Soil Borings

On July 26, 2023, Ninyo & Moore conducted a subsurface exploration at the site in order to evaluate the subsurface conditions and to collect soil samples for laboratory testing. Our evaluation consisted of drilling, logging, and sampling of two small-diameter borings using a CME-75 truck-mounted drill rig equipped with hollow-stem augers. The borings, denoted as B-1 and B-2, extended to depth of approximately 20 feet bgs (Figure 2). Bulk and relatively undisturbed soil samples were collected at selected intervals. Descriptions of the soils encountered are presented in the boring logs in Appendix A.

5.2 Laboratory Testing

The soil samples collected from our drilling activities were transported to the Ninyo & Moore laboratory in Phoenix, Arizona. Ninyo & Moore performed laboratory tests on selected samples obtained from the borings to evaluate the in-situ moisture content and dry density, particle-size gradation, Atterberg limits, maximum density, consolidation, direct shear, swell, and corrosivity characteristics (including pH, minimum electrical resistivity, and soluble sulfate and chloride contents). The in-situ moisture content and dry density results are presented on the boring logs in Appendix A. A description of the laboratory testing as well as the remainder of the laboratory test results are presented in Appendix B.

6 GEOLOGY AND SUBSURFACE CONDITIONS

The geology and subsurface conditions at the site are described in the following sections.

6.1 Geologic Setting

The project site is located in the Sonoran Desert Section of the Basin and Range physiographic province, which is typified by broad alluvial valleys separated by steep, discontinuous, subparallel mountain ranges. The mountain ranges generally trend north-south and northwest-southeast. The basin floors consist of alluvium with thickness extending to several thousands of feet.

The basins and surrounding mountains were formed approximately 10 to 18 million years ago during the Mid- to Late-Tertiary. Extensional tectonics resulted in the formation of horsts (mountains) and grabens (basins) with vertical displacement along high-angle normal faults. Intermittent volcanic activity also occurred during this time. The surrounding basins filled with alluvium from the erosion of the surrounding mountains as well as from deposition from rivers. Coarser-grained alluvial material was deposited at the margins of the basins near the mountains.

The surficial geology of the site is mapped as Holocene Surficial Deposits (0-10 thousand years). This unit is generally characterized as unconsolidated deposits associated with modern fluvial systems. This unit consists primarily of fine-grained, well-sorted sediment on alluvial plains, but also includes gravelly channel, terrace, and alluvial fan deposits on middle and upper piedmonts. (Pearthree, P.A., Huckleberry, G., 1994).

6.2 Subsurface Conditions

Our knowledge of the subsurface conditions at the project site is based on the results of our exploratory borings and our understanding of the general geology of the area. The boring logs contain our field test results, as well as our interpretation of the conditions between actual samples retrieved. Therefore, the boring logs contain both factual and interpretive information. Lines

delineating subsurface strata on the boring logs are intended to group soils having similar engineering properties and characteristics. They should be considered approximate, as the actual transition between soil types may be gradual. Detailed stratigraphic information as well as a key to the soil symbols and terms used on the boring logs is provided in Appendix A.

6.2.1 Pavement

Pavement consisting of Asphalt Concrete (AC) and Aggregate Base (AB) was encountered in our borings. AC was encountered at the surface and extended to a depth of approximately 2 to 3 inches in the borings. Underlying the AC, a layer of AB measuring approximately 5 inches thick was encountered in boring B-1. Alluvium was encountered underlying the AC in Boring B-2.

6.2.2 Fill

Undocumented fill soil was encountered underlying the pavement in boring B-1. The fill, which extended to a depth of 5 feet bgs, generally consisted of loose to medium dense clayey sand (SC) in our boring B-1. Varying quantities of gravel were also observed in our borings.

6.2.3 Alluvium

Native alluvial soil was encountered beneath the fill described above in boring B-1 and beneath the AC in boring B-2. The alluvium extended to the boring termination depths. In our borings, the alluvium generally consisted of loose to very dense clayey sand (SC). Varying quantities of gravel and caliche and varying degrees of cementation were also observed in our borings.

6.3 Groundwater

Groundwater was not encountered in our borings. Based on well data from the Arizona Department of Water Resources, the depth to groundwater has been estimated to be about 88 feet bgs. Groundwater levels can fluctuate due to seasonal variations, irrigation, groundwater withdrawal or injection, and other factors.

6.4 Surface Water

The FEMA flood map for the selected area is number 04013C2210L, effective on October 16, 2013. A preliminary review of this map suggests that the project site is mapped as being in FEMA Zone X. Sites mapped in Zone X are considered areas of minimal flood hazard, having a 0.2 percent annual chance flood hazard, but which may encounter surface waters during periods of heavy precipitation.

7 GEOLOGIC HAZARDS

The following sections describe regional geologic hazards, including land subsidence, earth fissures, and faults.

7.1 Land Subsidence and Earth Fissures

Groundwater depletion, due to groundwater pumping, has caused land subsidence and earth fissures in numerous alluvial basins in Arizona. It has been estimated that subsidence has affected more than 3,000 square miles and has caused damage to a variety of engineered structures and agricultural land. From 1948 to 1983, excessive groundwater withdrawal has been documented in several alluvial valleys where groundwater levels have been reportedly lowered by up to 500 feet. With such large depletions of groundwater, the alluvium has undergone consolidation resulting in large areas of land subsidence (Schumann and Genualdi, 1986).

This site lies within the West Valley Land Subsidence Feature in the West Salt River Valley Sub-Basin of the Phoenix Active Management Area. Based on Radarsat-2 Satellite Interferometric Synthetic Aperture Radar (InSAR) Data, up to 0.4 inches of subsidence has occurred in this area between May 2010 and May 2022.

In Arizona, earth fissures are generally associated with land subsidence and pose an ongoing geologic hazard. Earth fissures generally form near the margins of geomorphic basins where significant amounts of groundwater depletion have occurred. Earth fissures form due to tensional stress caused by differential subsidence of the unconsolidated alluvial materials over buried bedrock ridges and irregular bedrock surfaces.

Based on our field reconnaissance and review of the referenced material, there are no known or exposed earth-fissures present at the subject site. The closest documented earth fissure to this site is approximately 8 miles to the northeast of the site (AZGS, 2019). Continued groundwater withdrawal in the area may result in subsidence of the valley and the formation of new fissures or the extension of existing fissures. In general, land subsidence and earth fissures are not considered to be a constraint to development on this project site.

7.2 Faulting and Seismicity

The site lies within the Sonoran zone, which is a relatively stable tectonic region located in southwestern Arizona, southeastern California, southern Nevada, and northern Mexico (Euge et al., 1992). This zone is characterized by sparse seismicity and few Quaternary faults. Based on our field observations, review of pertinent geologic data, and analysis of aerial photographs, Quaternary faults are not located on or adjacent to the property.

The closest documented Quaternary fault to the site is the Carefree Fault Zone, located approximately 24 miles to the northeast of the site (Pearthree, 1998). The Carefree Fault Zone is a 12 km (7.2 mile) long series of branching north and northwest striking faults likely to have been active during the past few hundred thousand years. Recent movement along this fault was approximately 750,000 years ago during the Middle Pleistocene epoch. Approximately 2 meters of displacement occurred along this fault within middle to late Pleistocene deposits (200,000 to 750,000 years), but the Holocene deposits (<250,000 years) are not displaced. The slip-rate category of this fault is less than 0.2 millimeters per year (Pearthree, 1998).

7.3 Seismic Design Considerations

The current International Building Code (IBC) specifies that the Risk-Targeted, Maximum Considered Earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. The MCE_R ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits for near-source effects. The horizontal PGA that corresponds to the MCE_R for the site was calculated as 0.117g. The MCE_G PGA, based on the geometric mean PGA with a 2 percent probability of exceedance in 50 years, with adjustment for site class effects (PGA_M) was calculated as 0.129g. Seismic design parameters were calculated using the ATC Hazards by Location website seismic design tool.

Table 1 presents the seismic design parameters for the site in accordance with IBC guidelines and mapped spectral acceleration parameters (USGS, 2011). In accordance with the results of our field exploration, the general geology of the area, and our experience with similar materials, these ground motion values are calculated for "stiff soil" sites, which correspond to a weighted average Standard Penetration Resistance (\overline{N}) of less than 50 blows per foot and to a shear-wave velocity of approximately 600 to 1,200 fps in approximately the top 100 feet bgs. Different soil or rock types may amplify or de-amplify these values. The proposed improvements should be designed in accordance with the requirements of governing jurisdictions and applicable building codes.

Table 1 – IBC Seismic Design Criteria	
Seismic Design Factors	Value
Site Class	D
Site Coefficient, F_a	1.6
Site Coefficient, F_v	2.4
Mapped Spectral Acceleration at 0.2-second Period, S_s	0.183 g
Mapped Spectral Acceleration at 1.0-second Period, S_1	0.065 g
Spectral Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	0.293 g
Spectral Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	0.157 g
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	0.195 g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.105 g

8 GEOTECHNICAL CONSIDERATIONS

Based on the results of our subsurface evaluation, laboratory testing, and data analysis, the proposed construction is feasible from a geotechnical standpoint, provided the recommendations in this report are incorporated into the design and construction of the project, as appropriate. Geotechnical considerations include the following:

- Based on referenced material in our library, geologic hazards are not present along the project alignment.
- The soils in the upper 20 feet bgs along the project alignment generally consist of fill and native alluvial deposits composed of loose to very dense clayey sand. Some of these soil layers will be prone to sloughing during excavation.
- Conventional heavy-duty earthmoving construction equipment in good operating condition may be used to excavate the on-site materials. However, during our field exploration very dense materials, caliche nodules, and varying degrees of cementation were encountered. These materials will be more difficult to excavate and will slow the rate of excavation.
- Sloughing of soils during construction may occur; specifically, where the excavation abuts fill soils from adjacent utilities. In addition, vibrations caused by the influence of nearby traffic may cause sloughing into excavations.
- Care should be taken during excavation. Shoring or the use of trench boxes may be needed during construction.
- Groundwater was not observed in our borings at the time of drilling. Based on published well data by ADWR groundwater has been encountered historically at approximately 88 feet bgs in the vicinity of the site. In general, groundwater is not anticipated to be a constraint to the construction of the project.
- Imported soils and soils generated from on-site excavation activities that exhibit a very low to low swell potential, have a plasticity index (PI) of 15 or less and are free of deleterious materials can generally be used as trench backfill.

- Many of the on-site soils can be re-used as trench backfill for this project.
- The results of our laboratory testing do not indicate that the on-site soils should be considered corrosive to ferrous metals. Notwithstanding the test results, the presence of corrosive soils is very common in Maricopa County and a corrosion specialist should be consulted for corrosion recommendations.
- The sulfate content of the soils presents a negligible potential for sulfate exposure to concrete.

9 RECOMMENDATIONS

The following sections present our geotechnical recommendations and were developed based on our understanding of the proposed construction, the observed subsurface conditions, and our experience with similar soils. In general, the recommendations and guidelines outlined in the Maricopa Association of Governments (MAG) Standard Specifications and Details and/or any City of Phoenix amendments should be used unless recommended differently herein.

The recommendations in this report pertain to the location where our boring was drilled. If the proposed construction is changed from that discussed herein or subsurface conditions other than those shown on the boring logs (Appendix A) are observed at the time of construction, Ninyo & Moore should be retained to conduct a review of the new information and to evaluate the need for additional recommendations.

9.1 Instrumentation and Documentation

Given the proximity of the planned excavations to existing settlement sensitive features, consideration should be given to implementing documentation and instrumentation programs to evaluate design assumptions, existing conditions, and to monitor movements, levels, and deformations prior to and during construction. The monitoring programs may include the use of inclinometers, convergence points, and/or an array of surface control points. The resulting data should be reviewed and evaluated during construction. These programs should be in-place or conducted prior to the start of construction.

9.1.1 Documentation of Existing Conditions

We recommend that a pre-construction survey be performed prior to construction on pavements, residences, and structures within 50 feet of the proposed trench excavations. The pre-construction survey should consist of photographic documentation of the pavement condition, exterior portions of adjacent residences, transmission towers, and other improvements, including distress features, such as tilting, cracks and/or separations that may be present. Consideration may be given to videotaping the survey. In addition, interviews with

owners should be conducted to provide knowledge of the age and type of the improvements as well as maintenance history and utility problems.

9.1.2 Lateral Movement of Shoring Support System

We recommend that inclinometers and/or survey points be established behind excavations located in areas where structures are located above a 1:1 (horizontal to vertical [H:V]) plane projected from the bottom of the proposed excavations. The inclinometers or survey points should be monitored and evaluated daily during excavation activities to provide an advanced warning system of potential problems.

9.1.3 Ground Surface Settlement

An array of ground survey points should be installed along the project alignment to monitor settlement. The survey points should be installed as close as practical to the project alignment and incrementally away from the alignment. The contractor should be responsible for maintaining the total settlement to less than ½-inch. If settlements reach ¼-inch, we recommend that a review of the contractor's methods be performed and appropriate changes be made, if needed.

Consideration should be given to placing survey monitoring points on nearby structures to monitor the performance of the structures. In this way, a record of the performance of the structures will be maintained and available. This information, in conjunction with pre-construction surveys, may help in reducing potential claims and expediting and limiting settlement of legitimate claims.

9.2 Earthwork

The following sections present our earthwork recommendations for this project. In general, MAG and any City of Phoenix construction standards and specifications are expected to apply, unless otherwise noted.

9.2.1 Excavations

Our evaluation of the excavation characteristics of the on-site materials is based on the results of our exploratory boring, site observations, and experience with similar materials. In our opinion, many of the near surface soils may be excavated or ripped using conventional heavy-duty earthmoving or excavation equipment in good operating condition; however, during our field exploration very dense materials, caliche nodules, and varying degrees of

cementation were encountered. These materials will be more difficult to excavate and will slow the rate of excavation.

Equipment and procedures should be used that do not cause significant disturbance to the excavation bottoms. If the subgrade becomes disturbed, it should be compacted before placing the backfill material.

The bottoms of trench excavations should expose competent soils and should be dry and free of loose, soft, or disturbed soil. Any soft, wet, weak, or deleterious materials should be over-excavated to expose competent soils.

9.2.2 Temporary Slopes

Excavations for this project should be designed in accordance with current applicable, state, and federal trenching guidelines, including the Occupational Safety and Health Administration (OSHA) requirements for excavations presented in 29 CFR Part 1926 (Revised July 1992), Subpart P, Excavations.

For planning purposes, and according to OSHA soil classifications, a "Type C" soil should be considered for this project due to the loose and / or cohesionless (e.g., sandy and gravelly) nature of the fill and alluvial soils. In general, temporary slopes excavated in competent "Type C" soil should be inclined no steeper than 1.5:1 (H:V), however flatter slopes or shoring may be needed.

Details for open-cut slopes and shoring based on soil type and groundwater conditions are provided in the latest amended OSHA regulations. These details apply to temporary open-trench excavations up to 20 feet deep. Trenches more than 20 feet deep, or in areas where seepage is encountered should be designed by the contractor's engineer based on alignment-specific geotechnical analyses. Upon excavation, soil classifications and excavation performance should be evaluated in the field by the geotechnical consultant in accordance with the OSHA regulations.

Temporary excavations that encounter groundwater seepage or surface runoff, if any, may need shoring or dewatering. Flatter slopes or bracing should be used if excessive sloughing or raveling is observed. If material is stored or equipment is operated near an excavation, stronger shoring should be used to resist the extra pressure due to superimposed loads.

9.2.3 Temporary Shoring and Trench Boxes

Because of previously described soil conditions, the proposed depths of the excavations, and presence of existing utilities and structures (e.g., roadways, utilities, and residences), it may be preferable to temporarily shore or brace the trenches rather than using open cuts to the base of the excavations. Temporary earth retaining systems will be subjected to lateral loads resulting from earth pressures. Shored and braced trench excavations may be designed using the parameters on Figure 3.

The earth pressure values presented on Figure 3 assume that spoils from the excavation or other surcharge loads will not be placed above the excavation within a 1:1 (H:V) plane extending up and back from the base of the excavation. If spoil piles are placed closer than this to the braced excavation, the resulting surcharge loads should be considered in the bracing design. We recommend that an experienced structural engineer design the shoring system. The shoring parameters presented in this report should be considered as guidelines.

The contractor should anticipate repairing cracks in pavements adjacent to shored portions of the excavation due to anticipated lateral displacements of the shoring system. Horizontal and vertical movements of the shoring system should be monitored by a surveyor and the results reviewed by the project Geotechnical Engineer.

Trench boxes may also be a suitable alternative to laying back the side walls; however, due to the presence of loose, granular soils, the excavations may not stand open long enough to install the trench boxes. The contractor should be prepared to deal with these soil conditions and plan accordingly. Once installed, some sloughing is possible at the ends of the trench box; therefore, any loose material should be removed prior to backfilling of the trench.

9.2.4 Bottom Stability

Bottom of the excavations should be stable for the purpose of the planned construction. However, if excavations are open during a heavy rain event, the bottom of the trench may become saturated and unstable. Dewatering as discussed below may be anticipated in such events.

9.2.5 Construction Dewatering

Excavations that encounter seepage or surface run-off could be dewatered by pumping the water out and away from the excavation. Such zones may call for more aggressive means of dewatering and consultation with a qualified expert. Discharge of water from the excavations to natural drainage channels, if needed, may entail securing a special permit.

