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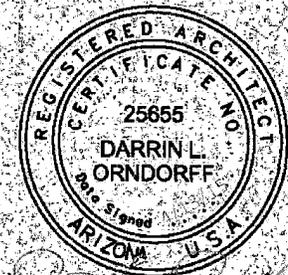
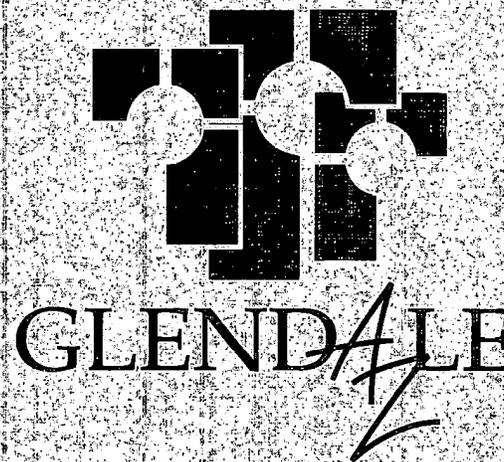
CITY CLERK
ORIGINAL

PROJECT SPECIFICATIONS AND CONTRACT DOCUMENTS

PROJECT NO. 141511

CITY OF GLENDALE TRANSIT CENTER

APRIL 2015



CITY OF GLENDALE

ENGINEERING DEPARTMENT

5850 W. Glendale Avenue, Glendale, Arizona, 85301 (623) 930-3630

PROJECT SPECIFICATIONS AND CONTRACT DOCUMENTS

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NOTICE TO CONTRACTORS

Sealed bids shall be either mailed to the City of Glendale Engineering Department, 5850 West Glendale Avenue, Glendale, Arizona, 85301, or hand-delivered to the Engineering Department office, third floor, 5850 West Glendale Avenue, Glendale, Arizona, for furnishing all plant, material, equipment and labor, and to complete construction of: **PROJECT NO. 141511 - CITY OF GLENDALE TRANSIT CENTER**. This project will provide two (2) new bus pullouts and a new steel canopy to shelter cast-in-place concrete seating walls and metal benches. The work includes the removal of approximately 353 square yards of asphalt pavement, and the removal and replacement of approximately 130 lineal feet of curb and gutter, and 1,410 square yards of concrete paving.

Bids must be received by the Engineering Department of the City of Glendale no later than 3:00 P.M., MAY 14, 2015. Any bid received after that time will not be considered and will be returned to the bidder. At that time, the bids will be publicly opened and read aloud in the Engineering Department Conference Room, 5850 West Glendale Avenue, Glendale, Arizona.

A pre-bid conference will be held on MAY 6, 2015, at 10:00 A.M., in Conference Room B-2, at City Hall, 5850 West Glendale Avenue, Glendale, Arizona. Bidders, contractors, and other interested parties are invited to attend this conference which will be conducted by the Owner and Engineer to answer any questions.

Plans, specifications and contract documents may be examined, and copies may be obtained at City of Glendale Engineering Department, 5850 West Glendale Avenue, Glendale, Arizona. A non-refundable charge of \$40.00 shall be paid for each set of plans and specifications issued from this office.

Each bid shall be in accordance with the plans, specifications and contract documents, and shall be set forth and submitted on the BID DOCUMENTS included with the project specifications book. The BID DOCUMENTS may be removed from the project specifications book and submitted independently of such book. Each bid shall be accompanied by a proposal guarantee, in the form of a certified or cashier's check or bid bond for ten percent (10%) of the amount of bid, made payable to the order of the City of Glendale, Arizona, to insure that the successful bidder will enter into the contract if awarded to him and submit the required Certificate of Insurance, Payment Bond and Performance Bond. All proposal guarantees, except those of the three lowest qualified bidders, will be returned immediately following the opening and checking of proposals. The proposal guarantees of the three lowest qualified bidders will be returned immediately after the contract documents have been executed by the successful bidder. The proposal guarantee shall be declared forfeited as liquidated damages if the successful bidder refuses to enter into said contract or submit the Certificate of Insurance, Payment Bond and Performance Bond after being requested to do so by the City of Glendale, Arizona.

The City of Glendale reserves the right to reject any or all bids or waive any informality or irregularity in a bid. No bidder may withdraw his bid for a period of fifty (50) days after opening and reading of the bids.

The City of Glendale is an equal opportunity employer and minority business enterprises and women's business enterprises are encouraged to submit bids.

CITY OF GLENDALE, ARIZONA

INFORMATION FOR BIDDERS

1. **ELIGIBILITY OF CONTRACTORS:** When calling for bids for contracts for public work to be performed on behalf of the State or any political subdivision thereof, which will be paid for from public funds, no bid shall be considered for performance of a contract, including construction work which is not submitted by a bidder duly licensed as a contractor in this State. No bid shall be awarded to any contractor or entity not authorized to do business in the State of Arizona by the Arizona Corporation Commission, as required by statute.

2. **PROPOSAL:** Bids to receive consideration shall be made in accordance with the following instructions:

(a) Before submitting a bid, bidders shall carefully examine the plans and specifications and contract documents, visit the site of the work, fully inform themselves as to all existing conditions and limitations.

(b) Bids shall be submitted on the "PROPOSAL" forms provided and delivered to the City of Glendale Engineering Department on or before the day and hour set in the "NOTICE TO CONTRACTORS," as published. Bids shall be enclosed in a sealed envelope marked on the outside lower right-hand corner indicating:

1. The bidder's name and address.
2. The project number.
3. The title of the project.
4. The time and date the bids are to be received.

(c) It is the sole responsibility of the bidder to see that his bid is received in proper time. Any bids received after the scheduled closing time for receipt of bids will be returned to the bidder unopened.

(d) The signatures of all persons shall be in longhand. Any interlineations, alterations, or erasures must be initialed by the signer of the bid.

(e) Bids shall not contain any recapitulations of the work to be done. No oral, telegraphic, telephonic, or modified proposals will be considered.

3. **BID SECURITY:** Each proposal shall be accompanied by a proposal guarantee in the form of a certified or cashier's check or bid bond, with a properly executed Power of Attorney attached, in an amount equal at least to ten percent (10%) of the proposal payable without condition to the City. If a bid bond is submitted with the bid it shall be issued by a company licensed with the Arizona Department of Insurance and authorized to issue such bonds in this state. **NO BONDS ISSUED BY INDIVIDUAL SURETIES WILL BE ACCEPTED. The company issuing the bid bond shall have a rating of not less than A- in the BEST rating available at the time this project was let to bid.** The proposal guarantee shall guarantee that the bidder, if awarded the contract, will, within ten (10) working days after the award, execute such contract in accordance with the proposal and in manner and form required by the contract documents, and will furnish good and sufficient bond for the faithful performance of the same, a payment bond and a certificate of insurance. The bid securities of the three (3) lowest bidders will be retained until the contract is awarded, or other disposition made thereof. The bid securities of all bidders, except the three (3) lowest, will be returned promptly after the canvass of bids. In the event the Contractor fails, within ten (10)

working days after the award, to execute said Contract and deliver the Performance and Labor and Material Payment Bonds and the Certificate of Insurance, the Bid Security shall become the property of the City.

4. **WITHDRAWAL OF BID:** Any bidder may withdraw his bid, either personally, by telegram or by written request, at any time prior to the scheduled closing time for receipt of bids. No bid may be withdrawn by telephone. Any bid withdrawn will not be opened and will be returned to the bidder. After opening and reading of the bids, no bidder may withdraw his bid for a period of fifty (50) days from the date of opening and reading.

5. **LATE BIDS:** Bids received after the scheduled closing time for receipt of bids, as contained in the "Notice to Contractors," will not be considered and will be returned to the bidder.

6. **AWARD OR REJECTION OF BIDS:** The contract will be awarded to the lowest and best qualified responsive bidder complying with these instructions and with the "NOTICE TO CONTRACTORS." The City of Glendale, Arizona, however, reserves the right to accept or reject any or all bids or to waive any or all informalities or irregularities in the bid. Alternates may be accepted depending upon the availability of City funds. Accepted alternates will be considered in determining the lowest responsive and responsible bidder.

7. **BIDDERS INTERESTED IN MORE THAN ONE BID:** No person, firm or corporation shall be allowed to make, file, or be interested in more than one (1) bid for the same work unless alternate bids are called for in the specifications or any addenda. A person, firm, or corporation who has submitted a sub-proposal to a bidder, or who has quoted prices on materials to a bidder is not thereby disqualified from submitting a sub-proposal or quoting prices to other bidders.

8. **CONTRACT AND BONDS:** The form of contract, which the successful bidder as Contractor will be required to execute and the forms of bonds which he shall be required to furnish are included in the contract documents and should be carefully examined by the bidder. The successful bidder shall use the forms provided or such other forms as are acceptable by the City. The Contract and Performance and Labor and Material Payment Bonds will be executed in three (3) original counterparts. All bonds shall be issued by companies licensed with the Arizona Department of Insurance and authorized to issue such bonds in this state. **NO BONDS ISSUED BY INDIVIDUAL SURETIES WILL BE ACCEPTED. The company issuing any bond shall have a rating of not less than A- in the BEST rating available at the time this project was let to bid.**

9. **INSURANCE REQUIREMENTS:** Contractor, and each Sub-contractor performing work or providing materials related to this Agreement must procure and maintain the insurance coverages described (collectively, "Contractor's Policies"), until each Parties' obligations under this Agreement are completed. Contractor must at all times relevant hereto carry a commercial general liability policy with a combined single limit of at least \$1,000,000 per occurrence and \$2,000,000 annual aggregate. **Contracts in excess of \$250,000 shall require \$2,000,000 single occurrence/\$5,000,000 annual aggregate.**

Sub-contractors must at all times relevant hereto carry a general commercial liability policy with a combined single limit of at least \$1,000,000 per occurrence.

This commercial general liability insurance must include independent contractors' liability, contractual liability, broad form property coverage, products and completed operations, XCU

hazards if requested by the City, and a separation of insurance provision.

These limits may be met through a combination of primary and excess liability coverage.

Auto. A business auto policy providing a liability limit of at least \$1,000,000 per accident for Contractor and \$1,000,000 per accident for Sub-contractors and covering owned, non-owned and hired automobiles.

Workers' Compensation and Employer's Liability. A workers' compensation and employer's liability policy providing at least the minimum benefits required by Arizona law.

Equipment Insurance. Contractor must secure, pay for, and maintain all-risk insurance as necessary to protect the City against loss of owned, non-owned, rented or leased capital equipment and tools, equipment and scaffolding, staging, towers and forms owned or rented by Contractor or its Sub-contractors.

10. SUBCONTRACTORS LISTING AND CERTIFICATION OF CONTRACT COMPLIANCE: The contractor will be required to furnish the form of subcontractors listing and certification of contract compliance with the executed contract documents. This information is requested for tracking and insurance purposes only.

11. INTERPRETATION OF PLANS AND DOCUMENTS: If any person contemplating a bid for proposed contract is in doubt as to the true meaning of any part of the plans, specifications, or other proposed contract documents, or finds discrepancies in or omissions from the plans and specifications, he may submit to the Engineering Department, a written request for an interpretation or correction thereof. The person submitting the request will be responsible for its prompt delivery. Questions received less than ninety-six (96) hours before the bid opening time may not be answered. Any interpretation or correction of the documents will be made only by Addendum, duly issued and a copy of such Addendum will be mailed or delivered to each person receiving a set of such documents. The City of Glendale will not be responsible for any other explanations or interpretations of the proposed documents.

12. CHANGES TO PLANS AND DOCUMENTS: Any changes to the plans and documents shall be made only by Addendum. No verbal or other changes to the plans and documents will be valid. A copy of each Addendum will be mailed or delivered as provided in Section 13 below.

13. ADDENDUM: Any addenda will be faxed, mailed or delivered to all who are known by the City to have received a complete set of bid documents, and to offices where bid documents have been filed for review purposes. It is the responsibility of each bidder to ascertain that he has received all addenda issued by telephoning the office identified in the NOTICE TO CONTRACTORS as the location where bid documents are available prior to submitting his bid.

Bidders shall acknowledge all addenda in the appropriate location on the "PROPOSAL" form. Failure to acknowledge receipt of Addenda shall render the bid proposal non-responsive and it will be rejected.

14. ASSIGNMENT OF CONTRACT: No assignment by the Contractor of any contract to be entered into hereunder, or any part thereof, or of funds to be received thereunder by the Contractor, will be recognized by the Owner by the Owner unless such assignment has had prior approval of the Owner, and the Surety has been given due notice of such assignment in writing and has consented

thereto in writing.

15. **PLANS AND SPECIFICATIONS TO SUCCESSFUL BIDDER:** The successful bidder may obtain five (5) sets of plans and specifications for this project from the City.

16. **TIME OF COMPLETION:** The Contractor shall commence work under this project on or before the tenth day following receipt of the Notice to Proceed for that project from the City of Glendale and shall fully complete all work under the project within sixty days (60) consecutive calendar days from and including the date of receipt of such Notice to Proceed. Time is of the essence in the completion of all work required under this contract. The Contractor shall, at all times, during the continuance of the contract, prosecute the work with such force and equipment as is sufficient to complete all work within the time specified.

17. **CITY OF GLENDALE TRANSACTION PRIVILEGE TAX:** The City of Glendale transaction privilege tax shall **NOT** be waived under the provisions of this contract. The current privilege tax rate can be obtained from the City of Glendale Sales Tax and Licenses Department. The Contractor shall be responsible for reporting and payment of all city, county, state or federal taxes.

18. **PRE-BID CONFERENCE:** A pre-bid conference will be held on May 6, 2015, at 10:00 a.m., in Conference Room B-2, at City Hall, 5850 West Glendale Avenue, Glendale, Arizona. Bidders, contractors, and other interested parties are invited to attend this conference which will be conducted by the Owner and Engineer to answer any questions.

19. **ALTERNATES:** Alternate proposals will not be considered unless called for in the documents or any addenda thereto. When alternates are requested, all requested alternates or alternate bid items, unless otherwise stated, shall be bid. If no change in the base bid will occur with the alternate, enter "No Change."

20. **APPROVAL OF SUBSTITUTIONS:** The materials, products and equipment described in the Documents and Addenda establish a standard or required function, dimension, appearance and quality to be met by any proposed substitution. No substitute will be considered, before bid opening, unless written request for approval has been received by the City Engineer at least ten (10) working days prior to the scheduled closing time for receipt of bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including any drawings, cuts, performance and test data and any other information necessary for evaluation of the substitute. Bidder shall not be entitled to approval of a substitute.

If a substitute is approved, the approval shall be set forth in an Addendum. Bidders shall not rely upon approvals made in any other manner.

21. **USE OF "EQUALS":** When the specifications for materials, articles, products and equipment state "or equal," contractor may bid upon, and use materials, articles, products and equipment which will perform equally the duties imposed by the general design. The City Engineering Department will have the final approval of all materials, articles, products and equipment proposed to be used as an "equal." It shall not be purchased or installed without the prior written approval from the City Engineering Department.

Approvals for "equals," before bid opening, may be requested in writing to the City Engineering

Department for approval. Requests must be received at least ten (10) days prior to the date set for opening the Bid Proposals. The request shall state the name of the material, article, product or equipment for which the item is sought to be considered an equal and a complete description of the proposed equal including any drawings, cuts, performance and test data and any other information necessary for approval of the equal. All approvals will be issued in the form of an addendum.

22. EXAMINATION OF CONTRACT DOCUMENTS AND VISIT SITE: Before submitting a Bid Proposal, bidders should carefully examine the Contract Documents, visit the site of the work, fully inform themselves as to all existing conditions and limitations. No consideration will be granted for any alleged misunderstanding of the material, articles or piece of equipment to be furnished or work to be done. It is understood that the tender of the Bid Proposal carries with it the agreement to all items and conditions referred to herein or indicated in the Contract Documents.

23. BIDDERS IN DEFAULT: No bid will be awarded to any person, firm or corporation that is not authorized by the Arizona Corporation Commission to do business in the State of Arizona, in arrears or is in default to the City of Glendale upon any debt or contract, or that is a defaulter as surety or otherwise upon any obligation to the City of Glendale, or has failed to faithfully perform any previous contract with the City of Glendale.

END OF INFORMATION FOR BIDDERS

PROPOSAL

Place City of Glendale

Date 05.14.15

Proposal of TSG Constructors, LLC, a ^{limited liability company} ~~Corporation~~ organized and existing under the laws of the State of Arizona. a partnership consisting of _____; or an individual trading as _____.

TO THE HONORABLE MAYOR AND COUNCIL
CITY OF GLENDALE
GLENDALE, ARIZONA

Gentlemen:

The undersigned hereby proposes and agrees to furnish any and all required labor, materials, construction equipment, transportation and services for the construction of: **PROJECT 141511 - CITY OF GLENDALE TRANSIT CENTER**, in strict conformity with the plans and specifications for the following unit prices:

(Extension of these unit prices on the basis of estimated quantities and the totaling of these extensions are for the purpose of comparing bids only. The mathematics of such extensions and totaling will be checked and corrected by the Engineering Department, before evaluating the bids, and the lowest of such corrected and checked totals will determine the lowest bids.)

BID SCHEDULE

PROJECT NUMBER: 141511

PROJECT NAME: Glendale Transit Center Phase II

Item No.	Description	Quantity	Unit	Unit Cost	Total Cost
1	Arizona Pollutant Discharge Elimination System	1	LS	4,000 ⁰⁰	4,000 ⁰⁰
2	Potholing	4	EA	1,500⁰⁰ 400 ^{MO}	6,000⁰⁰ 1,600 ^{MO}
3	Site Grading	1	LS	4,000 ⁰⁰	4,000 ⁰⁰
4	Subgrade Preparation	1,524	SY	27 ⁰⁰	41,148 ⁰⁰
5	Untreated Base, Aggregate Base Course	36	Tons	45 ⁰⁰	1,620 ⁰⁰
6	Asphalt Concrete Surface Course, SHRP 3/8" (9.5mm)	22	Tons	600 ⁰⁰	13,200 ⁰⁰
7	Portland Cement Concrete Pavement, Class A, 8" Thick	1,454	SY	82^{MO} 58 ^{MO}	119,228⁰⁰ 84,332 ^{MO}
8	Concrete Sidewalk, Standard Detail 230	748	SY	50 ⁰⁰	37,400 ⁰⁰
9	Sidewalk Scoop Ramp, See Sheet C112	2	EA	2,000 ⁰⁰	4,000 ⁰⁰
10	Combined Concrete Curb & Gutter, Standard Detail 220, Type 'A', H=6"	474	LF	20 ⁰⁰	9,480 ⁰⁰
11	Decorative Integral Colored Concrete	223	SY	72 ⁰⁰	16,056 ⁰⁰
12	Remove Portland Cement Concrete Single Curb and Curb and Gutter	268	LF	8 ⁰⁰	2,144 ⁰⁰
13	Remove Asphalt Concrete Pavement	1259	SY	12 ⁰⁰	15,108 ⁰⁰
14	Pavement Marking (4" Wide Yellow Stripe)	292	LF	1 ⁰⁰	292 ⁰⁰
15	Pavement Marking (4" Wide White Stripe)	427	LF	1 ⁰⁰	427 ⁰⁰
16	Traffic Control	1	LS	10,600 ⁰⁰	10,600 ⁰⁰
17	Remove Concrete Pavement	1460	SY	24 ⁰⁰	35,040 ⁰⁰
18	Adjust Frame & Cover to Grade, MAG Standard Detail 391-1	1	EA	600 ⁰⁰	600 ⁰⁰
19	Adjust Manhole Frame & Cover, MAG Standard Detail 422	3	EA	700 ⁰⁰	2,100 ⁰⁰
20	Controlled Low Strength Material	4	CY	160 ⁰⁰	640 ⁰⁰
21	Bus Stop Sign	3	EA	250 ⁰⁰	750 ⁰⁰
22	Mobilization	1	LS	40,000 ⁰⁰	40,000 ⁰⁰
23	Construction Contingency	1	LS	25,000	\$25,000

24	Speed Cushion, COG Standard Detail G-350	2	EA	<u>5,100⁰⁰</u>	<u>10,200⁰⁰</u>
25	Concrete Valley Gutter, Standard Detail 240	46	SF	<u>11⁰⁰</u>	<u>506⁰⁰</u>
26	Combined Concrete Curb and Gutter, Standard Detail 220, Type "C"	20	LF	<u>34⁰⁰</u>	<u>680⁰⁰</u>
27	Sawcut & Remove Exist Valley Gutter	4	SY	<u>11520</u>	<u>460⁰⁰</u>
28	Trees (36" Box)	2	EA	<u>700⁰⁰</u>	<u>1,400⁰⁰</u>
29	Shrubs (5 Gallon)	45	EA	<u>14⁰⁰</u>	<u>630⁰⁰</u>
30	1" Screened Decomposed Granite	635	SF	<u>149</u>	<u>635⁰⁰</u>
31	Pipe - Schedule 40 PVC - 3/4"	196	LF	<u>2⁰⁰</u>	<u>392⁰⁰</u>
32	Emitter - Multi-Outlet Assembly	2	EA	<u>1320</u>	<u>26⁰⁰</u>
33	Emitter - Single-Outlet Assembly	45	EA	<u>720</u>	<u>315⁰⁰</u>
34	Drip Flush End Cap Assembly	1	EA	<u>27,000⁰⁰</u>	<u>27⁰⁰</u>
35	Miscellaneous Demolition	1	LS	<u>14,000⁰⁰</u>	<u>14,000⁰⁰</u>
36	Bus Shelter, Site Walls and Seating	1	LS	<u>197,192</u>	<u>197,172</u>
37	Bus layover seating, site walls and sidewalk	1	LS	<u>12,000⁰⁰</u>	<u>12,000⁰⁰</u>
38	"Arrowhead Towne Center" Sign (allowance)			<u>\$12,000</u>	<u>\$12,000</u>
39	Transit Map Sign (allowance)			<u>\$17,000</u>	<u>\$17,000</u>

GRAND TOTAL

617,000

The undersigned hereby declares that he has visited the site(s) and has carefully examined the contract documents relating to the work covered by the above bid or bids.

Upon receipt of notice of the acceptance of this bid, we will execute the formal contract attached within ten (10) days, and will deliver a one hundred percent (100%) Performance Bond for the faithful performance of this Contract, together with a one hundred percent (100%) Payment Bond and Certificate of Insurance.

The bid security attached, with endorsement, in the sum of ten percent (10%) of the total bid, is to become the property of the City of Glendale, Arizona, in the event the Contract and Bonds are not executed within the time set forth, as liquidated damages for the delay and additional work caused thereby.

The undersigned has checked carefully all the above figures and understands that the City of Glendale, Arizona, will not be responsible for any errors or omissions on the part of the undersigned in making up this bid.

The undersigned understands that the Mayor and Council of the City of Glendale, Arizona, reserves the right to reject any or all bids or to waive any informalities or irregularities in the bid.

Respectfully submitted,

Arizona Contractor's
Classification and
License No.
204114 KB-01
291064 A

TSG Constructors, LLC
Contractor

By 
Stanley S. Showalter, Member

PO Box 71640, Phoenix, AZ 85050

(Complete business address)

Telephone Number: 623-742-0161
Fax Number 623-742-0320

Bidder shall signify receipt of all Addenda here (if any):

Addenda #1, 05.11.15 Addenda #2, 05.12.15

Failure to acknowledge receipt of all Addenda shall render the bid proposal non-responsive and will be rejected.

Acknowledged by 
Stanley S. Showalter, Member

This Construction Agreement ("Agreement") is entered into and effective between the CITY OF GLENDALE, an Arizona municipal corporation ("City"), and TSG Constructors, an Arizona LLC, authorized to do business in Arizona ("Contractor") as of the 23 day of June, 2015.

RECITALS

- A. City intends to undertake a project for the benefit of the public and with public funds that is more fully set forth in the **Notice to Contractors** and the attached **Exhibit A** ("Project");
- B. City desires to retain the services of Contractor to perform those specific duties and produce the specific work as set forth in the Project, the plans and specifications, the **Information for Bidders**, and the **Maricopa Association of Governments** ("MAG") **General and Supplemental Conditions and Provisions**;
- C. City and Contractor desire to memorialize their agreement with this document.

AGREEMENT

In consideration of the Recitals, which are confirmed as true and correct and incorporated by this reference, the mutual promises and covenants contained in this Agreement, and other good and valuable consideration, City and Contractor agree as follows:

1. Project.

1.1 Scope. Contractor will provide all services and material necessary to assure the Project is completed timely and efficiently consistent with Project requirements, including, but not limited to, working in close interaction and interfacing with City and its designated employees, and working closely with others, including other contractors, providers or consultants retained by City.

1.2 Documents. The following documents are, by this reference, entirely incorporated into this Agreement and attached Exhibits as though fully set forth herein:

- (A) Notice to Contractors;
- (B) Information for Bidders;
- (C) MAG General Conditions, Supplemental General Conditions, Special and Technical Provisions;
- (D) Proposal;
- (E) Bid Bond;
- (F) Payment Bond;
- (G) Performance Bond;
- (H) Certificate of Insurance;
- (I) Appendix; and
- (J) Plans and Addenda thereto.

Should a conflict exist between this Agreement (and its attachments), and any of the incorporated documents as listed above, the provisions of this Agreement shall govern.

1.3 Project Team.

(A) Project Manager. Contractor will designate an employee as Project Manager with sufficient training, knowledge, and experience to, in the City's opinion, to complete the project and handle all aspects of the Project such that the work produced by Contractor is consistent with applicable standards as detailed in this Agreement.

(B) Project Team.

- (1) The Project manager and all other employees assigned to the project by Contractor will comprise the "Project Team."
- (2) Project Manager will have responsibility for and will supervise all other employees assigned to the project by Contractor.

(C) Sub-contractors.

Project 141511

- (1) Contractor may engage specific technical contractor (each a "Sub-contractor") to furnish certain service functions.
- (2) Contractor will remain fully responsible for Sub-contractor's services.
- (3) Sub-contractors must be approved by the City, unless the Sub-contractor was previously mentioned in the response to the solicitation.
- (4) Contractor shall certify by letter that contracts with Sub-contractors have been executed incorporating requirements and standards as set forth in this Agreement.

2. **Schedule.** The Project will be undertaken in a manner that ensures it is completed in a timely and efficient manner. If not otherwise stated in **Exhibit A**, the Project shall be completed by no later than within ninety (90) consecutive calendar days from and including the date of receipt of the Notice to Proceed.

3. Contractor's Work.

3.1 **Standard.** Contractor must perform services in accordance with the standards of due diligence, care, and quality prevailing among contractors having substantial experience with the successful furnishing of services and materials for projects that are equivalent in size, scope, quality, and other criteria under the Project and identified in this Agreement.

3.2 **Licensing.** Contractor warrants that:

- (A) Contractor and Sub-contractors will hold all appropriate and required licenses, registrations and other approvals necessary for the lawful furnishing of services ("Approvals"); and
- (B) Neither Contractor nor any Sub-contractor has been debarred or otherwise legally excluded from contracting with any federal, state, or local governmental entity ("Debarment").
 - (1) City is under no obligation to ascertain or confirm the existence or issuance of any Approvals or Debarments or to examine Contractor's contracting ability.
 - (2) Contractor must notify City immediately if any Approvals or Debarment changes during the Agreement's duration and the failure of the Contractor to notify City as required will constitute a material default of this Agreement.

3.3 **Compliance.** Services and materials will be furnished in compliance with applicable federal, state, county and local statutes, rules, regulations, ordinances, building codes, life safety codes, or other standards and criteria designated by City.

3.4 **Coordination; Interaction.**

- (A) If the City determines that the Project requires the coordination of professional services or other providers, Contractor will work in close consultation with City to proactively interact with any other contractors retained by City on the Project ("Coordinating Entities").
- (B) Subject to any limitations expressly stated in the budget, Contractor will meet to review the Project, schedules, budget, and in-progress work with Coordinating Entities and the City as often and for durations as City reasonably considers necessary in order to ensure the timely work delivery and Project completion.
- (C) If the Project does not involve Coordinating Entities, Contractor will proactively interact with any other contractors when directed by City to obtain or disseminate timely information for the proper execution of the Project.

3.5 **Hazardous Substances.** Contractor is responsible for the appropriate handling, disposal of, and if necessary, any remediation and all losses and damages to the City, associated with the use or release of hazardous substances by Contractor in connection with completion of the Project.

Project 141511

3.6 Warranties. At any time within two years after completion of the Project, Contractor must, at Contractor's sole expense and within 20 days of written notice from the City, uncover, correct and remedy all defects in Contractor's work. City will accept a manufacturer's warranty on approved equipment as satisfaction of the Contractor's warranty under this subsection.

3.7. Bonds. Upon execution of this Agreement, and if applicable, Contractor must furnish Payment and Performance bonds as required under A.R.S. § 34-608.

4. Compensation for the Project.

4.1 Compensation. Contractor's compensation for the Project, including those furnished by its Sub-contractors will not exceed \$617,000.00, as specifically detailed in the Contractor's bid and set forth in **Exhibit B** ("Compensation").

4.2 Change in Scope of Project. The Compensation may be equitably adjusted if the originally contemplated scope of services as outlined in the Project is significantly modified by the City.

(A) Adjustments to the Scope or Compensation require a written amendment to this Agreement and may require City Council approval.

(B) Additional services which are outside the scope of the Project and not contained in this Agreement may not be performed by the Contractor without prior written authorization from the City.

5. Billings and Payment.

5.1 Applications.

(A) The Contractor will submit monthly invoices (each, a "Payment Application") to City's Project Manager and City will remit payments based upon the Payment Application as stated below.

(B) The period covered by each Payment Application will be one calendar month ending on the last day of the month.

5.2 Payment.

(A) After a full and complete Payment Application is received, City will process and remit payment within 30 days.

