Loop 303 Corridor/White Tanks
Area Drainage Master Plan Update
Contract FCD 99-40

FINAL

VOLUME IV

Level III
Area Drainage Master Plan Update Report

Prepared for:

Flood Control District of Maricopa County

February 2005

Prepared by:

URS

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FINAL AREA DRAINAGE MASTER PLAN
UPDATE REPORT
Loop 303 Corridor/White Tanks
Area Drainage Master Plan Update
Contract FCD 99-40

Prepared for
Flood Control District of Maricopa County

URS Job No. 23441586
February 2005

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ADMP	Area Drainage Master Plan
ADOT	Arizona Department of Transportation
AT&SF	Atkinson, Topeka & Santa Fe (Railroad)
BID	Buckeye Irrigation District
CAD	computer-aided design
cfs	cubic feet per second
CIP	Capital Improvement Program
DCR	Design Concept Report
FCDMC	Flood Control District of Maricopa County
FEMA	Federal Emergency Management Agency
FRS	Flood Retarding Structure
GIS	geographic information system
IGA	Intergovernmental Agreement
LAFB	Luke Air Force Base
LC	low chord
LDD	Autodesk Land Desktop
MAG	Maricopa Association of Governments
MCDOT	Maricopa County Department of Transportation
MVR	Mountain Vista Ranch
MWD	Maricopa Water District
NRCS	Natural Resources Conservation Service
NWVTS	Northwest Valley Transportation Study
O&M	operation and maintenance
RID	Roosevelt Irrigation District
SWVTS	Southwest Valley Transportation Study
TI	traffic interchange
VE	value engineering
WSEL	water surface elevation
WV-TCMP	West Valley Multi-Modal Transportation Corridor Master Plan

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SUMMARY

The Flood Control District of Maricopa County (FCDMC) contracted with the URS Corporation (URS) team to develop an update to the Area Drainage Master Plan (ADMP) for the Loop 303 Corridor/ White Tanks Area, Contract FCD 99-40. With the completion of this Level III Report, the update to the original study completed by The WLB Group, Inc. in March 1995 will be complete. This update includes flood control projects constructed on recommendation of the previous study as well as infrastructure and land use changes. The need for this update was driven by dramatic changes in population density and land use taking place in the West Valley in a relatively short time. Such changes include converting land from agriculture to residential use, addition of infrastructure, and construction of commercial and industrial areas. Proposed flood control facilities will be crucial to the future protection of existing and new construction within the study area. The primary function(s) of these proposed facilities are as follows:

- Mitigate existing known flood hazards
- Prevent increased flooding due to higher runoff rates associated with new construction/development
- Provide a positive means of draining new development via outfall channels leading south to the Gila/Salt rivers and east to the Agua Fria River

As a result of the fast pace of new development within the project area, drainage infrastructure improvements should be made as soon as possible. Crucial drainageways could be blocked as a result of further development if the planning (purchase of easements/right-of-way) and construction of new flood control facilities is delayed.

Planning and implementation of drainage improvements concurrent with ongoing development can provide opportunity for alliances with stakeholders that will help ensure land, financing, and public support. Early planning will simplify decisions regarding multi-use options on a particular project as well as allow for facilitating and coordinating landscape character and visual themes into the project.

The area being studied is bounded by the White Tank Mountains to the west, McMicken Dam/Deer Valley Road to the north, the Agua Fria River to the east, and Gila River to the south. The area includes the portions of the incorporated areas of Avondale, Buckeye, El Mirage, Glendale, Goodyear, Litchfield Park, Peoria, Sun City, and Surprise, as well as unincorporated areas of Maricopa County.

The project is separated into four components:

1. Data Collection and Existing Conditions
2. Level I Alternatives Analysis (Alternatives Formulation/Preliminary Analysis)
3. Level II Alternatives Analysis (Alternative Analysis)
4. Level III Alternatives Analysis (Preferred Alternative Analysis)

This section of the final report provides project background and summary data as well as a progression of the analysis from Data Collection through Level III leading up to the preparation of the 15% conceptual design plans.

Each of the four project components listed above were completed in accordance with the scope of work. As the project progressed from one component to the next, the field of considered alternatives was steadily decreased through a process of elimination. This process was comprised of the following:

- Alternative analysis.
- Project stakeholders meetings and input recommendations.
- Neighborhood meetings and an evaluation of performance using a weighted matrix to score relative performance.

As the project progressed from one component to the next, the level of detail accompanying each round of alternative eliminations increased. This was a logical approach since each subsequent level of analysis resulted in the elimination or combination of multiple alternatives. The result was fewer alternatives to consider and analyze at the next level.

With each level of analysis, a relative cost analysis was prepared to compare alternatives. This information was one of many factors included with the weighted matrix evaluation.

During the course the ADMP Update, there were several change orders given to URS by FCDMC. One of the more important involved the incorporation of suggestions made through Value Engineering (VE) (2/2002-3/2002) held after the completion of the Level II phase of analysis. This change order involved a detailed analysis of the most significant of the suggestions made by the VE team as well as the direct incorporation of others. For a detailed explanation of the VE recommendations and findings refer to the 'Preferred Alternative Phase Value Engineering Report', by Rider Hunt Levett & Bailey, dated March 14, 2002. Some of the more significant suggestions made by the VE team included the following:

- The elimination of a proposed channel along the existing RID Canal alignment south of I-10 from approximately Cotton Lane to Tuthill Road.
- The addition of a proposed channel on the north side of I-10 from approximately Perryville Road to Cotton Lane.
- The incorporation of a composite channel section along the proposed SR 303L alignment. This section could incorporate

a low flow box or concrete channel with an overflow channel above.

- The elimination of the proposed channels north of Waddell Road east of Litchfield Road.

Another important milestone resulted in part from the decision of MCDOT and FCDMC to begin discussions for an Intergovernmental Agreement (IGA) regarding the construction of the proposed SR 303L offsite drainage channel. As part of this, URS performed a detailed comparison between the quantity/cost estimate prepared in the MCDOT SR 303L DCR for the proposed offsite drainage improvements and the estimate prepared for the ADMP Update. This comparison focused on differences in methodology, criteria/ assumptions, design storm and level of detail associated with the two estimates. The purpose of this comparison was to establish a basis for determining a future "percentage" cost share agreement between MCDOT and FCDMC specific to the ultimate construction of the proposed SR 303L offsite drainage channel.

More recent milestones involved a new concept for the storage of discharge volume along the SR 303L corridor. This concept was designed to make extensive use of land directly adjacent to Luke Air Force Base (LAFB) for the purpose of protecting if from future encroachment due to development. Finally, changes to the proposed SR 303L channel were made due to the following factors:

- Meetings with the Perryville Prison officials regarding the proposed online detention basin located at I-10 and SR 303L. The prison made specific recommendations for basin location and geometry.
- New concepts incorporated at the proposed I-10/SR 303L traffic interchange (TI) per direction of MCDOT and ADOT.
- A general shift in the western limit of the proposed SR 303L roadway section based on MCDOT's and ADOT's request to design the corridor for a five-lane rather than a four-lane freeway.

The design criteria associated with the Level III portion of the analysis were consistent with the earlier levels with the exception of the SR 303L channel. As before, the criteria for all other proposed facilities were based on the concept of large, multi-use channel corridors with offline basins used as parks or recreation areas. By contrast, the criteria followed for the SR 303L channel were derived from the concept of a concrete-lined channel with only a small landscape/aesthetic buffer within the corridor or basins. Proposed basins were for peak attenuation only. The reason for this change in criteria along the SR 303L was three-fold:

- VE recommendation.
- MCDOT/ADOT did not feel that a grass-lined, multi-use facility adjacent to major freeway was feasible.
- MCDOT/ADOT typically do not build grass-lined, multi-use facilities due to the typical increase in costs associated with these types of projects.
- FCDMC was willing to compromise on the ultimate vision for this facility recognizing its functional importance as well as the benefit to expediting its construction through partnership with MCDOT/ADOT.

An important consideration associated with the Level III analysis involved minimizing adverse impacts to existing flood control facilities present within the project area as a result of those proposed with the ADMP Update. Such impacts were carefully evaluated and adjustments were made to proposed facilities when inflow volumes/ discharges were increased at existing channels and basins, respectively. There were no significant adverse impacts found at existing facilities as a result of the final iteration of the preferred/selected alternative.

In a few cases, there were modifications made to the proposed channel cross-section geometry along specific reaches of certain facilities. This was typically done in an effort to minimize the overall proposed footprint in areas where existing development/encroachment precluded the use of the relatively large channel section associated with characteristic of the multi-use/aesthetic aspect of the project. If there was an existing corridor that was only slightly narrow compared with that required by the proposed facility footprint, the decision was made to modify the proposed facility through that particular location only. Such modifications were made along specific reaches of the following proposed facilities:

- The proposed Atkinson, Topeka & Santa Fe (AT&SF) Railroad Channel
- The proposed Bullard Wash Channel
- The proposed Lower El Mirage Channel (also known as the West Cactus Basin and Channels Project)

The environmental impacts associated with the Level III analysis were similar to those detailed under preceding levels of analysis.

In regard to cultural impacts, findings indicated that perpendicular crossings of existing linear historic features were not likely to result in substantive adverse impacts; however, these may require some mitigation. Proposed facilities parallel to existing linear historic features for significant distances may cause more concern.

When the proposed flood control facilities undergo final design, compliance with the Arizona Antiquities Act will be evaluated in more detail. Needs for right-of-way across any State Trust land or other state permits would entail requirements for the lead state agency to comply with the State Historic Preservation Act. Similarly, any federal permits would require compliance with Section 106 of the National Historic Preservation Act.

The socio-economic impacts of the preferred/selected alternative revealed that the relative benefit far outweighed any negative impact. Obvious benefits to the surrounding community in socioeconomic terms would include those derived from the aesthetic and multi-use aspects associated with facilities, as well as the flood protection and regional outfall function provided. The only real negative impacts

would be those associated with the need to take right-of-way including existing homes and/or business. Since the majority of the project area still exists as agriculture land use, it is not anticipated as a major concern at this time. Delays in the project could change the level of impact.

The impact to ecological resources found within the project area were determined under the Level III analysis to have the potential to affect the Sonoran desert tortoise, Southwestern Willow Flycatcher, Cactus Ferruginous pygmy-owl, and Yuma Clapper Rail.

At this level of analysis, the full extent of the potential impact to these species is not clear. A more detailed analysis must be made during the final design phase and should include the following at a minimum:

- A comprehensive site visit to evaluate the habitat suitability for each species identified.
- Evaluate the extent to which any existing habitat will be lost in both the riparian and upland areas of the Sonoran desert scrub.
- Correspond with the Arizona Game and Fish Department and the U.S. Fish and Wildlife Service in regard to the findings of the detailed analysis of the potential effects to these species due to the implementation of the Selected Alternative.

The phasing and implementation conceptual plan developed for the preferred/selected alternative incorporated a method of relative priority/ranking of the proposed facilities to determine a logical sequence of development over time. This information was incorporated with the data obtained from the current FCDMC CIP to determine an overall plan for phasing and implementation of the ADMP Update facilities.

Due to the magnitude of the ADMP Update, it will not be economically feasible to construct all of the proposed projects at once; therefore, an initial/draft plan for constructing the proposed facilities in segments or phases was prepared.

The following elements regarding each of the proposed facilities were considered when preparing the phasing plan:

- The relative ability of a proposed facility to reduce known flood hazards.
- The degree or concentration of future adjacent development for which a proposed facility will provide both flood protection as well as an outfall. This information was estimated based on future proposed land use throughout the project area.
- The ability of a proposed facility to provide adequate outfall service and flood protection in areas where future population density projections are high and will occur in a relatively short time.
- The ability of a proposed facility to provide adequate outfall service and flood protection in areas where future urban concentration projections are high and will occur in a relatively short time.

Each proposed facility was scored in the above categories and assigned a weighted value. From this information, the proposed facilities were ordered from highest to lowest priority. Then, the list was modified based on practical considerations such as the requirement of the construction of a relatively low priority channel (such as the I-10 East Diversion Channel) upon construction of another proposed "high priority" facility (such as the Bullard Wash Channel).

All facilities currently included in the FCDMC CIP program were placed at the top of the priority ranking. These facilities were placed in the order in which they appeared in the CIP.

An important aspect to the ADMP Update was the consideration and preparation of an implementation plan. This is a very important element to the project since the ultimate design and construction of the proposed facilities depends upon effective implementation over a relatively long period of time.

Due to the large scale of all the proposed facilities (taken as a whole), the time frame for ultimate design and construction will be many years and somewhat ambiguous. Therefore, the need for ongoing involvement and support of the ultimate vision on the part of project stakeholders will be crucial to the future success of the ADMP Update. The full and continued support of stakeholders over many years to come will be essential to ensure that all of the facilities proposed with the ADMP Update are ultimately designed and constructed. Such agreements and continued support will also be paramount to identifying future project partners.

Periodic updating and revising of the prioritization of the proposed Selected Alternative facilities will likely be required as circumstances within the project area are extremely fluid. Such a process may involve a periodic update analysis of identifying the most critical projects through the use of a procedure similar to that used in the preparation of this ADMP Update.

Operation and maintenance associated with the proposed facilities will be fairly intense. This is inherent to grass-lined structures that employ multi-use and aesthetic components. Such facilities require routine watering and basic upkeep of the vegetation associated with both the aesthetic and multi-use components as well the lining itself. It will also be important to determine which agency will assume these responsibilities or if they will be handled by a homeowner's association (in reaches through developments).

Although the methods and criteria used in preparing the quantity/cost estimate were consistent with those used under the previous levels of analysis, there were a few more quantities shown for this Level III estimate. Most notably are the following:

- Costs associated with anticipated utility relocations.
- Costs associated with the 50-year life cycle operation and maintenance.
- Costs associated with required structure relocations.

The final cost estimate shown in this report is somewhat higher than those prepared in the past. This is due in part to the addition of the above costs while maintaining the 30% contingency shown in previous estimates as well as the increase in some of the unit costs used. For example, the land acquisition cost used in previous estimates of $40,000/acre was increased to $60,000/acre due to rapidly changing conditions present within the project area. Other unit costs were increased by the average inflation rate where necessary.

The final estimated cost of the ADMP Update Project was between approximately $463,000,000 and $498,000,000. The smaller of the two estimates is based on the total cost assuming a more modest implementation of landscape/multi-use components as apposed to the higher estimate that incorporates more complete "facility treatments" given the themes developed for each.

1.0 INTRODUCTION

1.1 PROJECT DESCRIPTION

This report documents the proposed preferred/selected flood control alternative and associated 15% Level conceptual design plans prepared for the Loop 303 Corridor/White Tanks Area Drainage Master Plan Update (ADMP). From this point forward, the Selected Alternative will be referred to as the "selected alternative." This report will focus on the selected alternative while referring the reader to previous reports for information regarding the Level I and Level II phases of the project.

The *Level II Phase II Technical Memorandum dated June 2003* documents the methods and criteria used to develop and evaluate the selected alternative solution to existing flood control problems within the project area. Several initial alternatives were documented in the *Data Collection Report for the Loop 303 Corridor/White Tanks Area Drainage Master Plan Update (Loop 303 ADMP Update), dated May 2003*. The ADMP covers an approximate 220-square-mile watershed west of metropolitan Phoenix. The *Level I Alternative Analysis Report dated June 2003* and the *Level II Phase I Alternatives Technical Memorandum, dated June 2003* included a more detailed project description.

1.1.1 Location

The study area boundary is defined by the ridgeline in the White Tank Mountains on the west, the Gila River on the south, the Agua Fria River on the east, and the McMicken Dam/Deer Valley Road on the north. The study area spans across the majority of Townships 1N-4N and Ranges 1W-3W which includes the cities of Goodyear, Glendale, Buckeye, Litchfield Park, El Mirage, Avondale, Sun City, Peoria, and Surprise, as well as unincorporated Maricopa County. See Figure 1.1.

1.1.2 Purpose

The purpose of this report is to document the final phase of the update study, conducted under the Level III portion of the project. This report will focus on the selected alternative, which was chosen following Phase II of the Level II analysis. This report will briefly summarize the alternative evaluation process used to determine the selected alternative. Detailed discussions of the selection process used to identify and evaluate the many alternatives considered during the ADMP Update Project were presented in past reports and submitted under separate cover (*Data Collection Report, Level I Alternative Analysis Report,* Level II Phase I, and the Level II Phase II Technical Memorandum). These reports should be referred to for additional detail. *For a detailed explanation of the scope of work for the Loop 303 Corridor/White Tanks Area Drainage Master Plan Update project, refer to Appendix A-I.*

1.2 ALTERNATIVES EVALUATION

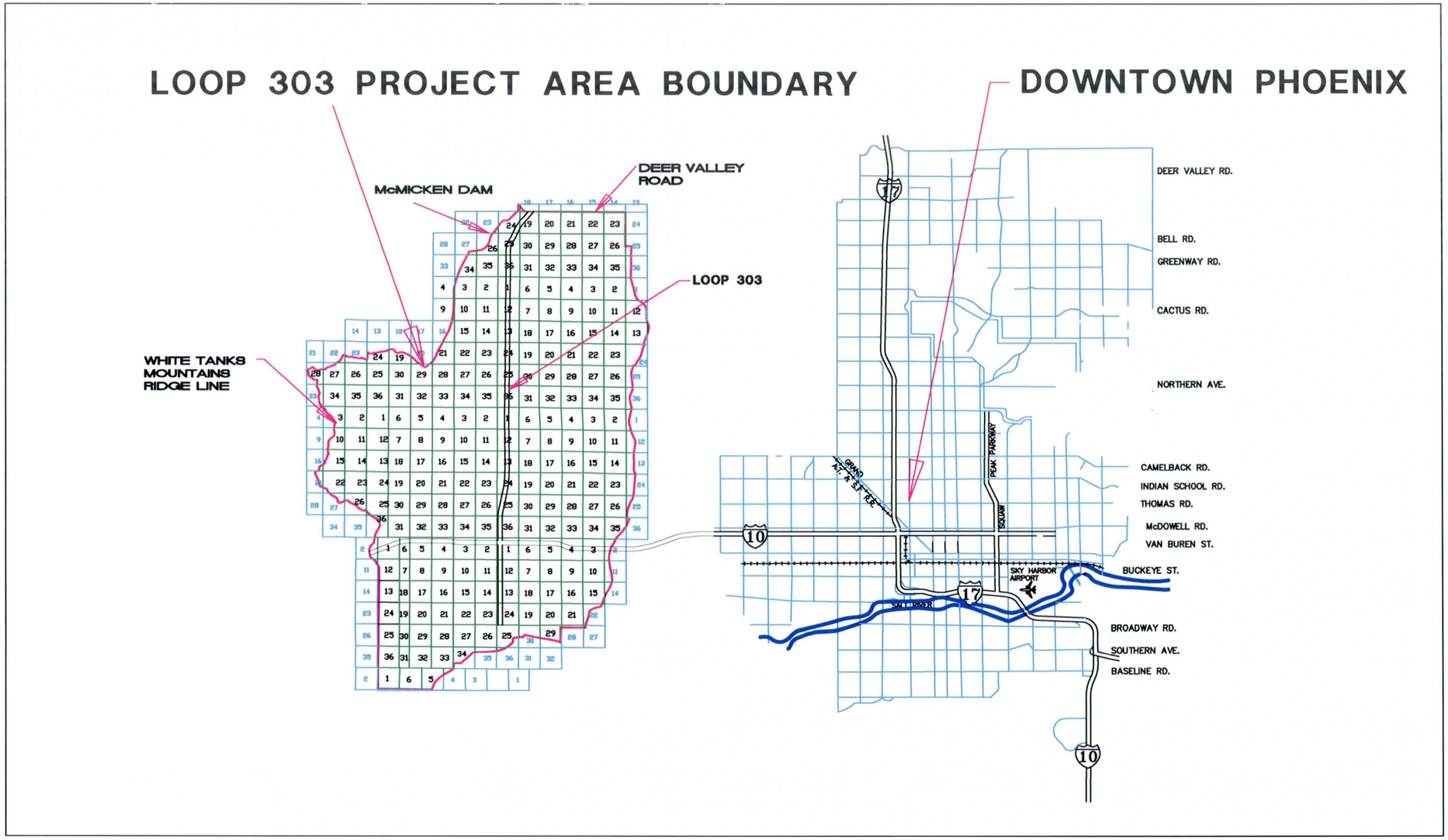
There were three levels of analysis by which multiple alternatives for flood control were identified and evaluated within the project area. In the first level of analysis, the following procedure was followed in the evaluation and narrowing of potential flood control alternatives:

- **Initial Alternative Development** – Brainstorming sessions produced 11 schematic flood control alternatives proposed for the project area. These alternatives were presented to project area stakeholders at the first stakeholders meeting on February 22, 2000. Input received from the meeting participants was then used to further refine, eliminate, and/or add to proposed alternatives.

- **Alternative Refinement for First Neighborhood Meeting** – Based on the input from the stakeholders meeting, particular elements of each of the initial 11 alternatives were combined or eliminated to produce 10 revised alternatives. The revised alternatives were presented at the first neighborhood meetings held on March 7 and 9, 2000.

- **Matrix Alternative Evaluation, May 18, 2000** – Following the first neighborhood meeting at which the 10 revised alternatives were presented, a matrix of weighted criteria was developed for further analysis. Using the matrix to score each alternative's performance according to various criteria, a final score was assigned each. The three alternatives with the best scores were then selected for further (more detailed) consideration in the Level II portion of the project. These alternatives were called "recommended" alternatives and were analyzed relative to a baseline alternative (refer to the *Drainage Channel Study for West Half of Estrella Freeway Loop 303 from Interstate 17 – Drainage Technical Memorandum*, dated August 1998, by DeLeuw Cather and Company) that was established by another study and given to URS for use with the ADMP Update.

The next level of analysis, Level II, used more detailed information to allow for more accurate sizing of the proposed flood control elements presented in each of the three recommended alternatives as well as those present in the baseline alternative. Where Level I was primarily a schematic representation of each of the alternatives with analysis based on practical knowledge, experience, and some computations, Level II was far more detailed in scope. As part of Level II, the proposed facilities were drawn more precisely using computer-aided design (CAD) and the associated hydraulic properties were analyzed using a higher level of detail. Rough profiles and footprint areas were produced and superimposed with digital terrain models to estimate the probable extents of the proposed flood control facilities.



VICINITY MAP

June, 2004
Figure 1.1

Level II – The following is a summary of the procedure followed in the evaluation and reduction of potential flood control alternatives to a single or preferred alternative as well as intervening events that contributed to the final selected alternative:

- **Changes to the Recommended Alternatives** – As a result of the Level I portion of the project, three recommended alternatives were identified for further study. The three alternatives were analyzed and compared with the baseline alternative. Upon presenting these recommended alternatives to the project stakeholders at the second stakeholders meeting on June 1, 2000, some modifications were suggested by the stakeholders and incorporated as part of **specific** alternatives. These changes were documented and described by the *Level II Phase I report*. At this time, the existing condition hydrology model was updated and distributed to project stakeholders. A third stakeholders meeting was held on May 30, 2001. The purpose of this meeting was to allow stakeholders a chance to comment on the recently completed existing condition hydrology model as well as re-acquaint them with the three alternatives identified under Level I. The changes to the alternatives recommended by stakeholders at the June 1, 2000 meeting were then incorporated into the alternatives prior to the submittal of the *Level II Phase II report*, on September 7, 2001. For a detailed description of the changes made to the recommended alternatives as a result of the second stakeholders meeting, refer to Section 2.1.1 of the *Level II Phase I report*.

- **Alternative Features Modeled with HEC-1** – Due to the number and complexity of the proposed alternatives from the Level I portion of the project, they were not evaluated using the hydrologic model. HEC-1 (U.S. Army Corps of Engineers HEC-1 hydrologic modeling software) models were only developed for the three recommended alternatives, baseline alternative, and preferred alternative at the Level II and III project stages of analysis, respectively. Proposed channels were modeled using diversion, routing, and storage records within the HEC-1 input files. These records described the geometry required as determined by detailed analysis of each of the alternatives within the project area. Upon execution of the models, the performance of each of the alternatives was assessed relative to the other alternatives. Each alternative was sized to allow for zero freeboard using the "Existing Condition" HEC-1 model and for the required freeboard (at a minimum) using the "Future Condition" HEC-1 model. For a detailed description of the procedure used to model the alternatives with the HEC-1 model, refer to Section 2.3 of the *Level II Phase II report*.

- **Alternative Evaluation** – This was done to generate input data required for the alternatives to be analyzed using the **weighted** matrix developed and documented in the Level I report. The matrix from Level I was refined slightly for use with the Level II analysis. In the Level II analysis, a higher level of detail was used to develop the matrix input than with Level I.

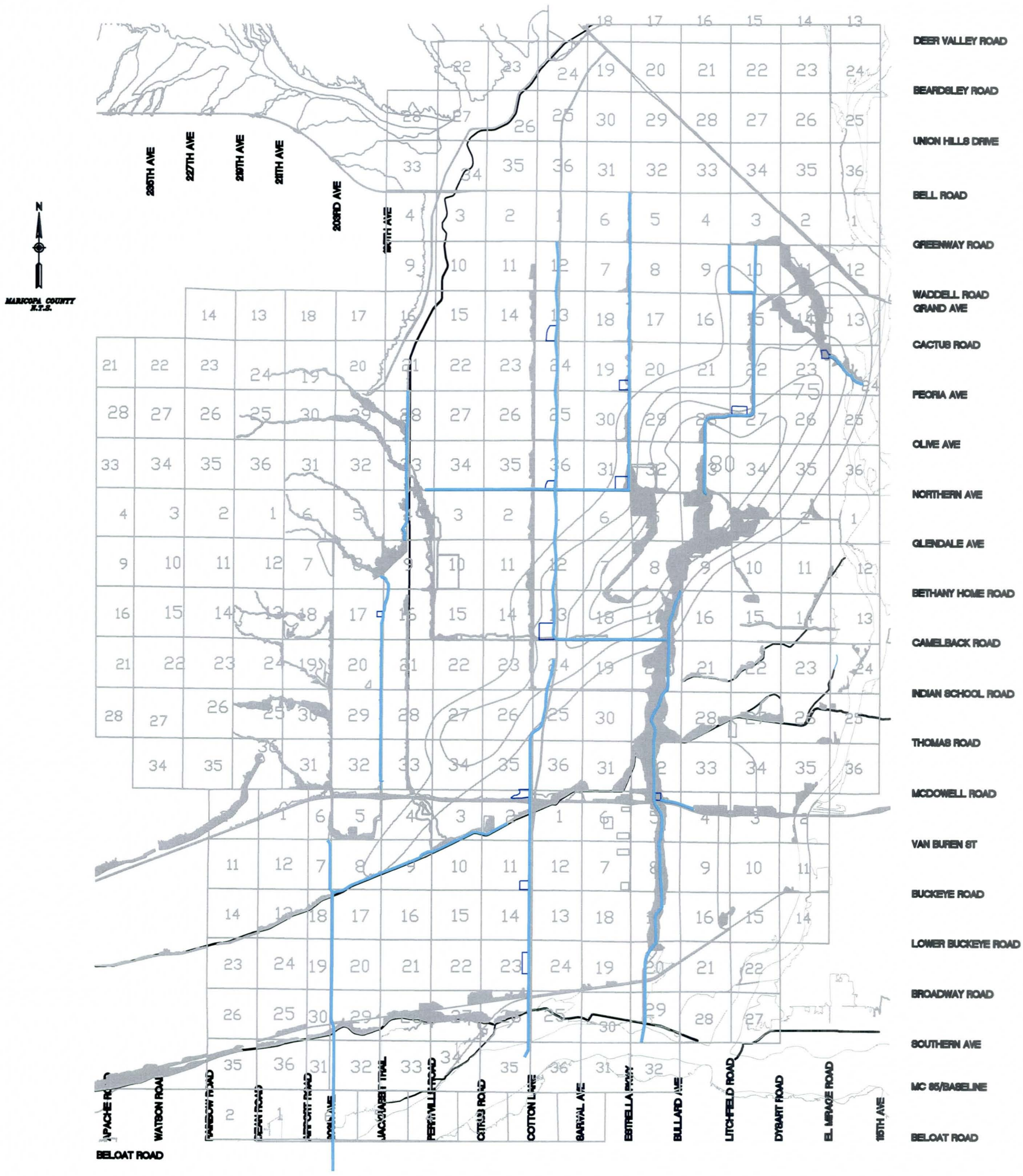
- **Second Neighborhood Meeting** – The three recommended alternatives were presented along with the baseline alternative at the second neighborhood meeting on August 28 and 30, 2001. Comments from this meeting were considered in the final matrix evaluation prior to the submittal of the *Level II Phase II report*.

- **Recommended Preferred Alternative** – The three alternatives were evaluated using the weighted matrix described above. Based on the results of the evaluation documented in the *Level II Phase II report*, it became clear that the preferred alternative would be some combination of elements found within Alternatives 2 and 3. The solution was to allow the stakeholders to evaluate the elements of each alternative within specified sub-areas within the overall project area.

- **Stakeholders Matrix Evaluation** – On September 12, 2001, the project stakeholders met (fourth stakeholders meeting) to fill out the weighted matrix refined from the Level I phase of the project and used in the *Level II Phase II report*. This was done to allow the stakeholders to actively participate in the ultimate determination/selection of a preferred alternative. The stakeholders first changed the relative importance factors assigned to the individual matrix criteria used in the *Level II Phase II report*. Then, the revised matrix was used to evaluate each of the alternatives for the sub regions within the overall project area. The top scoring alternative element configurations for each particular sub-region were then selected and the preferred alternative was determined to be a composite of the selected elements. URS began preliminary analysis of the preferred alternative for the Level III phase of the project. *Figure 1.2 shows the updated preferred alternative.*

The final level of analysis, Level III, was specific to the development of a 15% set of conceptual design plans and accompanying report based on the preferred alternative selected at the close of Level II. At this point in the process, the facilities proposed under the preferred alternative were more accurately located along their respective alignments and detailed profile information was developed for each. To accomplish this task, the following process was followed:

- The HEC-1 model was modified to reflect the proposed alternative elements using diverts, storage routing, and other relevant input data. The process is iterative since the rate of flow along the proposed element is not fully known until the proposed facility geometry has been modeled, i.e., the proposed geometry is interdependent with the final flow rates. Optimizing these two parameters can be time consuming, and therefore, it was agreed that only one or two iterations would be used.



Preferred Alternative

September 2001

Loop 303 Corridor/White Tanks ADMP Update

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FIGURE 1.2

- The initial input data reflecting the proposed alternative elements was general in order to obtain a "first set" of discharges along proposed facility concentration points. The model was run and the discharges were used for the next iteration.

- The discharges from the above step were used to more accurately size the individual components of each proposed facility. The "new" geometry was then entered into HEC-1 (routes, storage records, etc.) and the model was run again.

  - At this point, if the discharges changed significantly, one additional iteration was completed. However, in the majority of cases, the discharges were very close to the previous analysis.

- Using the current set of discharges from the above steps, the proposed facility elements were finalized. No further modifications were made to the HEC-1 model at this point since that would be considered an additional iteration. For this reason, the final element sizes adjusted based on the current set of discharges are slightly different than those found within the final HEC-1 input files.

Using the above information, the elements of the Preferred Alternative were overlaid with the digital terrain model of the project area and "tied in" with the natural ground.

During the Level III portion of the project, several issues arose which significantly impacted or changed the schematic layout of the preferred alternative. The following is a summary of the intervening events that contributed to the final Selected Alternative:

- Monthly Coordination Meeting No. 18, November 29, 2001 – At this meeting, the progress of the preliminary design of two channels proposed with the preferred alternative was presented. The first was the Beardsley Canal Channel from approximately the McMicken Dam south to the existing White Tanks Flood Retarding Structure (FRS) #3. Wood Patel and Associates were completing the preliminary design of this channel. The second was the Bullard Wash Channel south of Interstate 10 (I-10). This channel was being designed by the FCDMC and another consultant. From this point forward, these two channels were shown as part of the ADMP but were no longer included with the 15% Level Conceptual Design Plans. They were now referred to as "under development." In addition, URS informed FCDMC that two additional basins would be added to the preferred alternative. The first was to be added along the Roosevelt Irrigation District (RID) Channel at Perryville Road while the second would be added at the confluence of the proposed Tuthill Road Channel with the RID Canal Channel. *Figure 1.3 shows the updated preferred alternative.*

- Value Engineering – The Loop 303 Corridor/White Tanks Area Drainage Master Plan Update project was selected by the FCDMC for a VE workshop in December 2001. The VE was conducted in February 2002. As a result of the VE, several recommendations were made regarding proposed modifications to the preferred alternative.

- VE Recommendations – As a result of the FCDMC IPR meeting held March 28, 2002, a few of the VE recommended changes were proposed for immediate implementation into the preferred alternative pending formal acceptance by the project stakeholders. The most significant of those changes are listed below:

  - The proposed channel along the existing AT&SF Railroad was to begin at Waddell Road and would not extend north/upstream of that location (previously, the channel included two 1-mile tributaries north of Waddell Road).

  - The proposed channel along the RID Canal was abandoned, and a channel along the north side of I-10 approximately 1 mile north was added. Additionally, a small channel along the north side of I-10 just east of Sarival Avenue was added.

  - Minor adjustments were made to proposed basin locations along the Tuthill Channel and the SR 303L Channel.

  Although several of the more complex VE alternatives were subsequently analyzed separately by our team, none were cost effective. For more information regarding the VE alternatives and analysis, refer to the *Preferred Alternative Phase Value Engineering Report, Loop 303/White Tanks Area Drainage Master Plan, Maricopa County, Arizona, dated March 14, 2002 by Rider Hunt Levett & Bailey.* For a detailed discussion of the analysis and related cost estimates regarding the more complicated VE recommendations, refer to the *Composite Channel Analysis, dated September 2002*, located in Appendix E of this report.

- VE Implementation – On May 15, 2002, URS met with FCDMC to discuss several actions required to incorporate the accepted recommendations from the VE. *Figure 1.4 shows the updated preferred alternative as it was presented in September 2002.* Those elements are listed below:

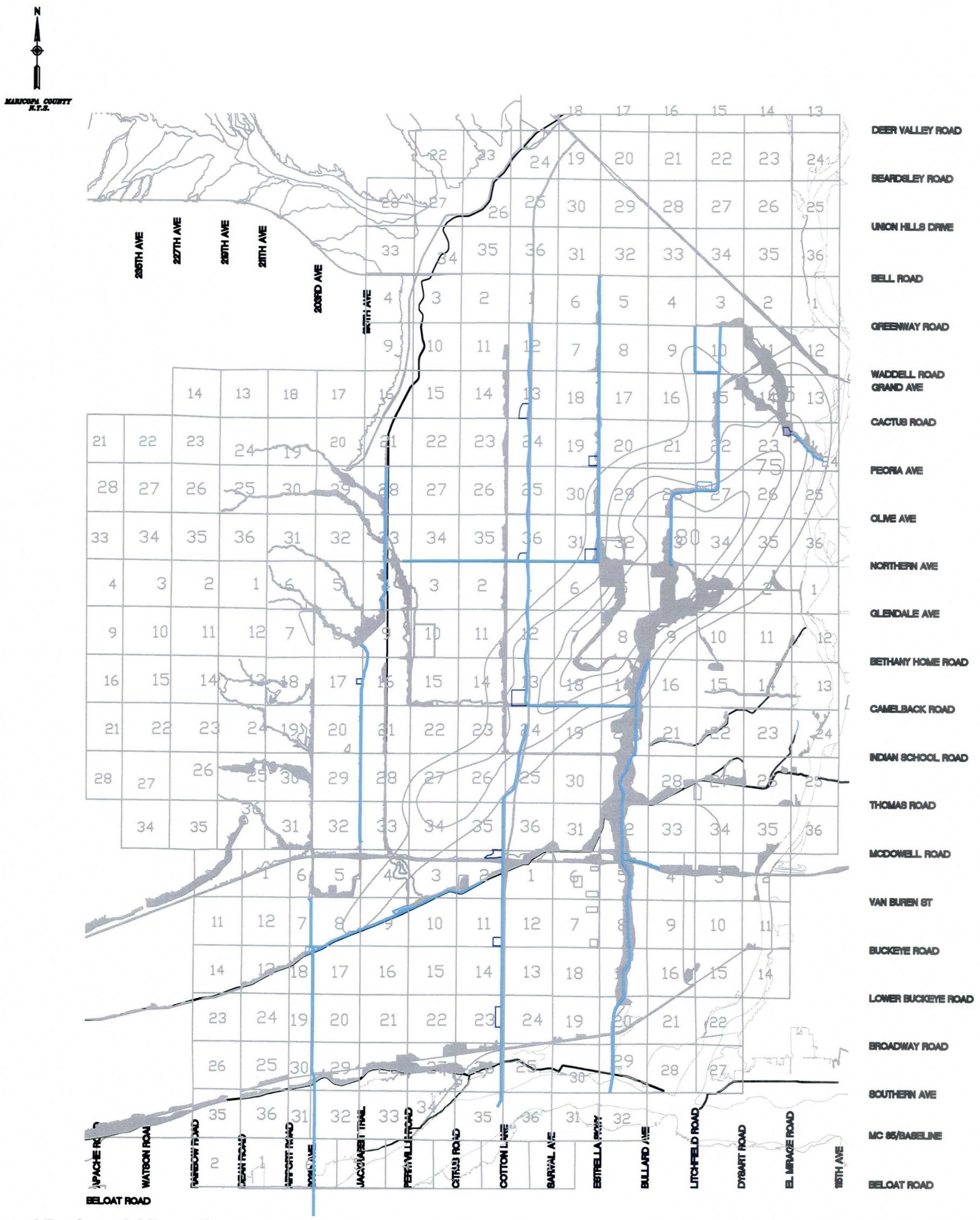
  - Remove the channel and basins along the RID canal.

  - Include a channel parallel and just north of I-10 from approximately Perryville Road to Loop 303. The runoff being concentrated in the channel and diverted to the Loop 303 channel.

  - Move the basin at Tuthill Road and the RID canal south to the railroad tracks, if feasible.

  - Eliminate from the plan both channels north of Waddell Road/Thunderbird Road in the northeast portion of the project area.

  - Relocate the basin along the AT&SF railroad tracks south of Peoria Avenue south to Olive Avenue in the northeast portion of the project area.



Updated Preferred Alternative

November 2001

Loop 303 Corridor/White Tanks ADMP Update

Figure 1.3

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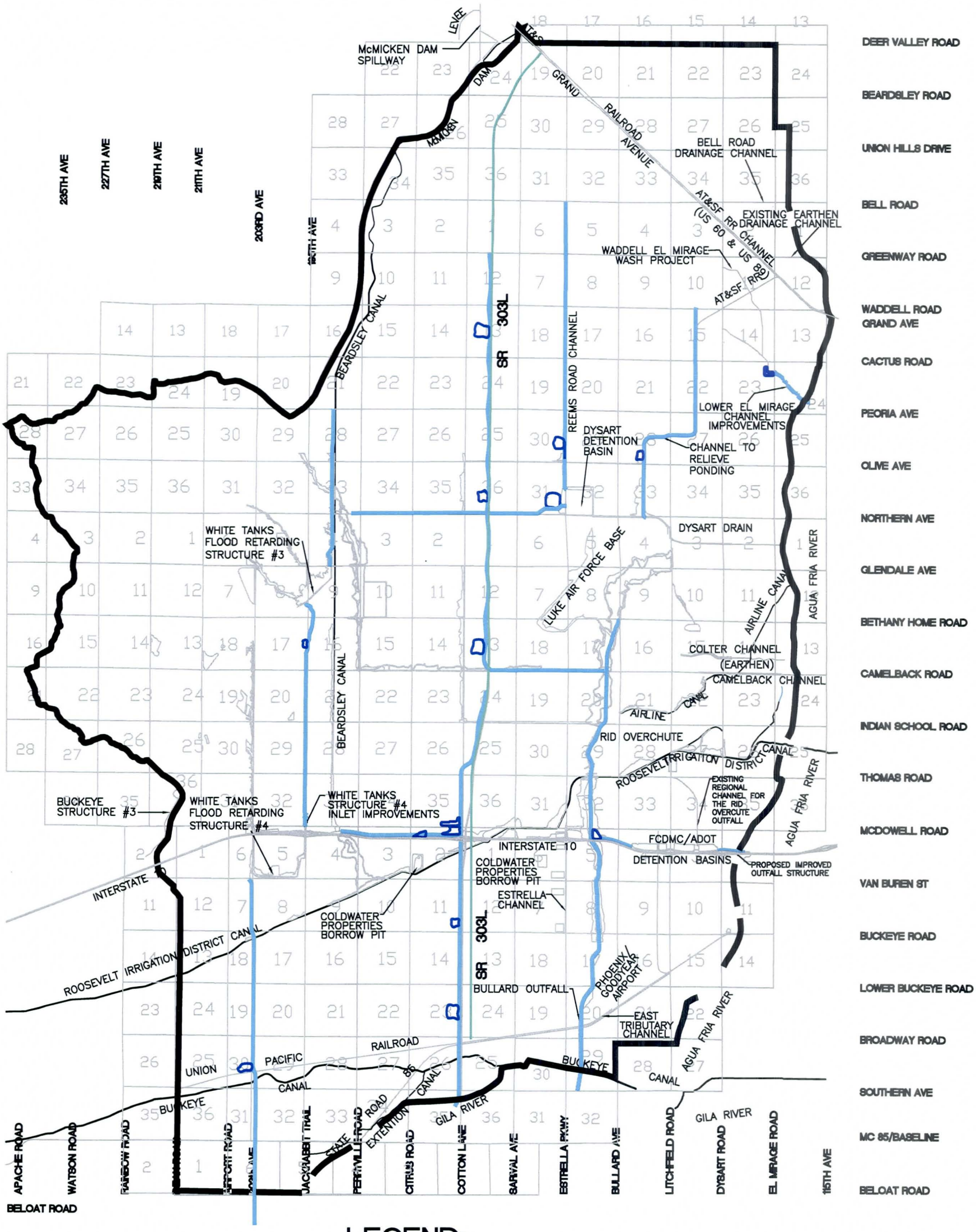

LEGEND:

- PROPOSED DETENTION BASIN
- PROPSED FLOOD CONTROL CHANNEL
- PROPOSED PROJECT AREA BOUNDARY
- PROPOSED STATE ROUTE 303L
- EXISTING RAIL ROAD
- EXISTING STRUCTURE OR FACILITY
- EXISTING 100-YR FLOODPLAIN BOUNDARY
- PROPOSED 100-YR FLOODPLAIN BOUNDARY

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PRELIMINARY/DRAFT PREFERRED ALTERNATIVE *September 2002*

Loop 303 Corridor/White Tanks ADMP Update

Flood Control District of Maricopa County

Figure 1.4

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- The Reems Road channel remains in the plan.
- The Reems Road channel should discharge to the Falcon Dunes Golf Course Basin on the north side of the basin. URS will use the original stage-storage data developed for the basin unless directed by the FCDMC to do otherwise.
- Reduce landscape requirements along channels and in basins to the maximum required by FCDMC landscape criteria. The reduction in landscape requirements could impact the following elements of the channel and basin design:
  - Multi-use facilities may be excluded from the project (trails, recreational facilities, kiosks, etc.).
  - The type and amount of vegetation and other landscape features will be reduced in many areas.
- Move basins away off section lines and commercial corners to facilitate use and access to potential commercial sites.
- Retain basin at Camelback Road and Jackrabbit Trail.

- Coordinate with the SR 303L project teams and Maricopa County Department of Transportation (MCDOT) on developing a joint drainage alternative for the project. The coordination includes all section consultants. Presently, MCDOT has directed the project teams to design to Arizona Department of Transportation (ADOT) drainage criteria, which is less robust than the 100-year/24-hour duration design storm event (this project's design standard). The implications of the coordination on the Loop 303 Update plan include:
  - Reduce the size of channels and basins for landscape objective as stated above.

