FINAL SPECIAL PROVISIONS

FOR

CITY OF MARICOPA
TRAFFIC ON-CALL PROJECT

TRAFFIC SIGNAL CONSTRUCTION – HONEYCUTT ROAD AT GLENNWILDE DRIVE/PROVINCE PARKWAY

CITY OF MARICOPA, ARIZONA

February 2012

PROPOSED WORK:

The proposed work is located at the intersection of Honeycutt Road and Glennwilde Drive/Province Parkway in the City of Maricopa, Arizona. The project consists of the installation of traffic signal equipment, modifications to the existing signing and striping, and other miscellaneous work.

(SPCooNFA, 02/20/08)

SPECIFICATIONS:

The work embraced herein shall be performed in accordance with the requirements of the following separate documents:

Arizona Department of Transportation, Standard Specifications for Road and Bridge Construction, Edition of 2008 (Pub. # 31-066),

Arizona Department of Transportation, Intermodal Transportation Division, Standard Drawings, listed in the project plans and defined hereinafter,

Arizona Department of Transportation, Traffic Group, Manual of Approved Signs, available on the Department's website, through the Traffic Group,

Arizona Department of Transportation, Traffic Group, Traffic Control Design Guidelines (Pub. # 31-088),

Manual on Uniform Traffic Control Devices for Streets and Highways, 2003 edition and Arizona Supplement to the 2003 edition, September 1, 2004 (Pub. # 31-010),

MAG Uniform Standard Specifications for Public Works Construction (2009),

MAG Uniform Standard Details for Public Works Construction (2009),

City of Maricopa Identity Guidelines (February 2008),

City of Maricopa Internally Illuminated Street Name Sign Specifications,

City of Maricopa Signing and Striping Policy (December 2005), and

City of Maricopa Special Provision, ADA Compliant Handicap Ramp Panels (February 26, 2007).

The Proposal Pamphlet and Non-bid Pamphlet which includes the following documents:

These Special Provisions,

Standard Federal Equal Employment Opportunity Construction Contract Specifications (Executive Order 11246), July 1, 1978, Revised November 3, 1980 and Revised April 15, 1981,

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246), July 1, 1978, Revised November 3, 1980 and Revised April 15, 1981, Executive Order 99-4, March 26, 1999, and

Bidding Schedule.

Included in the Proposal Pamphlet only:

Bid,

Surety (Bid) Bond, 12-1303,

Certification With Respect to the Receipt of Addenda,

Certification With Regard to the Performance of Previous Contracts or Subcontracts, Subject to the Equal Opportunity Clause of Executive Order No. 99-4 and the Filing of Required Reports, Non-Federal Aid Projects, August 1, 2000, and

Affidavit by contractor certifying that there was no collusion in bidding for contract.

BID SUBMISSION:

In submitting a bid, the holder of the Bid Proposal Pamphlet shall completely execute the following documents:

Bid,

Bidding Schedule,

Surety (Bid) Bond, 12-1303,

Certification With Respect to the Receipt of Addenda,

Certification With Regard to the Performance of Previous Contracts or Subcontracts, Subject to the Equal Opportunity Clause of Executive Order No. 99-4 and the Filing of Required Reports, Non-Federal Aid Projects, August 1, 2000, and

Affidavit by contractor certifying that there was no collusion in bidding for contract.

PROPOSAL GUARANTY:

Each bidder is advised to satisfy itself as to the character and the amount of the proposal guaranty required in the Advertisement for Bids.

CONTRACT DOCUMENTS:

The bidder to whom an award is made will be required to execute a Performance Bond and a Payment Bond, each in 100 percent of the amount of the bid, an Insurance Certificate and the Contract Agreement.

A copy of these documents is not included in the Proposal Pamphlet which is furnished to prospective bidders; however, each bidder shall satisfy itself as to the requirements of each document.

The documents, approved by the Department of Transportation, Highways Division, are identified as follows:

Statutory Performance Bond, 12-1301, September, 1992,

Statutory Payment Bond, 12-1302, September, 1992,

Contract Agreement, 12-0912, August, 2000, and

Certificate of Insurance, 12-0100, June, 1998.

A copy of each document may be obtained by making a request to Contracts and Specifications Services.

COPIES OF PROJECT DOCUMENTS:

Distribution of a limited number of plans and Special Provisions will be made to the successful low bidder, at no charge, following confirmation of bid prices and DBE submittal, if applicable. The distribution will be made on the following basis:

Full Size Plans	1/2 Size Plans	Bound Bid Books	Unbound Bid Books
2	5	2	5

These plans and Special Provisions will be set aside and designated for use by the low bidder along with an equal number held in reserve by the City of Maricopa. In the event that excess documents remain following bid opening, the additional documents will be evenly split between the low bidder and the City of Maricopa.

Any additional plans or Special Provisions that the low bidder may require beyond the above distribution will be available at the invoice cost of printing by ordering through the Engineer.