9.2.6 Backfill Material and Re-use of On-site Soils

On-site and imported soils that exhibit relatively low PI and very low to low expansive potential are generally suitable for re-use as engineered fill. Relatively low PI is defined as a PI value of 15 or less, as evaluated by ASTM D4318.

In addition, engineered fill should not include organic material, construction debris, or other non-soil fill materials. Clay lumps and rock particles should not be larger than 4 inches in dimension. This material should be disposed of off-site or in non-structural areas.

Based on MAG guidelines, the definition of “granular backfill” may be used for engineered fill for this project. Granular backfill is material in which the sum of the PI and the percent of material passing a No. 200 sieve does not exceed 23.

Engineered fill in contact with ferrous metals should also have low corrosion potential (minimum resistivity more than 2,000 ohm-cm, chloride content less than 25 parts per million [ppm]). Fill material in contact with concrete should have a soluble sulfate content of less than 0.1 percent.

Based on laboratory test results and our general observations, we anticipate that many of the on-site soils are suitable for re-use as engineered fill and backfill during construction. We suggest additional field sampling and laboratory testing be conducted by the contractor either prior to or during construction to better evaluate the quality of the on-site materials.

9.3 Pipe Bedding and Modulus of Soil Reaction (E')

We recommend that the storm sewer line be supported on 4 inches or more of granular bedding material such as sand and gravel, or crushed rock meeting the MAG Section 702 Standard Specifications (pea gravel or crushed chips are not acceptable) [Figure 4]. This bedding/pipe-zone backfill should extend 1 foot above the pipe crown. Care should be taken not to allow voids to form beneath the pipe (i.e., the pipe haunches should be continuously supported) to avoid damaging the storm sewer line. This may involve fill placement by hand or small compaction equipment. The pipe bedding should be moisture-conditioned and compacted as discussed in this report.

The modulus of soil reaction (E') is used to characterize the stiffness of soil backfill placed on the sides of buried pipelines for the purpose of evaluating deflection caused by the weight of the backfill over the pipe. For granular backfill soils for pipes, we recommend using an E' value of 1,200 pounds per square inch (psi).

E' for native materials will vary with material type and stiffness of the trench sidewalls. Approximate values of E' for the near surface materials encountered in our borings are presented in Table 2 below:

Table 2 – Modulus of Soil Reaction (E') for Native Soils			
Trench Wall Soil Classification (USCS)	Approximate E' (psi)		
	Loose	Medium Dense	Dense
Clayey Sand (SC)	400	700	2500

9.4 Fill Placement and Compaction

Backfill soils should be moisture-conditioned within the moisture range shown below in Table 3 and mechanically compacted to the percent compaction shown. Fill should generally be placed in 8-inch-thick loose lifts such that each lift is firm and non-yielding under the weight of construction equipment. Jetting and other forms of water consolidation are not recommended for this project.

Table 3 – Summary of Compaction Recommendations		
Description	Percent Relative Compaction per ASTM D698	Moisture Content
Pipe Bedding	95 percent	±2 percent of optimum
Granular Trench Backfill – Within 2 feet below pavement	100 percent	
AB below pavements	100 percent	
Non-Granular Trench Backfill – Within 2 feet below pavement	95 percent	
Trench Backfill – Deeper than 2 feet below pavement	95 percent	

An earthwork (shrinkage) factor of 10 to 20 percent is estimated. This shrinkage factor range represents an average of the material tested and assumes that materials excavated from the site will be placed as fill. They do not include transportation and handling losses. Potential bidders should consider this in preparing estimates and should review the available data to make their own conclusions regarding excavation conditions.

9.5 Controlled Low Strength Material (CLSM)

It is our opinion that the backfill zone may be filled with CLSM. CLSM consists of a fluid, workable mixture of aggregate, Portland cement, and water. The use of CLSM has some advantages:

- A narrower backfill zone can be used, thereby minimizing the quantity of soil to be excavated and possibly reducing disturbance to the near-by traffic;
- Relatively higher E' values may be used (E' = 3,000 psi);
- The support given to the connecting pipes is generally better;
- Because little compaction is needed to place CLSM, there is less risk of damaging the connecting pipes; and
- CLSM can be batched to flow into irregularities in the trench bottom and walls.

The CLSM design mix should be in accordance with current MAG or Standard Specifications for Public Works Construction standards. Additional mix design information can be provided upon request. The 28-day strength of the material should be no less than 50 psi and no more than 120 psi.

Buoyant or uplift forces on the piping should be considered when using CLSM and prudent construction techniques may result in multiple pours to avoid inducing excessive uplift forces. Sufficient time should be provided to allow the CLSM to cure before placing additional lifts of CLSM or trench backfill.

9.6 T-Top Pavement Replacement

In AC paved areas over trench excavations, we recommend the use of MAG "T-Top" Type Trench Backfill (MAG detail 200-1) with respect to the AC and AB replacement at the surface of the trench excavations, in order to reduce the potential for distress due to differential settlement and water infiltration into the subsurface. This includes the removal of AC and AB to 1 foot or more laterally beyond the extent of each side of the installation trench and extending to a depth of 1 foot or more below the bottom of the asphalt layer.

In the T-Top, the thickness of AB should be 12 inches or match either the existing or design thickness, whichever is more. We recommend a seal be placed at the saw cut joint between the patch and the existing AC. Periodic maintenance of the pavement should be performed. The AC thickness should be in accordance with any City of Phoenix design standards, or match the existing thickness, whichever is thicker.

9.7 Corrosion

The corrosion potential of the on-site materials was analyzed to evaluate its potential effect on the ferrous metals used for this project. Corrosion potential was evaluated using the results of laboratory testing on samples obtained during our subsurface evaluation that were considered representative of soils along the project alignment.

Laboratory testing consisted of pH, minimum electrical resistivity, and chloride and soluble sulfate contents. The pH and minimum electrical resistivity tests were performed in general accordance with Arizona Test 236b, while sulfate and chloride content tests were performed in accordance with Arizona Test Method 733 and 736, respectively. The results of the corrosivity tests are presented in Appendix B.

The soil pH value of the selected sample tested from our boring was 8.4 which is considered to be slightly alkaline. The minimum electrical resistivity of the sample tested in the laboratory was 4,690 ohm-cm, which is not considered to be corrosive to ferrous metals. The chloride content of the sample tested was 8 ppm, which is also not considered corrosive for ferrous materials. The soluble sulfate contents of the soil samples tested was 0.0003 percent by dry weight of soil, which is considered to represent a negligible potential for sulfate exposure to concrete.

Notwithstanding the aforementioned test results and due to the limited number of chemical tests performed, as well as our experience with similar soil conditions and regional practice, we recommend that to reduce the corrosion potential of buried metallic utilities, topsoil, organic soils, soils, and mixtures of sand and clay not be placed adjacent to buried metallic utilities. Rather, we suggest that sand or gravel be placed around buried metal piping. Also, buried utilities of different metallic construction or operating temperatures should be electrically isolated from each other to minimize galvanic corrosion problems. In addition, new piping should be electrically isolated from old piping, if any, so that the old metal will not increase the corrosion rate of the new metal. A corrosion specialist should be consulted for further recommendations.

9.8 Concrete

A laboratory chemical test performed on a selected sample of on-site soils indicated a sulfate content of 0.0003 percent by weight. Based on the sulfate test results and due to the limited number of chemical tests performed, as well as our experience with similar soil conditions and regional practice, we recommend that “Type II” cement be used for the construction of concrete structures at this site. Due to potential uncertainties as to the use of reclaimed irrigation water, or topsoil that may contain higher sulfate contents, pozzolan or admixtures designed to increase sulfate resistance may be considered.

The concrete should have a water-cementitious materials ratio of no more than 0.50 by weight for normal weight aggregate concrete. The structural engineer should ultimately select the concrete design strength based on the project-specific loading conditions. However, higher strength concrete may be selected for increased durability and resistance to shrinkage cracking.

9.9 Site Drainage

Positive surface drainage should be provided to divert water away from the trench zone and pavements. Surface water should not be permitted to pond over the trench zone or on pavement surfaces after construction. Water that is pumped out of the trench should be done so in an area that drains the water away from the trench.

9.10 Pre-Construction Conference

We recommend a pre-construction conference be held. Representatives of the owner, civil engineer, the geotechnical consultant, and the contractor should be in attendance to discuss the project plans and schedule. Our office should be notified if the project description included herein is incorrect, or if the project characteristics are significantly changed.

9.11 Construction Observation and Testing

During construction operations, we recommend a qualified geotechnical consultant perform observation and testing services for the project. These services should be performed to evaluate exposed subgrade conditions, including the extent and depth of overexcavation, to evaluate the suitability of proposed borrow materials for use as fill and to observe placement and test compaction of fill soils. If another geotechnical consultant is selected to perform observation and testing services for the project, we request that the selected consultant provide a letter to the owner, with a copy to Ninyo & Moore, indicating that they fully understand our recommendations and they are in full agreement with the recommendations contained in this report. Qualified subcontractors utilizing appropriate techniques and construction materials should perform construction of the proposed improvements.

10 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be

encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

11 REFERENCES

Applied Technology Council, ATC Hazards by Location, <https://hazards.atcouncil.org/>.

Arizona Department of Water Resources (ADWR), Hydrology Publications, <https://new.azwater.gov/hydrology/e-library>.

Arizona Department of Water Resources (ADWR), Well Registry Application, <http://gisweb.azwater.gov/waterresourcedata>.

Arizona Geological Survey <http://data.azgs.az.gov/hazard-viewer/>.

ASTM International (ASTM), Annual Book of ASTM Standards.

Euge, K.M., Schell, B.A., and Lam, I.P., 1992, Development of Seismic Acceleration Contour Maps for Arizona: Arizona Department of Transportation Report No. AZ 92-344: dated September.

Federal Emergency Management Agency DFIRM Flood Map, Map number 04013C2120L, effective on October 16, 2013.

Flood Control District of Maricopa County Historic Aerial Photographs, <https://gis.maricopa.gov/GIO/HistoricalAerial/index.html>.

Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction.

Ninyo & Moore, In-house proprietary information.

Occupational Safety and Health Administration (OSHA), 1992 (Revised), Title 29 of the Code of Federal Regulations (CFR), Part No. 1926 - Safety and Health Regulations for Construction, Subpart P - Excavations.

Pearthree, P.A., 1998, Quaternary Fault Data and Map for Arizona: Arizona Geological Survey, Open-File Report 98-24.

Schumann, H.H. and Genualdi, R., 1986, Land Subsidence, Earth Fissures, and Water-level Changes in Southern Arizona: Arizona Geological Survey OFR 86-14: scale 1:500,000.

United States Department of the Interior, Bureau of Reclamation, 2013, Method for Prediction of Flexible Pipe Deformation, Report M-25 Second Edition, Revised 2015.



FIGURES



LEGEND

- B-2  BORING
-  ALIGNMENT

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. | REFERENCE: GOOGLE EARTH 2022.

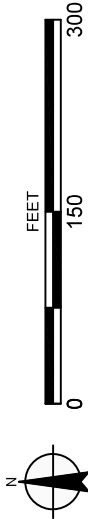
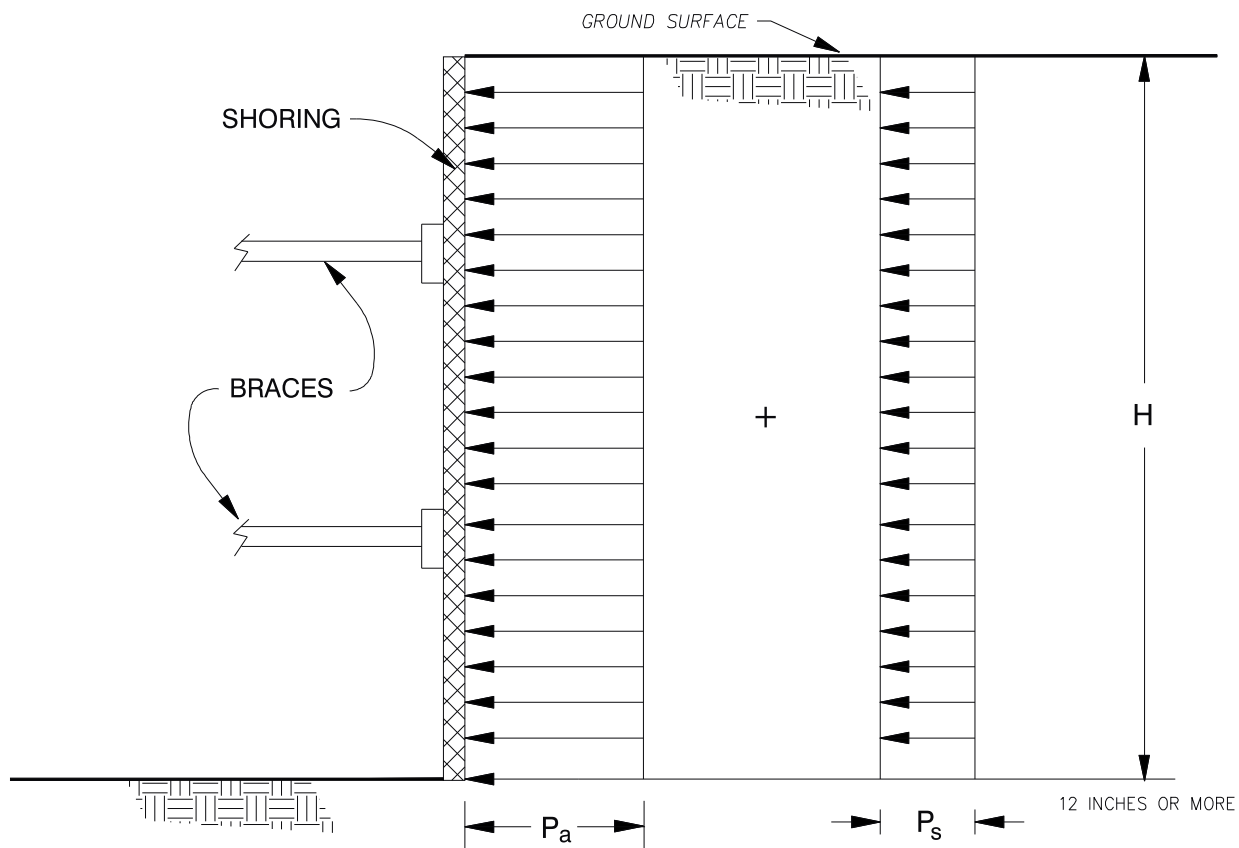


FIGURE 2

EXPLORATION LOCATIONS

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPROVEMENTS
PHOENIX, ARIZONA



NOTES:

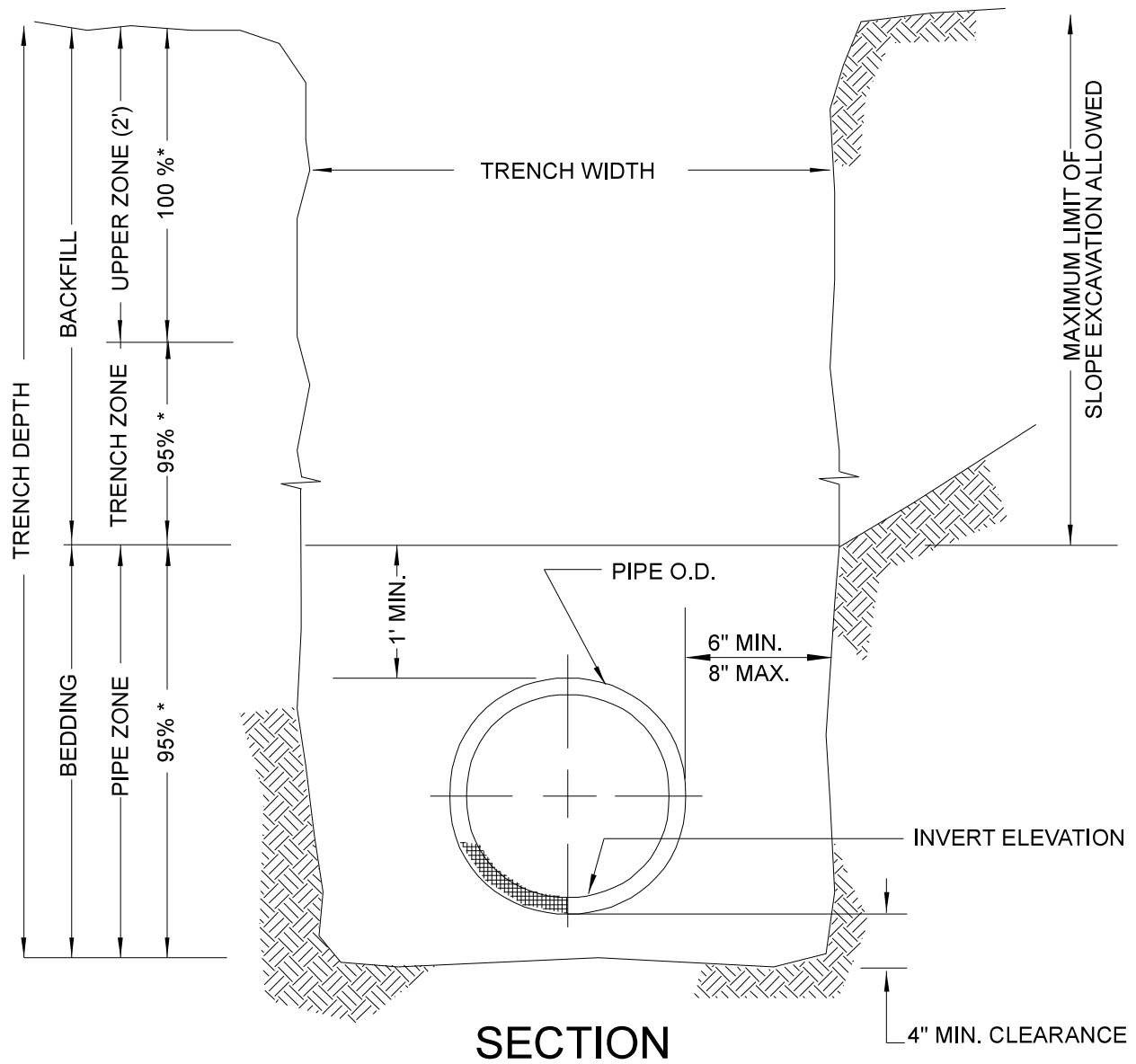
1. APPARENT LATERAL EARTH PRESSURE, P_a
 $P_a = 35H$ psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
 $P_s = 120$ psf
3. ASSUMES GROUNDWATER IS NOT PRESENT
4. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
5. H IS IN FEET

NOT TO SCALE

FIGURE 3

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION IN GRANULAR SOILS

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPROVEMENTS
 PHOENIX, ARIZONA



NOTE

* Indicates minimum relative compaction (see report for details).