(B) Payment may be subject to or conditioned upon City's receipt of:

(1) Completed work generated by Contractor and its Sub-contractors; and

(2) Unconditional waivers and releases on final payment from Sub-contractors as City may reasonably request to assure the Project will be free of claims arising from required performances under this Agreement.

5.3 Review and Withholding.

City's Project Manager will timely review and certify Payment Applications.

(A) If the Payment Application is rejected, the Project Manager will issue a written listing of the items not approved for payment.

(B) City may withhold an amount sufficient to pay expenses that City reasonably expects to incur in correcting the deficiency or deficiencies rejected for payment.

(C) Contractor will provide, by separate cover, and concurrent with the execution of this Agreement, all required financial information to the City, including City of Glendale Transaction Privilege License and Federal Taxpayer identification numbers.

(D) City will temporarily withhold Compensation amounts as required by A.R.S. 34-221(C).

6. Termination.

6.1 For Convenience. City may terminate this Agreement for convenience, without cause, by delivering a written termination notice stating the effective termination date, which may not be less than 15 days following the date of delivery.

- (A) Contractor will be equitably compensated any services and materials furnished prior to receipt of the termination notice and for reasonable costs incurred.
- (B) Contractor will also be similarly compensated for any approved effort expended and approved costs incurred that are directly associated with Project closeout and delivery of the required items to the City.

6.2 For Cause. City may terminate this Agreement for cause if Contractor fails to cure any breach of this Agreement within seven days after receipt of written notice specifying the breach.

- (A) Contractor will not be entitled to further payment until after City has determined its damages. If City's damages resulting from the breach, as determined by City, are less than the equitable amount due but not paid Contractor for Service and Repair furnished, City will pay the amount due to Contractor, less City's damages.
- (B) If City's direct damages exceed amounts otherwise due to Contractor, Contractor must pay the difference to City immediately upon demand; however, Contractor will not be subject to consequential damages more than \$1,000,000 or the amount of this Agreement, whichever is greater.

7. Insurance.

7.1 Requirements. Contractor must obtain and maintain the following insurance ("Required Insurance"):

- (A) Contractor and Sub-contractors. Contractor, and each Sub-contractor performing work or providing materials related to this Agreement must procure and maintain the insurance coverages described below (collectively, "Contractor's Policies"), until each Parties' obligations under this Agreement are completed.
- (B) General Liability.
 - (1) Contractor must at all times relevant hereto carry a commercial general liability policy with a combined single limit of at least \$1,000,000 per occurrence and \$2,000,000 annual aggregate.
 - (2) Sub-contractors must at all times relevant hereto carry a general commercial liability policy with a combined single limit of at least \$1,000,000 per occurrence.
 - (3) This commercial general liability insurance must include independent contractors' liability, contractual liability, broad form property coverage, products and completed operations, XCU hazards if requested by the City, and a separation of insurance provision.
 - (4) These limits may be met through a combination of primary and excess liability coverage.
- (C) Auto. A business auto policy providing a liability limit of at least \$1,000,000 per accident for Contractor and 1,000,000 per accident for Sub-contractors and covering owned, non-owned and hired automobiles.
- (D) Workers' Compensation and Employer's Liability. A workers' compensation and employer's liability policy providing at least the minimum benefits required by Arizona law.
- (E) Equipment Insurance. Contractor must secure, pay for, and maintain all-risk insurance as necessary to protect the City against loss of owned, non-owned, rented or leased capital equipment and tools, equipment and scaffolding, staging, towers and forms owned or rented by Contractor or its Sub-contractors.

Project 141511

- (F) Notice of Changes. Contractor's Policies must provide for not less than 30 days' advance written notice to City Representative of:
- (1) Cancellation or termination of Contractor or Sub-contractor's Policies;
 - (2) Reduction of the coverage limits of any of Contractor or and Sub-contractor's Policies; and
 - (3) Any other material modification of Contractor or Sub-contractor's Policies related to this Agreement.
- (G) Certificates of Insurance.
- (1) Within 10 business days after the execution of the Agreement, Contractor must deliver to City Representative certificates of insurance for each of Contractor and Sub-contractor's Policies, which will confirm the existence or issuance of Contractor and Sub-contractor's Policies in accordance with the provisions of this section, and copies of the endorsements of Contractor and Sub-contractor's Policies in accordance with the provisions of this section.
 - (2) City is and will be under no obligation either to ascertain or confirm the existence or issuance of Contractor and Sub-contractor's Policies, or to examine Contractor and Sub-contractor's Policies, or to inform Contractor or Sub-contractor in the event that any coverage does not comply with the requirements of this section.
 - (3) Contractor's failure to secure and maintain Contractor Policies and to assure Sub-contractor policies as required will constitute a material default under this Agreement.
- (H) Other Contractors or Vendors.
- (1) Other contractors or vendors that may be contracted by Contractor with in connection with the Project must procure and maintain insurance coverage as is appropriate to their particular agreement.
 - (2) This insurance coverage must comply with the requirements set forth above for Contractor's Policies (e.g., the requirements pertaining to endorsements to name the parties as additional insured parties and certificates of insurance).
- (I) Policies. Except with respect to workers' compensation and employer's liability coverages, the City must be named and properly endorsed as additional insureds on all liability policies required by this section.
- (1) The coverage extended to additional insureds must be primary and must not contribute with any insurance or self insurance policies or programs maintained by the additional insureds.
 - (2) All insurance policies obtained pursuant to this section must be with companies legally authorized to do business in the State of Arizona and acceptable to all parties.

7.2 Sub-contractors.

- (A) Contractor must also cause its Sub-contractors to obtain and maintain the Required Insurance.
- (B) City may consider waiving these insurance requirements for a specific Sub-contractor if City is satisfied the amounts required are not commercially available to the Sub-contractor and the insurance the Sub-contractor does have is appropriate for the Sub-contractor's work under this Agreement.
- (C) Contractor and Sub-contractors must provide to the City proof of Required Insurance whenever requested.

7.3 Indemnification.

- (A) To the fullest extent permitted by law, Contractor must defend, indemnify, and hold harmless City and its elected officials, officers, employees and agents (each, an "Indemnified Party," collectively, the

"Indemnified Parties"), for, from, and against any and all claims, demands, actions, damages, judgments, settlements, personal injury (including sickness, disease, death, and bodily harm), property damage (including loss of use), infringement, governmental action and all other losses and expenses, including attorneys' fees and litigation expenses (each, a "Demand or Expense"; collectively, "Demands or Expenses") asserted by a third-party (i.e. a person or entity other than City or Contractor) and that arises out of or results from the breach of this Agreement by the Contractor or the Contractor's negligent actions, errors or omissions (including any Sub-contractor or other person or firm employed by Contractor), whether sustained before or after completion of the Project.

- (B) This indemnity and hold harmless policy applies even if a Demand or Expense is in part due to the Indemnified Party's negligence or breach of a responsibility under this Agreement, but in that event, Contractor shall be liable only to the extent the Demand or Expense results from the negligence or breach of a responsibility of Contractor or of any person or entity for whom Contractor is responsible.
- (C) Contractor is not required to indemnify any Indemnified Parties for, from, or against any Demand or Expense resulting from the Indemnified Party's sole negligence or other fault solely attributable to the Indemnified Party.

7.4 **Waiver of Subrogation.** Contractor waives, and will require any Subcontractor to waive, all rights of subrogation against the City to the extent of all losses or damages covered by any policy of insurance.

8. **Immigration Law Compliance.**

8.1 Contractor, and on behalf any subcontractor, warrants, to the extent applicable under A.R.S. § 41-4401, compliance with all federal immigration laws and regulations that relate to their employees as well as compliance with A.R.S. § 23-214(A) which requires registration and participation with the E-Verify Program.

8.2 Any breach of warranty under subsection 8.1 above is considered a material breach of this Agreement and is subject to penalties up to and including termination of this Agreement.

8.3 City retains the legal right to inspect the papers of any Contractor or subcontractor employee who performs work under this Agreement to ensure that the Contractor or any subcontractor is compliant with the warranty under subsection 8.1 above.

8.4 City may conduct random inspections, and upon request of City, Contractor shall provide copies of papers and records of Contractor demonstrating continued compliance with the warranty under subsection 8.1 above. Contractor agrees to keep papers and records available for inspection by the City during normal business hours and will cooperate with City in exercise of its statutory duties and not deny access to its business premises or applicable papers or records for the purposes of enforcement of this section 8.

8.5 Contractor agrees to incorporate into any subcontracts under this Agreement the same obligations imposed upon Contractor and expressly accrue those obligations directly to the benefit of the City. Contractor also agrees to require any subcontractor to incorporate into each of its own subcontracts under this Agreement the same obligations above and expressly accrue those obligations to the benefit of the City.

8.6 Contractor's warranty and obligations under this section to the City is continuing throughout the term of this Agreement or until such time as the City determines, in its sole discretion, that Arizona law has been modified in that compliance with this section is no longer a requirement.

8.7 The "E-Verify Program" above means the employment verification program administered by the United States Department of Homeland Security, the Social Security Administration, or any successor program.

9. **Conflict.** Contractor acknowledges this Agreement is subject to A.R.S. § 38-511, which allows for cancellation of this Agreement in the event any person who is significantly involved in initiating, negotiating, securing, drafting, or creating the Agreement on City's behalf is also an employee, agent, or consultant of any other party to this Agreement.

10. **Prohibitions.** Contractor certifies under A.R.S. §§ 35-391 *et seq.* and 35-393 *et seq.*, that it does not have, and during the term of this Agreement will not have "scrutinized" business operations, as defined in the preceding statutes, in the countries of Sudan or Iran.

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11. Non-Discrimination Policies. Contractor must not discriminate against any employee or applicant for employment on the basis of race, religion, color sex or national origin. Contractor must develop, implement and maintain non-discrimination policies and post the policies in conspicuous places visible to employees and applicants for employment. Contractor will require any Sub-contractor to be bound to the same requirements as stated within this section.

12. Notices.

12.1 A notice, request or other communication that is required or permitted under this Agreement (each a "Notice") will be effective only if:

- (A) The Notice is in writing, and
- (B) Delivered in person or by private express overnight delivery service (delivery charges prepaid), certified or registered mail (return receipt requested).
- (C) Notice will be deemed to have been delivered to the person to whom it is addressed as of the date of receipt, if:
 - (1) Received on a business day, or before 5:00 p.m., at the address for Notices identified for the Party in this Agreement by U.S. Mail, hand delivery, or overnight courier on or before 5:00 p.m.; or
 - (2) As of the next business day after receipt, if received after 5:00 p.m.
- (D) The burden of proof of the place and time of delivery is upon the Party giving the Notice.
- (E) Digitalized signatures and copies of signatures will have the same effect as original signatures.

12.2 Representatives.

- (A) Contractor. Contractor's representative ("Contractor's Representative") authorized to act on Contractor's behalf with respect to the Project, and his or her address for Notice delivery is:

TSG Constructors, LLC
Attn: Stanley S. Showalter
P.O. Box 71640
Phoenix, Arizona 85050

- (B) City. City's representative ("City's Representative") authorized to act on City's behalf, and his or her address for Notice delivery is:

City of Glendale
Attn: Bill Passmore
5850 West Glendale Avenue
Glendale, Arizona 85301

With required copies to:

City of Glendale
City Manager
5850 West Glendale Avenue
Glendale, Arizona 85301

City of Glendale
City Attorney
5850 West Glendale Avenue
Glendale, Arizona 85301

- (C) Concurrent Notices.

- (1) All notices to City's representative must be given concurrently to City Manager and City Attorney.
- (2) A notice will not be considered to have been received by City's representative until the time that it has also been received by City Manager and City Attorney.

Project 141511

- (3) City may appoint one or more designees for the purpose of receiving notice by delivery of a written notice to Contractor identifying the designee(s) and their respective addresses for notices.
 - (D) **Changes.** Contractor or City may change its representative or information on Notice, by giving Notice of the change in accordance with this section at least ten days prior to the change.
- 13. **Financing Assignment.** City may assign this Agreement to any City-affiliated entity, including a non-profit corporation or other entity whose primary purpose is to own or manage the Project.
- 14. **Entire Agreement; Survival; Counterparts; Signatures.**
 - 14.1 **Integration.** This Agreement contains, except as stated below, the entire agreement between City and Contractor and supersedes all prior conversations and negotiations between the parties regarding the Project or this Agreement.
 - (A) Neither Party has made any representations, warranties or agreements as to any matters concerning the Agreement's subject matter.
 - (B) Representations, statements, conditions, or warranties not contained in this Agreement will not be binding on the parties.
 - (C) Any solicitation, addendums and responses submitted by the Contractor are incorporated fully into this Agreement as Exhibit A. Any inconsistency between Exhibit A and this Agreement will be resolved by the terms and conditions stated in this Agreement.
 - 14.2 **Interpretation.**
 - (A) The parties fairly negotiated the Agreement's provisions to the extent they believed necessary and with the legal representation they deemed appropriate.
 - (B) The parties are of equal bargaining position and this Agreement must be construed equally between the parties without consideration of which of the parties may have drafted this Agreement.
 - (C) The Agreement will be interpreted in accordance with the laws of the State of Arizona.
 - 14.3 **Survival.** Except as specifically provided otherwise in this Agreement each warranty, representation, indemnification and hold harmless provision, insurance requirement, and every other right, remedy and responsibility of a Party, will survive completion of the Project, or the earlier termination of this Agreement.
 - 14.4 **Amendment.** No amendment to this Agreement will be binding unless in writing and executed by the parties. Any amendment may be subject to City Council approval.
 - 14.5 **Remedies.** All rights and remedies provided in this Agreement are cumulative and the exercise of any one or more right or remedy will not affect any other rights or remedies under this Agreement or applicable law.
 - 14.6 **Severability.** If any provision of this Agreement is voided or found unenforceable, that determination will not affect the validity of the other provisions, and the voided or unenforceable provision will be reformed to conform to applicable law.
 - 14.7 **Counterparts.** This Agreement may be executed in counterparts, and all counterparts will together comprise one instrument.
- 15. **Dispute Resolution.** Each claim, controversy and dispute ("Dispute") between Contractor and City will be resolved in accordance with Exhibit C. The final determination will be made by the City.

Project 141511

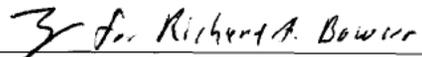
16. **Exhibits.** The following exhibits, with reference to the term in which they are first referenced, are incorporated by this reference.

Exhibit A	Project
Exhibit B	Compensation
Exhibit C	Dispute Resolution

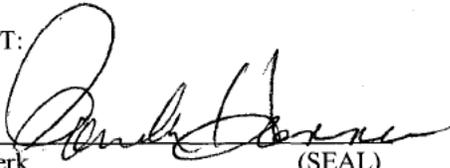
Project 141511

The parties enter into this Agreement as of the date shown above.

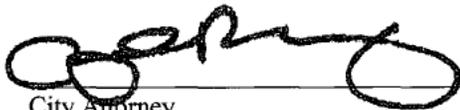
City of Glendale,
an Arizona municipal corporation


By: Richard A. Bowers
Its: Acting City Manager

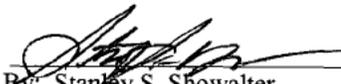
ATTEST:


City Clerk (SEAL)

APPROVED AS TO FORM:


City Attorney

TSG Constructors
an Arizona limited liability company


By: Stanley S. Showalter
Its: Manager

WOMEN-OWNED/MINORITY BUSINESS [] YES NO
CITY OF GLENDALE TRANSACTION PRIVILEGE TAX NO. [REDACTED]
FEDERAL TAXPAYER IDENTIFICATION NO. [REDACTED]

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**EXHIBIT A
CONSTRUCTION AGREEMENT**

PROJECT

This project is for a new City of Glendale Transit Center located at 7700 West Arrowhead Towne Center. The new transit center will be located at the north entry plaza to the Arrowhead Towne Center mall, between the AMC Theatres and Dick's Sporting Goods. The Transit Center will provide two (2) new bus pullouts along the inner loop drive and a new steel canopy to shelter cast-in-place concrete seating walls and metal benches. The work includes the removal of approximately 353 square yards of asphalt pavement in the inner loop drive, and the removal and replacement of approximately 130 lineal feet of curb and gutter, and 1,410 square yards of concrete paving in the inner loop drive and plaza areas.

Project 141511

**EXHIBIT B
CONSTRUCTION AGREEMENT**

COMPENSATION

METHOD AND AMOUNT OF COMPENSATION

By bid, including all services, materials and costs.

NOT-TO-EXCEED AMOUNT

The total amount of compensation paid to Contractor for full completion of all work required by the Project during the entire term of the Project must not exceed \$617,000.00

DETAILED PROJECT COMPENSATION

As shown in detail on the Bid Schedule.

**EXHIBIT C
CONSTRUCTION AGREEMENT**

DISPUTE RESOLUTION

1. Disputes.

- 1.1 Commitment. The parties commit to resolving all disputes promptly, equitably, and in a good-faith, cost-effective manner.
- 1.2 Application. The provisions of this Exhibit will be used by the parties to resolve all controversies, claims, or disputes ("Dispute") arising out of or related to this Agreement-including Disputes regarding any alleged breaches of this Agreement.
- 1.3 Initiation. A party may initiate a Dispute by delivery of written notice of the Dispute, including the specifics of the Dispute, to the Representative of the other party as required in this Agreement.
- 1.4 Informal Resolution. When a Dispute notice is given, the parties will designate a member of their senior management who will be authorized to expeditiously resolve the Dispute.
 - (A) The parties will provide each other with reasonable access during normal business hours to any and all non-privileged records, information and data pertaining to any Dispute in order to assist in resolving the Dispute as expeditiously and cost effectively as possible;
 - (B) The parties' senior managers will meet within 10 business days to discuss and attempt to resolve the Dispute promptly, equitably, and in a good faith manner, and
 - (C) The Senior Managers will agree to subsequent meetings if both parties agree that further meetings are necessary to reach a resolution of the Dispute.

2. Arbitration.

- 2.1 Rules. If the parties are unable to resolve the Dispute by negotiation within 30 days from the Dispute notice, and unless otherwise informal discussions are extended by the mutual agreement, the Dispute will be decided by binding arbitration in accordance with Construction Industry Rules of the AAA, as amended herein. Although the arbitration will be conducted in accordance with AAA Rules, it will not be administered by the AAA, but will be heard independently.
 - (A) The parties will exercise best efforts to select an arbitrator within 5 business days after agreement for arbitration. If the parties have not agreed upon an arbitrator within this period, the parties will submit the selection of the arbitrator to one of the principals of the mediation firm of Scott & Skelly, LLC, who will then select the arbitrator. The parties will equally share the fees and costs incurred in the selection of the arbitrator.
 - (B) The arbitrator selected must be an attorney with at least 15 years experience with commercial construction legal matters in Maricopa County, Arizona, be independent, impartial, and not have engaged in any business for or adverse to either Party for at least 10 years.
- 2.2 Discovery. The extent and the time set for discovery will be as determined by the arbitrator. Each Party must, however, within ten (10) days of selection of an arbitrator deliver to the other Party copies of all documents in the delivering party's possession that are relevant to the dispute.
- 2.3 Hearing. The arbitration hearing will be held within 90 days of the appointment of the arbitrator. The arbitration hearing, all proceedings, and all discovery will be conducted in Glendale, Arizona unless otherwise agreed by the parties or required as a result of witness location. Telephonic hearings and other reasonable arrangements may be used to minimize costs.
- 2.4 Award. At the arbitration hearing, each Party will submit its position to the arbitrator, evidence to support that position, and the exact award sought in this matter with specificity. The arbitrator must select the award sought

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by one of the parties as the final judgment and may not independently alter or modify the awards sought by the parties, fashion any remedy, or make any equitable order. The arbitrator has no authority to consider or award punitive damages.

2.5 Final Decision. The Arbitrator's decision should be rendered within 15 days after the arbitration hearing is concluded. This decision will be final and binding on the Parties.

2.6 Costs. The prevailing party may enter the arbitration in any court having jurisdiction in order to convert it to a judgment. The non-prevailing party shall pay all of the prevailing party's arbitration costs and expenses, including reasonable attorney's fees and costs.

3. **Services to Continue Pending Dispute.** Unless otherwise agreed to in writing, Contractor must continue to perform and maintain progress of required services during any Dispute resolution or arbitration proceedings, and City will continue to make payment to Contractor in accordance with this Agreement.

4. **Exceptions.**

4.1 Third Party Claims. City and Contractor are not required to arbitrate any third-party claim, cross-claim, counter claim, or other claim or defense of a third-party who is not obligated by contract to arbitrate disputes with City and Contractor.

4.2 Liens. City or Contractor may commence and prosecute a civil action to contest a lien or stop notice, or enforce any lien or stop notice, but only to the extent the lien or stop notice the Party seeks to enforce is enforceable under Arizona Law, including, without limitation, an action under A.R.S. § 33-420, without the necessity of initiating or exhausting the procedures of this Exhibit.

4.3 Governmental Actions. This Exhibit does not apply to, and must not be construed to require arbitration of, any claims, actions or other process filed or issued by City of Glendale Building Safety Department or any other agency of City acting in its governmental permitting or other regulatory capacity.

C-_____

INDIVIDUAL SURETIES WILL NOT BE ACCEPTED
STATUTORY PERFORMANCE BOND PURSUANT TO TITLE 34,
CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES
(Penalty of this bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS:

Bond# 106329581

*Travelers Casualty
and Surety
Company of
America*

That TSG Constructors, LLC (hereinafter called the Principal), as Principal, and
, a corporation organized and existing under the laws of the State of Connecticut with its principal office in the
City of Hartford, (hereinafter called the Surety), as Surety, are held and firmly bound unto the City of
Glendale, a municipal corporation, (hereinafter called the Obligee), in the amount of
Six Hundred Seventeen Thousand and NO/100***** Dollars (\$ 617,000.00*****), for the
payment whereof; the said Principal and Surety bind themselves, and their heirs, administrators, successors and
assigns, jointly and severally, firmly by these presents.

WHEREAS, The Principal has entered into a certain written contract with the Obligee, dated the 23rd day of
June, 2015, to construct **PROJECT 141511 - CITY OF GLENDALE TRANSIT CENTER**, which contract is
hereby referred to and made a part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said Principal shall
faithfully perform and fulfill all undertakings, covenants, terms, conditions and agreements of said contract
during the original term of said contract any extension thereof, with or without notice to the Surety, and during
the life of any guaranty required under the contract and shall also perform and fulfill all the undertakings,
covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that
may hereafter be made, notice of which modifications to the Surety being hereby waived; then the above
obligation shall be void, otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this bond is executed pursuant to the provisions of Title 34, Chapter 2, Article
2, of the Arizona Revised Statutes, and all liabilities on this bond shall be determined in accordance with the
provisions of said Title, Chapter, and Article, to the extent as if it were copied at length herein.

The prevailing party or any party which recovers judgment on this bond shall be entitled to such reasonable
attorney's fees as may be fixed by the court or a judge thereof.

Witness our hands this 6th day of July, 2015.

TSG Constructors, LLC
Principal Seal

By [Signature]
Travelers Casualty and Surety Company of America
Surety Seal

[Signature]
Agency of Record Patrick R. Hedges, Attorney-in-Fact

15160 N. Hayden Rd. #101
Scottsdale, AZ 85260
Agency Address

Telephone Number: 602-317-4868

INDIVIDUAL SURETIES WILL NOT BE ACCEPTED
STATUTORY PAYMENT BOND PURSUANT TO TITLE 34,
CHAPTER 2, ARTICLE 2, OF THE ARIZONA REVISED STATUTES
(Penalty of this bond must be 100% of the Contract Amount)

KNOW ALL MEN BY THESE PRESENTS: Bond# 106329581

*Travelers Casualty
and Surety
Company of
America*

That, TSG Constructors, LLC (hereinafter called the Principal), as Principal, and
, a corporation organized and existing under the laws of the State of Connecticut with its principal
office in the City of Hartford, (hereinafter called the Surety), as Surety, are held and firmly
bound unto the City of Glendale, a municipal corporation, (hereinafter called the Obligee), in the
amount of ^{Six Hundred Seventeen} ~~Thousand and NO/100~~ Dollars (\$ 617,00.00***), for the payment whereof; the said Principal and
Surety bind themselves, and their heirs, administrators, successors and assigns, jointly and severally,
firmly by these presents.

WHEREAS, The Principal has entered into a certain written contract with the Obligee, dated the 23rd
day of June, 2015, to construct **PROJECT 141511 - CITY OF GLENDALE TRANSIT
CENTER** which contract is hereby referred to and made a part hereof as fully and to the same extent
as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the said
Principal shall promptly pay all monies due to all persons supplying labor or materials to him or his
subcontractors in the prosecution of the work provided for in said Contract, then this obligation shall
be void, otherwise to remain in full force and effect.

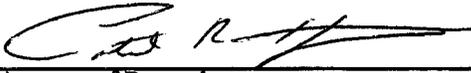
PROVIDED, HOWEVER, that this bond having been required of the said Principal in order to
comply with the provisions of Title 34, Chapter 2, Article 2, of the Arizona Revised Statutes, all
rights and remedies on this bond shall inure solely to such persons and shall be determined in
accordance with the provisions, conditions, and limitations of said Title, Chapter and Article, to the
same extent as if they were copied at length herein.

The prevailing party or any party which recovers judgment on this bond shall be entitled to such
reasonable attorney's fees as may be fixed by the court or a judge thereof.

Witness our hands this 6th day of July, 2015.

TSG Constructors, LLC
Principal Seal

By  _____
Travelers Casualty and Surety Company of America
Surety Seal

 _____
Agency of Record Patrick R. Hedges, Attorney-in-Fact

Agency Address
Constructors Bonding, Inc.
15160 N. Hayden Rd. #101
Scottsdale, AZ 85260
Telephone 602-317-4868



POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 229398

Certificate No. 006344683

KNOW ALL MEN BY THESE PRESENTS: That Farmington Casualty Company, St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company are corporations duly organized under the laws of the State of Connecticut, that Fidelity and Guaranty Insurance Company is a corporation duly organized under the laws of the State of Iowa, and that Fidelity and Guaranty Insurance Underwriters, Inc., is a corporation duly organized under the laws of the State of Wisconsin (herein collectively called the "Companies"), and that the Companies do hereby make, constitute and appoint

David J. McKee, Patrick R. Hedges, Joseph A. Clarcken III, Jennifer Castillo, and Melanie Ankeney

of the City of Scottsdale, State of Arizona, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons, guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law.

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 12th day of May, 2015

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St. Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss.

By: [Signature]
Robert L. Raney, Senior Vice President

On this the 12th day of May, 2015, before me personally appeared Robert L. Raney, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

In Witness Whereof, I hereunto set my hand and official seal.
My Commission expires the 30th day of June, 2016.



[Signature: Marie C. Tetreault]
Marie C. Tetreault, Notary Public

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary; or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority; and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached.

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 6th day of July, 2015.

WARNING: THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

Kevin E. Hughes
Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

CONTRACTORS ENHANCEMENT PLUS ENDORSEMENT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM

LOST KEY COVERAGE

SECTION I – COVERAGES, COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY, coverage is extended to include the following:

If a customer's master or grand key, excluding electronic key card, is lost while in your care, custody or control we will pay the cost of replacing the keys, including the master lock and all keys used in the same lock, the cost of adjusting locks to accept the new keys, or the cost to replace the locks, whichever is less.

Limit of Insurance - The most we will pay for "loss" arising out of any one "occurrence" is \$5,000.

SECTION V DEFINITIONS is amended as follows:

The following definition applies to Lost Key Coverage:

"Loss" means unintentional physical damage or destruction to tangible property, including theft or disappearance. Tangible property does not include money or securities.

VOLUNTARY PROPERTY DAMAGE

SECTION I – COVERAGES, COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY, coverage is extended to include the following:

At your request, we will pay for "property damage" to property of others caused by you and while in your possession, arising out of your business operations and occurring during the policy period.

Limit of Insurance - The most we will pay for "loss" arising out of any one "occurrence" is \$500.

SECTION V – DEFINITIONS is amended as follows:

The following definition applies to Voluntary Property Damage coverage:

"Loss" means unintentional damage or destruction but does not include disappearance, theft, or loss of use.

NON-OWNED WATERCRAFT

SECTION I – COVERAGES, COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY, 2. Exclusions is amended as follows:

- g. **Aircraft, Auto Or Watercraft (2) (a)** is replaced with:
 - (a) Less than 51 feet long; and

EXPANDED PROPERTY DAMAGE COVERAGE

For the purposes of this endorsement only:

SECTION I – COVERAGES, COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY, 2. Exclusions is amended as follows:

- a. Exclusions j.(3), j.(5), and j.(6) are deleted in their entirety.
- b. Exclusion j.(4) is deleted in its entirety and replaced by the following:
Personal property in the care custody or control of the insured:
 - 1. for storage or sale at premises you own, rent or occupy; or
 - 2. while being transported by any aircraft, "auto" or watercraft owned or operated by or rented to or loaned to any insured.
- c. The following exclusions are added:
 - 1. The coverage provided by this endorsement does not apply to "property damage" arising out of the disappearance or loss of use of personal property.
 - 2. The coverage provided by this endorsement does not apply to "property damage" included in the "products-completed operations hazard".

Limit of Insurance - The most we will pay for "property damage" provided by this coverage in any one "occurrence" is \$5,000.

Deductible - Our obligation to pay for a covered loss applies only to the amount of loss in excess of \$250.

This insurance is excess over any other valid and collectible insurance.

DAMAGE TO PREMISES RENTED TO YOU

SECTION I – COVERAGES, COVERAGE A BODILY INJURY AND PROPERTY DAMAGE LIABILITY, the last paragraph of **2. Exclusions** of is replaced by the following:

If **Damage to Premises Rented to You** is not otherwise excluded, exclusions **c.** through **n.** do not apply to damage by fire, lightning, explosion, smoke or sprinkler leakage to premises while rented to you or temporarily occupied by you with permission of the owner. A separate limit of insurance applies to this coverage as described in Section III-Limits of Insurance.