MATERIAL AND SITE INFORMATION:

Projects requiring materials, excavation, or site investigation may have additional information available concerning the material investigations of the project site and adjacent projects. This information, when available and applicable, may be examined at the City of Maricopa Public Works office. This information will not be attached to the contract documents. Copies of available information may be purchased by prospective bidders.

CITY SUPPLIED EQUIPMENT AND SERVICES

The City of Maricopa will provide, and the Contractor shall "install only," the following equipment:

- Controller Cabinet
- Traffic Signal Controller (and programming)
- Traffic Signal Poles
- Traffic Signal and Luminaire Mast Arms
- Traffic and Pedestrian Signal Heads
- Battery Backup System
- Service Pedestal
- Pedestrian Pushbutton Assembly w/sign

The Contractor shall notify the City's assigned traffic signal programmer no less than 48 hours prior to the installation and final wiring of the traffic signal controller and cabinet. The programmer will conduct on-site observation of the installation and wiring.

INTERNALLY ILLUMINATED STREET NAME SIGNS
(City of Maricopa Special Provision)

Illuminated street name signs shall adhere to the City of Maricopa Internally Illuminated Street Name Sign Specifications and to the City of Maricopa Identity Guidelines (February 2008).

GENERAL

Illuminated street name signs shall be internally illuminated and furnished with either one or two sign message panels, designated as single-faced or double-faced, respectively. The illuminated light emitting diode (LED) sign shall include the sign housing, reflectors, sign panel(s), seals, LEDs, photoelectric control, conductors, terminal blocks and components, mounting assemblies, and painting when specified. Signs shall be rigid mounted units attached to the signal pole, not free swinging units attached to the bottom of the mast arm.

Message panels shall be designed in accordance with the current *City of Maricopa Identity Guidelines* (February 2008).

MECHANICAL SPECIFICATIONS

The outer dimensions of the sign assembly (excluding the mounting bosses) shall be standard widths of 15, 18, 20, and 24 inches, and standard lengths of 48-96 inches, in six inch increments.

The maximum thickness for the sign shall be 1.38 inches for single-faced signs and 1.77 inches for double-faced signs.

The long edge of the sign shall be constructed from a single section of 6063-T5 aluminum extrusion. The end caps shall be affixed to the frame with stainless screws. The end caps shall be removable to enable replacing panels or components.

The overall weight, excluding mounting hardware, shall not exceed 6 pounds per square foot for single-faced signs and 8 pounds per square foot for double-faced signs.

The sign shall have a polycarbonate panel that is UV, weather, abrasion, and impact resistant. The sign panels shall be replaceable.

ENVIRONMENTAL SPECIFICATIONS

The sign shall be designed and constructed to withstand 178 Km/h (110 mph) wind loads in conformance with the requirements of the AASHTO publication *Standard Specifications for Structural Supports or Highway Signs, Luminaries, and Traffic Signals*, 4th Edition, 2001.

The sign and power supply shall be able to withstand and operate at temperature extremes of -40 degrees F to 140 degrees F.

LUMINANCE

Minimum luminance of the sign legend shall be 250 nits (candela/square meter). Minimum luminance of the sign background shall be 25 nits. Sign elements to be illuminated shall include the sign legend and background, per MUTCD Section 2A.08.

Sign Sheeting. Sign legend and background shall be retroreflective ASTM Type IX designation.

Light Source. The light source for the signs shall be LEDs that are mounted along the top and bottom edges of the sign. The LEDs shall evenly illuminate a light panel that is the same dimensions as the sign face. The LEDs shall have a minimum projected life of 50,000 hours. A maximum of two LEDs per square foot shall be used for single-faced signs and four LEDs per square foot for double-faced signs.

ELECTRICAL

The power supply shall be housed inside the frame assembly. Power supply shall be UL Class 2 limited output voltage and current plus isolation for safe operation, and UL Outdoor damp location rated. Power supply shall be IP66 Outdoor rated.

Energy Requirements. The overall power required shall not exceed 2 watts per square foot for single-faced signs and 4 watts per square foot for double-faced signs.

Energy Start Partner. The sign shall be an Energy Star Qualified Product.

QUALITY ASSURANCE

Manufacturer shall be ISO 9001 certified.

WARRANTY

A five (5) year warranty shall be provided on the sign assembly.

CERTIFICATION

The manufacturer of the sign assembly shall furnish a certification with the quotation, stating the design and construction of the complete sign assembly, including the sign panels and sign mounting assemblies, conform to the requirements of this specification and the above-referenced AASHTO wind load requirements. The certification shall be signed and sealed by a licensed Professional Engineer.

When the manufacturer proposes to incorporate materials or other components different from those in this specification, the certification shall list each proposed change along with a justification. Material specification, shop drawings, and other supporting documentation shall be attached to the certification. The proposed change(s) will be reviewed by the Engineer for consideration as "an approved equal" to the specified material or component. The manufacture shall furnish upon request one sample of each type of material or component to facilitate the review.