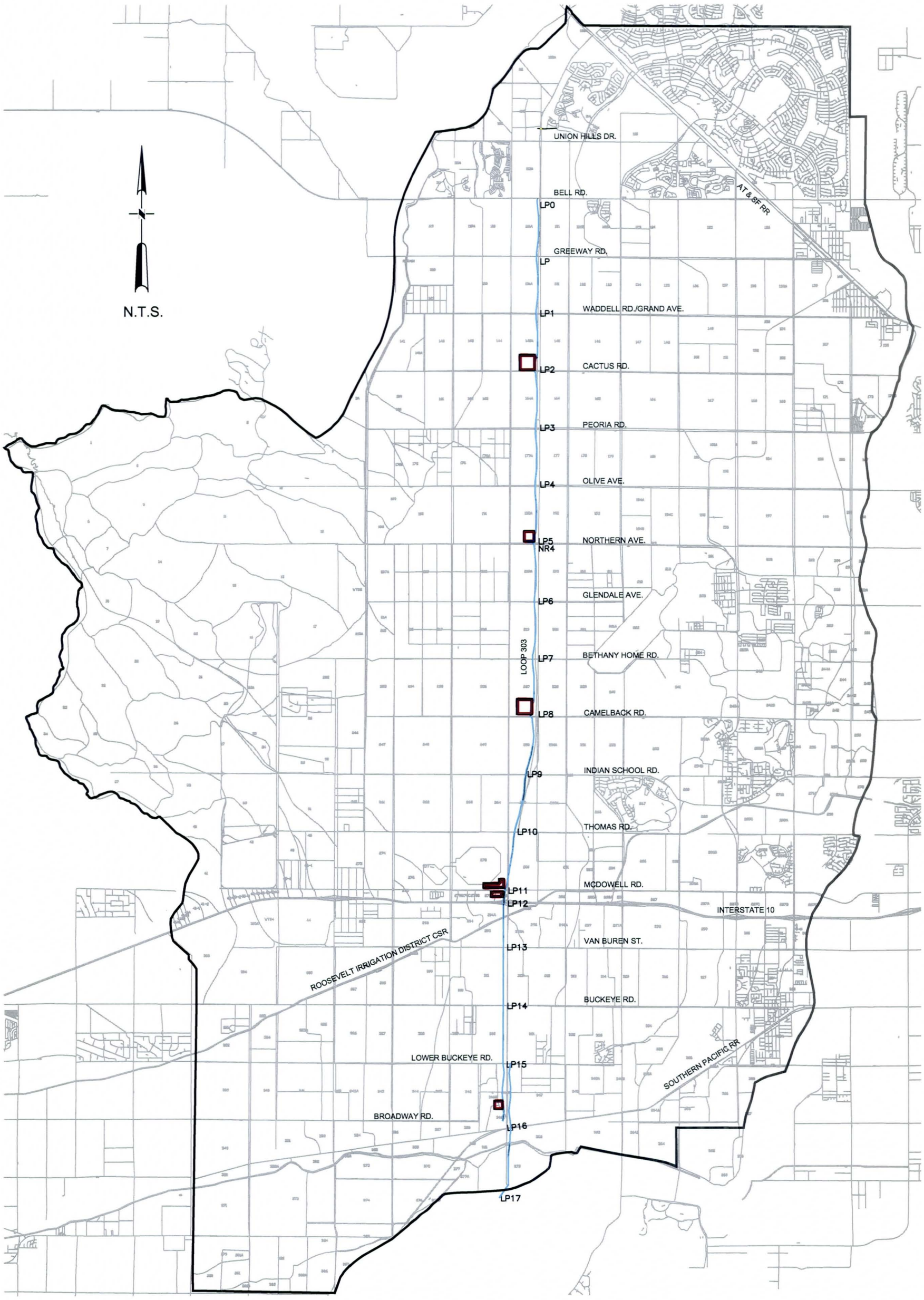
- Coordination Meeting with MCDOT – On June 10, 2002, FCDMC, MCDOT, and URS met to discuss the coordination of the design of the proposed off-site drainage channel along the west side of the proposed SR 303L between the two agency projects. The agencies agreed to work closely from this point forward through increased coordination and ultimately an IGA. Since MCDOT would only agree to pay for a typical ADOT concrete facility (50-year design), FCDMC would be expected to pay for any additional costs due to a higher level of protection and/or incorporating multi-use aesthetic components. At this time, FCDMC was undecided on which channel section to use adjacent to the SR 303L. URS was about to begin the process of evaluating in detail the composite channel alternative recommended by the VE team. FCDMC was also considering other alternative cross sections such as a typical concrete ADOT concrete section designed for a 100-year storm, a hybrid concrete section with an adjacent landscape corridor, and the original wide, multi-use/aesthetic corridor concept.

- *Composite Channel Analysis, submitted September 2002* – URS was tasked with performing a detailed analysis of the composite channel alternative as recommended by the VE report. This analysis showed a much more expensive structure than anticipated by the VE team and was ultimately deemed cost prohibitive. The analysis results showed that the preferred alternative as presented to the VE team was still the least cost alternative.

- *Change Order 12, submitted March 26, 2003 (Appendix F)* – As a result of closer coordination with MCDOT and the SR 303L project, FCDMC instructed URS to evaluate the performance of the proposed MCDOT SR 303L 50-year concrete channel for the 100-year storm event. Among other alternatives pursued with this analysis, URS evaluated an upgraded version of the proposed MCDOT SR 303L channel concept for the 100-year storm event. Finally, URS performed a cost estimate for the proposed 100-year version of the MCDOT facility and compared it with the estimates prepared for the proposed MCDOT 50-year facility. The results of the analysis indicated that the additional cost associated with upgrading the MCDOT proposed 50-year facility to a 100-year facility would require an additional 7.5% in funding (based on unit costs use in the MCDOT DCR, see Table 6.5 of Change Order 12 located in Appendix F of this report). This alternative would be identical to the one proposed in the MCDOT Design Concept Report (DCR) with the exception that it would be designed for the 100-year storm event. This alternative shows the SR 303L channel as continuous from north to south in contrast with the preferred alternative prior to the new analysis. The new preferred alternative showed the SR 303L channel as two distinct channels north and south of Camelback Road. *Figure 1.5 shows the updated preferred alternative.*

- Coordination Meeting with MCDOT, April 23, 2003 – FCDMC explained to MCDOT that they had reviewed the URS report and were going to choose a proposed channel section based on Alternative 3. The final section would consist of a concrete lined channel along SR 303L with a 20-foot access road and 10-foot landscape buffer placed on the west side of the right channel bank. The channel section would be sized for the 100-year storm event. This alternative would be much closer to a typical ADOT facility than the large aesthetic/multi-use facility previously proposed with the preferred alternative.

- Level I and II Finalization and Coordination Meeting, May 15, 2003 – FCDMC directed URS to move the proposed basin located at the northwest corner of Camelback Road and SR 303L to the south side of Camelback within the LAFB crash zone area. *Figure 1.6 shows the updated preferred alternative for the SR 303L only. This was the only feature, which was changed from Figure 1.5.*



ALTERNATIVE #3 PROPOSED CHANNEL

March 2003

Loop 303 Corridor/White Tanks ADMP Update

FIGURE 1.5

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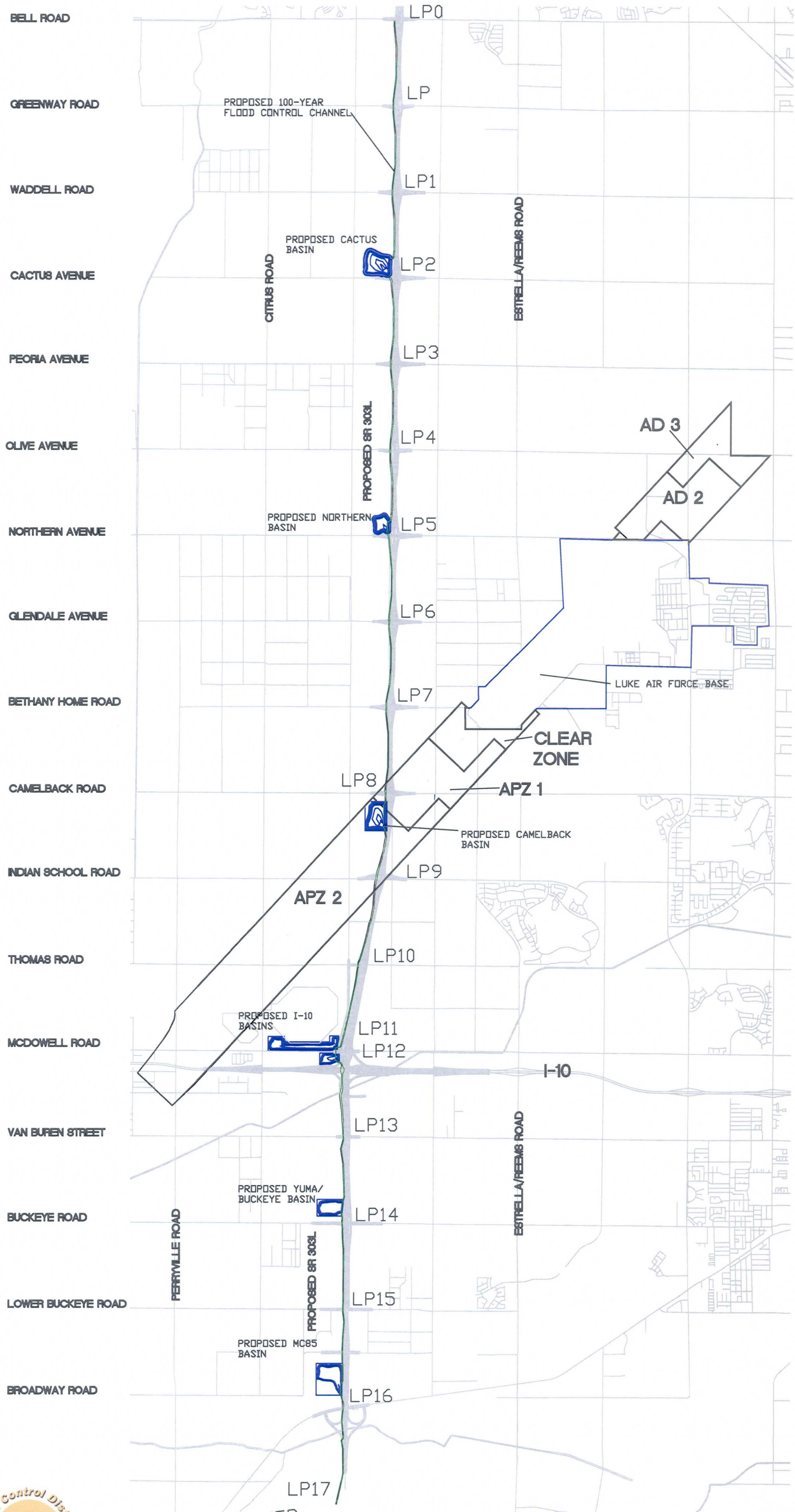


LEVEL III PREFERRED ALTERNATIVE MAP

URS

May, 2003
Figure 1.6

- Proposed Basins along SR 303L Channel Relocated within LAFB Crash Zones – On June 25, 2003, URS completed an analysis of an alternative basin and channel configuration along the SR 303L adjacent to LAFB. The analysis was submitted to the FCDMC as a letter report. The analysis involved the relocation of two large basins to the LAFB crash zones. The result of the analysis was about a 14.5% increase in overall project cost. Therefore, the FCDMC did not direct URS to change the preferred alternative. *Figure 1.7 shows the updated preferred alternative.*

- Proposed Basins along SR 303L Channel Relocated within LAFB Crash Zones (see Appendix G) – On August 5, 2003, URS completed an analysis of three alternative basin and channel configurations along the SR 303L adjacent to LAFB. The analysis was submitted to the FCDMC as a letter report. This analysis involved the partial relocation of two basins within the LAFB crash zones. The result of the analysis showed that the implementation of Alternative 3 would only increase the overall project cost by approximately 8.5%. Based on this result, the FCDMC instructed URS to incorporate Alternative 3 into the preferred alternative. Generally, Alternative 3 reduces the size of two upstream basins and changes them from on-line to off-line. The increased volume is then stored within the LAFB crash zone sites. From this point forward, the preferred alternative was called the "selected alternative."

- Perryville Prison Meeting at FCDMC on December 9, 2003 – At a meeting between URS, FCDMC, and Perryville State Prison officials, URS was directed to reconfigure the proposed basin along SR 303L north of I-10 located on state land contiguous to the prison fence line. This work involved the relocation of the basin from the west and south sides of the prison to the east and south sides to the prison. Other minor changes to proposed basin side slopes were also made where necessary. As a practical matter, URS took the opportunity to modify the proposed footprint for both basins located at the I-10/SR 303L TI. These modifications were done to avoid potential conflict with the proposed TI due to recent changes in both alignment as well as profile. Also, the proposed basin outlet configuration at the south side McDowell Road at the I-10/SR 303L TI was modified to account for the newly depressed ramp profiles.

- MCDOT Coordination, January 6, 2004 – Per a recent contract modification (SR 303L DCR – I-10 to US 60 – CM #7) for the SR 303L DCR project, the following major changes to the proposed SR 303L cross section and roadway design were required by MCDOT (as a result of a request from ADOT):

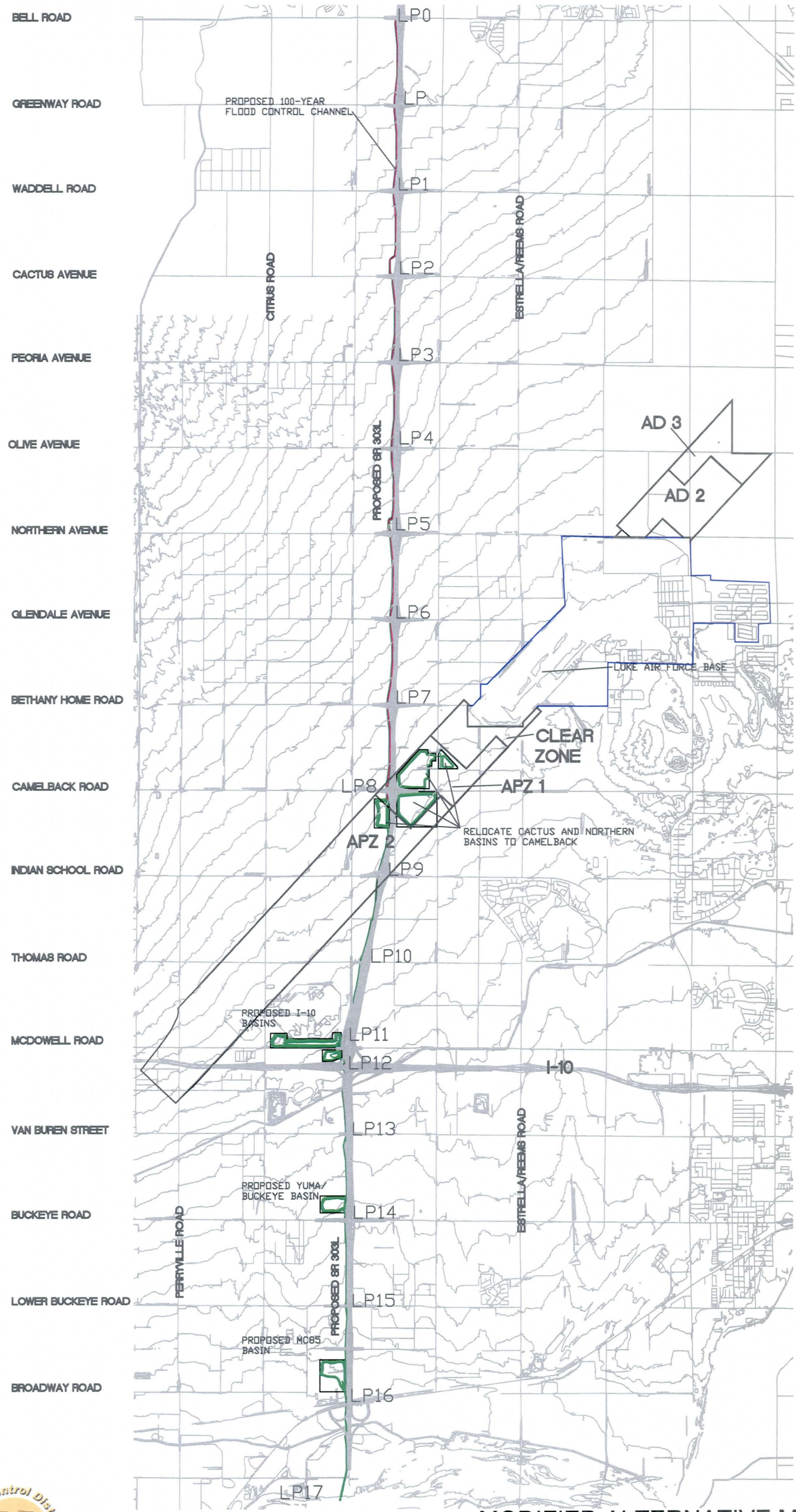
  - Incorporate four lanes for the SR 303L through the I-10 TI
  - Place the geometry for the Northern Parkway TI
  - Revise plan sheets for building a five-lane ultimate roadway section
  - Revise the required right-of-way limits
  - Revise grade separation at the Indian School Road TI

  As a result of these changes, the preferred alternative channel alignment along the west side of the proposed SR 303L was shifted west at a minimum by the width of the additional (fifth) lane added in the above change order. The alignment was also impacted by the changes to the Indian School Road grade separation as well as the placement of the Northern Parkway TI. *Figure 3.1B located in Section 3 of this report shows the updated Selected Alternative.*

1.3 EVOLUTION OF THE SELECTED ALTERNATIVE

As a result of the many changes/modifications evidenced by the sequence of events described previously for each level of analysis, a clear understanding of the specific components describing the alternatives at any point in time became difficult.

In an attempt to clearly lay out the events and subsequent actions taken while refining the Selected Alternative under the Level III portion of analysis, a table matrix was developed. The matrix, *Table 1.1A and Table 1.1B*, shows each of the components present within the preferred alternative at each step taken during the completion of the above process.



MODIFIED ALTERNATIVE MAP

JUNE, 2004
Figure 1.7

Table 1.1A
Development of the Preferred/Selected Alternative

				Alternative Channel Components																	
				North to South Channels										West to East Channels						Diagonal Channels	
Change Initialized Date	Exhibit Created Date	Event Described	Alternative Description	Tuthill	Jackrabbit	Beardsley	SR 303L North	SR 303L South	Reems	AT&SF	Litchfield	1/2 mi. E. Litchfield	Bullard Wash	Northern	Waddell	I-10 West	I-10 Central	I-10 East	Camelback	RID Canal	Lower El Mirage
12-Sep-01	n/a	Stakeholders matrix evaluation	Preferred	●	●	●	●	●	●	●	●	●	●	●	●			●	●	●	
29-Nov-01	21-Feb-02	Monthly coordination meeting No. 18	Preferred	U	U	U	U	U	U	U	U	U	U	U	U			U	U	U	
15-May-02	Sep-02	initial implementation of VE recommendations	Preferred	U	U	UD	U	U	U	C	R	R	C,UD, S to M	U	R	A		U	U	R	A
Sep-02	Sep-02	3rd public meeting	Preferred	U	U	U	U	U	U	U			U	U		U	A	U	U		U
26-Mar-03	Mar-03	Change Order 12 - Alternative #3	Preferred - SR 303L	U	U	U	M to S	M to S	U	U			U	U		U	U	U	U		U
15-May-03	May-03	project coordination meeting in May, 2003	Preferred - SR 303L	U	U	U	U	U	U	U			U	U		U	U	U	U		U
25-Jun-03	16-Jun-03	Change Order 13	Preferred - SR 303L	U	U	U	C	C	U	U			U	U		U	U	U	U		U
5-Aug-03	Oct-03	Change Order 14 - Alternative #3	Selected Alternative	U	U	U	C	C	U	U			U	U		U	U	U	U		U

Matrix Codes

- ● = Component present in initial iteration of preferred alternative
- U = Component unchanged and present in subsequent iteration of preferred alternative
- C = Component present in subsequent iteration of preferred alternative, however significant change to reach limits
- R = Component removed from subsequent iteration of preferred alternative
- A = Component not present in initial iteration of preferred alternative but added in subsequent iteration
- M to S = Component present in initial iteration of preferred alternative as two or more pieces, i.e., not a continuous element along the existing or proposed project feature and has been combined into a single feature
- S to M = Component present in initial iteration of preferred alternative as a single feature and has now been split up into multiple pieces, i.e., discontinuous along the existing or proposed project feature
- UD = Element is still part of alternative, however, under development

Table 1.1B
Development of the Preferred/Selected Alternative

				Alternative Basin Components																			
				Basins on North to South Channels															Basins on West to East Channels		Basins on Diagonal Channels		Basins in LAFB Crash Zones
Change Initialized Date	Exhibit Created Date	Event Described	Alternative Description	RID and Tuthill	SR 303 @ MC85	SR 303 @ Buckeye	SR 303L @ I-10	SR 303L @ Camelback	SR 303L @ Northern	SR 303L @ Cactus	Jackrabbit @ Camelback	Reems @ Peoria	Reems @ Northern	Reems @ Olive	Bullard @ I-10	AT&SF @ Olive	AT&SF @ Peroia	Tuthill @ MC85	I-10 West @ Citrus	Northern @ Reems	Dysart @ Cactus	on RID	North of Camelback at South End
12-Sep-01	n/a	Stakeholders matrix evaluation	Preferred		●	●	●	●	●	●	●	●	●		●						●		
29-Nov-01	21-Feb-02	Monthly coordination meeting No. 18	Preferred	A	U	U	U	U	U	U	U	U	U		U		A				U	A	
15-May-02	Sep-02	initial implementation of VE recommendations	Preferred	R	U	U	U	U	U	U	U	R	U	A	U	A	R	A	A		U	R	
Sep-02	Sep-02	3rd public meeting	Preferred		U	U	U	U	U	U	U		U	U	U	U		U	U		U		
26-Mar-03	Mar-03	Change Order 12 - Alternative #3	Preferred - SR 303L		U	U	U	U	U	U	U		R	U	U	U		U	U	A	U		
15-May-03	May-03	project coordination meeting in May, 2003	Preferred - SR 303L		U	U	U	R	U	U	U			U	U	U		U	U	U	U		A
25-Jun-03	16-Jun-03	Change Order 13	Preferred - SR 303L		U	U	U		C	C	U			U	U	U		U	U	U	U		S to M, C
5-Aug-03	Oct-03	Change Order 14 - Alternative #3	Selected Alternative		U	U	U		C	C	U			U	U	U		U	U	U	U		C

Matrix Codes

- ● = Component present in initial iteration of preferred alternative
- U = Component unchanged and present in subsequent iteration of preferred alternative
- C = Component present in subsequent iteration of preferred alternative, however significant change facility
- R = Component removed from subsequent iteration of preferred alternative
- A = Component not present in initial iteration of preferred alternative but added in subsequent iteration
- M to S = Component present in initial iteration of preferred alternative as two or more pieces, i.e., not a continuous element along the existing or proposed project feature and has been combined into a single feature
- S to M = Component present in initial iteration of preferred alternative as a single feature and has now been split up into multiple pieces, i.e., discontinuous along the existing or proposed project feature
- UD = Element is still part of alternative, however, under development

2.0 DESIGN CRITERIA AND OBJECTIVES

The criteria for the Level III preferred alternative were consistent with those previously used in Levels I and II. Generally, modifications to established criteria were made only to mitigate potential future conflicts identified by parcel data provided URS by the FCDMC. In other cases, criteria were modified in accordance with the change in channel lining properties (concrete lined versus grass lined) and other hydraulic considerations.

In the following sections of this report, the process/procedures and specific criteria used to analyze the Selected Alternative elements and develop the 15% (Conceptual) Level Design Plans will be described in detail.

2.1 HYDROLOGIC MODELS

An essential component of this project was the development of the hydrologic models required to provide discharges necessary for the design of the individual elements proposed with the preferred/ selected alternative.

Four separate models were developed as a means to the end goal of producing discharges for sizing the proposed channels and basins. Each of these models is listed and briefly described below:

- **Existing Conditions Model** – The existing conditions model was developed as an updated version of the original model prepared by the WLB Group Inc. in the early 1990s with the first Area Drainage Master Study conducted within the project area. The following tools were used to refine and updated sub-basins and associated input data as needed:
    - Color Aerial Photograph – This was used in conjunction with aerial photography taken at the time of the original study as well as field trips to identify areas where significant changes had taken place within the overall watershed.
    - In some cases, these changes required modifications to existing sub-basin delineations and a redefinition of the associated boundaries. In other cases, it merely required an update to the land use data and/or soils information.
    - Intensive Data Collection – All available data within the project area were identified and collected under this phase of the project. This included the following as a minimum:
        - Design plan sets
        - As-built design plan sets
        - Existing and proposed development and associated grading and drainage plans
        - Existing and proposed development and associated detailed drainage reports
        - USGS quadrangle maps for reference and identification of prominent local features and labels
        - Existing utility information to aid in identifying potential cost impacts of one proposed facility location over another
        - Detailed soils data – This information was more detailed and extensive than in the original study. Therefore, many soils parameters associated with sub-basins were revised.
        - Detailed land use plans – Existing and proposed/future land use data were obtained. This information was useful in defining sub-basin runoff characteristics in both the existing and future condition hydrologic models.
        - Current Flood Insurance Study information and all available backup data was used to identify existing constraints within the watershed as well as to flag higher risk areas for potential flooding.
    - Detailed Site Visits – Several site visits were conducted to verify existence or absence of particular drainage structures/ features shown on plan sets, drainage specific observations made in design reports, and to document prominent/visible land features impacting area drainage patterns.
- **Future Conditions Model** – The future conditions model was developed as a modified version of the existing conditions model. The following information was obtained to adequately define the future conditions model:
    - Future land use data and land use plans – This information was obtained from the individual cities as well as the Maricopa Association of Governments (MAG) in an effort to adequately predict the future land use and associated cover for input into the model.
    - On-site retention requirements – This information was obtained from each of the municipalities present within the watershed area. The information was used to develop divert data which were incorporated into the model to simulate the impact of future retention within certain sub-basins.
    - Percent impervious values for specific identified land use – These data were required to determine the approximate amount of runoff in percent that would result from the ultimate build-out of a sub-basin per a specified future land use.
- **Existing Conditions Model With Projects in Place** – This model was developed based on the existing conditions model. Using the existing conditions model as a base, this model was developed by adding the diversions and storage routes required to model the proposed elements of the Selected Alternative. The following information was required to define this model:

- Proposed channel cross section data, including any freeboard required
- Proposed channel roughness values
- Proposed channel length
- Proposed channel slope
- Proposed channel velocity and resulting NSTPS variable computation
- Proposed basin stage, volume, discharge data
- Proposed off-line basin diversion data

- **Future Conditions Model With Projects in Place** – This model was developed based on the existing conditions model with projects in place using the *future* conditions model as a base. The exact same information used to develop the existing conditions hydrology model with projects in place was used to develop this model. The only difference between the existing and future conditions hydrology models with projects in place is in the parameters defining the percent impervious and future diversion based on required on-site retention/detention.

For more detail regarding the development of the existing conditions hydrology model, associated assumptions, criteria and watershed characteristics, refer to the *Existing Condition Hydrology*, dated November 2002. *For more information and detail regarding the methodology, criteria, assumptions and development of the future conditions hydrology model, refer to Section 2.2.2 of the* Level II Phase II Technical Memorandum. Although the information presented in Section 2.2.2 is specific to the modeling of the three alternatives analyzed in that level of analysis (Level II), the same procedure was used in the subsequent Level III analysis. For a complete explanation of the methods and criteria used to develop the future condition hydrology (with and without projects), refer to the *Future Condition Hydrology, dated February 2004 located within Appendix B of this report*.

For more detail regarding the development and criteria associated with the future condition hydrology with projects in place, refer to Section 2.2.3 of the Level II Phase II Technical Memorandum. This section explains the general procedure used to simulate the proposed channel and basin components modeled as a result of the proposed alternatives. Again, the information contained within Section 2.2.3 is specific to the alternatives evaluated by the Level II analysis; however, it is the same methodology followed in the Level III analysis.

2.1.1 Specific Use of Hydrologic Models

Each of the models described above was developed for a specific purpose in regard to the analysis of the Level III Selected Alternative. Each of the models and their respective use is briefly described below:

Existing Condition Hydrology – The purpose of this model was to incorporate any and all changes in the watershed that resulted from development and other activity since the completion of the original hydrology model during the early 1990s (updated the WLB Group model). This newly updated model was used as a baseline for the development of all subsequent models. The discharges resulting from this model were larger than those produced from the future condition model due to the lack of on-site retention upstream of concentration points within currently undeveloped sub-basins. This model was used as the starting point or baseline model from which the "with projects in place" model was developed and from which the future condition hydrology was developed.

Existing Condition Hydrology with Projects in Place – As described above, the predicted discharges from this model were generally very conservative (larger) compared with those predicted by the future condition model. Therefore, the selected alternative elements were sized based on the discharges predicted with this model without the addition of freeboard. In a few cases, the future condition with projects model produced the higher, more conservative results. In those instances, the proposed facility was sized using that model with the normal freeboard requirement.

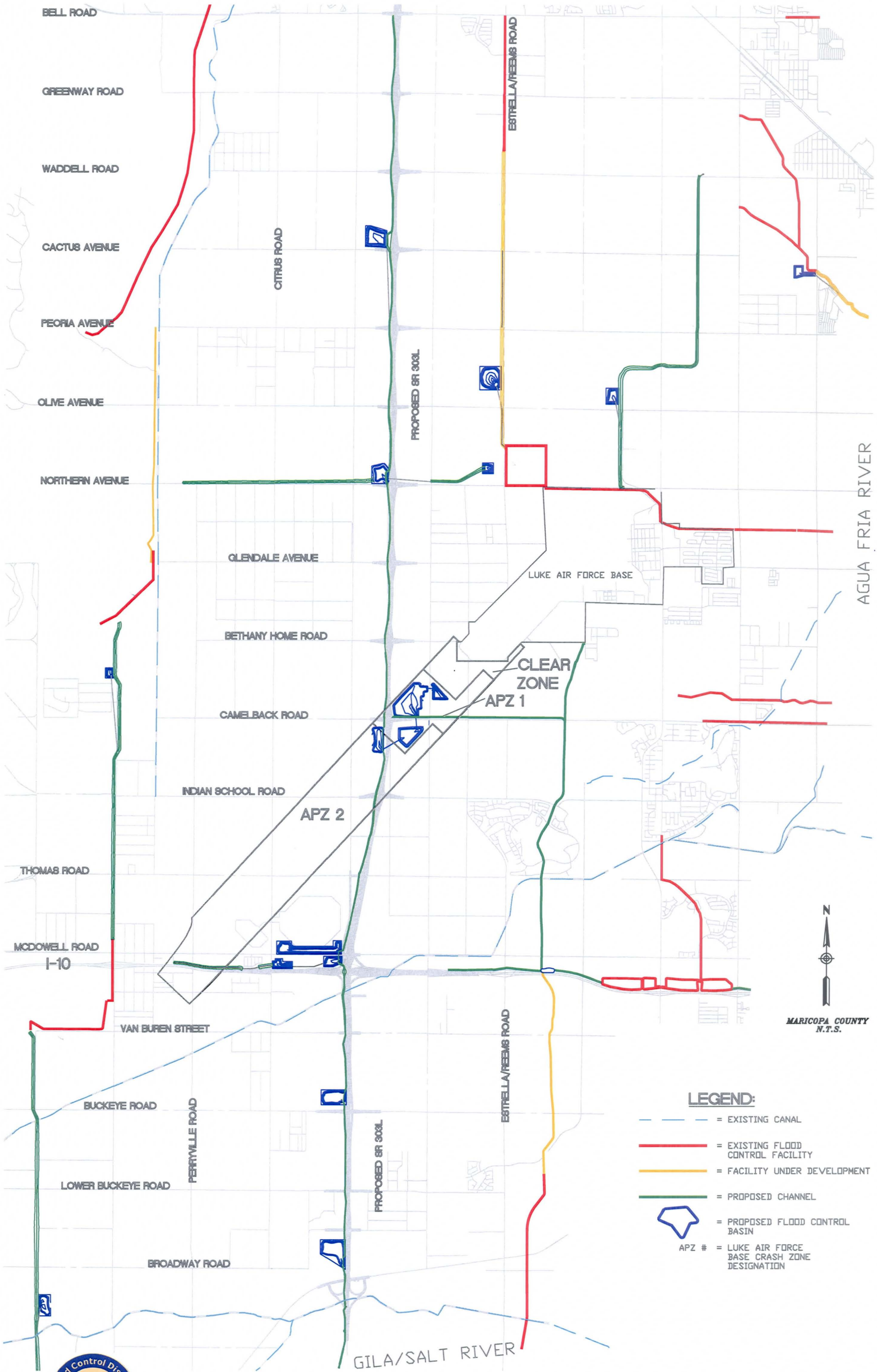
Future Condition Hydrology – The purpose of this model is to provide a baseline for the starting point or baseline model from which the "with projects in place" model was developed.

Future Condition Hydrology with Projects in Place – Since the discharges predicted by this model were usually significantly lower than those predicted by the existing condition model, they were used as a check for the proposed Selected Alternative structures. Each element proposed as part of the Selected Alternative was sized based on the existing condition hydrology without freeboard. The second part of the design criteria was to run the future condition hydrology with the proposed elements of the preferred/selected alternative to ensure that the freeboard requirements would be met at a minimum upon ultimate build-out of the watershed area.

In most cases, the existing condition hydrology produced the larger discharges along the proposed channel or basin elements for the Selected Alternative as a result of modeled future onsite retention. Therefore, the criteria used for the preliminary design of the proposed channels and basins was as follows:

- The *existing* condition 100-year, 24-hour peak discharge and volume were used to size the proposed flood control facilities.
- The *future* condition 100-year, 24-hour peak discharge and volume were then used to verify the presence of adequate freeboard within the facilities (per FCDMC requirements).

However, there were a few locations where the upstream sub-basins were going to develop without providing on-site retention. At concentration points downstream of these sub-basins, the total discharges actually went up due to the increased percent impervious. As a result, the discharges predicted from the future condition hydrology model were used and the required minimum freeboard was added. Figure 2.1 shows the Selected Alternative overlaid onto the existing condition hydrology sub basin map.



Flood Control District of Maricopa County

URS

LEVEL III SELECTED ALTERNATIVE MAP

August 2004
Figure 2.1

2.2 ANALYSIS OF PROPOSED ALTERNATIVE ELEMENTS

Once the Selected Alternative was identified, each of the proposed elements of the alternative was modeled per the method described above and sized for the 15% Level Conceptual Design Plans. In order to size the proposed elements of the Selected Alternative, several design criteria were agreed upon and implemented into the process. In a few cases, these criteria were modified due to specific field constraints that were either existing or known to be planned for in the near future.

Each of the criteria used for the Level III analysis of the preferred/ selected alternative is described in the following sections.

2.2.1 Proposed Channel Analysis

As part of the development of the Level III 15% Level Conceptual Design Plans, several issues were addressed and when required, assumptions made using the best available information. Several considerations, assumptions, and criteria were used to analyze the proposed Selected Alternative elements. Upon completion of the analysis, the results were used to finalize the horizontal and vertical alignments and ultimately prepare the conceptual design plans. The general process followed and the associated assumptions for the analysis of the proposed channels is summarized below:

- Horizontal placement of the proposed channel alignment – Although the channel alignment was schematically represented, it must be physically located relative to existing features. For channel alignments proposed adjacent to existing roadway alignments, the assumption was made that the channel would be constructed relative to the proposed future/ultimate roadway section rather than the existing section. This was done since most of the existing roadways within the project are rural, two-lane roads with relatively small cross sections. Since the area is growing very rapidly, each roadway adjacent to a proposed channel was studied to determine its future classification. The following information was consulted to determine a reasonable future/ultimate roadway section along the existing alignment:
  - Northwest Valley Transportation Study, BRW, 2000 (NWVTS)
  - Southwest Valley Transportation Study, BRW, 1996 (SWVTS)
  - MCDOT standard typical cross sections as defined within the MCDOT *Roadway Design Manual*
  - Typical sections for the proposed SR 303L freeway
  - Typical cross section for the proposed improved MC 85 from the City of Glendale
  - Typical cross section information describing roads of regional significance MAG

  In general, all proposed channels were located outside of the right-of-way proposed for the ultimate build-out of the adjacent roadway. From the channel layouts analyzed under the Level II phase of analysis, the approximate daylighted channel top widths were determined to adequately offset the channel centerline from the edge of the future right-of-way of the adjacent ultimate roadway section. The goal was to place the channel centerline at a location that would permit the placement of the required components of the proposed channel cross section (bottom width, side slopes, access road, landscape area, etc.) and still have enough room to daylight (i.e., tie the channel bank into the natural ground) the facility. The edge of the channel bank daylight line should roughly coincide with the ultimate roadway right-of-way line. This was very important in order to minimize the required amount of additional right-of-way to construct the proposed channel. Since the way in which a future roadway might be improved could vary, the following assumption was made:
  - The improvement of the future/ultimate roadway section would be made symmetrical about the currently defined/ existing roadway centerline as described by the data provided URS by the FCDMC from its geographic information system (GIS) database.
  - The future/ultimate roadway section would be chosen in accordance with the roadway classifications described within the NWVTS and SWVTS and their corresponding typical cross sections.

  In a case where the assumption of the daylight width was too far off and the resultant channel daylight line was encroaching on the ultimate roadway right-of-way line or it was too far away from the line, the channel centerline was adjusted accordingly.

  In some cases, the proposed channel facility was placed along an existing prominent feature such as a canal or railroad. In the case of a channel adjacent to a railroad, the following methods and assumptions were used:
  - If right-of-way was available for the railroad, the proposed channel centerline was offset from the right-of-way line the same method used above for a channel centerline adjacent to a roadway alignment.
  - If right-of-way was not available for the railroad, its location was estimated using an aerial photograph of the area. Due to the uncertainty in the estimated location of the right-of-way line, the line was further offset from the railroad by a buffer amount of approximately 5 feet. Then the proposed channel centerline was located by the same methods described above.
- Define the proposed horizontal channel centerline alignment – Once the channel centerline alignment is placed relative to the adjacent road, canal, or railroad, the next step is to define the horizontal alignment with respect to the digital terrain model. Once the alignment has been defined, it is stationed starting from zero at the downstream end and increasing in the upstream direction.
- Using the defined alignment above, the natural ground profile along the alignment and a set distance right and left of the defined

alignment is drawn. This information will be used when developing the proposed vertical channel profile.

- Identify concentration points and channel reaches – Due to the large area of this project, each of the proposed channels is several miles long. The nature of this project is "macro" and, therefore, concentration points are placed at approximately 1-mile intervals along the proposed channels. In order to simplify the analysis, the concentration points were selected based on those already existing within the hydrologic models. If more points were added, new sub-basins would result and that was beyond the project scope.

- Establish criteria by which proposed channel reaches are sized – The criteria established for the sizing of the proposed channel reaches were based on an assumption of using the flood control facilities for recreational and other multi-uses during dry periods. In some cases, these criteria were not possible to follow simply due to adjacent constraints present or planned within the field. In general, all of the proposed channels use drop structures when required to maintain velocities that are less than the acceptable maximums defined for given channel linings.

  An assumption common to all of the proposed channels was made in regard to the situation in which discharges predicted downstream decrease. In some cases, the downstream discharge at a particular concentration point along a proposed channel reach is lower than that computed for the previous/upstream location. This can occur in HEC-1 when the increase in contributing area to the next/downstream concentration point is relatively small relative to the overall contributing area at that location and the normal depth routing results in peak attenuation within the current channel reach. If this situation occurs, the larger discharge predicted at the previous concentration point is used to size the channel section.

- Each proposed channel was evaluated for the requirement of a low flow channel per the FCDMC Hydraulics Manual. Proposed earth and/or grass lined channels may require a low flow (armored) channel to control meandering and sediment deposition during low flow events. When the proposed channel bottom width divided by the product of the proposed channel velocity with the proposed channel depth is greater than or equal to 1.4, an armored low flow channel should be used (EQ. 6.24, page 254 of 485 of the FCDMC Hydraulics Manual). Finally, in an effort to minimize probable channel maintenance, the Froude Number was generally prevented from falling within the transitional zone between subcritical and supercritical flow ($0.86 < F_N < 1.13$). Only five out of 91 identified channel reaches resulted in the Froude number falling within this range. Four of the five locations were within the proposed concrete channel adjacent to the SR 303L freeway. At these locations, no further attempts were made to adjust the Froude number since this would require optimization time beyond the scope of the project. It is sufficient at this level of analysis to note that the final design should take steps to adjust the proposed channel section through these reaches slightly to ensure that the Froude number will be outside of the transition zone. *Table 2.1 shows the proposed channels and all other associated sizing criteria/assumptions.*

- Generate a vertical profile – Once the channel reach was sized according to the criteria described in *Table 2.1*, the vertical profile proposed for the channel was defined. The following parameters define the major considerations used while preparing the proposed channel profiles:

  - Proposed channel slope – This is the slope required to convey the design discharge at velocities less than the maximum allowed for the particular channel lining used.

  - Required drop structures (if applicable) – These were used in cases where existing grades were relatively steep compared with the proposed channel grades. This was common when proposed channel grades were used to limit flow velocities based on the resistive properties of the proposed lining material. In a few cases, the proposed channel profile was relatively flat compared with existing grade due to required 'tie-in' points upstream and downstream.

  - Minimum required depth – In some cases, due to natural grade issues, it is not possible to maintain the required depth and, therefore, the channel banks must be elevated above the adjacent ground. Whenever possible, the profile was adjusted to allow the entire minimum depth to be below the natural ground.

  - Boundary constraints at upstream and downstream ends of the channel – Many times, the profile was controlled by existing daylight elevations at the ultimate outfall point (Gila River) or by existing structures (e.g., existing concrete inlet channel to White Tanks FRS #4 along Jackrabbit Trail). At times the constraint was upstream such as the case of the Reems Road Channel where the proposed reach must tie into an existing segment at the upstream end.

- Existing channel profile grades through portions of the proposed channel alignment – This occurs in Palm Valley where there is an existing channel through an existing golf course from Indian School Road south to McDowell Road. Since this is only a small portion of the reach within which it is located, every effort was made to match the profile grades through this area.

- Relative invert elevations at proposed basins – This was a very important aspect to the function of proposed off-line basins. Every effort was made to set the proposed channel inverts adjacent to the proposed off-line basins in a manner that would prevent backwater from basin ponding to affect channel performance. At the downstream side of the basin adjacent to the channel, profile elevations were set to minimize the possibility of backwater from the channel impacting the basin operation (reducing basin volume) .