Upper zone required for pavement areas only.

Diagram not drawn to scale.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 4

PIPE BEDDING GUIDELINES

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPROVEMENTS
PHOENIX, ARIZONA



APPENDIX A

Boring Logs

APPENDIX A

BORING LOGS

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory borings. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler

Disturbed drive samples of earth materials were obtained by means of a SPT sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven up to 18 inches into the ground with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the logs are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed, and transported to the laboratory for testing.





























Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler

The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D3550. The approximate length of the fall, the weight of the hammer or bar, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

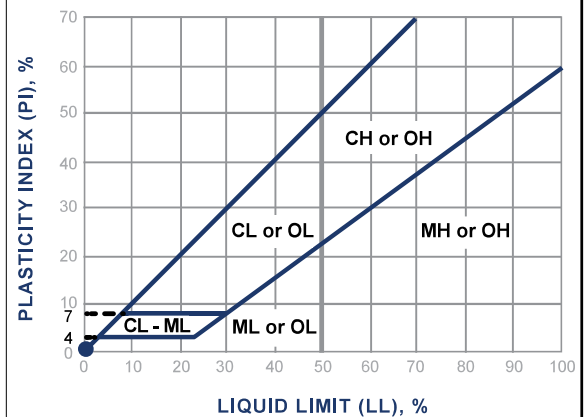
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions		
			Group Symbol	Group Name	
COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve	GRAVEL more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines		GW	well-graded GRAVEL
				GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines		GW-GM	well-graded GRAVEL with silt
				GP-GM	poorly graded GRAVEL with silt
				GW-GC	well-graded GRAVEL with clay
				GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines		GM	silty GRAVEL
				GC	clayey GRAVEL
				GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines		SW	well-graded SAND
				SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines		SW-SM	well-graded SAND with silt
				SP-SM	poorly graded SAND with silt
				SW-SC	well-graded SAND with clay
				SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines		SM	silty SAND
				SC	clayey SAND
				SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	SILT and CLAY liquid limit less than 50%	INORGANIC		CL	lean CLAY
				ML	SILT
				CL-ML	silty CLAY
		ORGANIC		OL (PI > 4)	organic CLAY
				OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC		CH	fat CLAY
				MH	elastic SILT
		ORGANIC		OH (plots on or above "A"-line)	organic CLAY
				OH (plots below "A"-line)	organic SILT
		Highly Organic Soils			PT

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.075 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.075"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consistency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

BORING LOG EXPLANATION SHEET

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
	Bulk	Driven						
0								<p>Bulk sample.</p> <p>Modified split-barrel drive sampler.</p> <p>No recovery with modified split-barrel drive sampler.</p> <p>Sample retained by others.</p> <p>Standard Penetration Test (SPT).</p> <p>No recovery with a SPT.</p> <p>Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.</p> <p>No recovery with Shelby tube sampler.</p> <p>Continuous Push Sample.</p> <p>Seepage.</p> <p>Groundwater encountered during drilling.</p> <p>Groundwater measured after drilling.</p>
5			XX/XX					
10								
15							SM	<p>MAJOR MATERIAL TYPE (SOIL):</p> <p>Solid line denotes unit change.</p>
							CL	<p>Dashed line denotes material change.</p> <p>Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Shear Bedding Surface</p>
20								<p>The total depth line is a solid line that is drawn at the bottom of the boring.</p>

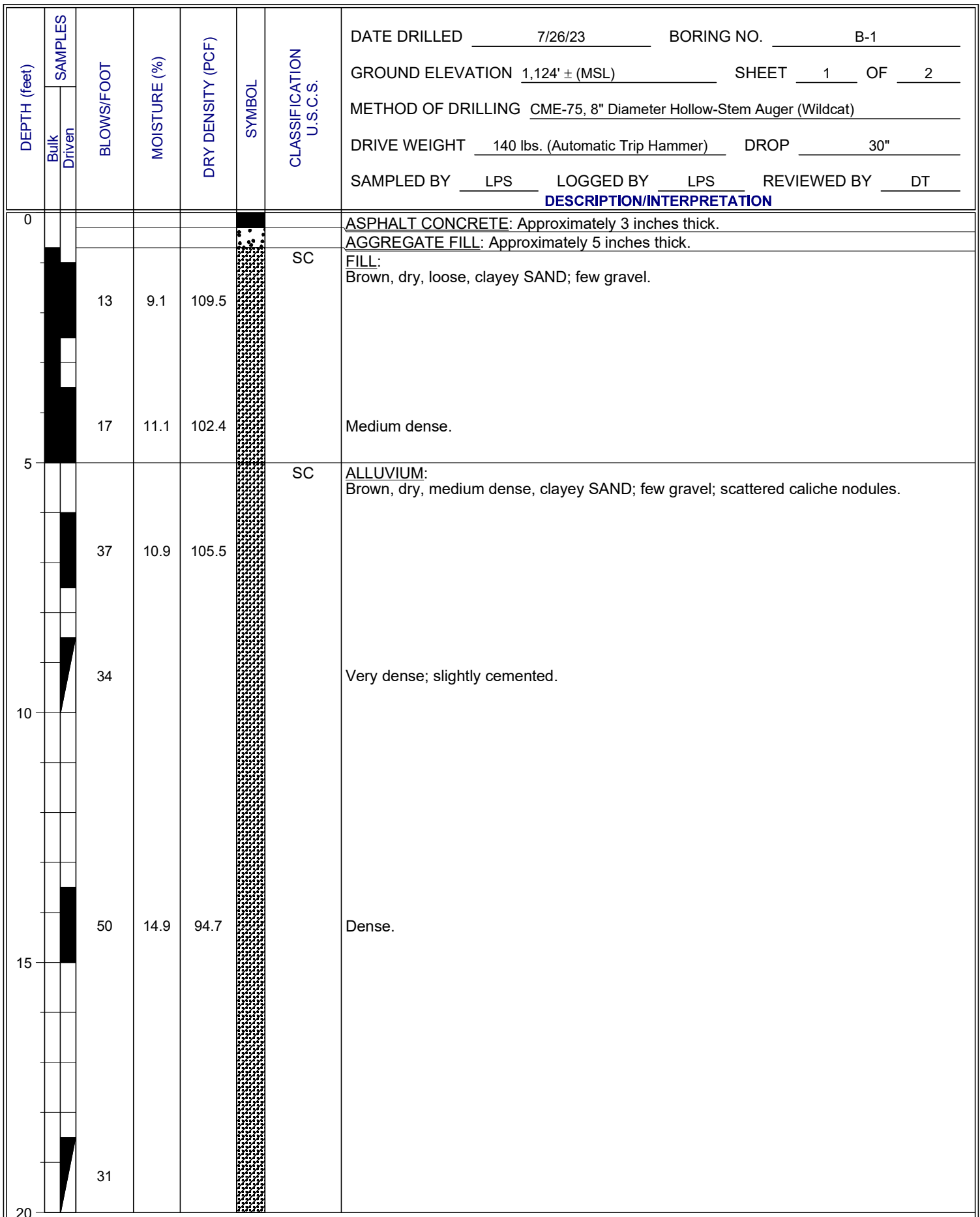


FIGURE A- 1

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>7/26/23</u> BORING NO. <u>B-1</u> GROUND ELEVATION <u>1,124' ± (MSL)</u> SHEET <u>2</u> OF <u>2</u> METHOD OF DRILLING <u>CME-75, 8" Diameter Hollow-Stem Auger (Wildcat)</u> DRIVE WEIGHT <u>140 lbs. (Automatic Trip Hammer)</u> DROP <u>30"</u> SAMPLED BY <u>LPS</u> LOGGED BY <u>LPS</u> REVIEWED BY <u>DT</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 7/26/23 shortly after completion of drilling. <u>Notes:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.		
25										
30										
35										
40										

FIGURE A- 2

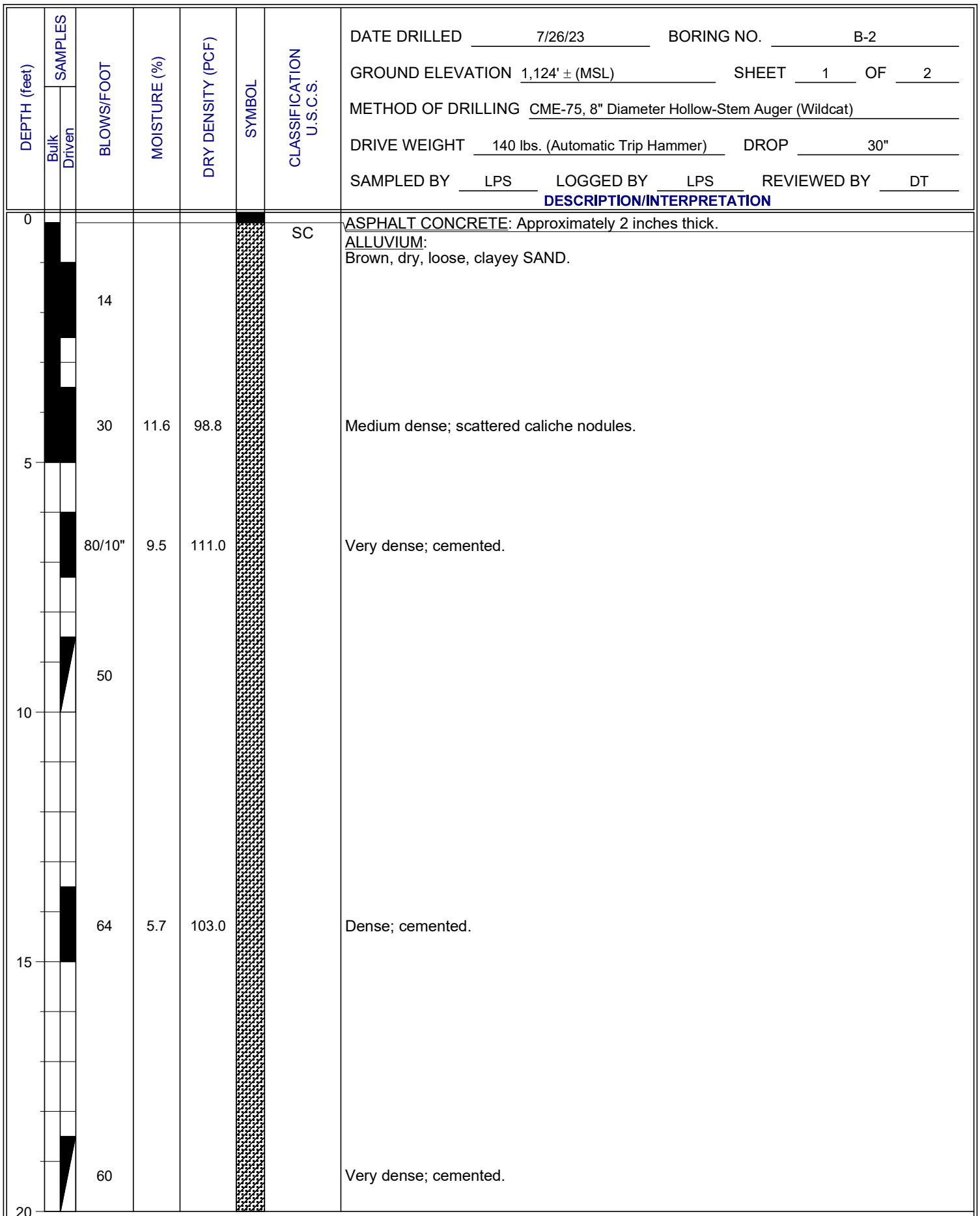


FIGURE A- 3

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>7/26/23</u> BORING NO. <u>B-2</u> GROUND ELEVATION <u>1,124' ± (MSL)</u> SHEET <u>2</u> OF <u>2</u> METHOD OF DRILLING <u>CME-75, 8" Diameter Hollow-Stem Auger (Wildcat)</u> DRIVE WEIGHT <u>140 lbs. (Automatic Trip Hammer)</u> DROP <u>30"</u> SAMPLED BY <u>LPS</u> LOGGED BY <u>LPS</u> REVIEWED BY <u>DT</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled and asphalt concrete patched on 7/26/23 shortly after completion of drilling. <u>Notes:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.		
25										
30										
35										
40										

FIGURE A- 4



APPENDIX B

Laboratory Testing

APPENDIX B

LABORATORY TESTING

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D2488. Soil classifications are indicated on the logs of the exploratory borings in Appendix A.

In-Place Moisture and Density Tests

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D2937. The test results are presented on the logs of the exploratory borings in Appendix A.

Gradation Analysis

Gradation analysis testing was performed on a selected representative soil sample in general accordance with ASTM D422. The grain-size distribution curve is shown on Figure B-1. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

Atterberg Limits

Atterberg Limits Tests were performed on selected representative fine-grained soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figure B-2.

Maximum Dry Density

Tests were performed on selected representative soil samples to evaluate the laboratory compaction characteristics in general accordance with ASTM D698. These test results were utilized to evaluate the relationship between maximum dry density and optimum moisture content for soils compacted using standard effort. The test results are shown on Figures B-3 and B-4.

Consolidation Tests

Consolidation testing was performed on a selected relatively undisturbed soil sample in general accordance with ASTM D2435. The sample was inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the testing are summarized on Figure B-5.

Direct Shear Tests

Direct shear testing was performed on a relatively undisturbed sample in general accordance with ASTM D3080 to evaluate the shear strength characteristics of selected materials. The sample was inundated during shearing to represent adverse field conditions. The results are shown on Figure B-6.

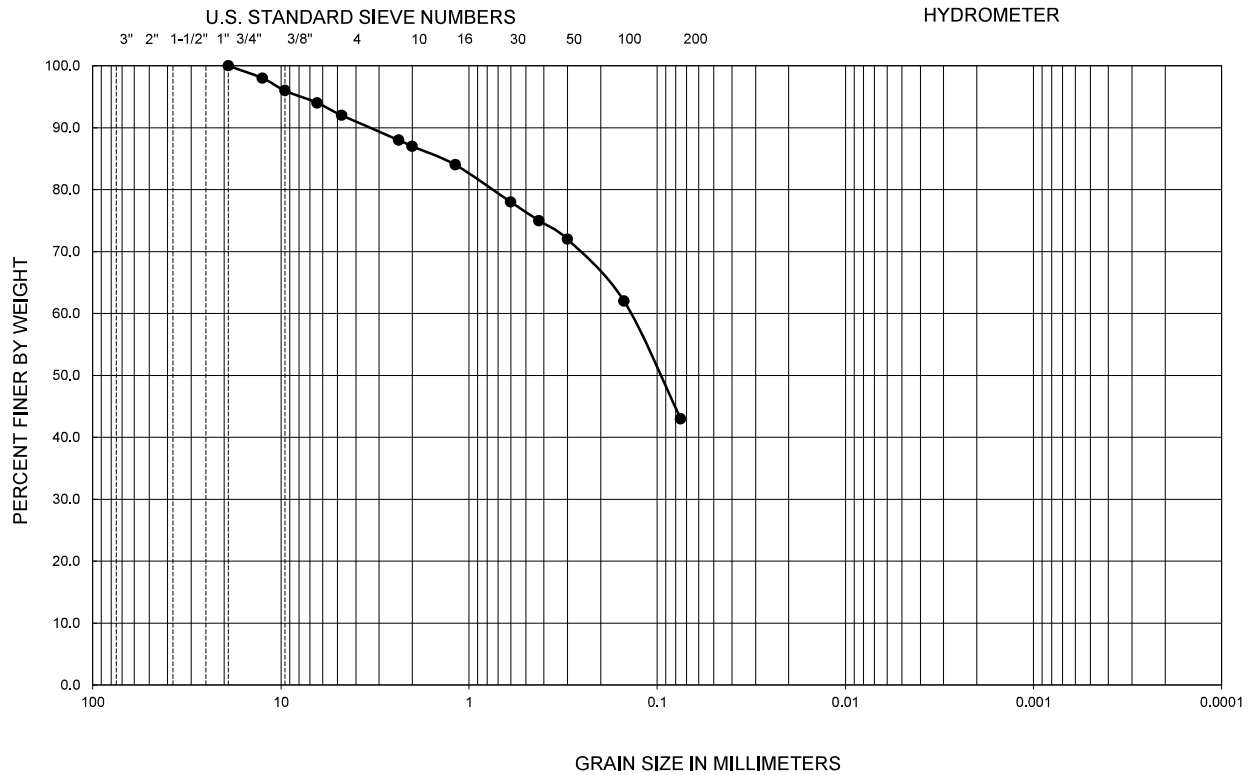
Swell Tests

Swell testing was performed on selected samples in general accordance with ASTM D4546 to evaluate the expansion characteristics of selected materials. The samples were inundated to represent adverse field conditions. The test results are shown on Figure B-7.