MEASUREMENT AND PAYMENT

Internally illuminated street name signs shall be measured in units of each and will be paid for at the contract unit price per each. This price shall include sign housing, reflectors, sign panel(s), seals, LEDs, photoelectric control, conductors, terminal blocks and components, mounting assemblies, painting (when specified), and all labor, equipment, and material necessary to install the signs and required design and certifications.

PEDESTRIAN SIGNAL HEADS

All pedestrian signal heads shall be countdown pedestrian signals per the MUTCD 2009, section 4E.04 through 4E.07. All indication symbols should be at least 9 inches high. The Contractor shall mount the pedestrian signal heads to the poles with mounting assemblies as identified on the plan set.

PEDESTRIAN PUSH BUTTONS

All pedestrian push buttons shall be Bull Dog style. The Contractor shall mount the pedestrian push buttons to the poles with mounting assemblies per Manufacturer's specifications.

OBLITERATION OF EXISTING PAVEMENT MARKINGS

Contractor shall obliterate all existing pavement markings in conflict with the proposed pavement markings as indicated in the plans. The obliteration shall occur using water blasting per City of Maricopa standards. Upon completion of the water blasting, a sealant approved by the City of Maricopa Engineer shall be applied by the Contractor to all areas where pavement markings have been obliterated.

MAINTENANCE OF TRAFFIC

Contractor shall be responsible for maintenance of traffic on roadways in the vicinity of the construction project.

All traffic control devices and their application shall conform to the Manual on Uniform Traffic Control Devices (MUTCD - United States Department of Transportation, Federal Highway Administration) as modified by the Arizona Department of Transportation's Supplement, the special provisions, and any field modifications made by the Engineer.

Installation of Temporary Traffic Control Devices: It shall be the responsibility of the Contractor to provide, erect, maintain, remove and/or relocate all temporary and existing traffic control devices and signal indications necessary to properly mark and control the construction area(s) for the safe and efficient movement of all roadway users.

The Contractor shall install temporary traffic control warning signs and devices prior to the start of any work in accordance with the approved Traffic Control Plan (TCP). The Contractor shall provide additional devices as determined by the Engineer, to safely control traffic.

All advanced warning construction signs shall be mounted on channels driven into the ground.

All temporary traffic control devices shall be ballasted with sandbags or other approved ballast. The amount of sandbags used shall be enough to provide adequate safety for the traveling public.

Ground mounted temporary traffic controls signs for rural and urban areas shall be mounted at a height of at least seven feet measured from the bottom of the sign to the near edge of the pavement.

The Contractor shall mount signs on wind resistant, spring-type bases when conditions warrant or as requested by the Engineer.

The Contractor shall place flags above all signs.

The Contractor shall use warning lights to mark traffic control devices at night.

The Contractor shall mount high-intensity flashing warning lights on all stop signs within the work zone.

Temporary traffic control signs with orange background shall use high intensity retroreflective sheeting.

The Contractor shall use an arrow board for all stationary or moving lane closures.

The Contractor is responsible for all costs incurred in replacing lost or damaged traffic control devices and traffic control warning signs.

Pavement Markings: Pavement markings used as an integral part of the traffic control plan shall be kept distinct and visible during their use. Temporary pavement markings shall match and meet the markings in place at both ends of their usage.

Removal of Permanent Traffic Control Devices: The Contractor shall notify the Engineer and obtain the Engineer's approval prior to the removal of any permanent traffic control device.

The Contractor shall remove (without damage) all permanent signs including signposts that are no longer applicable. The sign panels and posts shall be dismantled and transported to the City of Maricopa Public Works Department in a manner that will prevent damage. Concrete sign foundations shall be removed and disposed of by the Contractor.

Traffic Control Plan: Construction shall not commence without an approved TCP. At the time of the pre-construction meeting, the Contractor shall submit preliminary traffic control plans for each phase of the work for review. Plans shall be of an appropriate size and legible, plans found to be deficient by the Engineer shall be returned. The Contractor shall design the traffic control plan using the posted speed limit existing prior to commencement of work as the design speed. The TCP shall show all striping, signing, barricading and distances for all devices for all movements of roadway users during each phase of construction. The TCP shall show existing traffic control signs and temporary construction signs; shall identify conflicting signs to be covered/removed or relocated; and shall identify other features that may conflict with the placement of temporary signage. The TCP shall also show the duration of construction with the start and end date of each phase. For each proposed traffic control device, a copy of the manufacturer's certification of compliance with NCHRP 350 test requirements shall be submitted. The manufacturer's certification shall identify the NCHRP 350 test number. The City will, within 10 working days, review the plan and notify the Contractor of approval or note items to be revised.