Table 2.1
Channel Criteria

Channel Name	Alternative Sections	Effected Reach ALL or Stations		Proposed Lining Material	Manning Value	Maximum Velocity (f/s)	Freeboard: Existing Hydrology (ft)	Freeboard: Future Hydrology (ft)	side slopes X:1	Landscape Area: single side S (ft)	Landscape Area: both sides B (ft)	Access Road: single side S (ft)	Access Road: both sides B (ft)	Comments
Camelback		0+00.00 to	8+00.00	Grass	0.03	6.0	0	min. required by FCDMC	4:1		B = 30% total topwidth		B = 20'	From station 0+00.00 to station 8+00.00 within the overall RCM4 Reach (0+00 - 5+58.63), the section was modified to a bottom width of 26 feet to maintain the flow depth while steepening side slopes from 6:1 (exist) to 4:1 (prop). This was necessary to avoid the right bank daylight line from encroaching on the existing Camelback Road.
		8+00.00 to	66+25.35	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
Jackrabbit		ALL		Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
SR 303L		ALL		Concrete	0.013	15.0	0	min. required by FCDMC	2:1	S = 10' on west side		S = 20' on west side		Since the channel along the SR 303L is part of an IGA with MCDOT, this section represents a compromise between a typical ADOT section and the more aesthetic section proposed by FCDMC.
Upper Northern		ALL		Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
Lower Northern		ALL		Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
Reems		ALL		Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
AT & SF Railroad		0+00.00 to	154+44.00	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
	Alternative section 2	154+44.00 to	172+02.00	Concrete	0.013	15.0	0	min. required by FCDMC	2:1	none		B = 12' west side		Within this portion of reach RR4, there is very little room between the existing railroad and the City of Surprise sewer treatment plant. For this reason, the adjacent modifications are proposed to the typical channel section.
	Alternative section 3	154+44.00 to	N	Concrete	0.013	15.0	0	min. required by FCDMC	vertical	none		B = 12' west side		Within this portion of reach RR4, there is very little room between the existing railroad and the City of Surprise sewer treatment plant. For this reason, the adjacent modifications are proposed to the typical channel section.
		172+02.00 to	288+88.00	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
Lower El Mirage		0+00.00 to	17+13.00	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
	Alternative section 2	17+13.00 to	30+80.00	Grass	0.03	6.0	0	min. required by FCDMC	4:1			B = 12' west side		Within this portion of reach RLE4, there are some conflicts between the proposed channel daylight lines and the existing parcels. These parcels are undeveloped according to the aerial photography dated 2002. This alternate section would relieve if not eliminate the conflicts however it may not be necessary since these lots are not developed.
		30+80.00 to	48+75.30	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
Bullard Wash		0+00.00 to	66+04.07	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
		66+04.07 to	71+33.24	Grass	0.03	6.0	0	min. required by FCDMC	4:1		B = 30% total topwidth		B = 20'	Had to steepen side slopes through this portion of the reach, RBD4N to avoid conflicts with existing homes in Palm Valley adjacent to the existing Bullard Wash Channel through the Palm Valley golf course.
		30+80.00 to	48+75.30	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
		48+75.30 to	118+36.65	Grass	0.03	6.0	0	min. required by FCDMC	9:1		B = 30% total topwidth		B = 20'	Match existing side slopes on Palm Valley channel through golf course of 9:1.
		118+36.65 to	178+08.51	Grass	0.03	6.0	0	min. required by FCDMC	10:1		B = 30% total topwidth		B = 20'	Match side slopes called out on WLB plans prepared for Palm Valley between Indian School Road and Camelback.
		178+08.51 to	233+55.34	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
I-10 West Diversion		0+00.00 to	24+00.00	S T O R M				D R A I N						
		24+00.00 to	36+97.94	I N - L I N E				B A S I N						
		36+97.94 to	46+50.00	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
		46+50.46 to	57+40.00	S T O R M				D R A I N						
		57+40.00 to	104+27.24	Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
Tuthill		ALL		Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
I-10 East		ALL		Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	
I-10 Central		ALL		Grass	0.03	6.0	0	min. required by FCDMC	6:1		B = 30% total topwidth		B = 20'	

1. '*Alternative*' simply means that the described cross section could be used to avoid potential conflicts in lieu of the typical cross section.
2. Proposed channels were sized based on normal depth.

- Define channel cross templates – For every typical channel section defined within a reach, a cross section template was defined. These templates are later attached to the horizontal and vertical alignments and are used to both daylight the channel and generate earthworks quantities.

- Identify alignment conflicts – Once the centerline alignment is drawn and the channel has been daylighted, any concerns and/or conflicts with existing features were identified. In some cases, these concerns required slight adjustments to the channel alignment and the entire process had to be repeated. In other cases, they were minor and therefore considered insignificant. In the case where there were more significant conflicts, the typical channel section was modified to alleviate the concerns. In one case, major conflict required that the channel be placed within an underground storm drain. Finally, all known utility locations along the proposed channel alignment were evaluated. In all but one instance the channel alignment was not altered due to a utility conflict. The exception was the SR 303L channel, which conflicted with the high voltage power line and one of its associated towers. The channel was realigned in this area to go around the tower. Since all utility data were schematic at best, it was assumed that the vertical elevations on each utility in conflict with the channel would require relocation. This assumption is made clear in the quantity/cost (Section 6) portion of this report.

- Determination of right-of-way – Once the channel alignment was daylighted and adjusted to mitigate any apparent conflicts, the right-of-way limits for the channel were identified. In most cases, the entire channel footprint was considered outside of any existing right-of-way and would have to be acquired. However, in the case of the SR 303L off-site drainage channel, a portion of the proposed facility is within the right-of-way limits identified for the proposed freeway. In this case, the portion of the proposed channel footprint outside of the existing freeway right-of-way was identified.

- Required drop structures evaluated – In certain channel reaches where drop structures were required, a simple analysis was performed to determine if a jump would form. This information is specifically important in the grass-lined channels where the turbulence associated with the energy released in the jump could cause significant scouring within the channel.

- Culverts/bridges sized – Once the proposed channel and associated vertical and horizontal profiles are sufficiently well defined, all major crossings were sized to use either culverts or bridges.

    - Bridges – Single span bridges were generally used along channels where the flow was super critical and the use of culverts was causing significant backwater/ponding at the inlet. Since the goal was to minimize or eliminate any ponding at proposed culvert locations, single span bridges were used when this was otherwise impossible.

    - Culverts – Culverts were generally sized to limit or eliminate ponding at the inlets. Both box culverts and reinforced concrete pipe were analyzed and the cheapest alternative selected. Sufficient slope was usually used along the culvert barrel to facilitate in the cleaning of the barrel and limit sedimentation. In some cases, where daylighting downstream would not otherwise be possible, very flat channel grades were extended through the culvert barrels. These cases will require a higher level of maintenance; however, they were few in number.

Tables 2.2A and 2.2B present a summary of the proposed channels and associated characteristics for both the existing condition and future condition hydrology models.

2.2.1.1 Selected Backwater Checks

Part of the Level III analysis involved the use of the U.S. Army Corps of Engineers HEC-RAS hydraulic modeling program to perform detailed backwater checks at specified locations within various reaches of the Selected Alternative. It was agreed that the set-up of detailed HEC-RAS models for the entire project would take an enormous amount of time yielding little real value. Such an effort would involve the modeling the following at a minimum:

- Approximately 50 miles of proposed channels
- Approximately 60 or 70 proposed culvert locations
- Approximately 23 bridges
- Approximately 111 drop structures

Therefore, in an effort to simplify the analysis, FCDMC directed URS to size all of the proposed channel reaches using normal depth and perform backwater computations using HEC-RAS at selected locations agreed upon by FCDMC.

The locations proposed for backwater checks were delineated onto a map and submitted to the FCDMC via transmittal for concurrence on April 28, 2003. Included on the map were concentration points and the associated discharges. URS received concurrence with the locations from FCDMC on May 28, 2003. The following locations were selected for HEC-RAS checks:

- Jackrabbit Channel – From JR1 to White Tanks FRS #3 (Station 166+70 to Station 215+50.17)

- Tuthill Channel – From TC9 to TC5 (Station 31+32.00 to Station 154+25.60) and from TC3 to TC1 (Station 243+14.80 to Station 296+72.00)

- SR 303L Channel – From LP17 to LP15 (Station 0+00.00 to Station 119+88.14); from LP8 to LP7 (Station 440+09.92 to Station 498+50.45); from LP5 to LP4 (Station 614+86.88 to Station 656+82.90); and from LP2 to LP1 (Station 776+42.68 to station 816+32.34)

Table 2.2A
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
Camelback Channel														
	!CM2	372	372	1052.7	1056.5	3.8	4.7	5	(6:1)	*0.0020*	3.6	0.44	132	51
	!CM3	485	485	1047.5	1051.8	4.2	5.4	5	(6:1)	*0.0020*	3.8	0.45	143	57
	!CM4	783	783	1040.7	1044.8	4.1	6.3	26	(4:1)	*0.0020*	4.5	0.46	152	59
Jackrabbit Channel														
	!JR1	953	953	1177.1	1182.6	5.5	6.9	5	(6:1)	*0.0021*	4.6	0.47	167	71
	!JR2	813	813	1165.0	1169.3	4.3	5.3	15	(6:1)	*0.0025*	4.7	0.51	154	67
	!JR3	933	933	1147.4	1150.4	4.0	4.4	15	(6:1)	*0.0046*	6.1	0.61	140	51
	!JR4	1,324	1,324	1109.9	1114.3	4.4	4.4	25	(6:1)	*0.0035*	5.9	0.61	153	78
	!JR5	1,683	1,683	1080.3	1084.6	4.3	4.3	40	(6:1)	*0.0033*	6.0	0.60	171	92
SR303L URS DCR - Channel														
	!LP0	772	772	1275.6	1279.0	3.4	5.5	10	(2:1)	*0.0049*	13.7	1.57	62	24
	!LP	854	854	1247.9	1251.5	3.5	5.4	10	(2:1)	*0.0050*	14.3	1.61	62	24
	!LP1	1,612	1,612	1227.3	1232.5	5.1	5.9	12	(2:1)	*0.0031*	14.1	1.33	66	33
Cactus Road Basin	!LP2	2,898	2,898	1209.8	1215.9	6.0	6.1	20	(2:1)	*0.0026*	15.0	1.26	74	44
offline low flow/bypass channel	2LP2	587	587	1200.0	1202.6	2.5	4.8	20	(2:1)	*0.0026*	9.3	1.14	69	30
	!LP3	2,140	2,140	1180.8	1185.9	5.0	5.1	21	(2:1)	*0.0027*	13.8	1.26	71	41
	!LP4	2,636	2,636	1160.7	1165.9	5.2	5.2	26	(2:1)	*0.0025*	14.1	1.24	77	47
	!LP5	2,624	2,636	1136.3	1141.5	5.2	5.2	26	(2:1)	*0.0025*	14.0	1.23	77	47
offline low flow/bypass channel	2LP5	1,380	1,380	1130.4	1133.8	3.4	3.7	26	(2:1)	*0.0032*	12.5	1.32	71	40
	!LP6	1,539	1,539	1110.0	1115.1	5.1	6.4	16	(2:1)	*0.0020*	11.6	1.07	72	36
	!LP7	1,770	1,770	1087.1	1092.2	5.0	6.2	19	(2:1)	*0.0021*	12.1	1.10	74	39
	!LP8	2,097	2,097	1065.8	1070.7	4.9	6.1	26	(2:1)	*0.0020*	12.1	1.09	80	46
	!LP9	557	557	1047.9	1052.2	4.2	4.3	5	(2:1)	*0.0023*	9.8	1.08	52	22
	!LP10	624	624	1032.4	1036.1	3.7	3.7	5	(2:1)	*0.0052*	13.7	1.58	50	20
	!LP11	988	988	1014.5	1019.2	4.7	5.7	5	(2:1)	*0.0047*	14.8	1.56	58	24
	!LP13	697	701	984.8	988.5	3.6	3.8	8	(2:1)	*0.0041*	12.7	1.45	53	23
	!LP14	695	701	966.2	969.7	3.5	3.7	8	(2:1)	*0.0048*	13.5	1.54	53	22
	!LP15	676	676	934.2	937.7	3.4	4.2	8	(2:1)	*0.0048*	13.3	1.54	55	22
	!LP16	751	751	914.8	918.3	3.5	4.2	8	(2:1)	*0.0056*	14.5	1.67	55	22
	!LP17	447	448	884.3	888.7	4.3	5.5	5	(2:1)	*0.0013*	7.6	0.82	57	23
Upper Northern Channel														
	!NR1	256	256	1219.0	0.0	2.7	3.6	5	(6:1)	*0.0050*	4.6	0.66	115	37
	!NR2	1,309	1,309	1182.2	1186.3	4.0	4.1	30	(6:1)	*0.0039*	6.1	0.65	155	79
	!NR3	2,246	2,246	1143.5	1148.5	5.0	5.0	45	(6:1)	*0.0028*	6.0	0.56	189	105
	!NR4	2,308	2,308	1136.0	1141.0	5.0	5.0	50	(6:1)	*0.0025*	5.8	0.54	195	110
Lower Northern Channel	!NR5	262	262	1122.6	1125.9	3.3	4.3	5	(6:1)	*0.0020*	3.3	0.43	126	45
	!NR6	477	477	1096.7	1100.2	3.4	4.5	5	(6:1)	*0.0053*	5.5	0.71	129	47
Reems Road Channel														
	[2]RM1	709	516	1222.1	1226.6	4.5	5.7	6.5	(3:1)	*0.0040*	5.8	0.63	105	34
	[2]RM2	957	1,382	1208.2	1214.3	6.0	7.7	11.5	(4:1)	*0.0032*	6.5	0.60	147	60
	!RM3	1,366	1,366	1167.8	1172.0	4.1	4.2	30	(6:1)	*0.0037*	6.0	0.63	157	80
	!RM4	1,640	1,640	1142.7	1147.7	5.0	5.0	30	(6:1)	*0.0025*	5.5	0.53	169	90
	!RM5	2,179	2,179	1119.4	1124.6	5.1	5.2	40	(6:1)	*0.0027*	6.0	0.57	185	102
	!RM6	826	826	1100.6	1105.0	4.3	5.3	10	(6:1)	*0.0034*	5.3	0.59	148	63

Table 2.2A (continued)
Proposed Channel Summary
Existing Condition Hydrology

Channel Name	Concentration Point	Qexist	[1]Approximate Qcap (cfs)	DS Invert (ft)	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Froude Number F_N	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
AT&SF Railroad Channel														
	!RR1	425	425	1150.8	1154.5	3.6	3.9	10	(6:1)	*0.0020*	3.7	0.44	126	54
	!RR2	492	492	1146.2	1149.7	3.4	3.5	10	(6:1)	*0.0035*	4.7	0.58	120	52
	!RR3	785	785	1127.9	1131.9	4.0	4.0	10	(6:1)	*0.0046*	5.9	0.68	127	58
	!RR4	936	936	1110.1	1114.4	4.3	4.3	15	(6:1)	*0.0034*	5.4	0.59	139	67
	!RR5	970	970	1103.3	1108.5	5.2	5.2	15	(6:1)	*0.0015*	4.0	0.41	153	77
	!RR6	1,733	1,733	1098.8	1105.5	6.7	6.7	15	(6:1)	*0.0015*	4.7	0.42	176	95
	!RR7	1,770	1,770	1095.1	1101.9	6.8	6.8	15	(6:1)	*0.0015*	4.7	0.42	178	97
	!RR8	1,585	1,585	1081.1	1086.9	5.8	5.8	15	(6:1)	*0.0025*	5.5	0.53	162	85
Lower El Mirage Channel														
	!LE4	1,356	1,356	1107.2	1111.9	4.7	6.8	35	(3:1)	*0.0026*	5.9	0.54	151	63
	!LE5	865	865	1086.6	1090.6	4.0	5.1	15	(6:1)	*0.0038*	5.6	0.63	152	63
Bullard Wash Channel														
	!BD1N	2,103	2,103	1057.0	1047.3	5.2	7.0	45	(6:1)	*0.0020*	5.3	0.49	219	109
	!BD2N	3,244	3,244	1044.1	1049.8	5.7	7.8	65	(6:1)	*0.0020*	5.8	0.49	258	133
	!BD3N	3,410	3,410	1015.6	1020.7	5.0	6.7	65	(10:1)	*0.0027*	5.9	0.56	312	167
	!BD4N	3,248	3,410	1006.0	1010.8	4.7	6.4	102	(9:1)	*0.0018*	5.0	0.47	335	188
	!BD1S	3,556	3,556	985.5	990.4	4.9	6.4	90	(6:1)	*0.0025*	6.1	0.55	269	149
	!BD2S	2,321	2,321	980.9	984.4	3.5	3.8	95	(6:1)	*0.0033*	5.8	0.60	235	137
I-10 West Diversion Channel														
	!10W1	970	970	1045.8	N/A	3.8	4.5	25	(6:1)	*0.0035*	5.4	0.60	155	71
	!10W2	1,010	1,010	1039.7	1043.4	3.7	4.2	25	(6:1)	*0.0042*	5.9	0.66	150	69
	!10W3	1,046	1,046	1032.7	1036.5	3.7	4.1	25	(6:1)	*0.0042*	5.9	0.66	148	71
	!10W4	1,175	1,175	1028.5	1032.4	3.8	4.3	30	(6:1)	*0.0038*	5.8	0.63	158	77
	!10W5	1,588	1,588	1014.6	1018.9	4.3	5.0	35	(6:1)	*0.0036*	6.1	0.62	175	87
	!10W7	1,593	1,593	1014.6	1019.6	5.0	5.7	35	(6:1)	*0.0020*	5.0	0.48	186	95
	!10W8	743	743	1005.8	1010.5	4.6	5.5	10	(6:1)	*0.0020*	4.2	0.46	151	66
Tuthill Channel														
	!TC1	1,417	1,417	998.7	1003.5	4.7	5.8	20	(6:1)	*0.0037*	6.2	0.63	168	78
	!TC2	1,553	1,553	991.8	997.1	5.2	6.1	25	(6:1)	*0.0023*	5.3	0.51	180	89
	!TC3	1,491	1,491	957.0	961.9	4.8	5.1	25	(6:1)	*0.0029*	5.7	0.57	163	84
	!TC4	1,546	1,546	914.7	919.3	4.6	4.6	30	(6:1)	*0.0032*	5.9	0.59	163	85
	!TC5	1,926	1,926	886.8	891.4	4.6	4.6	40	(6:1)	*0.0033*	6.3	0.61	176	95
	!TC6	646	646	882.3	885.9	3.6	3.6	15	(6:1)	*0.0035*	5.0	0.59	128	58
	!TC7	1,323	1,323	863.6	867.8	4.1	4.2	45	(6:1)	*0.0020*	4.6	0.47	176	95
	!TC8	1,506	1,506	859.4	864.6	5.2	5.2	45	(6:1)	*0.0011*	3.8	0.35	192	107
	!TC9	1,503	1,506	854.8	860.1	5.3	5.3	45	(6:1)	*0.0010*	3.7	0.34	193	109
I-10 East Diversion Channel														
	10CE-US	575	575	984.5	988.6	4.1	4.5	12	(6:1)	*0.0019*	3.9	0.44	138	61
	10CE1	556	575	978.5	985.2	4.1	4.5	12	(6:1)	*0.0018*	3.8	0.43	138	62
I-10 Central Channel														
	!10C1	79	79	1005.4	1007.7	2.2	2.3	2	(6:1)	*0.0020*	2.4	0.40	90	29
	!10C2	131	131	1002.6	1005.3	2.7	2.7	2	(6:1)	*0.0020*	2.8	0.41	96	34
	!10C3	170	170	995.9	998.9	3.0	3.0	2	(6:1)	*0.0020*	2.9	0.42	101	38
	!10C4	243	243	982.2	985.5	3.2	3.3	2	(6:1)	*0.0026*	3.6	0.49	105	41

1. By normal depth computation.
2. Channel reach exists.
3. Top width.

Table 2.2B
Proposed Channel Summary
Future Condition Hydrology

Channel Name	Concentration Point	Q_{future}	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Required Freeboard (ft)	Actual Freeboard (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Channel ^{3}Tw (ft)	(WSEL) ^{3}Tw (ft)
Camelback Channel													
	!CM2	338	1056.4	3.6	4.7	1.0	1.1	5	(6:1)	*0.0020*	3.5	109	49
	!CM3	489	1051.8	4.2	5.4	1.1	1.2	5	(6:1)	*0.0020*	3.8	117	57
	!CM4	1,122	1045.7	4.9	6.3	1.3	1.4	26	(4:1)	*0.0020*	5.0	126	66
Jackrabbit Channel													
	!JR1	916	1182.6	5.4	6.9	1.4	1.5	5	(6:1)	*0.0021*	4.5	131	71
	!JR2	757	1169.2	4.1	5.3	1.1	1.2	15	(6:1)	*0.0025*	4.6	125	65
	!JR3	631	1150.8	3.3	4.4	1.0	1.1	15	(6:1)	*0.0046*	5.5	116	56
	!JR4	707	1113.2	3.2	4.4	1.0	1.2	25	(6:1)	*0.0035*	5.0	125	65
	!JR5	977	1083.6	3.2	4.3	1.0	1.1	40	(6:1)	*0.0033*	5.1	140	80
SR 303L Channel													
	!LP0	815	1279.1	3.5	5.5	2.0	2.0	10	(2:1)	*0.0049*	13.9	84	24
	!LP	663	1251.4	3.4	5.4	2.0	2.0	10	(2:1)	*0.0050*	14.1	84	24
	!LP1	958	1231.3	3.9	5.9	2.0	2.0	12	(2:1)	*0.0031*	12.2	88	28
	!LP2	1,372	1213.9	4.0	6.1	2.0	2.1	20	(2:1)	*0.0026*	12.1	96	36
	!LP3	765	1183.7	2.8	5.1	2.0	2.3	21	(2:1)	*0.0027*	10.1	93	33
	!LP4	928	1163.6	2.9	5.2	2.0	2.3	26	(2:1)	*0.0025*	10.2	98	38
	!LP5	926	1139.2	2.9	5.2	2.0	2.3	26	(2:1)	*0.0025*	10.1	98	38
	!LP6	1,177	1114.5	4.4	6.4	2.0	2.0	16	(2:1)	*0.0020*	10.8	94	34
	!LP7	1,247	1091.3	4.2	6.2	2.0	2.0	19	(2:1)	*0.0021*	10.9	96	36
	!LP8	1,533	1069.9	4.1	6.1	2.0	2.0	26	(2:1)	*0.0020*	11.0	102	42
	!LP9	120	1050.0	2.0	4.3	1.0	2.3	5	(2:1)	*0.0023*	6.6	73	13
	!LP10	133	1034.2	1.7	3.7	2.0	2.0	5	(2:1)	*0.0052*	9.1	72	12
	!LP11	610	1018.3	3.7	5.7	2.0	2.0	5	(2:1)	*0.0047*	13.1	80	20
	!LP13	187	986.7	1.8	3.8	2.0	2.0	8	(2:1)	*0.0041*	8.8	76	16
	!LP14	129	968.0	1.7	3.7	2.0	2.0	8	(2:1)	*0.0048*	9.3	75	15
	!LP15	293	936.5	2.2	4.2	2.0	2.0	8	(2:1)	*0.0048*	10.6	77	17
	!LP16	300	917.0	2.2	4.2	2.0	2.0	8	(2:1)	*0.0056*	11.3	77	17
	!LP17	422	888.6	4.2	5.5	1.3	1.3	5	(2:1)	*0.0013*	7.4	82	22
Upper Northern Channel													
	!NR1	233	0.0	2.6	3.6	1.0	1.0	5	(6:1)	*0.0050*	4.5	96	36
	!NR2	698	1185.2	2.9	4.1	1.0	1.2	30	(6:1)	*0.0039*	5.1	126	66
	!NR3	1,197	1147.1	3.6	5.0	1.0	1.4	45	(6:1)	*0.0028*	5.0	148	88
	!NR4	1,169	1139.5	3.5	5.0	1.0	1.5	50	(6:1)	*0.0025*	4.8	152	92
Lower Northern Channel	!NR5	262	1125.9	3.3	4.3	1.0	1.0	5	(6:1)	*0.0020*	3.3	105	45
	!NR6	477	1100.2	3.4	4.5	1.0	1.1	5	(6:1)	*0.0053*	5.5	107	47
Reems Road Channel													
	^{2}RM1	709	1226.6	4.5	5.7	1.2	1.2	7	(3:1)	*0.0040*	5.8	94	34
	^{2}RM2	699	1214.3	6.0	7.7	1.7	1.7	12	(4:1)	*0.0032*	6.5	120	60
	!RM3	627	1170.6	2.8	4.2	1.0	1.4	30	(6:1)	*0.0037*	4.8	124	64
	!RM4	606	1145.8	3.0	5.0	1.0	2.0	30	(6:1)	*0.0025*	4.1	127	67
	!RM5	818	1122.5	3.1	5.2	1.0	2.1	40	(6:1)	*0.0027*	4.6	137	77
	!RM6	749	1104.8	4.2	5.3	1.1	1.1	10	(6:1)	*0.0034*	5.2	120	60
AT&SF Railroad Channel													
	!RR1	256	n/a	2.9	3.9	1.0	1.0	10	(6:1)	*0.0020*	3.2	105	45
	!RR2	227	1148.7	2.4	3.5	1.0	1.1	10	(6:1)	*0.0035*	3.8	100	40
	!RR3	318	1130.6	2.6	4.0	1.0	1.4	10	(6:1)	*0.0046*	4.6	102	42

Table 2.2B (continued)
Proposed Channel Summary
Future Condition Hydrology

Channel Name	Concentration Point	Q_{future}	WSEL (ft)	Flow Depth (ft)	Channel Depth (ft)	Required Freeboard (ft)	Actual Freeboard (ft)	Bottom Width (ft)	Side Slope (H:V)	Design s (ft/ft)	(Q/A) V ft/s	Channel [3]Tw (ft)	(WSEL) [3]Tw (ft)
AT&SF Railroad Channel	!RR4	517	1113.4	3.2	4.3	1.0	1.1	15	(6:1)	*0.0034*	4.6	115	55
	!RR5	466	1107.1	3.7	5.2	1.0	1.5	15	(6:1)	*0.0015*	3.3	121	61
	!RR6	853	1103.8	4.9	6.7	1.3	1.8	15	(6:1)	*0.0015*	3.9	135	75
	!RR7	866	1100.1	4.9	6.8	1.3	1.9	15	(6:1)	*0.0015*	3.9	135	75
	!RR8	911	1085.7	4.5	5.8	1.2	1.3	15	(6:1)	*0.0025*	4.8	130	70
Lower El Mirage Channel													
	!LE4	1,387	1118.8	4.7	6.8	1.3	2.1	35	(3:1)	*0.0026*	5.9	124	64
	!LE5	880	1095.9	4.0	5.1	1.1	1.1	15	(6:1)	*0.0038*	5.6	124	64
Bullard Wash Channel													
	!BD1N	2,296	1045.6	5.5	7.0	1.5	1.5	45	(6:1)	*0.0020*	5.4	171	111
	!BD2N	3,700	1045.6	6.1	7.8	1.7	1.7	65	(6:1)	*0.0020*	6.0	198	138
	!BD3N	3,307	1020.9	5.2	6.7	1.4	1.5	65	(10:1)	*0.0027*	6.0	231	171
	!BD1S	2,798	990.5	5.0	6.4	1.4	1.4	90	(6:1)	*0.0025*	6.2	210	150
	!BD2S	1,557	983.7	2.8	3.8	1.0	1.0	95	(6:1)	*0.0033*	5.1	189	129
I-10 West Diversion Channel													
	!10W1	815	N/A	3.4	4.5	1.0	1.1	25	(6:1)	*0.0035*	5.2	127	67
	!10W2	755	1042.9	3.2	4.2	1.0	1.0	25	(6:1)	*0.0042*	5.4	123	63
	!10W3	715	1035.8	3.1	4.1	1.0	1.0	25	(6:1)	*0.0042*	5.3	122	62
	!10W4	852	1031.8	3.2	4.3	1.0	1.1	30	(6:1)	*0.0038*	5.3	130	70
	!10W5	1,280	1018.5	3.8	5.0	1.1	1.2	35	(6:1)	*0.0036*	5.8	142	82
	!10W6	1,275	1017.5	4.1	5.3	1.1	1.2	35	(6:1)	*0.0027*	5.2	145	85
	!10W7	1,278	1019.1	4.4	5.7	1.2	1.3	35	(6:1)	*0.0020*	4.7	149	89
	SR10W7	625	N/A	N/A	N/A	N/A	N/A	N/A	(6:1)	*0.0000*	N/A	N/A	N/A
	!10W8	627	1010.2	4.3	5.5	1.1	1.2	10	(6:1)	*0.0020*	4.1	123	63
Tuthill Channel													
	!TC1	1,269	1003.2	4.5	5.8	1.3	1.3	20	(6:1)	*0.0037*	6.0	134	74
	!TC2	1,312	996.7	4.8	6.1	1.3	1.3	25	(6:1)	*0.0023*	5.1	144	84
	!TC3	996	961.0	4.0	5.1	1.1	1.1	25	(6:1)	*0.0029*	5.1	133	73
	!TC4	781	918.0	3.2	4.6	1.0	1.4	30	(6:1)	*0.0032*	4.9	130	70
	!TC5	945	890.0	3.2	4.6	1.0	1.4	40	(6:1)	*0.0033*	5.1	138	78
	!TC6	129	884.0	1.6	3.6	1.0	2.0	15	(6:1)	*0.0035*	3.2	95	35
	!TC7	756	866.7	3.0	4.2	1.0	1.2	45	(6:1)	*0.0020*	3.9	142	82
	!TC8	747	863.1	3.6	5.2	1.0	1.6	45	(6:1)	*0.0011*	3.1	149	89
	!TC9	708	858.4	3.6	5.3	1.0	1.7	45	(6:1)	*0.0010*	3.0	148	88
I-10 East													
	10CE1	390	984.5	3.5	4.5	1.0	1.0	12	(6:1)	*0.0018*	3.4	114	54
I-10 Central Channel													
	!10C1	12	1006.5	1.0	2.3	1.0	1.3	2	(6:1)	*0.0020*	1.5	75	15
	!10C2	21	1003.9	1.3	2.7	1.0	1.4	2	(6:1)	*0.0020*	1.7	77	17
	!10C3	24	997.3	1.4	3.0	1.0	1.6	2	(6:1)	*0.0020*	1.8	78	18
	!10C4	44	983.9	1.7	3.3	1.0	1.6	2	(6:1)	*0.0026*	2.3	82	22

1. By normal depth.
2. Channel reach exists.
3. Top width.

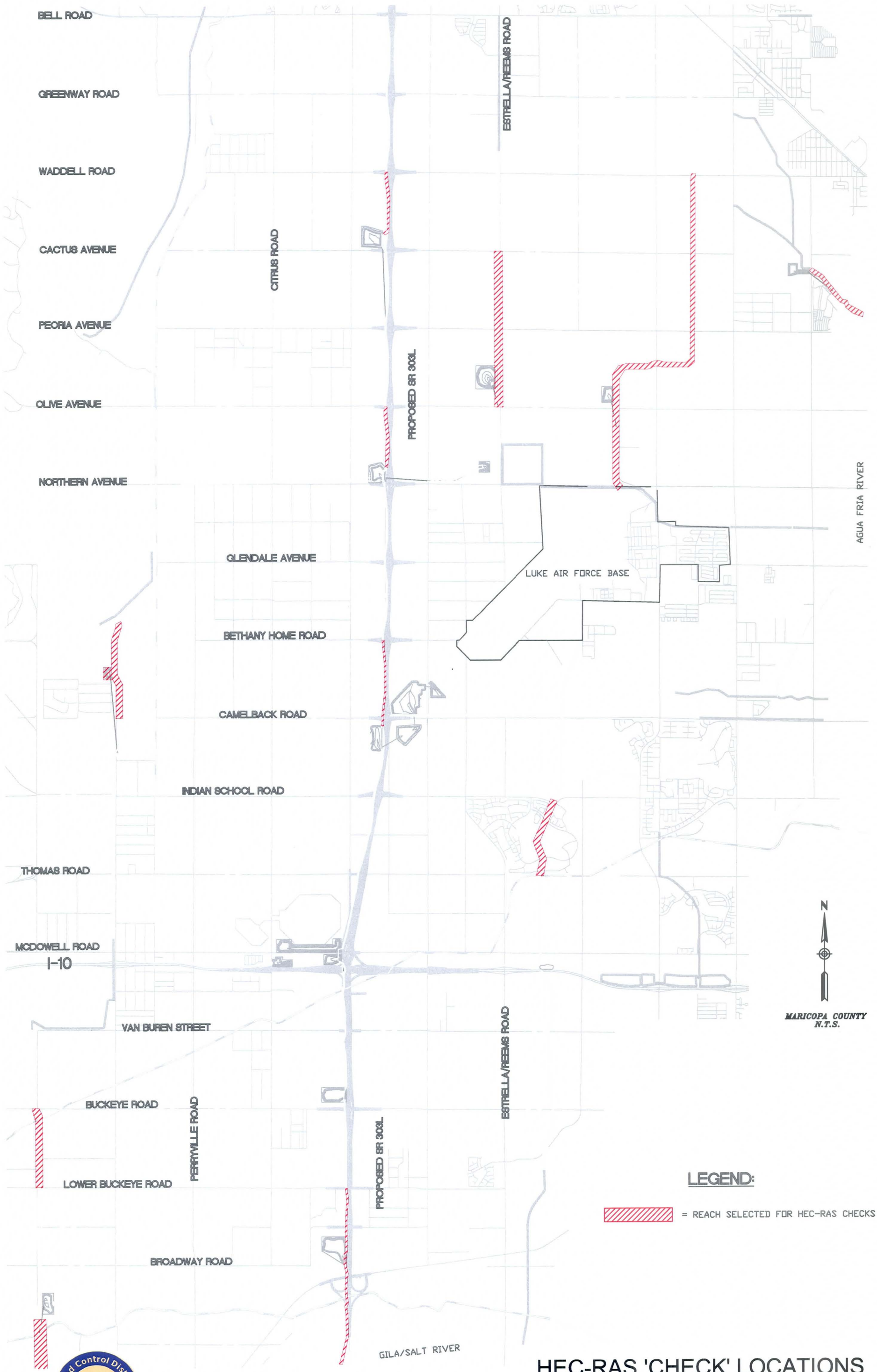
- Bullard Wash Channel – From BD4N to BD3N (Station 66+03.77 to Station 118+36.65)
- Reems Road Channel – From RM5 to RM3 (Station 28+47.25 to Station 135+95.10)
- AT&SF Railroad Channel – From RR8 to RR1 (Station 1+93.84 to Station 287+98.00)
- Lower El Mirage Channel – From LE5 to LE4 (Station 0+00.00 to Station 48+75.30)

See Figure 2.2 for the HEC-RAS 'check' locations. The following criteria and assumptions were used in performing the backwater checks at the above locations:

- Starting water surface elevation – In general normal depth was used to compute the boundary condition used to define the starting water surface elevation (WSEL) for the channel reaches checked using HEC-RAS. In the case of the proposed SR 303L channel, URS investigated the use of the 100-year water surface elevation at Gila/Salt River (ultimate outfall) as the boundary condition. However, this elevation proved unrealistic, as it was 12.5 feet above the downstream invert of the proposed SR 303L channel. Use of this elevation would assume that the 100-year peak discharge associated with the Gila/Salt River would be coincident with the 100-year peak within the proposed SR 303L channel. Given that the time to peak of the local system is not coincident with the peak 100-year flood stage on the Salt/Gila River, the 100-year WSEL was not used as a boundary condition. There was no specific information regarding the WSEL on the Gila/Salt River during the 10-year design storm, so URS used normal depth as a starting WSEL. This is adequate since the probability of a storm event over the entire contributing drainage area for the Gila/Salt River taking place at the same time as the 100-year storm event occurs over the localized White Tank Mountains watershed is considered small.
- Design Discharge – The 100-year peak discharges used for these backwater checks were developed using the hydrologic models described previously and used to size the channel reaches based on normal depth.
- Manning's 'n' value – The following values were used for the roughness coefficient:
  - Grass – n = 0.03
  - Concrete – n = 0.013
  - Culverts – n = 0.015
- Top of road elevation at culvert – One foot above the top of culvert was assumed.
- Flow regime – For grass-lined channels, the subcritical flow regime was assumed. For the concrete-lined channels, a mixed flow regime was used depending on channel slope, discharge and ground slope.

From the results of the backwater analysis, a comparison was made between the WSELs predicted by HEC-RAS and the corresponding normal WSEL predicted by the Manning Equation. All comparisons look at the change in WSEL from the perspective of normal depth being the basis and the "change" +/- in terms of the HEC-RAS WSEL. The following information was observed using basic statistics:

- Jackrabbit Channel – Out of a total of 17 cross sections modeled, the following information was observed regarding the compared WSELs in terms of change from normal depth to HEC-RAS:
  - Average difference = -0.25 feet
  - Maximum difference = 1.54 feet
  - Minimum difference = 0.02 feet
  - Most common difference = -0.03 feet, which occurred in 29% of the cross sections
- Tuthill Channel – Out of a total 89 of cross sections modeled, the following information was observed regarding the compared WSELs in terms of change from normal depth to HEC-RAS:
  - Average difference = –0.21 feet
  - Maximum difference = 1.53 feet
  - Minimum difference = 0.00 feet
  - Most common difference = -0.00 feet, which occurred in 9% of the cross sections
- AT&SF Railroad Channel – Out of a total 66 of cross sections modeled, the following information was observed regarding the compared WSELs in terms of change from normal depth to HEC-RAS:
  - Average difference = -0.30 feet
  - Maximum difference = 1.34 feet
  - Minimum difference = 0.01 feet
  - Most common difference = 0.26 feet, which occurred in 6% of the cross sections
- AT&SF Railroad Channel – Out of a total 50 of cross sections modeled, the following information was observed regarding the compared WSELs in terms of change from normal depth to HEC-RAS:
  - Average difference = -0.61 feet
  - Maximum difference = 1.48 feet
  - Minimum difference = 0.00 feet
  - Most common difference = -0.01 feet, which occurred in 12% of the cross sections



Flood Control District of Maricopa County

URS

HEC-RAS 'CHECK' LOCATIONS FOR THE SELECTED ALTERNATIVE

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Figure 2.2

- Lower El Mirage Channel – Out of a total 13 of cross sections modeled, the following information was observed regarding the compared WSELs in terms of change from normal depth to HEC-RAS:
  - Average difference = -0.10 feet
  - Maximum difference = 0.85 feet
  - Minimum difference = 0.01 feet
  - Most common difference = -0.01 feet, which occurred in 46% of the cross sections
- SR 303L Channel – Out of a total 250 of cross sections modeled, the following information was observed regarding the compared WSELs in terms of change from normal depth to HEC-RAS:
  - Average difference = -0.20 feet
  - Maximum difference = 2.18 feet
  - Minimum difference = 0.00 feet
  - Most common difference = 0.018 feet, which occurred in 5% of the cross sections
- Bullard Wash Channel – Out of a total 3 of cross sections modeled, the following information was observed regarding the compared WSELs in terms of change from normal depth to HEC-RAS:
  - Average difference = 0.40 feet
  - Maximum difference = 0.48 feet
  - Minimum difference = 0.29 feet
  - Most common difference = N/A; since only three cross sections were analyzed, there were three different values and hence no "most common" difference.

Taken over all of the HEC-RAS cross sections analyzed along the channel reaches analyzed with HEC-RAS, the following results were observed using basic statistics:

- All Channel Reaches – Out of a total 302 of cross sections modeled, the following information was observed regarding the compared WSELs in terms of change from normal depth to HEC-RAS:
  - Average difference = 0.105 feet
  - Average maximum difference = 1.6 feet
  - Average minimum difference = 0.045 feet
  - Most common difference (average) = -0.01 feet, which occurred in 6% of the cross sections

In addition to the above information, only 4% of approximately 425-modeled cross sections showed an increase in WSEL in excess of 0.5 feet. Approximately 82% showed a decrease in WSEL while 3% showed little or no change in WSEL.

At locations where the WSEL increased by 0.5 feet or more, inspection of the proposed channel in that area was done to determine the suspected reason. In most cases, increases were due to head loss at proposed culverts due to the expansion and contraction losses as well as the abrupt change in slope from relatively steep through the culvert barrel to relatively flat along the channel bottom.

Detailed results of the analysis were tabulated in *Table 2.3A* and are presented herein. More specific results at particular locations where the backwater exceeded normal depth by 0.5 feet or more are shown on *Table 2.3B*.