SECTION III – LIMITS OF INSURANCE, paragraph 6 is replaced with:

6. Subject to 5. above, the Damage To Premises Rented To You Limit is the most we will pay under Coverage **A** for damages because of "property damage" to any one premises, while rented to you, or in the case of damage by fire, lightning, explosion, smoke or sprinkler leakage, while rented to you or temporarily occupied by you with permission of the owner. The limit is increased to \$300,000.

SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS, 4. **Other Insurance**, **b. Excess Insurance (1) (a) (ii)** is replaced with:

(ii) That is Fire, Lightning, Explosion, Smoke or Sprinkler leakage insurance for premises rented to you or temporarily occupied by you with permission of the owner.

SUPPLEMENTARY PAYMENTS

SECTION I – COVERAGES, SUPPLEMENTARY PAYMENTS – COVERAGES A AND B is amended as follows:

1. **1. b.** replaced with:

b. Up to \$2,500 for cost of bail bonds required because of accidents or traffic law violations arising out of the use of any vehicle to which the Bodily Injury Liability Coverage applies. We do not have to furnish these bonds.

2. **1. d.** replaced with:

d. All reasonable expenses incurred by the insured at our request to assist us in the investigation or defense of the claim or "suit", including actual loss of earnings up to \$500 a day because of time off from work.

NEWLY FORMED AND ACQUIRED ORGANIZATIONS

SECTION II – WHO IS AN INSURED is amended as follows:

1. **3. a.** is replaced with:

a. Coverage under this provision is afforded only until the 180th day after you acquire or form the organization or the end of the policy period, whichever is earlier;

ADDITIONAL INSURED – WHEN REQUIRED IN AN AGREEMENT OR CONTRACT WITH YOU PRIMARY AND NON-CONTRIBUTORY

The following is added to SECTION II – WHO IS AN INSURED

4. Any person(s) or organization(s) with whom you have agreed in a valid written contract or written agreement that such person or organization be added as an additional insured on your policy during the policy period shown in the Declarations. Such person or organization is an additional insured only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury".

The person or organization added as an insured by this endorsement is an insured only to the extent you are held liable due to:

a. Lessors of Leased Equipment

Maintenance, operation or use of equipment leased to you by such person or organization. This insurance does not apply to any "occurrence" which takes place after the equipment lease expires.

However, their status as additional insured under this policy ends when their lease, contract or agreement with you for such leased equipment expires.

b. Managers or Lessors of Premises

The ownership, maintenance or use of that part of the premises you own, rent, lease or occupy.

This insurance does not apply to:

- (1) Any "occurrence" which takes place after you cease to be a tenant in that premises.
- (2) Structural alterations, new construction or demolition operations performed by or on behalf of the person or organization.

However, their status as additional insured under this policy ends when you cease to be a tenant of such premises.

c. State or Political Subdivision - Permits

Operations performed by you or on your behalf for which the state or political subdivision has issued a permit.

This insurance does not apply to:

- (1) "Bodily injury" or "property damage" or "personal or advertising injury" arising out of operations performed for the state or municipality; or
- (2) "Bodily injury" or "property damage" included within the "products-completed operations hazard".

However, such state or political subdivision's status as additional insured under this policy ends when the permit ends.

d. Owners, Lessees, or Contractors

"Bodily injury", "property damage" or "personal and advertising injury" caused, in whole or in part, by:

- (1) Your acts or omissions; or
- (2) The acts or omissions of those acting on your behalf;

in the performance of your ongoing operations performed for that additional insured, whether the work is performed by you or on your behalf.

The insurance does not apply to:

- (1) "bodily injury", "property damage", or "personal and advertising injury" arising out of the rendering of or the failure to render any professional architectural, engineering or survey services, including:
 - (a). The preparing, approving, or failing to prepare or approve maps, shop drawings, opinions, reports, survey, field orders, change orders or drawings and specifications: or
 - (b) Supervisory, inspection, architectural or engineering activities.
- (2) "Bodily injury" or "property damage" occurring after:
 - (a) All work, including materials, parts or equipment furnished in connection with such work, on the project (other than service, maintenance or repairs) to be performed by or on behalf of the additional insured(s) at the location of the covered operations has been completed; or
 - (b) That portion of "your work" out of which the injury or damage arises has been put to its intended use by any person or organization other than another contractor or subcontractor engaged in performing operations for a principal as a part of the same project.

However, a person or organization's status as additional insured under this policy ends when your operations for that additional insured are completed.

With respect to paragraph 4 of SECTION II WHO IS AN INSURED, Condition 4. Other Insurance of Section IV - Commercial General Liability Conditions is replaced by the following:

4. Other Insurance

If other valid and collectible insurance is available to the insured for a loss we cover under Coverages A or B of this Coverage Part, our obligations are limited as follows:

a. Primary Insurance

This insurance is primary if you have agreed in a written contract or written agreement:

- (1) That this insurance be primary. If other insurance is also primary, we will share with all that other insurance as described in c. below; or
- (2) The coverage afforded by this insurance is primary and non-contributory with the additional insured's own insurance.

Paragraphs (1) and (2) do not apply to other insurance to which the additional insured has been added as an additional insured or to other insurance described in paragraph b. below.

b. Excess Insurance

This insurance is excess over:

- (1) Any of the other insurance, whether primary, excess, contingent or on any other basis:
 - (a) That is Fire, Extended Coverage, Builder's Risk, Installation Risk or similar coverage for "your work";
 - (b) That is fire, lightning, or explosion insurance for premises rented to you or temporarily occupied by you with permission of the owner;
 - (c) That is insurance purchased by you to cover your liability as a tenant for "property damage" to premises rented to you or temporarily occupied by you with permission of the owner; or
 - (d) If the loss arises out of the maintenance or use of aircraft, "autos" or watercraft to the extent not subject to Exclusion g. of Section I – Coverage A – Bodily Injury And Property Damage Liability.
 - (e) That is any other insurance available to an additional insured under this endorsement covering liability arising out of the premises or operations, or products completed operations, for which the additional insured has been added as an additional insured by that other insurance.

- (2) When this insurance is excess, we will have no duty under Coverages A or B to defend the additional insured against any "suit" if any other insurer has a duty to defend the additional insured against that "suit". If no other insurer defends, we will undertake to do so, but we will be entitled to the additional insured's rights against all those other insurers.
- (3) When this insurance is excess over other insurance, we will pay only our share of the amount of the loss, if any, that exceeds the sum of:
 - (a) The total amount that all such other insurance would pay for the loss in the absence of this insurance; and
 - (b) The total of all deductible and self-insured amounts under all that other insurance.
- (4) We will share the remaining loss, if any, with any other insurance that is not described in this Excess Insurance provision and was not bought specifically to apply in excess of the Limits of Insurance shown in the Declarations of this Coverage Part.

c. Method Of Sharing

If all of the other insurance available to the additional insured permits contribution by equal shares, we will follow this method also. Under this approach each insurer contributes equal amounts until it has paid its applicable limit of insurance or none of the loss remains, whichever comes first.

If any of the other insurance available to the additional insured does not permit contribution by equal shares, we will contribute by limits. Under this method, each insurer's share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers.

EMPLOYEE BODILY INJURY TO ANOTHER EMPLOYEE

SECTION II – WHO IS AN INSURED The following Paragraph is added to **2.a.(1)**

Paragraphs **2.a.(1)(a), (b) and (c)** do not apply to “bodily injury” to a co-“employee” in the course of the co-“employee’s” employment by you, or to “bodily injury” to a co-“volunteer worker” while performing duties related to the conduct of your business.

BROAD FORM NAMED INSURED

SECTION II – WHO IS AN INSURED The following Paragraph is added to **2.**

- e. Any business entity incorporated or organized under the laws of the United State of America (including any State thereof), its territories or possessions or Canada (including any Province thereof) in which the Named Insured shown in the Declarations owns, during the policy period, an interest of more than fifty percent. If other valid collectible insurance is available to any business entity covered by this solely by reason of ownership by the Named Insured shown in the Declarations in excess of fifty percent, this insurance is excess over the other insurance, whether primary, excess, contingent, or on any other basis.

AGGREGATE LIMIT PER LOCATION

SECTION III – LIMITS OF INSURANCE The following paragraph is added to paragraph **2:**

The General Aggregate Limit under Section **III** Limits of Insurance applies separately to each of your locations owned by or rented to you or temporarily occupied by you with the permission of the owner. For the purposes of this provision, location means premises involving the same or connecting lots, or premises whose connection is interrupted only by a public street, roadway, waterway or railroad right-of-way.

AGGREGATE LIMIT PER PROJECT

SECTION III – LIMITS OF INSURANCE The following paragraph is added to paragraph **2:**

The General Aggregate Limit under Section **III** Limits of Insurance applies separately to each of your construction projects away from premises owned by or rented to you.

MEDICAL PAYMENTS

SECTION III – LIMITS OF INSURANCE, Paragraph **7.** is replaced:

7. Subject to **5.** above, the higher of:

- a. \$10,000; or
- b. The amount shown in the Declarations for Medical Expense Limit is the most we will pay under Coverage **C** for all medical expenses because of “bodily injury” sustained by one person.

This coverage does not apply if Coverage **C – Medical Payments** is excluded either by the provisions of any coverage forms attached to the policy or by endorsement.

KNOWLEDGE OF AN OCCURRENCE

SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS, The following is added to **2. Duties In The Event Of Occurrence, Offense, Claim Or Suit** condition:

- e. Knowledge of an occurrence, offense, claim or suit by an agent or employee of any insured shall not in itself constitute knowledge of the insured unless you, a partner, if you are a partnership; or an executive officer or insurance manager, if you are a corporation receives such notice of an occurrence, offense, claim or suit from the agent or employee.
- f. The requirements in **Section IV – Conditions Paragraph 2.b.** will not be considered breached unless there is knowledge of occurrence as outlined in paragraph **e.** above.

UNINTENTIONAL FAILURE TO DISCLOSE HAZARD

SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS, **6. Representations** is amended to include:

- d. Your failure to disclose all hazards or prior “occurrences” or offenses existing as of the inception date of the policy shall not prejudice the coverage afforded by this policy provided such failure to disclose all hazards or prior “occurrences” or offenses is not intentional. This provision does not affect our right to collect additional premium or exercise our right of cancellation or non-renewal.

WAIVER OF SUBROGATION

SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS, **8. Transfer of Rights of Recovery Against Others to Us** is amended to include:

If required by a written contract executed prior to loss, we waive any right of subrogation we may have against the contracting person or organization because of payments we make for injury or damage arising out of your ongoing operations or "your work" done under a contract with that person or organization and included in the "products-completed operations hazards".

LIBERALIZATION

SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS, **10. Liberalization** is added as follows:

If we revise this coverage form to provide more coverage without additional premium charge, your policy will automatically provide the additional coverage as of the day the revision is effective in your state.

BROADENED BODILY INJURY DEFINITION (MENTAL ANGUISH)

SECTION V – DEFINITIONS is amended as follows:

1. 3. "Bodily injury" is deleted and replaced with the following:

"Bodily injury" means physical injury, sickness or disease to a person and, if arising out of the foregoing, mental anguish, mental injury, shock or humiliation, including death at any time resulting therefrom.

All terms and conditions of this policy apply unless modified by this endorsement.

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

BLANKET ADDITIONAL INSURED ENDORSEMENT COMMERCIAL CONTRACTORS COVERAGE

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

- A. WHO IS AN INSURED (Section II)** is amended to include as an insured any person or organization whom you are required to add as an additional insured on this policy under a written contract or written agreement. The written contract or written agreement must be:
1. Valid and legally enforceable;
 2. Currently in effect or becoming effective during the term of this policy; and
 3. Executed prior to an "occurrence" resulting in "bodily injury", "property damage," or "personal and advertising injury."
- B.** The insurance provided to the additional insured is further limited as follows:
1. That person or organization is an additional insured, but only with respect to liability for "bodily injury" or "property damage" caused, in whole or in part, by "your work" for the additional insured which is the subject of the written contract or written agreement.
 2. If we insured the Named Insured for more than one annual policy period:
 - a. Only the policy in effect at the time the "bodily injury", "property damage", or "personal and advertising injury" first occurs will apply;
 - b. "Bodily injury", "property damage", or "personal and advertising injury", first occurs when it is initially discovered by any person;
 - c. Any continuation, progression, change or resumption of "bodily injury", "property damage", or "personal and advertising injury" will be deemed to be one occurrence;
 - d. Our limit of liability will not exceed the Limits of Insurance for one annual policy period.
 3. The coverage provided to the additional insured by this endorsement and paragraph f. of the definition of "insured contract" under **DEFINITIONS (SECTION V)** does not apply to "bodily injury" or "property damage" caused in whole or in part by the "products-completed operations hazard" unless required by the written contract or written agreement. When coverage does apply to "bodily injury" or "property damage" caused in whole or in part by the "products-completed operations hazard" such coverage will not apply beyond the period of time required by the written contract or written agreement.
 4. The insurance provided to the additional insured does not apply to:

"Bodily injury", "property damage", or "personal and advertising injury" arising out of the rendering of, or failure to render, any professional architectural, engineering or surveying services, including:

 - a. The preparing, approving, or failure to prepare or approve maps, shop drawings, opinions, reports, surveys, field orders, change orders or drawings and specifications; and
 - b. Supervisory, inspection, architectural or engineering activities.
 - c. Defects in design or specifications furnished by the additional insured or its' "employees".
 5. We have no duty to defend or indemnify an additional insured under this endorsement:
 - a. For any loss which occurs prior to our Named Insured commencing operations at the location of the loss.

b. Until we receive written notice of a claim or "suit" from the additional insured as required in the **Duties In The Event of Occurrence, Offense, Claim or Suit Condition**.

C. With respect to the coverage provided under this endorsement, the **COMMERCIAL GENERAL LIABILITY CONDITIONS (SECTION IV)** are amended as follows:

1. The following is added to the Duties In The Event of Occurrence, Offense, Claim or Suit Condition:

An additional insured under this endorsement will as soon as practicable:

- (1) Give written notice of an occurrence or an offense to us which may result in a claim or "suit" under this insurance;
- (2) Agree to trigger or activate any other insurance which the additional insured has for a loss we cover under this Coverage Part by tendering the defense to the insurers of all such other insurance;

2. With respect to the coverage provided under this endorsement, **Condition 4. Other Insurance** is replaced by the following:

a. Primary Insurance

This insurance is primary if you have agreed in a written contract or written agreement:

- (1) That this insurance be primary. If other insurance is also primary, we will share with all that other insurance as described in **c.** below; or
- (2) The coverage afforded by this insurance is primary and non-contributory with the additional insured's own insurance.

Paragraphs (1) and (2) do not apply to other insurance to which the additional insured has been added as an additional insured or to other insurance described in paragraph **b.** below.

b. Excess Insurance

This insurance is excess over:

- (1) Any of the other insurance, whether primary, excess, contingent or on any other basis:
 - (a) That is Fire, Extended Coverage, Builder's Risk, Installation Risk or similar coverage for "your work";
 - (b) That is fire, lightning, or explosion insurance for premises rented to you or temporarily occupied by you with permission of the owner;
 - (c) That is insurance purchased by you to cover your liability as a tenant for "property damage" to premises rented to you or temporarily occupied by you with permission of the owner; or
 - (d) If the loss arises out of the maintenance or use of aircraft, "autos" or watercraft to the extent not subject to Exclusion **g.** of Section **I** – Coverage **A** – Bodily Injury And Property Damage Liability
 - (e) That is any other insurance available to an additional insured under this endorsement covering liability for damages arising out of the premises or operations, or products and completed operations, for which the additional insured has been added as an additional insured by that other insurance.
- (2) When this insurance is excess, we will have no duty under Coverages A or B to defend the additional insured against any "suit" if any other insurer has a duty to defend the additional insured against that "suit". If no other insurer defends, we will undertake to do so, but we will be entitled to the additional insured's rights against all those other insurers.
- (3) When this insurance is excess over other insurance, we will pay only our share of the amount of the loss, if any, that exceeds the sum of:

- (a) The total amount that all such other insurance would pay for the loss in the absence of this insurance; and
 - (b) The total of all deductible and self insured amounts under all that other insurance.
- (4) We will share the remaining loss, if any, with any other insurance that is not described in this Excess Insurance provision and was not bought specifically to apply in excess of the Limits of Insurance shown in the Declarations of this Coverage Part.

c. Method of Sharing

If all of the other insurance available to the additional insured permits contribution by equal shares, we will follow this method also. Under this approach each insurer contributes equal amounts until it has paid its applicable limit of insurance or none of the loss remains, whichever comes first.

If any of the other insurance available to the additional insured does not permit contribution by equal shares, we will contribute by limits. Under this method, each insurer's share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers.

All terms and conditions of this policy apply unless modified by this endorsement.

CITY OF GLENDALE, ARIZONA
PUBLIC WORKS/ENGINEERING DEPARTMENT

CONTRACTOR'S AFFIDAVIT
REGARDING
SETTLEMENT OF CLAIMS

PROJECT 141511 - CITY OF GLENDALE TRANSIT CENTER

To the City of Glendale, Arizona

Gentlemen:

This is to certify that all lawful claims for materials, rental of equipment and labor used in connection with the construction of the above project, whether by subcontractor or claimant in person, have been duly discharged.

The undersigned, for the consideration of \$ _____, as set out in the final pay estimate, as full and complete payment under the terms of the contract, hereby waives and relinquishes any and all further claims or right of lien under, in connection with, or as a result of the above described project. The undersigned further agrees to indemnify and save harmless the City of Glendale against any and all liens, claims of liens, suits, actions, damages, charges, costs, litigation expenses, attorneys' fees and any other and expenses whatsoever, which said City may suffer arising out of the failure of the undersigned to pay for all labor performance and materials furnished for the performance of said installation.

Signed and dated at _____, this ____ day of _____, 20__.

Contractor

By _____

STATE OF ARIZONA)
) ss.
COUNTY OF MARICOPA)

The foregoing instrument was subscribed and sworn to before me this ____ day of _____, 20

Notary Public

My Commission Expires: _____

SUPPLEMENTAL GENERAL CONDITIONS

1. GENERAL: By Ordinance No. 1110 New Series, the City of Glendale adopted the "Uniform Standard Specifications for Public Works Construction," which are sponsored and distributed by the Maricopa Association of Governments. Copies of these documents, with revisions, are on file in the office of the City Engineer of the City of Glendale, and are hereby made a part of these Contract Documents.

Whenever in the Uniform Standard Specifications, the words "The Contracting Agency" are used, the meaning shall be the City of Glendale.

In all cases where ASTM, AASHTO, AWWA, USAG, Federal, City of Phoenix, MAG Specifications, Maricopa County, Arizona State Highway, City of Glendale or other standard specifications are referred to, unless otherwise stated, revisions, supplements or addenda issued on or before the date of this contract, shall prevail. In the event of any conflict between these project specifications and the requirements of the plans, detail drawings, MAG Standard Details and Specifications, these project specifications shall prevail.

2. DEFINITIONS: The following terms, as used in or pertaining to the Contract Documents, are defined as follows:

CITY: The word "City" refers to the City of Glendale, Arizona. The official representative of said City in these proceedings shall be the City Engineer.

CONTRACTOR: The word "Contractor" means the person, firm, or corporation with whom the Contract is made by the City.

MATERIALS: The term "Materials" includes, in addition to materials incorporated in the project, equipment and other material used and/or consumed in the performance of the work.

SUBCONTRACTOR: The word "Subcontractor" includes those having a direct contract with the Contractor and those who furnish material worked to a special design according to the plans and/or specifications for this work, but does not include those who merely furnish materials not so worked.

ENGINEER: The word "Engineer" means a person, firm or corporation duly authorized by the City, to act for the City in staking out the work, inspecting materials and construction, and interpreting plans and specifications.

CONTRACT DOCUMENTS: The words "Contract Documents" mean the Notice to Contractors, Information for Bidders, "Uniform Standard Specifications for Public Works Construction," MAG General Conditions, Supplemental General Conditions, Special Provisions, Supplemental Specifications, Proposal, Contract, Payment Bond, Performance Bond, Certificates of Insurance, Plans and Addenda thereto.

3. PROPOSAL QUANTITIES: It is expressly understood and agreed by the parties hereto that the quantities of the various classes of work to be done and material to be furnished under this Contract, which have been estimated as stated in the Proposal, are only approximate and are to be used SOLELY for the purpose of comparing, on a consistent basis, the proposals offered for the work under this Contract; and the Contractor further agrees that the City will not be held responsible if any of the quantities shall be found incorrect; and the Contractor will not make any claim for damages or for loss of profits because of a difference between the quantities of the various classes of work as estimated and the work actually done. If any error, omission, or mis-statement is found to occur in the estimated quantities, the same shall not invalidate this Contract or release the Contractor from the execution and completion of the whole or any part of the work in accordance with the specifications and the plans herein mentioned, or for the prices herein agreed upon and fixed therefore, or excuse him from any of the obligations or liabilities hereunder, or entitle him to any damages or compensation except as may be provided for in this Contract.

4. WITHDRAWAL OF PROPOSALS: No proposal shall be withdrawn following the opening and reading of the bids for a period of 50 days from the date of opening without the consent of the contracting agency through the body or agent duly authorized to accept or reject the proposal.

5. LOSSES AND DAMAGES: All loss or damage arising out of the nature of the work to be done or from the action of the elements, or from any unforeseen circumstances in the prosecution of the same, or from any unusual obstructions or difficulties which may be encountered in and/or during the prosecution of the work, or from any casualty whatsoever of every description, shall be sustained and borne by the Contractor at his own cost and expense except as otherwise provided by the contract documents or the laws of the State of Arizona.

6. DUST PREVENTION: The Contractor shall take whatever steps, procedures or means required to prevent abnormal dust conditions due to his construction operations in connection with this contract. The dust control measures shall be maintained at all times during construction of the project, to the satisfaction of the Engineer, in accordance with the requirements of the "Maricopa County Health Department Air Pollution Control Regulations" which have been adopted pursuant to A.R.S. § 36-779.

The Contractor shall be required to obtain the necessary permit from the Maricopa County Air Pollution Control Bureau, 1001 N. Central Ave., Phoenix, Arizona 85004 - telephone (602) 506-6727.

7. EXCESS MATERIAL: Excess material shall be removed from the work site and wasted at a location approved by the Engineer. Broken concrete and asphalt may be delivered to the Glendale Sanitary Landfill located at 115th Avenue and Glendale Avenue. The prevailing regulations and fee schedule will not be waived for work under this project. All materials, to be disposed of at the landfill, shall be weighed and disposed of at the prevailing rate.

8. STOCKPILE OF MATERIALS: The Contractor may place or stockpile materials in the public right-of-way, if approved by the Engineer, provided they do not prevent access to adjacent properties or prevent compliance with traffic regulations.

Traffic shall not be required to travel over stockpiled materials, and proper dust control shall be maintained.

9. REFUSE COLLECTION ACCESS: At any time the project construction shall require the closure or disruption of traffic in any roadway, alley, or refuse collection easement such that normal refuse collection will be interfered with, the Contractor shall, at least 48 hours prior to causing such closure or disruption, make arrangements with the Field Operations Department in order that refuse collection service can be maintained.

10. CLEAN-UP: After all work under this contract is completed, the Contractor shall remove all loose concrete, lumber, wire, reinforcing, debris, and other materials not incorporated in the work, from the site of the work. Clean-up shall include the removal of all excess pointing mortar materials within pipes and removal of over-size rocks and boulders left after finish grading. The contractor shall provide for the legal disposal of all waste products, debris, etc., and shall make necessary arrangements for such disposal.

11. SHOP DRAWINGS: The Contractor shall provide shop drawings as may be necessary for the prosecution of the work as required by the contract documents. The Engineer shall promptly review all shop drawings. The Engineer's approval of any shop drawing shall not release the Contractor from responsibility for deviations from the contract documents. The approval of any shop drawing which substantially deviates from the requirements of the contract documents shall be evidenced by a change order.

When submitted for the Engineer's review, shop drawings shall bear the contractor's certification that he has reviewed, checked, and approved the shop drawings and that they are in conformance with the requirements of the contract documents.

Portions of the work requiring a shop drawing or sample submission shall not begin until the shop drawing or sample submission has been approved by the Engineer. A copy of each approved shop drawing and each approved sample shall be kept in good order by the Contractor at the site and shall be available to the Engineer.

12. PROTECTION OF FINISHED OR PARTIALLY FINISHED WORK: The Contractor shall properly guard and protect all finished or partially finished work, and shall be responsible for the same until the entire contract is completed and accepted, in writing, by the City. The Contractor shall turn over the entire work in full accordance with the specifications before final settlement shall be made.

13. STATUS OF EMPLOYEES: Contractor shall be responsible for assuring the legal working status of its employees and its subcontractor's employees.

14. LAWS AND REGULATIONS: This Contract shall be governed by and constructed in accordance with the laws of the State of Arizona. The Contractor shall keep himself fully informed of all existing and future City and County Ordinances and Regulations and State and Federal Laws and Occupational Safety and Health Standards (OSHA) in any manner affecting the work herein specified. He shall at all times observe and comply with said Ordinances, Regulations, or Laws.

15. PERMITS: The City has obtained certain required permits which are included in the project specifications, but it will be the duty of the Contractor to determine that all the necessary permits have been obtained. The Contractor shall, at his own expense, obtain all required permits which have not been furnished by the City. A no-fee permit will be issued for work in the City of Glendale right-of-way and easement. (Also see Paragraph 7. Dust Prevention.)

16. ELECTRIC POWER AND WATER: The Contractor shall make his own arrangements for electric power and water. Subject to the convenience of the City, he may be permitted to connect to existing facilities where available, but he shall meter and bear the cost of such power or water. Fire hydrant meters may be obtained from the City of Glendale. Installation and removal of meters should be scheduled through the City's Water Services/Utilities Division at 930-2700. For details and current rates, please visit <http://www.glendaleaz.com/CrossConnection/firehydrantmeterprogram.cfm>.

17. SURVEY CONTROL POINTS AND MONUMENTS: Existing survey monuments indicated on the plans or found during construction shall be protected by the Contractor, and in the event removal is necessary, removal and replacement shall be performed by permission of the Engineer, under direct supervision of the Engineer or his authorized representative. Survey monuments shall be constructed to conform to the requirements of MAG Specifications, Section 405, and Standard Details.

18. EXISTING UTILITIES: The Contractor is hereby advised that the location of all utilities, as shown on the plans, may not be complete nor exact and the Contractor shall satisfy himself as to the exact location of the utilities by contacting Blue Stake or the utility companies before proceeding with the work. After the underground utilities are located by Blue Stake or the utility company, the contractor shall excavate in a careful and prudent manner to prevent unwillful damage to the underground utilities.

In the event the Contractor or its Subcontractor damages an existing, properly identified underground City of Glendale water or sewer line, the Contractor shall be responsible for the repairs at its expense.

The exact location of all existing underground service utilities, whether or not indicated on the plans, shall be determined by the Contractor at no expense to the City, and he shall conduct his work so as to prevent interruption of service or damage to them.

The Contractor shall protect existing utility services and be responsible for their replacement if damaged by him, or to make necessary adjustment in their location, if required, in order to complete the work for his Contract.

Utility companies and other interested parties have been provided with construction plans and the

construction schedule for this project. The Contractor shall comply with MAG Specifications 105.6 to cooperate with the utility companies.

19. **MAINTENANCE OF IRRIGATION FACILITIES:** Where irrigation facilities interfere with construction, the Contractor shall remove and replace the affected irrigation facilities to its original condition. Final acceptance of replaced facilities will depend upon final approval of the Engineer.

20. **OVERHEAD UTILITY LINES AND POLES:** Contractor is advised that when work around overhead lines and poles is required on a project the Contractor is required to coordinate with Utility Companies who own and operate overhead lines and poles. The coordination may include, but not be limited to the following activities: pole bracing, de-energizing of lines, and temporary relocations. Contractor is responsible to contact the applicable Utility Company representative and discuss his proposed construction methods; in order to determine what actions the Utility Company must take and the costs related to those actions. The Contractor shall include these costs in the applicable bid items for this project.

The primary and the backup representatives for this review and cost determinations are as follows:

Arizona Public Service:	Mr. Bobby Garza	602-371-7989
Qwest:	Mr. Ron Floyd	602-630-1932
Salt River Project:	Mr. Tim Rinn	602-236-8694
Salt River Project:	Ms. Mariann Ward	602-236-6389
Cox Communications:	Mr. Ron Pint	623-328-3529
Cox Communications:	Ms. Linda Facio	623-328-3500

21. **SOUTHWEST GAS FACILITIES EXPOSED DURING CONSTRUCTION:** The Contractor, upon exposing a gas line during construction, shall call SOUTHWEST GAS at 602-271-4277. The Southwest Gas patrolman will respond, usually within an hour, to inspect the line. Minor cuts or abrasions to the pipe coating will be rewrapped and tracer wire will be reconnected at no cost to the City.

22. **UNDERGROUND UTILITIES' BEDDING:** All water, sewer, storm drain, irrigation and other conduits installed within the City of Glendale shall be bedded from bottom of excavation to one foot above the pipe with granular bedding material meeting the requirements of Section 601.4.6 of MAG Uniform Standard Specifications. The initial bedding under the pipe shall follow City of Glendale Detail G-690.

23. **SEWER SERVICE LINES:** The Contractor shall be responsible for locating, and protecting from damage during construction, all sewer service lines within the project which are not owned by the City. Contractor will be permitted to review the "as-builts" to assist Contractor in locating the non-City owned sewer service lines. These "as-builts" were prepared, and supplied to the City, by private developers or contractors who installed the non-City owned sewer service lines. Therefore, the City does not guarantee or warranty the accuracy of such "as-builts" and the contractor, as a condition for being allowed to review such "as-builts", hereby agrees to hold the City harmless for any and all damages or other expenses contractor may incur as a result of any inaccuracies or incorrect information in these "as-builts".