Traffic Control Technician: The Contractor shall appoint a Traffic Control Technician (other than the superintendent/foreman or barricade subcontractor), who has been properly trained and certified in the application of work zone traffic control, to maintain all necessary traffic control devices. At the beginning and end of each workday, and periodically throughout the day, the Traffic Control Technician shall inspect the construction work site. The Traffic Control Technician shall ensure that all construction signs and barricades are standing upright in accordance with the approved traffic control plan, free of dirt and debris and visible to intended traffic. At the end of the workday all non-essential traffic control devices will be removed. The Contractor shall immediately correct deficiencies noted by the engineer. The Contractor shall provide an after-hours pager and telephone number for the Traffic Control Technician at the pre-construction meeting.

Intersection Restriction: Off-duty uniformed police officers are required at the intersections when restrictions are present, and may be required at other locations as requested by the Engineer. Any work performed in the right of way within 300 feet of an intersection shall be considered as restricting the intersection.

Flaggers: All flaggers shall be properly trained and certified by a recognized source, such as the American Traffic Safety Services Association (ATSSA) and shall carry with them at all times proof that training and certification requirements have been completed within the last two years.

Failure to Provide Adequate Traffic Control Measures: If the Contractor fails to provide adequate traffic control measures, the Engineer may have the work accomplished by other sources. The cost of having this work accomplished by other sources will be deducted from monies due or to become due to the Contractor.

Notifications: The City of Maricopa Police Department shall be provided with the name and phone number of the person responsible for 24-hour maintenance of all traffic control devices.

The Contractor shall notify all affected emergency services such as fire departments, police stations, and emergency management system by handbill a maximum of 48 hours and minimum of 24 hours in advance of any street restrictions.

Road Closure and Road Restrictions: A road closure for the convenience of the Contractor is not authorized. Traffic restrictions are not permitted on arterial or collector streets during peak traffic hours of 6:00 a.m. to 8:30 a.m. and 4:00 p.m. to 7:00 p.m. At all other times, a minimum of one lane in each direction shall remain open to vehicular traffic.

Temporary Lane Diversions: For construction or trenching that requires movement of traffic from the normal travel lanes, temporary lane diversions may be used only during daylight hours and the normal traffic lanes shall be restored prior to the end of daylight hours. Traffic plates and temporary pavement shall be used to restore traffic lanes. The Engineer, under unusual conditions, may authorize exceptions.

Regulatory Speed Limit Signs: An appropriate regulatory speed limit sign shall be used where traffic is maintained on temporary detour roads, diversions, or on traffic lanes that are severely restricted.

Access to Adjacent Property: Access to all adjacent properties shall be maintained whenever possible. When access cannot be maintained, Contractor shall notify the adjacent residents at least 48 hours in advance of the access closure. In no case shall the access be closed for more than four hours. Access to fire stations, hospitals, sheriff stations and schools shall be maintained at all times.

Temporary Longitudinal Traffic Barriers / Steel Plating: Open excavations and trenches within 10 feet of an active traffic lane shall be protected at night and during non-working hours from vehicle traffic by steel plating or the use of temporary longitudinal traffic barriers. The Contractor shall use temporary longitudinal traffic barriers when construction hazards warrant, or as requested by the Engineer. Impact attenuation devices shall be provided by the Contractor commensurate with barrier end treatment requirements.

Supplemental Safety Markings: Rope, flagging, fencing and woven plastic tape may be used between barricades and channeling devices to provide additional safety.
Measurement: Measurement for Traffic Control shall be made on a Lump Sum basis. This lump sum measurement shall include all materials, equipment and labor necessary to facilitate traffic control per the contract documents. Traffic Control includes but is not limited to the application and removal of temporary pavement markings including related modification of existing pavement markings, pilot

cars, flagmen, barricades, sign panels, sign stands, warning lights, portable barriers, uniformed off-duty law enforcement officers, and related temporary pavements.

No direct measurement of individual traffic control elements or devices will be made. All traffic control devices, unless otherwise noted, shall be considered as included in the lump sum measurement for the Traffic Control pay item.

No direct measurement for temporary pavements will be made. All sawcutting, grading, aggregate base course materials, asphaltic concrete pavement, labor, and equipment shall be considered as included in the lump sum measurement for the Traffic Control pay item.

No direct measurement for removal of temporary pavements will be made. All sawcutting, and removal of aggregate base course materials and asphaltic concrete pavement shall be considered as included in the lump sum measurement for the Traffic Control pay item.

SIGN FOUNDATIONS (U POSTS)

U-channel base posts shall be driven into the ground to a minimum depth of 36 inches. No other foundation is required. U-channel base post installations shall be measured by the unit each. U-channel base posts are for temporary signing only.

SIGN POSTS (U)

U-channel sign post shall be used for temporary signing only. U-channel posts shall be fabricated from rerolled rail steel conforming to the requirements of ASTM A 499 or hot-rolled carbon steel bars. Prior to rerolling the rail steel, the rail nominal weight shall be 91 pounds per yard and shall meet the requirements of ASTM A 1 pertaining to quality assurance. Yield Point of the steel shall be 80,000 psi minimum.