Table 2.3A
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Jackrabbit Channel		166+00.00	16600	813	1176.90	5.3	4.3	1181.20	1181.18	-0.02
(JR1 to WT FRS #3)		166+67.80	16667.8	813	1177.09	5.3	4.3	1181.39	1181.35	-0.04
	JR1	166+72.80	16672.8	953	1177.10	6.9	5.5	1182.60	1181.06	-1.54
		167+00.00	16700	953	1177.10	6.9	5.5	1182.60	1181.79	-0.81
		169+63.60	16963.6	953	1177.67	6.9	5.5	1183.17	1182.90	-0.27
		172+27.30	17227.3	953	1178.23	6.9	5.5	1183.73	1183.59	-0.14
		174+91.00	17491	953	1178.80	6.9	5.5	1184.30	1184.20	-0.10
		176+69.80	17669.8	953	1180.00	6.9	5.5	1185.50	1184.58	-0.92
		181+00.90	18100.9	953	1180.91	6.9	5.5	1186.41	1186.30	-0.11
		185+32.10	18532.1	953	1181.81	6.9	5.5	1187.31	1187.26	-0.05
		189+63.20	18963.2	953	1182.72	6.9	5.5	1188.22	1188.18	-0.04
		193+94.40	19394.4	953	1183.62	6.9	5.5	1189.12	1189.09	-0.03
		198+25.50	19825.5	953	1184.53	6.9	5.5	1190.03	1190.00	-0.03
		202+56.70	20256.7	953	1185.43	6.9	5.5	1190.93	1190.90	-0.03
		206+87.80	20687.8	953	1186.34	6.9	5.5	1191.84	1191.81	-0.03
		211+19.00	21119.0	953	1187.24	6.9	5.5	1192.74	1192.71	-0.03
	WT FRS #3	215+50.17	21550.17	953	1188.15	6.9	5.5	1193.65	1193.62	-0.03
Tuthill Channel		30+00.00	3000	1503	857.8	5.3	5.3	863.1	863.05	-0.05
(From TC9 to TC5)		30+78.00	3078	1503	857.8	5.3	5.3	863.1	863.14	0.04
	TC9	31+27.00	3127	1503	857.9	5.3	5.3	863.2	863.38	**0.18**
		31+85.00	3185	1503	858	5.3	5.3	863.3	863.48	**0.18**
		32+34.00	3234	1503	858	5.3	5.3	863.3	863.41	**0.11**
		36+46.16	3646.16	1503	858.47	5.3	5.3	863.77	863.78	0.01
		40+58.33	4058.33	1503	858.93	5.3	5.3	864.23	864.18	-0.05
		44+70.50	4470.5	1503	859.4	5.3	5.3	864.7	864.59	-0.11
	TC8	45+03.00	4503	1506	859.4	5.2	5.2	864.6	864.79	**0.19**
		45+66.00	4566	1506	859.6	5.2	5.2	864.8	864.89	0.09
		45+98.50	4598.5	1506	859.6	5.2	5.2	864.8	864.83	0.03
		50+24.55	5024.55	1506	860.04	5.2	5.2	865.24	865.27	0.03
		54+50.61	5450.61	1506	860.49	5.2	5.2	865.69	865.7	0.01
		58+76.66	5876.66	1506	860.93	5.2	5.2	866.13	866.14	0.01
		63+02.72	6302.72	1506	861.38	5.2	5.2	866.58	866.58	0
		67+28.77	6728.77	1506	861.82	5.2	5.2	867.02	867.02	0
		71+54.83	7154.83	1506	862.27	5.2	5.2	867.47	867.47	0
		75+80.88	7580.88	1506	862.71	5.2	5.2	867.91	867.91	0
		80+06.94	8006.94	1506	863.16	5.2	5.2	868.36	868.35	-0.01
		84+33.00	8433	1506	863.6	5.2	5.2	868.8	868.8	0
	TC7	84+43.50	8443.5	1323	863.6	4.2	4.1	867.7	868.99	**1.29**
		85+67.50	8567.5	1323	864.6	4.2	4.1	868.7	869.53	**0.83**
		85+78.00	8578	1323	864.6	4.2	4.1	868.7	869.48	**0.78**
		88+94.20	8894.2	1323	865.27	4.2	4.1	869.37	869.81	**0.44**
		92+10.40	9210.4	1323	865.93	4.2	4.1	870.03	870.25	**0.22**

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Tuthill Channel (continued)		95+26.60	9526.6	1323	866.6	4.2	4.1	870.7	870.78	0.08
(From TC9 to TC5)		95+28.60	9528.6	1323	868.6	4.2	4.1	872.7	871.24	-1.46
		95+50.00	9550	1323	868.64	4.2	4.1	872.74	871.84	-0.9
		99+31.80	9931.80	1323	869.41	4.2	4.1	873.51	873.39	-0.12
		103+13.60	10313.6	1323	870.18	4.2	4.1	874.28	874.24	-0.04
		106+95.40	10695.4	1323	870.96	4.2	4.1	875.06	875.04	-0.02
		110+77.20	11077.2	1323	871.73	4.2	4.1	875.83	875.83	0
		114+59.00	11459	1323	872.5	4.2	4.1	876.6	876.6	0
		114+61.00	11461	1323	874.5	4.2	4.1	878.6	877.14	-1.46
		115+00.00	11500	1323	874.58	4.2	4.1	878.68	877.91	-0.77
		118+78.20	11878.2	1323	875.34	4.2	4.1	879.44	879.31	-0.13
		122+56.50	12256.5	1323	876.11	4.2	4.1	880.21	880.16	-0.05
		126+34.70	12634.7	1323	876.87	4.2	4.1	880.97	880.96	-0.01
		130+13.00	13013.0	1323	877.64	4.2	4.1	881.74	881.73	-0.01
		133+91.30	13391.3	1323	878.4	4.2	4.1	882.5	882.5	0
		133+93.30	13393.3	1323	880.4	4.2	4.1	884.5	883.04	-1.46
		134+00.00	13400	1323	880.4	4.2	4.1	884.5	883.45	-1.05
		137+28.00	13728	1323	881.05	4.2	4.1	885.15	885.01	-0.14
		140+56.00	14056	1323	881.71	4.2	4.1	885.81	885.76	-0.05
		143+84.00	14384	1323	882.36	4.2	4.1	886.46	886.45	-0.01
	TC6	143+85.00	14385	646	882.36	3.6	3.6	885.96	886.64	0.68
		144+62.00	14462	646	883.36	3.6	3.6	886.96	886.77	-0.19
		144+71.00	14471	646	883.36	3.6	3.6	886.96	886.71	-0.25
		147+89.20	14789.2	646	884.51	3.6	3.6	888.11	888.08	-0.03
		151+07.40	15107.4	646	885.65	3.6	3.6	889.25	889.2	-0.05
	TC5	154+25.60	15425.6	646	886.8	3.6	3.6	890.4	890.34	-0.06
Tuthill Channel		242+00.00	24200	1546	956.6	4.6	4.6	961.2	961.16	-0.04
(From TC3 to TC1)		242+91.80	24291.8	1546	956.93	4.6	4.6	961.53	961.45	-0.08
	TC3	243+09.80	24309.8	1491	957	5.1	4.8	961.8	961.94	**0.14**
		243+67.80	24367.8	1491	957.8	5.1	4.8	962.6	962.27	-0.33
		243+88.30	24388.3	1491	957.9	5.1	4.8	962.7	961.96	-0.74
		248+10.10	24810.1	1491	959.1	5.1	4.8	963.9	964.02	**0.12**
		248+14.10	24814.1	1491	963.1	5.1	4.8	967.9	966.7	-1.2
		248+50.00	24850	1491	963.2	5.1	4.8	968	967.49	-0.51
		251+37.50	25137.5*	1491	964.03	5.1	4.8	968.83	968.81	-0.02
		254+25.00	25425.0*	1491	964.87	5.1	4.8	969.67	969.69	0.02
		257+12.60	25712.6	1491	965.7	5.1	4.8	970.5	970.54	0.04
		257+16.60	25716.6	1491	969.7	5.1	4.8	974.5	973.29	-1.21
		257+30.00	25730	1491	969.74	5.1	4.8	974.54	973.81	-0.73
		261+47.80	26147.8	1491	970.9	5.1	4.8	975.7	975.83	**0.13**
		261+62.80	26162.8	1491	971	5.1	4.8	975.8	976.3	**0.5**
		262+20.80	26220.8	1491	972	5.1	4.8	976.8	976.78	-0.02
		262+35.80	26235.8	1491	972.06	5.1	4.8	976.86	976.58	-0.28
		266+39.00	26639	1491	973.3	5.1	4.8	978.1	978.07	-0.03
		266+43.00	26643	1491	977.3	5.1	4.8	982.1	980.9	-1.2

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Tuthill Channel (continued)		266+60.00	26660	1491	977.35	5.1	4.8	982.15	981.46	-0.69
(From TC3 to TC1)		269+37.70	26937.7*	1491	978.2	5.1	4.8	983	982.94	-0.06
		272+15.50	27215.5*	1491	979.05	5.1	4.8	983.85	983.82	-0.03
		274+93.40	27493.4	1491	979.9	5.1	4.8	984.7	984.68	-0.02
		274+97.40	27497.4	1491	983.9	5.1	4.8	988.7	987.49	-1.21
		275+10.00	27510	1491	983.94	5.1	4.8	988.74	987.99	-0.75
		277+89.20	27789.2*	1491	984.79	5.1	4.8	989.59	989.54	-0.05
		280+68.50	28068.5*	1491	985.65	5.1	4.8	990.45	990.42	-0.03
		283+47.80	28347.8	1491	986.5	5.1	4.8	991.3	991.28	-0.02
		283+51.80	28351.8	1491	990.5	5.1	4.8	995.3	994.09	-1.21
		283+70.00	28370	1491	990.55	5.1	4.8	995.35	994.69	-0.66
		287+64.50	28764.5	1491	991.8	5.1	4.8	996.6	996.59	-0.01
	TC2	287+74.00	28774	1553	991.8	6.1	5.2	997	997.04	0.04
		288+35.00	28835	1553	992.8	6.1	5.2	998	997.9	-0.1
		288+49.50	28849.5	1553	992.8	6.1	5.2	998	997.76	-0.24
		292+40.60	29240.6	1553	993.7	6.1	5.2	998.9	998.85	-0.05
		292+44.60	29244.6	1553	997.7	6.1	5.2	1002.9	1001.37	-1.53
		292+60.00	29260	1553	997.74	6.1	5.2	1002.94	1001.94	-1
	TC1	296+59.20	29659.2	1553	998.7	6.1	5.2	1003.9	1003.81	-0.09
AT&SF Railroad Channel	RR8	00+00.00	0	1585	1081.1	5.8	5.8	1086.9	1086.56	-0.3
(RR8 to RR1)		01+90.00	190	1585	1081.7	5.8	5.8	1087.5	1087.17	-0.3
		06+42.38	642.375*	1585	1082.82	5.8	5.8	1088.6	1088.57	0.0
		10+94.75	1094.75*	1585	1083.93	5.8	5.8	1089.7	1089.94	**0.2**
		15+47.12	1547.12*	1585	1085.05	5.8	5.8	1090.9	1091.1	**0.3**
		19+99.50	1999.5*	1585	1086.17	5.8	5.8	1092.0	1092.22	**0.3**
		24+51.87	2451.87*	1585	1087.28	5.8	5.8	1093.1	1093.34	**0.3**
		29+04.25	2904.25*	1585	1088.4	5.8	5.8	1094.2	1094.46	**0.3**
		33+56.62	3356.62*	1585	1089.52	5.8	5.8	1095.3	1095.58	**0.3**
		38+09.00	3809.*	1585	1090.63	5.8	5.8	1096.4	1096.7	**0.3**
		42+61.37	4261.37*	1585	1091.75	5.8	5.8	1097.6	1097.81	**0.3**
		47+13.75	4713.75*	1585	1092.87	5.8	5.8	1098.7	1098.93	**0.3**
		51+66.12	5166.12*	1585	1093.98	5.8	5.8	1099.8	1100.05	**0.3**
	RR7	56+18.50	5618.5	1770	1095.1	6.8	6.8	1101.9	1101.16	-0.7
		57+08.50	5708.5	1770	1095.4	6.8	6.8	1102.2	1101.37	-0.8
		60+86.18	6086.18*	1770	1095.97	6.8	6.8	1102.8	1102.35	-0.4
		64+63.86	6463.86*	1770	1096.53	6.8	6.8	1103.3	1103.05	-0.3
		68+41.55	6841.55*	1770	1097.1	6.8	6.8	1103.9	1103.69	-0.2
		72+19.23	7219.23*	1770	1097.67	6.8	6.8	1104.5	1104.31	-0.2
		75+96.91	7596.91*	1770	1098.23	6.8	6.8	1105.0	1104.9	-0.1
	RR6	79+74.60	7974.6	1733	1098.8	6.7	6.7	1105.5	1105.49	0.0
		84+05.10	8405.1*	1733	1099.44	6.7	6.7	1106.1	1106.15	0.0
		88+35.60	8835.6*	1733	1100.09	6.7	6.7	1106.8	1106.36	-0.4
		92+66.10	9266.1*	1733	1100.73	6.7	6.7	1107.4	1106.66	-0.8
		96+96.60	9696.6*	1733	1101.37	6.7	6.7	1108.1	1107.03	-1.0

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
AT&SF Railroad Channel (continued)		101+27.10	10127.1*	1733	1102.01	6.7	6.7	1108.7	1107.49	-1.2
(RR8 to RR1)		105+57.60	10557.6*	1733	1102.66	6.7	6.7	1109.4	1108.02	-1.3
	RR5	109+88.10	10988.1	970	1103.3	5.2	5.2	1108.5	1108.58	0.1
		110+78.10	11078.1	970	1103.7	5.2	5.2	1108.9	1108.69	-0.2
		115+08.90	11508.9*	970	1104.34	5.2	5.2	1109.5	1109.44	-0.1
		119+39.80	11939.8*	970	1104.98	5.2	5.2	1110.2	1110.09	-0.1
		123+70.70	12370.7*	970	1105.62	5.2	5.2	1110.8	1110.73	-0.1
		128+01.60	12801.6*	970	1106.26	5.2	5.2	1111.5	1111.36	-0.1
		132+32.50	13232.5*	970	1106.9	5.2	5.2	1112.1	1111.98	-0.1
		136+63.40	13663.4*	970	1107.54	5.2	5.2	1112.7	1112.61	-0.1
		140+94.30	14094.3*	970	1108.18	5.2	5.2	1113.4	1113.24	-0.1
		145+25.20	14525.2*	970	1108.82	5.2	5.2	1114.0	1113.87	-0.2
		149+56.10	14956.1*	970	1109.46	5.2	5.2	1114.7	1114.5	-0.2
	RR4	153+87.00	15387	936	1110.1	4.3	4.3	1114.4	1115.13	**0.7**
		154+77.00	15477	936	1110.6	4.3	4.3	1114.9	1115.24	**0.3**
		159+44.80	15944.8*	936	1112.17	4.3	4.3	1116.5	1116.35	-0.1
		164+12.60	16412.6*	936	1113.75	4.3	4.3	1118.1	1117.67	-0.4
		168+80.50	16880.5*	936	1115.32	4.3	4.3	1119.6	1119.26	-0.4
		173+48.30	17348.3*	936	1116.89	4.3	4.3	1121.2	1120.82	-0.4
		178+16.10	17816.1*	936	1118.46	4.3	4.3	1122.8	1122.39	-0.4
		182+84.00	18284.0*	936	1120.04	4.3	4.3	1124.3	1123.97	-0.4
		187+51.80	18751.8*	936	1121.61	4.3	4.3	1125.9	1125.55	-0.4
		192+19.60	19219.6*	936	1123.18	4.3	4.3	1127.5	1127.12	-0.4
		196+87.50	19687.5*	936	1124.75	4.3	4.3	1129.1	1128.69	-0.4
		201+55.30	20155.3*	936	1126.33	4.3	4.3	1130.6	1130.26	-0.4
		206+23.20	20623.2	936	1127.9	4.3	4.3	1132.2	1131.84	-0.4
	RR3	206+25.70	20625.7	785	1127.9	4.0	4.0	1131.9	1131.71	-0.2
		207+15.70	20715.7	785	1128.4	4.0	4.0	1132.4	1132.21	-0.2
		211+47.20	21147.2*	785	1130.38	4.0	4.0	1134.4	1134.19	-0.2
		215+78.80	21578.8*	785	1132.36	4.0	4.0	1136.4	1135.43	-0.9
		220+10.40	22010.4*	785	1134.33	4.0	4.0	1138.3	1137.6	-0.7
		224+42.00	22442.0*	785	1136.31	4.0	4.0	1140.3	1139.48	-0.8
		228+73.60	22873.6*	785	1138.29	4.0	4.0	1142.3	1141.47	-0.8
		233+05.20	23305.2*	785	1140.27	4.0	4.0	1144.3	1143.43	-0.8
		237+36.80	23736.8*	785	1142.24	4.0	4.0	1146.2	1145.39	-0.8
		241+68.40	24168.4*	785	1144.22	4.0	4.0	1148.2	1147.36	-0.9
	RR2	246+00.00	246+00.00	492	1146.2	3.5	3.4	1149.6	1149.32	-0.3
		249+30.00	24930.0*	492	1147.35	3.5	3.4	1150.8	1150.69	-0.1
		252+60.10	25260.1*	492	1148.5	3.5	3.4	1151.9	1151.81	-0.1
		255+90.10	25590.1*	492	1149.65	3.5	3.4	1153.1	1152.96	-0.1
	RR1	259+20.20	259+20.20	492	1150.8	3.5	3.4	1154.2	1154.11	-0.1

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Reems Channel		29+00.00	2900	831	1119.24	5.3	5.3	1124.54	1123.58	-0.96
(RM3 to RM5)		29+32.80	2932.8	831	1119.35	5.3	5.3	1124.65	1123.69	-0.96
	RM5	29+47.80	2947.8	2179	1119.4	5.2	5.2	1124.6	1123.18	-1.42
		30+39.80	3039.8	2179	1120.3	5.2	5.2	1125.5	1124.02	-1.48
		30+50.00	3050	2179	1120.33	5.2	5.2	1125.53	1124.52	-1.01
		36+93.10	3693.1	2179	1122.1	5.2	5.2	1127.3	1127.37	0.07
		36+95.10	3695.1	2179	1124.1	5.2	5.2	1129.3	1127.82	-1.48
		37+10.00	3710	2179	1124.14	5.2	5.2	1129.34	1128.38	-0.96
		41+41.23	4141.23*	2179	1125.33	5.2	5.2	1130.53	1130.46	-0.07
		45+72.46	4572.46*	2179	1126.51	5.2	5.2	1131.71	1131.63	-0.08
		50+03.70	5003.7	2179	1127.7	5.2	5.2	1132.9	1132.81	-0.09
		50+05.70	5005.7	2179	1129.7	5.2	5.2	1134.9	1133.42	-1.48
		50+20.00	5020	2179	1129.74	5.2	5.2	1134.94	1133.99	-0.95
		54+51.43	5451.43*	2179	1130.93	5.2	5.2	1136.13	1136.06	-0.07
		58+82.86	5882.86*	2179	1132.11	5.2	5.2	1137.31	1137.23	-0.08
		63+14.30	6314.3	2179	1133.3	5.2	5.2	1138.5	1138.42	-0.08
		63+16.30	6316.3	2179	1135.3	5.2	5.2	1140.5	1139.02	-1.48
		63+30.00	6330	2179	1135.34	5.2	5.2	1140.54	1139.57	-0.97
		67+61.63	6761.63*	2179	1136.53	5.2	5.2	1141.73	1141.66	-0.07
		71+93.26	7193.26*	2179	1137.71	5.2	5.2	1142.91	1142.84	-0.07
		76+24.90	7624.9	2179	1138.9	5.2	5.2	1144.1	1144.02	-0.08
		76+26.90	7626.9	2179	1140.9	5.2	5.2	1146.1	1144.62	-1.48
		76+40.00	7640	2179	1140.94	5.2	5.2	1146.14	1145.16	-0.98
		82+77.20	8277.2	2179	1142.7	5.2	5.2	1147.9	1147.95	0.05
	RM4	82+82.20	8282.2	1640	1142.7	5.0	5.0	1147.7	1148.14	**0.44**
		83+74.20	8374.2	1640	1143.2	5.0	5.0	1148.2	1148.26	0.06
		87+97.20	8797.2	1640	1144.2	5.0	5.0	1149.2	1149.25	0.05
		87+99.20	8799.2	1640	1146.2	5.0	5.0	1151.2	1149.75	-1.45
		88+10.00	8810	1640	1146.23	5.0	5.0	1151.23	1150.25	-0.98
		92+28.60	9228.6*	1640	1147.27	5.0	5.0	1152.27	1152.26	-0.01
		96+47.20	9647.2	1640	1148.3	5.0	5.0	1153.3	1153.3	0
		96+49.20	9649.2	1640	1150.3	5.0	5.0	1155.3	1153.85	-1.45
		96+60.00	9660	1640	1150.33	5.0	5.0	1155.33	1154.35	-0.98
		100+78.60	10078.6*	1640	1151.36	5.0	5.0	1156.36	1156.35	-0.01
		104+97.30	10497.3	1640	1152.4	5.0	5.0	1157.4	1157.39	-0.01
		104+99.30	10499.3	1640	1154.4	5.0	5.0	1159.4	1157.95	-1.45
		105+10.00	10510	1640	1154.43	5.0	5.0	1159.43	1158.44	-0.99
		109+28.60	10928.6*	1640	1155.47	5.0	5.0	1160.47	1160.46	-0.01
		113+47.30	11347.3	1640	1156.5	5.0	5.0	1161.5	1161.5	0
		113+49.30	11349.3	1640	1158.5	5.0	5.0	1163.5	1162.05	-1.45
		113+60.00	11360	1640	1158.53	5.0	5.0	1163.53	1162.55	-0.98
		117+78.60	11778.6*	1640	1159.56	5.0	5.0	1164.56	1164.55	-0.01
		121+97.30	12197.3	1640	1160.6	5.0	5.0	1165.6	1165.6	0
		121+99.30	12199.3	1640	1162.6	5.0	5.0	1167.6	1166.15	-1.45
		122+10.00	12210	1640	1162.63	5.0	5.0	1167.63	1166.64	-0.99

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Reems Channel (continued)		126+28.60	12628.6*	1640	1163.67	5.0	5.0	1168.67	1168.66	-0.01
(RM3 to RM5)		130+47.30	13047.3	1640	1164.7	5.0	5.0	1169.7	1169.7	0
		130+49.30	13049.3	1640	1166.7	5.0	5.0	1171.7	1170.25	-1.45
		130+60.00	13060	1640	1166.73	5.0	5.0	1171.73	1170.75	-0.98
	RM3	134+74.30	13474.3	1640	1167.8	5.0	5.0	1172.8	1172.75	-0.05
Lower El Mirage Channel	LE5	00+00.00	0	865	1086.6	5.1	4.0	1090.6	1090.57	0.0
(LE5 to LE4)		04+41.48	441.483*	865	1088.3	5.1	4.0	1092.3	1092.29	0.0
		08+82.97	882.966*	865	1090	5.1	4.0	1094.0	1093.99	0.0
		13+24.45	1324.45*	865	1091.7	5.1	4.0	1095.7	1095.69	0.0
		17+65.93	1765.93*	865	1093.4	5.1	4.0	1097.4	1097.39	0.0
		22+07.41	2207.41*	865	1095.1	5.1	4.0	1099.1	1099.09	0.0
		26+48.90	2648.9	865	1096.8	5.1	4.0	1100.8	1100.79	0.0
		26+98.90	2698.9	865	1099.3	5.1	4.0	1103.3	1102.45	-0.8
		27+10.00	2710	865	1099.34	5.1	4.0	1103.3	1102.89	-0.4
		32+51.32	3251.32*	865	1101.3	5.1	4.0	1105.3	1105.51	**0.2**
		37+92.65	3792.65*	865	1103.27	5.1	4.0	1107.3	1107.28	0.0
		43+33.97	4333.97*	865	1105.23	5.1	4.0	1109.2	1109.28	0.0
	LE4	48+75.30	4875.3	865	1107.2	5.1	4.0	1111.2	1111.24	0.0
Loop 303 Channel	LP1	840+92.73	84,092.73	2898	1227.29	6.1	6.0	1233.3	1232.5	-0.8
(LP2 to LP1)		840+00.80	84,000.80	2898	1227.05	6.1	6.0	1233.1	1232.46	-0.6
		839+08.90	83,908.90	2898	1226.81	6.1	6.0	1232.8	1232.39	-0.5
		838+17.00	83,817.00	2898	1226.58	6.1	6.0	1232.6	1232.35	-0.3
		837+25.20	83,725.20	2898	1226.34	6.1	6.0	1232.4	1232.23	-0.1
		836+33.30	83,633.30	2898	1226.1	6.1	6.0	1232.1	1232.06	-0.1
		835+41.40	83,541.40	2898	1225.86	6.1	6.0	1231.9	1231.88	0.0
		834+49.50	83,449.50	2898	1225.62	6.1	6.0	1231.7	1231.64	0.0
		833+57.60	83,357.60	2898	1225.38	6.1	6.0	1231.4	1231.41	0.0
		832+65.80	83,265.80	2898	1225.15	6.1	6.0	1231.2	1231.23	0.0
		831+73.90	83,173.90	2898	1224.91	6.1	6.0	1230.9	1230.98	0.0
		830+82.05	83,082.05	2898	1224.67	6.1	6.0	1230.7	1230.74	0.0
		830+78.55	83,078.55	2898	1221.17	6.1	6.0	1227.2	1225.84	-1.4
		829+82.40	82,982.40	2898	1220.92	6.1	6.0	1227.0	1225.8	-1.2
		828+86.30	82,886.30	2898	1220.67	6.1	6.0	1226.7	1225.75	-1.0
		827+90.20	82,790.20	2898	1220.42	6.1	6.0	1226.5	1225.69	-0.8
		826+94.10	82,694.10	2898	1220.17	6.1	6.0	1226.2	1225.61	-0.6
		825+98.10	82,598.10	2898	1219.92	6.1	6.0	1226.0	1225.51	-0.4
		825+02.00	82,502.00	2898	1219.67	6.1	6.0	1225.7	1225.38	-0.3
		824+05.90	82,405.90	2898	1219.42	6.1	6.0	1225.5	1225.23	-0.2
		823+09.80	82,309.80	2898	1219.17	6.1	6.0	1225.2	1225.05	-0.2
		822+13.70	82,213.70	2898	1218.92	6.1	6.0	1225.0	1224.83	-0.1
		821+17.60	82,117.60	2898	1218.67	6.1	6.0	1224.7	1224.6	-0.1
		820+21.50	82,021.50	2898	1218.43	6.1	6.0	1224.5	1224.37	-0.1
		819+25.40	81,925.40	2898	1218.18	6.1	6.0	1224.2	1224.09	-0.1
		818+29.30	81,829.30	2898	1217.93	6.1	6.0	1224.0	1223.83	-0.1
		817+33.30	81,733.30	2898	1217.68	6.1	6.0	1223.7	1223.56	-0.2

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Loop 303 Channel (continued)		816+37.20	81,637.20	2898	1217.43	6.1	6.0	1223.5	1223.29	-0.2
(LP2 to LP1)		815+41.10	81,541.10	2898	1217.18	6.1	6.0	1223.2	1223.01	-0.2
		814+45.00	81,445.00	2898	1216.93	6.1	6.0	1223.0	1222.74	-0.2
		813+48.90	81,348.90	2898	1216.68	6.1	6.0	1222.7	1222.46	-0.3
		812+52.80	81,252.80	2898	1216.43	6.1	6.0	1222.5	1222.18	-0.3
		811+56.70	81,156.70	2898	1216.18	6.1	6.0	1222.2	1221.9	-0.3
		810+60.68	81,060.68	2898	1215.93	6.1	6.0	1222.0	1221.62	-0.3
		810+57.68	81,057.68	2898	1212.43	6.1	6.0	1218.5	1218.28	-0.2
		809+66.00	80,966.00	2898	1212.19	6.1	6.0	1218.2	1218.05	-0.2
		808+74.40	80,874.40	2898	1211.95	6.1	6.0	1218.0	1217.8	-0.2
		807+82.80	80,782.80	2898	1211.72	6.1	6.0	1217.8	1217.55	-0.2
		806+91.20	80,691.20	2898	1211.48	6.1	6.0	1217.5	1217.26	-0.3
		805+99.60	80,599.60	2898	1211.24	6.1	6.0	1217.3	1216.97	-0.3
		805+08.00	80,508.00	2898	1211	6.1	6.0	1217.0	1216.67	-0.4
		804+16.40	80,416.40	2898	1210.76	6.1	6.0	1216.8	1216.37	-0.4
		803+24.80	80,324.80	2898	1210.52	6.1	6.0	1216.6	1216.06	-0.5
		802+33.20	80,233.20	2898	1210.29	6.1	6.0	1216.3	1215.76	-0.6
		801+41.60	80,141.60	2898	1210.05	6.1	6.0	1216.1	1215.44	-0.6
		800+40.00	80,040.00	2898	1209.81	6.1	6.0	1215.8	1215.13	-0.7
		799+73.60	79,973.60	2898	1208.37	6.1	6.0	1214.4	1213.22	-1.2
		798+97.30	79,897.30	2898	1206.92	6.1	6.0	1213.0	1211.48	-1.5
		798+21.00	79,821.00	2898	1205.48	6.1	6.0	1211.5	1209.84	-1.7
		797+31.80	79,731.80	2898	1205.25	6.1	6.0	1211.3	1209.95	-1.3
		796+42.60	79,642.60	2898	1205.02	6.1	6.0	1211.1	1210.08	-1.0
		795+53.40	79,553.40	2898	1204.78	6.1	6.0	1210.8	1210.2	-0.6
		794+64.20	79,464.20	2898	1204.55	6.1	6.0	1210.6	1210.39	-0.2
		793+75.00	79,375.00	2898	1204.32	6.1	6.0	1210.4	1210.73	**0.4**
		793+71.25	79,371.25	2898	1200.57	6.1	6.0	1206.6	1204.62	-2.0
		792+75.80	79,275.80	2898	1200.33	6.1	6.0	1206.4	1204.95	-1.4
		791+80.40	79,180.40	2898	1200.08	6.1	6.0	1206.1	1205.32	-0.8
		790+84.90	79,084.90	2898	1199.84	6.1	6.0	1205.9	1205.8	-0.1
		789+89.50	78,989.50	2898	1199.59	6.1	6.0	1205.6	1206.82	**1.2**
	LP2	788+94.12	78,894.12	587	1199.35	6.1	6.0	1205.4	1201.11	-4.3
Loop 303 Channel	LP4	680+77.44	68,077.44	2624	1160.74	5.2	5.2	1165.9	1165.9	0.0
(LP5 to LP4)		679+78.00	67,978.00	2624	1160.48	5.2	5.2	1165.7	1166.28	0.6
		678+78.70	67,878.70	2624	1160.23	5.2	5.2	1165.4	1165.66	0.2
		677+79.30	67,779.30	2624	1159.97	5.2	5.2	1165.2	1165.25	0.1
		676+80.00	67,680.00	2624	1159.72	5.2	5.2	1164.9	1164.93	0.0
		676+74.90	67,674.90	2624	1159.71	5.2	5.2	1164.9	1164.92	0.0
		676+69.80	67,669.80	2624	1159.7	5.2	5.2	1164.9	1164.91	0.0
		676+64.70	67,664.70	2624	1159.68	5.2	5.2	1164.9	1164.9	0.0
		676+59.70	67,659.70	2624	1159.67	5.2	5.2	1164.9	1164.89	0.0
		676+56.90	67,656.90	2624	1156.87	5.2	5.2	1162.1	1160.61	-1.4
		676+40.00	67,640.00	2624	1156.83	5.2	5.2	1162.0	1160.63	-1.4

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Loop 303 Channel (continued)		675+40.00	67,540.00	2624	1156.58	5.2	5.2	1161.8	1160.63	-1.1
(LP5 to LP4)		674+40.00	67,440.00	2624	1156.33	5.2	5.2	1161.5	1160.63	-0.9
		673+40.00	67,340.00	2624	1156.08	5.2	5.2	1161.3	1160.62	-0.6
		672+40.00	67,240.00	2624	1155.83	5.2	5.2	1161.0	1160.6	-0.4
		671+40.00	67,140.00	2624	1155.58	5.2	5.2	1160.8	1160.58	-0.2
		670+40.00	67,040.00	2624	1155.33	5.2	5.2	1160.5	1160.56	0.0
		669+40.00	66,940.00	2624	1155.08	5.2	5.2	1160.3	1160.75	0.5
		668+40.00	66,840.00	2624	1154.83	5.2	5.2	1160.0	1160.28	0.3
		668+24.41	66,824.41	2624	1154.79	5.2	5.2	1160.0	1160.22	0.2
		668+21.40	66,821.40	2624	1151.99	5.2	5.2	1157.2	1155.75	-1.4
		668+00.00	66,800.00	2624	1151.94	5.2	5.2	1157.1	1155.79	-1.3
		667+09.80	66,709.80	2624	1151.71	5.2	5.2	1156.9	1155.78	-1.1
		666+19.70	66,619.70	2624	1151.49	5.2	5.2	1156.7	1155.78	-0.9
		665+29.60	66,529.60	2624	1151.26	5.2	5.2	1156.4	1155.76	-0.7
		664+39.50	66,439.50	2624	1151.04	5.2	5.2	1156.2	1155.75	-0.5
		663+49.40	66,349.40	2624	1150.81	5.2	5.2	1156.0	1155.74	-0.3
		662+59.20	66,259.20	2624	1150.59	5.2	5.2	1155.8	1155.72	-0.1
		661+69.10	66,169.10	2624	1150.36	5.2	5.2	1155.5	1155.99	0.4
		660+79.00	66,079.00	2624	1150.14	5.2	5.2	1155.3	1155.59	0.3
		659+88.92	65,988.92	2624	1149.91	5.2	5.2	1155.1	1155.26	0.2
		659+85.92	65,985.92	2624	1147.12	5.2	5.2	1152.3	1150.9	-1.4
		659+60.00	65,960.00	2624	1147.05	5.2	5.2	1152.2	1150.87	-1.4
		658+62.50	65,862.50	2624	1146.81	5.2	5.2	1152.0	1150.88	-1.1
		657+65.00	65,765.00	2624	1146.57	5.2	5.2	1151.8	1150.88	-0.9
		656+67.50	65,667.50	2624	1146.32	5.2	5.2	1151.5	1150.86	-0.6
		655+70.00	65,570.00	2624	1146.08	5.2	5.2	1151.3	1150.84	-0.4
		654+72.50	65,472.50	2624	1145.84	5.2	5.2	1151.0	1150.83	-0.2
		653+75.00	65,375.00	2624	1145.59	5.2	5.2	1150.8	1150.81	0.0
		652+77.50	65,277.50	2624	1145.35	5.2	5.2	1150.5	1150.99	0.5
		651+80.00	65,180.00	2624	1145.11	5.2	5.2	1150.3	1150.55	0.3
		651+53.23	65,153.23	2624	1145.14	5.2	5.2	1150.3	1148.92	-1.4
		651+50.43	65,150.43	2624	1142.24	5.2	5.2	1147.4	1146	-1.4
		651+40.00	65,140.00	2624	1142.21	5.2	5.2	1147.4	1146.18	-1.2
		650+40.00	65,040.00	2624	1141.96	5.2	5.2	1147.1	1146.17	-1.0
		649+40.00	64,940.00	2624	1141.71	5.2	5.2	1146.9	1146.14	-0.8
		648+40.00	64,840.00	2624	1141.46	5.2	5.2	1146.6	1146.09	-0.6
		647+40.00	64,740.00	2624	1141.21	5.2	5.2	1146.4	1146.02	-0.4
		646+40.00	64,640.00	2624	1140.97	5.2	5.2	1146.2	1145.94	-0.2
		645+40.00	64,540.00	2624	1140.72	5.2	5.2	1145.9	1146.55	0.6
		644+40.00	64,440.00	2624	1140.47	5.2	5.2	1145.7	1145.88	0.2
		643+40.00	64,340.00	2624	1140.22	5.2	5.2	1145.4	1145.46	0.1
		643+17.74	64,317.74	2624	1140.16	5.2	5.2	1145.3	1143.8	-1.5
		643+14.94	64,314.94	2624	1137.4	5.2	5.2	1142.6	1141.15	-1.4
		642+80.00	64,280.00	2624	1137.27	5.2	5.2	1142.5	1141.1	-1.4
		641+85.00	64,185.00	2624	1137.04	5.2	5.2	1142.2	1141.12	-1.1

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Loop 303 Channel (continued)		640+90.00	64,090.00	2624	1136.8	5.2	5.2	1142.0	1141.13	-0.9
(LP5 to LP4)		639+95.00	63,995.00	2624	1136.56	5.2	5.2	1141.7	1141.13	-0.6
		639+00.00	63,900.00	2624	1136.33	5.2	5.2	1141.5	1141.14	-0.4
		638+06.60	63,806.60	2624	1136.03	5.2	5.2	1141.2	1140.82	-0.4
		637+13.30	63,713.30	2624	1135.73	5.2	5.2	1140.9	1140.48	-0.4
		636+20.00	63,620.00	2624	1135.43	5.2	5.2	1140.6	1140.09	-0.5
		636+15.00	63,615.00	2624	1135.42	5.2	5.2	1140.6	1140.08	-0.5
		636+10.00	63,610.00	2624	1135.4	5.2	5.2	1140.6	1140.07	-0.5
		636+05.00	63,605.00	2624	1135.39	5.2	5.2	1140.6	1140.06	-0.5
		636+00.00	63,600.00	2624	1135.37	5.2	5.2	1140.6	1140.05	-0.5
		635+96.00	63,596.00	2624	1131.37	5.2	5.2	1136.6	1134.77	-1.8
		635+80.00	63,580.00	2624	1131.32	5.2	5.2	1136.5	1134.76	-1.7
		633+00.00	63,300.00	938	1130.43	5.2	2.7	1133.1	1131.93	-1.2
	LP5	629+60.00	62,960.00	1380	1129.75	5.2	3.4	1133.2	1133.01	-0.1
Loop 303 Channel	LP7	521+80.00	52,180.00	2097	1087.05	6.1	4.9	1091.9	1092.16	0.3
(LP7 to LP8)		520+12.00	52,012.00	2097	1086.71	6.1	4.9	1091.6	1091.38	-0.2
		518+44.00	51,844.00	2097	1086.38	6.1	4.9	1091.2	1090.91	-0.3
		516+76.00	51,676.00	2097	1086.04	6.1	4.9	1090.9	1090.44	-0.5
		515+08.00	51,508.00	2097	1085.71	6.1	4.9	1090.6	1089.97	-0.6
		513+40.00	51,340.00	2097	1085.37	6.1	4.9	1090.2	1089.49	-0.7
		513+34.70	51,334.70	2097	1085.36	6.1	4.9	1090.2	1089.5	-0.7
		513+29.40	51,329.40	2097	1085.35	6.1	4.9	1090.2	1089.53	-0.7
		513+24.10	51,324.10	2097	1085.34	6.1	4.9	1090.2	1089.79	-0.4
		513+18.89	51,318.89	2097	1085.33	6.1	4.9	1090.2	1089.78	-0.4
		513+15.89	51,315.89	2097	1082.33	6.1	4.9	1087.2	1085.63	-1.6
		513+10.50	51,310.50	2097	1082.32	6.1	4.9	1087.2	1085.64	-1.5
		513+05.30	51,305.30	2097	1082.31	6.1	4.9	1087.2	1085.65	-1.5
		513+00.00	51,300.00	2097	1082.3	6.1	4.9	1087.2	1085.65	-1.5
		511+13.30	51,113.30	2097	1081.93	6.1	4.9	1086.8	1085.9	-0.9
		509+26.60	50,926.60	2097	1081.55	6.1	4.9	1086.4	1086.58	0.2
		507+40.00	50,740.00	2097	1081.18	6.1	4.9	1086.0	1086.15	0.1
		505+53.30	50,553.30	2097	1080.81	6.1	4.9	1085.7	1085.79	0.1
		503+66.60	50,366.60	2097	1080.43	6.1	4.9	1085.3	1085.36	0.1
		501+80.00	50,180.00	2097	1080.06	6.1	4.9	1084.9	1084.98	0.1
		499+93.30	49,993.30	2097	1079.69	6.1	4.9	1084.5	1084.61	0.1
		498+06.60	49,806.60	2097	1079.31	6.1	4.9	1084.2	1084.23	0.1
		496+20.00	49,620.00	2097	1078.94	6.1	4.9	1083.8	1083.85	0.1
		496+14.00	49,614.00	2097	1078.93	6.1	4.9	1083.8	1083.84	0.1
		496+08.10	49,608.10	2097	1078.92	6.1	4.9	1083.8	1083.83	0.1
		496+02.10	49,602.10	2097	1078.9	6.1	4.9	1083.8	1083.84	0.1
		495+96.20	49,596.20	2097	1078.89	6.1	4.9	1083.7	1083.83	0.1
		495+90.32	49,590.32	2097	1078.88	6.1	4.9	1083.7	1083.82	0.1
		495+87.32	49,587.32	2097	1075.88	6.1	4.9	1080.7	1079.05	-1.7
		493+97.60	49,397.60	2097	1075.5	6.1	4.9	1080.4	1079.22	-1.1
		492+07.90	49,207.90	2097	1075.12	6.1	4.9	1080.0	1079.47	-0.5

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Loop 303 Channel (continued)		490+18.20	49,018.20	2097	1074.74	6.1	4.9	1079.6	1079.58	0.0
(LP7 to LP8)		488+28.50	48,828.50	2097	1074.36	6.1	4.9	1079.2	1079.2	0.0
		486+38.80	48,638.80	2097	1073.98	6.1	4.9	1078.8	1078.82	0.0
		484+49.10	48,449.10	2097	1073.6	6.1	4.9	1078.5	1078.44	0.0
		482+59.40	48,259.40	2097	1073.22	6.1	4.9	1078.1	1078.06	0.0
		480+69.70	48,069.70	2097	1072.84	6.1	4.9	1077.7	1077.67	0.0
		478+80.00	47,880.00	2097	1072.46	6.1	4.9	1077.3	1077.29	0.0
		478+75.40	47,875.40	2097	1072.45	6.1	4.9	1077.3	1077.2	-0.1
		478+70.80	47,870.80	2097	1072.44	6.1	4.9	1077.3	1077.13	-0.2
		478+66.30	47,866.30	2097	1072.43	6.1	4.9	1077.3	1077.06	-0.2
		478+61.74	47,861.74	2097	1072.42	6.1	4.9	1077.3	1076.99	-0.3
		478+58.74	47,858.74	2097	1069.42	6.1	4.9	1074.3	1072.41	-1.9
		478+54.00	47,854.00	2097	1069.41	6.1	4.9	1074.3	1072.47	-1.8
		478+49.30	47,849.30	2097	1069.4	6.1	4.9	1074.3	1072.52	-1.7
		478+44.60	47,844.60	2097	1069.39	6.1	4.9	1074.2	1072.56	-1.7
		478+40.00	47,840.00	2097	1069.38	6.1	4.9	1074.2	1072.61	-1.6
		476+72.00	47,672.00	2097	1069.04	6.1	4.9	1073.9	1072.83	-1.1
		475+04.00	47,504.00	2097	1068.71	6.1	4.9	1073.6	1073.22	-0.3
		473+36.00	47,336.00	2097	1068.37	6.1	4.9	1073.2	1073.58	0.4
		471+68.00	47,168.00	2097	1068.04	6.1	4.9	1072.9	1073.27	0.4
	LP8	470+00.00	47,000.00	2097	1067.7	6.1	4.9	1072.6	1072.97	0.4
Loop 303 Channel	LP10	361+00.00	36,100.00	988	1032.36	5.7	4.7	1037.0	1036.1	-0.9
(LP14 to LP13)		356+75.00	35,675.00	988	1030.34	5.7	4.7	1035.0	1034.77	-0.2
		352+50.00	35,250.00	988	1028.33	5.7	4.7	1033.0	1032.89	-0.1
		348+25.00	34,825.00	988	1026.32	5.7	4.7	1031.0	1030.96	0.0
		344+00.00	34,400.00	988	1024.3	5.7	4.7	1029.0	1029.02	0.1
		340+00.00	34,000.00	988	1022.4	5.7	4.7	1027.1	1027.06	**0.0**
		336+00.00	33,600.00	988	1020.5	5.7	4.7	1025.2	1025.15	**0.0**
		332+00.00	33,200.00	988	1018.61	5.7	4.7	1023.3	1023.26	**0.0**
		328+00.00	32,800.00	988	1016.71	5.7	4.7	1021.4	1021.36	0.0
	LP11	324+00.00	32,400.00	988	1014.81	5.7	4.7	1019.5	1019.45	0.0
Loop 303 Channel	LP13	225+80.00	22,580.00	695	984.75	3.7	3.5	988.2	988.5	0.3
(LP14 to LP13)		222+02.00	22,202.00	695	982.93	3.7	3.5	986.4	986.46	0.0
		218+24.00	21,824.00	695	981.11	3.7	3.5	984.6	984.61	0.0
		214+46.00	21,446.00	695	979.3	3.7	3.5	982.8	982.8	0.0
		210+68.00	21,068.00	695	977.48	3.7	3.5	981.0	980.98	0.0
		206+90.00	20,690.00	695	975.66	3.7	3.5	979.1	979.16	**0.0**
		203+12.00	20,312.00	695	973.84	3.7	3.5	977.3	977.35	**0.0**
		199+34.00	19,934.00	695	972.02	3.7	3.5	975.5	975.53	**0.0**
		195+56.00	19,556.00	695	970.21	3.7	3.5	973.7	973.73	0.0
		191+78.00	19,178.00	695	968.39	3.7	3.5	971.9	971.91	0.0
		188+00.00	18,800.00	695	966.57	3.7	3.5	970.1	970.09	0.0

Table 2.3A (continued)
HEC-RAS Backwater Checks

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	Concentration Point	Channel Station	Cross Section	Q100 (cfs)	Channel Elev (ft)	Channel Depth (ft)	Normal Depth (ft)	WSEL (normal depth) (ft)	WSEL (HEC-RAS) (ft)	Difference (ft)
Loop 303 Channel	LP15	122+04.60	12,204.6	746	935.26	4.2	3.4	938.7	938.2	-0.5
(LP16 to LP15)		120+64.13	12,064.1	746	934.6	4.2	3.4	938.0	939.17	1.1
		119+88.00	11,988.0	746	934.2	4.2	3.4	937.6	938.69	1.1
		116+58.60	11,658.6	746	932.36	4.2	3.5	935.9	936.05	0.2
		113+29.30	11,329.3	746	930.52	4.2	3.5	934.0	934.25	0.2
		110+00.00	11,000.0	746	928.68	4.2	3.5	932.2	932.7	0.5
		106+11.90	10,611.9	746	926.51	4.2	3.5	930.0	929.69	-0.3
		102+23.80	10,223.8	746	924.34	4.2	3.5	927.8	927.57	-0.3
		98+35.75	9,835.8	746	922.17	4.2	3.5	925.7	925.6	-0.1
		94+47.67	9,447.7	746	920	4.2	3.5	923.5	923.4	-0.1
		93+47.67	9,347.7	746	919.4	4.2	3.5	922.9	922.81	-0.1
		91+98.13	9,198.1	746	918.57	4.2	3.5	922.1	923.02	0.9
		90+48.60	9,048.6	746	917.75	4.2	3.5	921.3	921.99	0.7
		88+99.06	8,899.1	746	916.92	4.2	3.5	920.4	921.26	0.8
		87+49.53	8,749.5	746	916.1	4.2	3.5	919.6	920.4	0.8
	LP16	86+00.00	8,600.0	746	915.27	4.2	3.5	918.8	919.59	0.8
Loop 303 channel	LP17									
(LP17 to detention basin)		00+00.00	0	448	884.33	5.5	4.3	888.67	887.93	-0.74
		04+46.40	446.4	448	884.94	5.5	4.3	889.28	888.80	-0.48
		08+92.80	892.8	448	885.55	5.5	4.3	889.89	889.36	-0.53
		13+39.20	1339.2	448	886.15	5.5	4.3	890.49	889.97	-0.52
		17+85.60	1785.6	448	886.76	5.5	4.3	891.10	890.56	-0.54
		22+32.00	2232	448	887.37	5.5	4.3	891.71	891.17	-0.54
		26+78.40	2678.4	448	887.98	5.5	4.3	892.32	891.78	-0.54
		31+24.80	3124.8	448	888.58	5.5	4.3	892.92	892.39	-0.53
		35+71.20	3571.2	448	889.19	5.5	4.3	893.53	892.99	**-0.54**
		40+17.60	4017.6	448	889.8	5.5	4.3	894.14	891.96	**-2.18**
		40+52.88	4052.88	448	889.8	5.5	3.6	893.40	891.83	**-1.57**
		45+80.38	4580.38	448	895.9	5.5	3.7	899.57	898.99	**-0.58**
		51+45.85	5145.85	448	897.49	5.5	3.7	901.16	900.90	-0.26
		51+89.39	5189.39	448	897.55	5.5	3.7	901.22	901.00	-0.22
		58+86.44	5886.44	448	898.95	5.5	4.0	902.90	902.17	**-0.73**
		59+89.06	5989.06	448	899.15	5.5	4.0	903.10	901.77	**-1.33**
		60+93.92	6093.92	448	899.35	5.5	4.0	903.30	901.57	**-1.73**
		61+28.92	6128.92	448	899.43	5.5	4.0	903.38	901.53	-1.85
		66+06.92	6606.92	448	904.87	5.5	4.0	908.82	907.84	**-0.98**
	LP16	66+68.60	6668.6	448	905	5.5	4.0	908.95	907.67	**-1.28**
Bullard Wash Channel	RID	118+36.05	1.003	3700	1015.6	6.7	5.0	1020.6	1021.0	**0.4**
	BD4N	66+03.80	0.012	3700	1006.0	6.4	4.7	1010.7	1011.2	**0.5**
RID overchute to Indian School Road	BD3N	65+41.00	0.000	3700	1005.7	4.7	3.4	1009.1	1009.4	**0.3**

Table 2.3B
HEC-RAS Backwater Check Summary

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	*Channel Station*	Increase over normal depth	HEC-RAS WSEL (ft)	[1]*Available Depth (ft)*	*HEC-RAS Flow Depth (ft)*	Comments
Tuthill Channel						
(From TC9 to TC5)	*84+43.50*	1.3'	*868.99*	*6.4*[a]	*5.4*	The increase in wsel downstream of the culvert is due to the change in slope from 0.0088 f/f to 0.0022 f/f. The increased channel depth due to the flattened slope causes backwater.
	85+67.50	0.8'	*869.53*	*6.4*[a]	*4.9*	The increase is due to the culvert at MC85. The WSEL is contained within the corridor.
	85+78.00	0.8'	*869.48*	*6.4*[a]	*4.9*	The increase is due to the culvert at MC85. The WSEL is contained within the corridor.
	88+94.20	0.4'	*869.81*	*6.4*[a]	*4.5*	The increase is due to the culvert at MC85. The WSEL is contained within the corridor.
	143+85.00	0.7'	*886.64*	*7.7*[a]	*4.3*	The increase is due to the culvert at the BID Canal. The WSEL is contained within the corridor.