24. **RIGHTS-OF-WAY:** The City will provide rights-of-way and easements for all work specified in this Contract, and the Contractor shall not enter or occupy with man, tools, equipment or materials any private ground outside the property of the City of Glendale, Maricopa County, Arizona, without the consent of the property owner.

25. **SUBCONTRACTS:** Subcontracts shall be in accordance with, and the Contractor shall be bound by, the following provisions:

All subcontracts shall be subject to the approval of the City.

All subcontracts shall be in writing and shall provide that all work to be performed thereunder shall be performed in accordance with the terms of the Contract.

Certified copies of any and all subcontracts shall be furnished to the City Engineering Department; however, prices may be omitted.

Subcontracts shall conform to the regulations governing employment of labor.

The subcontracting of any part of the work will in no way relieve the Contractor of his responsibility under the Contract.

26. **PRE-CONSTRUCTION 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 Engineer will schedule a Pre-Construction Conference. This will be held at the City of Glendale, 5850 West Glendale Avenue, Glendale, Arizona.

The purpose of this Conference is to establish a working relationship between the Contractor, Utility Companies, and the Engineer. The agenda will include critical elements of the construction schedule, procedures for handling shop drawings and other submittals, cost breakdown of major lump sum items, payment application and processing, coordination with the involved utility companies, emergency telephone numbers for all representatives involved in the course of construction, and establishment of the Notice to Proceed date.

Minimum attendance by the Contractor shall be a responsible official of the company/corporation, who is authorized to execute and sign documents on behalf of the company/corporation.

27. OVERTIME:

Regular Work Hours: The work required to be performed by the Plans and Specifications for the Project shall be performed only during regular working hours, unless the City has authorized overtime work in accordance with the procedures set forth below. Regular working hours shall be defined as one 8-1/2 hour shift per day, Monday through Friday, or, upon prior approval of the City, one 10-1/2 hour shift per day on a compressed four day work week during Monday through Friday. Regular working hours shall not include Saturdays, Sundays or City recognized legal holidays.

Authorization and Costs: If the Contractor desires to schedule work for times other than regular work hours (overtime), the Contractor shall make a written request to the City at least two business days prior to the scheduled overtime. The City reserves the right to deny the request to work overtime based on the best interest and needs of the City. If an overtime request is denied, the City may, at its sole discretion, extend the contract time at no additional costs to the City.

In the event the Contractor does perform work overtime, with or without the prior approval of the City, the Contractor shall be responsible to the City for all additional costs that may be incurred by the City as a result of the Contractor's overtime work, including costs for engineering, inspections, testing, surveying and construction administration, all in accordance with MAG Section 108.5. However, the Contractor shall not be responsible for City's costs incurred as a result of overtime work requested by the City or overtime work resulting from an emergency which is not the responsibility of the Contractor or its employees, subcontractors or suppliers. The City's cost will be billed directly to the Contractor or may, at the City's option, be deducted from monies due the Contractor.

28. **CONTRACTOR'S CONSTRUCTION SCHEDULE:** Concurrently, with the execution of the contract and prior to the pre construction conference, the Contractor shall submit a preliminary schedule for the Engineer's review and acceptance. The schedule shall be in sufficient detail to allow the Engineer to determine if the proposed schedule will conform to an acceptable program of construction operations, as determined by the contracting agency. Within ten calendar days after the preliminary schedule, described above, has been accepted by the Engineer, the Contractor shall submit a progress schedule, utilizing the critical path method scheduling technique, showing the order in which he proposes to carry out the work, the dates on which he will start each phase of the work, and the contemplated date for completion of each phase. The Contractor shall not be permitted to commence construction until the schedule complying with this paragraph has been submitted to the

City. The Contractor will not be granted any extension to the contract time or compensation for any damages as a result of the City's refusal to allow Contractor to commence construction until the critical path method progress schedule has been submitted and accepted by the Engineer.

The critical path method (CPM) scheduling technique requires a breakdown of the entire work into individual tasks and an analysis of the number of days required to perform each task. The schedule submitted to the City should highlight and identify the critical path for the project. After the work is in progress, the Contractor shall submit supplementary progress schedules, using the critical path method technique, of the progress to date and projection for completion. The supplementary progress schedules shall be submitted with each pay request in accordance with the paragraph, "Payments to Contractors," of these Supplemental General Conditions. The progress schedules shall be subject to the acceptance of the Engineer. In the event the Contractor fails to submit a supplementary progress schedule acceptable to the Engineer, the City may withhold further progress payments to the Contractor until the Contractor submits an acceptable supplementary progress schedule, which is accepted by the Engineer, to the City. Schedule changes requiring an increase in the City's engineering personnel on the project shall not be put into effect until the Engineer has approved such increase and made arrangements for the required additional personnel.

29. CHARACTER OF WORKMEN: None but skilled foremen and workmen shall be employed on work requiring special qualifications. When required by the Engineer, the Contractor shall discharge any person who is, in the opinion of the Engineer, disorderly, dangerous, insubordinate, incompetent, or otherwise objectionable. The Contractor shall keep the City harmless from damages or claims for compensation that may occur in the enforcement of this section of the specifications.

30. HINDRANCES AND DELAYS: Except as otherwise provided herein, no charge shall be made by the Contractor for hindrances or delays from any cause during the progress of the work embraced in this Contract; but such delays, if due to no fault or neglect of the Contractor, shall entitle the Contractor to an extension of time allowed for completing the work, sufficient to compensate for the delay, the amount of the delay to be determined by the Engineer, provided the Contractor shall give said Engineer immediate notice in writing of the cause of such delay.

30.1 Delay: In the event of a delay for which the City is solely responsible, which is unreasonable under the circumstances and which was not within the contemplation of City and Contractor at the time this Contract is executed, City and Contractor shall negotiate, in good faith, a payment by the City to Contractor for the expenses incurred by Contractor as a result of such delay, in accordance with the City of Glendale Engineering Department's POLICY STATEMENT FOR CALCULATING DELAYS AND DAMAGES. This provision shall not be construed to void any provision in the contract which requires notice of delay or provides for liquidated damages. However, if the delay is the result of any act or neglect of a third party, including the architect, engineer or other contractor employed by the City, or by labor disputes, fire, unusual delay in transportation, adverse weather conditions not reasonably foreseeable, unavoidable casualties, or any causes beyond the Contractor's control, the Contractor shall not be entitled to any payments or compensation for expenses incurred as a result of such delay, but the Contract Time shall be extended by Change Order for such reasonable time as the Engineer may determine. No extension or compensation will be granted for any delay which is the result, wholly or partially, of any act or neglect of Contractor or any Subcontractor hired by Contractor.

31. LIQUIDATED DAMAGES:

31.1 Should the contractor fail to substantially complete the work under this contract within the time for completion stated in the paragraph "Time of Completion," in the Information for Bidders, then the contractor shall pay the City of Glendale, Arizona, liquidated damages, pursuant to the provisions of Section 108.9, Standard Specifications for Public Works Construction, Maricopa Association of Governments, until the work is substantially complete.

31.2 Should the contractor fail to fully and finally complete the work under this contract within the time for completion set forth in the paragraph "Time of Completion," in the Information for Bidders, even though the contractor has achieved substantial completion of the work within such time, then the

contractor shall pay the City of Glendale, liquidated damages (pursuant to the provisions of Section 108.9, Standard Specifications for Public Works Construction, Maricopa Association of Governments), in an amount equal to 100% of the applicable liquidated damage rate set forth in MAG Section 108.9 for each and every calendar day of delay until the work is fully and finally complete and accepted.

31.3 The date of substantial completion shall be the date when the work is sufficiently complete, in accordance with the contract documents, so the owner can fully occupy and utilize the work or designated portion thereof for the use for which it is intended, with all the project's parts and systems operable as required by the contract documents and all the work is complete, accessible, operable, and usable by the owner for its intended purpose(s), and all parts, systems and sitework are 100% complete and cleaned for the owner's use. Only incidental corrective work and final cleaning (if required), beyond cleaning needed for the owner's full use, may remain for final completion.

31.4 Full and final completion shall be that date when all work under the project, including incidental corrective work under punch list and final cleaning, has been completed and the entire project is accepted by the owner.

32. PAYMENTS TO CONTRACTOR: The measurements of quantities and the payments to the Contractor shall be in accordance with MAG Uniform Standard Specifications for Public Works Construction, Part 100 - General Conditions, Section 109 - Measurements and Payments.

Payments will be made on the basis of itemized, monthly statements prepared by the City and signed by the Contractor. The Contractor shall submit an itemized, duly certified and approved estimate for work completed through the last day of the preceding month in accordance with MAG Specifications, as amended by these Supplemental General Conditions. Upon approval of the pay estimate, the City will mail the check directly to the Contractor.

The pay estimate shall be accompanied by an updated progress schedule as required by these Supplemental General Conditions and a cash flow report when required by the Special Provisions. Approval of progress payments shall be conditional upon submittal of progress schedules and cash flow reports, when required, which are acceptable to the Engineer.

Upon 100% completion and acceptance of the project, and with the request for final payment, the Contractor shall complete and submit the "Contractor's Affidavit Regarding Settlement of Claims" form which is included in these specifications. Before final payment and release of retention, Contractor must arrange for its Surety to provide the City with a fully executed AIA Consent of Surety form. To avoid delays in the final payment, the Surety may send the Consent of Surety directly to the City via fax at (623) 915-2861, and mail the original to the City of Glendale Engineering Department, 5850 West Glendale Avenue, Glendale, Arizona 85301. Should any ambiguity arise between the Contract and these Conditions, the provisions of the Contract shall prevail.

33. WARRANTY: This project shall have a 2 year warranty. The warranty period shall begin upon final acceptance of the work by the City of Glendale.

END OF SUPPLEMENTAL GENERAL CONDITIONS

SPECIAL PROVISIONS

1. **SCOPE OF WORK:** This project is for a new City of Glendale Transit Center located at 7700 West Arrowhead Towne Center. The new transit center will be located at the north entry plaza to the Arrowhead Towne Center mall, between the AMC Theatres and Dick's Sporting Goods. The Transit Center will provide two (2) new bus pullouts along the inner loop drive and a new steel canopy to shelter cast-in-place concrete seating walls and metal benches. The work includes the removal of approximately 353 square yards of asphalt pavement in the inner loop drive, and the removal and replacement of approximately 130 lineal feet of curb and gutter, and 1,410 square yards of concrete paving in the inner loop drive and plaza areas.

2. **DEFINITIONS:**

A. **Section:** Reference to a Section on the plans or in these Specifications shall mean a Section of the Uniform Standard Specifications for Public Works Construction, sponsored and distributed by Maricopa Association of Governments (MAG), latest revision. The provisions of MAG Uniform Standard Specifications and Details for Public Works Construction, which are not altered or modified by the drawings or by these Special Provisions or by any subsequently issued Addendum, shall apply to the contract even though the Contractor's attention is not specifically drawn to such provisions.

B. **Standard Detail:** Reference to a MAG Standard Detail (MAG S.D.) on the plans or in these specifications shall mean a standard detail drawing in the latest revision of the Uniform Standard Specifications for Public Works Construction, sponsored and distributed by Maricopa Association of Governments. City of Glendale Standard Detail (C.O.G. S.D.) shall mean a standard detail drawing in the City of Glendale's Engineering Design and Construction Standards, latest revision. City of Phoenix Standard Detail (C.O.P. S.D.) shall mean a standard detail drawing in the Phoenix Supplemental Standard Details for Public Works Construction, latest revision.

3. **CONSTRUCTION SURVEYING AND LAYOUT:** The work under this item shall consist of furnishing all materials, personnel, equipment, and traffic control necessary to perform all surveying, staking, and verification of the accuracy of all control points per the plans and as directed by the Engineer. Included in this work shall be all calculations required for the satisfactory completion of the project in conformance with the plans and these Special Provisions. The work shall be done under the direction of a registered professional engineer or a registered land surveyor employed by the Contractor. The crew chief shall be NICET Certified Level III or a registered land surveyor. The Contractor shall furnish all equipment, materials and other devices necessary for establishing, checking, marking and maintaining points, lines, grades and layouts.

Throughout the work, the Contractor shall set all stakes including, but not limited to; centerline stakes; offset stakes; reference point stakes; slope stakes; pavement lines, curb lines and grade stakes at intervals not greater than 25 feet; stakes for sewers, roadway drainage, pipe, under drains, clearing, paved gutter, fence, right of way markers, and survey monuments; blue tops of subgrade, subbase and base courses at intervals not greater than 50 feet; permanent as-built elevation marks; and all other horizontal or vertical controls necessary for complete and accurate layout and construction of the work. Stakes for horizontal and vertical curves shall be set at intervals appropriate for the length of curve. The coordinates of any new control points established by the Contractor during the course of the work shall be given to the Engineer within five working days of control point establishment.

Field notes shall be kept in standard field notebooks furnished by the Contractor. Field notes shall be kept in a clear, orderly and neat manner consistent with standard surveying practices. The standard field notebooks or copies of, shall be made available to the Engineer upon request at any time during the prosecution of the work.

When utility adjustments are a part of the contract, the Contractor shall perform all layout work and

set all control points, stakes and references necessary for carrying out all such adjustments.

The Contractor shall cross-section all fill areas for monthly, quantity estimates and as directed by the Engineer. The Engineer may verify the accuracy of same. The Engineer shall check all measurements that involve determination of final quantities.

Any errors, omissions or discrepancies in the project plans shall be immediately brought to the attention of the Engineer. The Contractor shall promptly notify the Engineer in writing, explaining the problem in detail. The Engineer will advise the Contractor within three working days of any corrective actions deemed necessary. No changes in the project plans will be allowed without the approval of the Engineer.

The Contractor shall be compensated for additional work associated with survey and layout when:

- A. The project plans do not provide sufficient information and new calculations must be performed.
- B. The Contractor performs survey work based on erroneous plan information, which results in the duplication of work.
- C. Changes by the Engineer to the plan information for which the Contractor has already performed the work and results in the duplication of such work.

The Contractor shall not be due compensation for any survey work when:

- A. Information provided on the plans is sufficiently complete to allow any additional information necessary for the complete layout of the work to be routinely calculated.
- B. The Contractor fails to inform the Engineer of discovered plan errors before the performance of any extra survey work.
- C. Work is included in any other pay item.

The Contractor shall inform the Engineer in a timely manner of any omissions, ambiguities, or errors which the Contractor feels may result in extra calculations or survey work, so as not to delay the project or create any unnecessary calculations.

All additional survey work shall be documented by the Contractor and verified by the Engineer before compensation may be granted. Documentation shall consist of a detailed diary specifically addressing the work involved in the alleged problem area. The Contractor may be required to provide calculations, charts, graphs, drawings, or any other physical evidence, which will verify additional work.

The Contractor shall be responsible for verifying curb and gutter grades before placement of concrete using a steel straightedge, string line or other method approved by the Engineer. The field verification shall be performed in the presence of the Engineer or designated representative.

The Engineer reserves the right to make inspections and random checks of the staking and layout. Inspection or acceptance of all or any part of the Contractor's staking and layout by the Engineer does not relieve the Contractor of full responsibility to secure the proper dimensions, grades and elevations of the work.

If, in the Engineer's opinion, the work is not being performed in a manner that will assure proper controls and accuracy, the Engineer will order any or all of the staking and layout work redone at no additional cost to the City. If any portion of the Contractor's staking and layout work is ordered redone and requires 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 monthly estimate.

The Contractor shall provide final "as-constructed" field surveying, including both vertical and horizontal data based on the finished work. The Contractor shall also furnish final Record Drawings for all improvements. The Record Drawings shall be prepared by a Registered Land Surveyor and submitted to the Owner for approval prior to final acceptance of the project. The Record Drawings shall be prepared on a set of reproducible copies of the construction plans. The completed drawings shall be signed and sealed by the Registered Land Surveyor responsible for obtaining the As-built information and preparing the Record Drawings.

All survey field books and documentation shall be available for inspection by the Engineer. This item shall be considered incidental to the work and no separate payment shall be made for CONSTRUCTION SURVEYING AND LAYOUT.

Payment for this item will be made at the contract lump sum price fully.

4. **SUSPENSION OF WORK:** The Engineer reserves the right to suspend the work wholly or in part if deemed necessary for the best interest of the City. This suspension will be without compensation to the Contractor, other than to adjust the contract time in accordance with MAG Section 108.

5. **COMPLIANCE WITH MANUFACTURER'S INSTRUCTIONS:** In all instances wherein the item and/or specifications require installation or construction in accordance with either manufacturer's or supplier's recommendations and/or instructions, said recommendations and/or instructions shall be submitted with the applicable portions clearly marked for approval prior to the commencement of work on that item or portion of the contract.

6. **TRAFFIC REGULATIONS:**

6.1 All traffic affected by this construction shall be regulated in accordance with the City of Phoenix "Traffic Barricade Manual," the "Manual of Uniform Traffic Control Devices" and these Special Provisions. The following traffic restrictions are minimum requirements throughout the construction period:

6.1.1 All references in the City of Phoenix "Traffic Barricade Manual" and the "Manual of Uniform Traffic Control Devices" to "arterial" and/or "collector" streets shall mean "arterial and/or major arterial" streets and are referred to as "major" streets in the following sections.

6.1.2 A minimum of two travel lanes (one for each direction) shall be maintained open to traffic at all times on all major streets. All work that enters or crosses a major street must be done at times other than 6:00 a.m. to 8:30 a.m., and 4:00 p.m. to 6:00 p.m. unless approved by the Transportation Director or Designee.

6.1.3 A travel lane shall be defined as ten (10) feet of roadway not obstructed by traffic control devices with a safe motor vehicle operating speed of twenty-five (25) miles per hour.

6.1.4 A travel lane will not be considered as open to traffic until it has been graded reasonably smooth and is paved with a minimum of two (2) inches of asphalt. This shall be considered temporary pavement and shall be removed completely before proceeding with

final surfacing.

- 6.1.5 The Contractor shall provide and maintain all required and requested traffic control devices to protect and guide traffic for all work in the construction area.
- 6.1.6 Intersection area shall be defined as all of the area within the right-of-way of intersecting streets, plus two-hundred fifty (250) feet beyond the center of the intersected streets on all legs of the intersection.
- 6.1.7 The Contractor shall maintain all existing traffic signs erect, clean and in full view of the intended traffic at all times. Street name signs at major street intersections shall be maintained erect at all times. If any signs interfere with construction, the Contractor shall notify the Transportation Department at least 48 hours in advance before covering or removing said signage. The Contractor shall be responsible for reinstalling all signs removed or covered and verifying they are correctly placed. The Transportation Department will inspect all signage prior to completion of the project.
- 6.1.8 Local access to all properties on the subject project shall be maintained at all possible times in the form of a safe and reasonable direct route to at least one of the above defined major streets. Whenever local access cannot be maintained, the Contractor shall notify the affected property owner or user and the Engineer at least Seventy-Two (72) hours in advance.
- 6.1.9 The Contractor shall be required to provide a uniformed off-duty City of Glendale police officer to assist with traffic control whenever traffic in any one direction is restricted to one lane at a signalized major intersection or at other locations if it should become necessary in the opinion of the Transportation Director or Designee. If the Contractor chooses to use a police officer at other locations during peak traffic hours or to assist with his other traffic control operations, the cost shall be included in the lump sum for "Traffic Control" and not paid out of the hours allowed for "Off Duty Glendale Police Officer." All requests for off-duty officers will be made through the Glendale Police Department, Off-Duty Work Administrator. The Contractor must provide evidence of workmen's compensation coverage before any officer will be permitted to work.

Measurement for payment of the uniformed off-duty Glendale police officer hours will be made by the actual number of man-hours used for traffic control at signalized major intersections or as approved by the Engineer. Because the quantity of hours is dependent on the Contractors schedule of activities, the unit price bid for this item will be administered as a contingency bid item and any adjustment in hours will not be subject to the 20 percent limitation.

Payment for the off-duty Glendale police officer will be made at the contract unit price bid per hour for OFF DUTY GLENDALE POLICE OFFICER and shall include the net hourly rate of \$35.00 per police officer with a three (3) hour minimum. The net hourly rate shall be increased to include withholding for Federal, State, FICA, Medicare, Workmen's Compensation insurance and any payroll administrative costs.

- 6.1.10 The Contractor shall prepare a traffic control plan for the project and submit it to the City Transportation Director or Designee for review and approval at least fifteen (15) working days prior to the start of construction. The traffic control plan must be submitted through the City of Glendale on-Line Traffic Control Plan application process at www.glendaleaz.com/transportation/TrafficControlForm.cfm. The traffic control plan shall include message boards installed a minimum of seven (7) working days prior to restrictions when requested by the Transportation Director or Designee, additional public notification shall be required for major restrictions that impact adjacent stakeholders. Any changes to the traffic control plan during construction shall be submitted to the City Transportation Director or Designee for approval at least seventy-two (72) hours before implementation.

Payment for this item shall be made at the contract lump sum price for TRAFFIC CONTROL.

- 6.1.11 It is the City's desire to maintain one lane of traffic in each direction on minor streets whenever possible. Should it become imperative for the Contractor to close off a portion of any minor street or reduce the travel way to a single lane, he/she must obtain approval from the City Transportation Director or Designee Seventy-Two (72) hours prior to implementing a traffic control change. He/she must provide all the necessary signs to detour traffic and/or flag person to control traffic for a single lane. The maximum amount of time that the street may be closed is from 9:00 a.m. until 4:00 p.m.
- 6.1.12 Flagger Requirements: All flaggers shall be properly trained and certified by a recognized source, such as the American Traffic Safety Services Association (ATSSA) or National Safety Council, and shall carry with them at all times proof that training and certification requirements have been completed within the last two years.

7. **ENERGIZED AERIAL ELECTRICAL POWER LINES:** The utility company maintains energized aerial electrical power lines in the immediate vicinity of this project. Do not consider these lines to be insulated. Construction personnel working in proximity to these lines are exposed to an extreme hazard from electrical shock. Contractors, their employees, and all other construction personnel working on this project must be warned of the danger and instructed to take adequate protective measures, including maintaining a minimum ten (10) feet clearance between the lines and all construction equipment and personnel. (See: OSHA Standard 1926.550(a)15.) As an additional safety precaution, Contractors should also be instructed to call the utility company to arrange, if possible, to have these lines de-energized or relocated when the work reaches their immediate vicinity. The cost of such temporary arrangements would be borne by the Contractor. The utility company can often respond to such requests if two days advance notice is given, but some situations may require up to sixty (60) days lead time for relocation or other arrangements.

8. **CONCRETE GUTTER WATER TESTING:** The MAG Uniform Standard Specifications, Section 340.3, CONSTRUCTION METHODS, shall be modified as follows: The 1/2 inch referenced in Paragraph 16 beginning, "When required by the Engineer, gutter having a slope of 0.8 foot...", shall be changed to 1/4 inch.

9. **RECORD DRAWINGS:** The Contractor shall maintain one set of contract drawings with all changes, deviations, additions and deletions clearly marked thereon. Upon completion of the work, this set of drawings, shall be marked "RECORD DRAWINGS," dated, and delivered to the Engineer prior to approval of the Contractor's final payment request.

10. **AZPDES Permit Requirements:**

A. This project is subject to the Arizona Pollutant Discharge Elimination System (AZPDES) Stormwater requirements for construction sites under the Environmental Protection Agency (EPA) General Permit for Arizona. Under provisions of that permit, the Contractor shall be designated as permittee, and shall take all necessary measures to assure compliance with the AZPDES General Permit for Arizona as well as all other applicable Federal, State and local laws, ordinances, statutes, rules and regulations pertaining to stormwater discharge. As the permittee, the Contractor is responsible for preparing, in a manner acceptable to the EPA, ADEQ, and the City of Glendale, all documents required by this regulation, including but not necessarily limited to:

1. Stormwater Pollution Prevention Plan (SWPPP) for the project, including certification of compliance form. Contractor shall be required to develop, implement, update and revise the SWPPP, as necessary, in order to assure compliance with the ADEQ permit requirements. **All SWPPP revisions must be reviewed by the City of Glendale's Engineering Department prior to implementation.** The SWPPP shall be retained on the project site at all times during construction.

2. Notice of Intent (NOI) to assure compliance with the AZPDES General Permit for Arizona, including certification of signatures.
3. Notice of Termination (NOT) of coverage under AZPDES General Permit for Arizona.

B. Three copies of the SWPPP and the NOI shall be submitted to the City of Glendale during the pre-construction meeting and shall be subject to review by the City prior to implementation.

C. Contractor shall submit the completed and duly signed NOI forms no later than forty-eight (48) hours prior to the **pre-construction meeting** for the project to the following agency:

Arizona Department of Environmental Quality; Surface Water Section/Stormwater
and General Permits Unit
1110 West Washington, 5415A-1
Phoenix, AZ 85007

The contractor may also go online and use the Stormwater SMART NOI System at:

<http://www.az.gov/webapp/noi/main.do>

Failure by the Contractor (or Subcontractors of any tier) to submit NOI's within the mandated time frame shall result in delay of the construction start date, and no claim for extension of time will be granted for such delay. A copy of the completed NOI shall be posted at the construction site.

D. Inspections of all stormwater pollution control devices on the project shall be performed by the Contractor on a monthly basis and following each rainfall of 0.50 inches or more in a 24-hour period at the project site as required under provisions of the AZPDES General Permit for Arizona. Contractor shall prepare reports on such inspections and retain the reports for a period of three years following the completion of the project. Inspection reports shall be submitted monthly to the City along with progress payment requests. Additionally, Contractor shall maintain all stormwater pollution control devices on the project in proper working order, which shall include cleaning and/or repair during the duration of the project.

E. Contractor warrants that its employees and Subcontractors of any tier and their employees shall at all times comply with all applicable laws, ordinances, statutes, rules and regulations set forth by all federal, state and local governments and the Arizona Department of Environmental Quality in connection with AZPDES Permitting requirements and laws and regulations pertaining to air, groundwater and surface water quality.

Fines and penalties imposed by the ADEQ against the City of Glendale or the Contractor, for Contractor's failure to comply with any of the requirements of AZPDES General Permit of Arizona, shall be borne by the Contractor.

F. Upon project completion, acceptance and demobilization, Contractor shall use the SMART NOI web-based service to complete the NOT process and also provide a copy of the NOT to **the City of Glendale** thereby terminating all AZPDES permit coverage for the project. Contractor shall then surrender to the City all inspection information and other documents prepared and maintained by the Contractor in compliance of the AZPDES General Permit. Contractor shall retain the originals of such documents for a period of three (3) years following the completion of the project.

G. Copies of all required forms and guidance for preparing the SWPPP are available at the ADEQ website <http://www.azdeq.gov/environ/water/permits/stormwater.html>.

H. The Lump Sum price for the SWPPP shall include all material, labor, and all other costs relating to the preparation, installation and maintenance of the SWPPP during project construction, including assuring proper operation of the pollution control devices installed, and all maintenance, cleaning, and disposal costs associated with clean-up and repair following storm events, runoff or releases on the project. The Lump Sum price for the SWPPP shall be inclusive of all costs, and no additional claims shall be made by Contractor under any other specification provision of these documents, including Change Conditions. Payment for this bid item shall be upon final completion and acceptance of the project, as per Section 109.1.

Payment for AZPDES permit requirements shall be made on the basis of lump sum for all work for **ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM**. Payment shall include installation of inlet markers, supplied by the City, on all catch basins, scuppers, drywells and elsewhere as directed by the City. Markers shall be installed using a suitable 2-part epoxy as approved by the City.

11. **CONSTRUCTION MATERIALS SAMPLING AND TESTING:** The contractor, at their expense, shall provide adequate personnel for construction materials sampling and testing functions as required by the City of Glendale. Proof of certifications of the following requirements shall be provided to the City of Glendale prior to commencement of construction:

- A. **LABORATORY TESTING SERVICES:** Construction materials testing laboratories must meet the following requirements in order to perform laboratory testing on construction materials samples:
 - a. Possess and maintain current AASHTO accreditation (including R18) provided by the AASHTO Materials Reference Laboratory (AMRL), and Cement and Concrete Reference Laboratory (CCRL) in any test methods performed and be currently participating in their respective proficiency programs.
 - b. Concrete strength testing must be performed by a technician currently certified by the American Concrete Institute (ACI) as a "Concrete Strength Testing Technician".

- B. **FIELD TESTING AND SAMPLING SERVICES:** Field technicians shall be employed by the construction materials testing laboratory noted above and have current "*Field Technician Certification*" from the Arizona Technical Testing Institute (ATTI) and current "*Concrete Field Testing Technician – Grade I*" certification from the American Concrete Institute.

- C. **TESTING FREQUENCIES:** Laboratory and field testing and sampling shall adhere to the current City of Glendale minimum frequencies (see tables below) formal documentation, records etc. shall be provided to the City in a timely manner and as part of required project documentation for overall project acceptance. The City reserves the right to utilize independent / additional testing to confirm prior results.

Payment for this item will be made at the contract lump sum price fully complete for CONSTRUCTION MATERIALS SAMPLING AND TESTING.