The cast heat analysis of the steel shall conform to the following requirements:

Element Composition (Percent)
Carbon (0.67 - 0.82)
Manganese (0.70 - 1.10)
Phosphorus, (max. 0.04)
Sulphur (max. 0.05
Silicon (0.10 - 0.25)

Posts shall be a uniform, modified, flanged channel section. Weight of the posts shall be 2.00 lbs. per lineal foot, plus or minus five percent. The post shall be punched with continuous 3/8-inch diameter holes on 1.0-inch centers. The first hole shall be 1.0 inches from top and bottom of post.

The post shall consist of two parts, a sign post and a base post. The sign post lengths shall be supplied in 6-inch increments up to 12.0 feet as required for the installation location. The base posts shall be 3.5 feet in length, pointed at one end, and have at least eighteen holes in the base post, starting 1.0 inches from the top and continuing at 1.0-inch increments.
Posts shall be machine straightened to have a smooth uniform finish, free from defects. All holes and edges shall be free from burrs. Permissible tolerance for straightness shall be within 1/16 inch in 36 inches.

Posts shall be galvanized after fabrication in accordance with the requirements of ASTM A 123. Bolts, nuts, washers and spacers shall be cadmium plated in accordance with the requirements of ASTM B 766 or zinc plated in accordance with the requirements of ASTM B 633.

U-channel base posts shall be driven into the ground to a minimum depth of 36 inches.

U-channel sign posts shall be measured by the foot, to the nearest inch for each post furnished and installed. The length of U-channel sign posts shall not include the U-channel base post. U-channel base post installations shall be measured by the unit each.

SIGNAL CONTROLLER PROGRAMMING

The Contractor shall be responsible for wiring and programming the traffic signal controller. The Contractor shall submit the professional resume and license/certification information of a qualified programmer to the City of Maricopa for approval before the programming commences. In the event the City of Maricopa does not approve the Contractor's nominated programmer, the Contractor shall submit additional nomination(s) until a nominee is approved by the City.

ELECTRICAL SERVICE

Electrical service for the traffic signal will be provided by Electrical District Number 3 of Pinal County (ED3). The contractor shall enter into a trenching agreement with ED3 (a sample of which is provided on the following two pages) and shall adhere to all requirements and installation specifications contained therein. The ED3 contact person for this project is Kerry Umsted (520-424-0411).

The Contractor shall be responsible for all electrical panel wiring.

(104SWDEQ, 3/02/09)

SECTION 104 – SCOPE OF WORK

104.09 Prevention of Landscape Defacement; Protection of Streams, Lakes and Reservoirs: of the Standard Specifications is augmented with:

(A) General:

The contractor shall give attention to the effect of the contractor's operations upon the landscape, and shall take care to maintain the surroundings undamaged.

Landscaping damaged or disrupted by the contractor in the performance of the contract shall be replaced in kind and at the direction of the City's Engineer. Landscaping damaged or destroyed as a result of the contractor's negligence shall be replaced in kind at the contractor's expense.

(107UTIL, 06/17/09)

SECTION 107 - LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC:
107.15 Contractor's Responsibility for Utility Property and Services: of the Standard Specifications is modified to add:

The contractor shall be the City's Blue Stake field locator, and perform all requirements as prescribed in A.R.S. 40-360.21 through .29, for all underground facilities that have been installed by the contractor on the current project, until the project is accepted by the City of Maricopa.

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

Projects In Maricopa County	(602) 263-1100
Projects Outside Maricopa County	(800) 782-5348

The following utility companies have facilities in the area but are not anticipated to be in conflict:

Global Water Resources Reclaimed Water	Mr. Jared Christensen	623-580-9600
Maricopa Domestic Water Improvement District Water	Ms. Deborah Hemphill	520-568-2239
Electrical District #3 Electrical Service Provider	Mr. Kerry Umsted	520-424-0411
Southwest Gas Corporation Gas	Mr. Eddie Reyes	520-836-1156
Qwest Telephone	Mr. Ron Sprague	520-426-6766

It shall be the contractor's responsibility to determine the exact location of utilities in accordance with Blue Stake law. Blue Stake must be called at least two working days prior to commencing any construction operations of the project.

(109FORCE, 02/20/08)

SECTION 109 - MEASUREMENT AND PAYMENT:

109.04(D)(3)(a) Rental Rates (Without Operators): of the Standard Specifications is modified to add:

The Rental Rate Blue Book adjustment factor (F) will be 0.933.

(704THRMO, 9/06/07)

SECTION 704 - THERMOPLASTIC PAVEMENT MARKINGS:

704-2.02 Composition: the first paragraph of the Standard Specifications is revised to read:

The thermoplastic composition shall conform to the following requirements:

	Percent by Weight	
	White	**Yellow**
Binder (hydrocarbon or alkyd)	18 - 26	18 – 26

	Percent by Weight	
	White	**Yellow**
Titanium dioxide	10 - 15	-----
Yellow Lead-Free Pigment	-----	4 – 10
Reflective glass inter-mix beads	30 - 40	30 – 40
Calcium carbonate or equivalent filler	20 - 40	25 – 45

704-2.02(D) **Lead Chromate Pigment:** the title and text of the Standard Specifications are revised to read:

704-2.02(D) **Yellow Pigment:**

The yellow pigment shall be heat resistant and lead free. The type of yellow pigment shall be at the option of the manufacturer provided that the material conforms to all color requirements in a stable and durable fashion as specified herein.