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	*Channel Station*	Increase over normal depth	HEC-RAS WSEL (ft)	[1]*Available Depth (ft)*	*HEC-RAS Flow Depth (ft)*	Comments
Tuthill Channel						
(From TC3 to TC1)	*261+62.80*	0.5'	*976.3*	*8.9*[a]	*5.3*	The increase is due to the culvert at Hilton Ave. The WSEL is contained within the corridor.

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	*Channel Station*	Increase over normal depth	HEC-RAS WSEL (ft)	[1]*Available Depth (ft)*	*HEC-RAS Flow Depth (ft)*	Comments
AT&SF Railroad Channel						
(RR8 to RR1)	*153+87.00*	0.7'	*1115.13*	*4.3*[b]	*5.0*	The increase is due to the change from a steep grad to a flat grade (0.0035 f/f to 0.001 f/f). This should be checked upon final design.
	154+77.00	0.3'	*1115.24*	*4.3*[b]	*4.6*	The increase is due to the change from a steep grad to a flat grade (0.0035 f/f to 0.001 f/f). This should be checked upon final design.

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	*Channel Station*	Increase over normal depth	HEC-RAS WSEL (ft)	[1]*Available Depth (ft)*	*HEC-RAS Flow Depth (ft)*	Comments
Reems Channel						
(RM3 to RM5)	*82+82.20*	0.4'	*1148.14*	*5*[b]	*5.4*	HEC-RAS showed no adverse impacts along the Reems channel due to backwater

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	*Channel Station*	Increase over normal depth	HEC-RAS WSEL (ft)	[1]*Available Depth (ft)*	*HEC-RAS Flow Depth (ft)*	Comments
Loop 303 Channel						
(LP1 to LP2)	*793+75.00*	0.4'	*1210.73*	*11.3*[a]	*6.4*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	789+89.50	1.2'	*1206.82*	*10.5*[a]	*7.2*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor

1. This depth either refers to the depth of the channel invert relative to the natural adjacent ground (superscript[a]) or the proposed channel design depth (superscript[b]) - whichever is greater.

Table 2.3B (continued)
HEC-RAS Backwater Check Summary

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

bridge option

Channel	*Channel Station*	Increase over normal depth	HEC-RAS WSEL (ft)	[1]*Available Depth (ft)*	*HEC-RAS Flow Depth (ft)*	Comments
Loop 303 Channel						
(LP5 to LP4)	*679+78.00*	0.6'	*1166.28*	*5.8*[a]	*5.8*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	669+40.00	0.5'	*1160.75*	*5.7*[a]	*5.7*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	661+69.10	0.4'	*1155.99*	*5.7*[a]	*5.6*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	652+77.50	0.5'	*1150.99*	*5.7*[a]	*5.6*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	645+40.00	0.6'	*1146.55*	*5.7*[a]	*5.8*	HEC-RAS showed some increase in WSEL, about 0.1' above adjacent high ground, this should be checked at final design

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

bridge option

Channel	*Channel Station*	Increase over normal depth	HEC-RAS WSEL (ft)	[1]*Available Depth (ft)*	*HEC-RAS Flow Depth (ft)*	Comments
Loop 303 Channel						
(LP7 to LP8)	*473+36.00*	0.4'	*1073.58*	*11.5*[a]	*5.2*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	471+68.00	0.4'	*1073.27*	*11.5*[a]	*5.2*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	470+00.00	0.4'	*1072.97*	*11.5*[a]	*5.3*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

bridge option

Channel	*Channel Station*	Increase over normal depth	HEC-RAS WSEL (ft)	[1]*Available Depth (ft)*	*HEC-RAS Flow Depth (ft)*	Comments
Loop 303 Channel						
(LP16 to LP15)	*120+64.13*	1.1'	*939.17*	*4.2*[b]	*4.6*	HEC-RAS showed some increase in WSEL, therefore, this area should be checked in final design
	119+88.00	1.1'	*938.69*	*4.2*[b]	*4.5*	HEC-RAS showed some increase in WSEL, therefore, this area should be checked in final design
	110+00.00	0.5'	*932.7*	*4.2*[b]	*4.0*	HEC-RAS showed some increase in WSEL, therefore, this area should be checked in final design
	91+98.13	0.9'	*923.02*	*5.1*[a]	*4.4*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	90+48.60	0.7'	*921.99*	*5.5*[a]	*4.2*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	88+99.06	0.8'	*921.26*	*5.5*[a]	*4.3*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	87+49.53	0.8'	*920.4*	*5.5*[a]	*4.3*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor
	86+00.00	0.8'	*919.59*	*5.5*[a]	*4.3*	HEC-RAS showed some increase in WSEL, however, it is contained within the channel corridor

Comparisons of 100-year Water Surface Elevations (FlowMaster vs. HEC-RAS)

Channel	*Channel Station*	Increase over normal depth	HEC-RAS WSEL (ft)	[1]*Available Depth (ft)*	*HEC-RAS Flow Depth (ft)*	Comments
Bullard Channel						
(From BD4N to BD3N)	*118+36.05*	0.4'	*1020.96*	*6.7*[b]	*5.4*	HEC-RAS showed some increase in WSEL however, it is still contained within the channel
	66+03.80	0.5'	*1011.18*	*6.4*[b]	*5.2*	HEC-RAS showed some increase in WSEL however, it is still contained within the channel

1. This depth either refers to the depth of the channel invert relative to the natural adjacent ground (superscript[a]) or the proposed channel design depth (superscript[b]) - whichever is greater.

2.2.2 Proposed Basin Analysis

During the analysis of the Selected Alternative, there were several assumptions, criteria, and considerations regarding the sizing of the proposed basins. The two types of basins proposed with the Selected Alternative were:

- On-line basins – Basins that are placed directly within the proposed channel alignment. The proposed channel enters the basin at the upstream end. Discharges are then routed through the basin and released on the downstream end in a controlled fashion through an outflow structure. These basins tend to be larger than off-line basins since they accept both low flow and high flow runoff volume. In other words, all of the volume associated with any storm event hydrograph must flow through the basin.

- Off-line basins – Off-line basins are placed adjacent to the proposed channel alignment on the downstream side. These basins only operate in high flow situations and therefore remain relatively dry during low flow events. Since the first several acre-feet of volume associated with a hydrograph within the proposed channel are allowed to bypass the off-line basin, they tend to be smaller than on-line basins. Generally, these basins are equipped with an inflow weir at the upstream/inlet end and an outflow weir at the downstream/outlet end. The proposed channel would include some transition from a relatively wide bottom width upstream of the basin location to a narrower/constricted section adjacent to the basin at the inlet location. The purpose of the constricted section is to slow the forward momentum of the channel flow and create a backwater effect to facilitate the discharge of the channel flow over a lateral side weir and into the off-line basin. The final design should analyze the off-line basin in more detail to ensure proper operation.

Once the basin begins to operate, the inflow will pond to a particular stage and then begin discharging through an outflow structure. The approach to the design of these basins was simplified for this project since a more detailed analysis would be beyond the scope. However, a weir equation was used to estimate inflow and outflow rating curves and diversion tables were used in HEC-1 to simulate the weirs. Finally, the relative invert elevations of the channel profile and basin were set to show that the channel stage upstream was higher than that in the basin and that it was lower than the basin stage on the downstream side. The analysis did not account for potential backwater effects at the proposed inlet weir or use a complex analysis to determine the portion of flow discharging laterally to the basin normal to the forward momentum of the channel discharge. Rather, the simple weir equation was used to estimate a discharge over the basin inflow weir using a range of flow depths within the proposed adjacent channel as a basis for the head value. The weir coefficient, C, was lowered to a 2.0 in an effort to mitigate any overestimation of inflow due to the simplified method of analysis. The weir equation is as follows:

$$Q = CLH^{3/2}$$

Where;

C = The weir coefficient, 2.0

L = The length of the weir, ft

H = The depth of flow over the weir, ft

As part of the development of the Level III 15% Level Conceptual Design Plans, several issues were addressed and when required, assumptions made using the best available information. *Table 2.4A* shows the proposed basins and the associated criteria and assumptions used in their analysis. The general process used to size the proposed basins is briefly described below:

- Determine peak inflow volume from HEC-RAS.
- Estimate basin size required such that the outflow is sufficiently attenuated.
- Enter the stage-storage-discharge relationship into the existing condition HEC-1 model.
- Adjust the basin size until there is zero freeboard for the existing condition hydrology and at least 1-foot for the future condition hydrology. The outlet structure may require adjustment if revising the basin size affects the peak outflow significantly.
- Run the existing condition HEC-1 model.
- After the basin has been sized for zero freeboard for the existing condition hydrology, include the proposed basin in the future condition hydrology model.
- Check that there is at least 1-foot of freeboard in the basin when running the future condition hydrology HEC-1 model.
- Adjust the basin size until the future condition freeboard of at least 1-foot is met.

Tables 2.4B and 2.4C contain a summary showing each proposed basin and the associated characteristics for both the existing condition hydrology and the future condition hydrology.

The final step in the analysis of the basins was to determine the required pipe size to achieve the FCDMC post-storm drain requirement of 36 hours or less. This requirement is based on safety and environmental conditions. For a detailed discussion of the post-storm drain bleed time computations, see the discussion in Section ***2.2.3.3*** below. The methodology discussed under Section ***2.2.3.3*** is identical to that followed for all basins proposed as part of the Selected Alternative.

Table 2.4A
Proposed Basin Criteria

Basin Name	Location/ Description	Proposed Lining Material	Proposed Depth (ft)	Proposed Access Road (ft)	Freeboard		Offline or Online	Side Slopes X:1	Landscape Area Perimeter (ft)	Comments
					Existing Hydrology (ft)	Future Hydrology (ft)				
Camelback	none proposed	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-----
Jackrabbit	North of Camelback	See design report by LSD	12.5	20'	0	1	offline	6:1	varies, 30% of required footprint	
SR 303L	Cactus Road	See design report by LSD	15.0	20.0	0	1	offline	6:1	varies, 30% of required footprint	
	Northern Avenue	See design report by LSD	15.0	20.0	0	1	offline	6:1	varies, 30% of required footprint	
	Camelback/LAFB Crash Zones	See design report by LSD	6.0	20.0	0	1	online	6:1	varies, 30% of required footprint	
	I-10 at McDowell	See design report by LSD	15.0	20.0	0	1	online	6:1 and 4:1	varies, 30% of required footprint	Per meetings with prison officials, the proposed basin slopes nearest the prison should be 6:1 while those across the basin may be steeper, 4:1.
	Yuma/Buckeye Road	See design report by LSD	9.0	20.0	0	1	online	6:1	varies, 30% of required footprint	
	MC85	See design report by LSD	10.0	20.0	0	1	online	6:1	varies, 30% of required footprint	
Upper Northern	none proposed	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-----
Lower Northern	Reems Road	See design report by LSD	13.5	20.0	0	1	online	6:1	varies, 30% of required footprint	
Reems	Olive Avenue	See design report by LSD	7.0	20.0	0	1	offline	6:1	varies, 30% of required footprint	
AT & SF Railroad	Olive Avenue	See design report by LSD	14.0	20.0	0	1	offline	6:1	varies, 30% of required footprint	
Lower El Mirage	Cactus Road and El Mirage Road	See design report by LSD	9.5	20.0	0	1	offline	6:1	varies, 30% of required footprint	
Bullard Wash	I-10	See design report by LSD	11.5	20.0	0	1	offline	6:1	varies, 30% of required footprint	
I-10 West	Citrus Road	See design report by LSD	11.5	20.0	0	1	online	6:1	varies, 30% of required footprint	
Tuthill	US of Railroad	See design report by LSD	8.0	20.0	0	1	offline	6:1	varies, 30% of required footprint	
I-10 East	none proposed	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-----
I-10 Central	none proposed	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-----

Table 2.4B
Proposed Basin Summary
Existing Condition Hydrology

Channel/ Location ID	Qin (cfs)	Qout (cfs)	Vin (ac-ft)	Peak Storage (ac-ft)	Max. Vol. Provided (ac-ft)	Peak Stage (ft)	on/off line	Combined Total Outflow (cfs)	Length Low-Flow Basin Drain (ft)	Prop. Bot. Elev. (ft)	Prop. Top Elev. (ft)	Design FB (ft)	Actual FB (ft)	Backwater
Jackrabbit Channel														
SRJR1 (N. of Camelback)	850	65	42	41.5	43.9	1185.5	off-line	151	8,323	1,173.5	1,186.0	0.0	0.5	-----
Tuthill Channel														
SRTC5 (@ RxR)	1,646	550	109	108.5	108.5	898.0	off-line	618	4,390	890.0	898.0	0.0	-0.6	-----
I-10 Channel West														
SR10W7	1593	741	282	85.2	85.2	1022.0	on-line	N/A	2,487	1,010.5	1,022.0	0.0	0.0	-----
L303 Channel														
SRLP2 (Cactus Road)	2311	311	543	440	440.0	1212.0	off-line	587	5,630	1,197.0	1,212.0	0.0	0.0	-----
SRLP5 (Northern)	4241	442	354	334	333.0	1141.0	off-line	1380	6,934	1,126.0	1,141.0	0.0	0.0	-----
SRLP8 (Camelback)	2102	340	1081	705.9	700.0	1065.0	on-line	N/A	14,062	1,059.0	1,065.0	0.0	0.0	-----
SRLP12 (I-10)	1781	701	1166	591.5	590.0	1016.0	on-line	N/A	4,961	1,001.0	1,016.0	0.0	0.0	-----
SRLP14 (Yuma/Buckeye)	695	523	823	189.0	190.0	968.0	on-line	N/A	4,092	959.0	968.0	0.0	0.0	-----
SRLP16 (MC85)	751	448	938	325.0	325.0	913.0	on-line	N/A	2,872	903.0	913.0	0.0	0.0	-----
Reems/Northern Channel														
SRRM5 (Olive)	1,752	198	189	165.0	165.0	1134.0	off-line	818	1,449	1,127.0	1,134.0	0.0	0.0	-----
BSNR6(Northern)	477	0	55	55.0	61.1	1107.5	in-line	0	1,413	1,095.0	1,108.5	0.0	1.2	-----
AT&SF Railroad Channel														
SRRR7 (@Olive)	1,770	1285	331	81.3	142.7	1105.6	off-line	1439	1,832	1,097.5	1,111.5	0.0	6.1	-----
Lower El Mirage Channel														
(SRLE4 SW corner of Cactus and El Mirage)	1,312	813	191	56.9	80.0	1111.4	off-line	852	2,069	1,104.5	1,114.0	0.0	2.1	-----
Bullard Wash														
SRBD1S (I-10 and Bullard Wash)	2682	2011	813	134.9	138.0	990.2	off-line	575 - ADOT	4,390	978.5	990.2	0.0	-0.2	-----
								2239 - BLRD						

Table 2.4C
Proposed Basin Summary
Future Condition Hydrology

Channel/ Location ID	Qin (cfs)	Qout (cfs)	Vin (ac-ft)	Peak Storage (ac-ft)	Max. Vol. Provided (ac-ft)	Peak Stage (ft)	on/off line	Combined Total Outflow (cfs)	Prop. Bot. Elev. (ft)	Prop. Top Elev. (ft)	Design FB (ft)	Actual FB (ft)	Backwater
Jackrabbit Channel													
SRJR1 (N. of Camelback)	815	8	27	25.6	41	1181.0	off-line	102	1,173.5	1,186.0	0.0	4.5	-----
Tuthill Channel													
SRTC5 (@ RxR)	851	106	132	86.4	108.50	896.5	off-line	131	890.0	898.0	1.0	0.9	-----
I-10 Channel West													
SR10W7	1278	625	227	48.8	85	1017.3	on-line	N/A	1,010.5	1,022.0	1.0	4.7	-----
L303 Channel													
SRLP2 (Cactus Road)	1331	120	372	292	440	1206.9	off-line	N/A	1,197.0	1,212.0	1.0	5.1	-----
SRLP5 (Northern)	746	0	41	41.0	333	1128.2	off-line	N/A	1,126.0	1,141.0	1.0	12.8	-----
SRLP8 (Camelback)	1580	102	691	518.9	700	1063.4	on-line	N/A	1,059.0	1,065.0	1.0	1.6	-----
SRLP12 (I-10)	1063	132	675	420.8	590	1011.7	on-line	N/A	1,001.0	1,016.0	1.0	4.3	-----
SRLP14 (Yuma/Buckeye)	129	97	356	113.8	190	964.6	on-line	N/A	959.0	968.0	1.0	3.4	-----
SRLP16 (MC85)	300	51	349	202.1	325	909.0	on-line	N/A	903.0	913.0	1.0	4.0	-----
Reems/Northern Channel													
SRRM5 (Olive)	211	0	38	38.0	165	1128.6	off-line	607	1,127.0	1,134.0	1.0	5.4	-----
BSNR6(Northern)	477	0	55	55.0	61	1107.5	on-line	172	1,095.0	1,108.5	1.0	1.2	-----
AT&SF Railroad Channel													
SRRR7 (@Olive)	866	264	87	38.9	142.7	1101.4	off-line	703	16.7	16.7	1.0	10.3	-----
Lower El Mirage Channel													
(SRLE4 SW corner of Cactus and El Mirage)	1,343	831	234	59.5	80	1111.7	off-line	870	1,104.5	1,114.0	1.0	1.8	-----
Bullard Wash													
SRBD2S (I-10 and Bullard Wash)	2155	1392	748	117.6	138.0	988.6	off-line	395 - ADOT 997 - BLRD	978.5	990.2	1.0	1.5	-----

2.2.3 Alternatives Impact on ADOT Basins

In regard to the analysis of the ADOT basins watershed, URS was directed by the FCDMC to conduct an analysis and evaluate several alternatives, each utilizing a particular set of assumptions to model the contributing watershed. Each alternative model was then evaluated to determine the relative performance of the ADOT basins under each set of assumptions. For a detailed description of this analysis and results, refer to the ADOT Basin Watershed Area, Technical Memorandum, dated March 27, 2002 located in Appendix C.

2.2.3.1 Previous Analysis of the ADOT Basins

During the Level III analysis, URS used conservative assumptions in the existing and future condition hydrology models. Then, the "with projects" models incorporated the information in the Level III analysis. The set of assumptions used to perform the Level III ADOT Basin analysis are summarized below:

- For the future condition HEC-1 model, the ADOT Basin contributing watershed area is completely built out without providing future on-site retention.
- The ADMP is not in place. This is the assumption used to modify the existing and future condition ADMP Update HEC-1 models. These models are the baseline models from which the "with projects" models are developed.
- The existing condition defined per the field visit conducted on October 18, 2001 was incorporated into the existing condition hydrology model for the ADMP Update HEC-1 model.
- The most conservative condition described by the set of assumptions used by Alternative "Part 3A" in the ADOT Basin Watershed Area, Technical Memorandum, dated March 27, 2002 (see Appendix C) was used to model the future condition baseline and "with projects" model(s).

With the majority of the other proposed ADMP Update facilities, the maximum discharge used for design results from the existing condition hydrology model. This is due to the assumption that with future development upstream, cities will enforce their on-site retention requirements. In the case of the ADOT Basin analysis, the future condition hydrology model produces the maximum discharge used for design.

For comparative purposes, the ADMP Update models the scenario discussed in Part 3B from the ADOT Basin Watershed Area, Technical Memorandum, dated March 27, 2002 (see Appendix C). In this alternative, the ADOT Basin watershed area was assumed to be fully developed without future on-site retention with the ADMP Update "projects in place."

2.2.3.2 Level III Analysis of the ADOT Basin Performance

The total volume provided by the ADOT basins is approximately 1,030.0 AF and the total inflow volume (*with proposed improvements*) is approximately *862 AF*. Therefore, the maximum *equalized* peak stage within the basins should not exceed 984.5 feet. This approximation was determined by interpolation on the composite stage-storage curve for the basins. Given this information, the ADOT Basins will have approximately 1.5 feet of freeboard assuming an overflow elevation of 986 feet for all four basins operating as a single *composite* facility. This is a conservative estimate since most of the individual basins can pond as high as 988 feet before overtopping occurs.

Several assumptions/simplifications were made during the Level III analysis of the ADOT basins for the Selected Alternative. Due to the layout of the existing ADOT basins (interconnected ponds), an accurate model of the operation of the basins during the course of any given storm event must include the unsteady flow characteristics and variable water surface elevations between basins. The HEC-1 model does not adequately simulate these physical characteristics.

An interconnected basin model should account for the fact that there is a total composite inflow to the interconnected basins (in terms of a single system). Over time, that volume is redistributed among the modeled basins reversing flow direction through the pipes interconnecting the facilities as required to equalize the system. Such a model was beyond the scope of this project and, therefore, was not prepared. In lieu of such a model, a simplified approach was used to determine the adequacy of the interconnecting pipes existing between the ADOT basins as well as to determine a peak stage estimate within those basins. Refer to Appendix C for a detailed description of this approach.

2.2.4 Alternatives Impact on Existing Facilities

One of the goals of the Selected Alternative was to utilize existing flood control improvements present within the project area. Currently, there are several existing facilities that have been utilized or have otherwise been impacted by the results of the restudy.

One of the first steps in the ADMP Update project was to prepare a current existing condition hydrology model using the original model developed under the WLB Group, Inc. in the early 1990s. As a result of this updated model, several impacts to the existing facilities present within the watershed were noted within Section 5.2 of *the Existing Condition Hydrology, dated November 2002 (See Appendix A of the Data Collection Report, Volume I submitted under separate cover).* Table 5.2 shows a comprehensive listing of all the existing flood control facilities and the corresponding discharges from the revised/updated existing condition hydrology model. The table also shows the original discharges used to design and build these facilities. Any major differences/discrepancies in discharge rates are explained in detail by the text of Section 5.2. Some of these differences will again be noted in this section of the Level III report; however, for the detailed explanation, the reader should refer to the existing condition report.

Significant changes to discharge rates noted in Section 5.2 of *the Existing Condition Hydrology, dated November 2002 (see Appendix A of the Data Collection Report, Volume I submitted under separate cover)* were primarily due to the following major factors:

- A high volume of recent development activity within the contributing watershed areas to some of the existing flood control facilities resulted in increases to downstream peak discharges. In some cases, this was a result of the loose enforcement of typical on-site retention requirements for development.

- Discontinuous development/haphazard adherence to the proposed flood control concepts detailed in the existing ADMP as presented by the WLB Group, Inc.

- A fundamental change in the variable definitions as defined by the current FCDMC *Hydrology Manual* regarding soil parameters. This caused changes to occur in sub-basins where there was no development or change since the WLB study; however, the soil parameters changed based on the new variable definitions, which were adjusted for consistency with the current FCDMC *Hydrology Manual.*

- Changes to major drainage features causing some existing facilities' contributing watershed area to increase.

As a result of the Selected Alternative, several existing facilities were incorporated into the overall flood control concept while others were not. Those facilities not incorporated into the Selected Alternative were generally located within areas that were not readily accessible or conducive to the addition channels and/or basins. Facilities not incorporated into the Selected Alternative are considered to be "stand alone" and will not be impacted by the Selected Alternative. However, some of these facilities were impacted by the updated existing condition hydrology report (as shown on Table 5.2 in Section 5.2 of *the Existing Condition Hydrology, dated November, 2002*).

Below is a list of the non-"stand-alone" existing flood control facilities that are incorporated into the selected alternative and a brief description of the associated impacts due to the modeling of the Selected Alternative. All comparisons are made using the existing hydrology with projects in place, as this is generally the most conservative of the models:

- Falcon Dunes Golf Course and Detention Basin – This existing facility was constructed as a detention basin outlet to the existing Dysart Drain. Together, these two facilities were designed to provide 100-year flood protection for the LAFB downstream on the south side of Northern Avenue.

  - As a result of the Selected Alternative, the total inflow volume to the Falcon Dunes detention basin has decreased by approximately 34% from that estimated by the existing condition hydrology model. This decrease is due to the proposed SR 303L channel located 1.5 miles to the west as well as the proposed detention basin at the northwest corner of the intersection of Reems Road with Northern Avenue. The proposed SR 303L channel cuts off discharge volume and conveys it south while the proposed detention basin impounds storm water runoff volume previously flowing to the Falcon Dunes basin.

  - The peak stage within the basin is estimated at approximately 1,097.3 feet based on the stage-storage-discharge relationship described in the original HEC-1 model provided to URS by FCDMC at the start of the ADMP Update project. That information (incorporated into the Selected Alternative HEC-1 model) was presumably developed based on the geometry designed for the basin and presented on the "Dysart Drain Improvements Project, Reems Road to the Agua Fria River Detention Basin and Collector Channel," by NBS/Lowry, dated October 1994. According to this geometry, the maximum ponding elevation within the basin is approximately 1,100 feet.

  - *No recent survey/as-built data have been incorporated to the HEC-1 model regarding the Falcon Dunes golf course detention basin.*

- Dysart Drain – This existing concrete channel provides 100-year flood protection for the LAFB downstream on the south side of Northern Avenue. Recent improvements constructed along the drain in the late 1990s restored capacity lost over 30 years due to differential land subsidence.

  - As a result of the Selected Alternative, the discharge rates along the Dysart Drain have increased an average of 15.7% from those reported by the existing condition hydrology model; however, they are still below the facility design discharges. The main reason for the increase can be attributed to the added inflow due to the proposed AT&SF railroad channel approximately 1-mile downstream/east of the Falcon Dunes Detention Basin outfall.

- Indian School Road Channel – This facility was constructed as part of the Palm Valley Phase II development to provide interim protection from off-site flow north of Indian School Road. Ultimately, there will be a parallel channel constructed along Camelback Road approximately 1 mile north as well as on-site retention facilities with the ultimate build-out of the entire Palm Valley Master Planned development upstream. This channel is proposed to be reduced in cross section/capacity upon the completion/build-out of the upstream facilities. As a result, there are two sets of discharges associated with this channel. The first is for the interim channel where the off-site impacting discharge is much higher. The second is for the ultimate build-out condition upstream demonstrating the resultant decrease in discharge.

  - As a result of the proposed Camelback Channel upstream and the proposed SR 303L channel to the west, the discharges along the Indian School Road Channel have decreased an average of 59% relative to the existing condition hydrology values.

- With regard to the interim design discharges proposed along the Indian School Road Channel, the preferred/selected alternative model shows an average decrease of approximately 55%. At all locations along the proposed Indian School Road Channel for the interim condition, the discharges decreased with the Selected Alternative with the exception of the confluence of the Indian School Road Channel with the proposed Bullard Wash Channel. At this location, the Selected Alternative discharge has increased by approximately 0.5% above the interim design discharge. This is not considered a problem since it is due to the additional discharge modeled along the Bullard Wash resulting from the upstream lateral inflow of the proposed Camelback Channel. Since the proposed Bullard Wash Channel has been designed to accommodate this discharge rate, there will be no adverse impacts in the interim condition Indian School Road Channel.

- Upon ultimate build-out, the Indian School Road Channel was to be downsized to accommodate the lower discharge rates expected. As a result of the Selected Alternative, the lower design discharges along the ultimate version of the Indian School Road Channel have generally decreased by approximately 15%. However, at the Estrella/Reems Road intersection along the Indian School Road Channel alignment, the discharge increased by approximately 11%. This should not be a problem since the interim/existing version of the channel should have been sized to accommodate a flow rate that is approximately three times higher than that proposed as a result of the Selected Alternative. This will require that the ultimate version of the Indian School Road Channel be left with a slightly higher capacity (approximately 11%) through this reach than previously determined.

- Bullard Wash Channel Through Pebble Creek – According to the "Bullard Wash FIS Work Maps" by B&R Engineering and the WLB Group, as-built dated December 14, 1994, the discharge rates through this portion of the existing Bullard Wash channel range from approximately 4,121 cubic feet per second (cfs) at Indian School Road and 4,703 cfs at the RID Canal overchute structure. The maps were stamped as received by Michael Baker, Jr. Inc., on February 1, 1995. On March 3, 1995, Federal Emergency Management Agency (FEMA) issued a letter stating the formal acceptance of the detailed analysis along Bullard Wash from the RID overchute to Indian School Road. For reference, these maps and the letter are located in *Appendix A-IV* of this report.

  - As a result of the Selected Alternative, discharges along this portion of the Bullard Wash Channel have decreased by an average of approximately 25%. This is due in part to the improvements to the Dysart Drain completed in the late 1990s as well as to the addition of channels and basins in the upstream watershed area.

- Bullard Wash Outfall Channel – The existing Bullard Wash Outfall Channel was constructed by FCDMC in 1999. This facility was the first segment of the proposed channel alignment extending from the Salt/Gila River south to approximately Camelback Road north in the original ADMP by the WLB Group, Inc. Since this facility was constructed using a design discharge of approximately 3,200 cfs, the Selected Alternative was designed to limit the total discharge along this portion of the Bullard Wash Channel to that amount.

  - As a result of the Selected Alternative, discharges along this portion of the Bullard Wash Channel were limited to a maximum of 3,200 cfs. A proposed detention basin located along the Bullard Wash just north of I-10 diverts a substantial amount of flow east to the existing ADOT Basins. The basin then meters discharges south within the Bullard Wash corridor.

- White Tanks FRS #4 Inlet Channel – This facility was constructed by FCDMC in the early to mid-1990s adjacent to Jackrabbit Trail.

  - As a result of the Selected Alternative, the design discharge along this facility was decreased slightly (approximately 3%). The Selected Alternative proposes an extension of this existing facility north along Jackrabbit Trail to the outlet of the existing White Tanks FRS #3. In order to maintain the design discharge at or below that of the existing channel, there will be an off-line detention basin constructed north of Camelback Road along the proposed segment of the facility extension.

- White Tanks FRS #3 – Originally built in the 1950s along with the McMicken Dam and White Tanks FRS #4, this structure has been designed with an approximate capacity of 2,655 acre-feet. As a result of the Selected Alternative, there will be an inflow channel constructed along the west side of the existing Beardsley Canal. This channel will eliminate existing storm water discharge breakouts over the canal (east) and direct them into White Tanks FRS #3 south.

  - As a result of the Selected Alternative, the total inflow volume estimate to the existing White Tanks FRS #3 facility has increased by approximately 23.5% from the existing condition hydrology model. However, this value is still approximately 58% below the original design capacity of the facility. The increase over the existing condition hydrology is due to the proposed upstream inlet channel and the conveyance of discharge previously diverted east over the existing Beardsley Canal.

- White Tanks FRS #4 – Originally built in the 1950s along with the McMicken Dam and White Tanks FRS #3, this structure has been designed to with and approximate capacity of 1,036 acre-feet. As a result of the Selected Alternative, the existing concrete inflow channel will be extended north to the existing White Tanks FRS#3. This channel will redirect some discharge south to the White Tanks FRS #4.

- As a result of the Selected Alternative, the total inflow volume estimate to the existing White Tanks FRS #4 facility has increased by approximately 3.4% from the existing condition hydrology model. However, this value is still approximately 23.5% below the original design capacity of the facility. The increase over the existing condition hydrology is due to the proposed upstream inlet channel and the conveyance of discharge previously diverted southeast from sub-basins 215A and 232 just north of Camelback road.

- The proposed off-line detention basin located north of Camelback Road also mitigated the increase in inflow volume.

Table(s) 2.5A and 2.5B show the existing facilities within the ADMP Update project area and provides a summary of their design discharges versus the updated discharges. The updated discharges are based on the proposed Selected Alternative for both the existing and future condition hydrology models developed for the project. Note that some of the facilities listed are "stand alone" facilities and were impacted by updates made to the existing condition hydrology model only. Stand-alone facilities are those whose contributing watersheds are not impacted significantly by improvements proposed as part of the ADMP Update. These include the following:

- The Existing Colter Channel
- The Existing Camelback Channel
- The Existing RID Overchute
- The Existing White Tanks Flood Retarding Structure #3

For a detailed explanation of discrepancies between the design discharges presented for the "stand alone" facilities and the updated discharge due to the revised hydrology, refer to Section 5.2 of *the Existing Condition Hydrology, dated November 2002*. For the purposes of this report, the "stand alone" facilities are briefly described below:

- Reems Road Channel – These two existing channel reaches (originally designed for a 100-year storm event) were constructed as part of two separate developments located along Reems Road between Bell Road and Hearn Road. The existing reach adjacent to the existing Mountain Vista Ranch (MVR) development is significantly under capacity. As a result of the Selected Alternative, the discharges estimated along this channel reach have decreased from the existing condition hydrology by approximately 22%; however, they are still approximately 71% higher than the original design value. The reduced discharges in the Selected Alternative are due to the proposed SR 303L Channel approximately 1-mile west. This portion of the Reems Road Channel was under-designed for the following reasons:

  - The contributing watershed upstream increased by approximately 30% due to a significant re-alignment of Reems Road by the Sun City Grand Master Planned Community. Since Reems Road alignment defines a sub-basin boundary, the overall discharge increased at this location with respect to the design discharge used by MVR.

  - Assumption that existing upstream retention is 100% effective.

  - The assumption that a portion of the 100-year runoff will be conveyed by the existing Reems Road cross section.

The existing reach downstream of MVR was constructed as part of the existing Greenway Parc Development. As above, the increase to the contributing watershed area as well as the assumption that upstream retention was 100% effective (the ADMP Update assumes existing upstream retention is only 80% effective), resulted in the channel reach analysis showing it will not convey the design discharge.

As a result of the Selected Alternative, the discharges estimated along this channel reach have decreased from the existing condition hydrology by approximately 4.7%; however, they are still approximately 29% higher than the original design value. The reduced discharges in the Selected Alternative are due to the proposed SR 303L channel approximately 1 mile west.

The channel reach adjacent to the MVR development was designed to provide conveyance of the 100-year flow assuming the discharge was conveyed in part by the Reems Road cross section as well as the channel section. As part of the Level III portion of the ADMP Update, URS collected field survey at specific locations throughout the watershed area.

Based on concerns over existing channel capacity at the Reems Road Channel sections discussed above, four survey sections (two along the MVR channel and two along the Greenway Parc channel) were obtained and evaluated using normal depth with the proposed discharges using the existing condition hydrology with projects in place. The result of that computation showed the following:

At MVR – The average depth of flow over the Reems Road centerline was approximately 0.8 feet or 9 inches. The existing berm modeled as a left channel bank (east side of the road) by the MVR development may overtop at the section adjacent to the MVR development toward the downstream end of the existing channel. In addition, the right channel bank indicates overtopping at the upstream end of the existing channel. Some improvements may be necessary to increase the channel capacity. Further, the use of the existing berm on the right channel bank to contain the 100-year flood may not be appropriate as it is not an engineered berm, rather it is a result of mounded soil adjacent to existing agricultural fields.

Table 2.5A
Effect of Preferred Alternative on Existing Facilities
(Existing Condition Hydrology Base)

Facility Name	*Existing Facilities Design Data*			Proposed Preferred Alternative								Comment
				Discharge Summary				*Stage Summary*				
	Design Discharge/Inflow (cfs)	Peak Stage (ft)	Peak/Total Volume (ac-ft)	Pref. HEC-1 CP	Discharge (cfs)	Comments	Existing Facility Over/Under Capacity	Stage (ft)	Peak V (ac-ft)	Condition	Existing Facility Over/Under Stage/Volume	
Reems Road Channel												
CP122A	414	n/a	n/a	!RM1	709	Surcharge	*-295 cfs*	n/a	n/a	n/a	*n/a*	Existing channel under capacity, excess within road R/W
CP133	743	n/a	n/a	!RM2	957	Surcharge	*-214 cfs*	n/a	n/a	n/a	*n/a*	Existing channel under capacity, excess within road R/W
Falcon Dunes												
CP194B	1,840	1,100	407/550	!!194B	1,120	OK	*720 cfs*	1,097.3	239.5	OK	*2.6 ft*	
Dysart Drain												
Inflow from golf course	448	n/a	n/a	!!S194	306	OK	*142 cfs*	n/a	n/a	n/a	*n/a*	
CP195	1,772	n/a	n/a	!!C195	1,722	OK	*50 cfs*	n/a	n/a	n/a	*n/a*	-----
CP196	2,300	n/a	n/a	!!C196	1,784	OK	*516 cfs*	n/a	n/a	n/a	*n/a*	-----
CP202	2,287	n/a	n/a	!!C202	1,816	OK	*471 cfs*	n/a	n/a	n/a	*n/a*	-----
CP205	3,984	n/a	n/a	!!C205	2,375	OK	*1609 cfs*	n/a	n/a	n/a	*n/a*	-----
Colter Channel												
CP242	1,060	n/a	n/a	!!C242	1,054	OK	*6 cfs*	n/a	n/a	n/a	*n/a*	-----
CP243A	1,161	n/a	n/a	!!243A	1,160	OK	*1 cfs*	n/a	n/a	n/a	*n/a*	-----
CP244B	1,210	n/a	n/a	!!244B	1,160	OK	*50 cfs*	n/a	n/a	n/a	*n/a*	-----
CP245	1,900	n/a	n/a	!!C245	1,132	OK	*768 cfs*	n/a	n/a	n/a	*n/a*	-----
Camelback Channel												
242A	135	n/a	n/a	!!242A	204	Surcharge	*-69 cfs*	n/a	n/a	n/a	*n/a*	channel may require improvement
CP242B	505	n/a	n/a	!!242B	678	Surcharge	*-173 cfs*	n/a	n/a	n/a	*n/a*	channel may require improvement
CP243	603	n/a	n/a	!!C243	650	Surcharge	*-47 cfs*	n/a	n/a	n/a	*n/a*	channel may require improvement
CP245A	725	n/a	n/a	!!245A	617	OK	*108 cfs*	n/a	n/a	n/a	*n/a*	-----
[3]*Indian School*												
CP250A	1,250/510	n/a	n/a	!!250A	268	OK	*982 cfs*	n/a	n/a	n/a	*n/a*	-----
CP251	1,420/560	n/a	n/a	!!C251	482	OK	*938 cfs*	n/a	n/a	n/a	*n/a*	-----
CP252	2,670/560	n/a	n/a	!!C252	621	OK	*2049 cfs*	n/a	n/a	n/a	*n/a*	-----
CP253	3,390/3860	n/a	n/a	!BD3N	3,410	Surcharge	*-20 cfs*	n/a	n/a	n/a	*n/a*	-----
RID Overchute												
CP2712	1,456	n/a	n/a	!!2712	1,359	OK	*97 cfs*	n/a	n/a	n/a	*n/a*	-----
Bullard Wash/Pebble Creek												
2I253	4,121	n/a	n/a	!!I253	3,293	OK	*828 cfs*	n/a	n/a	n/a	*n/a*	-----
CP267	4,703	n/a	n/a	!BD4N	3,248	OK	*1455 cfs*	n/a	n/a	n/a	*n/a*	-----

Table 2.5A (continued)
Effect of Preferred Alternative on Existing Facilities
(Existing Condition Hydrology Base)

Facility Name	*Existing Facilities Design Data*			Proposed Preferred Alternative								Comment
				Discharge Summary				*Stage Summary*				
	Design Discharge/Inflow (cfs)	Peak Stage (ft)	Peak/Total Volume (ac-ft)	Pref. HEC-1 CP	Discharge (cfs)	Comments	Existing Facility Over/Under Capacity	Stage (ft)	Peak V (ac-ft)	Condition	Existing Facility Over/Under Stage/Volume	
Bullard Wash Outfall												
[1]BLRD2	3,200	n/a	n/a	!!BRD3	3,159	OK	*41 cfs*	n/a	n/a	n/a	*n/a*	
White Tanks 4 Inlet Channel												
I10WT4	2,216	n/a	n/a	!!0WT4	2,158	OK	*58 cfs*	n/a	n/a	n/a	*n/a*	-----
White Tanks 3												
CPWT3	n/a	n/a	2,655	!!WT3	9,847	n/a	*n/a*	1,200.8	1,113.0	OK	*1,542.0ac-ft*	-----
White Tanks 4												
CPWT4	n/a	n/a	1,036	!!WT4	6,833	n/a	*n/a*	1,043.1	793.0	OK	*243.0ac-ft*	-----

1. This value will be limited to 3,200 cfs. Any value shown that exceeds this will be refined during the Level III portion of the analysis.
2. Alternative 3 routes sub basin 232 to White Tanks FRS #4 - Alternatives 1, 2 and Baseline do not.
3. These are the ultimate design discharges assuming Camelback Road Channel is in place. For the interim, the values are 1,250 cfs, 1,420 cfs, 2,670 cfs and 3,390 cfs. The ultimate 'reduction' in the channel cross due to future build-out conditions must not be as great at concentration point CP252 (Estrella/Reems Road). This is due to the fact the preferred/selected alternative results in an 11% increase in the ultimate build-out discharge estimate at this location.