CITY OF GLENDALE - CONSTRUCTION ENGINEERING				
MATERIALS TESTING SECTION				
ASPHALTIC CONCRETE MINIMUM SAMPLING AND TESTING FREQUENCY				
TYPE OF SAMPLE	REQUIRED TEST(S)	TEST METHOD DESIGNATION	MINIMUM SAMPLE FREQUENCY	MINIMUM SIZE OF SAMPLE
COLD FEED AGGREGATE OR COMBINED HOT-BIN AGGREGATE SAMPLES	SIEVE ANALYSIS	A.S.T.M. C - 136	1 - EVERY 500 TONS	25Kg
	SAND EQUIVALENT	A.S.T.M. D - 2419	1 - PER DAY	10Kg
	SPECIFIC GRAVITY (COARSE & FINE)	A.S.T.M C-127 / C-128	1 - PER DAY	12Kg
	SIEVE ANALYSIS	A.S.T.M. C - 136	1 - PER EACH ADDITIONAL 500 TONS PRODUCED	25Kg
UNCOMPACTED ASPHALTIC CONCRETE MIXTURE	IGNITION-GRADATION	ARIZ.427	1 - PER FIRST 500 TONS PER DAY	9 Kg
	GYRATORY COMPACTION	AASHTO TP4	1 - PER FIRST 500 TONS PER DAY	9 Kg
	MAX. THEORETICAL SPECIFIC GRAVITY	A.S.T.M. D - 2041	1 - PER FIRST 500 TONS PER DAY	7 Kg
	IGNITION-GRADATION	ARIZ.427	1 - PER EACH ADDITIONAL 500 TONS PRODUCED	9 Kg
	MARSHAL COMPACTION	ASTM D-6926/D6927	1 - PER FIRST 500 TONS PER DAY	9 Kg
COMPACTED ASPHALTIC CONCRETE MIXTURE	NUCLEAR DENSITY	A.S.T.M. D - 2950	1 - PER 750 LINEAR FT PER PASS OR RIBBON	N/A
	SPECIFIC GRAVITY BY CORE SAMPLE	A.S.T.M. D - 2726	1 - PER 750 LINEAR FT PER PASS OR RIBBON	N/A

revised 1/07/2013

City of Glendale				
Minimum Construction Materials Field Testing Frequency				
Type of Material	Type of Structure	Minimum Test Frequency	Minimum Test Requirement	Test Method
Native In-Situ	Curb, Gutter & Sidewalk	1-per 500 lin.ft.	90% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Native In-Situ	Roadway Subgrade	1-per 500 lin.ft.	95% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Native In-Situ	Trench Backfill	1-per 500 lin.ft. per 1 ft. lift	95% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Native In-Situ	Structural Fill	1-per lift	95% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Native In-Situ	Driveways, Aprons, Valley Gutters	1- per structure	95% & +2 -4% of optimum moisture	ASTM D-698 / D-2922
Aggregate Base	Pipe Bedding	1-per 500 lin.ft.	95%	ASTM D-698 / D-2922
Aggregate Base	Curb, Gutter & Sidewalk	1-per 500 lin.ft.	95%	ASTM D-698 / D-2922
Aggregate Base	Roadway Base	1-per 500 lin.ft.	100%	ASTM D-698 / D-2922
Aggregate Base	Structural Fill	1-per lift	95%	ASTM D-698 / D-2922
Concrete	Curb, Gutter, Sidewalk, Driveways	1 set per 50 yards or 1/2 days pour	1 set of (4) 4X8 Cylinders	ASTM C-71 / C-172
Asphaltic Concrete	Roadway (Arterial)	1-per 750 lin.ft. per pass	92% - Nuclear Density	ASTM D-2950 / D-2041
Asphaltic Concrete	Roadway (Arterial)	1-per 750 lin.ft. per pass	92% - Core Density	ASTM D-2726
Asphaltic Concrete	Roadway (Residential)	1-per 750 lin.ft. per pass	95% - Marshall Density	ASTM D-6926/D6927
Asphaltic Concrete	Roadway (Residential)	1-per 750 lin.ft. per pass	95% - Core Density	ASTM D-2726
Asphaltic Concrete	Roadway	1 Sample per 500 tons	Uncompacted Field Sample	AC Laboratory Tests*
<p>NOTE: This table is based on the approximate <u>minimum</u> number of tests to be performed and requirements may be increased depending on site conditions or other circumstances at the discretion of the City of Glendale.</p> <p>* All Asphaltic Concrete Laboratory Tests are covered on another sheet provided upon request.</p>				

Revised 01/07/2013

12. **CASH FLOW REPORT:** The Contractor shall prepare a Cash Flow Report for projected monthly project cash flow on a City provided form and submit it for approval prior to issuance of the Notice to Proceed. The accumulation of monthly pay estimate costs shall be plotted versus time in accordance with the proposed construction schedule. After approval, the Contractor shall submit an updated Cash Flow Report prior to the receipt of each Progress Payment. Each updated Cash Flow Report shall reflect the Contractor's actual monthly payment versus the actual elapsed contract time.

At the City's request, if the projected quarterly project cash flow varies by more than ten percent of the total contract price, the Contractor shall prepare a revised Cash Flow Report. Each revised Cash Flow Report is subject to approval by the City prior to issuance of the progress payment.

Revisions to the report resulting from Contractor initiated delays or work schedule changes shall be at no cost to the City. Any revisions required by City initiated delays or changes to the work shall be paid as an integral part of the approved Change Order.

13. **CONSTRUCTION SIGN:** The project type to be indicated on the sign shall be 141511 - CITY OF GLENDALE TRANSIT CENTER. See "Construction Sign Detail."

14. ALLOWANCE FOR CONSTRUCTION CONTINGENCIES: Bid schedule includes a lump sum contingency allowance. This allowance is at all times the property of the City and is for the sole purpose of reimbursing Contractor for any unforeseen work not apparent at the time of bidding or additional work requested by the CITY OF GLENDALE.

No work anticipated for reimbursement under this Bid Item shall be initiated by Contractor until Contractor, City of Glendale Representative and City of Glendale agree on the scope and cost to perform the additional work. The Contractor shall prepare and submit to City of Glendale Representative a cost itemization and summary for the additional work. City of Glendale Representative and City of Glendale shall review and approve prior to Contractor proceeding with any additional work. Any portion of the stated sum not expended remains the property of the City of Glendale.

Work under this section shall consist of any additional work identified by the owner and contractor due to construction activity. All work under this item shall be itemized as per MAG requirements and deducted from the set amount of \$25,000.00. All work under this section shall include but is not limited to all necessary materials, tools, layout, survey and labor required to complete each task.

Measurement and payment for this item shall be made on an individual basis per task and as described above. Limit for this item is set at \$25,000.00 on the bid form, under line item ALLOWANCE FOR CONSTRUCTION CONTINGENCY.

END OF SPECIAL PROVISIONS



Project Life Cycle Cash Flow Schedule

Project No.: 0 Date: _____

Project Name: 0

Company Name: _____

Project Start Date: 0 Project Completion Date: 0

Original Updated Revised

Qtr.	Fiscal Yr.	Estimated		Actual	
		Amount	Accum.	Amount	Accum.
1st	07/13 - 09/13	\$ -	\$ -		
2nd	10/13 - 12/13	\$ -			
3rd	01/14 - 03-14	\$ -			
4th	04/14 - 06/14				
1st	07/14 - 09/14				
2nd	10/14 - 12/14				
3rd	01/15 - 03/15				
4th	04/15 - 06/15				
1st	07/15 - 09/15	\$ -	\$ -	\$ -	\$ -
2nd	10/15 - 12/15	\$ -	\$ -		
3rd	01/16 - 03/16	\$ -	\$ -		
4th	04/16 - 06/16	\$ -	\$ -		
1st	07/16 - 09/16	\$ -	\$ -	\$ -	\$ -
2nd	10/16 - 12/16				
3rd	01/17 - 03/17				
4th	04/17 06/17				
1st	07/17 - 09/17				
2nd	10/17 - 12/17				
3rd	01/18 - 03/18	\$ -	\$ -	\$ -	\$ -
4th	04/18 - 06/18				
Totals		\$ -		\$ -	\$ -

* COG's fiscal year is July 1, (current year) through June 30, (following year)

For Engineering Use Only:	
Account No: _____	PO No. _____

CONSTRUCTION SIGN DETAIL

CONSTRUCTION SIGNS ARE TO BE IN PLACE BEFORE PHYSICAL CONSTRUCTION BEGINS

SIGNS SHALL BE MADE OF 3/4" AC EXTERIOR PLYWOOD OR OTHER MATERIAL APPROVED BY THE ENGINEER

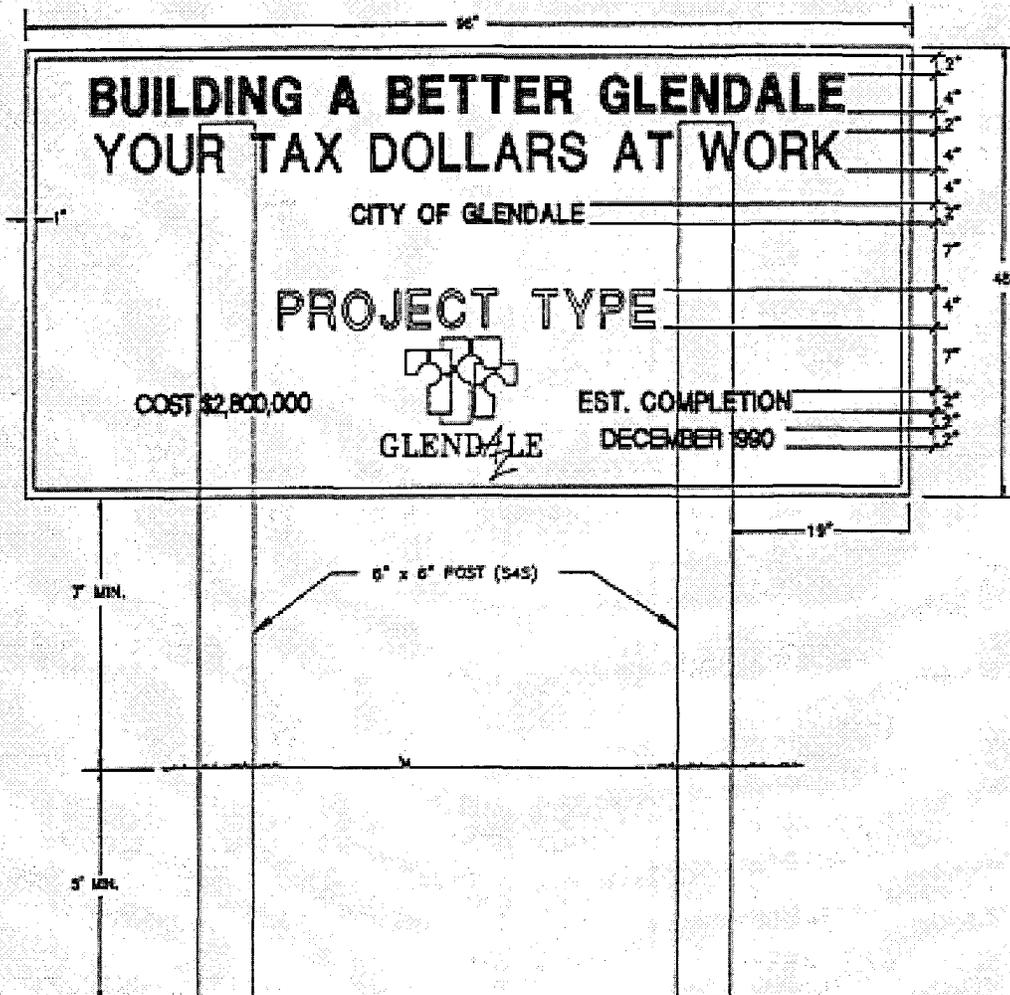
BACKGROUND TO BE PAINTED WHITE WITH STENCIL BLACK LETTERS, NUMERALS AND BORDER.

POSTS SHALL BE PAINTED WHITE. ALL MOUNTING HARDWARE TO BE RUST PROOF MATERIAL

SIGNS SHALL BE SO PLACED THAT THEY WILL NOT OBSCURE OR DETRACT FROM OTHER SIGNING.

CONTRACTOR TO FILL IN THE PROJECT TYPE, COMPLETION DATE, AND COST AS DIRECTED.

THE 12" X 13" TWO COLOR GLENDALE LOGO IS AVAILABLE BY CONTACTING THE CITY OF GLENDALE ENGINEERING DEPT. AT 623-930-3630. COST \$18.00





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Glendale Transit Center Phase II
April 15, 2015

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END OF TABLE OF CONTENT

~~DFDG~~

000105.13 Architectural Certification (DFDG)

PART 1 - GENERAL

1.01 CERTIFICATION

A. I hereby certify that these Specifications have been prepared by me, or under my supervision. I further certify that to the best of my knowledge these specifications are as required by and in compliance with the Building Codes of the State of Arizona.

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

00 31 32 Geotechnical Data

DIVISION 05 - METALS

05 12 00 Structural Steel Framing

05 52 13 Pipe Railings and Stainless Steel Plates

DIVISION 07 - THERMAL & MOISTURE PROTECTION

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DIVISION 12 - FURNISHINGS

129343 Site Seating

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 13 16 Concrete Paving and Walls

1.02 PROFESSIONAL SEAL



EXPIRES 12.31.15

Signature: _____ Date: 4/13/15

END OF CERTIFICATION

000105.19_ Civil Certification (Jacobs)

PART 1 - GENERAL

1.01 CERTIFICATION

A. I hereby certify that these Specifications have been prepared by me, or under my supervision. I further certify that to the best of my knowledge these specifications are as required by and in compliance with the Building Codes of the State of Arizona.

DIVISION 01 - GENERAL REQUIREMENTS

- 01 00 00 General Requirements
- 01 29 00 Payment and Measurement

DIVISION 02 - EXISTING CONDITIONS

- 02 41 19 Cutting and Patching

DIVISION 31 - EARTHWORK

- 31 00 00 Soils and Subsurface Conditions
- 31 00 01 Compliance
- 31 10 00 Earthwork

DIVISION 32 - EXTERIOR IMPROVEMENTS

- 32 12 15 Aggregate Base Course
- 32 12 16 Asphaltic Concrete Paving
- 32 13 17 Concrete Curbs, Sidewalk and Drives
- 32 17 13 Signing and Pavement Marking

1.02 PROFESSIONAL SEAL



Expires 09/30/2016

Signature: Michael K. Okamoto Date: April 21, 2015

END OF CERTIFICATION



SECTION 010000 GENERAL REQUIREMENTS

SCOPE OF WORK: The work on this project consists of grading, paving, curb & gutter, sidewalks, pavement markings, traffic control and utility adjustments.

2. DEFINITIONS:

A. Section: Reference to a Section on the plans or in these Specifications shall mean a Section of the Uniform Standard Specifications for Public Works Construction, sponsored and distributed by Maricopa Association of Governments (MAG), latest revision. The provisions of MAG Uniform Standard Specifications and Details for Public Works Construction, which are not altered or modified by the drawings or by these Special Provisions or by any subsequently issued Addendum, shall apply to the contract even though the Contractor's attention is not specifically drawn to such provisions.

B. Standard Detail: Reference to a MAG Standard Detail (MAG S.D.) on the plans or in these specifications shall mean a standard detail drawing in the latest revision of the Uniform Standard Specifications for Public Works Construction, sponsored and distributed by Maricopa Association of Governments. City of Glendale Standard Detail (C.O.G. S.D.) shall mean a standard detail drawing in the City of Glendale's Engineering Design and Construction Standards, latest revision. City of Phoenix Standard Detail (C.O.P. S.D.) shall mean a standard detail drawing in the Phoenix Supplemental Standard Details for Public Works Construction, latest revision.

3. **LINES AND GRADES:** The Contractor's licensed Land Surveyor shall provide line and grade boards or stakes at control points and at intervals not less than 50 foot. The Contractor shall provide such materials and give such assistance as may be required for setting line and grade boards or stakes. The Contractor shall give notice to the Land Surveyor not less than two working days in advance as to his need for additional grades and lines, in order that they may be furnished with a minimum of inconvenience to the City or of delay to the Contractor.

The Contractor shall be responsible for checking construction stakes for line and grade. If any discrepancies are found, between staking and approved plans, the Contractor shall notify the Engineer in writing prior to construction of any portion of work which discrepancy would affect in order to field check the staking and to make any adjustments and restaking of that portion of work. The Contractor shall be responsible for preserving all stakes set and shall take all steps necessary to insure that stakes are not disturbed or tampered with, and if in the area of any discrepancy, the stakes set are missing, moved or disturbed, the Contractor shall be responsible for the costs incurred to restake, remove and replace that portion of project where the discrepancy occurs.

4. **SUSPENSION OF WORK:** The Engineer reserves the right to suspend the work wholly or in part if deemed necessary for the best interest of the City. This suspension will be without compensation to the Contractor, other than to adjust the contract time in accordance with Section 108.

5. **COMPLIANCE WITH MANUFACTURER'S INSTRUCTIONS:** In all instances wherein the item and/or specifications require installation or construction in accordance with either manufacturer's or supplier's recommendations and/or instructions, said recommendations and/or instructions shall be submitted with the applicable portions clearly marked for approval prior to the commencement of work on that item or portion of the contract.

6. TRAFFIC REGULATIONS:

6.1 All traffic affected by this construction shall be regulated in accordance with the City of Phoenix "Traffic Barricade Manual," and these Special Provisions. The following traffic restrictions are minimum requirements throughout the construction period:

6.1.1 All traffic restrictions listed herein are to supplement the City of Phoenix "Traffic Barricade Manual," and are not intended to delete any part of the manual. All reference in the "Traffic Barricade Manual" to "arterial" and/or

"collector" streets shall mean "arterial and/or major arterial" streets and are referred to as "major" streets in the following sections.

6.1.2 A minimum of two travel lanes (one for each direction) shall be maintained open to traffic at all times on all major streets. All work that enters or crosses a major street must be done at times other than 6:00 a.m. to 8:30 a.m., and 4:00 p.m. to 7:00 p.m.

6.1.3 A travel lane shall be defined as ten (10) feet of roadway with a safe motor vehicle operating speed of twenty five (25) miles per hour.

6.1.4 A travel lane will not be considered as satisfactorily open to traffic until it has been graded reasonably smooth and is paved with a minimum of two (2) inches of asphalt. This shall be considered temporary pavement and shall be removed completely before proceeding with final surfacing.

6.1.5 The Contractor shall provide and maintain all necessary traffic controls, and must provide flashing arrow boards to protect and guide traffic for all work in the construction area.

6.1.6 Intersection area shall be defined as all of the area within the right of way of intersecting streets, plus two-hundred fifty (250) feet beyond the center of the intersected streets on all legs of the intersection.

6.1.7 The Contractor shall maintain all existing traffic signs erect, clean and in full view of the intended traffic at all times. Street name signs at major street intersections shall be maintained erect at all times. If any signs interfere with construction, the Contractor shall notify the Inspector at least 48 hours in advance for City forces to remove said signs. The Contractor shall be responsible for having all temporary traffic control signs installed and maintained during construction. The Transportation Department will re set all traffic and street name signs to permanent locations when notified by the Engineer that construction is complete.

6.1.8 Local access to all properties on the subject project shall be maintained at all possible times in the form of a safe and reasonable direct route to at least one of the above defined major streets. Whenever local access cannot be maintained, the Contractor shall notify the affected property owner or user and the Engineer at least twenty four (24) hours in advance.

6.1.9 The Contractor shall be required to provide a uniformed off duty City of Glendale police officer to assist with traffic control whenever traffic in any one direction is restricted to one lane at a signalized major intersection or at other locations if it should become necessary in the opinion of the Engineer. During construction activities that do not restrict a major signalized intersection, police officer assisted traffic control is not required. If the Contractor chooses to use a police officer at other locations during peak traffic hours or to assist with his other traffic control operations, the cost shall be included in the lump sum for "Traffic Control" and not paid out of the hours allowed for "Off Duty Glendale Police Officer." All requests for off-duty officers will be made through the Glendale Police Department, Off Duty Work Administrator. The Contractor must provide evidence of workmen's compensation coverage before any officer will be permitted to work.

Measurement for payment of the uniformed off duty Glendale police officer hours will be made by the actual number of man hours used for traffic control at signalized major intersections or as approved by the Engineer. Because the quantity of hours is dependent on the Contractors schedule of activities, the unit price bid for this item will be administered as a contingency bid item and any adjustment in hours will not be subject to the 20 percent limitation.

Payment for the off duty Glendale police officer will be made at the contract unit price bid per hour for "OFF-DUTY GLENDALE POLICE OFFICER" and shall include the net hourly rate of \$35.00 per police officer with a three (3) hour minimum. The net hourly rate shall be increased to include withholding for Federal, State, FICA, Medicare, Workmen's Compensation insurance and any payroll administrative costs.

6.1.10 The Contractor shall prepare a traffic control plan for the project and submit it to the City Transportation Director for review and approval at least seven (7) working days before the pre construction conference. The traffic



control plan shall include flashing arrow boards, barricades and signs, and shall address how local access to adjacent properties will be handled in accordance with the specifications herein. Any changes to the traffic control plan during construction shall be submitted to the City Transportation Director for approval at least seventy-two (72) hours before implementation.

Payment for this item shall be made at the contract lump sum price for "TRAFFIC CONTROL."

6.1.11 It is the City's desire to maintain one lane of traffic in each direction on minor streets whenever possible. Should it become imperative for the Contractor to close off a portion of any minor street or reduce the travel way to a single lane, he must obtain approval from the City Transportation Director twenty four (24) hours prior to implementing a traffic control change. He must provide all the necessary signs to detour traffic and/or flagmen to control traffic for a single lane. The maximum amount of time that the street may be closed is from 9:00 a.m. until 4:00 p.m.

7. CONCRETE GUTTER WATER TESTING: The MAG Uniform Standard Specifications, Section 340.3, CONSTRUCTION METHODS, shall be modified as follows: The 1/2 inch referenced in Paragraph 16 beginning, "When required by the Engineer, gutter having a slope of 0.8 foot....," shall be changed to 1/4 inch.

8. RECORD DRAWINGS: The Contractor shall maintain one set of contract drawings with all changes, deviations, additions and deletions clearly marked thereon. Upon completion of the work, this set of drawings, shall be marked "RECORD DRAWINGS," dated, and delivered to the Engineer prior to approval of the Contractor's final payment request.

9. SOILS REPORT: The boring logs and soils report for this project are available for review at the City Engineering Office upon request. The boring logs and soils report are provided only as a courtesy. The logs and soils reports are not incorporated into, or part of, the contract and the City of Glendale makes no warranties, express or implied, as to the accuracy of the information contained therein. The Contractor should not rely on the information contained therein and should perform its own investigation as to the subsurface conditions of the project. The logs and soils reports are not intended, nor should they be relied upon by the Contractor as, a representation of the true soil conditions of the project. If there is a conflict between this provision and any other provision of the contract documents, this provision will prevail. The Contractor will accomplish the project under whatever condition he finds at the contract price.

10. ALLOWANCES FOR CONTINGENCIES: Contract allowance items are provided for the purpose of encumbering funds to cover the costs of possible change order work necessary for completion of the project and for encumbering funds to complete the utility locations as required by the utility companies for which no bid items are provided. The amount of the allowance items is determined by the Project Engineer and is not subject to individual bid pricing. All bidders shall incorporate the amounts pre-entered in the bid schedule and shall reflect the same in the total amount bid for this project. The allowance items provide 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, and utility location costs, shall be approved by the City prior to undertaking it. It shall be paid for by extension of unit bid prices, negotiated price, or time and material. It shall be understood that this allowance 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.

10.1 Method of Measurement: Contract allowance items will be measured for payment by the method provided in the change order.

10.2 Basis of Payment: Payment for contract allowance items will be made at the agreed upon change order price, which shall be full compensation for supplying and furnishing all materials, facilities and services and performing all work involved in the change order if and as issued.

Payment will be made under the following items:

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“ALLOWANCE FOR POTHOLING (CONTINGENCY)” item per the unit price or lump sum in the applicable change order. The bid price will be the amount pre-entered in the bid schedule.

END OF SECTION 01 00 00



012900 PAYMENT AND MEASUREMENT

PART 1 - GENERAL

1.01 CONTRACT PAY ITEMS

TRANSIT CENTER

Pay Item 1 – ARIZONA POLLUTANT DISCHARGE ELIMINATION SYSTEM (AZPDES)

1. Reference: Technical Specifications Section 310001
2. Measurement: Basis of Measurement: Lump Sum (LS). An allowance for the Contractor's participation in the preparation of the Storm Water Pollution Prevention Plan (SWPPP), the implementation of the SWPPP, and the modification of the SWPPP as necessary for compliance with AZPDES General Permit No. AZG2003-001 for the duration of this construction project is included in these contract documents.
3. Payment: Basis of Payment: Payment shall be made monthly with equal payment during the entire construction period with any retention required by the terms and conditions of the construction contract to be paid after filing of the Notice of Termination (NOT). No separate measurement or direct payment will be made for preparing the Notice of Intent (NOI), the Notice of Termination (NOT), Inspection and Maintenance Reports, or other documentation required to perform the work, the cost being considered as included in the allowance.

Pay Item 2 – ALLOWANCE FOR POTHOLING (CONTINGENCY)

1. Reference: Special Provisions
2. Measurement: Basis of Measurement: Each (EA). The Work required for this item will be measured on the basis of each pothole completed by the Contractors for the location of underground utilities as required for the installation of other items of this specification.
3. Payment: Basis of Payment: Payment for Potholing will be made at the unit price bid for each pothole, between 3 feet and 10 feet in depth, completed, measured, documented, and backfilled. Payment will be full compensation for each pothole. Where more than one utility is located with this item, it will be up to the Engineer to determine the number of potholes actually paid as compensation.

Pay Item 3 – SITE GRADING

1. Reference: "Lines and Grades" in Special Provisions
2. Measurement: Basis of Measurement: Lump Sum (LS)
3. Payment: Basis of Payment: Shall be the price per lump sum paid for all earthwork. The price for earthwork shall include excavating, fill, sloping, compacting, rounding loading, depositing, conditioning, spreading of the material and disposal of excess material to the lines and grades shown on the drawings. All earthwork shall be paid in its original position and no further payment will be made for further handling or rehandling of the material.

Pay Item 4 – SUBGRADE PREPARATION

1. Reference: MAG Section 301
2. Measurement: Basis of Measurement: Square Yard (SY) Per MAG Section 301.7
3. Payment: The basis of payment will be the square yard price bid for Subgrade Preparation per MAG Section 301.8. This payment will be for subgrade preparation, excavation, embankment for construction of asphalt cement pavement, or concrete pavement. This payment shall be full compensation for the earthwork associated with pavement as shown on the plans and as specified. The cost of this item will include labor, materials, subgrade trimming, fabric, finishing, or other incidentals necessary for this construction.



Pay Item 5 – UNTREATED BASE, AGGREGATE BASE COURSE

1. Reference: MAG Section 310
2. Measurement: Basis of Measurement: Ton (TN)
3. Payment: The basis of payment will be the tons price bid for Untreated Base, Aggregate Base Course per MAG Section 301.4. This payment will be for each ton of Aggregate Base Course supplied, placed, compacted and accepted to the roadway lines and grades shown on the plans. This payment shall be full compensation for the construction of the roadway base course as specified. The cost of this item will include labor, materials, trimming, finishing, or other incidentals necessary for this construction.

Pay Item 6 – ASPHALT CONCRETE SURFACE COURSE, SHRP 3/8" (9.5mm)

1. Reference: MAG Section 321
2. Measurement: Basis of Measurement: Ton (TN) Per MAG Section 321.8
3. Payment: The basis of payment will be the tons price bid for Asphalt Concrete Surface Course per MAG Section 321.9. This payment will be for each ton of Asphalt Surface Course supplied, placed, compacted and accepted to the asphalt roadway lines and grades shown on the plans. This payment shall be full compensation for the construction of the roadway asphalt surface course as specified. The cost of this item will include labor, materials, trimming, finishing, compacting or other incidentals necessary for this construction.

Pay Item 7 – PORTLAND CEMENT CONCRETE PAVEMENT, CLASS A, 8" THICK

1. Reference: MAG Section 343 and the Plans
2. Measurement: Basis of Measurement: Square Yard (SY)
3. Payment: The basis of payment will be the square yard price bid for Portland Cement Concrete Pavement, Class A, 8" Thick. This payment will be for the full section of exposed aggregate paving constructed, complete with aggregate base course and subgrade preparation. This payment shall be full compensation for furnishing and constructing pavement complete and in place as shown on the plans and as specified. The cost of this item will include labor, materials, subgrade trimming, fabric, joints finishing, or other incidentals necessary for this construction.

Pay Item 8 – CONCRETE SIDEWALK, STANDARD DETAIL 230

1. Reference: MAG Section 343 and the Plans
2. Measurement: Basis of Measurement: Square Yards (SY)
3. Payment: The basis of payment will be the square yard price bid for Concrete Sidewalk, Std. Det. 230. This payment will be the quantity of exposed aggregate sidewalk constructed and shall be full compensation for furnishing and constructing walkway complete with 4-inches of aggregate base course. The exposed aggregate surface will match other exposed aggregate elements of the Park and Ride. This item will include all exposed aggregate paving and ramps, and truncated dome pavers or other incidentals necessary to complete the item. The cost of this item will include labor, materials, subgrade trimming, joints, finishing, or other incidentals necessary for this construction.

Pay Item 9 – SIDEWALK SCOOP RAMP, SEE SHEET C112

1. Reference: Technical Specifications Section 02527 and the Plans
2. Measurement: Basis of Measurement: Each (EA)
3. Payment: The basis of payment will be the price bid for each Concrete Sidewalk Scoop Ramp per Plan Detail. This payment will be payment in full for each sidewalk ramp, completed and accepted and in place as shown on the plans and as specified. The cost of this item will include labor, materials, subgrade trimming, base course, joints, backfill, finishing, or other incidentals necessary for this construction.