(708PPM, 6/15/09)

SECTION 708 - PERMANENT PAVEMENT MARKINGS:

708-2.02(B) **Physical Requirements:** of the Standard Specifications is modified to add:

(6) Heavy Metal Concentration:

Heavy metal concentration in glass beads shall be as specified in the following table, when tested by an independent laboratory, approved by the Engineer, using EPA Method 3052 and EPA Method 6010B. A Certificate of Analysis conforming to Subsection 106.05 shall be furnished to the Engineer prior to use.

Heavy Metal	Concentration
Arsenic	< 75 ppm
Antimony	< 75 ppm
Lead	< 100 ppm

708-3.02 **Application:** the last paragraph of the Standard Specifications is revised to read:

Tolerances for Placing Paint, Beads, and Primer:

The length of painted segment and gap shall not vary more than six inches in a 40-foot cycle.

The finished line shall be smooth, aesthetically acceptable and free from undue waviness.

Painted lines shall be four, eight, or 12 inches wide as shown on the plans with a tolerance of ± 1/8 inch and shall be placed at a minimum rate of 16 gallons per mile for a solid four-inch line and four gallons per mile for a broken four-inch line, based on a 10-foot stripe and a 30-foot gap (40-foot cycle aggregate).

Glass reflectorizing beads shall be applied on the wet paint at a minimum rate of eight pounds per gallon of paint.

Wet thickness shall not be less than 15 mils, unless otherwise shown on the plans.

(733SGNL, 4/27/01)

SECTION 733 - SIGNAL INDICATIONS AND MOUNTING ASSEMBLIES:

733-2.01(A)(4) Backplates: of the Standard Specifications is revised to read:

Louvered backplates shall be furnished and installed on all vehicular signal sections. Anodized aluminum sheet, 16 gauge, shall be used. All 12 inch signal faces shall have five inch backplates installed. All eight inch signal faces shall have eight inch backplates installed.

(924CQC, 3/02/09)

SECTION 924 - CONTRACTOR QUALITY CONTROL:

1.0 Description:

The work under this section shall consist of furnishing all personnel, materials, supplies, facilities and equipment necessary to perform all certification of test equipment, sampling, testing, and other control actions. The work shall also include the preparation of linear control charts, Weekly Quality Control Reports, and other reports and records as described in Subsection 106.04(C) of the Specifications.

2.0 Method of Measurement:

Contractor quality control will be measured for payment on a lump sum basis as a single unit of work.

3.0 Basis of Payment:

3.1 General:

The accepted quantities of contractor quality control, measured as provided above, will be paid at the contract lump sum price, which price shall be full compensation for the work, complete, as described and specified herein.

Partial payments under this item will be made in accordance with the following provisions:

(a) The first partial payment price will be the lesser of twenty five percent of the contract lump sum price for contractor quality control, or one percent of the original total contract bid amount.

(b) The remaining portion of the lump sum price will be prorated over the duration of the original contract on a monthly basis, and monthly progress payments will be made.

If adjustments to pay items covered under Contractor Quality Control are approved by supplemental agreement, an equitable adjustment to the lump sum amount for Contractor Quality Control may be made. Any adjustment to Contractor Quality Control shall be included in the supplemental agreement and the adjusted amount, less previous payments, will be prorated equally over the remaining contract period, including any related time extensions.

3.2 Delinquent Reports:

Failure of the contractor to submit complete and accurate Weekly Quality Control Reports, current to the most recent Wednesday submittal date, will be grounds for the Engineer to deduct monies from the contractor's progress payment.

For each Weekly Quality Control Report that is not complete and accurate, and not submitted to the Engineer by the Wednesday submittal date specified in Subsection 106.04(C)(6), the Department will deduct $2,500.00 from the progress payment for the current month.

For each delinquent Weekly Quality Control Report submitted to the Engineer within 10 business days of the original Wednesday due date, $2,000.00 will be returned on the next regular estimate, provided all of the requirements specified herein and in Subsection 106.04(C)(6) have been met, and the report is complete and accurate. No deducted monies will be returned for reports submitted more than 10 business days beyond the original Wednesday due date.

All deducted monies which are retained by the City, as specified above, are liquidated damages.

(925SRVY, 02/20/08)

SECTION 925 - CONSTRUCTION SURVEYING AND LAYOUT:

925-3.03 Office Survey Work:

The contractor shall be compensated for office work associated with project survey under the following circumstances:

(A) When the project plans fail to provide sufficient information to lay out the project or any part thereof.

(B) When the contractor performs office survey work based on erroneous plans information which results in the duplication of work.

(C) If the Department should change any plans information for which the contractor has already performed office work which results in the duplication of that work.

