

**CITY OF CASA GRANDE  
STANDARD PLAN NOTES  
04/30/2009**

**City Of Casa Grande**

**Standard Plan Notes**

These Construction Notes are the base notes that are required by the City of Casa Grande on all civil construction drawings submitted for review.

Please insure that all applicable notes for each phase of construction are included, if within the scope of work for your project.

These are "minimum base notes" and may be supplemented as your project may require.

This document, "Casa Grande Standard Plan Notes" (CGSPN), is available in hard copy at the Engineering Department and also in Acrobat PDF and other electronic formats. It can be sent to you via E-Mail if you provide us with your E-Mail address.

In the near future you will be able to download these notes directly from the Engineering Department's Web Site.

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## **I. General Notes: Construction Inspection and Testing**

1. All public Improvement Construction within the public right-of-way and onsite shall be conducted in accordance with, and conform to, the latest edition of the uniform standard specifications for Public Works Construction and Uniform Standard Details for Public Works Construction, Both as published by the Maricopa Association of Governments (M.A.G.).
2. Inspection of work per M.A.G. 105.10: The Engineer shall be permitted to inspect all materials, and each part or detail of the work at any time for the purpose of expediting and facilitating the progress of work. He shall be furnished with such information and assistance by the contractor, as is required to make a complete and detailed inspection. The City Engineer requires that the actual test result data sheet accompany all compaction test results submitted to the city's inspector. Pass/Fail statements are not acceptable without the attached data sheet. Failure to submit the test result data sheets will result in an incomplete submittal and the test will be rejected.
3. In the event of conflict between M.A.G. standard specifications and standard details and these plans, these plans shall prevail.
4. The office of the City Engineer shall be notified at least forty-eight (48) hours prior to the commencement of any work within the city right-of-way.  
TELEPHONE: 520-421-8625.
5. Contractor is to notify all public utilities at least two (2) working days prior to construction, for field locations of their respective facilities, by contacting the following: BLUE STAKE NUMBER: 1-800-782-5348.
6. Contractor shall coordinate and make arrangements for relocation of any utilities conflicting with the proposed construction of these plans, with the appropriate utility.
7. Removal and replacement of all trees, shrubs, vegetation, miscellaneous structures, debris, rubble and other deleterious materials within the limits of construction shall be at the contractor's expense.
8. All concrete sidewalks, driveways, aprons, cross-pans, valley gutter, curbs and gutters landscaping and irrigation that may be damaged during the course of constructions shall be removed and replaced by the contractor at the contractor's expense.

9. Shoring is to be installed or a trench box is to be used, in all trenches in excess of five (5') feet in depth. A registered civil engineer or soils engineer shall certify shoring installation plans, details and specifications. Shoring must conform to OSHA 29 CFR, Part 1926, and Subpart D.

10. Compaction testing is required and must be performed in the presence of a representative of the City Engineer.

**BACKFILL:** Backfill within the public utility easements and within public street right-of-way compact to 95% of maximum theoretical density per ASTM D698. All materials outside the moisture limit shall be considered unsuitable, and subject to removal. No hydraulic compaction or water jet compaction will be allowed. All compaction must be done by mechanical means. Moisture limit spec: 2.0 percent below optimum moisture, material shall be uniform.

**SUB-GRADE:** Sub-grade preparation for all new streets and roadways shall consist of scarifying and loosening sub-grade to a depth of six (6") inches. Sub-grade shall be constructed to achieve uniform moisture content by the addition of water and compacted to 95% of maximum density. Moisture shall be maintained between optimum and 4.0% below optimum moisture and shall be compacted to 95% on maximum theoretical density, as determined by ASTM D698. All materials outside the moisture limit at the time of placement and compaction shall be considered unsuitable and subject to removal. The finished surface of the sub-grade shall not vary from the grades established by the City Engineer by more than: 0.04 of a foot above or below specified grade

11. Install four (4") inches of aggregate base course material, compacted to 100% under all sidewalks, alleyway and driveway entrances.