Table 2.5B
Effect of Preferred Alternative on Existing Facilities
(Future Condition Hydrology Base)

Facility Name	*Existing Facilities Design Data*			Proposed Preferred Alternative								Comment
				Discharge Summary				*Stage Summary*				
	Design Discharge/Inflow (cfs)	Peak Stage (ft)	Peak/Total Volume (ac-ft)	Pref. HEC-1 CP	Discharge (cfs)	Comments	Existing Facility Over/Under Capacity	Stage (ft)	Peak V (ac-ft)	Condition	Existing Facility Over/Under Stage/Volume	
Reems Road Channel												
CP122A	414	n/a	n/a	!RM1	709	Surcharge	*-295 cfs*	n/a	n/a	n/a	*n/a*	Existing channel under capacity, excess within road R/W
CP133	743	n/a	n/a	!RM2	699	OK	*44 cfs*	n/a	n/a	n/a	*n/a*	Existing channel under capacity, excess within road R/W
Falcon Dunes												
CP194B	1,840	1,100	407/550	!!194B	949	OK	*891 cfs*	1,094.9	103.8	OK	*5.0*	
Dysart Drain												
Inflow from golf course	448	n/a	n/a	!!S194	248	OK	*200 cfs*	n/a	n/a	n/a	*n/a*	
CP195	1,772	n/a	n/a	!!C195	1,296	OK	*476 cfs*	n/a	n/a	n/a	*n/a*	-----
CP196	2,300	n/a	n/a	!!C196	1,350	OK	*950 cfs*	n/a	n/a	n/a	*n/a*	-----
CP202	2,287	n/a	n/a	!!C202	1,530	OK	*757 cfs*	n/a	n/a	n/a	*n/a*	-----
CP205	3,984	n/a	n/a	!!C205	1,999	OK	*1985 cfs*	n/a	n/a	n/a	*n/a*	-----
Colter Channel												
CP242	1,060	n/a	n/a	!!C242	1,016	OK	*44 cfs*	n/a	n/a	n/a	*n/a*	-----
CP243A	1,161	n/a	n/a	!!243A	720	OK	*441 cfs*	n/a	n/a	n/a	*n/a*	-----
CP244B	1,210	n/a	n/a	!!244B	668	OK	*542 cfs*	n/a	n/a	n/a	*n/a*	-----
CP245	1,900	n/a	n/a	!!C245	648	OK	*1252 cfs*	n/a	n/a	n/a	*n/a*	-----
Camelback Channel												
242A	135	n/a	n/a	!!242A	218	Surcharge	*-83 cfs*	n/a	n/a	n/a	*n/a*	channel may require improvement
CP242B	505	n/a	n/a	!!242B	643	Surcharge	*-138 cfs*	n/a	n/a	n/a	*n/a*	channel may require improvement
CP243	603	n/a	n/a	!!C243	400	OK	*203 cfs*	n/a	n/a	n/a	*n/a*	channel may require improvement
CP245A	725	n/a	n/a	!!245A	360	OK	*365 cfs*	n/a	n/a	n/a	*n/a*	-----
[3]*Indian School*												
CP250A	510/1,250	n/a	n/a	!!250A	135	OK	*375 cfs*	n/a	n/a	n/a	*n/a*	-----
CP251	560/1,420	n/a	n/a	!!C251	159	OK	*401 cfs*	n/a	n/a	n/a	*n/a*	-----
CP252	560/2,670	n/a	n/a	!!C252	175	OK	*385 cfs*	n/a	n/a	n/a	*n/a*	-----
CP253	3860/3,390	n/a	n/a	!BD3N	3,307	OK	*553 cfs*	n/a	n/a	n/a	*n/a*	-----
RID Overchute												
CP2712	1,456	n/a	n/a	!2712	838	OK	*618 cfs*	n/a	n/a	n/a	*n/a*	-----

Table 2.5B (continued)
Effect of Preferred Alternative on Existing Facilities
(Future Condition Hydrology Base)

Facility Name	*Existing Facilities Design Data*			Proposed Preferred Alternative								Comment
				Discharge Summary				*Stage Summary*				
	Design Discharge/Inflow (cfs)	Peak Stage (ft)	Peak/Total Volume (ac-ft)	Pref. HEC-1 CP	Discharge (cfs)	Comments	Existing Facility Over/Under Capacity	Stage (ft)	Peak V (ac-ft)	Condition	Existing Facility Over/Under Stage/Volume	
Bullard Wash/Pebble Creek												
2I253	4,121	n/a	n/a	!!I253	3,307	OK	*814 cfs*	n/a	n/a	n/a	*n/a*	-----
CP267	4,703	n/a	n/a	!BD4N	2,945	OK	*1758 cfs*	n/a	n/a	n/a	*n/a*	-----
Bullard Wash Outfall												
[1]BLRD2	3,200	n/a	n/a	!!BRD3	2,511	OK	*689 cfs*	n/a	n/a	n/a	*n/a*	
White Tanks 4 Inlet Channel												
I10WT4	2,206	n/a	n/a	!!0WT4	1,108	OK	*1098 cfs*	n/a	n/a	n/a	*n/a*	-----
White Tanks 3												
CPWT3	n/a	n/a	2,655	!!WT3	9,549	n/a	*n/a*	1,200.7	1,081.0	OK	*1,574.0 ac-ft*	-----
White Tanks 4												
CPWT4	n/a	n/a	1,036	!!WT4	3,486	n/a	*n/a*	1,039.4	528.0	OK	*508.0 ac-ft*	-----

1. This value will be limited to 3,200 cfs. Any value shown that exceeds this will be refined during the Level III portion of the analysis.
2. Alternative 3 routes sub basin 232 to White Tanks FRS #4 - Alternatives 1, 2 and Baseline do not.
3. These are the ultimate design discharges assuming Camelback Road Channel is in place. For the interim, the values are 1,250 cfs, 1,420 cfs, 2,670 cfs and 3,390 cfs.

At Greenway Parc – At the upstream portion of the existing Reems Road Channel segment adjacent to the Greenway Parc development, the normal depth calculation indicates that the channel may overtop its left bank and spread into the existing Reems Road alignment. The existing channel segment adjacent to Greenway Parc on the downstream end indicates that the channel will contain the 100-year runoff.

In conclusion, the existing Reems Road Channel segments may have significant capacity issues in regard to a lack of conveyance potential for the 100-year storm event. In addition, since the segment of channel adjacent to the MVR development is designed to convey the 100-year flood in conjunction with the existing Reems Road cross section, there may be issues related to directing the runoff contained within the roadway into the downstream portions of the Reems Road Channel.

- The Colter Channel – The Colter Channel was constructed to provide an outfall for the storm water runoff generated within the developed area east of Bullard Avenue and south of the existing Dysart Drain. Portions of development upstream of the Colter Channel have rights for relaxed on-site retention requirements.
    - The design discharges used for the Colter Channel are generally higher than those computed with the ADMP Update HEC-1 model.
- Existing Camelback Road Channel – The existing Camelback Road Channel starts approximately 1-mile east of the confluence of the proposed Camelback Road Channel with the proposed Bullard Wash Channel. The existing Camelback Road Channel parallels the existing Colter Channel approximately 1/2 mile south of the existing Colter Channel and north of Camelback Road. The channel was designed to eliminate flow breakouts at Dysart Road and El Mirage Road for the 100-year, 24-hour storm event. The channel discharge values shown in the design report are somewhat lower (6% on average) than the values calculated by the ADMP Update HEC-1 model. The difference in discharge is probably due to the factors noted when reviewing the Cella Barr Model prepared for MCDOT when designing the channel:
    - The Cella Barr model used a point rainfall depth of 3.8 inches rather than the 4.0 inches used in the ADMP Update models.
    - The Cella Barr model used the Muskingum-Cunge routing versus normal depth used in the ADMP Update models.
    - The soils parameters used in the Cella Barr model are different from those used in the ADMP Update models.
- RID Overchute – This existing facility conveys storm water discharge across the existing RID canal through the Palm Valley Phase II golf course to the existing ADOT basins downstream. Generally, discharges through this corridor decreased in the existing condition model prepared for the ADMP Update relative to those used in the design of the facility.

As mentioned previously, all of the above discussion is relative to the discharges estimated by the ADMP Update existing condition hydrology model(s). It should be noted that when the same comparisons are made with the ADMP Update future condition (with projects) hydrology model, there are only two locations where the estimated discharge rate exceeds the design flow rate of an existing flood control facility. Those two locations are briefly mentioned below:

Reems Road Channel – At the existing segment of the Reems Road Channel adjacent to the MVR development, the future condition (with projects) discharge rate is still approximately 70% higher than the design discharge. This is caused by the contributing area at this location being built out and, therefore, providing on-site retention per the future requirement. This results in a future discharge that is virtually identical to the existing discharge. Since the existing channel segment downstream has additional sub-basins that contribute area to the peak discharge that are not built out, the future discharge rate decreases and is less than the design discharge.

Camelback Channel – Since most of the contributing watershed area at approximately both of the Litchfield and Dysart road crossings of the existing channel alignment was fully developed, there was little change in the overall discharge rates in the future condition model. Therefore, the existing channel facility discharge rates were still on the order of 38% and 21%, respectively. Conversely, the contributing watershed downstream of these two locations does undergo significant future build-out and, hence; the downstream discharges decrease to values less than those used for the original channel design.

2.2.5 Alternatives Impact on Adjacent Land Parcels

The impact of the Selected Alternative facilities on the existing adjacent land parcels has been assessed and summarized in *Tables 2.7-2.18.* These tables list the proposed facility analyzed and contain the parcel number impacted, the length along the parcel impacted, and the approximate area of impact to each parcel. This information is based on the proposed facility daylight footprint and its encroachment on adjacent parcel areas.

The method for determining the impact area on each parcel was to overlay the parcel ownership data supplied URS by FCDMC and measure the area of the channel footprint within each adjacent parcel. The method used for determining the cost of the channel right-of-way for the cost estimate was to simply measure the entire channel footprint area. The main difference in these two methods of obtaining impact area is that the first method does not account for the footprint area encroaching on adjacent or perpendicular roadway right-of-way. By contrast, the second method does account for the entire channel/basin footprint including areas encroaching on adjacent and perpendicular roadways. Since the second method yields the more conservative result (more land impacted), that method was used to identify the right-of-way cost requirement associated with each proposed facility. *Tables 2.6-2.18* will be useful in identifying the actual parcels impacted by the proposed facilities for practical purposes.

Table 2.6
Impact to Adjacent Land Parcels, Camelback Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50161019B	653,400	100	137	13,695	15.00	0.31	0.00
50161012	196,412	2,600	12	31,200	4.51	0.72	0.00
50161018	3,182,494	2,570	120	308,400	73.06	7.08	0.00
50161007	3,398,987	1,333	142	189,286	78.03	4.35	0.00
50161006B	3,398,987	1,300	141	183,300	78.03	4.21	0.00
50161002	6,864,011	1,290	145	187,050	157.58	4.29	0.00
50161030C	20,336,596	158	12	1,896	466.86	0.04	0.00

Parcel Areas determined in AutoCAD/MicroStation

Table 2.7
Impact to Adjacent Land Parcels, Jackrabbit Channel

Parcel #	Parcel Area (ft^2)	Length Along Parcel (ft)	Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50234078	6639.18	23.78	105.54	2471.78		0.2	0.1	0.0
50234079	6579.62	60	104.41	6104.65		0.2	0.1	0.0
50234080	6616.03	60	98.35	5937.85		0.2	0.1	0.0
50234081	6616.26	60	97.4	5866.17		0.2	0.1	0.0
50234082	8460.3	77.54	97.4	7817.37		0.2	0.2	0.0
50234096	7556.28	96.15	33.4	7971.88		0.2	0.2	0.0
50534100	7042.39	99.24	26.74	2985.6		0.2	0.1	0.0
50234083	6788.45	98.7	26.49	2899.04		0.2	0.1	0.0
50234034	7810.49	100	10	7022.83		0.2	0.2	0.0
50234035	6243.91	-	-	6243.91		0.1	0.1	0.0
50234036	6075.01	99.48	47.16	4612.57		0.1	0.1	0.0
50234017G	619900.23	1280.82	60.23	79921.83		14.2	1.8	0.0
50234017H	176535.47	1280.82	120.74	156793.76		4.1	3.6	0.0
50234017D	324197.5	651.41	56.67	39134.11		7.4	0.9	0.0
50234017E	88899.14	655.37	122.42	82741.98		2.0	1.9	0.0
50234001B	933858.49	1924.85	56.67	89721.68		21.4	2.1	0.0
50234001C	264056.19	1924.09	126.22	259506.7		6.1	6.0	0.0
50234001D	67169.5	1924.09	-	855.41		1.5	0.0	0.0
50262001G	829323.44	1178.74	95.39	186770.19		19.0	4.3	0.0
50262001M	14415854.9	1813.94	52.43	102469.4		330.9	2.4	0.0
no number	335611.32	5163.88	100	72187.73		7.7	1.7	0.0
50262001L	172528.99	-	-	172528.99		4.0	4.0	0.0
50262016	45809.88	309.86	66.45	18889.4		1.1	0.4	0.0
50262017	48790.02	315.77	48.12	15248.86		1.1	0.4	0.0
50262038	44424.72	289.17	47.51	13638.6		1.0	0.3	0.0
50262001K	118724.77	-	-	118724.77		2.7	2.7	0.0
50262039	44901.58	158.16	45.84	7347.79		1.0	0.2	0.0
50262040	43188.42	151.02	47.53	7261.81		1.0	0.2	0.0
50262041	43023.6	151.01	51.89	7677.58		1.0	0.2	0.0
50262042	52988.29	234.98	48	11693.36		1.2	0.3	0.0
50262043	81236.69	179.61	49.32	7471.14		1.9	0.2	0.0
50262001J	204634.55	1586.05	129	204528.94		4.7	4.7	0.0
50262001F	684310.07	712.25	34.42	25434.37		15.7	0.6	0.0
50228013A	13930278	2577.5	168.88	430628.32		319.8	9.9	0.0
50228025	50966.38	145.4	67.18	13140.44		1.2	0.3	0.0
50229004F	61611.25	-	-	330.01		1.4	0.0	0.0
50229004D	83187.07	100.7	93.12	20801.02		1.9	0.5	0.0
50229001F	46082.91	17.04	104.02	2413.81		1.1	0.1	0.0
50229001W	46653.93	169.11	191.24	29132.37		1.1	0.7	0.0
50229001G	3167240.39	1486.33	176.69	256706.11		72.7	5.9	0.0
50229001H	2156651.05	574.72	172.08	99516.55		49.5	2.3	0.0
50228001C	1076221.16	2437.16	174.37	429462.75		24.7	9.9	0.0
50270036A	28102.22	-	-	8873.73		0.6	0.2	0.0
50270037A	32591.72	-	-	602.97		0.7	0.0	0.0
50228010A	10576408.2	2670.43	182.5	488023.32	368489.8	242.8	11.2	8.5
50222005B	7716666.36	695.82	196.18	119096.37		177.2	2.7	0.0

Parcel Areas determined in AutoCAD/MicroStation

Table 2.8
Impact to Adjacent Land Parcels, SR 303L Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
Nonassess	2,628,805	922	68	62,807		60.35	1.44	0.00
50249005	1,674,849	1,399	64	89,645		38.45	2.06	0.00
50249009	2,579,338	1,351	69	93,147		59.21	2.14	0.00
50249001B	337,823	468	92	43,133		7.76	0.99	0.00
50249001A	12,978	42	71	2,988		0.30	0.07	0.00
50249012C	123,848	63	76	4,780		2.84	0.11	0.00
50249012D	96,368	51	70	3,562		2.21	0.08	0.00
50249012B	2,766,403	672	64	43,226		63.51	0.99	0.00
50249013B	675,096	517	66	34,207		15.50	0.79	0.00
50249020K	345,218	495	75	37,107		7.93	0.85	0.00
50243025F	16,250	26	51	1,300		0.37	0.03	0.00
50243025C	5,343,481	539	60	32,519	2,265,363	122.67	0.75	52.01
50243025D	1,205,696			0	9,385		0.00	
50243027	1,631,872	1,266	60	75,981		37.46	1.74	0.00
50243028	1,659,513	1,291	64	82,150		38.10	1.89	0.00
50243006	1,619,591	1,258	61	77,356		37.18	1.78	0.00
50243003F	42,337	33	69	2,286				
50285096	65,065	400	23	9,121		1.49	0.21	0.00
50285097	55,852	810	17	30,583		1.28	0.70	0.00
50285048	7,199	55	21	1,179		0.17	0.03	0.00
50285047	6,533	52	22	1,164		0.15	0.03	0.00
50285046	6,034	55	21	1,144		0.14	0.03	0.00
50285017	6,675	110	40	4,406		0.15	0.10	0.00
50285098	3,797	25	39	983		0.09	0.02	0.00
50285016	6,050	110	38	4,226		0.14	0.10	0.00
50243700	6,056	110	37	4,095		0.14		
50243820	3,848	25	37	919		0.09	0.02	0.00
50243818	19,864	328	27	8,923		0.46	0.20	0.00
50243699	6,495	103	38	3,903		0.15	0.09	0.00
50243697	10,031	90	19	1,721		0.23	0.04	0.00
50243003B	46,161	143	62	8,818		1.06	0.20	0.00
50243696	6,278	57	20	1,139		0.14	0.03	0.00
50243695	5,501	50	19	962		0.13	0.02	0.00
50243694	5,501	50	19	959		0.13	0.02	0.00
50243693	5,502	50	19	966		0.13	0.02	0.00
50243692	5,503	50	20	980		0.13	0.02	0.00
50243691	5,503	50	20	1,000		0.13	0.02	0.00
50243690	5,504	50	20	1,023		0.13	0.02	0.00
50243689	5,657	50	21	1,061		0.13	0.02	0.00
50243819	44,053	653	30	19,589		1.01	0.45	0.00
50243687	7,152	110	42	4,607		0.16	0.11	0.00
50243821	3,843	25	43	1,063		0.09	0.02	0.00
50243686	5,500	110	43	4,744		0.13	0.11	0.00
50243219	5,506	110	44	4,882		0.13	0.11	0.00
50243292	3,841	25	45	1,132		0.09	0.03	0.00
50243218	7,148	110	46	5,103		0.16	0.12	0.00
50243200	6,700	60	28	1,666		0.15	0.04	0.00
50243199	6,380	58	29	1,663		0.15	0.04	0.00
50243198	6,380	58	30	1,730		0.15	0.04	0.00
50243197	5,500	50	32	1,599		0.13	0.04	0.00
50243196	5,500	50	35	1,742		0.13	0.04	0.00

Table 2.8 (continued)
Impact to Adjacent Land Parcels, SR 303L Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50243195	5,500	48	40	1,928		0.13	0.04	0.00
50243194	5,500	50	43	2,169		0.13	0.05	0.00
50243193	6,068	56	48	2,727		0.14	0.06	0.00
50243192	7,060	58	54	3,121		0.16	0.07	0.00
50243291	50,072	735	28	20,830		1.15	0.48	0.00
50243002B	138,921	351	59	20,830		3.19	0.48	0.00
50243002D	863,628	901	63	56,946		19.83	1.31	0.00
50239003A	6,626,421	1,599	64	103,050	1,641,081	152.12	2.37	37.67
50239003B	136,003	n/a	n/a	0	5,550		0.00	
50239002	1,660,991	1,321	73	96,906		38.13	2.22	0.00
50239005B	692,952	554	77	42,423		15.91	0.97	0.00
50239005A	1,007,218	715	70	50,068		23.12	1.15	0.00
50238003B	4,221,749	2,554	89	228,461		96.92	5.24	0.00
50238003D	857,480	47	77	6,794				
50238004Q	1,127,845	40	99	3,928				
50238004U	3,096,558	481	92	52,321		71.09	1.20	0.00
50238004X	379,275	150	104	14,520				
50238004Y	9,551	10	106	1,063			0.02	
50238004P	1,636,857	2,079	121	252,117		37.58	5.79	0.00
50238004V	2,034,999	343	126	43,205		46.72	0.99	0.00
50238004R	2,683,134	243	104	25,327	1,199,748			
50238004F	1,293,929	n/a	n/a	n/a	6,092			
50238004S	1,293,806	n/a	n/a	n/a	316,211	29.70	n/a	7.26
50232002E	1,943	783	90	70,628	2,807,511	0.04	1.62	64.45
50101008E	260,460	71	25	2,059		5.98	0.05	0.00
50101006D	120,547	112	35	4,592				
50101006G	1,242,115	2,631	71	187,248		28.52	4.30	0.00
50101006H	27,001	40	65	2,612		0.62	0.06	0.00
50101001E	5,690,068	3,824	84	322,581		130.63	7.41	0.00
50101003D	2,219,634	1,582	72	114,170		50.96	2.62	0.00
50102012C	4,777,528	1,590	55	86,854		109.68	1.99	0.00
50102012D	2,210,749	1,065	110	117,597		50.75	2.70	0.00
50102015G	5,608,554	922	64	59,129	1,435,770	128.75	1.36	32.96
50102011C	6,514,278	n/a	n/a	n/a	1,521,751	149.55	n/a	34.93
50102010C	303,106	n/a	n/a	n/a	275,396			
50102010D	48,147	n/a	n/a	n/a	38,629	1.11	n/a	0.89
50102010E	369,763	n/a	n/a	n/a	335,946	8.49	n/a	7.71
50102002	363,488	n/a	n/a	n/a	12,884	8.34	n/a	7.71
50102010A	2,046,615	n/a	n/a	n/a	1,640,455	46.98	n/a	37.66
50102007A	4,807,459	n/a	n/a	n/a	1,725,241	110.36	n/a	39.61
50102007C	78,954	n/a	n/a	n/a	2,193	1.81	n/a	0.05
50161020	3,388,668	n/a	n/a	n/a	603,008	77.79	n/a	13.84
50102009	176,096	63	108	6,779		4.04	0.16	0.00
50102004	5,899,207	2,575	83	214,833		135.43	4.93	0.00
50102003	6,025,277	2,654	77	203,066		138.32	4.66	0.00
50103009A	2,831,635	1,330	44	58,573		65.01	1.34	0.00
50103009B	3,109,077	1,324	67	88,588		71.37	2.03	0.00
50103010	6,144,814	39,786	5	184,498		141.07	4.24	0.00
50104010B	2,866,262	39,786	2	71,892		65.80	1.65	0.00
50104010C	3,162,786	1,403	50	69,922		72.61	1.61	0.00
50104009C	2,891,506	1,138	65	73,637		66.38	1.69	0.00
50104009F	2,341,597	1,375	65	89,276		53.76	2.05	0.00
50105003A	6,236,303	2,716	92	251,167	1,621,647	143.17	5.77	37.23
50105002	3,439,829	1,326	117	155,018		78.97	3.56	0.00

Table 2.8 (continued)
Impact to Adjacent Land Parcels, SR 303L Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50105008B	762,428	1,296	85	110,158		17.50	2.53	0.00
50105008C	118,120	345	45	15,371		2.71	0.35	0.00
50106009	325,848	101	80	8,017		7.48	0.18	0.00
50106003	6,394,450	2,527	90	228,101		146.80	5.24	0.00
50106001	6,712,618	2,624	89	234,049		154.10	5.37	0.00
50108025C	14,857	22	76	1,672		0.34	0.04	0.00
50108025A	7,408	10	76	761		0.17	0.02	0.00
50108025B	186,021	297	75	22,392		4.27	0.51	0.00
50108026	209,574	337	66	22,392		4.81	0.51	0.00
50108027	205,715	319	76	24,179		4.72	0.56	0.00
50108028	208,855	324	74	23,851		4.79	0.55	0.00
50108029	208,470	321	77	24,866		4.79	0.57	0.00
50108030	205,537	318	76	24,227		4.72	0.56	0.00
50108031	208,122	325	84	27,337		4.78	0.63	0.00
50108032	209,740	321	82	26,452		4.81	0.61	0.00
50110027	224,284	345	82	28,343		5.15	0.65	0.00
50110028	219,782	339	75	25,254		5.05	0.58	0.00
50110029	218,765	341	77	26,363		5.02	0.61	0.00
50110031	165,747	256	87	22,326		3.81	0.51	0.00
50110030	52,479	82	92	7,549		1.20	0.17	0.00
50110032	150,639	346	11	3,808		3.46	0.09	0.00
50110033	135,789	347	20	7,114		3.12	0.16	0.00
50110034	122,132	345	56	19,303		2.80	0.44	0.00
50110018	193,257	173	107	18,478		4.44	0.42	0.00
50111002	6,251,551	2,710	29	78,580	2,216,098	143.52	1.80	50.87
50111004C	755,618	660	40	26,389		17.35	0.61	0.00
50111004D	752,065	661	35	23,387		17.27	0.54	0.00
50111004B	3,951,384	1,311	24	32,056		90.71	0.74	0.00
50112018	5,380,123	2,625	25	64,537		123.51	1.48	0.00
50112015B	6,168,362	1,427	29	42,038		141.61	0.97	0.00
50112015A	23,063	10	6	61		0.53	0.00	0.00
50112015C	50,742	22	6	141		1.16	0.00	0.00
50112187	892,401	3,514	45	156,747		20.49	3.60	0.00
50112004F	1,108,848	584	20	11,394		25.46	0.26	0.00

Parcel Areas determined in AutoCAD/MicroStation

Table 2.9
Impact to Adjacent Land Parcels, Upper Northern Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50209010A	6,731,588	723	210	151,830		154.54	3.49	0.00
50209010B	39,988	197	203	39,932		0.92	0.92	0.00
50209012C	13,660,852	2,611	210	548,381		313.61	12.59	0.00
50209014	6,969,600	2,641	220	581,020		160.00	13.34	0.00
50210008	44,416	302	146	44,213		1.02	1.01	0.00
50210042A	85,358	303	185	56,055		1.96	1.29	0.00
50210044	44,522	305	111	33,754		1.02	0.77	0.00
50210079	44,515	304	112	33,882		1.02	0.78	0.00
50210009	44,447	305	101	30,845		1.02	0.71	0.00
50210045	44,553	302	91	27,286		1.02	0.63	0.00
50210078	44,544	301	89	26,769		1.02	0.61	0.00
50210002Z	3,484,800	1,271	191	242,049		80.00	5.56	0.00
50210082	1,742,400	627	176	110,656		40.00	2.54	0.00
50210081	1,742,400	626	179	111,887		40.00	2.57	0.00
50210007	10,423,080	1,302	190	247,380		239.28	5.68	0.00
50210006	132,422	53	190	10,005		3.04	0.23	0.00
50105003A	12,476,063	1,406	220	309,320	1,786,716	286.41	7.10	41.02
502-10-080	230,345	75	185	13,875		5.29	0.32	0.00

Parcel Areas determined in AutoCAD/MicroStation

Table 2.10
Impact to Adjacent Land Parcels, Lower Northern Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50105003A	12,476,063	13	130	1,690	515,514	286.41	0.04	11.83
50148004A	20,861,320	1,418	160	226,944	147,106	478.91	5.21	3.38
50148003A	4,268,880	2,367	210	497,070		98.00	11.41	0.00

Parcel Areas determined in AutoCAD/MicroStation

Table 2.11
Impact to Adjacent Land Parcels, Reems Channel

Parcel #	Parcel Area (ft^2)	Length Along Parcel (ft)	Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50142016E	144100.26			7411.99		3.3	0.2	0.0
50142013	1662355.96			4242.6		38.2	0.1	0.0
50148004A	20736026.2	2594.21	152.04	439508.8		476.0	10.1	0.0
50141008B	119421.1	162.39	46.95	8643.97		2.7	0.2	0.0
50141008A	119401.72	209.94	50	9963.61		2.7	0.2	0.0
50141005	5975737.23	2498.62	192.78	496097.6	2041794	70.3	11.4	46.9
50141006A	3060605.59	1283.1	207.53	260422.1	200454.3	70.3	6.0	4.6
50141006B	3106285.09	1300.86	228.21	251402.8		71.3	5.8	0.0
50140008C	38763.11	15	199.75	5983.75		0.9	0.1	0.0
50140008A	25844.13	10	201.48	2021.27		0.6	0.0	0.0
50140008B	6612162.05	2567.07	173.29	452433		151.8	10.4	0.0
50140009B	81002.4	30	173.21	5184.03		1.9	0.1	0.0
50140009A	11832275.8	2577.96	171.84	464868.4		271.6	10.7	0.0
50140009C	111613.72	33	183.26	6029.19		2.6	0.1	0.0
50140003B	5896849.11	2597.84	164.21	437043.6		135.4	10.0	0.0
50140001E	4868348.42	2112.9	177.16	371214.1		111.8	8.5	0.0
50140001D	202611.1	467.88	176.49	82144.07		4.7	1.9	0.0
50177008B	482326.33	976.65	174.16	172678.4		11.1	4.0	0.0
50197628	41901.97	280.06	168.42	33127.31		1.0	0.8	0.0
50177013A	347028.55	159.39	168.42	24019.33		8.0	0.6	0.0

Parcel Areas determined in AutoCAD/MicroStation

Table 2.12
Impact to Adjacent Land Parcels, AT&SF Railroad Channel

Parcel #	Parcel Area (ft^2)	Length Along Parcel (ft)	Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50142017A	6705895.56	2580.8	160.4	388136.7	153.9	8.9	0.0
50142019A	224380.81			5618.41	5.2	0.1	0.0
50142018	6775337.18	2615.46	151.86	393602.5	155.5	9.0	0.0
50142033	288748.9			9071.85	6.6	0.2	0.0
50143030	32564.38	341.29	34.71	10934.3	0.7	0.3	0.0
50143031	137999.43	153.79	204.18	57182.14	76.1	1.3	0.0
50143017	3314180.24	2108.73	225.04	483261.4	76.1	11.1	21.5
50143023	130620.05			6670.6	3.0	0.2	0.0
50143029	111892.22	1864.81	23.13	22252.93	2.6	0.5	0.0
50143015C	6500539.47	2411.16	215.08	556589.5	149.2	12.8	0.0
50143013B	5793959.57	4200	175.28	734018	133.0	16.9	0.0
50143009G	8559.45	15	157.26	2269.62	0.2	0.1	0.0
50143009E	5692.18	9.98	157.26	1637.93	0.1	0.0	0.0
50143009J	1090623.16	1911.14	141.95	274712.8	25.0	6.3	0.0
50143007F	184150.58	330.51	140.56	46893.27	4.2	1.1	0.0
50143005B	521187.03	921.57	148.92	137188.8	12.0	3.1	0.0
50143006A	2829587.28	644.05	144.91	93277.52	65.0	2.1	0.0
50143003A	1597205.46	1284.33	158.13	199906.7	36.7	4.6	0.0
50143024	230149.29			200	5.3	0.0	0.0
50138004	1589026.82	1287.26	129.77	174110.4	36.5	4.0	0.0
50138013	221643.75			200	5.1	0.0	0.0
50138001	1626352.18	1320.41	136.13	181028	37.3	4.2	0.0
50138007Z	308498.22	642.13	117.27	74699.21	7.1	1.7	0.0
50138012	87882.84	738.63	21.16	14097.74	2.0	0.3	0.0
50138007Y	385493.68	649.2	137	90959.04	8.8	2.1	0.0
50138007F	2913906.54	1305.84	124.07	163362.4	66.9	3.8	0.0
501150014	1680855.55	107.82	124.13	12521.42	38.6	0.3	0.0

Parcel Areas determined in AutoCAD/MicroStation

Table 2.13
Impact to Adjacent Land Parcels, Lower El Mirage Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
NONASSESS	1,254,071	540	172	92,953		28.79	2.13	
50186553	994,760	1,760	165	215,708		22.84	4.95	
50186463	2,032	32	5	160		0.05	0.00	
50186462	2,037	42	19	799		0.05	0.02	
50186461	2,117	42	32	1,328		0.05	0.03	
50186460	2,008	40	35	1,411		0.05	0.03	
50186459	1,961	42	31	1,293		0.05	0.03	
50186458	2,031	39	33	1,267		0.05	0.03	
50186457	2,049	39	35	1,362		0.05	0.03	
50186456	2,045	40	31	1,220		0.05	0.03	
50186455	1,873	41	29	1,207		0.04	0.03	
50186454	2,092	39	32	1,250		0.05	0.03	
50186453	2,028	38	36	1,370		0.05	0.03	
50186452	2,061	42	36	1,513		0.05	0.03	
50186451	2,000	42	35	1,461		0.05	0.03	
50186450	2,037	43	32	1,359		0.05	0.03	
50186449	2,106	42	30	1,265		0.05	0.03	
50186448	2,107	40	33	1,311		0.05	0.03	
50186447	2,001	42	28	1,173		0.05	0.03	
50186446	2,053	41	28	1,138		0.05	0.03	
50186445	2,032	38	32	1,224		0.05	0.03	
50186444	1,988	40	27	1,097		0.05	0.03	
50186443	2,013	39	27	1,065		0.05	0.02	
50186442	2,086	43	24	1,031		0.05	0.02	
50186441	2,146	41	25	1,036		0.05	0.02	
50186474	2,109	38	51	2,109		0.05	0.05	
50186475	2,051	37	53	2,051		0.05	0.05	
50186476	2,064	40	53	2,064		0.05	0.05	
50186477	2,096	39	53	2,096		0.05	0.05	
50186478	2,208	40	54	2,208		0.05	0.05	
50186479	2,017	37	52	2,017		0.05	0.05	
50186480	2,110	38	55	2,110		0.05	0.05	
50186481	2,022	39	56	2,022		0.05	0.05	
50186482	2,083	38	53	2,083		0.05	0.05	
50186483	2,174	39	55	2,174		0.05	0.05	
50186484	2,139	39	52	2,139		0.05	0.05	
50186485	2,074	38	52	2,074		0.05	0.05	
50186486	2,069	38	52	2,069		0.05	0.05	
50186487	2,145	38	55	2,145		0.05	0.05	
50186488	2,120	38	55	2,120		0.05	0.05	
50186489	2,589	37	52	2,589		0.06	0.06	
50186490	3,164	45	44	2,800		0.07	0.06	
50186491	3,160	32	16	218		0.07	0.01	
50185930	552,824	1,172	175	192,518		12.69	4.42	
50185936	101,752	863	85	68,053		2.34	1.56	
50186558	1,445,690	360	78	25,895		33.19	0.59	
50186559E	84,420	410	117	46,698		1.94	1.07	
50186560A	270,412	46	23	1,458		6.21	0.03	
50185842	2,091	40	44	499		0.05	0.01	
50185841	1,991	42	44	470		0.05	0.01	
50185840	2,043	41	41	391		0.05	0.01	

Table 2.13 (continued)
Impact to Adjacent Land Parcels, Lower El Mirage Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50185839	2,066	38	39	586		0.05	0.01	
50185838	2,374	42	35	633		0.05	0.01	
50185837	2,232	43	30	948		0.05	0.02	
50185836	2,235	42	25	998		0.05	0.02	
50185835	2,212	41	19	1,327		0.05	0.03	
50185834	2,321	45	14	1,710		0.05	0.04	
50185833	2,404	13	6	83		0.06	0.00	
50186561	325,162	70	164	10,755		7.46	0.25	
50144004L	616,568	0	68	1,418	199,010	14.15	0.03	4.57
50144004K	1,161,583	n/a	n/a	n/a	524,294	26.67	n/a	12.04

Parcel Areas determined in AutoCAD/MicroStation

Table 2.14
Impact to Adjacent Land Parcels, Bullard Wash Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Basin Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50161001	1,698,840	1,425	236	336,380		39.00	7.72	0.00
50161034B	5,200,803	1,348	225	303,188		119.39	6.96	0.00
50161034A	64,708	23	248	5,803		1.49	0.13	0.00
50161002	6,864,011	2,647	246	651,211		157.58	14.95	0.00
50161032F	3,375,900	1,591	41	65,231		77.50	1.50	0.00
50161032G	576,037	231	47	10,857		13.22	0.25	0.00
50161030C	20,336,596	5,404	270	1,459,080		466.86	33.50	0.00
50161029K	716,867	1,464	67	98,101		16.46	2.25	0.00
50161029N	838,061	675	74	49,950		19.24	1.15	0.00
50161029B	1,639,337	1,387	110	152,570		37.63	3.50	0.00
50169006F	295,837	506	303	153,318		6.79	3.52	0.00
50169006H	41,166	n/a	n/a	n/a		0.95	0.00	0.00
50187624	665,510	1,183	248	293,384		15.28	6.74	0.00
50169961D	2,942,042	2,833	242	685,603		67.54	15.74	0.00
50169960	530,909	124	265	32,860		12.19	0.75	0.00
50170951	789,327	786	252	198,072		18.12	4.55	0.00
50187274	117,498	46	15	690		2.70	0.02	0.00
50170952	39,071	203	180	36,540		0.90	0.84	0.00
50169959	10,000	n/a	n/a	n/a		0.23	0.00	0.00
50169003E	100,848	52	228	11,856		2.32	0.27	0.00
50169017D	5,438,902	2,524	233	588,092		124.86	13.50	0.00
50169016E	6,570,285	2,578	233	600,767		150.83	13.79	0.00
50004982	1,388,188	880	206	181,280	640,335	31.87	4.16	14.70
50004981	807,006	56	51	2,856		18.53	0.07	0.00
50004980	1,179,193	392	253	99,058		27.07	2.27	0.00
50004971	8,446,892	30	50	1,500		193.91	0.03	0.00
50004010W	1,316,111	n/a	n/a	n/a	197,380	30.21	0.00	4.53
50004974	390,282	n/a	n/a	n/a	4,508	8.96	0.00	0.10
50004981	739,094	n/a	n/a	n/a	15,230	16.97	0.00	0.35
50004980	1,159,572	n/a	n/a	n/a	9,508	26.62	0.00	0.22
50187515	379,191	50	243	12,150		8.71	0.28	0.00

Parcel Areas determined in AutoCAD/MicroStation

Table 2.15
Impact to Adjacent Land Parcels, I-10 West Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50236003V	84,755	1,279	152	194,607	1.95	4.47	0.00
50237024C	6,512	121	10	1,229	0.15	0.03	0.00
NONASSESS	388,992	1,256	24	30,144	8.93	0.69	0.00
50236003L	16,545	141	5	712	0.38	0.02	0.00
50237064J	891,769	495	122	60,393	20.47	1.39	0.00
50237132	848,920	2,611	51	133,155	19.49	3.06	0.00
50237002Z	119,364	195	30	5,909	2.74	0.14	0.00
50237174	311,387	328	185	60,606	7.15	1.39	0.00
50237002Y	160,664	171	197	33,687	3.69	0.77	0.00
50237002X	50,934	171	19	3,279	1.17	0.08	0.00
50237002W	163,806	175	193	33,828	3.76	0.78	0.00
50237002V	52,317	156	93	14,539	1.20	0.33	0.00
50237209	7,656	13	50	656	0.18	0.02	0.00
50237064B	606,238	2,076	167	346,480	13.92	7.95	0.00
50237172A	100,211	1,056	149	157,192	2.30	3.61	0.00
50237325	16,338	144	58	8,375	0.38	0.19	0.00
50237173	208,083	424	100	42,244	4.78	0.97	0.00
50237002T	188,544	418	82	34,217	4.33	0.79	0.00
50236004H	21,332	32	243	7,710	0.49	0.18	0.00
50238004R	2,687,760	15	242	3,635	61.70	0.08	9.70
50238004W	376,523	n/a	n/a	n/a	8.64	n/a	7.21
50237226	7,264	37	24	888	0.17	0.02	0.00
50237227	6,137	47	13	611	0.14	0.01	0.00
50237228	5,961	61	24	1,452	0.14	0.03	0.00
50237229	6,041	58	34	1,972	0.14	0.05	0.00
50237230	6,018	60	41	2,476	0.14	0.06	0.00
50237327A	493,081	364	76	27,706	11.32	0.64	0.00

Parcel Areas determined in AutoCAD/MicroStation

Table 2.16
Impact to Adjacent Land Parcels, Tuthill Channel

Parcel #	Parcel Area (ft^2)	Length Along Parcel (ft)	Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
40009001A	978697.23	1173.86	263.32	311560.7	22.5	7.2	0.0
40009012	1670872.19	1280.08	261.16	330749.7	38.4	7.6	0.0
40009010A	3393429.74	2599.72	255.09	548703.3	77.9	12.6	0.0
40009014	74594.01	294.61	153.54	46138.67	1.7	1.1	0.0
50253008H	3163688.63	1255.37	199.01	227823.1	72.6	5.2	0.0
50255002	60739.92	40	199.5	7971.88	1.4	0.2	0.0
50253009A	3453903.61	1314.3	217.7	275719.2	79.3	6.3	0.0
50255006H	9907547.42	3256.33	217.93	693757.6	227.4	15.9	0.0
50252009C	68510.1	411.24	22.56	3612.06	1.6	0.1	0.0
50252006D	79205.84	58.86	170.96	8544.04	1.8	0.2	0.0
50252006E	170805.41	518.18	119.85	42748.4	3.9	1.0	0.0
50252010L	15903.88	542.21	38.53	15903.88	0.4	0.4	0.0
50252010J	115492.84	843.88	42.5	24967.19	2.7	0.6	0.0
50252010H	411364.75	301.67	117.49	37149.18	9.4	0.9	0.0
50252970A	270276.77	101.2	161.08	17702.08	6.2	0.4	0.0
50252010B	1986666.02	924.25	218.81	185823.6	45.6	4.3	11.2
50252011B	3312059.1	1317.59	221.58	200558.9	76.0	4.6	14.5
50252011A	182888.01	1317.59	68.12	70074.06	4.2	1.6	0.0
50252007	3409633.91	1278.77	211.09	271401.5	78.3	6.2	0.0
50247007	195341.33	1290.14	130.9	153379.5	4.5	3.5	0.0
50247042	190308.1	1290.14	89.36	138978.9	4.4	3.2	0.0
50247011	383263.35	1285.38	253.92	361996.9	8.8	8.3	0.0
50247036	377645.27	1278.53	249.63	355360.8	8.7	8.2	0.0
50247031B	289872.71	570.6	234.3	133492.2	6.7	3.1	0.0
50247031H	524784.08	730.09	234.31	148604.9	12.0	3.4	0.0
50246004P	1463946.27	1308.25	186.54	266409.8	33.6	6.1	0.0
50246028	185663.25	585.05	215.4	128219.2	4.3	2.9	0.0
50246027	175263.05	560.74	214.59	132921.3	4.0	3.1	0.0
50246044	39757.44	125.47	214.59	26954.49	0.9	0.6	0.0
50246002C	24401.01	44.66	230.77	10707.46	0.6	0.2	0.0
50246004S	12922562.5	1799.99	166.76	354498.5	296.7	8.1	0.0
50246003	523632.29	405.92	165.76	64265.42	12.0	1.5	0.0
50246008G	50889.31			1094.31	1.2	0.0	0.0
50246008F	46958.43			10442.24	1.1	0.2	0.0
50246008E	41656.17			17371.56	1.0	0.4	0.0

Parcel Areas determined in AutoCAD/MicroStation

Table 2.17
Impact to Adjacent Land Parcels, I-10 East Diversion Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50004010W	1,338,163	1,099	194	212,844	30.72	4.89	0.00
50004974	393,565	651	223	144,868	9.04	3.33	0.00
50004002N	1,742,400	1,348	221	297,798	40.00	6.84	0.00
50004979	1,784,714	85	226	19,202	40.97	0.44	0.00

Parcel Areas determined in AutoCAD/MicroStation

Table 2.18
Impact to Adjacent Land Parcels, I-10 Central Channel

Parcel #	Parcel Area (ft^2)	Approx. Length Along Parcel (ft)	Approx. Width into Parcel (ft)	Channel Area in Parcel (ft^2)	Parcel Area (ac)	Channel Area in Parcel (ac)	Basin Area in Parcel (ac)
50005003A	2,245,224	448	66	29,427	51.54	0.68	0.00
50005004K	486,320	1,661	73	121,275	11.16	2.78	0.00
50005004F	581,828	484	82	39,567	13.36	0.91	0.00
50005006B	1,004,219	1,200	88	105,600	23.05	2.42	0.00
50004977	50,476	40	97	3,880	1.16	0.09	0.00
50004972A	1,369,962	1,611	99	159,654	31.45	3.67	0.00
50004980	117,331	2,346	25	58,650	2.69	1.35	0.00
50004982	1,388,188	694	109	75,457	31.87	1.73	0.00

Parcel Areas determined in AutoCAD/MicroStation

3.0 SELECTED ALTERNATIVE

As described on Section(s) 1.2 and 1.3, the selection of a final Selected Alternative for the ADMP Update was a long and detailed process. *Figure 2.1 in Section 2* shows the final Selected Alternative. With the completion of the detailed analysis that was crucial to the development of the 15% Level plans, some issues regarding the proposed channel alignments were identified that may require more detailed evaluation during future design projects. For more detail, refer to the 'Future Design Considerations' section 3.6 of this report.

3.1 DESIGN FEATURES

The Selected Alternative and the associated features are described briefly below. *Figure 2.1* located in Section 2.0 of this report shows the Selected Alternative.

- **Beardsley Canal Channel (AKA, White Tanks FRS #3 North Inlet Channel)** – Containment of existing flow breaks along the Beardsley Canal north of White Tanks FRS #3. The first of the existing breaks occurs near Olive Avenue; the second and third occur just north of Northern Avenue. Since the Beardsley Canal Channel is currently under development, this facility is not addressed in detail on the Level III 15% Level Conceptual Design Plans.

- **Jackrabbit Channel (AKA, White Tanks FRS #3 Outlet Channel)** – Containment of flow breaks along the Jackrabbit Trail alignment from White Tanks FRS #3 to just north of Camelback Road. Conveyance of the 100-year runoff from the contributing watershed area in the White Tank Mountains south to the existing White Tanks FRS #4 located at approximately Van Buren Street. The proposed channel will tie into the existing concrete White Tanks FRS #4 inlet channel at approximately McDowell Road.

- **Jackrabbit Basin** – This proposed off-line basin is located north of Camelback Road along the proposed Jackrabbit Channel. This basin helps to attenuate the peak discharges and store the additional volume intercepted from sub-basin 232. Historically, storm water discharge generated within sub-basin 232 has broken out across the Jackrabbit Trail alignment and then south to I-10. This flow is now intercepted and released in a controlled fashion by the Jackrabbit Basin. The Jackrabbit Basin will also serve to limit the peak flow rate at the existing White Tanks FRS #4 to the original design discharge value.

- **Tuthill Channel** – This proposed channel will provide the following function:

  - A regional drain and ultimate outfall for the southwest region of the ADMP Update project area.

  - A north-south emergency outfall channel from White Tanks FRS #4 along the Tuthill Road alignment.

  This channel is located on the west side of the Tuthill Road alignment from the existing White Tanks FRS#4 structure south to the Gila River.

- **Union Pacific Basin** – This off-line basin provides peak attenuation on the north side of the Union Pacific Railroad. The attenuated peaks result in a smaller channel facility crossing the existing railroad and BID Canal.