The contractor shall not be due compensation for any office survey work:

(A) When information provided in the plans is sufficiently complete to allow any additional information necessary for the complete layout of the project to be routinely calculated.

(B) When the contractor fails to inform the Engineer of discovered plan errors prior to the performance of any extra office survey work.

(C) That is included in any other existing 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 office survey work, so as not to delay the project or create any unnecessary calculations.
All office survey work shall be documented by the contractor and verified by the Engineer for compensation. Documentation shall consist of at least a detailed office diary specifically addressing the

work involved in the alleged problem area. The contractor may be required to provide the calculations, charts, graphs, drawings, or any other physical evidence which will verify the extra work.

925-3.04 Survey Manager:

The contractor shall be compensated for a survey manager when deemed necessary for extra work ordered by the Engineer. The use of a survey manager, along with all survey manager duties required as a result of the additional work, must be authorized in advance by the Engineer. The survey manager shall be a Registered Land Surveyor in the State of Arizona.

925-4 Method of Measurement: of the Standard Specifications is revised to read:

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

One-, two-, and three-person survey parties, survey managers, and office survey technicians will be measured by the hour to the nearest half hour.

SECTION 925 - CONSTRUCTION SURVEYING AND LAYOUT:

925-5 Basis of Payment: the first two sentences of the second paragraph of the Standard Specifications are revised to read:

If additional staking and layout are required as a result of additional work ordered by the Engineer, such work will be paid under ITEM 9250101 - ONE-PERSON SURVEY PARTY at the predetermined rate of $65 per hour, ITEM 9250102 - TWO-PERSON SURVEY PARTY at the predetermined rate of $100 per hour, ITEM 9250103 - THREE-PERSON SURVEY PARTY at the predetermined rate of $135 per hour, ITEM 9250106 – SURVEY MANAGER at the predetermined rate of $100 per hour, and ITEM 9250105 - OFFICE SURVEY TECHNICIAN at the predetermined rate of $70 per hour.

925-5 Basis of Payment: the third paragraph of the Standard Specifications is revised to read:

The amount per hour for a one-person, two-person, or three-person survey party includes the cost of all work necessary to complete the extra work.

925-5 Basis of Payment: the sixth paragraph of the Standard Specifications is revised to read:

The amount per hour for a survey manager and an office survey technician shall include all necessary office supplies and equipment, such as calculators and computers.

925-5 Basis of Payment: of the Standard Specifications is modified to add:

Unless otherwise directed by the Engineer, requests for payment for additional survey work performed shall be submitted prior to the end of the monthly estimate billing period during which the work is performed.

(1007REFS, 07/30/07)

SECTION 1007 - RETROREFLECTIVE SHEETING: of the Standard Specifications is revised to read:

1007-2 Material Types: of the Standard Specifications is revised to read:

Sheeting material types for warning signs, regulatory signs, and guide sign backgrounds will be as shown on the plans.

The type of sheeting material to be used in other applications will be as specified herein.

For barricades, channelizers and other work zone devices, ASTM sheeting Types IV, VIII, IX, or X shall be used.

ASTM sheeting Types VIII, IX, or X shall be used for route marker signs and auxiliaries (stand alone), and for milepost markers.

Sheeting for orange work zone signs (fluorescent) shall be ASTM Types VI, VIII, IX, or X. Roll-up orange work zone signs shall use ASTM Type VI sheeting.

For direct-applied characters, demountable characters and shields on guide signs, ASTM sheeting Types VIII, IX, or X shall be used.

ASTM sheeting Types V, VIII, IX, or X shall be used for object markers, guardrail markers, and delineators. Object markers for guardrail end treatments, and impact attenuators (fluorescent) shall use ASTM Types VIII, IX, or X.

Sheeting for Adopt-A-Highway signs and logo signs shall be ASTM Type I.

When more than one sheeting type is allowed, the contractor may use any of the types listed, provided that materials used for a particular application shall be of the same ASTM type, manufacturer, and product for all signs of the same type in the project.

Opaque films used with sheeting shall be acrylic type films.

Direct-applied and demountable black characters shall be non-reflective.

1007-3 Visual Appearance, Luminance and Color Requirements:

Except as specified herein, the color of the sheeting, ink or film shall conform to the ADOT Manual of Approved Signs, the Manual on Uniform Traffic Control Devices (MUTCD), and the plans.

All warning signs with yellow backgrounds shall use fluorescent yellow sheeting.

All work zone signs with orange backgrounds shall use fluorescent retroreflective orange sheeting, except that non-reflective sign materials may be used for temporary work zone signs where the signs will be clearly visible under available natural light.

All sheeting, inks and film used shall be uniformly colored so there is no visual variation in their appearance on the same sign or from sign to sign of the same colors.