12. Grading of aggregate bases and aggregate sub-base shall be as follows: Aggregate materials shall have water added to them and shall be mixed and processed to produce a uniform blend of material before placement. After processing, the material shall be placed and spread on the prepared sub-grade and shall be placed in a uniform layer or layers not exceeding six (6") inches in compacted depth, unless otherwise approved in writing by the City Engineer. Each layer of aggregate base shall be compacted to a density of not less than 100% of the maximum density. The finished surface of the sub-grade shall not vary from the grades established by the City Engineer by more than: 0.04 of a foot above or below specified grade.

13. Compaction testing for sub-grade will be done after the sub-grade has been string lined and is within tolerance and accepted by the City Engineer. The City Engineer or his representative will direct the number and location of density tests. All sub-grades shall have a blue-top elevation set to finished grade and left and right edges of pavement, and centerline of roadway.

14. One (1) sand cone test shall be required for every ten (10) nuclear density tests performed, or when requested by the City Engineer or his representative. The City Engineer or Engineer's representative shall determine the locations of these sand cone tests.

15. All materials, including but not limited to aggregate base course, borrow material and native material, will be accepted in place only. Testing required for acceptance will include a sieve analysis and plasticity index, (P.I.). Determination of maximum theoretical density will be in accordance with ASTM D698. Only a four-point proctor test will be accepted.

16. The base course shall not be placed on sub-grade until the City Engineer has accepted the sub-grade. All materials will be accepted in place only.

17. Compaction densities: M.A.G. type I Backfill material (Section 601.4.4) is modified to include areas under the pavement, right-of-way, and easements for all trenches including sewer, water, electric, gas, telephone, and storm drains, moisture spec. 2.0 percent below optimum moisture compact to 95% of maximum theoretical density. All materials outside the moisture spec-limit shall be considered unsuitable, subject to removal and material shall be uniform.

18. The location of all sewer stub-outs shall be stamped on the top of vertical curb, and face of rolled curbs, with a four (4") inch high letters (IE: "S").

19. All curb, gutter and sidewalk expansion joint filler will be ½" bituminous pre-molded strips. All expansion joint spacing shall not exceed a maximum of (50') feet or as directed by the City Engineer. Concrete curing compound material shall be a white pigment membrane used on all concrete structures including curb & gutter, sidewalk, headwall, catch basins and sidewalk ramps.

20. Paving will not commence until aggregate base course compaction and gradation tests are completed and the City Engineer accepts the results.

21. No trench in Public Right of Way shall be less than twelve (12") inches in width to insure proper compaction and testing.

22. USPS Cluster Mail Box locations must be pre-determined and noted on the Civil plans for grading and paving. Add cluster boxes to Legend and in Construction Notes. Cluster Box locations should be shown on the "Overall Sewer/Water/Hydrant/Streetlight Plan."

23. Median Curb & Gutter Bull Nose shall be painted yellow, with reflective glass beads, per M. A. G. DTL-223, and have yellow raised pavement reflectors installed before the painting is complete.

## II. GRADING NOTES

1. Site area: \_\_\_\_\_ net acres.

2. Approved drainage report:

BY: \_\_\_\_\_, DATED: \_\_\_\_\_, \_\_\_\_\_. JOB  
NUMBER: # \_\_\_\_\_.

3. Approved geo-technical report:

BY: \_\_\_\_\_, DATED: \_\_\_\_\_, \_\_\_\_\_. JOB  
NUMBER: # \_\_\_\_\_.

4. The contractor is responsible for complying with all necessary regulations and requests by the City and Pinal County regarding dust control.

5. Removal of all cacti and native plants shall be in accordance with the provisions of the "Arizona Native Plant Law" A.R.S. Chapter 7.

6. Contractor must keep public streets clear of soil, mud, and debris at all times.

7. Contractor must prevent damage to drainage during grading construction.

8. Contractor must correct any damage to public or private property that results from work done under the approval of Grading permit.

9. If site grading totals more than one-tenth (0.1) Acre, Contractor must obtain a Pinal County Dust Control Permit. If grading exceeds one (1.0) Acre, this activates AZPDES and Contractor must submit a NOI to ADEQ and prepare a Storm Water Management Plan acceptable to ADEQ.