Soil Corrosivity Tests

Soil pH and minimum resistivity tests were performed on a representative sample in general accordance with Arizona test method, ARIZ 236c. The chloride content of the selected sample was evaluated in general accordance with ARIZ 736. The sulfate content of the selected sample was evaluated in general accordance with ARIZ 733. The test results are shown on Figure B-8.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (percent)	USCS
●	B-1	0.7-5.0	27	16	11	--	--	0.14	--	--	43.0	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

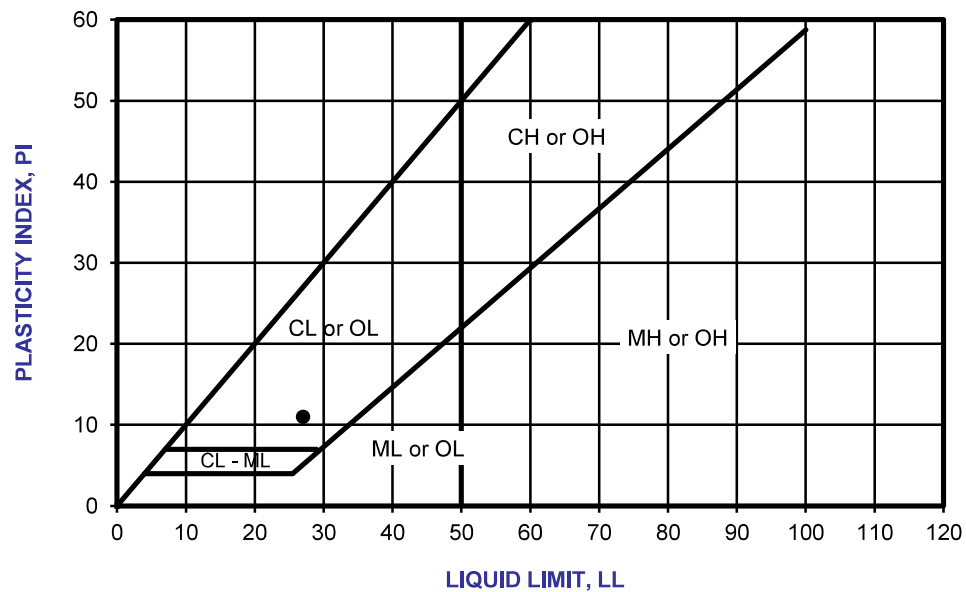
FIGURE B-1

GRADATION TEST RESULTS

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPROVEMENTS
PHOENIX, ARIZONA

SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-1	0.7-5.0	27	16	11	CL	SC

NP - INDICATES NON-PLASTIC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

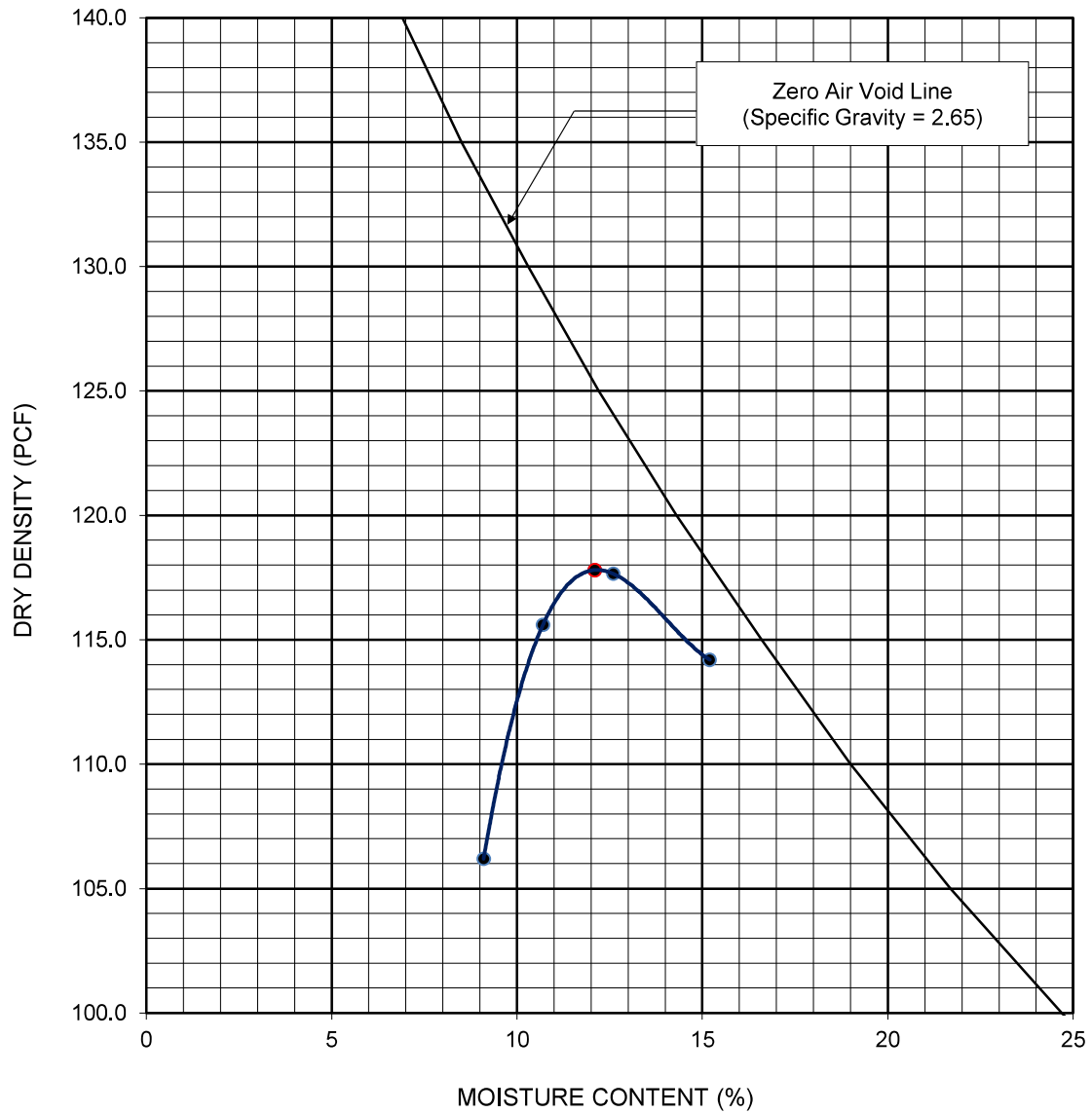
FIGURE B-2

ATTERBERG TEST RESULTS

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA

607516003 | 8/23



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-1	0.7-5.0	SC	117.8	12.1
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			120.5	11

PERFORMED IN GENERAL ACCORDANCE WITH

☐ ASTM D 1557

☒ ASTM D 698

METHOD

☒ A

☐ B

☐ C

FIGURE B-3

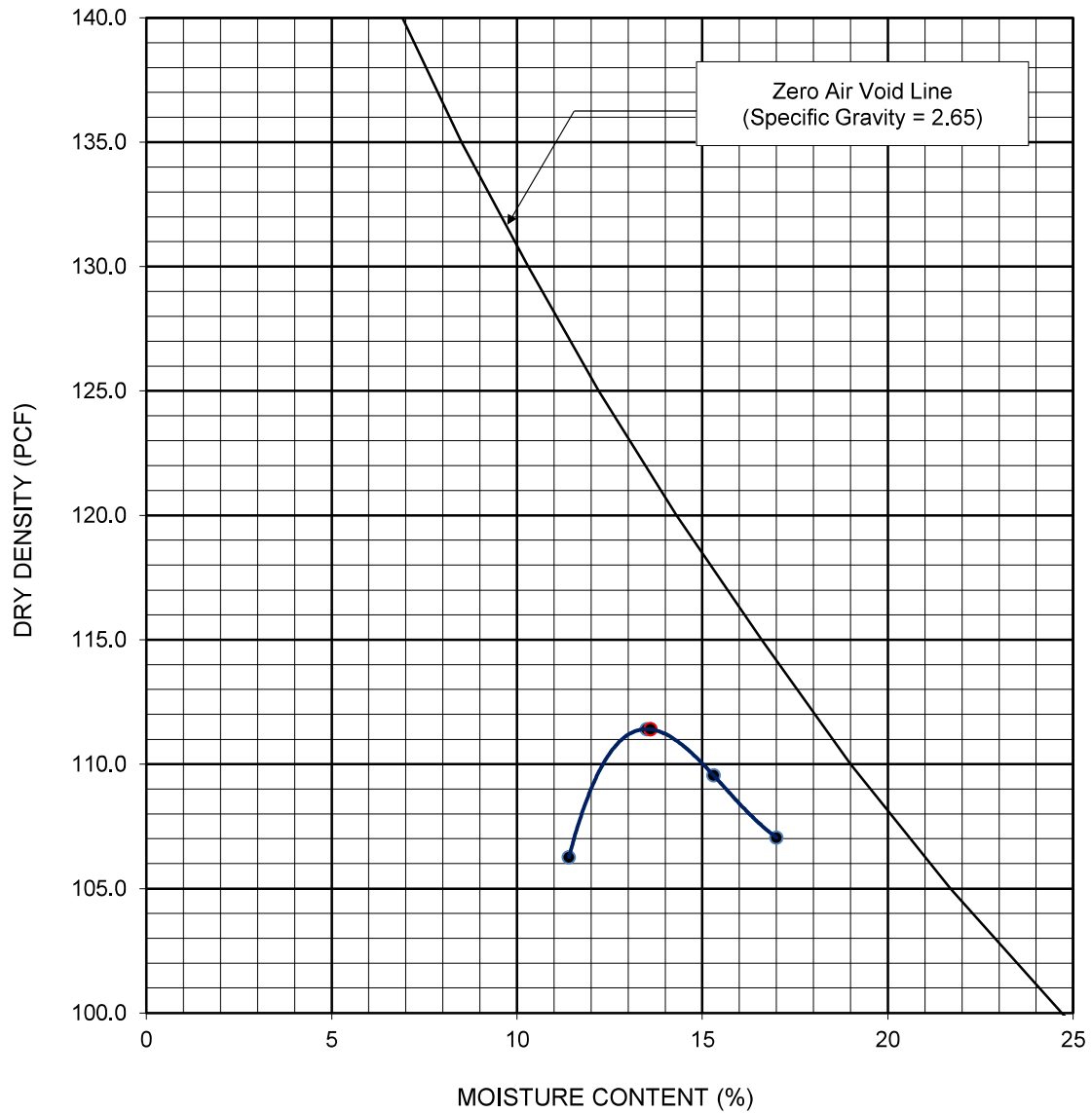
MAXIMUM DENSITY RESULTS

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA

607516003

8/23



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-2	0.2-5.0	SC	111.4	13.6
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			114.5	12.5

PERFORMED IN GENERAL ACCORDANCE WITH

☐ ASTM D 1557

☒ ASTM D 698

METHOD

☒ A

☐ B

☐ C

FIGURE B-4

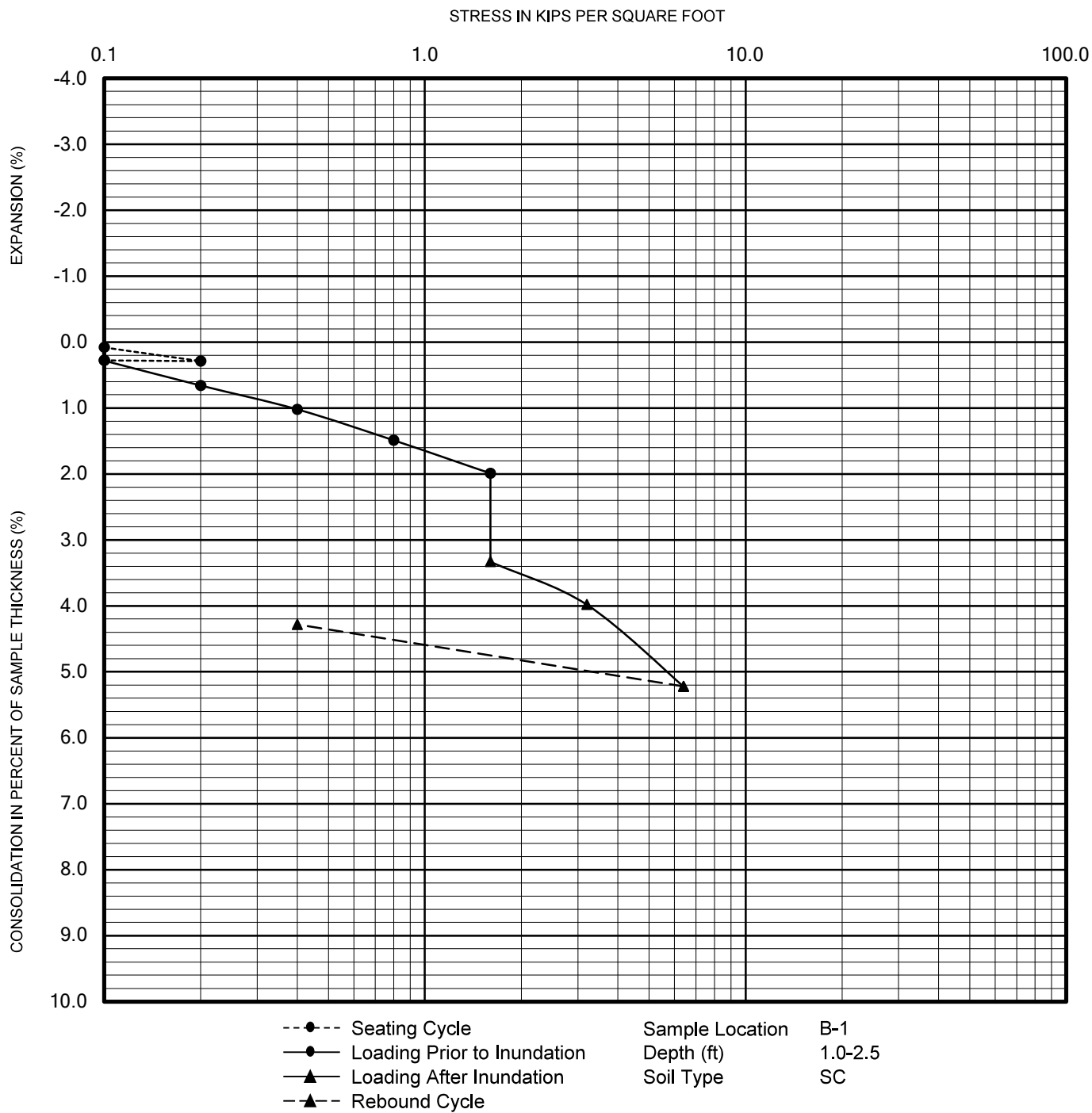
MAXIMUM DENSITY RESULTS

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA

607516003

8/23



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435/4546

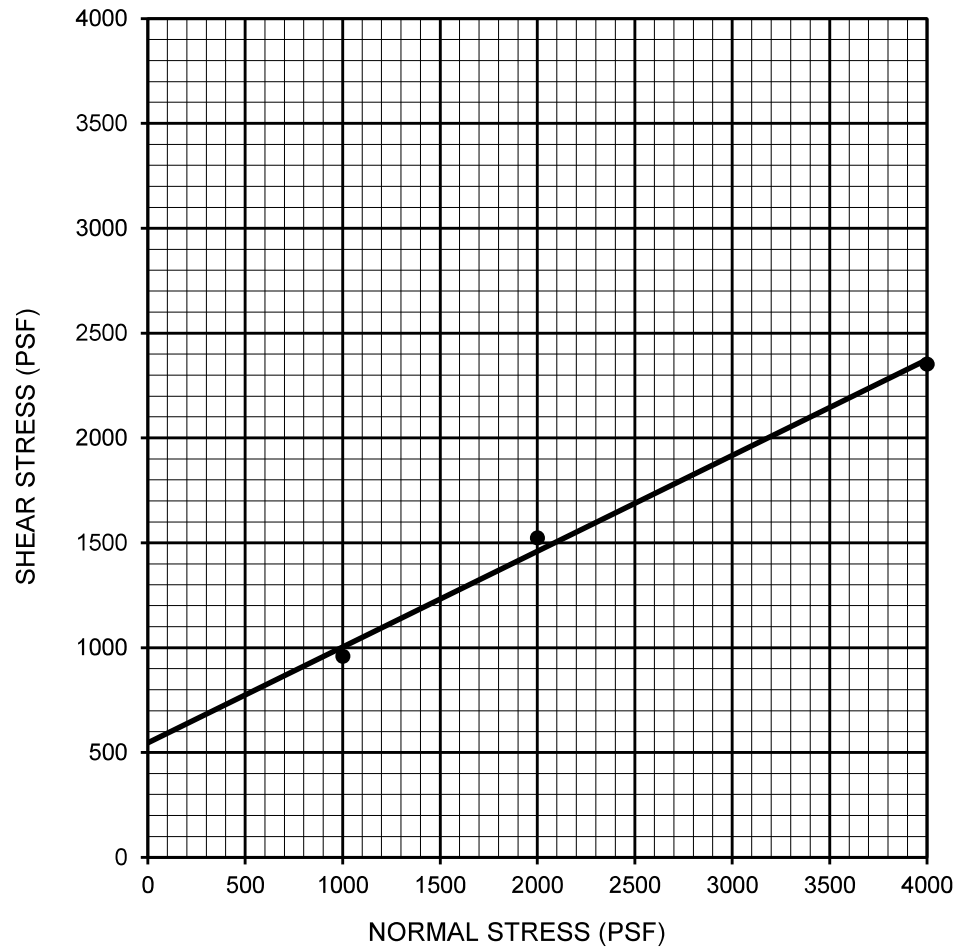
FIGURE B-5

CONSOLIDATION TEST RESULTS

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA

607516003 | 8/23



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
RELATIVELY UNDISTURBED		B-1	3.5-5.0	Peak	546	25	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-6