Standard colors specified for sheeting, processing inks, and films shall, as applicable, match visually and be within the color tolerance limits required by Highway Tolerance Charts issued by the Federal Highway Administration. Additionally, for the retroreflective sheeting, unless otherwise noted, the Luminance Factor (Daytime Luminance) and Color Specification Limits (Daytime) shall conform to the applicable requirements of ASTM D 4956.

In addition to the luminance and color requirements, fluorescent orange sheeting shall have the capacity to effectively fluoresce outdoors under low light conditions. For all applications requiring fluorescent orange sheeting, the contractor shall provide a letter to the Engineer from the manufacturer certifying that the sheeting to be used is fluorescent.

1007-4 Coefficient of Retroreflection:

The coefficient of retroreflection shall meet the minimum requirements of ASTM D 4956 for the type of retroreflective sheeting specified.

All black opaque films shall have a maximum coefficient of retroreflection of 1.0 or less at an observation angle of 0.2 degrees and entrance angle of -4.0 degrees.

1007-5 Color Processing:

Transparent and opaque inks used for post or pre-screen printing of signs shall be of a type and quality specified by the sheeting manufacturer, and shall conform to the applicable requirements of the MUTCD and the Federal Highway Administration for traffic signs. The inks shall be applied in a manner, and with equipment, that is consistent with the ink manufacturer's recommendations. Additionally, the signs produced shall have a uniform legend of consistent stroke width and sharply defined edges, without blemishes that would negatively impact appearance, color or required retroreflectivity.

For sheeting applications using black ink, the maximum coefficient of retroreflection shall be 1.0 or less at an observation angle of 0.2 degrees and entrance angle of -4.0 degrees.

1007-6 Adhesive:

Reflective sheeting and film adhesives shall be either Class I or II as specified in ASTM D 4956 and as modified herein.

Pressure sensitive adhesive shall be an aggressive tack type that requires no heat, solvent or other pre-application preparation of the sheeting or film for its adhesion to clean aluminum, plywood, or reflective sheeting surfaces. Pretreatment of plastic surfaces shall be done as recommended by the sheeting manufacturer.

Heat-activated adhesives shall allow positioning under normal working conditions and temperatures without damage to the materials or application surface. This type of adhesive shall be activated by applying heat in excess of 150 degrees F to the material using a heat vacuum process. No pre-treatment of the heat activated adhesive shall be necessary.

The adhesive shall form a tight weatherproof durable bond that shall endure under all weather conditions for the required time of durability for that material. During this period the material shall remain bonded to its surface without discoloration, cracking, crazing, peeling, blistering, dimensional change or alignment change.

1007-8 Durability Requirements:

Sheeting stability will be determined using a durability rating which shall be equal to twice the testing periods listed below. Sheeting must be warranted by the manufacturer against the defects listed below for a period equal to the specified durability rating for each type of sheeting product. Only those sheeting products which provide the specified warranty will be acceptable.

Type IV, VIII, IX, X, and XI sheeting shall be weather-tested, as specified above, for a period of 60 months. Orange colored sheeting used for construction zone signing, barricades, and channeling devices shall be weather-tested for a period of 18 months. All other sheeting shall be weather-tested for a period of 30 months. In all cases the related inks and films shall be tested along with the respective sheeting, and shall be subject to the same durability requirements as the sheeting.

Type IV, VIII, IX, X, and XI sheeting, related inks and films shall have a minimum ten year durability rating. All orange sign sheeting shall have a minimum durability rating of three years. All other sheeting, films, and inks shall have a minimum durability rating of five years.

After weather testing for the periods specified above, sheeting and related inks and films shall show no significant degradation or reduced performance. Unacceptable degrees of degradation and reduced performance are as listed below:

(1) Bubbles, wrinkles, cracks or breaks on any portion of the applied materials greater than three inches in length that result in a negative appearance or concerns of additional degradation.

(2) Significant shrinkage that causes the material to curl or to pull away from the background.

(3) Significant delaminating of any material or layer (sheeting to substrate, sheeting to sheeting, sheeting to film, ink to sheeting, film to sheeting or film to film).

(4) Significant visible discoloration, including clouding or chalking.

(5) A loss of transparency of any transparent sheeting, ink or film.

(6) A loss in opaqueness of any opaque ink or film.

(7) Significant cracking, blistering, ripping, flaking, curling or chipping of any sheeting, ink or film.

(8) A loss of nighttime retroreflectivity as observed at night under normal conditions, or as defined and measured with a portable retroreflectometer at an observation angle of 0.2 degrees and entrance angle of -4.0 degrees. The measured coefficient of retroreflection shall be consistent with what would be expected of the type of material being measured, normal manufacturing variations, the time that the material has been in the field, and FHWA requirements.

Manufacturer's guarantees or warranties on all traffic sign material shall be transferred to the City of Maricopa upon completion and acceptance of the project in accordance with the requirements of Subsection 106.13.

1007-9 Application:

The sheeting, inks, clear coats (if required), and films shall be applied as specified by the manufacturer. The applied sheeting or film shall not have bubbles, wrinkles or foreign materials beneath the reflective sheeting, ink or film.

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