10. All on-site grading must comply with Appendix Chapter 33 of the Uniform Building Code.

11. All grading in the public right-of-way must comply with M.A.G. Specifications and Standard Details; the engineer's approved plans and specifications for the project; and the soils engineer's geotechnical report for the project. Surveyors will set construction stations, stakes establishing

Lines and grades for road work, curbs, gutters, sidewalks, structures and centerlines for utilities and necessary appurtenances as he may deem necessary, he will furnish the contractor with all necessary information relating to the

grades. These stakes and marks shall constitute the field control by and in accordance with which the contractor shall establish other necessary controls and perform the work. The contractor shall be held responsible for the preservation of all stakes and marks, and if the contractor has carelessly or willfully destroyed the construction stakes or marks, the cost for replacing them will be charged against him.

12. No minimum floor elevation shall be lowered unless approved by the City Engineer.

13. Any slope that is steeper than 3:1 shall be riprapped or shall be re-vegetated.

14. The contractor shall provide a level bottom (+/- 1/10TH) in all retention basins, at the elevations shown on the plans. Retention basin side slopes shall not exceed 4:1, unless approved by the City Engineer and noted on the plans.

15. Retention basin percolation tests shall be performed after grading is completed and prior to landscaping. Percolation tests shall be submitted to the City Engineer. Recommendations regarding number of drywells required to meet the requirements of the City Code will be presented to the City Engineer for approval, and the final number of drywells required shall be determined by these tests. Drywells require a permit from the Arizona Department of Environmental Quality and Arizona Department of Environmental Quality drywall registration numbers shall be noted on the as-built plans.

16. GRADING PLAN AS-BUILTS:

As-graded certification of the on-site grading by the design engineer is required prior to final acceptance of any on-site grading or drainage improvements. Record drawing of the public improvements by the design engineer is required prior to final acceptance of the public improvements.

As-built grading plans shall be prepared by the design Engineer after grading is completed. These shall include but not be limited to, as-built elevations for: finished pads, all rear property corners, retention basin bottoms, swales, berms and perimeter landscape easements, any and all deviations from the approved plans at the time of completion of mass grading. If any drywells have been installed, ADEQ drywell registration numbers must be made part of the As-Built Plans.

## 17. RETENTION BASIN MAINTENANCE:

With reference to Chapter 15.40 of the City regulations, Article XII and section 15.40.1240 D., the perpetual responsibility for maintenance of the retention basins will be assigned Owner. A suggested maintenance program that could be proposed to the Owner is:

1. Annual inspection of the retention basins and their outlet structures shall be done for the following:
  - a. Excessive silting
  - b. Degradation of side slopes.
  - c. Dry well integrity.
  - d. Landscaping
2. The maintenance engineer will prepare a report for the home owners association regarding items a-d and make recommendations in the following format:
  - a. Maintenance work is needed.
  - b. A check list of the maintenance items.
  - c. After the maintenance items have been performed a certification of the corrective measures taken will be retained on file.
  - d. If there is no maintenance work required and the basins are functioning correctly the certification will acknowledge this.
  - e. A statement certifying that watershed conditions have not changed since the previous inspection report shall be made.
  - f. If watersheds have changed, a statement outlining the effects on the overall retention system will be required.
  - g. If the watersheds have changed to the extent that the retention system no longer satisfies City of Casa Grande Flood Damage Prevention regulations an immediate notification of City of Casa Grande Engineering division is required.

The site development improvements have been designed with compliance to the City of Casa Grande subdivision and drainage ordinances. All streets provide for the required conveyance of storm runoff, and each of the retention basins have been shown to provide the required storage volumes.

### III. SEWER NOTES

1. 100% of the sewer lines shall be tested for infiltration and ex-filtration in accordance with AAC R18-9-E301.4.01 D.2.J; by using low pressure air testing methods. Testing shall be done after all wet and dry utilities have been installed and properly backfilled. All sewer testing shall be done in the presence of the City Engineer or City Inspector.

2. Sewer design report:

BY: \_\_\_\_\_, DATED: \_\_\_\_\_, \_\_\_\_\_, JOB  
NUMBER: # \_\_\_\_\_.