Pay Item 10 – COMBINED CONCRETE CURB AND GUTTER, STANDARD DETAIL 220, TYPE “A”, H=6”

1. Reference: Technical Specifications Section 02527
2. Measurement: Basis of Measurement: Linear Feet (LF)
3. Payment: The basis of payment will be the linear foot price bid for Combined Concrete Curb and Gutter, Standard Detail 220, Type A, with a height of 6”. This payment will be payment in full for the quantity of this curb and gutter accepted, completed and in place as shown on the plans and as specified. The cost of this item will include labor, materials, subgrade trimming, joints, backfill, finishing, or other incidentals necessary for this construction.

Pay Item 11 – DECORATIVE INTEGRAL COLORED CONCRETE

1. Reference: Technical Specifications Section 02520
2. Measurement: Basis of Measurement: Square Yard (SY)
3. Payment: The basis of payment will be the square yard price bid for Decorative Integral Colored Concrete, (Davis “Graphite” Colored Concrete with Broom Finish). This payment will be for the variable depth of concrete paving constructed and shall be full compensation for furnishing and constructing pavement and 4-inch aggregate base course complete and in place as shown on the plans and as specified. The cost of this item will include labor, materials, subgrade trimming, fabric, joints finishing, or other incidentals necessary for this construction.

Pay Item 12 – REMOVE PORTLAND CEMENT CONCRETE SINGLE CURB AND CURB AND GUTTER

1. Reference: MAG Section 350
2. Measurement: Basis of Measurement: Linear Feet (LF)
3. Payment: The basis of payment will be the linear foot price bid to remove existing Portland Cement Concrete Single Curb and/or Curb and Gutter. This payment will be payment in full for each foot of either type of curb removed, and disposed of as shown on the plans and as specified. The cost of this item will include all excavation, backfill, labor, materials, disposal, equipment or other incidentals necessary for this construction.

Pay Item 13 – REMOVE ASPHALT CONCRETE PAVEMENT

1. Reference: MAG Section 350
2. Measurement: Basis of Measurement: Square Yard (SY)
3. Payment: The basis of payment will be the square yard price bid for removal of asphalt concrete pavement. This payment will be for each square yard of pavement removed and shall be full compensation for removal of pavement either full depth or partial as shown on the plans and as specified. The cost of this item will include saw cutting, labor, equipment, tools, or other incidentals necessary for this removal.

Pay Item 14 – PAVEMENT MARKING (4” WIDE YELLOW STRIPE)

1. Reference: Technical Specifications Section 02790 and the Plans
2. Measurement: Basis of Measurement: Linear Foot (LF) at 4-inch width. Other width will be computed as equivalents of 4-inch width.
3. Payment: The basis of payment will be the price bid for pavement markings. This payment will be payment in full for each linear foot of 4-inch wide pavement marking supplied, installed, and accepted in place as shown on the plans and as specified. The cost of this item will include labor, tools, materials, traffic control or other incidentals necessary to complete this item.

Pay Item 15 – PAVEMENT MARKING (4” WIDE WHITE STRIPE)

1. Reference: Technical Specifications Section 02790 and the Plans

2. Measurement: Basis of Measurement: Linear Foot (LF) at 4-inch width. Other width will be computed as equivalents of 4-inch width.
3. Payment: The basis of payment will be the price bid for pavement markings (4-inch Wide White Stripe) as an equivalent marking width. This payment will be payment in full for each linear foot of 4-inch pavement marking supplied, installed, and accepted in place as shown on the plans and as specified. The cost of this item will include labor, tools, materials, traffic control or other incidentals necessary to complete this item.

Pay Item 16 – TRAFFIC CONTROL

1. Reference: "Traffic Regulations" in Special Provisions
2. Measurement: Basis of Measurement: Lump Sum (LS)
3. Payment: Basis of Payment: shall be payment in full to furnish traffic control for the project. This payment will be payment in full for the complete traffic control as required for the execution of construction. The cost of this item will include signage, lights, labor, tools, materials, or other incidentals necessary to complete this item.

Pay Item 17 – REMOVE CONCRETE PAVEMENT

1. Reference: MAG Section 350
2. Measurement: Basis of Measurement: Square Yard (SY)
3. Payment: The basis of payment will be the square yard price bid for removal of concrete pavement. This payment will be for each square yard of pavement removed and shall be full compensation for removal of pavement either full depth or partial as shown on the plans and as specified. The cost of this item will include saw cutting, labor, equipment, tools, or other incidentals necessary for this removal.

Pay Item 18 – ADJUST FRAME AND COVER PER STANDARD DETAIL 391-1

1. Reference: MAG Section 345 and the Plans
2. Measurement: Basis of Measurement: Each (EA)
3. Payment: The basis of payment will be the price bid for each Adjust Frame and Cover, per Standard Detail 391-1. This payment will be payment in full for the adjustment of frame and cover, completed and accepted and in place as shown on the plans and as specified. The cost of this item will include labor, materials, subgrade trimming, joints, backfill, finishing, or other incidentals necessary for this construction.

Pay Item 19 – ADJUST MANHOLE FRAME AND COVER PER STANDARD DETAIL 422

1. Reference: MAG Section 345 and the Plans
2. Measurement: Basis of Measurement: Each (EA)
3. Payment: The basis of payment will be the price bid for each Adjust Frame and Cover, per Standard Detail 422. This payment will be payment in full for the adjustment of frame and cover, completed and accepted and in place as shown on the plans and as specified. The cost of this item will include labor, materials, subgrade trimming, joints, backfill, finishing, or other incidentals necessary for this construction.

Pay Item 20 – CONTROLLED LOW STRENGTH MATERIAL

1. Reference: MAG Section 604, 728 and the Plans
2. Measurement: Basis of Measurement: Cubic Yards (CY)
3. Payment: The basis of payment will be the cubic yard price bid for installation of controlled low strength material. This payment will be for each cubic yard of slurry installed. The cost of this item will include saw cutting, labor, equipment, tools, or other incidentals necessary for this construction.

Pay Item 21 – BUS STOP SIGN

1. Reference: MUTCD and the Plans
2. Measurement: Basis of Measurement: Each (EA)
3. Payment: The basis of payment will be the price bid for each sign installation, per the plans. This payment will be payment in full for the installation of the bus stop sign, completed and accepted and in place as shown on the plans and as specified. The cost of this item will include labor, materials, backfill, finishing, or other incidentals necessary for this construction.

Pay Item 22 – MOBILIZATION

1. Reference: ADOT Section 901
2. Measurement: Basis of Measurement: Lump Sum (LS)
3. Payment: Mobilization shall be according to ADOT Standard Specifications Section 901. Payment shall be lump sum (LS), which shall be full compensation for supplying and furnishing all materials, facilities and services and performing all work involved as specified in ADOT Standard Specifications Section 901.

Pay Item 23 – CONSTRUCTION CONTINGENCY

1. Reference: Special Provision
2. Measurement: Basis of Measurement: Lump Sum (LS)
3. Payment: Measurement and payment for this item shall be made on an individual basis per task and as described in the Special Provisions.

END OF SECTION 01 29 00

02 41 19 CUTTING AND PATCHING

Except as otherwise required in these specifications, construction of this project shall be in accordance with all applicable City of Glendale Engineering Design and Construction Standards, 2002 Edition, and Maricopa Association of Governments (M.A.G.) Uniform Standard Specifications, 2006 edition.

1.01 SECTION INCLUDES

- A. Cutting, fitting and patching, including attendant excavation and backfill required to complete Work, and for:
 - 1. Making several parts fit together properly.
 - 2. Uncovering portions of Work to provide for installation of ill-timed Work.
 - 3. Removing and replacing defective and non-conforming Work.
 - 4. Removing samples of installed Work required for testing, as directed by Engineer.
 - 5. Providing routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

1.02 SUBMITTALS

- A. In advance of executing any cutting or alterations, submit written request to Engineer requesting consent to proceed with cutting which affects:
 - 1. Work of City or other trades.
 - 2. Structural value or integrity of any element of Project.
 - 3. Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
 - 4. Efficiency, operational life, maintenance or safety of operational elements.
 - 5. Visual qualities of sight-exposed elements.
- B. Include in request:
 - 1. Identification of Project.
 - 2. Description of affected Work.
 - 3. Necessity for cutting, alteration or excavation.
 - 4. Effect of Work of City or other trades, or structural or weatherproof integrity of Project.
 - 5. Description of proposed Work:
 - a. Scope of cutting, patching, alteration, or excavation.
 - b. Trades which will execute Work.

- c. Products proposed to be used.
- d. Extent of refinishing to be done.
- 6. Alternatives to cutting and patching.
- 7. Cost proposal, when applicable.
- 8. Written permission of trades whose Work will be affected.
- C. Submit written notice to Engineer designating time Work will be uncovered to provide for observation.

1.03 PAYMENT FOR COSTS

- A. Cost caused by ill-timed or defective Work or Work not conforming to Contract Documents, including costs for additional services of Engineer and Engineer to be paid by Contractor.
- B. Cost of Work done on written instructions of Engineer, other than defective or nonconforming Work, will be paid by City on approval of written Change Order. Provide written cost proposals prior to proceeding with cutting and patching proposed by Engineer.

2.01 MATERIALS

- A. Provide for replacement of Work removed. Comply with Contract Documents for type of Work standards and Specification requirements for each specific product involved.

3.01 INSPECTION

- A. Inspect existing conditions of Work, including elements subject to movement or damage during cutting and patching, and excavating and backfilling. After uncovering Work, inspect conditions affecting installation of new products and verify procedures with Engineer.
- B. Report unsatisfactory or questionable conditions in writing to Engineer. Do not proceed with Work until further instructions are received.

3.02 PREPARATION

- A. Provide shoring, bracing and supports as required to maintain structural integrity of Work.
- B. Provide devices and methods to protect other portions of Work from damage, including elements which may be exposed by cutting and patching Work. Maintain excavations free from water.

3.03 ERECTION, INSTALLATION AND APPLICATION

A. Performance:

1. Execute fitting and adjustment of products to provide finished installation to comply with and match specified tolerances and finishes.
2. Execute cutting and demolition by methods which prevent damage to other Work to provide proper surfaces to receive installation of repairs and new Work.
3. Execute excavating and backfilling by methods which prevent damage to other Work and settlement as specified in Section 02300.

B. Employ original installer or fabricator to perform cutting and patching for:

1. Weather-exposed surfaces and moisture-resistant elements such as roofing, sheet metal, sealants and waterproofing.
2. Sight-exposed finished surfaces.

C. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes as shown on Drawings and as specified.

D. Fit Work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces. Conform to fire code requirements for penetrations and maintain integrity of fire walls and ceilings.

E. Restore Work which has been out or removed. Install new products to provide completed Work in accordance with requirements of Contract Documents and as required, matching surrounding areas and surfaces.

F. Refinish entire surfaces as necessary to provide an even, matching finish as follows:

1. Continuous Surfaces: To nearest intersections.
2. Assembly Areas: Refinish entire room area.

END OF SECTION 02 41 19

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SECTION 051200 - STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

- A. Submittals: Shop Drawings Welding Procedure Specifications (WPSs) and mill test reports.
- B. Comply with applicable provisions of the following:
 - 1. AISC 303.
 - 2. AISC 341 and AISC 341s1.
 - 3. AISC 360.
 - 4. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Connections: Provide details of connections required by the Contract Documents to be selected or completed by structural-steel fabricator.

2.2 STRUCTURAL STEEL

- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- B. W-Shapes: ASTM as indicated in General Structural Notes.
- C. Channels, Angles-Shapes: ASTM as indicated in General Structural Notes..
- D. Plate and Bar: ASTM as indicated in General Structural Notes.
- E. Cold-Formed Hollow Structural Sections: ASTM as indicated in General Structural Notes.
- F. Steel Pipe: ASTM as indicated in General Structural Notes.

2.3 ACCESSORIES

- A. High-Strength Bolts, Nuts, and Washers: As indicated in General Structural Notes.
- B. Anchor Rods: ASTM F 1554, Grade 36.
 - 1. Configuration: As indicated

2. Nuts: ASTM A 563 hex carbon steel.
 3. Plate Washers: ASTM A 36/A 36M carbon steel.
 4. Washers: ASTM F 436, Type 1, hardened carbon steel.
- C. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.
- D. Grout: ASTM C 1107, nonmetallic, shrinkage resistant, factory packaged.

2.4 FABRICATION

- A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303 and AISC 360.
- B. Shop Priming: Prepare surfaces according to SSPC-SP 2 or SSPC-SP 3. Shop prime steel to a dry film thickness of at least 1.5 mils. Do not prime surfaces to be embedded in concrete or mortar or to be field welded.

PART 3 - EXECUTION

3.1 ERECTION

- A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
- B. Baseplates Bearing Plates and Leveling Plates: Clean concrete and masonry surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.
1. Set plates for structural members on wedges, shims, or setting nuts as required.
 2. Weld plate washers to top of base plate.
 3. Snug-tighten or pretension anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
 4. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure.
- C. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
- D. Do not use thermal cutting during erection.
- E. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

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1. Joint Type: As indicated on structural drawings.
- F. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

END OF SECTION 051200

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SECTION 055213 - Pipe Railings and Stainless Steel Plates

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Steel pipe railings.
 - 2. Stainless-steel Plate Seat Dividers

1.3 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.4 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Manufacturer's product lines of mechanically connected railings.
 - 2. Railing brackets.
 - 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each type of exposed finish required.
 - 1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters.
 - 2. Fittings and brackets.

3. Assembled Sample of Stainless Steel Seat Divider, made from full-size components

a. Show method of connecting and finishing members at intersections.

D. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Welding certificates.

C. Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.

D. Paint Compatibility Certificates: From manufacturers of topcoats applied over shop primers certifying that shop primers are compatible with topcoats.

E. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

F. Evaluation Reports: For post-installed anchors, from ICC-ES.

1.6 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.6/D1.6M, "Structural Welding Code - Stainless Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.8 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional, to design railings, including attachment to building construction.
- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - 1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.
 - c. Uniform and concentrated loads need not be assumed to act concurrently.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F.

2.2 METALS, GENERAL

- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

2.3 STEEL AND IRON

- A. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
- B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - 1. Provide galvanized finish for exterior installations and where indicated.

2.4 STAINLESS STEEL

- A. Plate and Sheet: ASTM A 240/A 240M or ASTM A 666, Type 316L.

2.5 FASTENERS

- A. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.

- B. Stainless-Steel Plate: stainless-steel fasteners as indicated on drawings. Provide concealed fasteners for interconnecting components and for attaching them to other work, unless otherwise indicated

2.6 MISCELLANEOUS MATERIALS

- A. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- B. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
 - 1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- C. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.
- D. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.
- E. Epoxy Intermediate Coat: Complying with MPI #77 and compatible with primer and topcoat.
- F. Polyurethane Topcoat: Complying with MPI #72 and compatible with undercoat.
- G. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.
- H. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound.
 - 1. Water-Resistant Product: At exterior locations provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating and that is recommended by manufacturer for exterior use.

2.7 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.
- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded connections unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Welded Connections for Aluminum Pipe: Fabricate railings to interconnect members with concealed internal welds that eliminate surface grinding, using manufacturer's standard system of sleeve and socket fittings.
- J. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
 - 1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- K. Form Changes in Direction as Follows:
 - 1. As detailed.
- L. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- M. Close exposed ends of railing members with prefabricated end fittings.
- N. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.
- O. For railing posts set in concrete, provide steel sleeves not less than 6 inches long with inside dimensions not less than 1/2 inch greater than outside dimensions of post, with metal plate forming bottom closure.

2.8 STEEL AND IRON FINISHES

A. Galvanized Railings:

1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
4. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
5. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.

D. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.

1. Shop prime uncoated railings with universal shop primer unless indicated.
2. Do not apply primer to galvanized surfaces.

E. High-Performance Coating: Apply epoxy intermediate and polyurethane topcoats to prime-coated surfaces. Comply with coating manufacturer's written instructions and with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Apply at spreading rates recommended by coating manufacturer.

1. Color: Match Architect's sample.

2.9 STAINLESS-STEEL FINISHES

A. Remove tool and die marks and stretch lines, or blend into finish.

B. Polished and Buffed Finish: SSINA - No. 4 Finish SSINA

C. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fit exposed connections together to form tight, hairline joints.

- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
 - 1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.2 RAILING CONNECTIONS

- A. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.
- B. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.3 ANCHORING POSTS

- A. Form or core-drill holes not less than 5 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. Cover anchorage joint with flange of same metal as post, welded to post after placing anchoring material.
- C. Leave anchorage joint exposed with anchoring material flush with adjacent surface.

3.4 ADJUSTING AND CLEANING

- A. Clean stainless steel by washing thoroughly with clean water and soap and rinsing with clean water.

B. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 requirements for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

C. Touchup Painting: Cleaning and touchup painting of field welds, bolted connections, and abraded areas as required.

3.5 PROTECTION

A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION 055213

SECTION 074113.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes standing-seam metal roof panels.
- B. Related Sections:
 - 1. Section 074213 "Metal Soffit & Fascia Panels" for metal panels used in horizontal soffit applications.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Meet with Owner, Architect, Owner's insurer if applicable, metal panel Installer, metal panel manufacturer's representative, structural-support Installer, and installers whose work interfaces with or affects metal panels, including installers of roof accessories and roof-mounted equipment.
 - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - 3. Review methods and procedures related to metal panel installation, including manufacturer's written instructions.
 - 4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
 - 5. Review structural loading limitations of purlins and rafters during and after roofing.
 - 6. Review flashings, special details, drainage, penetrations, equipment curbs, and condition of other construction that affect metal panels.
 - 7. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
 - 8. Review temporary protection requirements for metal panel systems during and after installation.
 - 9. Review procedures for repair of metal panels damaged after installation.
 - 10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
 - 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 - 2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.
- C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.
 - 1. Include similar Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
 - 1. Metal Panels: 12 inches long by actual panel width. Include clips, fasteners, closures, and other metal panel accessories. Provide 12-inch-long pieces of each typical trim.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, for tests performed by a qualified testing agency.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

- C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 - a.
 - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:

- a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.
2. Warranty Period: Two years from date of Substantial Completion.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
 2. Finish Warranty Period: 10 years from date of Substantial Completion.
- C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:
1. Wind Loads: As required for location installed. Submit documentation.
- B. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.
- C. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
1. Uplift Rating: UL 90.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): As required for location installed. Submit documentation.

2.2 STANDING-SEAM METAL ROOF PANELS

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
1. Aluminum Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1637.
- B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels. Formed with vertical ribs at panel edges and [**intermediate stiffening ribs symmetrically spaced**] [**a flat pan**] between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ATAS International, Inc.
 - b. Bemo USA.
 - c. Berridge Manufacturing Company.
 - d. CENTRIA Architectural Systems.
 - e. Firestone Building Products.
 - f. MBCI; a division of NCI Group, Inc.
 2. Aluminum Sheet: Coil-coated sheet, ASTM B 209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 - a. Basis of Design: Bemo USA Inc., 65/400T Structural Standing Seam
 - b. Thickness: 0.050 inch thick
 - c. Surface: Smooth, flat finish.
 - d. Exterior Finish: Bemo-Flon Coating. Fluoropolymer with specular gloss of 7 at 60 deg. when measured per ASTM D 523 or Equal
 - e. Color: Provide custom color as indicated on drawings.
 - f. Panel Width: Varies with taper, as indicated on Drawings
 - g. Panel Seam Height: Minimum 2.5 inch.
 - h. Panel Length: Full length with no lateral seams.
 - i. Joint Type: As standard with manufacturer.
 3. Clips: One-piece fixed to accommodate thermal movement.
 - a. Material: zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, stainless-steel sheet, or non-thermally-conductive polymer clip.

2.3 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C 645; cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 coating designation or ASTM A 792/A 792M,

Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 - 1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
 - 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 - 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
 - 2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.
- F. Dissimilar Materials: Where elements of fabricated roof panel assemblies will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

2.4 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same

profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 - 4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.5 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Aluminum Panels and Accessories:
 - 1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to

- exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 3. Mica Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 4. Metallic Fluoropolymer: AAMA 2605. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 5. FEVE Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish containing 100 percent fluorinated ethylene vinyl ether resin in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 6. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 1. Examine primary and secondary roof framing to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
 2. Examine solid roof sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
 - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.3 METAL PANEL INSTALLATION

- A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

- 1. Shim or otherwise plumb substrates receiving metal panels.
- 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
- 3. Install screw fasteners in predrilled holes.
- 4. Locate and space fastenings in uniform vertical and horizontal alignment.
- 5. Install flashing and trim as metal panel work proceeds.
- 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
- 7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
- 8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

- B. Fasteners:

- 1. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.

- C. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

- D. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

- E. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

- 1. Install clips to supports with self-tapping fasteners.
- 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
- 3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
- 4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
- 5. Watertight Installation:

- a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
 - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
 - c. At panel splices, nest panels with minimum 6-inch end lap, sealed with sealant and fastened together by interlocking clamping plates.
- F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof and weather-resistant performance.
 2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align metal panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.5 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect metal roof panel installation, including accessories. Report results in writing.
- B. Remove and replace applications of metal roof panels where tests and inspections indicate that they do not comply with specified requirements.
- C. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- D. Prepare test and inspection reports.

3.6 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On

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completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

- B. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074113

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SECTION 074213 - METAL SOFFIT AND FASCIA PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes metal soffit panels.
- B. Related Sections:
 - 1. Section 074113.16 "Standing Seam Metal Roof Panels".

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
- B. Shop Drawings:
 - 1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 - 2. Accessories: Include details of flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.
- C. Samples for Initial Selection: For each type of metal panel indicated with factory-applied color finishes.
 - 1. Include similar Samples of trim and accessories involving color selection.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below:

1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each product, tests performed by a qualified testing agency.
- C. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.
- C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
 1. Build mockup of typical roof eave, including fascia, and soffit as shown on Drawings; approximately four panels wide by full eave width, including attachments and accessories.
 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of

water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.

- D. Retain strippable protective covering on metal panels during installation.
- E. Copper Panels: Wear gloves when handling to prevent fingerprints and soiling of surface.

1.9 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

- 1. Failures include, but are not limited to, the following:
 - a. Structural failures including rupturing, cracking, or puncturing.
 - b. Deterioration of metals and other materials beyond normal weathering.

- 2. Warranty Period: Two years from date of Substantial Completion.

- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

- 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
 - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

- 2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:
 - 1. Wind Loads/Design Loads: As required for location installed. Submit documentation.
- B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): As required for location installed. Submit documentation.

2.2 METAL SOFFIT AND FASCIA PANELS

- A. General: Provide metal soffit panels designed to be installed by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners in side laps. Include accessories required for weathertight installation.
- B. Metal Soffit Panels: Match shapes and material of metal wall panels.
 - 1. Finish: As indicated on Drawings.
 - 2. Sealant: Factory applied within interlocking joint.
- C. Flush-Profile Metal Soffit Panels Solid panels formed with vertical panel edges and a flat pan between panel edges; with flush joint between panels.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. ATAS International, Inc.
 - b. Bemo USA.
 - c. Berridge Manufacturing Company.
 - d. CENTRIA Architectural Systems.
 - e. Firestone Building Products.
 - f. MBCI; a division of NCI Group, Inc.
 - 2. Aluminum Sheet: Coil-coated sheet, ASTM B 209, alloy as standard with manufacturer, with temper as required to suit forming operations and structural performance required.
 - a. Thickness: 0.040 inch.
 - b. Surface: Smooth, flat finish.
 - c. Exterior Finish: Bemo-Flon Coating. Fluoropolymer with specular gloss of 7 at 60 deg. when measured per ASTM D 523 or Equal
 - d. Color: Color: Provide custom color as indicated on drawings. Note: different color for fascia and soffit. .

- e. Panel Width: Varies with taper, as indicated on Drawings
- f. Panel Length: Full length with no lateral seams.
- g. Joint Type: Flush. All joints shall align with roof seams and fascia seams.

2.3 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Subframing and Furring: ASTM C 645, cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 coating designation or ASTM A 792/A 792M, Class AZ50 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 - 1. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch-thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of metal panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.
- E. Panel Sealants: Provide sealant types recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
 - 1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
 - 2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 - 3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.4 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 - 2. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.
 - 3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
 - 4. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 - 5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
 - 6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal soffit panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Aluminum Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
2. Three-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
3. Mica Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish with suspended mica flakes containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
4. Metallic Fluoropolymer: AAMA 2605. Three-coat fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
5. FEVE Fluoropolymer: AAMA 2605. Two-coat fluoropolymer finish containing 100 percent fluorinated ethylene vinyl ether resin in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
6. Siliconized Polyester: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil for primer and 0.8 mil for topcoat.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 1. Examine framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal panel manufacturer.
 2. Examine sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal panel manufacturer.
 - a. Verify that air- or water-resistive barriers been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations. Wire tie or clip furring channels to supports, as required to comply with requirements for assemblies indicated.

3.3 METAL PANEL INSTALLATION

- A. General: Install metal panels according to manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Shim or otherwise plumb substrates receiving metal panels.
 - 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 - 3. Install screw fasteners in predrilled holes.
 - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 5. Install flashing and trim as metal panel work proceeds.
 - 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 - 7. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
 - 1. Aluminum Panels: Use aluminum or stainless-steel fasteners for surfaces exposed to the exterior; use aluminum or galvanized-steel fasteners for surfaces exposed to the interior.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- D. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
 - 1. Install components required for a complete metal panel system including trim, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.
- E. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.
 - 1. Install exposed flashing and trim that is without buckling, and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to achieve waterproof performance.

2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 074213.53

SECTION 12 93 43 SITE SEATING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Seating.

1.2 REFERENCES

A. ASTM Testing Standards:

1. ASTM B 117 – Standard Practice for Operating Salt Spray (Fog) Apparatus.
2. ASTM D 522 – Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
3. ASTM D 523 – Standard Test Method for Specular Gloss.
4. ASTM D 2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
5. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
6. ASTM D 3359 – Standard Test Methods for Measuring Adhesion by Tape Test.
7. ASTM D 3363 – Standard Test Method for Film Hardness by Pencil Test.
8. ASTM G 155 – Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.

B. ISO Testing Standards:

1. ISO 1520 – Paints and Varnishes – Cupping Test.
2. ISO 2815 – Paints and Varnishes – Buchholz Indentation Test.

C. ANSI/BIFMA Testing Standards:

1. ANSI/BIFMA X5.4-2005 – Standard Test for Lounge Seating.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, storage and handling requirements and recommendations, installation methods and available colors, styles, patterns and textures.
- B. Shop Drawings: Submit manufacturer's shop drawings, including plans and elevations, indicating overall dimensions.
- C. Samples: Submit manufacturer's samples of materials, finishes, and colors.
- D. Warranty: Manufacturer's standard warranty.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Manufacturer regularly engaged in manufacture of site furnishings since 1969.
- B. Product Support: Products are supported with complete engineering drawings and design patents.
- C. Base Worth: An installed base of products worth in excess of one hundred million dollars.
- D. Assets: Excess of twenty million dollars in assets.
- E. Production: Orders are filled within a 40-day schedule.

F. Facility Operator: Welders and machine operators are certified.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage: Store materials in clean, dry area in accordance with manufacturer's instructions. Keep materials in manufacturer's original, unopened containers and packaging until installation.
- C. Handling: Protect materials and finish during handling and installation to prevent damage.

1.6 WARRANTY

- A. Warranty Information:
 - Products will be free from defects in material and/or workmanship for a period of three years from the date of invoice.
 - The warranty does not apply to damage resulting from accident, alteration, misuse, tampering, negligence, or abuse.
 - Landscape Forms, Inc. shall, at its option, repair, replace, or refund the purchase price of any items found defective upon inspection by an authorized Landscape Forms service representative.
 - Purchasers should be aware that normal use of these high quality products can result in superficial damage affecting the finish. Scratches, nicks, and dents are to be considered normal wear and tear, and are not the responsibility of the manufacturer.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design: Landscape Forms, Inc., 431 Lawndale Avenue, Kalamazoo, Michigan 49048. Toll Free (800) 521-2546. Phone (269) 381-0396. Fax (269) 381-3455. Website www.landscapeforms.com. E-mail: specify@landscapeforms.com.

2.2 SEATING

- A. Basis of Design: "Plexus II" Seating
 - 1. Support: Custom fabricated stainless steel plate embedded in concrete with bolted connection to chair.
 - 2. Seat style:
 - a. Backed seats
 - 1) Straight seats (for straight supports and custom radius 276" or greater)
 - 3. Arms:
 - a. End and Intermediate Arms
 - 4. Table option:
 - a. No Table

2.3 MATERIALS

- A. Seats: Constructed of a steel wire grid panel welded to a tubular steel frame. Grid panel is constructed of 5/16" diameter and reinforcing wires spaced 2-1/2" apart and 1/8" diameter cross wires spaced 1/2" apart. Frame is constructed of 7/8" outer diameter x

0.120" wall steel tube. Seats are secured to support with (2) 7/16-20 x 1-1/2" hex head cap screws with nuts, all stainless steel with lubricating and locking thread patch.

- C. Arm: Constructed with 7/8" outer diameter x 0.120" wall steel tube.
- D. Supports: As detailed

2.5 RECYCLED CONTENT

- A. Plexus:
 - Recycled Material Content: Minimum 86 percent.
 - Post-Consumer Material Content: Minimum 57 percent.
 - Pre-Consumer Material Content: Minimum 29 percent.
 - Recyclable: 100 percent.

2.6 FABRICATION

- A. Shop assembled seating.