DIRECT SHEAR TEST RESULTS

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA

607516003

8/23

SAMPLE LOCATION	SAMPLE DEPTH (ft)	U.S.C.S	SWELL (%)
B-2	0.2-5.0	SC	2.6

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

FIGURE B-7

SWELL TEST RESULTS

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH ¹	RESISTIVITY ¹ (Ohm-cm)	SULFATE CONTENT ² (ppm) (%)		CHLORIDE CONTENT ³ (ppm)
B-1	0.7-5.0	8.4	4,690	3	0.0003	8

¹ PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 236e

² PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 733b

³ PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 736b

FIGURE B-8

CORROSIVITY TEST RESULTS

PINCHOT AVENUE AND 18TH STREET DRAINAGE IMPTOVEMENTS

PHOENIX, ARIZONA



3202 East Harbour Drive | Phoenix, Arizona 85034 | p. 602.243.1600

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ninyoandmoore.com

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

Geotechnical Evaluation 48th Place and East Flower Street Drainage Improvements Phoenix, Arizona

WOODPATEL

2051 West Northern Avenue, Suite 100, Phoenix, Arizona 85021

August 29, 2023 | Project No. 607516004



Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

August 29, 2023
Project No. 607516004

Mr. James G. Taillon, CFM
WOODPATEL
2051 West Northern Avenue, Suite 100
Phoenix, Arizona 85021

Subject: Geotechnical Evaluation
48th Place and East Flower Street
Drainage Improvements
Phoenix, Arizona

Dear Mr. Taillon:

In accordance with our proposal dated September 19, 2022, and your authorization, Ninyo & Moore has performed a geotechnical evaluation for the above-referenced site. The attached report presents our methodology, findings, conclusions, and recommendations regarding the geotechnical conditions at the project site.

Ninyo & Moore appreciates the opportunity to be of service to you on this project.

Respectfully submitted,
NINYO & MOORE

Donald M. Tharp

Donald M. Tharp, PE
Principal Engineer

DT/SDN/tlp



Steven D. Nowaczyk

Steven D. Nowaczyk, PE
Managing Principal Engineer

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1 INTRODUCTION

In accordance with our proposal dated September 19, 2022, and your authorization, we have performed a geotechnical evaluation for the proposed drainage improvement project near the intersection of 48th Place and East Flower Street in Phoenix, Arizona. The purpose of our evaluation was to assess the subsurface conditions at the project site in order to provide geotechnical recommendations for design and construction. This report presents the results of our evaluation, and our geotechnical considerations and recommendations regarding the proposed construction.

2 SCOPE OF SERVICES

The scope of our services for this project generally included:

- Reviewing readily available geotechnical data, aerial photographs, and published geologic literature, including maps and reports pertaining to the project site and vicinity.
- Review available geologic literature and aerial photographs of the project site.
- Conducting a visual geologic reconnaissance of the project site.
- Establishing the test locations in the field and arranging for the mark out of underground utilities through Arizona 811.
- Arranging for traffic control services to be implemented during our field work activities.
- Performing geotechnical explorations for the project, which included one boring extending to a depth of 20 feet below the ground surface (bgs) advanced using a CME 75 drill rig equipped with hollow-stem augers (HSAs) and logged by a Ninyo & Moore employee.
- Collecting soil samples from the boring for laboratory testing and analysis. Ninyo & Moore personnel logged the boring in general accordance with the Unified Soil Classification System and ASTM D2488 by observing cuttings and samples. The soil samples were transported to a Ninyo & Moore laboratory for testing.
- Performing laboratory testing to evaluate the to evaluate the in-situ moisture content and dry density, particle-size gradation, Atterberg limits, maximum density, consolidation, direct shear, swell, and corrosivity characteristics (including pH, minimum electrical resistivity, and soluble sulfate and chloride contents).
- Preparing this report presenting our findings, conclusions, and recommendations regarding the design and construction of the project.

Our scope of services did not include environmental consulting services such as hazardous waste sampling or analytical testing at the site. A detailed scope of services and estimated fee for such services can be provided upon request.

3 SITE DESCRIPTION

The project site is located near the intersection of 48th Place and East Flower Street in Phoenix, Arizona. At the time of our evaluation, the site consisted of asphalt paved roads, a grassy park area, and a right-of-way boundary between two houses. The site was bounded by 48th Street, a park and houses to the north; 48th Place and neighborhood to the east; 48th Street, a park and houses to the south; and a neighborhood to the west.

Aerial photographs from Google Earth© indicate that the elevation at the project site ranges from roughly 1,223 to 1,224 feet, above mean sea level (MSL). The project site generally slopes east to west, with minor surface variations in elevation.

Aerial photographs dated 1930 through 2021 from the Maricopa County website and Google Earth© were reviewed for this project. Photographs prior to 1959 show the site as being in agricultural production with a north – south trending canal present on the western edge of the parcel. By 1959, 48th Place and East Flower Street had been constructed and a residential subdivision developed along them. 48th Street is shown as a graded, single-lane, roadway. Development of the area continued through the 1960's and 1970's and by 1979, the neighborhood was generally composed of single-family residences and 48th street had been paved. Between 1996 and 1998 the canal was abandoned and filled with soil creating a grassy area with a paved N-S trending pedestrian and bike path through it. The site has remained virtually unchanged since then.

4 PROJECT DESCRIPTION

We understand the project includes the replacement of an existing 12-inch storm drain with about 200 linear feet of a new 36-inch storm drain that is assumed to extend less than 20 feet deep. Also planned is construction of new valley gutters on 50th Street at Mulberry Drive and East Flower Street; and reconstruction of curb returns and sidewalk ramps to create a high point on Mulberry Drive and East Flower Street.

5 FIELD EXPLORATION AND LABORATORY TESTING

The following sections summarize our field exploration and laboratory testing activities.

5.1 Soil Boring

On June 23, 2023, Ninyo & Moore conducted a subsurface exploration at the site in order to evaluate the subsurface conditions and to collect soil samples for laboratory testing. Our evaluation consisted of drilling, logging, and sampling of one small-diameter boring using a

CME-75 truck-mounted drill rig equipped with HSAs. The boring, denoted as B-1, extended to depth of approximately 20 feet bgs (Figure 2). Bulk and relatively undisturbed soil samples were collected at selected intervals. Descriptions of the soils encountered are presented in the boring log in Appendix A.

5.2 Laboratory Testing

The soil samples collected from our drilling activities were transported to the Ninyo & Moore laboratory in Phoenix, Arizona. Ninyo & Moore performed laboratory tests on selected samples obtained from the boring to evaluate the in-situ moisture content and dry density, particle-size gradation, Atterberg limits, maximum density, consolidation, direct shear, swell, and corrosivity characteristics (including pH, minimum electrical resistivity, and soluble sulfate and chloride contents). The in-situ moisture content and dry density results are presented on the boring log in Appendix A. A description of the laboratory testing as well as the remainder of the laboratory test results are presented in Appendix B.

5.3 Supplementary Corrosivity Testing

As the results of our initial corrosivity testing indicated a minimum electrical resistivity less than 1,500 ohm-cm from a sample taken from our soil boring and in accordance with the Section 6.4.5 of the City of Phoenix (COP) Storm Water Policies and Standards; supplemental corrosivity testing was performed on near-surface samples taken from two additional locations along the storm drain alignment (Figure 2).

6 GEOLOGY AND SUBSURFACE CONDITIONS

The geology and subsurface conditions at the site are described in the following sections.

6.1 Geologic Setting

The project site is located in the Sonoran Desert Section of the Basin and Range physiographic province, which is typified by broad alluvial valleys separated by steep, discontinuous, subparallel mountain ranges. The mountain ranges generally trend north-south and northwest-southeast. The basin floors consist of alluvium with thickness extending to several thousands of feet.

The basins and surrounding mountains were formed approximately 10 to 18 million years ago during the Mid- to Late-Tertiary. Extensional tectonics resulted in the formation of horsts (mountains) and grabens (basins) with vertical displacement along high-angle normal faults. Intermittent volcanic activity also occurred during this time. The surrounding basins filled with

alluvium from the erosion of the surrounding mountains as well as from deposition from rivers. Coarser-grained alluvial material was deposited at the margins of the basins near the mountains.

The surficial geology of the site is mapped as Holocene Surficial Deposits (0-10 thousand years). This unit is generally characterized as unconsolidated deposits associated with modern fluvial systems. This unit consists primarily of fine-grained, well-sorted sediment on alluvial plains, but also includes gravelly channel, terrace, and alluvial fan deposits on middle and upper piedmonts. (Pearthree, P.A., Huckleberry, G., 1994).

6.2 Subsurface Conditions

Our knowledge of the subsurface conditions at the project site is based on the results of our exploratory boring and our understanding of the general geology of the area. The boring log contains our field test results, as well as our interpretation of the conditions between actual samples retrieved. Therefore, the boring log contains both factual and interpretive information. Lines delineating subsurface strata on the boring log are intended to group soils having similar engineering properties and characteristics. They should be considered approximate, as the actual transition between soil types may be gradual. Detailed stratigraphic information as well as a key to the soil symbols and terms used on the boring log is provided in Appendix A.

6.2.1 Fill

Undocumented fill soil was encountered at the surface of our boring. The fill, which extended to a depth of 8.5 feet bgs, generally consisted of medium to very dense clayey sand (SC) in our boring. Varying quantities of gravel and caliche and varying degrees of cementation were also observed in our boring.

6.2.2 Alluvium

Native alluvial soil was encountered beneath the fill soils described above and extended to the boring termination depth. In our boring, the alluvium generally consisted of dense clayey sand (SC). Varying quantities of gravel and caliche and varying degrees of cementation were also observed in our boring.

6.3 Groundwater

Groundwater was not encountered in our boring. Based on well data from the Arizona Department of Water Resources, the depth to groundwater has been estimated to be about 25 feet bgs. Groundwater levels can fluctuate due to seasonal variations, irrigation, groundwater withdrawal or injection, and other factors.

6.4 Surface Water

The FEMA flood map for the selected area is number 04013C2230M, effective on October 16, 2013. A preliminary review of this map suggests that the project site is mapped as being in FEMA Zone X. Sites mapped in Zone X are considered areas of minimal flood hazard, having a 0.2 percent annual chance flood hazard, but which may encounter surface waters during periods of heavy precipitation.

7 GEOLOGIC HAZARDS

The following sections describe regional geologic hazards, including land subsidence, earth fissures, and faults.

7.1 Land Subsidence and Earth Fissures

Groundwater depletion, due to groundwater pumping, has caused land subsidence and earth fissures in numerous alluvial basins in Arizona. It has been estimated that subsidence has affected more than 3,000 square miles and has caused damage to a variety of engineered structures and agricultural land. From 1948 to 1983, excessive groundwater withdrawal has been documented in several alluvial valleys where groundwater levels have been reportedly lowered by up to 500 feet. With such large depletions of groundwater, the alluvium has undergone consolidation resulting in large areas of land subsidence (Schumann and Genualdi, 1986).

In Arizona, earth fissures are generally associated with land subsidence and pose an ongoing geologic hazard. Earth fissures generally form near the margins of geomorphic basins where significant amounts of groundwater depletion have occurred. Earth fissures form due to tensional stress caused by differential subsidence of the unconsolidated alluvial materials over buried bedrock ridges and irregular bedrock surfaces.

Based on our field reconnaissance and review of the referenced material, there are no known or exposed earth-fissures present at the subject site. The closest documented earth fissure to this site is approximately 7.5 miles to the northwest of the site (AZGS, 2019). Continued groundwater withdrawal in the area may result in subsidence of the valley and the formation of new fissures or the extension of existing fissures. In general, land subsidence and earth fissures are not considered to be a constraint to development on this project site.

7.2 Faulting and Seismicity

The site lies within the Sonoran zone, which is a relatively stable tectonic region located in southwestern Arizona, southeastern California, southern Nevada, and northern Mexico (Euge et al., 1992). This zone is characterized by sparse seismicity and few Quaternary faults. Based on our field observations, review of pertinent geologic data, and analysis of aerial photographs, Quaternary faults are not located on or adjacent to the property.

The closest documented Quaternary fault to the site is the Carefree Fault Zone, located approximately 21 miles to the northeast of the site (Pearthree, 1998). The Carefree Fault Zone is a 12 km (7.2 mile) long series of branching north and northwest striking faults likely to have been active during the past few hundred thousand years. Recent movement along this fault was approximately 750,000 years ago during the Middle Pleistocene epoch. Approximately 2 meters of displacement occurred along this fault within middle to late Pleistocene deposits (200,000 to 750,000 years), but the Holocene deposits (<250,000 years) are not displaced. The slip-rate category of this fault is less than 0.2 millimeters per year (Pearthree, 1998).

7.3 Seismic Design Considerations

The current International Building Code (IBC) specifies that the Risk-Targeted, Maximum Considered Earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. The MCE_R ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits for near-source effects. The horizontal PGA that corresponds to the MCE_R for the site was calculated as 0.119g. The MCE_G PGA, based on the geometric mean PGA with a 2 percent probability of exceedance in 50 years, with adjustment for site class effects (PGA_M) was calculated as 0.131g. Seismic design parameters were calculated using the ATC Hazards by Location website seismic design tool.

Table 1 presents the seismic design parameters for the site in accordance with IBC guidelines and mapped spectral acceleration parameters (USGS, 2011). In accordance with the results of our field exploration, the general geology of the area, and our experience with similar materials, these ground motion values are calculated for "stiff soil" sites, which correspond to a weighted average Standard Penetration Resistance (\overline{N}) of less than 50 blows per foot and to a shear-wave velocity of approximately 600 to 1,200 fps in approximately the top 100 feet bgs. Different soil or rock types may amplify or de-amplify these values. The proposed improvements should be designed in accordance with the requirements of governing jurisdictions and applicable building codes.

Table 1 – IBC Seismic Design Criteria	
Seismic Design Factors	Value
Site Class	D
Site Coefficient, F_a	1.6
Site Coefficient, F_v	2.4
Mapped Spectral Acceleration at 0.2-second Period, S_s	0.186 g
Mapped Spectral Acceleration at 1.0-second Period, S_1	0.066 g
Spectral Acceleration at 0.2-second Period Adjusted for Site Class, S_{MS}	0.298 g
Spectral Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	0.159 g
Design Spectral Response Acceleration at 0.2-second Period, S_{DS}	0.199 g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.106 g

8 GEOTECHNICAL CONSIDERATIONS

Based on the results of our subsurface evaluation, laboratory testing, and data analysis, the proposed construction is feasible from a geotechnical standpoint, provided the recommendations in this report are incorporated into the design and construction of the project, as appropriate. Geotechnical considerations include the following:

- The soils in the upper 20 feet bgs along the project alignment generally consist of fill and native alluvial soil deposits composed of medium dense to very dense clayey sand. Some of these soil layers will be prone to sloughing during excavation.
- Conventional heavy-duty earthmoving construction equipment in good operating condition may be used to excavate the on-site materials. However, during our field exploration very dense materials with gravel and varying degrees of cementation were encountered. These materials will be more difficult to excavate and will slow the rate of excavation.
- Sloughing of soils during construction may occur; specifically, where the excavation abuts fill soils from adjacent utilities. In addition, vibrations caused by the influence of nearby traffic may cause sloughing into excavations.
- Care should be taken during excavation. Shoring or the use of trench boxes may be needed during construction.
- Groundwater was not observed in our boring at the time of drilling. Based on published well data by ADWR groundwater has been encountered historically at approximately 25 feet bgs in the vicinity of the site. In general, groundwater is not anticipated to be a constraint to the construction of the project.

- Imported soils and soils generated from on-site excavation activities that exhibit a very low to low swell potential, have a plasticity index (PI) of 15 or less and are free of deleterious materials can generally be used as trench backfill.
- Some of the on-site soils should not be re-used as engineered fill for this project.
- New pavements and flatwork should be supported on a zone of adequately moisture-conditioned and compacted engineered fill.
- Geologic hazards are not present along the project alignment.
- The on-site soils should be considered corrosive to ferrous metals. The presence of corrosive soils is very common in Maricopa County and a corrosion specialist should be consulted for corrosion recommendations.
- The sulfate content of the soils presents a negligible potential for sulfate exposure to concrete.