3. All sewer lines shall have at least 3.0' feet of backfill cover to the top of pipe.

4. All sewer lines shall be tested for uniform slope in accordance with AAC R18-9-E301.D.2.K.

5. Contractor shall perform short term deflection testing on all sections of PVC gravity sewer pipes NO SOONER THAN 30 DAYS AFTER COMPLETION OF BACKFILL AND COMPACTION, BUT PRIOR TO THE INSTALLATION OF FINISH SURFACE MATERIALS. A short term deflection in excess of 5% shall be considered unserviceable and shall be repaired or replaced and retested. Testing is to be incidental to the pipe installation. M.A.G. 615 (c) deflection testing for HDPE and PVC pipe: after all dry utilities have been installed perform 100% deflection testing on all sewer pipes after backfill and compaction. All testing shall be done in the presence of the City Engineer or City Inspector.

6. Flexible pipe material for gravity sanitary sewers shall be SDR 35 PVC and comply with the following specifications: PVC, ASTM D-3034. Alternative pipe materials are not permitted.

7. Installation of plastic pipe must comply with ASTM D-2321, class 12 embankment materials only.

8. All sanitary sewer manholes shall be 48" inch diameter, except as otherwise noted on the project plans, and shall be constructed in compliance with M.A.G. Std. Details 420-1 and 420-2. Type "A", conical top. "Ram Neck" gaskets or approved equal are to be installed between pre-cast manhole sections. Contractor is to furnish and install a plastic inflow protector, with check valve, beneath the manhole lid, per city requirements. Flat top bands allowed in shallow applications (less than 30") with approval by the City Engineer.

9. Sanitary manholes shall be coated on all inside surfaces with a 2 coat, hi solids, epoxy coating, Raven Lining System 405, Joseph Painting Sewer Shield 101, AP/M Permaform COR+GARD or Sauereisen Sewer Gard 210. Dry mil thickness shall be 125 mils. Manholes shall be coated prior to arrival on site. After manholes have been set in place, an additional second coating of epoxy shall be applied. No manhole steps shall be installed in manholes. Water ex-filtration testing of manholes is not permitted.
10. Vacuum testing per AAC R189-9-E301.D.3.F.1 shall test all manholes for water tightness. Costs of testing are incidental to sewer manhole construction.
11. Manhole concrete collars shall be 1' foot deep and 1' foot wide outside of rim casting. Collars shall be used in unpaved as well as paved areas. Also, green, fiberglass locator reflective delineators are required at each manhole not located in a paved area. I.E.: streets, parking lots, etc.
12. No water pipe shall pass through or come into contact with any part of a sewer manhole. The minimum horizontal separation between water mains and manholes shall be six (6') feet, measured from the outside of water main pipe.
13. Sanitary sewer ex-filtration testing will only be considered when low pressure testing cannot be used, and only with written, prior approved, of the City Engineer.
14. The minimum separation between force mains or pressure sewers and water mains shall be two (2') feet vertically and six (6') feet horizontally under all conditions. Where a sewer force main crosses above, or less than two (2') feet below a water line, the crossing is required to have "extra protection" as described in note #17.
15. Vertical separation note: when a gravity sewer crosses two (2') feet or more below a waterline no extra protection is required. When a gravity sewer crosses less than two (2') feet below, or above a waterline, extra protection is required. The protection will be consistent with that described in note #16. In no case shall a sewer line cross less than two feet above a waterline.
16. Horizontal separation note: when a gravity sewer is laid parallel with a waterline, the minimum separation shall be six (6') feet measured from outer edges of the pipes. When the two lines are less than six (6') feet apart, extra protection shall be required. The protection shall be consistent with that described in note #17. In no case shall a gravity sewer and waterline be less than two feet apart when parallel.