- **Reems Road Channel** – This existing and proposed facility provides channelization of the Reems Road floodplain from Bell Road south to the existing Falcon Dunes golf course/detention basin. The existing reaches of the overall proposed facility extend from Bell Road to Hearn Road adjacent to the MVR and Greenway Parc developments, respectively. The proposed portion of this facility will tie into the downstream end of the existing reach adjacent to Greenway Parc and extend south to daylight in the existing Falcon Dunes golf course/detention basin. This channel eliminates several existing flow breaks over Reems Road from the west to the east.

- **Reems Road Basin** – This off-line basin is located just north of Olive Avenue on the west side of the Reems Road Channel. This proposed basin provides storage for storm water runoff and attenuates the peak discharges along the proposed Reems Road Channel. Since the channel effectively redirects runoff that historically crossed Reems Road and continued overland to the southeast, the total volume of runoff ultimately conveyed to the existing Falcon Dunes golf course/detention basin will increase. The proposed Reems Road Basin provides the storage and peak attenuation required to maintain the operational integrity of the existing Falcon Dunes golf course/detention basin.

- **Bullard Channel** – This proposed facility begins as a small north-south channel near the Bethany Home Road alignment to relieve ponding at a sump caused by subsidence just east of LAFB. This low spot is generally located north of Bethany Home Road and west of Litchfield Road. The proposed channel is located within the existing Bullard Wash alignment and extends from approximately Bethany Home Road north to the Gila River south.

  A portion of the facility exists and is referred to as the Bullard Wash Outfall Channel. This segment of the Channel extends from the Gila River south to approximately just north of Lower Buckeye Road. A second segment of this facility is currently under development. This portion of the channel ties into the existing Bullard Wash Outfall Channel and extends north to approximately I-10. This segment of the channel will not be described in detail on by the 15% Level Conceptual Design plans

since it is already in a more advanced phase of analysis outside of the scope of this project.

Finally, the segment of the proposed Bullard Channel that will be addressed in detail by the 15% Level Conceptual Design plans is that portion from I-10 north to approximately the Bethany Home Road alignment.

This proposed channel would improve the drainage conveyance through the historically low area defined by the existing Bullard Wash. The channel will provide a 100-year ultimate outfall to the Gila River for a large portion of the southeastern region of the ADMP Update project area.

- **Bullard Basin** – This proposed off-line basin is located just north of I-10 and east of the proposed Bullard Channel. The basin functions as a metering facility to control the magnitude of the peak discharges on the existing Bullard Outfall Channel downstream. This basin also acts as a diversion structure that conveys additional runoff volume to the existing ADOT Basins approximately one mile east.

- **AT&SF Railroad Channel** – This proposed channel is located adjacent to the existing AT&SF Railroad on the west. The channel begins at Waddell Road and extends generally south to the existing Dysart Drain. This channel provides relief of ponded water on the west/upstream side of the existing railroad embankment. The channel also eliminates existing flow breaks over the railroad embankment at approximately Cactus Road, Peoria Avenue, the center of Section 27 township 3N range 1W southeast of the Peoria Avenue and Litchfield Road intersection and approximately 1/2 mile south of Peoria Avenue along Litchfield Road.

- **AT&SF Railroad Basin** – This proposed off-line basin is located just north of Olive Avenue adjacent to the proposed AT&SF Railroad Channel on the west. The basin provides the storage and peak attenuation necessary to maintain downstream design discharges along the existing Dysart Drain.

- **Lower El Mirage Channel** – This proposed facility would provide the necessary outfall to the recently constructed "Lower El Mirage Wash and Tributary" channels. These existing channels terminate at the existing culverts located at the southwest corner of the intersection of Cactus Road and El Mirage Road. The proposed facility will be constructed over the existing Lower El Mirage Wash alignment and will extend from the existing culvert mentioned above east to the Agua Fria River. This channel will alleviate the existing floodplain through this area providing a positive conveyance and ultimate outfall for the surrounding area currently developing in the City of El Mirage.

- **El Mirage Basin** – This proposed off-line basin will provide metered control of the increased discharge generated by the contributing area rapidly developing to the northwest. The basin will allow a controlled outflow of discharge through an outlet pipe daylighting in the channel downstream.

- **SR 303L Channel** – This proposed channel begins at Bell Road and extends south to the Gila River. The channel will be adjacent to the proposed SR 303L freeway and will provide 100-year flood protection for the roadway. In addition, this facility eliminates breakouts at approximately 15 separate locations along the existing SR 303L alignment and the Cotton Lane alignment, respectively. This channel will alleviate existing flooding downstream as well as provide an ultimate outfall to the Gila River for both the north and south regions of the ADMP Project area.

- **Cactus Road/SR 303L Basin** – This off-line basin is located at the northwest corner of the intersection of Cactus Road and SR 303L. This basin provides some peak attenuation and storage volume for high flow events up to and including the 100-year storm. The facility meters storm water runoff volume to the proposed SR 303L channel to the south.

- **Northern Avenue/SR 303L Basin** – This off-line basin is located at the northwest corner of the intersection of Northern Avenue and SR 303L. This basin provides some peak attenuation and storage volume for high flow events up to and including the 100-year storm. The facility meters storm water runoff volume to the proposed SR 303L channel to the south.

- **LAFB Crash Zone Basins** – These four proposed basins have taken the place of the single basin previously proposed at the northwest corner of the intersection of Camelback Road with the SR 303L freeway. These facilities include a much smaller version of the Camelback Road/SR 303L Basin located at the southwest corner of the intersection of Camelback Road and the SR 303L freeway. Since this group of basins is interconnected and analyzed as a composite or single facility, they will be referred to as a single basin location. The basins provide peak attenuation and flood protection for adjacent parcels and downstream channel segments. Due to the large area of land required for these relatively shallow basins (6-foot), some discharge previously conveyed south from LAFB sub-basins to the proposed Camelback Channel is now retained upstream. This has the effect of lowering the discharges previously estimated along the proposed Camelback Channel. As a result, the upper-most reach of the proposed channel has been eliminated. These basins have been located within the existing LAFB crash zone areas to provide a buffer to existing and ongoing development around the base perimeter.

- **I-10/SR 303L Basin** – Similar to the LAFB Crash Zone Basins, this on-line facility represents the composite of two smaller facilities that have been interconnected and analyzed as a single basin. This facility is located at the northwest corner of the proposed traffic interchange of the proposed SR 303L freeway and the existing I-10 freeway. The northern basin lies north of

McDowell Road and is located within and adjacent to the existing Perryville Prison property limits along its south and east perimeter. The southern basin lies south of McDowell Road and east of the proposed interchange. This facility provides peak attenuation and storage volume required to minimize the size of the outfall facility required to cross the proposed traffic interchange and continue south to the Gila River outfall. The south basin also serves as an outfall for the proposed I-10 West Channel tributary from the west along the north side of the I-10 freeway alignment.

- **Buckeye Road/SR 303L Basin** – This proposed on-line basin is located just north of the intersection of Buckeye Road and the proposed SR 303L freeway. The basin provides peak attenuation and storage volume necessary to mitigate the overall channel cross-section downstream. The basin acts as a detention facility and meters flow at a controlled rate south to the proposed SR 303L Channel downstream at the basin outlet.

- **MC 85/SR 303L Basin** – This on-line basin is located just north of MC 85 along the west side of the proposed SR 303L Channel. Like all of the basins proposed upstream along the SR 303L, this basin functions as a detention facility to mitigate the size of the proposed SR 303L Channel section as it progresses downstream. The basin also allows for a much smaller structure crossing the existing MC 85 roadway and the existing Union Pacific Railroad.

- **I-10 West Channel** – This facility is located along the north side of the existing I-10 freeway and extends from approximately 191st Avenue east to the proposed I-10/SR 303L Basin. This channel consists of a combination of open channel and underground storm drain. The facility relieves ponding along the north side of the existing I-10 embankment and eliminates approximately 10 flow breaks south beneath the I-10.

- **I-10 West Basin** – This proposed on-line basin is located just east of Citrus Road and provides the peak attenuation and storage necessary to mitigate the required size of the downstream channel section. In addition, this basin allows the south ern component of the proposed I-10/SR 303L Basin facility to remain relatively small enabling it to fit within the small area between the proposed interchange ramps for the I-10 and SR 303L freeways.

- **Upper Northern Channel** – This proposed facility extends from the Perryville Road alignment west to the proposed Northern Avenue/SR 303L Basin east. This channel eliminates a flow break over Northern Avenue at Cotton Lane and provides a regional outfall for the northwest area of the ADMP Update project.

- **Lower Northern Channel** – This proposed facility extends from the Sarival Avenue alignment east to the proposed Lower Northern Basin. This channel eliminates a flow break over Northern Avenue at Sarival Avenue and another approximately 1/2 mile downstream. This channel also provides a regional outfall for the north-central area of the ADMP Update project.

- **Lower Northern Basin** – This on-line basin provides the storage and peak attenuation required to maintain the operational integrity of the existing Falcon Dunes golf course/detention basin. This proposed basin will be interconnected with the existing Falcon Dunes golf course/detention facility and will act to further increase the flood protection provided.

- **Camelback Channel** – This proposed facility extends from the Sarival Avenue alignment east to the proposed Bullard Channel. This channel eliminates three flow breaks over Camelback Road and provides a regional outfall for the developing area upstream.

- **I-10 Central Channel** – This proposed facility extends from a high point approximately 6,300 feet west of Bullard Channel east to the proposed off-line basin located at I-10 and the proposed Bullard Channel. This facility relieves the existing ponding on the north side of the I-10 embankment and conveys runoff east to the proposed Bullard Channel. The channel also relieves three flow breaks south beneath I-10.

- **I-10 East Diversion Channel** – This proposed facility extends from the proposed off-line detention basin at I-10 and the proposed Bullard Channel east to the existing ADOT basins. This channel allows for the diversion of excess storm water runoff out of the Bullard Wash corridor to the oversized ADOT Basins.

- **ADOT Basin Improvements** – Minor improvement of the existing ADOT basins to allow for the draining of the increased storage volume within the FCDMC requirement of 36 hours. Some minor regrading is recommended at the eastern-most basin ("A") to facilitate the daylighting of the low flow basin drainpipe from the proposed basin located at the intersection of I-10 and the Bullard Channel. The improved outlet will consist of a four-barrel 48-inch RCP. This pipe will be placed due east to the Agua Fria River and will be located between the existing Wal-Mart back parking area and the toe of the existing westbound I-10 exit ramp.

Tables 3.0A and 3.0B list the pros and cons associated with the above Selected Alternative.

Table 3.0A
Preferred/Selected Alternative "Pros"

"Pros" of Preferred/Selected Alternative												
	Alternative provides strong multi-use and partnering potential	Eliminates flow breaks from the White Tanks Mountains along Beardsley Canal and Jackrabbit Trail	Diversion of flow from Bullard Wash to ADOT basins	Channel along the AT&SF Railroad relieves ponding	Opportunities for trails adjacent to channels connecting cities	Flow diversions from WT#3&4 makes conversion to detention easier	Alternative shows significant west-east flow diversions	Alternative shows significant number of proposed detention/park facilities	Proposed detention and/or channels will minimize Loop 303 channel	Runoff is removed from the Loop 303 watershed	Alternative uses existing borrow pit	Overland channels provide good trail corridors
Alternative												
Preferred/Selected	●	●	●	●	●			●	●			●

Table 3.0B
Preferred/Selected Alternative "Cons"

Preferred/Selected Alternative "Cons"									
	Sludge dumped in the ADOT basins may require cleanup	Wal-Mart expansion may create difficulty in the construction of a proposed outfall channel	Too few west-east outfall channels	Too few attenuation park/detention basins are shown	No runoff is diverted from WT#3 making conversion to detention ponds difficult	Lack of west-east collectors implies larger facilities along Loop 303 corridor	Overland flow paths may require more land acquisition or pass through existing development	Does not make significant use of existing flood control facilities	Large flow diversions from WT #3 will require large channels along Loop 303 and/or Bullard Wash
Alternative									
Preferred/Selected	●	●			●	●			

Preferred/Selected Alternative "Cons"			
	No runoff is diverted from WT#4 making conversion to detention ponds difficult	West-east channel along Camelback must cut through a large hill to outlet at the Agua Fria River	There are too few north-south channels
Alternative			
Preferred/Selected	●		

3.2 EXISTING UTILITIES

As part of the data collection phase of the ADMP Update, URS made a significant effort to gather and process all data available throughout the approximately 220-square-mile project area relative to existing utilities. Of the approximately 47 utility owners identified as present within the project area (see Table 2.1 in the *Data Collection Report*), only a fraction responded with any useful information. Section 2.5 of the *Data Collection Report (Volume I) for the Loop 303 Corridor/White Tanks Area Drainage Master Plan Update (Loop 303 ADMP Update), dated May 2003* contains a detailed discussion of the process followed by URS in the gathering of the existing utility data throughout the project area. Section 2.5 contains a list of those utilities that did send schematic information and the nature of that information.

All utility data gathered have been included on the base mapping used to develop the 15% Level design plans. Additional utility data was collected throughout the project and was added to the base mapping as it was received. *Table(s) 3.1A-3.1J* contains a summary of the utility conflicts encountered for each of the facilities proposed as part of the Selected Alternative for the ADMP Update project. The following proposed facilities did not show utility conflicts; however, this may be due to incomplete information available:

- Upper Northern Channel
- Lower Northern Channel
- Lower El Mirage Channel
- Camelback Channel

For more information on the role of utilities in the ADMP Project, refer to Section 4.1.1 of the *Level I Alternative Analysis Report dated June 2004 (Volume II, submitted under separate cover) and* Section(s) 2.4.2 and 2.5 of the *Level II Phase II Technical Memorandum dated June 2004 (Volume III, submitted under separate cover).*

3.3 SITE CONSTRAINTS

Through the process of refining the Selected Alternative to a degree necessary to prepare the 15% Conceptual Design Plans, the Level III analysis resulted in several issues and/or constraints regarding the proposed facilities. Some of the issues were general and related to the overall project while others were specific to certain proposed facilities. While none of the following constraints is considered a "fatal flaw," some of them could be significant during the design phase of proposed facilities.

3.3.1 General Issues and Constraints

Some of the constraints were imposed on the project by the FCDMC in the form of limiting criteria to be followed in an effort to mitigate the relatively high cost of multi-uses/aesthetic treatments as well as other costs associated with the proposed facilities. To that end, the following criteria were followed:

- ***Proposed Basins*** – The area associated with the proposed detention facilities is based on the daylighted perimeter line that can be as much as 30% greater than the required basin footprint. The additional area may be used for additional landscaping and aesthetics.

- ***Proposed Channels*** – With the exception of the proposed SR 303L channel, the area associated with the proposed channel footprint is based on the channel bank daylight lines. The cross section templates used to daylight the channels were based on the following:

  - A landscape corridor along the proposed channel determined by multiplying the proposed top width (including required freeboard) by 30%. This area was divided in half and added to the proposed channel cross section adjacent to the proposed maintenance roads on either side of the channel.
  - The placement of a 20-foot access road on either side of the channel banks.
  - Channels where there are curved sections that either avoid existing "hard-scape" features or follow an existing alignment (road, railroad, etc.). These curved channel sections should be designed to account for potential super-elevation at the outside of the bend. The magnitude of the super elevation (subcritical and supercritical flow) should be estimated to ensure adequate freeboard within the channel section.

- ***Landscape and Aesthetic Treatment*** – The Selected Alternative landscape/aesthetic and multi-use costs associated with the proposed facilities will be limited $1.00 per square foot. This maximum value was agreed on between FCDMC and URS in December 2002 as a result of the VE done earlier that year and is consistent with the District's landscape and aesthetic policy.

- ***Proposed Culvert Sizing and Location*** – At a meeting with the FCDMC on October 1, 2002, it was decided that culverts need to be sized at all major access points along the channels. The FCDMC has instructed URS to use the recently flown aerial photo (B&W) supplied to URS by FCDMC to estimate culvert/access locations. Access will not be provided via culvert crossings at every single farm/dirt road intersected by a proposed channel.

- ***Proposed Pedestrian Crossings*** – Large box culverts (10-foot x 8-foot) will be used as pedestrian crossings along the proposed channels. FCDMC requested that costs pertaining to these structures be included in an alternate cost estimate that would include multi-use components.

Table 3.1A
Known Utility Conflict Summary, Jackrabbit Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Relocation Unit	Relocation Quantity	Description of Relocation
Jackrabbit						
	17+34	6" Water	Perpendicular - crossing	LF	181	dip waterline below channel invert
	45+41	8" Water	Perpendicular - crossing	LF	182	dip waterline below channel invert
	70+16	OH Electric	Perpendicular - crossing	EA	1	relocate power poles (estimate cost per crossing) - protect lines during construction
	150+69	8" Water	Perpendicular - crossing	LF	179	dip waterline below channel invert

Table 3.1B
Known Utility Conflict Summary, SR 303L Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Description of Relocation
SR 303L				
	60+03	FO	PER	relocate fiber optic line
	67+47	12" WTR	PER	relocate 12" water
	103+29	24" WTR	PER	relocate 24" water
	113+22	OH Electric	PER	relocate overhead electric
	121+14	24" WTR	PER	relocate 24" water
	172+07	OH Electric	PER	relocate overhead electric
	173+61	24" WTR	PER	relocate 24" water
	174+48	OH Electric	PER	relocate overhead electric
	254+77	RID Canal	N/A	Channel will be under the canal
	281+17	24" SWR	PER	relocate 24" sewer
	281+41	OH Electric	DIAG	relocate overhead electric
	288+91	15" SWR	PER	relocate 15" sewer
	311+07 - 307+71	OH Electric	DIAG	relocate overhead electric
	311+07 - 307+71	IRR	DIAG	relocate irrigation - size unknown
	311+07	IRR	PER-X	relocate irrigation pipe - size unknown
	324+76	IRR	PER-X	relocate irrigation - size unknown
	338+00	IRR	PER-X	relocate supply irrigation - size unknown
	352+03	OH Electric	PER-X	relocate overhead electric
	364+88	OH Electric	PER-X	relocate overhead electric
	365+41	IRR	PER-X	relocate irrigation - size unknown
	365+96	IRR	PER-X	relocate irrigation - size unknown
	379+09	IRR	PER-X	relocate supply irrigation - size unknown
	384+90	IRR	DIAG	relocate irrigation PIPE - size unknown
	392+06	IRR	PER-X	relocate supply irrigation - size unknown
	392+15	GAS	PER-X	relocate gas line - size unknown
	392+18	OH Electric	PER-X	relocate overhead electric
	392+21	TELE	PER-X	relocation cost not significant
	392+60	TELE	PER-X	relocation cost not significant
	392+73	GAS	PER-X	relocate gas line - size unknown
	412+72	IRR	PER-X	relocate supply irrigation - size unknown
	419+32	IRR	PER-X	relocate supply irrigation - size unknown
	432+71	IRR	PER-X	relocate supply irrigation pipe through basin - size unknown
	441+00 - 424+50	IRR	PAR-X	relocate supply irrigation through basin - size unknown

Table 3.1B (continued)
Known Utility Conflict Summary, SR 303L Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Description of Relocation
	445+81	IRR	PER-X	relocate supply irrigation pipe - size unknown
	445+93	OH Electric	PER-X	relocate overhead electric
	450+19	IRR	PER-X	relocate supply irrigation - size unknown
	459+51	IRR	PER-X	relocate supply irrigation - size unknown
	472+68	IRR	PER-X	relocate irrigation tailwater - size unknown
	485+99	IRR	PER-X	relocate supply irrigation - size unknown
	498+82	IRR	PER-X	relocate supply irrigation - size unknown
	499+47	OH Electric	PER-X	relocate overhead electric
	512+51	IRR	PER-X	relocate supply irrigation - size unknown
	525+52	OH Electric	PER-X	relocate overhead electric
	525+86	OH Electric	PER-X	relocate overhead electric
	546+73	IRR	PER-X	relocate supply irrigation - size unknown
	551+84	IRR	PER-X	relocate supply irrigation - size unknown
	552+06	TELE	PER-X	relocation cost not significant
	565+44	IRR	PER-X	relocate irrigation tailwater - size unknown
	579+47	IRR	PER-X	relocate irrigation tailwater - size unknown
	590+89	IRR	PER-X	relocate irrigation tailwater - size unknown
	604+63	IRR	PER-X	relocate supply irrigation - size unknown
	604+79	IRR	PER-X	relocate irrigation tailwater - size unknown
	604+92	OH Electric	PER-X	relocate overhead electric
	605+52	TELE	PER-X	relocation cost not significant
	618+34	IRR	PER-X	relocate irrigation tailwater - size unknown
	631+62	IRR	PER-X	relocate irrigation tailwater - size unknown
	656+64 - 655+80	OH Electric	PER-X and PAR-X	relocate overhead electric
	657+94	OH Electric	PER-X	relocate overhead electric
	657+99	4" WTR	PER-X	relocate 4" water
	658+13	IRR	PER-X	relocate irrigation tailwater - size unknown
	659+00	OH Electric	PER-X	relocate overhead electric
	666+00 - 659+01	OH Electric	PAR-X	relocate parallel overhead electric
	709+00 - 701+00	OH Electric	PAR-X	relocate parallel overhead electric
	711+05	IRR	PER-X	relocate irrigation tailwater - size unknown
	711+80	24" SWR	PER-X	relocate 24" sewer
	712+41	OH Electric	PER-X	relocate overhead electric
	725+30	IRR	PER-X	relocate supply irrigation - size unknown
	737+82	IRR	PER-X	relocate irrigation tailwater - size unknown
	751+36	IRR	PER-X	relocate irrigation tailwater - size unknown
	763+96	OH Electric	PER-X	relocate overhead electric
	764+05	IRR	PER-X	relocate Irrigation tailwater - size unknown - perpendicular to channel and basin
	775+68	IRR	PER-X	relocate Irrigation tailwater - size unknown - perpendicular to channel and basin
	783+72	IRR	PER-X	relocate supply irrigation - size unknown
	791+71	IRR	PER-X	relocate supply irrigation - size unknown
	799+82	IRR	PER-X	relocate supply irrigation - size unknown
	807+81	IRR	PER-X	relocate supply irrigation - size unknown
	816+78	IRR	PER-X	relocate irrigation tailwater - size unknown
	816+92	OH Electric	PER-X	relocate overhead electric
	817+00	IRR	PER-X	relocate supply irrigation - size unknown
	817+07	27" SWR	PER-X	relocate 27" sewer
	817+13	GAS	PER-X	relocate gas line - size unknown
	817+48	TELE	PER-X	relocation cost not significant

Table 3.1B (continued)
Known Utility Conflict Summary, SR 303L Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Description of Relocation
	823+81	IRR	PER-X	relocate irrigation - size unknown
	830+13	IRR	PER-X	relocate irrigation - size unknown
	836+37	IRR	PER-X	relocate irrigation - size unknown
	830+12	IRR	PER-X	relocate irrigation - size unknown
	836+38	IRR	PER-X	relocate irrigation - size unknown
	845+70	IRR	PER-X	relocate irrigation - size unknown
	855+82	IRR	PER-X	relocate irrigation - size unknown
	865+28	IRR	PER-X	relocate irrigation - size unknown
	869+76	IRR	PER-X	relocate irrigation - size unknown
	869+95	IRR	PER-X	relocate irrigation - size unknown
	870+44	OH Electric	PER-X	relocate overhead electric
	907+09	SWR	PER-X	relocate sewer - size unknown
	908+00 - 907+25	SWR	PAR-X	relocate sewer - size unknown
	921+00 - 920+25	SWR	PAR-X	relocate sewer - size unknown
	N/A	WTR	PER-X	relocate water line - size not given/known
	N/A	IRR	PER-X	relocate irrigation - size unknown, assume small conc. V-ditch
	N/A	15" SWR	PER-X	relocate sewer line
	N/A	SWR	PER-X	relocate sewer line - size not given/known
	N/A	TELE	PER-X	relocation cost not significant
	N/A	TV	PER-X	relocation cost not significant
	N/A	OH Electric	PER-X	dig trench to place culvert

Table 3.1C
Known Utility Conflict Summary, Reems Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Relocation Unit	Relocation Quantity	Description of Relocation
Reems						
	134+10	30" sewer	perpendicular - crossing	LF	185	siphon sewer line
	81+85	42" sewer	perpendicular - crossing	LF	205	siphon sewer line

Table 3.1D
Known Utility Conflict Summary, AT&SF Railroad Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Relocation Unit	Relocation Quantity	Description of Relocation
AT&SF Railroad						
	187+86 to 204+64	30" Sewer	parallel	LF	1,678	relocate 30" sewer
	257+28	12" Water	perpendicular - crossing	LF	200	relocate 12" water
	178+85.7	12" Water	perpendicular - crossing	LF	200	relocate 12" water
	152+89-178+85.7	8" Water	parallel - relocation	LF	2,640	relocate 8" water
	177+17.7	24" Sewer	perpendicular - crossing	LF	200	siphon 24" sewer (Dysart Interceptor)
	56+02	OH Electric	perpendicular - crossing	EA	1	relocate 238 LF OH Elec.
	53+85	OH Electric	perpendicular - crossing	EA	1	relocate 260 LF OH Elec.
	3+16	Irrigation Ditch	perpendicular - crossing	LF	200	siphon or relocate Irr. Ditch
	0+16	OH Electric	perpendicular - crossing	EA	1	relocate 287 LF OH Elec.

Table 3.1E
Known Utility Conflict Summary, I-10 West Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Relocation Unit	Relocation Quantity	Total LF	Description of Relocation
I-10 West							
	38+52	6" CA water	PER	EA	1	222	relocate 6" waterline
	64+04	6" CA water	PER	EA	1	222	relocate 6" waterline
	90+59	8" CA water	PER	EA	1	168	relocate 8" waterline

Table 3.1F
Known Utility Conflict Summary, Tuthill Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Relocation Unit	Relocation Quantity	Description of Relocation
Tuthill						
	298+04	OH Electric	perpendicular - crossing	EA	1	relocate power poles (estimate cost per crossing)
	295+20	OH Electric	perpendicular - crossing	EA	1	relocate power poles (estimate cost per crossing)
	291+34	fiber optic	perpendicular - crossing	LF	170	dip fiber optic line below channel invert
	288+90	RID Canal	perpendicular - crossing	LF	170	may have to siphon canal below channel invert
	290+71	OH Electric	parallel within footprint	LF	16,197	relocate power poles (estimate cost per crossing)
	236+29	OH Electric	perpendicular - crossing	EA	1	relocate power poles (estimate cost per crossing)
	208+90	High Vltg.	perpendicular - crossing	EA	1	existing tower on left channel daylight line - avoid - do not re-locate
	191+82	OH Electric	perpendicular - crossing	EA	1	relocate power poles (estimate cost per crossing)
	144+49	BID Canal	perpendicular - crossing	LF	165	may have to siphon canal below channel invert
	45+11	?? Canal	perpendicular - crossing	LF	213	may have to siphon canal below channel invert

Table 3.1G
Known Utility Conflict Summary, Bullard Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Relocation Unit	Relocation Quantity	Total LF	Description of Relocation
Bullard Channel							
	12+82	12" Force Main	PER	EA	1	246	relocate 12" force main
	12+82	12" Force Main	crossing	EA	1	529	relocate 12" force main from basin conflict
	66+67	fiber optic	PER	EA	1	179	relocate fiber optic line adjacent RID canal
	92+71	OH Electric	PER	EA	1	226	relocate overhead electric

Table 3.1H
Known Utility Conflict Summary, I-10 East Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Relocation Unit	Relocation Quantity	Total LF	Description of Relocation
I-10 East Diversion							
	15+55	16" water	PER	EA	1	247	relocate 16" waterline
	[1]15+56	4" SW - gas	PER	EA	1	247	relocate 4" SW - gasline
	14+97	OH Electric	PER	EA	1	250	relocate 8" waterline
	15+16	IRR	PER-X	EA	1	244	relocate supply irrigation - size unknown

Table 3.1I
Known Utility Conflict Summary, ADOT Improvements

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Relocation Unit	Relocation Quantity	Total LF	Description of Relocation
ADOT Outlet Improvement							
	[1]16+38.59	4" SW - gas	PER	EA	1	40	relocate 4" SW - gasline

Table 3.1J
Known Utility Conflict Summary, I-10 Central Channel

Channel Name	Station (ft)	Utility Size and Type	Utility Orientation to Channel	Relocation Unit	Relocation Quantity	Total LF	Description of Relocation
I-10 Central							
	25+94	IRR	PER-X	EA	1	131	relocate supply irrigation - size unknown
	41+85	IRR	PER-X	EA	1	97	relocate supply irrigation - size unknown

3.3.2 Facility-Specific Issues and Constraints

Camelback Channel

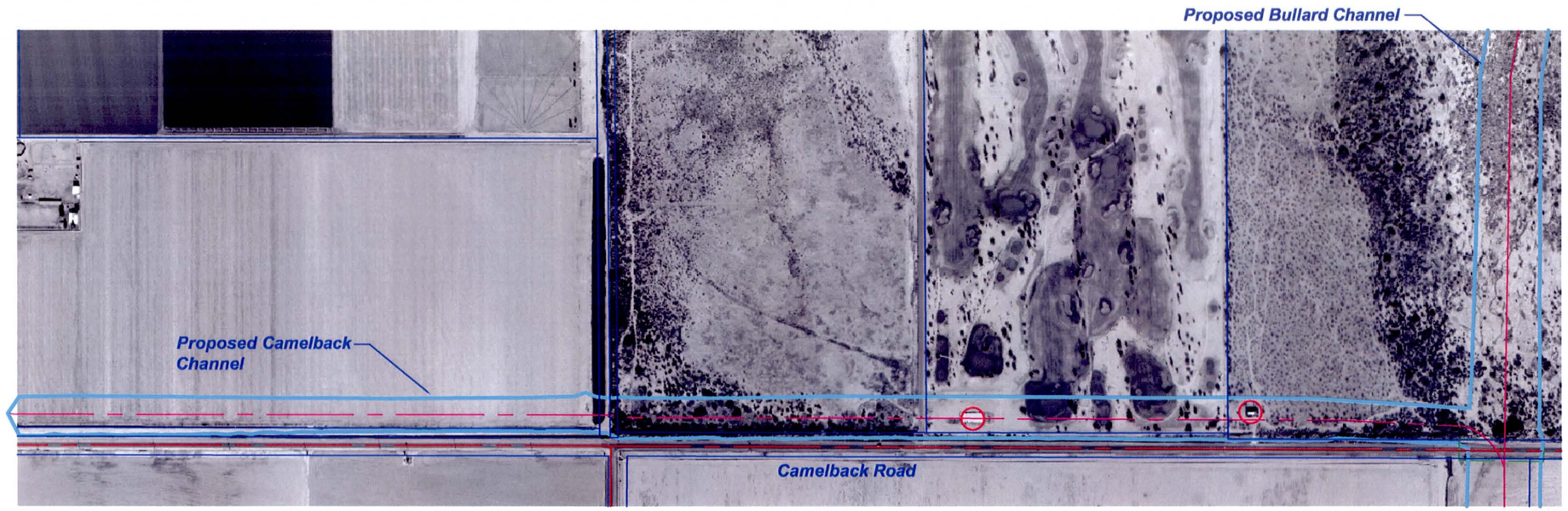
- From Station 0+00 to 8+00, the section was narrowed to minimize encroachment on Camelback Road by the south daylight line. The encroachment was a result of the curve in the channel to the south as it combines with the proposed Bullard Wash Channel prior to crossing Camelback Road. In order to alleviate the situation, the south channel side slope was steepened in this area from 6:1 to 4:1 and the bottom width increased from 20 to 25 feet. The overall effect was to maintain flow depth while shrinking the channel section through this portion of reach (RCM4).
- The portion of the Camelback Channel proposed east of the SR 303L begins approximately 1/2 mile east of Sarival Avenue (at concentration point location CM2 – see Figure 3.11). This is a direct result of the Selected Alternative revisions along the SR 303L whereby the placement of basins within the LAFB crash zones cuts off a significant portion of upstream runoff that is currently conveyed to the proposed Camelback Road Channel alignment. Note that local jurisdictional plans show a channel along Camelback Road all the way to SR 303L. As a general rule of thumb for this ADMP Update project, a "regional" type flood control channel may be proposed where runoff estimates are approximately 500 cfs or more; however, in the initial (proposed) upstream reach of the Camelback Road Channel, discharges are approximately 400 cfs.
- There were two locations identified along the proposed channel alignment where there may be a significant off-site inflow. The first location is at the upstream side of the proposed culvert crossing (Alsup Avenue north and Pebble Creek Parkway south) approximate 1/2 mile east of Sarival Avenue (at concentration point CM2). At this location, the off-site discharge is estimated to be approximately 386 cfs at 2i239 (HEC-1 node ID). The second location is just upstream of the confluence of the proposed Camelback Road Channel with the proposed Bullard Wash Channel. At this location, the total existing condition inflow from sub-basin 241 is approximately 1,380 cfs. At the major point of inflow (approximately Station 3+50.00), the estimated inflow is approximately 247 cfs. This is based on the delineated area contributing to runoff at that location prorated as a percentage of the overall contributing sub-basin 241 (major inflow "area" = 0.27 sm – about 17.9% of total sub-basin 241 area – 0.27/1.51 = 17.9%. 0.179*1,380 = 247 cfs). Note that the preceding values are for the "Existing Condition" model. This model normally controls the channel size; however, in this location, the "Future" model produces the higher values as follows: 17.9% * 1,588 = 284 cfs.
- According to the aerial photograph, there are two structures in the path of the proposed channel at Station(s) 23+75 and 11+76, respectively. These structures appear to be associated with the existing golf course adjacent to the channel on the north side of Camelback Road. *Figure 3.1* shows the proposed Camelback Road Channel alignment relative to the structures at Station 23+75 and Station 11+76. Although the proposed Camelback Road Channel could be relocated to the south side of Camelback Road, this is not recommended since this would place the facility on the downstream side of the roadway requiring large cross drain pipes to convey discharges across Camelback Road. Since there is only one structure present in the path of the proposed channel, it is probably more economical to leave the alignment where it is.

Jackrabbit Channel

- Upon review of the proposed horizontal alignment, it was apparent that there would be several houses taken by this channel on the west side of Jackrabbit Trail. In a meeting with FCDMC in November 2002, URS agreed to shift the channel alignment when possible to the east side of Jackrabbit Trail to avoid homes. Some additional modifications were made to the portion of the channel proposed on the west side of Jackrabbit Trail since that road was recently designated a "Road of Regional Significance" by MCDOT. Given this new designation, URS relocated the proposed channel alignment based on the appropriate ultimate roadway cross section. This has been completed and some cross drains were added on the west side of the channel to convey major inflow from the White Tank Mountains under Jackrabbit Trail and into the proposed channel.
- Several locations were identified along the proposed channel alignment where there may be a significant off-site inflow. At these locations, the approximate inflow discharge was estimated based on a pro-rating of the total contributing area at that location. If upstream off-site flow adjacent to the proposed channel is broad, shallow sheet flow (largely unconcentrated in nature), then that discharge is assumed to be conveyed into the channel by smaller (less significant) inflow scuppers, catch basins, culverts, etc. This type of inflow is not assumed to combine at the identified points of major inflow. These inflow areas were identified on the Level III 15% Conceptual Design Plans and were used in determining the total cost estimate associated with the channel.
- According to the aerial photo overlay, there are two structures in the path of the proposed channel alignment. The following list of channel stations identifies the approximate location of each structure relative to the proposed channel centerline:
  - 126+50
  - 122+80
- In addition to the above structures, the aerial photo indicates that the right channel bank may conflict with future homes (currently undeveloped lots) from approximately Station 71+00 to 89+00. Through this reach, steepening side slopes and reducing depth by using a smooth channel lining may reduce the channel section. Another alternative would be to use a box culvert. Relocation to the east side of Jackrabbit Trail is not an option due to a large number of existing homes/structures located on that side of the roadway. *Figures 3.2a and 3.2b show the proposed channel alignment relative to the existing and future structures.*

— = Parcel Ownership Boundary

○ = Structure Conflict



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Structure Conflict(s) - Camelback Channel

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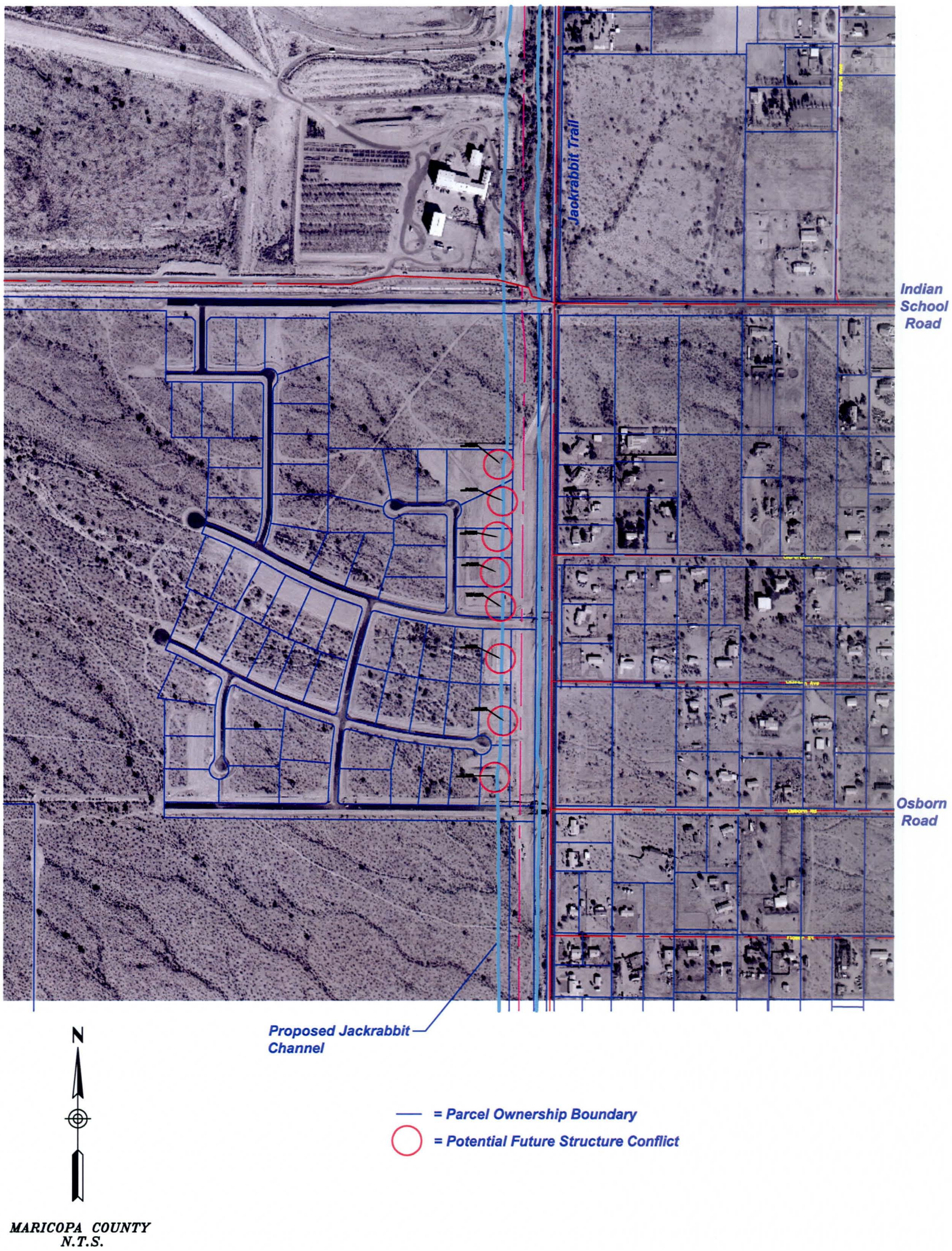
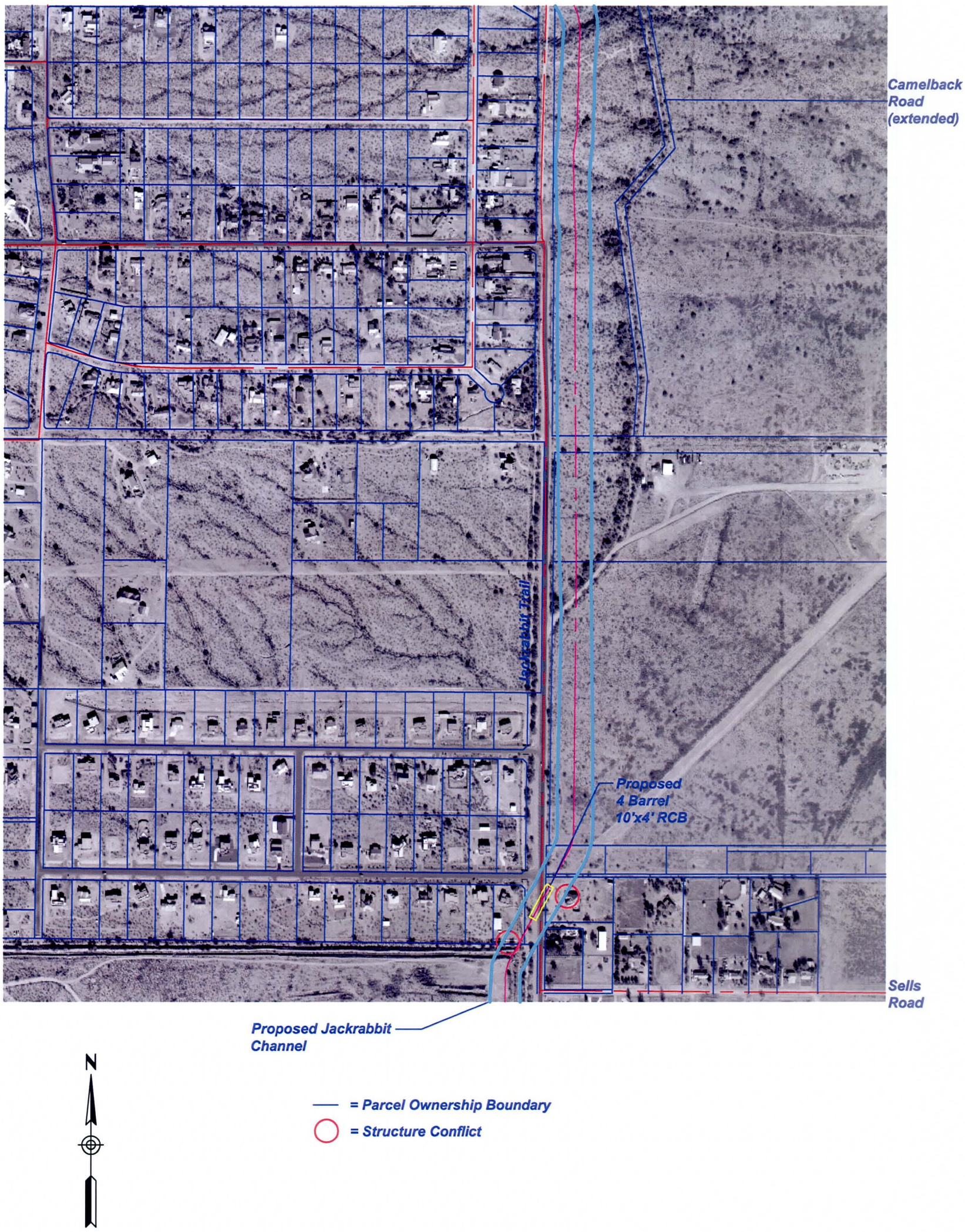
FIGURE 3.1



Structure Conflict(s) - Jackrabbit Channel January 2005

Loop 303 Corridor/White Tanks ADMP Update URS FIGURE 3.2A



Structure Conflict(s) - Jackrabbit Channel

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URS FIGURE 3.2B

Tuthill Channel

- Upon review of the proposed horizontal alignment, it was apparent that there would be several houses taken by this channel on either the west or east sides of Tuthill Road. However, it appeared that some of these may be avoided if the proposed channel alignment were shifted from one side of Tuthill to the other intermittently along the alignment where warranted. After discussing this issue with FCDMC in November 2002, an alternative channel alignment was proposed that meandered significantly in some areas to avoid existing homes. The meandering added approximately 0.43 miles (2,300 feet) at an added cost of $1.7 to $2 million. The estimated value of the existing structures was approximately (12 homes times an average of $145,000 per home) $1.7 million. Since there is no real benefit to re-alignment of the channel, the original alignment not changed.