9 RECOMMENDATIONS

The following sections present our geotechnical recommendations and were developed based on our understanding of the proposed construction, the observed subsurface conditions, and our experience with similar soils. In general, the recommendations and guidelines outlined in the Maricopa Association of Governments (MAG) Standard Specifications and Details and/or any COP amendments should be used unless recommended differently herein.

The recommendations in this report pertain to the location where our boring was drilled. If the proposed construction is changed from that discussed herein or subsurface conditions other than those shown on the boring log (Appendix A) are observed at the time of construction, Ninyo & Moore should be retained to conduct a review of the new information and to evaluate the need for additional recommendations.

9.1 Instrumentation and Documentation

Given the proximity of the planned excavations to existing settlement sensitive features, consideration should be given to implementing documentation and instrumentation programs to evaluate design assumptions, existing conditions, and to monitor movements, levels, and deformations prior to and during construction. The monitoring programs may include the use of inclinometers, convergence points, and/or an array of surface control points. The resulting data should be reviewed and evaluated during construction. These programs should be in-place or conducted prior to the start of construction.

9.1.1 Documentation of Existing Conditions

We recommend that a pre-construction survey be performed prior to construction on pavements, residences, and structures within 50 feet of the proposed trench excavations. The pre-construction survey should consist of photographic documentation of the pavement condition, exterior portions of adjacent residences, transmission towers, and other improvements, including distress features, such as tilting, cracks and/or separations that may be present. Consideration may be given to videotaping the survey. In addition, interviews with owners should be conducted to provide knowledge of the age and type of the improvements as well as maintenance history and utility problems.

9.1.2 Lateral Movement of Shoring Support System

We recommend that inclinometers and/or survey points be established behind excavations located in areas where structures are located above a 1:1 (horizontal to vertical [H:V]) plane projected from the bottom of the proposed excavations. The inclinometers or survey points should be monitored and evaluated daily during excavation activities to provide an advanced warning system of potential problems.

9.1.3 Ground Surface Settlement

An array of ground survey points should be installed along the project alignment to monitor settlement. The survey points should be installed as close as practical to the project alignment and incrementally away from the alignment. The contractor should be responsible for maintaining the total settlement to less than ½-inch. If settlements reach ¼-inch, we recommend that a review of the contractor's methods be performed and appropriate changes be made, if needed.

Consideration should be given to placing survey monitoring points on nearby structures to monitor the performance of the structures. In this way, a record of the performance of the structures will be maintained and available. This information, in conjunction with pre-construction surveys, may help in reducing potential claims and expediting and limiting settlement of legitimate claims.

9.2 Earthwork

The following sections present our earthwork recommendations for this project. In general, MAG and any COP construction standards and specifications are expected to apply, unless otherwise noted.

9.2.1 Excavations

Our evaluation of the excavation characteristics of the on-site materials is based on the results of our exploratory boring, site observations, and experience with similar materials. In our opinion, many of the near surface soils may be excavated or ripped using conventional heavy-duty earthmoving or excavation equipment in good operating condition; however, during our field exploration dense materials, caliche nodules, and varying amounts of gravel were encountered. These materials will be more difficult to excavate and will slow the rate of excavation.

Equipment and procedures should be used that do not cause significant disturbance to the excavation bottoms. If the subgrade becomes disturbed, it should be compacted before placing the backfill material.

The bottoms of trench excavations should expose competent soils and should be dry and free of loose, soft, or disturbed soil. Any soft, wet, weak, or deleterious materials should be over-excavated to expose competent soils.

9.2.2 Temporary Slopes

Excavations for this project should be designed in accordance with current applicable, state, and federal trenching guidelines, including the Occupational Safety and Health Administration (OSHA) requirements for excavations presented in 29 CFR Part 1926 (Revised July 1992), Subpart P, Excavations.

For planning purposes, and according to OSHA soil classifications, a "Type C" soil should be considered for this project due to the loose and / or cohesionless (e.g., sandy and gravelly) nature of the fill and alluvial soils. In general, temporary slopes excavated in competent "Type C" soil should be inclined no steeper than 1.5:1 (H:V), however flatter slopes or shoring may be needed.

Details for open-cut slopes and shoring based on soil type and groundwater conditions are provided in the latest amended OSHA regulations. These details apply to temporary open-trench excavations up to 20 feet deep. Trenches more than 20 feet deep, or in areas where seepage is encountered should be designed by the contractor's engineer based on alignment-specific geotechnical analyses. Upon excavation, soil classifications and excavation performance should be evaluated in the field by the geotechnical consultant in accordance with the OSHA regulations.

Temporary excavations that encounter groundwater seepage or surface runoff, if any, may need shoring or dewatering. Flatter slopes or bracing should be used if excessive sloughing or raveling is observed. If material is stored or equipment is operated near an excavation, stronger shoring should be used to resist the extra pressure due to superimposed loads.

9.2.3 Temporary Shoring and Trench Boxes

Because of previously described soil conditions, the proposed depths of the excavations, and presence of existing utilities and structures (e.g., roadways, utilities, and residences), it may be preferable to temporarily shore or brace the trenches rather than using open cuts to the base of the excavations. Temporary earth retaining systems will be subjected to lateral loads resulting from earth pressures. Shored and braced trench excavations may be designed using the parameters on Figure 3.

The earth pressure values presented on Figure 3 assume that spoils from the excavation or other surcharge loads will not be placed above the excavation within a 1:1 (H:V) plane extending up and back from the base of the excavation. If spoil piles are placed closer than this to the braced excavation, the resulting surcharge loads should be considered in the bracing design. We recommend that an experienced structural engineer design the shoring system. The shoring parameters presented in this report should be considered as guidelines.

The contractor should anticipate repairing cracks in pavements adjacent to shored portions of the excavation due to anticipated lateral displacements of the shoring system. Horizontal and vertical movements of the shoring system should be monitored by a surveyor and the results reviewed by the project Geotechnical Engineer.

Trench boxes may also be a suitable alternative to laying back the side walls; however, due to the presence of loose, granular soils, the excavations may not stand open long enough to install the trench boxes. The contractor should be prepared to deal with these soil conditions and plan accordingly. Once installed, some sloughing is possible at the ends of the trench box; therefore, any loose material should be removed prior to backfilling of the trench.

9.2.4 Bottom Stability

Bottom of the excavations should be stable for the purpose of the planned construction. However, if excavations are open during a heavy rain event, the bottom of the trench may become saturated and unstable. Dewatering as discussed below may be anticipated in such events.

9.2.5 Construction Dewatering

Excavations that encounter seepage or surface run-off could be dewatered by pumping the water out and away from the excavation. Such zones may call for more aggressive means of dewatering and consultation with a qualified expert. Discharge of water from the excavations to natural drainage channels, if needed, may entail securing a special permit.

9.2.6 Backfill Material and Re-use of On-site Soils

On-site and imported soils that exhibit relatively low PI and very low to low expansive potential are generally suitable for re-use as engineered fill. Relatively low PI is defined as a PI value of 15 or less, as evaluated by ASTM D4318.

In addition, engineered fill should not include organic material, construction debris, or other non-soil fill materials. Clay lumps and rock particles should not be larger than 4 inches in dimension. This material should be disposed of off-site or in non-structural areas.

Based on MAG guidelines, the definition of “granular backfill” may be used for engineered fill for this project. Granular backfill is material in which the sum of the PI and the percent of material passing a No. 200 sieve does not exceed 23.

Engineered fill in contact with ferrous metals should also have low corrosion potential (minimum resistivity more than 2,000 ohm-cm, chloride content less than 25 parts per million [ppm]). Fill material in contact with concrete should have a soluble sulfate content of less than 0.1 percent.

Based on laboratory test results and our general observations, we anticipate that some of the on-site soils are not suitable for re-use as engineered fill and backfill during construction. We suggest additional field sampling and laboratory testing be conducted by the contractor either prior to or during construction to better evaluate the quality of the on-site materials.

9.2.7 Fill Placement and Compaction

We recommend that where undocumented fill is encountered in areas to receive settlement-sensitive improvements, the fill be removed, and the exposed subgrade proof-rolled, prior to the placement of engineered fill or other improvements. The geotechnical consultant should carefully evaluate these areas prior to placement of fill or other construction. If fill is placed in these areas, its placement should be observed by the geotechnical consultant and field density tests performed on each lift of fill. Engineered fill should be placed as described in this report.

New pavements and flatwork should be supported on a zone of adequately moisture-conditioned and compacted engineered fill extending 12 inches or more below the AB. The zone of moisture-conditioned and compacted engineered fill should extend 1 foot or more horizontally beyond the pavements.

Once these over-excavations are finished and the underlying soils are exposed, further evaluation should be made by the on-site geotechnical representative. Based on this evaluation, additional remediation may be needed. This could include further scarification of the exposed surface. The additional remediation, if needed, should be addressed by the geotechnical consultant during earthwork operations. Excavations should be backfilled as described in this report.

9.3 Pipe Bedding and Modulus of Soil Reaction (E')

We recommend that the storm sewer line be supported on 4 inches or more of granular bedding material such as sand and gravel, or crushed rock meeting the MAG Section 702 Standard Specifications (pea gravel or crushed chips are not acceptable) [Figure 4]. This bedding/pipe-zone backfill should extend 1 foot above the pipe crown. Care should be taken not to allow voids to form beneath the pipe (i.e., the pipe haunches should be continuously supported) to avoid damaging the storm sewer line. This may involve fill placement by hand or small compaction equipment. The pipe bedding should be moisture-conditioned and compacted as discussed in this report.

The modulus of soil reaction (E') is used to characterize the stiffness of soil backfill placed on the sides of buried pipelines for the purpose of evaluating deflection caused by the weight of the backfill over the pipe. For granular backfill soils for pipes, we recommend using an E' value of 1,200 pounds per square inch (psi).

E' for native materials will vary with material type and stiffness of the trench sidewalls. Approximate values of E' for the near surface materials encountered in our boring are presented in Table 2 below:

Table 2 – Modulus of Soil Reaction (E') for Native Soils			
Trench Wall Soil Classification (USCS)	Approximate E' (psi)		
	Loose	Medium Dense	Dense
Clayey Sand (SC)	400	700	2500

9.4 Fill Placement and Compaction

Backfill soils should be moisture-conditioned within the moisture range shown below in Table 3 and mechanically compacted to the percent compaction shown. Fill should generally be placed in 8-inch-thick loose lifts such that each lift is firm and non-yielding under the weight of construction equipment. Jetting and other forms of water consolidation are not recommended for this project.

Table 3 – Summary of Compaction Recommendations		
Description	Percent Relative Compaction per ASTM D698	Moisture Content
Below new pavements and flatwork	95 percent	±2 percent of optimum
Pipe Bedding	95 percent	
Granular Trench Backfill – Within 2 feet below pavement	100 percent	
AB below pavements	100 percent	
Non-Granular Trench Backfill – Within 2 feet below pavement	95 percent	
Trench Backfill – Deeper than 2 feet below pavement	95 percent	

An earthwork (shrinkage) factor of 10 to 20 percent is estimated. This shrinkage factor range represents an average of the material tested and assumes that materials excavated from the site will be placed as fill. They do not include transportation and handling losses. Potential bidders should consider this in preparing estimates and should review the available data to make their own conclusions regarding excavation conditions.

9.5 Controlled Low Strength Material (CLSM)

It is our opinion that the backfill zone may be filled with CLSM. CLSM consists of a fluid, workable mixture of aggregate, Portland cement, and water. The use of CLSM has some advantages:

- A narrower backfill zone can be used, thereby minimizing the quantity of soil to be excavated and possibly reducing disturbance to the near-by traffic;
- Relatively higher E' values may be used (E' = 3,000 psi);
- The support given to the connecting pipes is generally better;
- Because little compaction is needed to place CLSM, there is less risk of damaging the connecting pipes; and
- CLSM can be batched to flow into irregularities in the trench bottom and walls.

The CLSM design mix should be in accordance with current MAG or Standard Specifications for Public Works Construction standards. Additional mix design information can be provided upon request. The 28-day strength of the material should be no less than 50 psi and no more than 120 psi.

Buoyant or uplift forces on the piping should be considered when using CLSM and prudent construction techniques may result in multiple pours to avoid inducing excessive uplift forces. Sufficient time should be provided to allow the CLSM to cure before placing additional lifts of CLSM or trench backfill.

9.6 T-Top Pavement Replacement

In AC paved areas over trench excavations, we recommend the use of MAG “T-Top” Type Trench Backfill (MAG detail 200-1) with respect to the asphalt concrete (AC) and aggregate base (AB) replacement at the surface of the trench excavations, in order to reduce the potential for distress due to differential settlement and water infiltration into the subsurface. This includes the removal of AC and AB to 1 foot or more laterally beyond the extent of each side of the installation trench and extending to a depth of 1 foot or more below the bottom of the asphalt layer.

In the T-Top, the thickness of AB should be 12 inches or match either the existing or design thickness, whichever is more. We recommend a seal be placed at the saw cut joint between the patch and the existing AC. Periodic maintenance of the pavement should be performed. The AC thickness should be in accordance with any COP design standards, or match the existing thickness, whichever is thicker.

9.7 Corrosion

The corrosion potential of the on-site materials was analyzed to evaluate its potential effect on the ferrous metals used for this project. Corrosion potential was evaluated using the results of laboratory testing on samples obtained during our subsurface evaluation that were considered representative of soils along the project alignment.

Laboratory testing consisted of pH, minimum electrical resistivity, and chloride and soluble sulfate contents. The pH and minimum electrical resistivity tests were performed in general accordance with Arizona Test 236b, while sulfate and chloride content tests were performed in accordance with Arizona Test Method 733 and 736, respectively. The results of the corrosivity tests are presented in Appendix B.

The soil pH value of the selected samples tested ranged from 8.9 to 9.4 which is considered to be slightly alkaline. The minimum electrical resistivity of the samples tested in the laboratory ranged from 385 to 1,261 ohm-cm, which is considered to be corrosive to ferrous metals. The chloride content of the samples tested ranged from 1,365 to 66 ppm, which is also considered corrosive for ferrous materials. The soluble sulfate contents of the soil samples tested ranged from .0003 to .09810 percent by dry weight of soil, which is considered to represent a negligible potential for sulfate exposure to concrete.

Based on the above-mentioned laboratory results and to reduce the corrosion potential of buried metallic utilities, we recommend that, topsoil, organic soils, soils, and mixtures of sand and clay not be placed adjacent to buried metallic utilities. Rather, we suggest that sand or gravel be placed around buried metal piping. Also, buried utilities of different metallic construction or operating temperatures should be electrically isolated from each other to minimize galvanic corrosion problems. In addition, new piping should be electrically isolated from old piping, if any, so that the old metal will not increase the corrosion rate of the new metal. A corrosion specialist should be consulted for further recommendations.

9.8 Concrete

A laboratory chemical tests performed on selected samples of on-site soils indicated a sulfate content ranging from .0003 to .09810 percent by weight. Based on the sulfate test results and due to the limited number of chemical tests performed, as well as our experience with similar soil conditions and regional practice, we recommend that “Type II” cement be used for the construction of concrete structures at this site. Due to potential uncertainties as to the use of reclaimed irrigation water, or topsoil that may contain higher sulfate contents, pozzolan or admixtures designed to increase sulfate resistance may be considered.

The concrete should have a water-cementitious materials ratio of no more than 0.50 by weight for normal weight aggregate concrete. The structural engineer should ultimately select the concrete design strength based on the project-specific loading conditions. However, higher strength concrete may be selected for increased durability and resistance to shrinkage cracking.

9.9 Site Drainage

Positive surface drainage should be provided to divert water away from the trench zone and pavements. Surface water should not be permitted to pond over the trench zone or on pavement surfaces after construction. Water that is pumped out of the trench should be done so in an area that drains the water away from the trench.

9.10 Pre-Construction Conference

We recommend a pre-construction conference be held. Representatives of the owner, civil engineer, the geotechnical consultant, and the contractor should be in attendance to discuss the project plans and schedule. Our office should be notified if the project description included herein is incorrect, or if the project characteristics are significantly changed.

9.11 Construction Observation and Testing

During construction operations, we recommend a qualified geotechnical consultant perform observation and testing services for the project. These services should be performed to evaluate exposed subgrade conditions, including the extent and depth of overexcavation, to evaluate the suitability of proposed borrow materials for use as fill and to observe placement and test compaction of fill soils. If another geotechnical consultant is selected to perform observation and testing services for the project, we request that the selected consultant provide a letter to the owner, with a copy to Ninyo & Moore, indicating that they fully understand our recommendations and they are in full agreement with the recommendations contained in this report. Qualified subcontractors utilizing appropriate techniques and construction materials should perform construction of the proposed improvements.

10 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

11 REFERENCES

Applied Technology Council, ATC Hazards by Location, <https://hazards.atcouncil.org/>.

Arizona Department of Water Resources (ADWR), Hydrology Publications, <https://new.azwater.gov/hydrology/e-library>.

Arizona Department of Water Resources (ADWR), Well Registry Application, <http://gisweb.azwater.gov/waterresourcedata>.

Arizona Geological Survey <http://data.azgs.az.gov/hazard-viewer/>.

ASTM International (ASTM), Annual Book of ASTM Standards.

Euge, K.M., Schell, B.A., and Lam, I.P., 1992, Development of Seismic Acceleration Contour Maps for Arizona: Arizona Department of Transportation Report No. AZ 92-344: dated September.