17. Extra protection: extra protection shall consist of constructing the sanitary sewer main with mechanical joint or restrained joint ductile iron pipe for a distance of ten (10') feet on either side of the water main. The ductile iron pipe shall comply with the agency's requirements for sewer installation. In the case of a crossing, the number of joints shall be held to a minimum with one full joint of pipe centered over or under the other. An alternate protection may consist of encasing both pipes in concrete for a distance of ten feet on either side of the crossing or passed the point where minimum separations, as described in notes # 12 through #14, are not met. (M.A.G. Std. detail 404-1)

18. When unusual conditions, such as but not limited to highway or bridge crossings, prevent the water and sewer separations required above (notes 12 through 14) from being met, the department of Environmental Quality and City Engineer will review and may approve requests for authorization to use other alternate construction techniques, materials and joints, on a case by case basis. In such instances, a complete description of the circumstances and details of the proposed construction shall be attached to the plans submitted to the department of Environmental Equality and City Engineer. In no case shall the sewer infringe upon an area, which is within two (2') feet of either side of a water main. Separation must comply with AAC R18-9-811.

19. Contractor shall install a three (3') foot long piece of #5 rebar at the end of each sanitary sewer stub-out, prior to backfill and after invert elevations have been as-built. Curb to be marked with an "S" marking stub-out.

20. All sewer mains shall be cleaned by hydro-vacuum method after manhole frames and covers have been adjusted to final grade. TV Inspection of all mains is required prior to final walk-through.

21. Sewer services are not allowed in manholes.

22. Sewer cleanouts are not allowed in the public system. Manholes shall be used in all instances for sewer main connections.

23. Four (4") inch house sewer services shall not be connected until the sewer main has been accepted by the City of Casa Grande. All house sewer services shall be left uncovered, and capped, until sewer testing is complete and system has been accepted.

24. ABC bedding material of four inches (4") shall be compacted to 95% for all sewer main pipes.

25. Manhole foundations for all Sanitary Sewer bases shall be constructed per M. A. G. Sections 505 and 725 and M. A. G. Standard Detail 420-2.

26. New sewer installations cannot be connected to the existing system until accepted by the City Engineer. A plug must be installed if connection is made to an existing manhole, until such time as all testing of the new sewer system is completed and passed by the City of Casa Grande.

27. All sanitary and storm drain lift stations shall be supplied with an alarm system for high level; and a generator that starts automatically upon power failure.

28. SEWER PLAN AS-BUILTS: As-built sewer plans shall be prepared by the design engineer and shall include, but are not limited to, the following: Manhole rim and invert elevations, all sewer stub-out invert elevations to all lots, existing sewer tie-in invert elevation, any and all deviations from approved plans.

#### **IV. STORM SEWER NOTES**

1. Cut-off walls with a minimum dimension of 1'-6", shall be used at all scuppers, and terminations of riprap and concrete storm drainage culverts and Concrete Spillway behind scuppers 6' minimum.

2. Guard railings shall be placed on all scuppers.

3. Trash racks are required at all inlets and outlets of storm sewer head walls for all pipes 12" (inches) in diameter and larger.

4. Reinforced concrete pipe (RCP) shall be placed per manufacturers specifications and in accordance with M.A.G.

5. All riprap shall be grouted.

6. "U-type" headwalls with wing walls per M.A.G. STD, Det. 501-3 or 501-4 are required for all exposed storm water pipe.

7. Manhole concrete collar shall be 1' foot deep and 1' foot wide outside of rim casting. Collar shall be used in unpaved as well as paved areas.

8. Retention basins should be constructed with a two-foot (2') bench at top prior to start of slope.

9. All CMP and RCP pipe joints shall be joined with an "O" ring or gasket type watertight seal.

10. Any storm drains crossing the City streets that are going to be paved will be required to use 2-sack A.B.C. slurry fill to the top of the pipe with 6" to 8" on each side of pipe. All storm pipes within City ROW shall be RGRCP.

11. Construction of sewer and storm drain, 4" A.B.C. bedding per M.A.G. spec. 702. Modified compact to 95% typical.

12. Construction of reinforced concrete Box Culverts shall be constructed per A.D.O.T. standards & specifications, typical.