2.7 FINISHES

- A. Finish on Metal: Landscape Forms, Inc. "Pangard II".- Basis of Design
 - 1. Primer: Rust inhibitor.
 - 2. Topcoat: Thermosetting polyester powdercoat. UV, chip, and flake resistant.
 - 3. Test Results: "Pangard II".
 - a. Gloss, Garner 60 Degrees, ASTM D 523: Plus or minus 5.
 - b. UV Resistance, Color and Gloss, ASTM G 155, Cycle 7: Delta E less than 2 at 2.0 mils and less than 20 percent loss.
 - c. Cross-Hatch Adhesion, ASTM D 3359, Method B: 100 percent pass.
 - d. Flexibility Test, Mandrel, ASTM D 522: 3 mm at 2 mils.
 - e. Erichsen Cupping, ISO 1520: 8 mm.
 - f. Impression Hardness, Buchholz, ISO 2815: 95.
 - g. Impact Test, ASTM D 2794: 60 inches/pound at 2.5 mils.
 - h. Pencil Hardness, ASTM D 3363: 2H minimum.
 - i. Corrosion Resistance, 1,500-Hour Test, ASTM B 117: Max. undercutting 1 mm.
 - j. Humidity Resistance, 1,500-Hour Test, ASTM D 2247: Max. blisters 1 mm.
 - 4. Color: As Indicated on Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive seating.
- B. Notify Architect of conditions that would adversely affect installation or subsequent use.
- C. Do not begin installation until unacceptable conditions are corrected.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Install level.
- C. Anchor securely in place.

3.3 ADJUSTING

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- A. Finish Damage: Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- B. Component Damage: Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.4 CLEANING

- A. Clean promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

3.5 PROTECTION

- A. Protect installed to ensure that, except for normal weathering, seating will be without damage or deterioration at time of Substantial Completion.

END OF SECTION

31 00 00 SOILS AND SUBSURFACE CONDITIONS

Except as otherwise required in these specifications, construction of this project shall be in accordance with all applicable City of Glendale Engineering Design and Construction Standards, 2002 Edition, and Maricopa Association of Governments (M.A.G.) Uniform Standard Specifications, 2006 edition.

PART 1 GENERAL

1.01 SCOPE

- A. Subsurface and soils investigations.

1.02 SITE FAMILIARIZATION

- A. The Contractor must examine the site prior to bid and prior to the start of construction.
- B. Prior to the start of construction, the Contractor may perform additional borings or tests at no cost to the City.
- C. Separate and site specific soil testing has been completed by Speedie and Associates, Project No. 150306SA, March 27, 2015.

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31 00 01 COMPLIANCE WITH AZPDES GENERAL PERMIT NO. AZG2003-001

PART 1 - GENERAL

This project is subject to the terms and conditions of Arizona Pollutant Discharge Elimination System (AZPDES) General Permit No. AZG2003-001 for Storm Water Discharges from Construction Activities. Under the provisions of the AZPDES General Permit, both the City of Glendale and the Contractor shall be designated as operators, and both must ensure compliance with the terms and conditions of the AZPDES General Permit. AZPDES General Permit No. AZG2003-001 was issued by the Arizona Department of Environmental Quality (ADEQ) on February 28, 2003.

Work under this item shall consist of preparing all required documents and certifications, performing inspections, and furnishing all materials, labor, and equipment necessary to comply with all requirements of AZPDES General Permit No. AZG2003-001 for Storm Water Discharges from Construction Activities. The work shall also include providing, installing, maintaining, removing and disposing of erosion and sediment control measures such as gravel filter berms, dikes, catch basin inlet protection, end-of pipe filtering devices, silt fences, dams, sediment traps and basins, netting, straw bale barriers, slope drains, and other erosion control devices or methods.

PART 2 - PERMIT REQUIREMENTS

Please note that the terms and conditions of AZPDES General Permit No. AZG2003-001, except to the extent that more explicit or more stringent requirements are written directly into the contract documents, have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

Both the City of Glendale and the Contractor are designated as operators of the construction site, and both must complete a Notice of Intent (NOI) to comply with the terms and conditions of AZPDES General Permit No. AZG2003-001 for Storm Water Discharges from Construction Activities. The NOIs must be signed in accordance with the signatory requirements of the AZPDES General Permit, and must contain all required eligibility certifications. The Project Manager for the City of Glendale will ensure that both the Contractor's and the City's completed and signed NOIs are submitted to the ADEQ. A blank NOI form is attached to these project specifications for use by the Contractor.

It shall be the responsibility of both the City of Glendale and the Contractor to prepare a joint Storm Water Pollution Prevention Plan (SWPPP) and ensure its compliance with the minimum conditions of the AZPDES General Permit, including measures to protect impaired or unique waters, measures to protect threatened and/or endangered species, and measures to protect properties eligible for protection under the National Historic Preservation Act. The SWPPP must reflect the Contractor's entire scope of activities at the job site as anticipated for the duration of the construction activities. The Contractor must indicate in the SWPPP those changes in job site requirements and/or the order of work performance that will require modifications to the SWPPP, and include those modifications in the SWPPP.

Once completed, it shall be the responsibility of the City of Glendale to review and approve the joint SWPPP prior to the start of work. The preconstruction conference shall not be held and the Contractor shall not be allowed to start work until the City of Glendale has approved the SWPPP as being adequate and in accordance with the requirements of the AZPDES General Permit. The City of Glendale shall approve or not approve the SWPPP within seven (7) calendar days after receipt of the SWPPP from the Contractor for purposes of review. Failure of the Contractor and the City of Glendale to reach agreement on the adequacy of the SWPPP prior to the preconstruction conference will delay the start of work. The Contractor shall not be entitled to additional compensation for costs that result from such delay in the construction start date.

The SWPPP is not to be submitted to the ADEQ unless directed to do so by the City's Project Manager or in response to a direct request from the ADEQ Director (or authorized representative). If the SWPPP must be submitted to the ADEQ for review and approval, authorization to discharge under the AZPDES General Permit may be withheld by ADEQ for up to thirty-two (32) business days after receipt of the SWPPP.

It shall be the responsibility of the Contractor to implement the SWPPP, and ensure day-to-day compliance with the terms and conditions of the SWPPP and the AZPDES General Permit. The Contractor shall, with the approval of the City's Project Manager, update and revise the SWPPP as necessary throughout the duration of the project to ensure compliance with the AZPDES General Permit requirements.

The Contractor shall retain a copy of the SWPPP and the AZPDES General Permit at a central location on the job site for the use of all operators whenever they are on the construction site. A copy of the signed SWPPP must be retained on the construction site or at another location easily accessible during normal working hours.

All subcontractors and construction site operators having control over only a portion of the construction site shall comply with the requirements of the AZPDES General Permit and the common SWPPP under the supervision of the Contractor. The Contractor shall ensure that all partial site operators having day-to-day operational control of activities necessary to ensure compliance with the SWPPP or other permit requirements submit NOIs to ADEQ as required by the AZPDES General Permit. Subcontractors and partial site operators shall ensure that their activities do not render any other party's pollution prevention plan measures ineffective.

The Contractor shall obtain and incorporate into the SWPPP copies of all NOIs required by the AZPDES General Permit. The Contractor shall ensure that all required documents are complete and accurate, and all required NOIs are received by ADEQ at least two (2) business days before a contractor, subcontractor, or partial site operator is allowed to perform any work at the construction site.

The Contractor shall submit the Contractor's completed and signed NOI form to the ADEQ at the following address:

Arizona Department of Environmental Quality
Water Permits Section/Stormwater NOI (5415B-3)
1110 West Washington Street
Phoenix, Arizona 85007
Or fax to (602) 771-4674

The Contractor shall provide a copy of the Contractor's completed and signed NOI form to the City's Project Manager at the preconstruction conference. The City's Project Manager shall ensure that a copy of the Contractor's completed NOI form along with a copy of the City's completed NOI form is incorporated into the SWPPP.

Failure by the Contractor to provide copies of the required completed NOI forms by the time of the preconstruction conference shall cause a delay in the construction start date. The Contractor shall not be entitled to additional compensation for costs that result from such delay in the construction start date.

The Project Manager for the City of Glendale shall also send copies of the completed NOI forms to:

City of Glendale
Attn: Pamela J. Kavanaugh
Assistant City Manager
5850 W. Glendale Ave., Suite 431
Glendale, AZ 85301
Phone: (623) 930-2870
Fax: (623) 847-1399

The Contractor must submit an amended NOI if ADEQ provides notification that the previously submitted NOI is incomplete. The amended NOI must be submitted to the ADEQ, the City's Project Manager, and if so directed by the City's Project Manager, to the City's Assistant City Manager.

The Contractor may assume coverage under the AZPDES General Permit two (2) business days after receipt of the NOI by ADEQ; unless ADEQ provides notification that the NOI needs additional evaluation. Such notification may be made in writing, electronically, by fax, or by phone; and will typically be made within two (2) business days after receipt of the NOI. The Contractor cannot assume coverage under the permit and must delay the start of construction for a period of thirty-two (32) business days after receipt of the NOI by ADEQ, unless additional notice is received from ADEQ during this time period. If there is no additional notice, the Contractor may assume coverage under the AZPDES General Permit and initiate construction activities at the end of the 32 business days.

PART 3 - STORM WATER POLLUTION PREVENTION PLAN (SWPPP) REQUIREMENTS

The SWPPP must be prepared prior to submitting the NOI to ADEQ for coverage under AZPDES General Permit, and the Contractor must implement the SWPPP as written from the initial commencement of construction activity until final stabilization is complete. The SWPPP must be prepared in accordance with good engineering practice, and must:

- (a) Identify potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the construction site;
- (b) Identify, describe and ensure implementation of best management practices (BMPs) that will be used to reduce the amount of pollutants in storm water discharges from the construction site;
- (c) Assure compliance with the terms and conditions of AZPDES General Permit No. AZG2003-001 for Storm Water Discharges from Construction Activities; and
- (d) Identify the party responsible for on-site implementation of the SWPPP.

Specific requirements for the contents of the SWPPP include identification of all operators of the project site, and the areas over which each operator has control. The SWPPP must also provide a description of the nature of the construction activity that includes:

- (a) A description of the project and its intended use after the Notice of Termination (NOT) is filed (e.g. a municipal park, a municipal building, high density housing, a City street, a water treatment plant, a municipal airport, etc.);
- (b) A description of the intended sequence of activities that disturb the soil at the site (e.g. grubbing, excavation, grading, utilities, infrastructure installation, etc.);
- (c) The total area of the site, and an estimate of the total area of the site expected to be disturbed by excavation, grading, or other activities, including off-site barrow and fill areas;
- (d) An estimate of the runoff coefficient of the site for both the pre-construction and post-construction conditions, and data describing the soil and any existent data on the quality of any discharge from the site;
- (e) A general location map (e.g. U.S.G.S quadrangle map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and the receiving waters within one mile of the site.

The SWPPP must contain a legible site map completed to scale that shows the entire site, and identifies:

- (a) The directions of storm water flow (e.g. use arrows to show which way or ways storm water will flow on, through, and off the site), and the approximate slopes anticipated after major grading activities;
- (b) Areas of soil disturbance and areas of no soil disturbance;
- (c) Locations of structural and non-structural controls identified in the SWPPP;
- (d) Locations where stabilization practices are expected to occur;
- (e) Locations of off-site material, waste, borrow areas, or equipment storage areas;
- (f) Locations of all surface water bodies (including wetlands);
- (g) Locations where storm water discharges to surface water (including dry washes) and to the City's storm sewer system;
- (h) Locations and registration numbers of on-site drywells;
- (i) Areas where final stabilization has been accomplished and no further construction-phase permit requirements apply.

The SWPPP must identify the nearest receiving water or waters, including ephemeral and intermittent streams, dry sloughs, and arroyos. If applicable, the SWPPP must also identify the areal extent and describe any wetlands near the site that could be disturbed or that could potentially receive discharges from the disturbed areas of the project.

The SWPPP must identify the location and describe any storm water or non-storm water discharges at the site associated with activity other than construction and other pollutant sources, such as fueling operations, on-site material storage areas, waste piles, etc. This includes discharges from dedicated asphalt plants and dedicated concrete plants that are covered by the AZPDES General Permit.

The SWPPP must identify and address off-site storage areas or borrow areas that are used solely for this construction project.

The SWPPP must describe all pollution control measures that will be implemented as part of the construction project to control pollutants in storm water discharges. For each major activity identified in the project description, the SWPPP must clearly describe appropriate control measures; the general sequence during the construction process when the measures will be implemented; and identify the construction site operator responsible for the implementation of the described control measures.

Off-site material storage areas (including overburden and stockpiles of dirt, borrow areas, etc.) used solely by the Contractor for the permitted construction project are considered a part of the project and must be addressed in the SWPPP.

For purposes of controlling erosion and sediment, the SWPPP must address the following:

- (a) Erosion and sediment controls must be designed to retain sediment on the construction site to the extent practicable.
- (b) All control measures must be properly selected, installed, and maintained per the manufacturer's specifications and good engineering practices. If periodic inspections or information is discovered that indicates a control has been used inappropriately, or installed incorrectly, the Contractor must replace or modify the control for site situations as soon as practicable and before the next anticipated storm event.

- (c) When sediment escapes the construction site, off-site accumulations of sediment must be routinely removed at a frequency sufficient to ensure no adverse effects on water quality.

The SWPPP must describe good housekeeping procedures to prevent litter, construction debris, and construction chemicals exposed to storm water from becoming a pollutant source for storm water discharges.

The SWPPP must include a description of and identify interim and permanent stabilization practices for the construction site, including a schedule of when the practices will be implemented. The SWPPP shall document those areas where existing vegetation will be preserved.

The Contractor must initiate stabilization measures within 14 calendar days in those areas where construction activities have temporarily or permanently ceased, except:

- (a) Where stabilization by the 14th day is precluded by snow cover or frozen ground conditions, stabilization measures must be initiated as soon as practicable.
- (b) Where construction activity on a portion of the site has temporarily ceased, but earth disturbing activities will resume in that area within the 14 days. In this event, temporary stabilization measures do not have to be initiated on that portion of the site.
- (c) When the site is using vegetative stabilization measures and it is during seasonally arid conditions, vegetative stabilization measures must be initiated as soon as practicable.

The Contractor must maintain the following records as part of the SWPPP:

- (a) Dates when major grading activities occur;
- (b) Dates when construction activities temporarily or permanently cease on a portion of the site;
- (c) Dates when stabilization measures are initiated and completed, and the reasons for any delay.

The SWPPP must describe structural practices to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site to the degree attainable. Placement of structural practices in floodplains should be avoided to the degree attainable. A combination of sediment and erosion control measures is required to achieve maximum pollutant removal. Sediment basins and velocity dissipation devices must be utilized and placed in accordance with Part IV.D.5 of the AZPDES General Permit.

The SWPPP must include a description of post-construction storm water management measures that will be installed during the construction process to control pollutants in storm water discharges after construction operations have been completed. Structural measures shall be placed on upland soils to the degree attainable, and must be designed and installed consistent with applicable City of Glendale storm water management requirements.

The SWPPP must identify all allowable sources of non-storm water discharges listed in Part I.C.2 of AZPDES General Permit No. AZG2003-001 for Storm Water Discharges from Construction Activities except for flows from fire fighting activities. Non-storm water discharges are to be eliminated or reduced to the extent feasible. The Contractor must implement appropriate best management practices (BMPs) to minimize pollutants in any non-storm water discharges, and must describe those BMPs in the SWPPP. Except if used in emergency firefighting, super-chlorinated wastewaters must be held on-site until the chlorine dissipates, or otherwise de-chlorinated prior to discharge.

The SWPPP must describe:

- (a) Measures to prevent the discharge of solid materials, including building materials, to waters of the United States, except as authorized by a permit issued under section 404 of the Clean Water Act;

- (b) Measures to minimize off-site vehicle tracking of sediments, to the extent practicable, and the generation of on-site dust;
- (c) Construction and waste materials expected to be stored on-site with updates as appropriate. The SWPPP must also include a description of the controls to reduce pollutants from these materials including storage practices to minimize exposure of the materials to storm water, and spill prevention and response practices;
- (d) Any pollutant sources from areas other than construction (including storm water discharges from dedicated asphalt plants, dedicated concrete plants, and/or any other non-construction pollutant sources), with details of controls and measures that will be implemented at those sites to minimize pollutant discharges; and
- (e) Measures to sufficiently stabilize soil at culvert locations to prevent the formation of rills and gullies during construction.

The SWPPP must include a copy of AZPDES General Permit No. AZG2003-001 for Storm Water Discharges from Construction Activities. Copies of the NOIs submitted to ADEQ and/or copies of the certificates received from ADEQ specifying the authorization numbers must also be incorporated into the SWPPP as they become available. If any other agreements with state, federal, or local officials exist that would affect the provisions or implementation of the SWPPP, copies of these agreements must also be included in the SWPPP. (Please note, these types of agreements would include grading and drainage approvals and/or permits, and storm water management approvals and/or permits issued by the City of Glendale Engineering Department.)

The SWPPP must be consistent with applicable federal, state, and local requirements for soil and erosion control or storm water management. The SWPPP may incorporate by reference the appropriate elements of soil and erosion or storm water management plans required by other agencies. A copy of these requirements incorporated by reference must be provided as an attachment to the SWPPP, and must be updated as necessary to remain consistent with any revisions made to the requirements by the responsible agency or agencies.

A schedule for routine inspections of the construction site must be included in the SWPPP. This schedule must comply with Part IV.H.1 and Part IV.H.2 of the AZPDES General Permit.

The Contractor must sign the SWPPP in accordance with Part VII.K of the AZPDES General Permit. A copy of the signed SWPPP must be retained on the construction site or at another location easily accessible during normal working hours.

PART 4 - SWPPP IMPLEMENTATION AND CONSTRUCTION REQUIREMENTS

The Contractor shall not begin any construction activity until all applicable SWPPP controls, devices, and practices have been put into place.

In accordance with the terms and conditions of the AZPDES General Permit, the Contractor shall post the following documents at the construction site near the main entrance:

- (a) The AZPDES authorization number for the project or a copy of the NOI if an authorization number has not yet been assigned,
- (b) The name and telephone number of a local office or site contact person,
- (c) A brief description of the construction project, and
- (d) The location of the SWPPP if the site is inactive or does not have an on-site location to store the plan, and the name of the contact person for accessing the SWPPP.

The Contractor shall provide adequate and timely maintenance of vegetation, erosion and sediment control measures, and other protective measures and/or best management practices (BMPs) identified in the site plan or SWPPP to ensure that they remain in effective operating condition. Maintenance needs identified through inspections or other means shall be accomplished as soon as practicable and before the next anticipated storm event. If existing protective measures need to be modified or additional measures added, implementation of these changes must be completed before the next anticipated storm event, if practicable. If not practicable, implementation must be completed as soon as it is practicable. Sediment and debris must be removed from sediment traps, sediment ponds, trash racks, and similar structures when the design capacity of the structure has been reduced by fifty (50) percent.

The Contractor shall employ qualified personnel as defined by Part IV.H.3 of the AZPDES General Permit to inspect construction site areas in accordance with the requirements of Part IV.H.4 of the AZPDES General Permit. All inspection results shall be documented in reports that, at a minimum, include:

- (a) The inspection date;
- (b) The name, title, and qualifications of the person or persons performing the inspection. The qualifications must be either on or attached to the report. Alternatively, if the SWPPP documents the qualifications of the person or persons performing the inspection, then that portion of the SWPPP may be referenced;
- (c) The weather information for the period since the last inspection (or since the start of construction if this is the first inspection), including the best estimate of the beginning of each storm event, the duration of each event, the time that has elapsed since the last storm event, and the approximate amount of rainfall for each event in inches;
- (d) The location or locations of discharges of sediment or other pollutants from the site;
- (e) The location or locations and identification of BMPs that need to be maintained, failed to operate as designed, or proved inadequate;
- (f) The location or locations where additional BMPs that do not exist at the time of the inspection need to be implemented;
- (g) Any corrective actions required, including any changes to the SWPPP that are needed, and the dates for implementation;
- (h) Identification of all sources of non-storm water and their associated pollution prevention control measures; and
- (i) Identification of material storage areas, and any evidence of or potential for pollutant discharge from such areas.

The Contractor must retain the inspection reports and any records of follow-up actions taken for a period of at least three (3) years from the date permit coverage expires or is terminated. Inspection reports must identify any instance of non-compliance with the terms and conditions of the AZPDES General Permit. Where no instance of non-compliance is identified, the report must contain a certification that the construction project or site is being operated in compliance with the SWPPP and AZPDES General Permit No. AZG2003-001. The report shall be signed in accordance with Part VII.K of the permit. Copies of all inspection reports shall be provided to the City's Project Manager at least once each month throughout the duration of the project.

Based on the results of the inspection, the Contractor must modify the SWPPP to include additional or modified BMPs designed to correct problems identified. These revisions must be completed within seven (7) calendar days following the inspection. If existing BMPs need to be modified, or if additional BMPs are needed,

implementation must be completed before the next anticipated storm event. If implementation before the next anticipated storm event is not practicable, implementation must occur as soon as it is practicable.

The Contractor, with the approval of the City's Project Manager, must amend the SWPPP within fifteen (15) business days whenever:

- (1) There is a change in design, construction, operation, or maintenance at the construction site that has a significant effect on the discharge of pollutants to the waters of the United States, and such effect has not been previously addressed in the SWPPP; or
- (2) Inspections, monitoring (if required), or investigations by the Contractor, the City of Glendale, state officials, or federal officials determine the discharges are causing or contributing to water quality exceedances, or the SWPPP is ineffective in eliminating or significantly minimizing pollutants in storm water discharges from the construction site.

The SWPPP and all reports required under this contract shall be available to the public in accordance with the requirements of section 308(b) of the Clean Water Act. The Contractor shall make plans and reports available upon request to the ADEQ Director (or authorized representative); State, Tribal, or local agency with approval authority for sediment and erosion control plans, grading plans, or storm water management plans; local government officials; or to the operator of a municipal separate storm sewer receiving discharges from the site in accordance with the terms and conditions of the AZPDES General Permit.

The ADEQ Director (or authorized representative) may notify the Contractor and/or the City of Glendale at any time that the SWPPP is inadequate, or does not meet one or more of the requirements of Part IV of AZDES General Permit. Within fifteen (15) business days of receipt of such notification from ADEQ (or as otherwise provided by ADEQ), the Contractor must make the required changes to the SWPPP and submit to the ADEQ a written certification that the requested changes were made and implemented. The ADEQ may request submittal or re-submittal of the SWPPP to verify that all deficiencies have been adequately addressed.

No condition of the AZPDES General Permit or the SWPPP shall release the Contractor from any responsibilities or requirements under any other environmental statutes or regulations, including requirements for the prevention or minimization of the discharge of hazardous substances or oil. If there is a release containing a hazardous substance or oil in an amount equal to or greater than the reportable quantities established under federal regulations that has the potential to impact storm water discharges from this site, the Contractor must report the release to the regulatory agencies in accordance with regulatory requirements. In addition, the Contractor must modify the SWPPP within fourteen (14) calendar days after gaining knowledge of the release to provide a description of the release, the circumstances leading to the release, and the date of the release. The SWPPP must identify measures to minimize and/or prevent the occurrence of such releases, and appropriate measures for responding to such releases. The AZPDES General Permit does not authorize the discharge of any substance resulting from on-site spills, or the discharge of oil or chemicals.

The SWPPP (including a copy of AZPDES General Permit No. AZG003-001) shall be kept on the project site from the date of commencement of construction activities to the date of submittal of the Notice of Termination (NOT). A copy of the SWPPP and the permit shall be retained by the Contractor for a period of at least three (3) years following the date of final stabilization of the construction site. The Contractor shall also retain for the same three-year period all reports required by the AZPDES General Permit and all records of data used to complete the NOI.

It shall be the responsibility of the Contractor to ensure that copies of all documents and records retained by the Contractor in accordance with requirements of the AZPDES permit are also provided to the City's Project Manager.

Within thirty (30) days of the date of final stabilization of the construction site, the Contractor shall submit a completed and properly signed Notice of Termination (NOT) form to the City's Project Manager. The City of Glendale will also complete a NOT form, and will submit both the Contractor's and the City's NOT to the ADEQ at the

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address specified on the NOT form; thereby terminating the Contractor's and the City's AZPDES permit coverage for the project. Copies of the NOT will also be sent to those agencies that received a copy of the NOI. A blank NOT form is enclosed with these project specifications for use by the Contractor.

END OF SECTION 31 00 01

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31 10 00 EARTHWORK

EARTHWORK

STANDARD SPECIFICATIONS

Except as otherwise required in these specifications, construction of this project shall be in accordance with all applicable City of Glendale Engineering Design and Construction Standards, 2002 Edition, and Maricopa Association of Governments (M.A.G.) Uniform Standard Specifications, 2006 edition.

PART 1 GENERAL

1.01 DESCRIPTION

Earthwork shall conform to MAG Specifications Sections 201, 205, 206, 210, 211, 220, 225, and 230 and as modified herein. Earthwork shall consist of all local excavation, borrow and fill construction operations necessary to bring the grade to the contours and elevations shown on the plans or as directed by the Engineer.

1.02 OVERVIEW INFORMATION

If there is a surplus or shortage of suitable material, the contractor may, upon approval from, and as directed by the Engineer, make minor adjustments to the grading of the parking areas to compensate for any shortages and/or surpluses of material, at no additional cost to the City.

The contractor shall not haul suitable material from the site until the Contractor has verified that the remaining on-site earthwork volume is adequate to construct the remaining fill areas. Any surplus material removed prior to the completion of the specified work, which must subsequently be replaced, shall be at no additional cost to the City. All haul material shall be disposed of properly off-site as approved by the Engineer. Haul loads over highways or city streets shall comply with legal requirements.

1.03 GEOTECHNICAL REPORTS

Geotechnical Reports used during design are provided as information to the Contractor. No representation or warranty is made or implied by the Engineer or City as to the adequacy of the reports for construction. The Contractor shall visit the site, examine the soils report and obtain all information necessary to determine existing site and subsoil conditions that will affect the work prior to bid. Additional geotechnical testing, after bid for the Contractor's information, will be no cost to the City.

1.04 TESTING AND INSPECTION

Testing and inspections shall comply with the MAG Standard Specifications.

1.05 PERFORMANCE AND FINAL ACCEPTANCE REQUIREMENTS

- A. Landscape areas shall be tilled and bladed to remove rocks greater than 2 inches to a depth of 4 inches below finish grade.
- B. Landscape mounds and depressions shall be staked at 25 feet along the contour that defines the edge and staked at all high and low points to define the intended land form. Swales shall be staked at 25 foot intervals when engineered slopes are less than 2 percent.

C. Landscape areas shall be finished graded plus or minus 0.10 foot, allowing for two inches of decomposed granite installation. Grades of all planter areas after the 2" decomposed granite installation shall be 1" below the tops of adjacent pavements, walkways and curbing.

1.06 PROJECT CONDITIONS

A. Verify and locate all existing underground utilities in areas of work. Notify Engineer if location of proposed facilities has to be altered to accommodate existing conditions.

B. Protect excavations by shoring, bracing, sheeting, underpinning, or other methods as required to prevent cave-ins or loose dirt from entering excavations. Barricade open excavations and post warning lights at work adjacent to public streets and walks.

C. Underpin adjacent structures, including utility service lines, which may be damaged by excavation operations.

D. Promptly repair damage to adjacent facilities caused by earthwork operations. Cost of repair at Contractor's expense.

Promptly notify the Engineer of unexpected sub-surface conditions.

Grade at excavations to prevent surface water draining into excavated areas.

All haul material shall be disposed of properly off-site as approved by the Engineer. Haul loads over highways or city streets shall comply with legal load requirements. All material shall be removed from shelf areas of vehicles in order to eliminate spilling of material, and loads shall be watered or covered to eliminate dust. The Contractor shall also regularly clean existing streets to prevent buildup of haul material as directed by the Engineer.

Environmental Requirements: Place, spread and roll fill materials during favorable weather conditions. When the work is interrupted by rain, do not resume fill operations until evidence is furnished which establishes that moisture content and density of the previously placed fill are as specified.

SWPPP: Ensure that the project meets the minimum standards requirements of the Storm Water Pollution Prevention Plan (SWPPP) and that the plan is implemented prior to the start of any construction that results in soil disturbing activities such as grading, trenching, and excavations.

Dust Control: Comply with requirements of governing authorities. Use whatever means necessary to control dust on and near the work and on and near off-site borrow, storage and spoil areas; if such dust is caused by the Contractor's operations during performance of the work, or if resulting from the conditions in which the Contractor leaves the site. Thoroughly moisten surfaces as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other work on the site.

PART II PRODUCTS

2.01 MATERIALS

Materials shall conform to MAG Uniform Standard Specification for Public Works Construction.

B. All fill material is subject to testing and inspection

PART III EXECUTION

3.01 PREPARATION

A. Establish extent of grading and excavation by area and elevation. Designate and identify datum elevation and project engineering reference points. Set required lines, levels, and elevations.

B. Do not cover or enclose work of this Section before obtaining required inspections, tests, approvals and location recording.

3.02 EXISTING UTILITIES

A. Before starting grading and excavation, establish the location and extent of underground utilities in the work area. Exercise care to protect existing utilities during earthwork operations. Perform excavation work near utilities by hand and provide necessary shoring, sheeting, and supports as the work progresses.

B. Maintain and protect as required existing utility lines which pass through the work area.

C. Protect active utility services uncovered by excavation.

D. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with City and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

E. Do not interrupt existing utilities serving facilities occupied and used by City or others, during occupied hours, except when permitted in writing by Engineer and then only after acceptable temporary utility services have been provided.

F. Provide minimum of 48-hour notice to Engineer and receive written notice to proceed before interrupting any utility.

G. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinates with utility companies for shut-off of services if lines are active.

3.03 CLEARING AND GRUBBING

Clearing and grubbing shall conform to MAG Section 201 or as modified herein. All voids and cavities shall be filled with clean excavated materials and compacted to the surrounding new material densities. All areas to receive constructed fill shall be cleared of all existing turf. All waste material shall be disposed of off the project site. All existing pavement that is to be removed shall be saw cut.

3.04 ON SITE AND OFF SITE GRADING

Comply with MAG Specifications Sections 205, 206, 210, 211, 220, 225, and 230 or as modified herein.