Federal Emergency Management Agency DFIRM Flood Map, Map number 04013C2230M, effective on October 16, 2013.

Flood Control District of Maricopa County Historic Aerial Photographs, <https://gis.maricopa.gov/GIO/HistoricalAerial/index.html>.

Maricopa Association of Governments Uniform Standard Specifications and Details for Public Works Construction.

Ninyo & Moore, In-house proprietary information.

Occupational Safety and Health Administration (OSHA), 1992 (Revised), Title 29 of the Code of Federal Regulations (CFR), Part No. 1926 - Safety and Health Regulations for Construction, Subpart P - Excavations.

Pearthree, P.A., 1998, Quaternary Fault Data and Map for Arizona: Arizona Geological Survey, Open-File Report 98-24.

Schumann, H.H. and Genualdi, R., 1986, Land Subsidence, Earth Fissures, and Water-level Changes in Southern Arizona: Arizona Geological Survey OFR 86-14: scale 1:500,000.

United States Department of the Interior, Bureau of Reclamation, 2013, Method for Prediction of Flexible Pipe Deformation, Report M-25 Second Edition, Revised 2015.



FIGURES



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LEGEND

- B-1 BORING
- SC-2 SUPPLEMENTAL CORROSIVITY TEST
- ALIGNMENT

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. | REFERENCE: GOOGLE EARTH 2022.

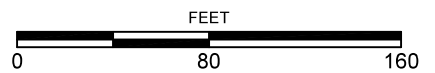
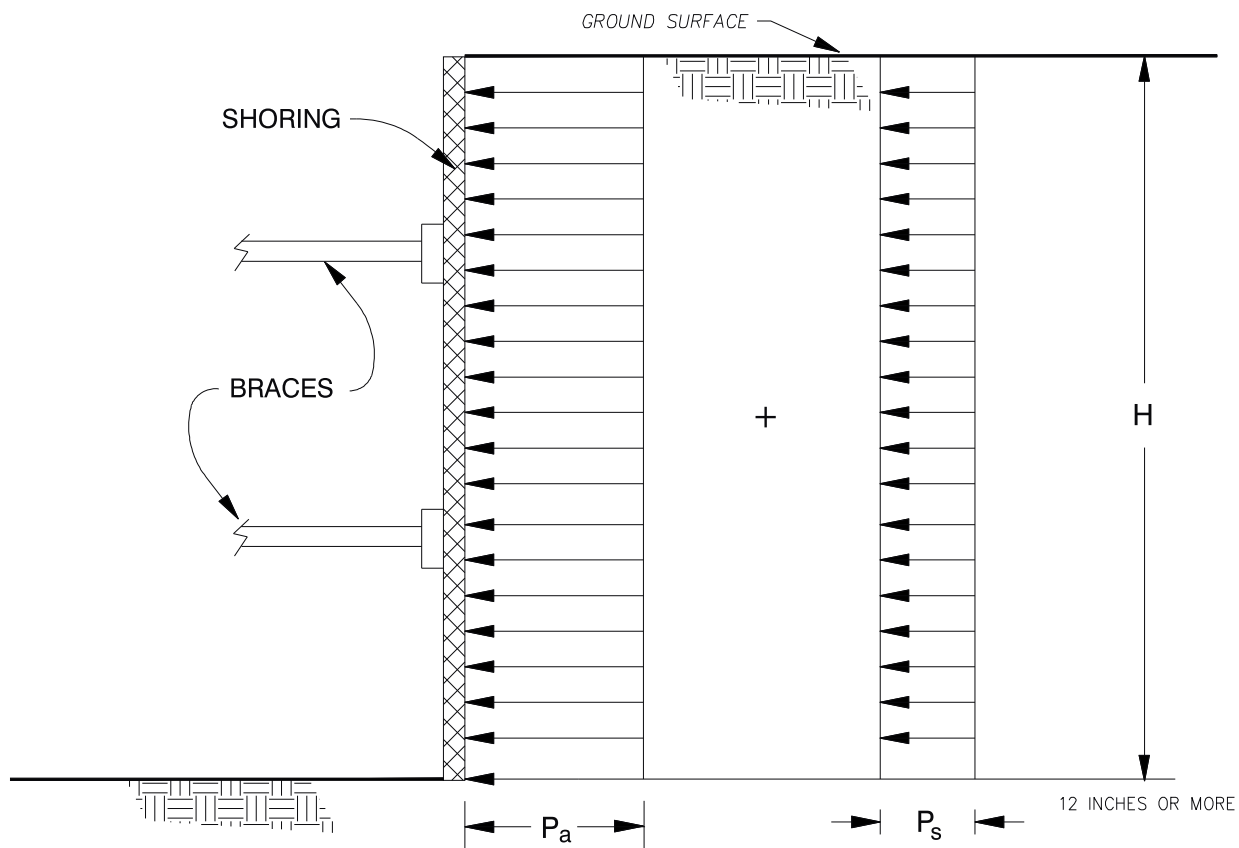


FIGURE 2

BORING LOCATION

48TH PLACE AND EAST FLOWER STREET DRAINAGE IMPROVEMENTS
PHOENIX, ARIZONA



NOTES:

1. APPARENT LATERAL EARTH PRESSURE, P_a
 $P_a = 30H$ psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
 $P_s = 120$ psf
3. ASSUMES GROUNDWATER IS NOT PRESENT
4. SURCHARGES FROM EXCAVATED SOIL OR CONSTRUCTION MATERIALS ARE NOT INCLUDED
5. H IS IN FEET

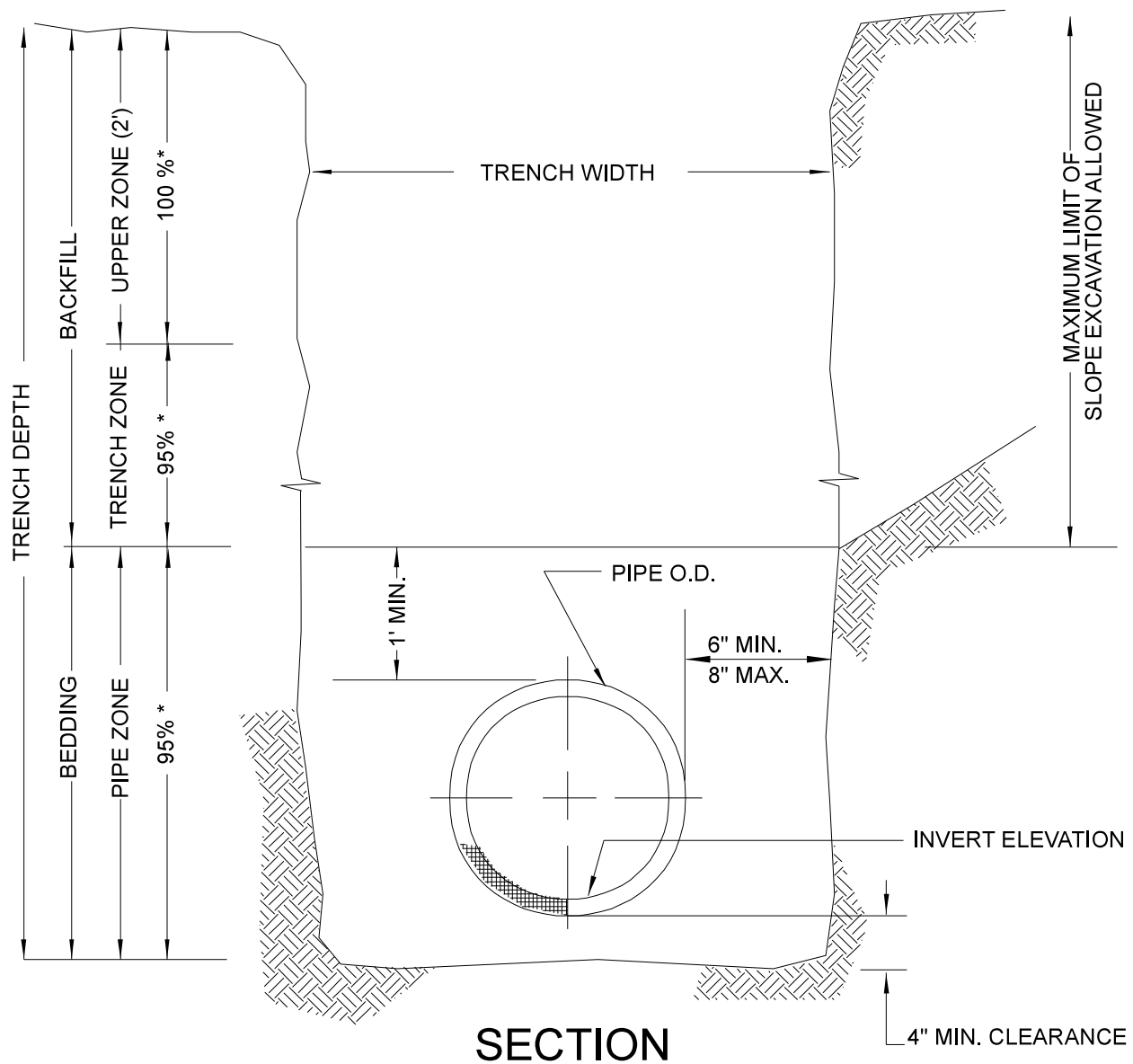
NOT TO SCALE

FIGURE 3

LATERAL EARTH PRESSURES FOR BRACED EXCAVATION IN GRANULAR SOILS

48TH PLACE AND EAST FLOWER STREET DRAINAGE IMPROVEMENTS
 PHOENIX, ARIZONA

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NOTE

* Indicates minimum relative compaction (see report for details).

Upper zone required for pavement areas only.

Diagram not drawn to scale.

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE.

FIGURE 4

PIPE BEDDING GUIDELINES

48TH PLACE AND EAST FLOWER STREET DRAINAGE IMPROVEMENTS
PHOENIX, ARIZONA



APPENDIX A

Boring Log

APPENDIX A

BORING LOG

Field Procedure for the Collection of Disturbed Samples

Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples

Bulk samples of representative earth materials were obtained from the exploratory boring. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler

Disturbed drive samples of earth materials were obtained by means of a SPT sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven up to 18 inches into the ground with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the log are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed, and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples

Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler

The sampler, with an external diameter of 3.0 inches, was lined with 1-inch long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D3550. The approximate length of the fall, the weight of the hammer or bar, and the number of blows per foot of driving are presented on the boring log as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

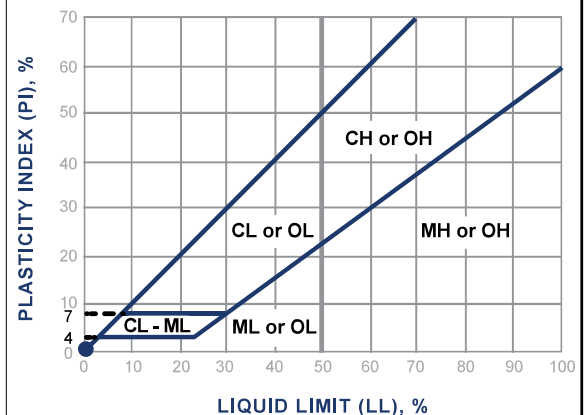
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve	GRAVEL more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
		GRAVEL with FINES more than 12% fines	GP-GC	poorly graded GRAVEL with
			GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
		SAND with FINES more than 12% fines	SP-SC	poorly graded SAND with clay
			SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	SILT and CLAY liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
		Highly Organic Soils	PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.075 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.075"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consistency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

BORING LOG EXPLANATION SHEET

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
	Bulk	Driven						
0								<p>Bulk sample.</p> <p>Modified split-barrel drive sampler.</p> <p>No recovery with modified split-barrel drive sampler.</p> <p>Sample retained by others.</p> <p>Standard Penetration Test (SPT).</p> <p>No recovery with a SPT.</p> <p>Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.</p> <p>No recovery with Shelby tube sampler.</p> <p>Continuous Push Sample.</p> <p>Seepage.</p> <p>Groundwater encountered during drilling.</p> <p>Groundwater measured after drilling.</p>
5			XX/XX					
10								
15							SM	<p>MAJOR MATERIAL TYPE (SOIL):</p> <p>Solid line denotes unit change.</p>
							CL	<p>Dashed line denotes material change.</p> <p>Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Shear Bedding Surface</p>
20								<p>The total depth line is a solid line that is drawn at the bottom of the boring.</p>

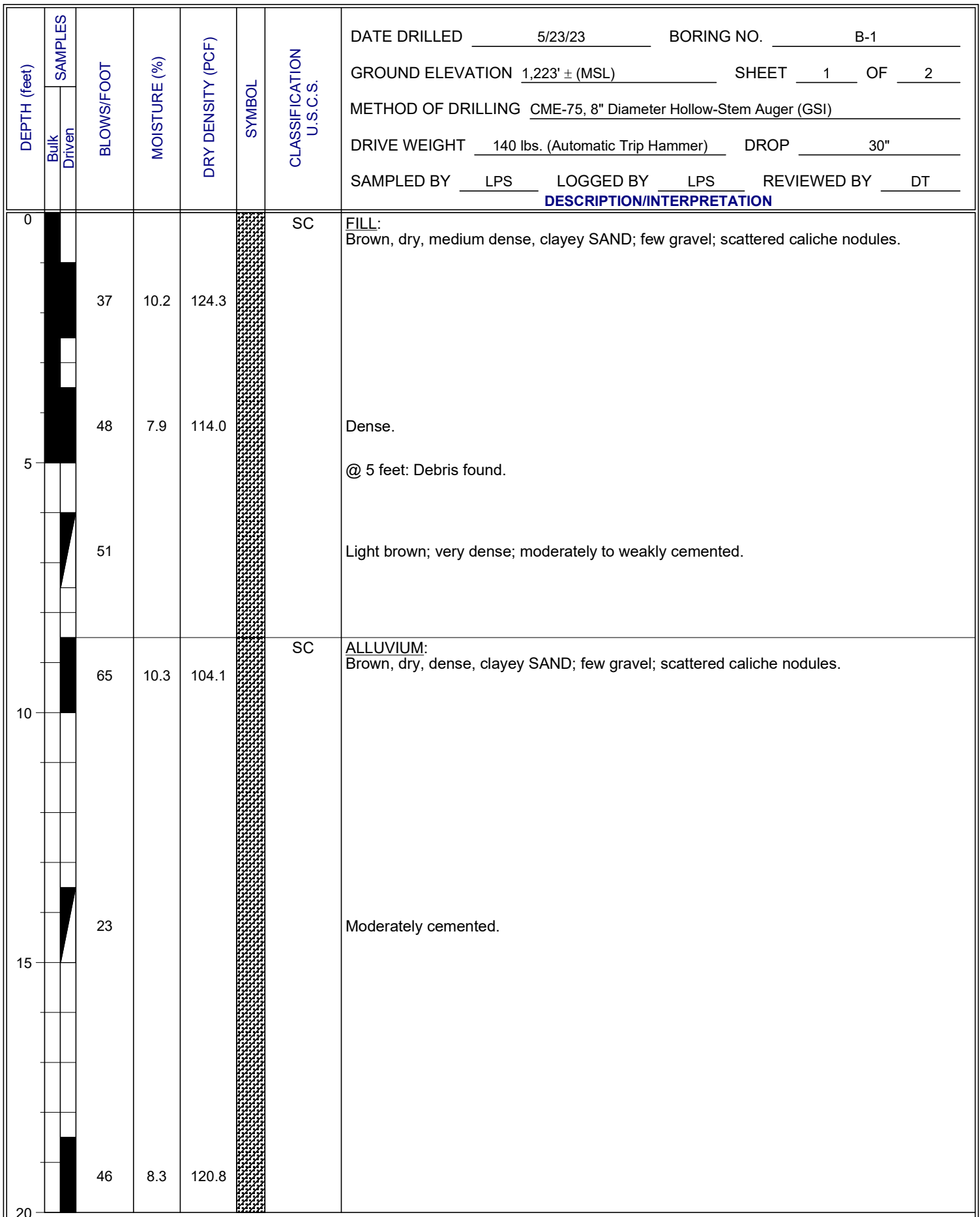


FIGURE A- 1

DEPTH (feet)	SAMPLES		BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED <u>5/23/23</u> BORING NO. <u>B-1</u> GROUND ELEVATION <u>1,223' ± (MSL)</u> SHEET <u>2</u> OF <u>2</u> METHOD OF DRILLING <u>CME-75, 8" Diameter Hollow-Stem Auger (GSI)</u> DRIVE WEIGHT <u>140 lbs. (Automatic Trip Hammer)</u> DROP <u>30"</u> SAMPLED BY <u>LPS</u> LOGGED BY <u>LPS</u> REVIEWED BY <u>DT</u>		
	Bulk	Driven						DESCRIPTION/INTERPRETATION		
20								Total Depth = 20 feet. Groundwater not encountered during drilling. Backfilled on 5/23/23 shortly after completion of drilling. <u>Notes:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.		
25										
30										
35										
40										

FIGURE A- 2



APPENDIX B

Laboratory Testing

APPENDIX B

LABORATORY TESTING

Classification

Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D2488. Soil classifications are indicated on the log of the exploratory boring in Appendix A.

In-Place Moisture and Density Tests

The moisture content and dry density of relatively undisturbed samples obtained from the exploratory boring were evaluated in general accordance with ASTM D2937. The test results are presented on the log of the exploratory boring in Appendix A.