13. ABC Bedding material of four (4") inches shall be used and compacted to 95% for all Storm Sewer Pipes.

14. Construction of manhole foundations for all Storm Sewer Bases shall be per M. A. G. Sections 505 and 725.

15. STORM PLAN AS-BUILTS: As-Built storm sewer plans prepared by the design engineer shall include, but not be limited to, the following: TOC at both ends of each scupper and gutter at center or flow-line of each scupper; inlet and outlet inverts; headwall top elevations and inverts; cross-pan and valley gutter flow lines elevations; storm manhole rim and invert elevations; drywell rim elevations; pipe dimensions and lengths, and any and all deviations from approved drawings.

## V. WATER MAIN NOTES

1. All proposed public and/or private utilities shall be installed on the opposite side of right-of-way from the proposed water mains whenever possible.

2. WATER DISTRIBUTION DESIGN REPORT:

BY: \_\_\_\_\_,

DATED: \_\_\_\_\_, \_\_\_\_\_. JOB NUMBER: #\_\_\_\_\_.

3. All materials that come into contact with drinking water shall meet NSF standard 60 and 61.

4. All water mains less than twelve (12") inches in diameter are to be installed at a minimum top of pipe depth of thirty six (36") inches below finished grade. Water mains twelve (12") inches in diameter, or larger, shall be installed at a minimum top of pipe depth of forty eight (48") inches below finished grade.

5. All waterlines shall be pressure and leakage tested in accordance with AWWA C-600 section 4, or M.A.G. section 610.14.
6. All new fire hydrants shall have four (4") inch N.S.T. steamer connections.
7. No obstructions, (IE: tress, shrubs, utility pedestals, streetlights, transformers, J-boxes, switch cabinets) shall be placed with five (5') feet in front of or to the side of any fire hydrant.
8. All onsite water mains shall be within the public right-of-way unless otherwise noted on plans. All construction shall be in accordance with the Arizona Water Company Standard Details and Specifications and ADEQ/ADWR current standards. However all trench backfill compaction within the public right-of-way and in all public easements shall be per City of Casa Grande Detail and Compaction Specifications.
9. All water mains must be disinfected per AAC Title 18 and Arizona Water Company Standards.
10. There shall be no septic systems within one hundred (100') feet of the proposed water main extension.
11. WATER PLAN AS-BUILTS: As built water plans shall be prepared by the design engineer and shall include but are not limited to; all hydrant base elevations, hydrant locations, valve box locations, meter box locations, and landscape meter locations, and any and all deviations from the approved plans.
12. Pressure release valves are required at all high places within water line.

## **VI. PAVING NOTES**

1. All grading, excavation, paving, trenching, pipe bedding and backfill shall comply with the recommendations set forth in the SOILS (Geotechnical) report for this project and the referenced required specifications and details. SOILS report and pavement design were prepared:  
 BY: \_\_\_\_\_,  
 JOB NO. \_\_\_\_\_, DATED: \_\_\_\_\_, \_\_\_\_\_.
2. The contractor shall verify the locations, elevations and horizontal controls of all existing utilities at point of tie-in prior to commencing any new construction. Should any location, elevation or control differ from that shown on these plans, the contractor shall contact the owner's agent.

3. The contractor shall give 72 hours notice to the City Engineer prior to any construction activity within the right-of-way.
4. The City Engineer must approve all plan revisions in writing prior to construction of any changes to approved plans.
5. Upon commencement of work, traffic control devices shall be posted and maintained by the contractor until such time as work is completed.
6. Remove and relocation of all mailboxes, fences, signs, gates, posts-pipes, etc., within the right-of-way and construction limits shall be directed by the City Engineer.
7. 25 MPH speed limit signs shall be located at all entrances into the development. 35 MPH signs for collectors shall be located per the plans.
8. Concrete Collars, on all utility and survey monument frame adjustments, are to be installed flush with the proposed or existing pavement.
9. Paint for pavement marking and striping shall be thermal traffic paint applied in a single coat at a rate of 100 to 110 sq. feet per gallon with traffic beads included.
10. Street cuts on asphalt pavement: Cut existing pavement at one (1') from the utility trench cut, per M.A.G. detail 200 type (T) top; Tack edges. (Using A19mm per. MAG Sect.710 Asphaltic concrete hot mix.) Asphalt concrete shall be tested for compaction, to 95%. The contractor, at his expense, will have a private lab core sample and run a Marshall for compaction test, for acceptance on all street cuts. All replacement pavements shall match existing, unless authorized in writing by the City Engineer.
11. All construction & test methods shall be in conformance with the city of Casa Grande and Maricopa Association of Governments (M.A.G.) uniform standards specifications and details for public works construction, latest edition.  
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12. Asphaltic concrete for shall conform to M.A.G. USSD section 710 mix specifications. The minimum pavement section for Arterials and Major Collectors shall be a 2" (12.5 mm) AC surface course with a 3" (19 mm) AC base course with a minimum 10" aggregate base course. Alternate pavement sections based on a geotechnical report may be considered, but must contain at least the 2" + 3" AC pavement noted above in the top section of the pavement structure and an equivalent load capacity.