A. ROADWAY EXCAVATION SECTION 205;

Modify 205.1 DESCRIPTION

Roadway excavation shall consist of excavation involved in grading and construction of site work, and roadways, except structure excavation, trench excavation and any other excavation separately designated.

Modify 205.2 UNSUITABLE MATERIALS

Delete the 3rd paragraph entirely; "The removal and disposal of such unsuitable material will be paid for as roadway excavation."

Add paragraph: Turf and landscape areas; Turf subgrade to a depth of 6 inches below finish grade shall be free of all deleterious materials and rocks 2 inches in any dimension and to a depth of 2 inches below finish grade free of all rocks greater than 1/2 inch. Landscape areas (non turf) shall be tilled and bladed to remove rocks greater than 2 inches to a depth of 4 inches below finish grade.



Modify 205.6 SURPLUS MATERIALS

Modify first sentence: Unless otherwise shown on the plans, specified in the special provisions, or approved by the Engineer, no surplus excavated material shall be disposed of within the right of way.

Delete 205.8 PAYMENT

STRUCTURE EXCAVATION AND BACKFILL SECTION 206

Modify 206.1 DESCRIPTION

Add paragraph: All excavation, including engineered, controlled earthwork pad for structures, paving, etc., shall be constructed in accordance with MAG. All costs for the initial testing of earthwork will be paid for by the City. Costs for re-testing due to failure of work to comply with these specifications shall be paid for by the Contractor.

Modify 206.3 INSPECTION

Add: It shall be the Contractor's responsibility to coordinate the Inspections to ensure no job delays.

C. FILL CONSTRUCTION SECTION 211:

Modify 211.2 PLACING

Modify the 1st sentence: Rocks, broken concrete, organic material, trash, or other solid materials, which are larger than 4 inches in the greatest dimension, shall not be placed in fill construction.

Add paragraphs: Fill in Turf and landscape areas; Turf subgrade to a depth of 6 inches below finish grade shall be free of all deleterious materials and rocks 2 inches in any dimension and to a depth of 2 inches below finish grade shall be free of all rocks greater than 1/2 inch. Fill in Landscape areas (non turf) shall be free of rocks greater than 2 inches to a depth of 4 inches below finish grade.

Fill placement in turf and landscape areas shall be compacted to not more than 90 percent of the materials maximum dry density. Scarify over compacted areas to a depth of 4 inches prior to planting turf or placement of organic materials.

Delete 7th Paragraph, 2nd sentence delete: Broken Portland cement concrete, and bituminous type pavement obtained from project excavation will be permitted in fill with the following limitation: (A), (B), (C), and (D).

Modify 2.11.3 COMPACTING

Add paragraphs: Strip the site of any existing fill zones (including end-dumped fill piles), backfill zones and unsuitable soils. During stripping, observe the surface for evidence of buried debris, vegetation or disturbed materials, which will require additional removal. If encountered, these materials shall be removed. Areas steeper than 5H to 1V should be benched and any depressions widened to accommodate compaction equipment.

Areas within and extending 5 feet beyond the footprint of the building ,over which fills are to be placed, shall be cleared and scarified to a depth of 8 inches, moisture conditioned and compacted to provide a bond between the existing ground and the material to be deposited thereon.

Add specific compaction requirements: Compact subgrade, fill, backfill, sub-base fill or base material to the following minimum percent compaction of the ASTM D698 maximum dry density for each lift. Rate shall be per geotechnical report recommendations. If no recommendations are given in report, apply rate per table below:

Material Minimum Percent Compaction

Below foundation and pavement sections	95
Below concrete floor slabs (above footings)	90
Base Material:	
Below concrete slabs	95



Below pavement sections 100
 Backfill*
 Turf and Landscape Areas 90
 85 (maximum)

*Outside of building, exterior slab and pavement areas.

The moisture content of the soils at the time of compaction shall be per geotechnical report recommendations. If no recommendations are given in report, moisture content shall be per table below.

Type	Area of Use	Moisture Content
On-site	Building, Exterior Slab, Ramada	Optimum to optimum plus or minus 3%
On-site	Pavement	2% below optimum or lower
Imported	Building, Exterior Slab	Optimum plus or minus 3%
Imported	Pavement	2% below optimum or lower
Base Material	Building Pavement	Optimum plus or minus 3%

Any soils which are disturbed or over excavated by the contractor outside the limits of the plans or specifications should be replaced with materials compacted as specified above.

Areas of new fill in planters and turf areas shall be compacted between 75 to 85 percent of the materials maximum dry density. Planters shall be water settled. The Contractor shall take precautions to not over-compact the fill because tight compaction retards plant growth.

211.5 MEASUREMENT: delete this section in its entirety

211.6 PAYMENT: delete this section in its entirety

END OF SECTION 31 00 00

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32 12 15 AGGREGATE BASE COURSE

PART 1 – GENERAL

1.1 SUMMARY

- A. Documents affecting work of the section include, but are not necessarily limited to, General Conditions, Supplementary conditions, and sections in Division I of these Specifications.
- B. Construction of the aggregate base course shall conform to MAG Standard Specifications Sections 310 and 702.

1.2 QUALITY ASSURANCE Use adequate number of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with specified requirements and the methods needed for proper performance to the work of the section.

Use equipment of adequate size, capacity, and numbers to accomplish the work of this section in a timely manner.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Comply with pertinent provisions of Section 01620 STORAGE AND PROTECTION.

PART 2 – PRODUCTS

Aggregate base shall comply with Subsection 702.2 of the MAG Standard Specification.

PART 3 – EXECUTION

Aggregate base shall be placed in accordance with Subsection 310.2 of the MAG Standard Specifications.

END OF SECTION 32 13 17

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SECTION 321216 – ASPHALTIC CONCRETE PAVING

PART 1 - GENERAL

1.01 SUMMARY

- A. Provide asphaltic concrete paving where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, MAG Standard Specifications Section 311 and 710, and Sections in Division 1 of these Specifications.

1.02 SUBMITTALS

- A. Product data: CONTRACTOR must notify the CITY in writing of the sources from which it proposes to obtain material requiring the CITY approval, certification, or quality assurance testing. Such notification must be made as soon as possible after award of Contract but no later than 5 days after receipt of the Notice to Proceed.
 - 1. Materials list of items proposed to be provided under this Section;
 - 2. Certificates, signed by the asphaltic concrete paving materials producer and the asphaltic concrete paving subcontractor, stating that materials meet or exceed the specified requirements.

1.03 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Comply with pertinent provisions of MAG Standard Specifications.

**PART
PRODUCTS**

City of Glendale – Land Development Engineering
2006 Approved Asphaltic Concrete Mix Designs
Surface Course and Trench Applications

AC Mix Application	Lot Thickness	Supplier Name	Hot-Plant Number	Hot-Plant Location	AC Mix Size	Product Code	Traffic Application	Oil Content	Max. Unit Wt.
Surface or Trench	1"	Mass Materials	2	7845 W. Broadway	9.5mm	316	Arterial	5.4	152.6
Surface or Trench	1"	Mass Materials	2	7845 W. Broadway	9.5 mm	318	Residential	5.6	152.2
Surface or Trench	1"	Rinker	1386	3640 S. 19 th Avenue	9.5 mm	1361439	Arterial	5.4	151.1
Surface or Trench	1"	Rinker	1387	11920 W. Glendale Ave.	9.5mm	1361311	Arterial	5.7	153.3
Surface or Trench	1.5"	Volcan	56	14521 North 117 th Avenue	9.5mm	1219ABZG-06-B40	Residential	5.9	148.2
Surface or Trench	1.5"	Hansen	33	4002 South 51 st Avenue	9.5mm	35195PGA	Arterial	5.5	151.8
Surface or Trench	1.5"	Hansen	33	4002 South 51 st Avenue	12.5mm	35125PGR	Residential	5.6	152.1
Surface or Trench	1.5"	Hansen	33	4002 South 51 st Avenue	12.5mm	35125PGA	Arterial	5.5	152.3
Surface or Trench	1.5"	Mass Materials	2	7845 W. Broadway	12.5mm	323	Arterial	5.3	152.4
Surface or Trench	1.5"	Mass Materials	2	7845 W. Broadway	12.5 mm	325	Residential	5.6	151.8
Surface or Trench	1.5"	Rinker	1386	3640 S. 19 th Ave.	12.5 mm	1361436	Arterial	5.1	151.0
Surface or Trench	1.5"	Rinker	1386	3640 S. 19 th Avenue	12.5 mm	1361437	Residential	5.2	150.8
Surface or Trench	1.5"	Rinker	1387	11920 W. Glendale Ave.	12.5 mm	1361306	Arterial	4.7	154.8
Surface or Trench	1.5"	Rinker	1387	11920 W. Glendale Ave.	12.5 mm	1361310	Residential	5.0	154.3
Surface or Trench	1.5"	Rinker	1390	24004 N. 107 th Ave.	12.5 mm	1368154	Arterial	5.2	153.9
Surface or Trench	1.5"	Rinker	1390	24004 N. 107 th Ave.	12.5 mm	1368153	Residential	5.5	153.1
Surface or Trench	1.5"	Volcan	56	14521 North 117 th Avenue	12.5mm	1219ABZG-06-B2H	Arterial	5.3	150.3
Surface or Trench	1.5"	Volcan	56	14521 North 117 th Avenue	12.5mm	1219ABZG-06-B2Z	Residential	5.3	149.8
Base Course Only	2"	Hansen	33	4002 South 51 st Avenue	19mm	35195PGR	Residential	4.9	153.9
Base Course Only	2"	Hansen	33	4002 South 51 st Avenue	19mm	35195PGA	Arterial	4.6	154.6
Base Course Only	2"	Mass Materials	2	7845 W. Broadway	19mm	334	Arterial	4.7	153.9
Base Course Only	2"	Mass Materials	2	7845 W. Broadway	19 mm	336	Residential	5.0	153.2
Base Course Only	2"	Rinker	1386	3640 S. 19 th Ave.	19 mm	1361305	Arterial	4.9	152.0
Base Course Only	2"	Rinker	1386	3640 S. 19 th Ave.	19 mm	1361304	Residential	5.0	151.8
Base Course Only	2"	Rinker	1387	11920 W. Glendale Ave.	19 mm	1364827	Arterial	4.8	156.5
Base Course Only	2"	Rinker	1387	11920 W. Glendale Ave.	19 mm	1361309	Residential	5.0	152.0
Base Course Only	2"	Rinker	1390	24004 N. 107 th Ave.	19 mm	1368046	Arterial	4.8	155.8
Base Course Only	2"	Rinker	1390	24004 N. 107 th Ave.	19 mm	1368047	Residential	5.1	155.1
Base Course Only	2"	Volcan	56	14521 North 117 th Avenue	19mm	1219ABZG-06-B37	Arterial	5.0	151.1
Base Course Only	2"	Volcan	56	14521 North 117 th Avenue	19mm	1219ABZG-06-B3M	Residential	5.3	150.5

Please Note: If an AC Mix does not appear on this list, it cannot be used in the City of Glendale Right-of-Way.

A two-business day notice is required by the City prior to any AC placement. A Paving Notification Sheet must be filled out and faxed to the City's Materials Testing Laboratory at 623-877-2506 AND Inspection Department at (623) 915-2689. Material placed without notification is subject to removal.

The 2006 Approved AC Mix Design List and Paving Notification Sheet are both available on the City's website at <http://www.glendaleaz.com/Engineering/publications.cfm>. Asphaltic Concrete Mix Designs are on file at City of Glendale – Engineering Department, Materials Testing Laboratory 6771 North Glen Harbor Blvd., Glendale, AZ 85307.

(Revised 10-23-2006 by Tom Kaczmarowski, E.I.T. - Chief Materials Technician)

2.01 AGGREGATES

- A. Provide aggregates consisting of crushed stone, gravel, sand, or other sound, durable, mineral materials free of organic material, processed and blended, and naturally combined.
- B. Base aggregate must be such that it can be compacted readily under watering and rolling to form a firm, stable base. The coarse aggregate (material retained on the No. 4 sieve) shall consist of material requirements of Section 710 of the MAG Standard Specifications and as modified herein.
- C. Asphalt concrete aggregates shall meet the requirements of Section 710 of the MAG Standard Specifications for Type C mixes.

2.02 WEED KILLER

- A. Use weed killer only when necessary to prohibit organic growth in areas prepared for paving which will not be paved before weed growth may occur and only with permission of the Engineer.
- B. Provide a dry, free flowing, dust free chemical compound containing not less than 30% sodium chlorate or a chlorate-borate compound, non-flammable, not creating a fire hazard when applied in accordance with the manufacturer's recommendations, soluble in water, and capable of being spread dry or in solution.

2.03 ASPHALT

- A. Comply with provisions of the MAG Standard Specifications, Section 712, using AC-20.
- B. Mix designs shall meet the requirements of Section 710 of the MAG Standard Specifications for Type C mixes, and as specified herein.

2.04 SEALER

- A. Provide a sealer consisting of suitable fibrated chemical type asphalt base binders and fillers having a container consistency suitable for troweling after thorough stirring, and containing no clay or other deleterious substance.

2.05 MIXING ASPHALTIC CONCRETE MATERIALS

- A. At least 7 working days prior to their intended use, the CONTRACTOR shall furnish samples of aggregates, in the quantity requested by the ENGINEER, from the source he proposes to use for the project. Said samples shall have been processed in a manner representative of that material to be used in the work. Where asphalt concrete or asphalt concrete base is to be produced from the established sources and if acceptable to the ENGINEER, the CONTRACTOR may advise the ENGINEER in writing that the source, gradings and proportions of those aggregates proposed to be furnished are the same as those approved for, and used on, another prior or concurrent project. The project shall be identified by contract number.

2.06 PAVEMENT MARKING

- A. Provide traffic paint, colors, and appropriate markings as depicted by ADOT, the City, and in the Manual on Uniform Traffic Control Devices.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.

3.02 FINAL PREPARATION OF SUBGRADES

- A. After preparation of subgrade as specified in these Specifications, thoroughly scarify and wet the entire area to be paved to a depth of 6 inches, and then compact to a smooth, hard, even surface of 95% density to receive the aggregates.
- B. Apply the specified weed killer to the entire area to be paved. Adhere to the manufacturer's application recommendations.

3.03 PLACEMENT OF BASE COURSES

- A. Subbase (when required):
 1. Spread the subbase material to match existing subbase material.
 2. Compact to 100% of the maximum density as determined by ASTM D698.

B. Base:

1. Spread the base material to match existing base material and/or meet minimum thickness as required by MAG Standard Specifications, whichever is greater.
2. Compact to 95% of the maximum density as determined by ASTM D698.

C. Thickness tolerance: Provide the compacted thicknesses shown on the Drawings within a tolerance of plus or minus 0.042 feet.

D. Smoothness tolerance: The completed surfacing shall be thoroughly compacted, smooth, and true to grade and cross-section, and free from ruts, humps, depressions or irregularities. An acceptable surface shall not vary more than one-half inch from the lower edge of a 25 foot straightedge when the straightedge is placed parallel to the centerline of the roadway.

1. Deviations: Correct by removing materials, replacing with new materials, and reworking or recompacting as required.

E. Moisture content: Use only the amount of moisture needed to achieve the specified compaction.

3.04 PLACEMENT OF ASPHALTIC CONCRETE PAVING

A. Remove all loose materials from the compacted base, after base course is inspected, tested and approved by the City.

B. Receipt of asphaltic concrete materials:

1. Do not accept material unless it is covered with a tarpaulin until unloaded, and unless the material has a temperature of not less than 280° F.

C. Spreading:

1. The dumping of material in a windrow shall be limited to 750 feet in advance of the paving machine, unless otherwise permitted by the Engineer.
2. Unless otherwise shown on the plans, asphalt paver equipment used to place asphalt concrete shall be equipped with full automatic screen and grade sensing controls which shall control the longitudinal grade and transverse slope of the screen. The controls shall be actuated by grade and slope references. Corrections on account of deviations from the references shall be automatic. Guides and references required to control the longitudinal grade and transverse slopes shall be furnished and installed by the Contractor.
3. Should the contractor elect to use a ski device for longitudinal control, the minimum length of the device shall be 30 feet. The device shall be a rigid unit mounted on multiple supports. Each support shall act independently of others and the finished grade shall not be affected by the action of a single support.
4. Asphalt concrete shall be placed only when the atmospheric temperature is above 50°F, and rising.
5. Asphalt concrete shall not be placed when the underlying layer or surface is frozen, or when, in the opinion of the Engineer, weather conditions will prevent the proper handling, finishing, or compaction of the mixture.
6. Spread material in a manner which requires the least handling.

7. Where thickness of finished paving will be 4" or less, spread in one layer.
8. The complete mixture shall be deposited on the roadbed at a uniform quantity per linear foot, as necessary to provide the required compacted thickness without resorting to spotting, picking up or otherwise shifting the mixture. Segregation shall be avoided, and the surfacing shall be free from pockets of coarse or fine material. Asphalt concrete or asphalt concrete base containing hardened lumps shall not be used.
9. Longitudinal joints in the top layer shall correspond with the edges of proposed traffic lanes. Longitudinal joints in all other layers shall be offset not less than 0.5 foot alternately each side of the edges of traffic lanes. The Engineer may permit other patterns of placing longitudinal joints if he considers that such pattern will not adversely affect the quality of the finished product.
10. Unless otherwise provided herein or permitted by the Engineer, the top layer of asphalt concrete for shoulders, tapers, transitions, road connections, private drives, curve widening, chain control lanes, turnouts, left turn pockets, and other such areas, shall not be spread before the top layer of asphalt concrete for the adjoining through lane has been spread and compacted. At locations where the number of lanes is changed, the top layer for the through lanes shall be paved first. Tracks or wheels of spreading equipment shall not be operated on the top layer of asphalt concrete in any area until final compaction has been completed.
11. At locations where the asphalt concrete or asphalt concrete base is to be placed over areas inaccessible to spreading and rolling equipment, the asphalt concrete or asphalt concrete base shall be spread by any means to obtain the specified results and shall be compacted thoroughly to the required lines, grades and cross sections by means of pneumatic tampers, or by other methods that will produce the same degree of compaction as pneumatic tampers.
12. When directed by the Engineer, tack coat shall be applied to any layer in advance of spreading the next layer.
13. Before placing the top layer adjacent to cold traverse construction joints, such joints shall be trimmed to a vertical face and to a neat line. Connections to existing surfacing shall be feathered to conform to the requirements for smoothness. Longitudinal joints shall be trimmed to a vertical face and to a neat line if the edges of the previously laid surfacing are, in the opinion of the Engineer, in such condition that the quality of the compacted joint will be affected.
14. All layers, except otherwise provided, shall be spread with an asphalt paver. Asphalt pavers shall be operated in such a manner as to insure continuous and uniform movement of the paver.

E. Rolling:

1. The initial compaction shall be performed when the temperature of the asphalt concrete mixture is not less than 250° F.
2. The rolling and compacting pattern of the asphalt shall be at the Contractors discretion in order to achieve the required 95% compaction density, and as specified in MAG Standard Specifications Section 321.5. No roller marks shall be visible when complete.

3.05 FLOOD TEST

A. Prior to application of seal coat, perform a flood test in the presence of the Engineer.

B. Method:

1. Flood the entire asphaltic concrete paved area with water by use of a tank truck or hoses.

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2. If a depression is found where water ponds to a depth of more than 1/4" in ten feet, fill or otherwise correct to provide proper drainage.
3. Feather and smooth the edges of fill so that the joint between fill and original surface is invisible.

3.06 APPLICATION OF SEAL COAT

- A. No SS-1h seal will be required

3.07 PAVEMENT MARKING

- A. Contractor to install pavement markings as shown on the drawings and in accordance with ADOT, MAG Standards, and the Manual on Uniform Traffic Control Devices.
- B. Prepare the surfaces and apply the specified paint in accordance with the manufacturer's recommendations.

3.08 PROTECTION

- A. Protect the asphalt concrete paved areas from traffic until the asphalt is set and cured and does not pick up under foot or wheeled traffic.
- B. The CONTRACTOR is to protect this pavement until the job is approved by the City or opened for public use.

END OF SECTION 321216

SECTION 321316 - CONCRETE PAVING AND WALLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. Section includes colored and standard grey concrete paving, cast in place benches and walls

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.
- B. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to decorative concrete paving, including but not limited to, the following:
 - a. Concrete mixture design.
 - b. Quality control of concrete materials and decorative concrete paving construction practices.
 - c. .
 - 2. Require representatives of each entity directly concerned with decorative concrete paving to attend, including the following:
 - a. Contractor's superintendent.
 - b. Independent testing agency responsible for concrete design mixtures.
 - c. Ready-mix concrete manufacturer.
 - d. Decorative concrete paving Installer.
 - e. Manufacturer's representative of decorative concrete paving system.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- B. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color, pattern, or texture selection.
- C. Samples for Verification: For each type of exposed color, pattern, or texture indicated.
- D. Design Mixtures: For each decorative concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer ready-mix concrete manufacturer and testing agency.
- B. Material Certificates: For the following, from manufacturer:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Curing compounds.
 - 4. Joint fillers.
- C. Field quality-control reports.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer of decorative concrete paving systems.
- B. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- C. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
 - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- D. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - 1. Build mockups of full-thickness sections of decorative concrete paving to demonstrate typical joints; surface color, pattern, and texture; curing; and standard of workmanship.
 - 2. Build mockups of decorative concrete paving in the location and of the size indicated or, if not indicated, build mockups where directed by Architect and not less than 96 inches by 96 inches.

3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 PRECONSTRUCTION TESTING

- A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on decorative concrete paving mixtures.

1.9 FIELD CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.
- B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
 2. Do not use frozen materials or materials containing ice or snow.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
 - 1. Use flexible or uniformly curved forms for curves of a radius of 100 feet or less. Do not use notched and bent forms.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

- A. As indicated in structural drawings and specifications.

2.4 CONCRETE MATERIALS

- A. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.
- B. Cementitious Materials:
 - 1. Portland Cement: ASTM C 150/C 150M, gray portland cement Type I/II.
 - 2. Fly Ash: ASTM C 618, Class C or F.
 - 3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
- C. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 1N, uniformly graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Air-Entraining Admixture: ASTM C 260/C 260M.
- E. Color Pigment: ASTM C 979/C 979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.
 - 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. BASF Corporation-Construction Systems.
 - b. Davis Colors.
 - c. Solomon Colors, Inc.
- F. Water: Potable and complying with ASTM C 94/C 94M.

2.5 RELATED MATERIALS

- A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber in preformed strips.

2.6 CONCRETE MIXTURES

- A. Obtain each color, size, type, and variety of concrete mixture from single manufacturer with resources to provide concrete of consistent quality in appearance and physical properties.
- B. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
- C. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
- F. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.
- G. Concrete Mixtures: Normal-weight concrete.
 - 1. Compressive Strength (28 Days)/ Slump Limit and W/C Ratio: As specified in structural drawings.

2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116/C 1116M. Furnish batch certificates for each batch discharged and used in the Work.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
 - 1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.

2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below decorative concrete paving to identify soft pockets and areas of excess yielding.
 1. Completely proof-roll subbase in one direction. Limit vehicle speed to 3 mph.
 2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Section 312000 "Earth Moving."
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.
- B. Protect adjacent construction from discoloration and spillage during application of color hardeners, release agents, stains, curing compounds, and sealers.

3.3 EDGE FORMS AND SCREED CONSTRUCTION

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

3.4 FORMWORK INSTALLATION

- A. Limit deflection of form-facing panels to not exceed ACI 303.1 requirements.
- B. In addition to ACI 303.1 limits on form-facing panel deflection, limit cast-in-place architectural concrete surface irregularities, designated by ACI 347 as abrupt or gradual, as follows:
 1. Class A, 1/8 inch

- C. Construct forms to result in cast-in-place architectural concrete that complies with ACI 117 (ASI 117M).
- D. Construct forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast-in-place surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood rustications, keyways, reglets, recesses, and the like, for easy removal.
 - 1. Seal form joints and penetrations at form ties with form joint tape or form joint sealant to prevent cement paste leakage.
 - 2. Do not use rust-stained steel form-facing material.
- E. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- F. Chamfer exterior corners and edges of cast-in-place architectural concrete.
- G. Coat contact surfaces of wood rustications and chamfer strips with sealer before placing reinforcement, anchoring devices, and embedded items.
- H. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- K. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- L. Coat contact surfaces of forms with surface retarder, according to manufacturer's written instructions, before placing reinforcement.
- M. Place form liners accurately to provide finished surface texture indicated. Provide solid backing and attach securely to prevent deflection and maintain stability of liners during concreting. Prevent form liners from sagging and stretching in hot weather. Seal joints of form liners and form-liner accessories to prevent mortar leaks. Coat form liner with form-release agent.

3.5 STEEL REINFORCEMENT INSTALLATION

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap to adjacent mats.

3.6 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
 - 1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
 - 1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
 - 2. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
 - 3. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
 - 4. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
 - 1. Locate expansion joints at intervals of 50 feet unless otherwise indicated. Coordinate location with architect if not specifically located on drawings.
 - 2. Extend joint fillers full width and depth of joint.
 - 3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
 - 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
 - 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
 - 6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows, to match jointing of existing adjacent decorative concrete paving:
 - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
 - a. Tolerance: Ensure that grooved joints are within 3 inches either way from centers of dowels.

3.7 CONCRETE PLACEMENT

- A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
- B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement dowels and joint devices.
- H. Screed paving surface with a straightedge and strike off.
- I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.8 CONCRETE FINISH

- A. Concrete Finish: After final floating, apply the following finish:

1. Light Salt Finish to Match Existing

3.9 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Compound: Apply immediately after final finishing. Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.
 1. Cure integrally colored concrete with a pigmented curing compound.
- F. Curing and Sealing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

3.10 PAVING TOLERANCES

- A. Comply with tolerances in ACI 117 and as follows:
 1. Elevation: 3/4 inch.
 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 3. Surface: Gap below 10-foot-long, unlevelled straightedge not to exceed 1/2 inch.
 4. Lateral Alignment and Spacing of Dowels: 1 inch.
 5. Vertical Alignment of Dowels: 1/4 inch.
 6. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
 7. Joint Spacing: 3 inches.
 8. Contraction Joint Depth: Plus 1/4 inch, no minus.
 9. Joint Width: Plus 1/8 inch, no minus.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 3. Air Content: ASTM C 231/C 231M, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
 6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.
 - a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- G. Decorative concrete paving will be considered defective if it does not pass tests and inspections.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

- I. Prepare test and inspection reports.

3.12 REPAIR AND PROTECTION

- A. Remove and replace decorative concrete paving that is broken or damaged or does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
- B. Detailing: Grind concrete "squeeze" left from tool placement. Color ground areas with slurry of color hardener mixed with water and bonding agent. Remove excess release agent with high-velocity blower.
- C. Protect decorative concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain decorative concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

3.13 DECORATIVE CONCRETE PAVING SCHEDULE

- A. Patterned Decorative Concrete Paving A200 (Color C-0)
 - 1. Locations: Install at walks.
 - 2. Coloring Method: No integral Color. Provide Standard Grey Concrete
 - 3. Finish: Salt Finish to Match Existing
- B. Patterned Decorative Concrete Paving A200 (Color C-1)
 - 1. Locations: Install at walks.
 - 2. Coloring Method: Integrally colored as indicated on drawings.
 - 3. Finish: Salt Finish to Match Existing
- C. Walls and Benches (To Match C-0)
 - 1. Locations: As indicated on drawings
 - 2. Color: No integral Color. Provide Standard Grey Concrete
 - 3. Finish: To Match Existing Benches.

END OF SECTION 321316

32 13 17 CONCRETE CURB AND GUTTER, SIDEWALKS AND DRIVEWAYS

1. GENERAL

1.1 DESCRIPTION

This section specifies the necessary work for the complete construction of concrete monolithic curb, concrete curb, concrete curb and gutter, sidewalks and driveways.

Monolithic curb shall be described as the curb portion of the portland cement concrete pavements. The monolithic curb shall be poured continuously with the portland cement concrete pavement and not have any expansion joints unless designated for the portland cement concrete pavements. The portland cement concrete pavement will be measured to the gutter line.

1.2 RELATED WORK SPECIFIED ELSEWHERE

Earthwork: Section 02200

Cast-in-Place Concrete: Section 3300

2. PRODUCTS

2.1 REFERENCE: CITY OF PHOENIX OR MAG STANDARD SPECIFICATIONS AND DETAILS

- A. Sidewalk
- B. Sidewalk Ramp, Type A, B, and D
- C. Type A Single Curb, MAG
- D. Type A Curb and Gutter, MAG
- E. Valley Gutter, MAG
- F. Driveway

2.2 REFERENCE: ADOT STANDARD SPECIFICATION AND DRAWINGS

- A. Type B Curb and Gutter
- B. Type D Curb and Gutter
- C. Type C-1 Curb and Gutter

3. EXECUTION

Concrete curb and gutter, sidewalks, and driveway shall be constructed according to the requirements of Section 340 of the MAG Standard Specifications and ADOT Standards Specifications and Details.

Subgrade for curb, gutter, and sidewalk shall meet the requirements of General Earthwork, Section 02200, Section 3.70 for imported granular material.

END OF SECTION 32 13 17

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32 17 13 SIGNING AND PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the necessary work for the complete construction of signing and pavement markings.

PART 2 - PRODUCTS

2.1 REFERENCE: CITY OF GLENDALE

- A. City of Glendale "Pavement Marking Standards."

2.2 REFERENCE: ARIZONA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2000

- A. Section 607, "Roadside Sign Supports."
- B. Section 608, "Sign Panels."
- C. Section 704, "Thermoplastic Pavement Markings."
- D. Section 706, "Raised Pavement Markers."

PART 3 - EXECUTION

- A. Pavement markings, including all appurtenances, shall be constructed according to the requirements of the Standard Details and Specifications noted herein.

END OF SECTION 32 17 13

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