Gradation Analysis

Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D422. The grain-size distribution curves are shown on Figure B-1. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

Atterberg Limits

Atterberg Limits Tests were performed on selected representative fine-grained soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D4318. These test results were utilized to evaluate the soil classification in accordance with the USCS. The test results and classifications are shown on Figure B-2.

Maximum Dry Density

Tests were performed on selected representative soil samples to evaluate the laboratory compaction characteristics in general accordance with ASTM D698. These test results were utilized to evaluate the relationship between maximum dry density and optimum moisture content for soils compacted using standard effort. The test results are shown on Figure B-3.

Consolidation Tests

Consolidation testing was performed on a selected relatively undisturbed soil sample in general accordance with ASTM D2435. The sample was inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the testing are summarized on Figure B-4.

Direct Shear Tests

Direct shear testing was performed on a relatively undisturbed sample in general accordance with ASTM D3080 to evaluate the shear strength characteristics of selected materials. The sample was inundated during shearing to represent adverse field conditions. The results are shown on Figure B-5.

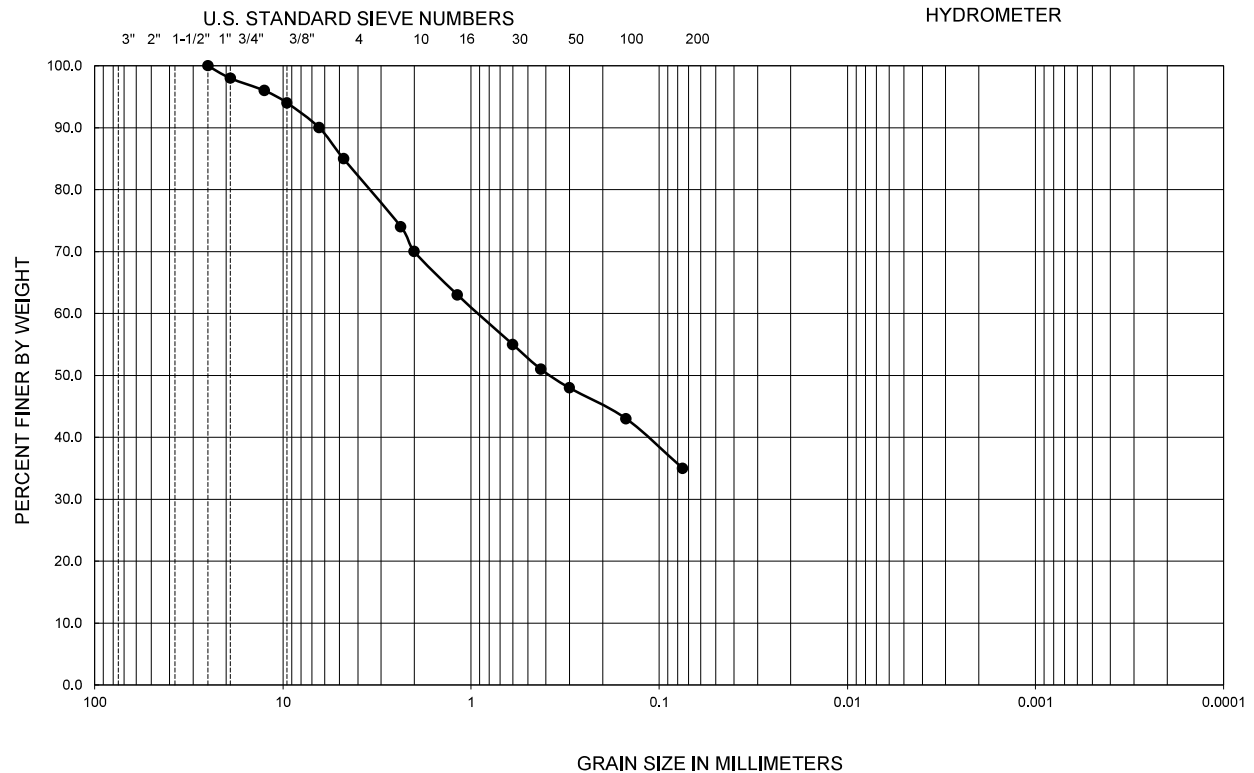
Swell Tests

Swell testing was performed on selected samples in general accordance with ASTM D4546 to evaluate the expansion characteristics of selected materials. The samples were inundated to represent adverse field conditions. The test results are shown on Figure B-6.

Soil Corrosivity Tests

Soil pH and minimum resistivity tests were performed on a representative sample in general accordance with Arizona test method, ARIZ 236c. The chloride content of the selected sample was evaluated in general accordance with ARIZ 736. The sulfate content of the selected sample was evaluated in general accordance with ARIZ 733. The test results are shown on Figure B-7.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY

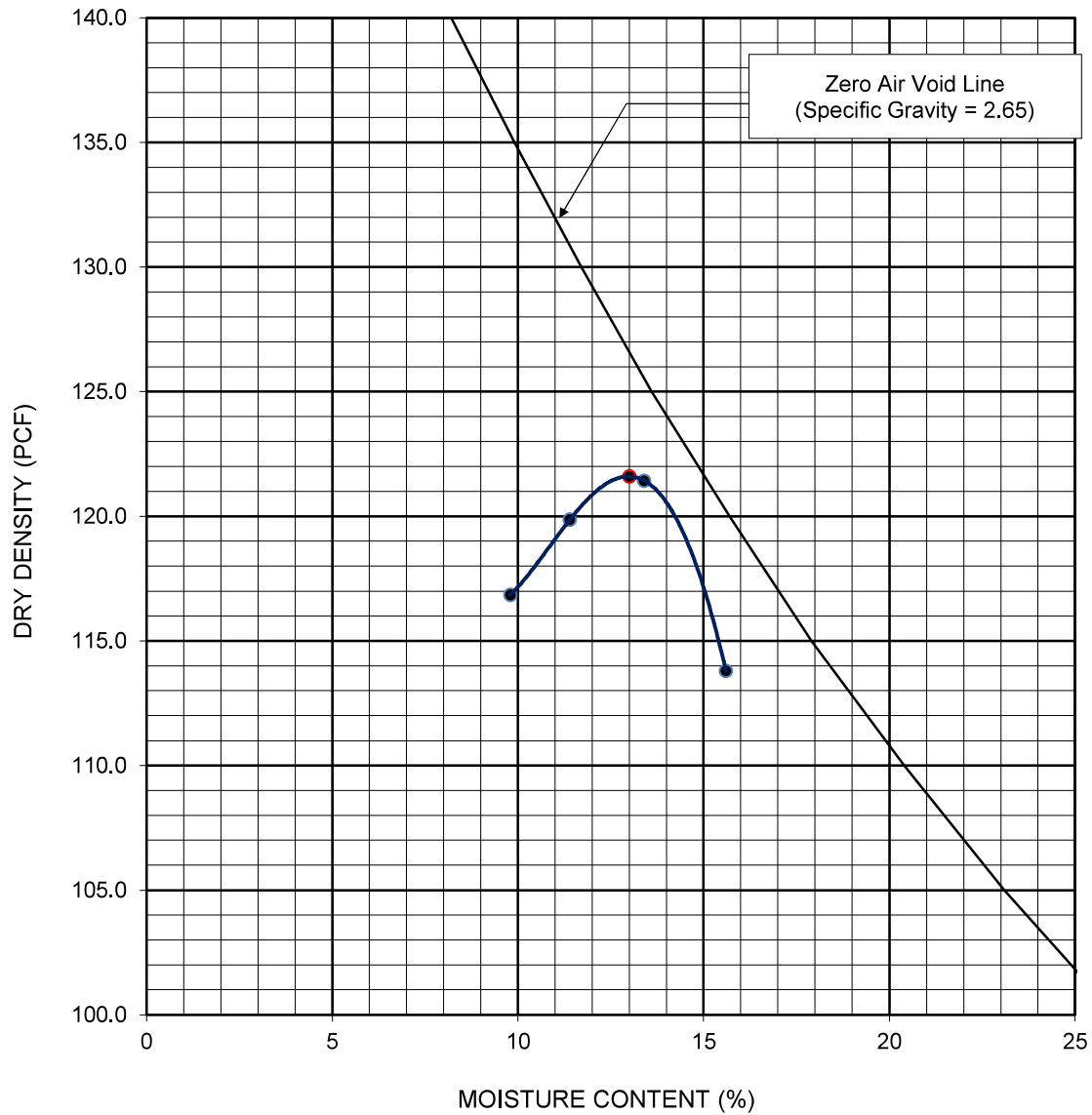


Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D ₁₀	D ₃₀	D ₆₀	C _u	C _c	Passing No. 200 (percent)	USCS
●	B-1	0.0-5.0	40	23	17	--	--	0.91	--	--	35.0	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM C136 / D422

FIGURE B-1

GRADATION TEST RESULTS



Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
B-1	0.0-5.0	SC	121.6	13.0
Dry Density and Moisture Content Values Corrected for Oversize (ASTM D 4718)			126	11

PERFORMED IN GENERAL ACCORDANCE WITH

☐ ASTM D 1557

☒ ASTM D 698

METHOD

☒ A

☐ B

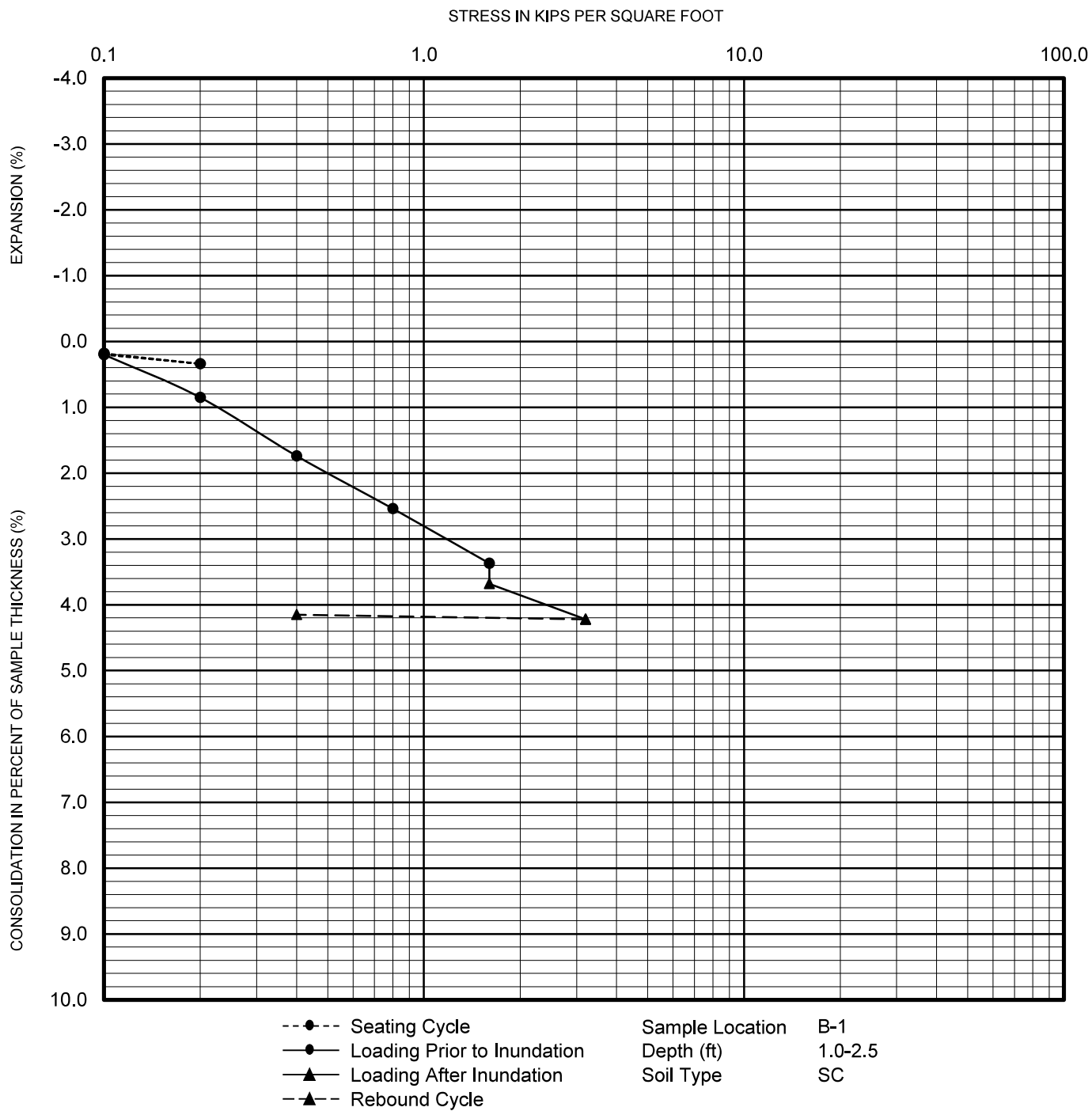
☐ C

FIGURE B-3

MAXIMUM DENSITY RESULTS

48TH PLACE AND EAST FLOWER STREET DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435/4546

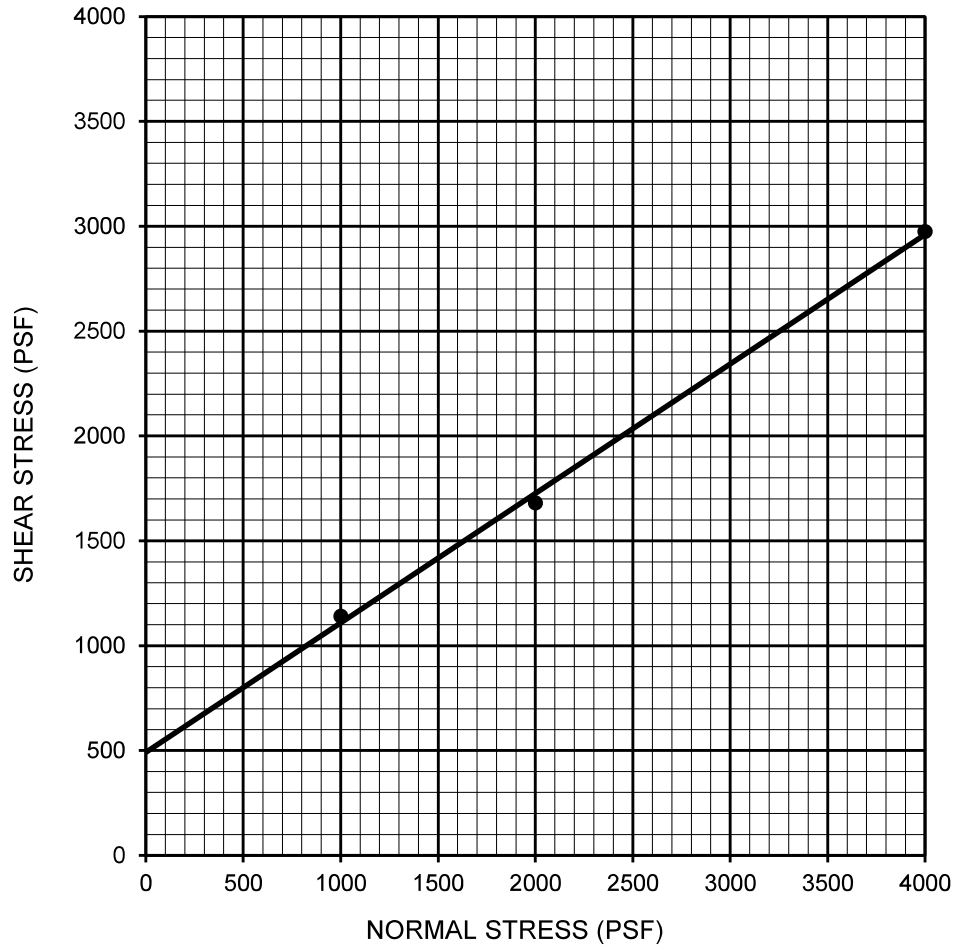
FIGURE B-4

CONSOLIDATION TEST RESULTS

48TH PLACE AND EAST FLOWER STREET DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA

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Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
UNDISTURBED	—●—	B-1	3.5-5.0	Peak	492	32	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-5

DIRECT SHEAR TEST RESULTS

48TH PLACE AND EAST FLOWER STREET DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA

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SAMPLE LOCATION	SAMPLE DEPTH (ft)	U.S.C.S	SWELL (%)
B-1	1.0-2.5	SC	0.4

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4546

FIGURE B-6

SWELL TEST RESULTS

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH ¹	RESISTIVITY ¹ (Ohm-cm)	SULFATE CONTENT ² (ppm) (%)		CHLORIDE CONTENT ³ (ppm)
B-1	0.0-5.0	8.9	385	981	0.0981	1365
SC-1	0.0-3.0	9.4	1,061	7	0.0007	314
SC-2	0.0-3.0	9.3	1,261	3	0.0003	66

¹ PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 236e

² PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 733b

³ PERFORMED IN GENERAL ACCORDANCE WITH ARIZONA TEST METHOD 736b

FIGURE B-7

CORROSIVITY TEST RESULTS

48TH PLACE AND EAST FLOWER STREET DRAINAGE IMPROVEMENTS

PHOENIX, ARIZONA



3202 East Harbour Drive | Phoenix, Arizona 85034 | p. 602.243.1600

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Ninyo & Moore
Geotechnical & Environmental Sciences Consultants