13. Surface Course Asphalt for all expressways and arterial streets must be rubberized asphalt concrete conforming to ADOT specifications. Placement dates for rubberized AC are March 15th to May 31st and September 1st to November 15th. No placement of rubberized AC will be allowed outside these dates unless Contractor has City of Casa Grande approval and that the rubberized AC can be placed per ADOT specifications.
14. All concrete shall comply with M.A.G. Section 725, Class-A 3000-PSI compressive strength at 28 days, unless otherwise specified. Contractor shall supply mix design to the City Engineer for approval prior to placement. Contractor shall supply a copy of each batch ticket to the City Engineer or his representative.
15. A copy of the City approved plans must be kept on-site at all times, during the course of construction.
16. All newly constructed pavements shall receive an application of sealant (fog-seal), approved in advance by the City Engineer and prior to acceptance into a warranty period. Hydrant reflectors shall be installed after the application of the sealant.
17. In the event of any dispute between these plans and M.A.G. standard specifications, these approved plans shall prevail.
18. The contractor/owner is responsible for final adjustment of all manholes, valves, clean-outs, water meter boxes, j-boxes, etc., and restoration of construction site to M.A.G. standards, including Right of Way Grading. None of the above shall be located in the sidewalk or curb areas.
19. Engineer's testing of A/C mix prior to placement is required and results are to be delivered to the City Engineer or his representative prior to paving.
20. Rolling patterns required by the geo-technical testing firm shall also be supplied to the Engineers representative.
21. Core testing of newly constructed asphalt concrete surfaces may be required at the discretion of the City Engineer. Core tests are mandatory, along with supporting Marshall test results, for all existing roadways where street cuts are necessary.
22. Protection of valley gutters, cross-pans and aprons during paving operations shall be the responsibility of the contractor and all damaged concrete shall be replaced prior to acceptance.

23. Tack seal shall be required between lifts, all vertical concrete surfaces prior to placement of asphalt. This requirement also applies to vertical asphaltic concrete surfaces and at all joints of new lifts.
24. The surveyor shall perform installation and straddling of monuments. Once stamped, datum shall be part of the as-built plans.
25. Street sign bases, poles and signs shall be installed prior to the final walk-through and acceptance into any warranty period. Only channel sign posts shall be permitted
26. All Warning, Regulatory and Street Name Signs must be manufactured of "ASTM D-4956-04 -Proposed Type IX Sheeting" (3M 4090 series or equivalent), that will be attached to the standard sign aluminum plates. Sign imaging shall be in compliance with the reflective sheeting manufacturers matched component system. Sign imaging shall consist of an acrylic based electronic cut able film (3M 1170 Series or equivalent) or silk-screened (depending on the quality of signage) with standard highway colors. In addition, if called out on plans, to create a graffiti-protective coating, a premium protective overlay film, 3M 1160 or equivalent, shall be used which is designed to comply with the underlying reflective sheeting match component system.
27. Right-of-way grading shall be completed prior to the final walk-through and shall be held one (1") inch below back of walk. (B.O.W.)
28. Paving As-Builts: Paving as-built plans shall be prepared by the design engineer and shall certify that this project was constructed in substantial conformance with the approved plans prior to request for final inspection, certificate of occupancy or release of assurance.
29. Freshly paved finished roadway shall be 1/4 " above the lip of the concrete gutter.
30. Sub grade preparation for all sidewalks, curb & gutter shall be scarified and loosened to a depth of 6", and shall be constructed to achieve a uniform moisture by the addition of water, moisture shall be maintained 2.0 percent above optimum moisture prior to placement of concrete, and compacted to 95 percent of maximum density. All materials outside the moisture limit shall be considered subject to removal.
31. Any Pavement adjacent to existing ROW must match the existing pavement design, unless authorized, in writing, by the City Engineer.

32. Finished grade of compacted, freshly placed asphalt, shall be no more nor less than ¼" inch above the lip of the gutter.

33. No diesel, or other cleaning solvents, will be applied to the paving hopper, the screed, the Auger immediately prior to beginning of the paving operation.

34. All handicap ramps shall be installed with truncated dome detectable warnings in compliance with M.A.G standard details 231-234. Truncated Domes must be a reinforced, pre-cast, set-in-place type product. Surface applied products, pavers or stamped concrete will not be allowed for new installations. Fiberglass material is not acceptable. Color of truncated domes shall be brownish red ( terracotta ).

35. PAVING PLAN AS-BUILTS: As-Built plans shall include, but not be limited to, the following: Horizontal and Vertical control, changes to any grade break locations, Top of Curb (TOC) elevations at each property corner, gutter/flow line elevations, scupper and catch basin inverts, monumentation, cross slopes, valley gutter flow line elevations, hydrant reflectors and any and all changes to the approved plans.

36. All Arterial Streets shall have deceleration lanes at cross streets and driveways.

#### STRIPING AND PAVEMENT MARKING NOTES

37. All pavement markings, signing and construction shall conform to ADOT standard drawings and specifications unless otherwise specified in the "Manual on Uniform Control Devices" latest edition.

38. Signs shall be installed on sign posts per *MAG Std. Detail 131 type "A"*

39. The contractor shall be responsible for the layout and installation of permanent pavement markings on final surface course using a string line, following control points that have been set no more than 10 feet along lines to be stripe.

40. Crosswalks, stop bars, arrows and legends shall be white *thermoplastic per ADOT 709 (M-10, M-11, M-2)* standard details, all other striping shall be white or yellow.

41. The dimensions shown to pavement stripes are to be center of the stripe or, in the case of double stripe, to the center of the double stripe.

42. All permanent pavement lines parallel to the flow of traffic shall be installed at a minimum of 15 mils and shall be placed in accordance with ADOT section 708-permanent pavement markings *for water borne paint*.
43. All striping shall be minimum widths of 6 inches except where noted on project places.
44. The pavement marking drawings are schematic only and not to scale. The contractor shall follow all dimensions, details, and standards when installing pavement stripes, markings, and markers.
45. The contractor shall refer any questions concerning traffic markings to the City Of Casa Grande Traffic Engineer. An inspection of the layout in the field by the city engineering inspection personnel will be required prior to any permanent striping applications. The contractor shall notify the city that the road is ready for inspection after the layout and spotting of the entire project is complete.
46. Raised reflective pavement markers shall be per ADOT standard detail No. *M-19 section 706*. They shall be non-adhesive with an abrasive resistant surface. They shall be secured in the pavement with a hot flexible marker adhesive.
47. All raised pavement markers shall be installed so that the reflective face of each marker is facing the direction of traffic and perpendicular to the traffic flow.
48. Where raised pavement markers are placed along solid striping, the nearest edge of each marker shall be offset no less than 4 inches and no more than 6 inches from the nearest edge of striping.
49. Turn lane arrows and legends shall be installed per ADOT standard detail # *M-10, M-11, M-2*. Crosswalks & Stop bars shall be installed per ADOT std. det. no. *M-10, M-11, M-2*.
50. Should field conditions change due to construction on adjacent places of roadway, the contractor shall be responsible for notifying the City Traffic Engineer and for submitting an updated striping plan twenty-one days prior to paving.
51. Pavements will be marked with waterborne paint with 24 hrs. of pavement sealing. Permanent markings will be placed 30 days after final pavement sealing.