- Locations were identified along the proposed channel alignment where there may be a significant off-site inflow. At these locations, the approximate inflow discharge was estimated based on a pro-rating of the total contributing area at that location. These locations are shown on the 15% Level conceptual design plans.

- According to the aerial photo overlay, there are approximately 22 structures in the path of the proposed channel alignment. The following stations mark the approximate locations of these structures: *295+50, 294+00, 269+50, 269+00, 268+50, 265+30, 264+75, 263+75, 260+75, 259+25, 296+20, 244+75, 235+00, 233+25, 231+20, 191+50, 151+00, 55+25, 54+75, 54+00, and 53+00.* The channel alignment was selected to minimize the number of conflicts with existing structures; however; there was significant existing development adjacent to the proposed channel on both sides of Tuthill Road. *Figure 3.3* shows the channel alignment relative to the structures listed above.

- The proposed profile for the Tuthill Channel is very flat toward the outfall at the Gila River. The longitudinal slope through approximately 1.8 miles of the proposed channel reach ranges from 0.0010 ft/ft to 0.0014 ft/ft. The reason for the flat slope is two-fold. The first is due to the required minimum channel depths at the MC85 Road (TC7) crossing. At this location, the channel profile must be deep enough to allow the construction of culverts under the existing road. The second is due to the "bowl shape" area in the Gila River floodplain from approximately concentration point TC6 through concentration point TC8 (approximately Southern Avenue to Beloat Road). As a result of this topography, the now deepened channel invert must be even flatter to daylight in the Gila River.

Reems Channel

- A "transition" will be required at Reems Road to convey the storm water runoff contained within the roadway adjacent to the MVR development back into the larger channel section(s) proposed downstream. This may be accomplished through warping of the Reems Road pavement section at the upstream end of the proposed portion of the channel. By warping the pavement, most of the storm water runoff from the upstream (existing) channel reaches may be intercepted by the higher capacity channel sections proposed downstream. As discussed previously, the two existing upstream reaches were under-designed and allow overflow to be conveyed within the Reems Road cross section.

Upper and Lower Northern Channel

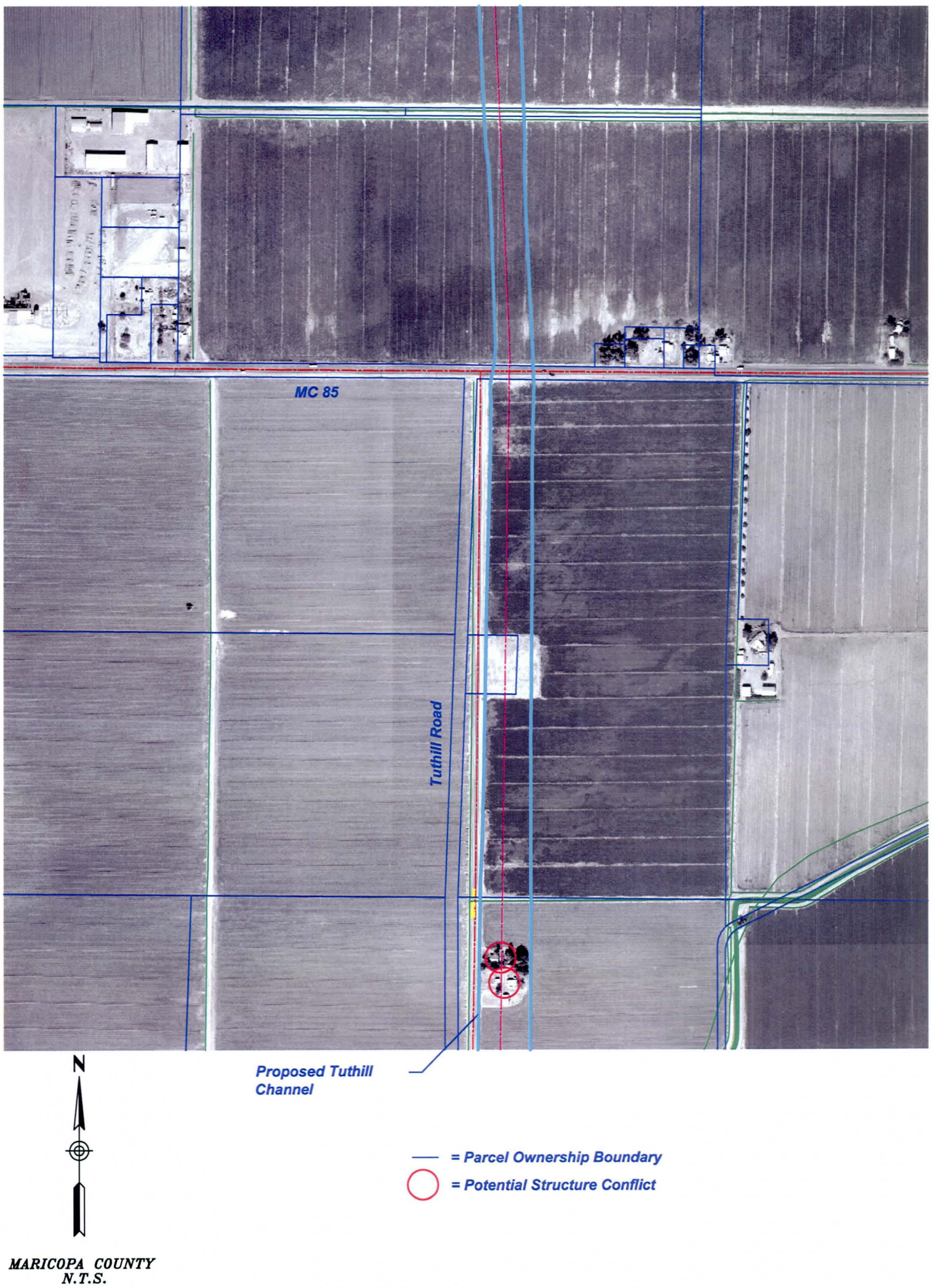
- As a consequence of the proposed SR 303L Channel, the segment of the Northern Channel proposed east of the SR 303L (Lower Northern Channel) will begin at approximately the Sarival Avenue alignment. Since the proposed SR 303L cuts off runoff from the west and directs it south, there is insufficient discharge for a proposed regional facility along Northern Avenue immediately east/downstream of SR 303L. Note that although the ADMP typically provides a "regional" channel when the flow is 500 cfs or more, in this case the channel extends to Sarival to improve conditions by eliminating the existing flow split at Northern Avenue and Sarival Avenue (1D209).

- The basin located at the intersection of Northern Avenue and Reems Road (!NR6) has the same inflow volume in the future condition hydrology as in the existing condition. This is unusual since the runoff volume under future conditions is normally lower due to the enforcement of onsite retention requirements by cities. In this case however, the contributing watershed area is virtually unchanged in the future condition.

- According to the aerial photo overlay, there are two structures in the path of the proposed channel alignment. *Figure 3.4* shows an overlay of the parcel ownership map with the aerial photo and the proposed plan-view of the proposed channel alignment. Those structure locations are given below:

  - 62+25
  - 55+60

- Future conflict may occur between the proposed "White Tank Foothills" development (adjacent to the proposed Upper Northern Channel from approximate channel centerline Station 67+87-120+06) and the proposed channel alignment. There are no feasible alternative alignments since the south side of Northern Avenue has already developed a high concentration of existing structures.



Structure Conflict(s) - Tuthill Channel

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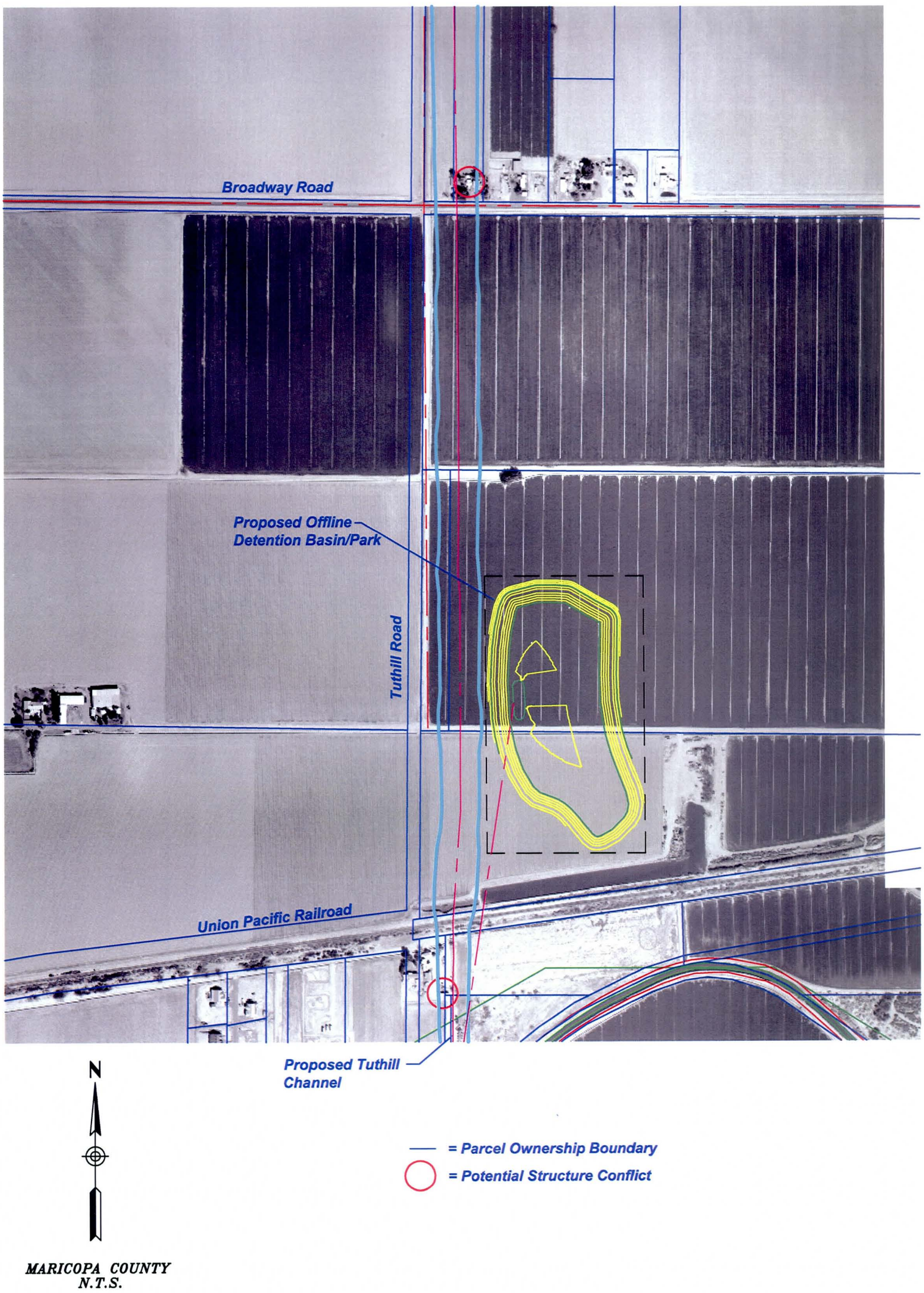
URS FIGURE 3.3A



Structure Conflict(s) - Tuthill Channel

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URS FIGURE 3.3B

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— = Parcel Ownership Boundary

○ = Potential Structure Conflict

Structure Conflict(s) - Tuthill Channel

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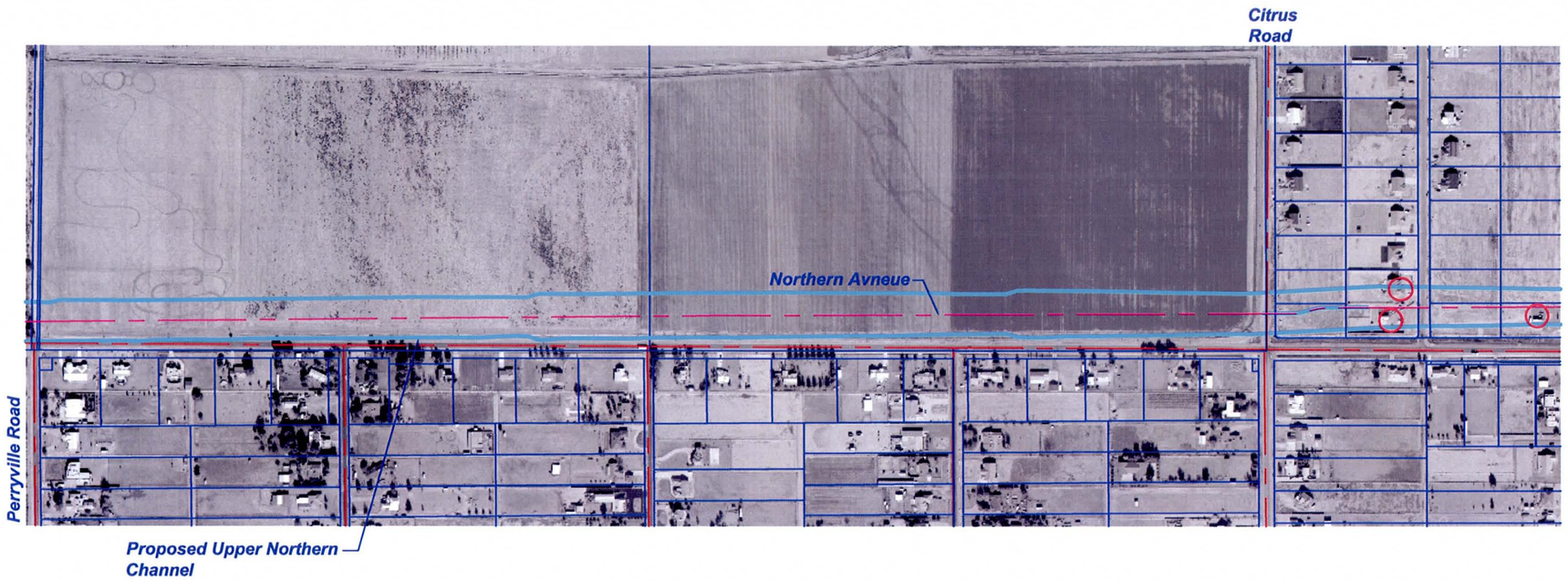
URS FIGURE 3.3C

= Parcel Ownership Boundary

= Structure Conflict



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Structure Conflict(s) - Upper Northern Channel

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FIGURE 3.4

Lower El Mirage Channel

- Although there are currently no constructed dwellings in the path of the proposed channel footprint, inspection of the aerial photo indicates that there may be graded lots (ready for construction) existing within the proposed right and left channel daylight limits. Some mitigating alternatives might be the following:

  - Steepen the proposed channel side slopes from 6:1 to 2:1 and use a smoother channel lining (CSA, shotcrete, etc.).
  - Convey the discharge through an underground culvert.

  The problem with the first of the alternatives would be the following:

  - Use of the proposed channel lining along the section would be aesthetically unpleasing. Since this section runs through an existing golf course, this may not be a satisfactory solution.

  The problem with the second of the above alternatives is that:

  - With the design of an underground box structure, the construction of such a structure would cause major disruption to the use of the existing golf course and would require significant effort in minimizing the inconvenience to residents living adjacent to the golf course. Also, such a structure would be required to convey a relatively large amount of discharge and would likely be much more expensive and harder to operate and maintain than an open channel.

  One alternative that may be more feasible and still meet the goals of the project might be the option described below.

  The current, proposed channel section requires approximately 175 feet for the entire footprint. This includes the daylighting, 30% landscape easement, and a 20-foot access road on either side of the channel. If there were no offset from the existing adjacent lot lines to the top of the proposed daylight line associated with each channel bank, there would be an available corridor of approximately 70 feet to 80 feet. This could be achieved by making the following changes to the proposed channel section through this reach:

  - By steepening the proposed channel side slopes from 6:1 to 4:1
  - Maintain a grass lining
  - Increase the proposed bottom width from 15 to 20 feet (to maintain a 4.0-foot channel depth)
  - Use a single 12-foot access road on one side only

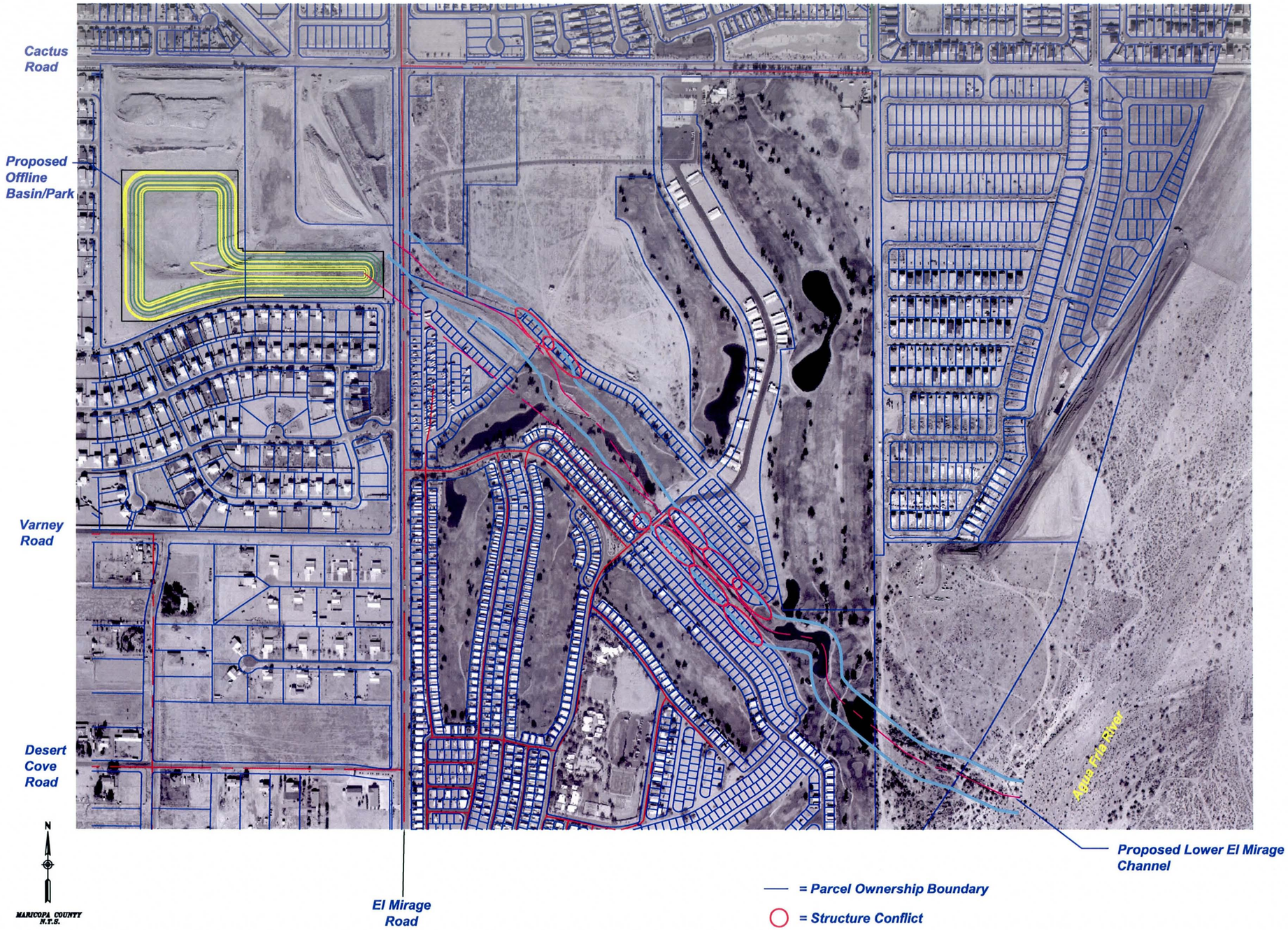
  Based on the above changes to the proposed channel section the channel top width would be on the order of 80 feet (including daylighting). Although there would be no room for a landscape corridor, this alignment runs through an existing golf course. Therefore, the landscape aspect is already inherent to the channel section.

  Figure 3.5 shows an overlay of the parcel ownership map with the aerial photo and the proposed plan-view of the proposed channel alignment.

  Of course, another alternative would be to leave the channel design as is and work with the existing development regarding those parcels that may be impacted by the proposed channel alignment. The existing development does not currently provide on-site retention, and there are no known plans for it to do so in the future. *This may provide an opportunity for the FCDMC to work with the development in allowing direct discharge to the proposed channel in return for the additional land required for the channel footprint. In any case, this is an issue that will require close attention in subsequent design contracts.*

- The channel design plans for the Lower El Mirage Wash and Tributary Channelization by AN West dated May 25, 2000, show the plan and profile for the existing channel adjacent to the proposed basin located at the southwest corner of El Mirage Road and Cactus Road. The ADMP Update proposes this as an off-line basin and, therefore, there will be a side inflow weir from the adjacent (existing) channel at approximately Station 16+16.9. At this location, however, the existing (as-built plans) profile is several feet below the ultimate profile shown on the plans. AN West describes this "ultimate" profile as the future channel profile due to anticipated siltation within the channel reach due to backwater ponding at the existing culverts crossing El Mirage Road (10-foot x 3-foot x 115-foot RCB). The inlet invert of these existing culverts is approximately 5.1 feet above the existing/constructed channel invert and approximately equal to the assumed future invert due to siltation. Therefore, a ponded condition will result prior to operating or conveying discharge across El Mirage Road.

- El Mirage Basin Design – As mentioned previously, there is an existing channel (recently constructed by El Mirage, plans by AN West "Lower El Mirage Wash Channelization L.O.M.R.," dated May 25, 2000) with slope 0.0026 f/f adjacent to the proposed off-line basin. The existing channel terminates at the existing 10-foot x 3-foot x 115-foot RCB double culvert located at El Mirage Road. The culvert has an inlet elevation of approximately 1,107.6 feet according the plans (page 4 of 18). Since this invert elevation is approximately 5.0 feet above the constructed/existing channel bottom invert, there will be significant ponding causing potential sedimentation to take place. From the AN West plans, the location experiencing the most sedimentation is just upstream of the culvert inlet. The magnitude of the sedimentation shown on the plans drops off with increased upstream distance from the culvert. The AN West plans show a straight line drawn from the culvert invert back upstream that terminates at the top of the next upstream culvert (approximately 1,438 feet upstream). The area below this line (to



Structure Conflict(s) - Lower El Mirage Channel

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FIGURE 3.5

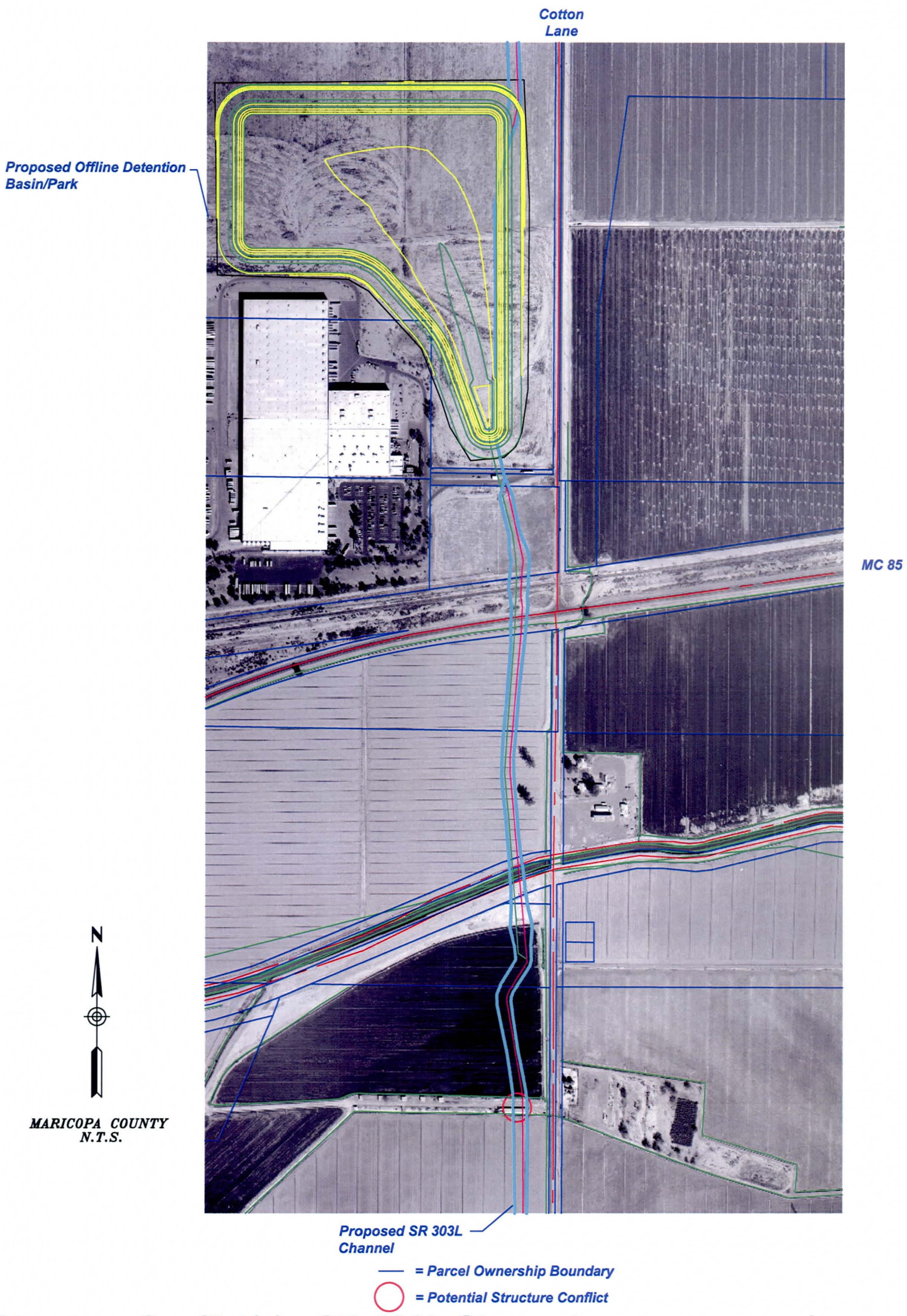
the constructed/existing channel profile shown on the plans) is labeled as "modeled ineffective in HEC-2 due to potential sediment." In order to design an off-line basin, assumptions must be made regarding these channel inverts since they may change over time. The following assumptions were made to design the off-line basin:

- At the proposed inflow location (to the basin from the channel at approximately Station 16+16.9 on AN West plans), the proposed weir invert elevation is set above the "ineffective flow line" (elevation = 1,107.6 feet) and below the maximum flood elevation (shown on AN West plans as 1,113.9 feet). Therefore, until sufficient sediment is deposited to this level or the depth of flow within the adjacent channel exceeds it, this basin will not see significant inflow volume. In the interim, water will pond at the culvert location until it reaches the elevation required to spill into the basin and/or be conveyed downstream by the existing culverts.
- Since the channel reach adjacent to the proposed basin will act as a detention area, it was modeled using stage storage discharge records in HEC-1 with a combined outflow through the existing culvert and over the adjacent side weir and into the proposed off-line basin/park. A "combined" discharge-rating curve was used to describe the composite flow through the existing culvert and the proposed off-line basin weir inlet. A divert routine was added to the model to simulate the outflow from the channel reach to the two separate locations, i.e., some flow is conveyed through the existing culverts downstream while some is conveyed laterally to the off-line basin. Since the "channel silted" situation results in the most conservative discharge estimates leaving the channel reach, this condition was used in the model.

The above situation is fairly complex and will require a much more detailed approach during the subsequent design phases of the proposed channel and basin.

SR 303L Channel

- The bottom slope across the proposed basin located at Cactus Road is 0.0025 f/f due to the difficulty associated with daylighting the post-storm drainpipe.
- The bottom slope across the proposed Northern Avenue Basin is 0.0025 f/f due to the difficulty associated with daylighting the post-storm drainpipe.
- The bottom slope across the LAFB crash zone basin (North Basin B) is 0.0025 f/f due to the difficulty associated with daylighting the post-storm drainpipe.
- The SR 303L channel is flowing at supercritical depth in the majority of reaches. As required by the FCDMC, the freeboard assumed through these reaches is 2 feet minimum and is added to the *future* depth of flow estimate. If the future depth of flow plus 2-foot freeboard is greater than the *existing* depth of flow without freeboard, then the channel is designed for the *future* depth plus freeboard. Otherwise, the channel is designed based on the *existing* depth without freeboard.
- Proposed curved channel sections within the SR 303L channel are required based on the adjacent roadway geometry and the proposed basin locations as well as some other existing "hard-scape" obstacles. Since the channel is flowing in a supercritical regime, more detailed analysis must be done during subsequent design contracts to ensure that these curves do not induce cross-waves, which could persist downstream and limit the capacity of the channel.
- The slope across the proposed basin at approximately the Broadway Road alignment upstream of the Union Pacific Railroad has been flattened from 0.5% to 0.2% to minimize the invert depth resulting at the low flow drain outlet.
- There is an existing "high voltage" power line with large towers crossing the proposed channel alignment diagonally from approximately Station 25+29.9 to Station 25+67.26. The proposed SR 303L channel alignment was shifted to avoid the large tower structures associated with the power line.
- The Buckeye Irrigation District (BID) canal will be required to be relocated within a siphon from approximately Station 45+43.6 to Station 47+67.62. This is due to the proximity to the Gila River and the fact that further deepening of the proposed channel profile under the canal would make daylighting the channel to the Gila River virtually impossible.
- According to the aerial photo overlay, there are approximately 14 structures within the path of the proposed SR 303L channel alignment. The approximate station locations for the 14 structures are: *871+47, 713+00, 712+00, 656+50, 656+00, 655+80, 586+00, 584+50, 582+50, 163+50, 163+00, 162+00, 161+00, 32+75. Figure 3.6* shows the potential structure conflicts.
- The proposed "Cotton Flower" development located adjacent to the proposed SR 303L channel on the west side just south of Yuma Road shows visible signs of fresh grading. This grading may indicate a potential for future conflicts between Cotton Flower and the proposed SR 303L channel. These potential conflicts are approximately located between *Stations 131+00 and 160+50.*



Structure Conflict(s) - SR 303L Channel

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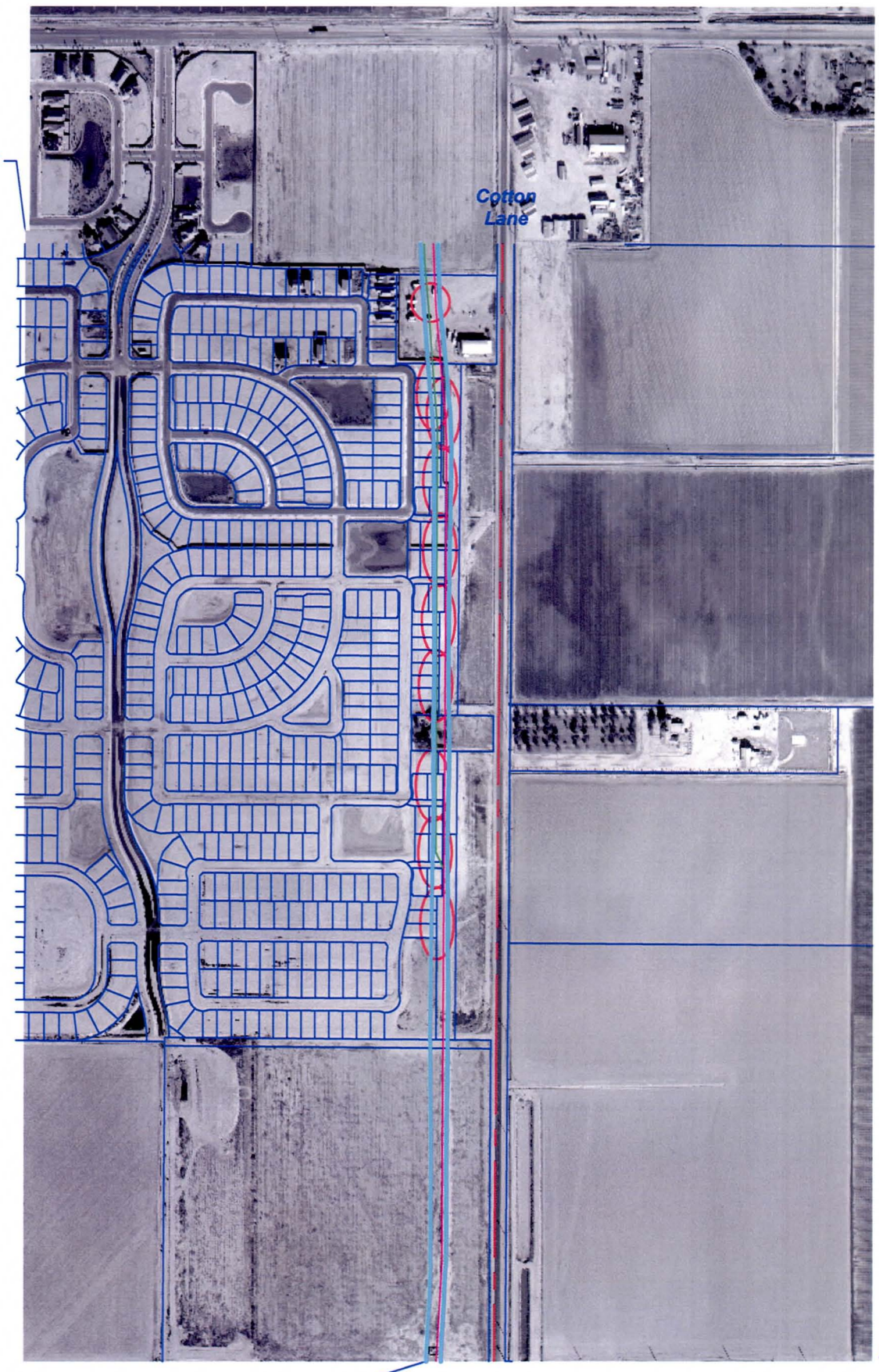
URS FIGURE 3.6A



N

MARICOPA COUNTY
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— = Parcel Ownership Boundary

= Potential Structure Conflict

= Potential Structure Conflict

Structure Conflict(s) - SR 303L Channel

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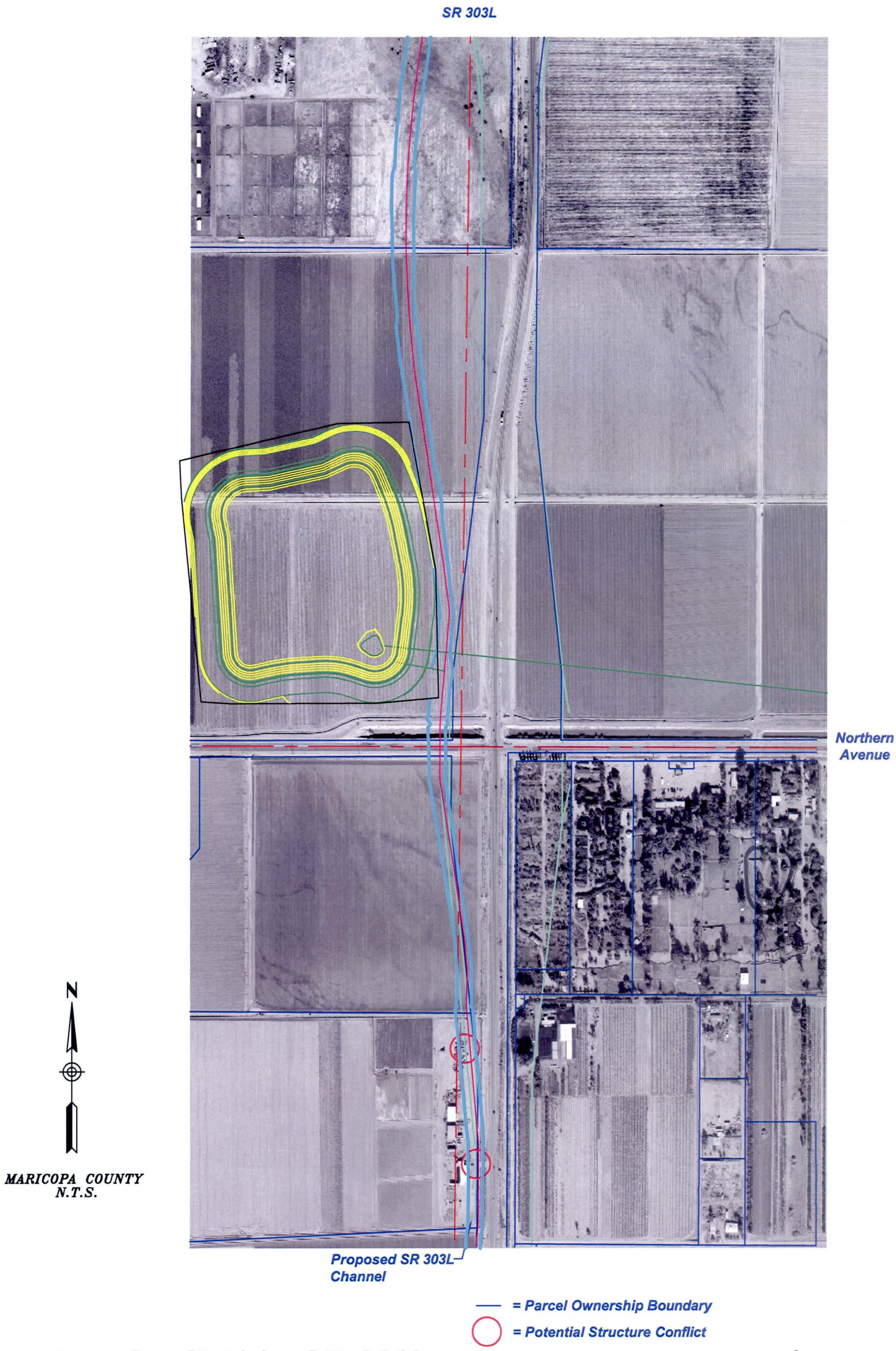
URS FIGURE 3.6B



Structure Conflict(s) - SR 303L

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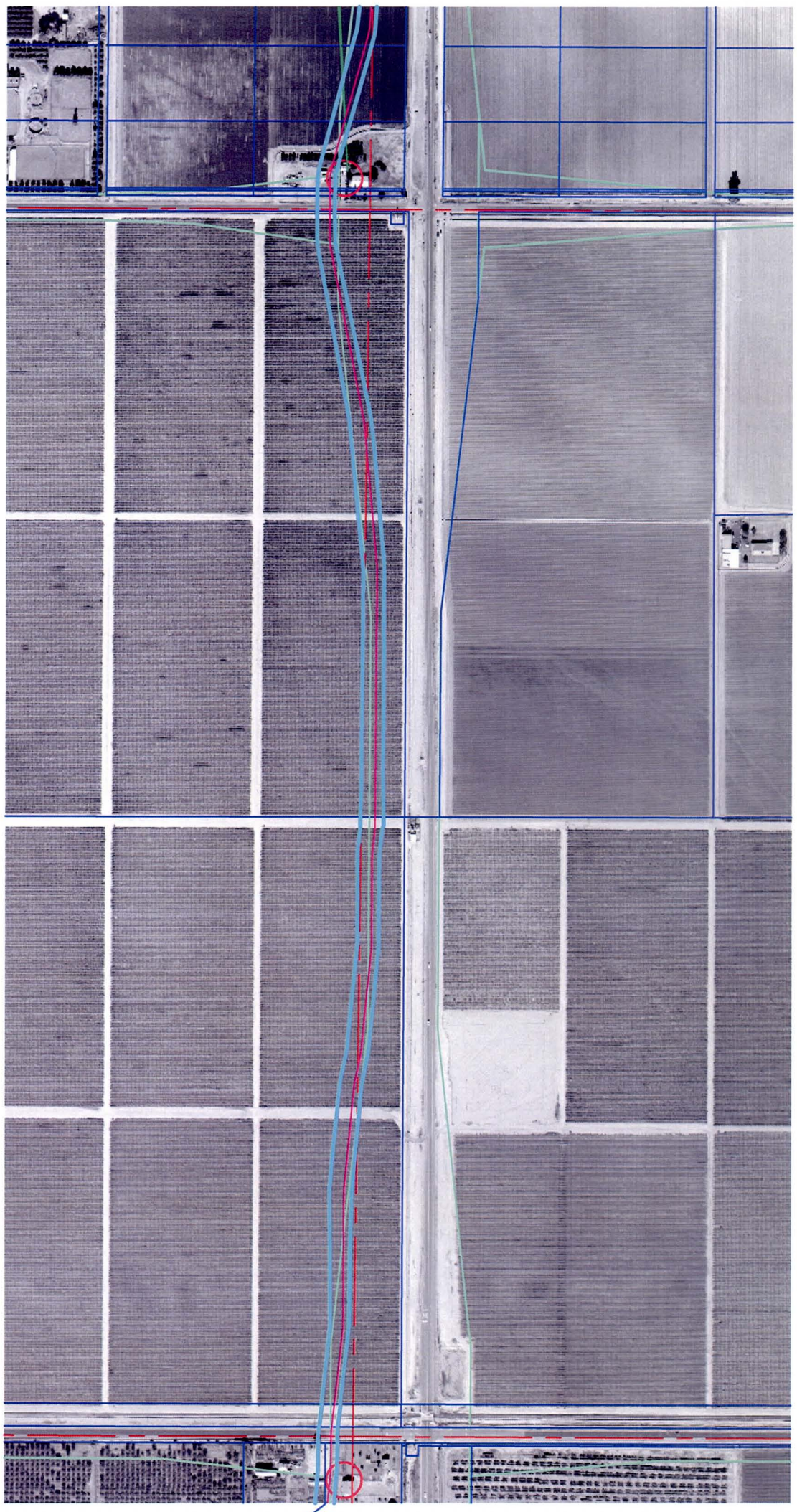
URS FIGURE 3.6C



N

MARICOPA COUNTY
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= Parcel Ownership Boundary

= Potential Structure Conflict

Structure Conflict(s) - SR 303L Channel

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URS FIGURE 3.6D

N

MARICOPA COUNTY
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= Parcel Ownership Boundary

= Potential Structure Conflict

Structure Conflict(s) - SR 303L Channel

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URS FIGURE 3.6E

- The operation and maintenance road will be 30 feet from approximately Peoria Avenue to Olive Avenue to facilitate the additional area required for turn around at the existing railroad on the north side of Olive Avenue. This will be necessary since the FCDMC has indicated that they will not be providing the improvements required by the railroad to allow for maintenance vehicles to cross the tracks at Olive Avenue. Therefore, south-bound maintenance vehicles must make a U-turn at Olive and travel north to Peoria Avenue. They may then enter the SR 303L and travel south to the Olive Avenue exit where they can then gain access to the SR 303L Channel south of Olive Avenue. Northbound maintenance vehicles must enter the SR 303L from Olive Avenue, travel north to the Peoria Avenue exit. From here they may access the SR 303L Channel either north or south of Peoria Avenue. The SR 303L DCR has accounted for this additional 10' of area in their right of way plans.

- Preliminary plans for the SR 303L DCR indicate that there may be difficulty daylighting the proposed 96-inch storm drain required for conveyance of onsite runoff from SR 303L into the Cactus Road detention basin. This will require a more detailed analysis upon final design.

- Due to issues related to timing, changes were made to the SR 303L DCR after the conclusion of this Level III report. Therefore, these changes have not been incorporated in the 15% level conceptual design plans included in Section 7 of this report. The most notable involves the re-alignment of Thomas Road at SR 303L. This resulted in a shift of the proposed SR 303L alignment to the west. Due to the shift, the proposed SR 303L Channel will also require shifting. This will not adversely impact the concept presented here but should be noted, as it must be addressed upon final design.

- This project does not consider changes to the I-10/SR 303L TI made by MCDOT after February 2004. The MCDOT design revisions could impact the I-10 West Channel. There may be alternative placement to the detention basins at I-10 and McDowell Road. Reconfiguring the basin should be considered during final design. The expansion of the proposed detention basin at I-10 just south of McDowell Road to the west results in a situation where it would be logical to combine this basin with the one proposed along the I-10 West Channel.

Bullard Wash Channel

- The length of the proposed culvert at McDowell Road was based on the assumption that McDowell Road is a minor arterial. The headwalls were placed just downstream of the sidewalks in the typical section or approximately 46 feet upstream and downstream of the roadway centerline. The culvert lengths shown at Palm Valley interior roadway crossings were based on those given in the HEC-2 model used to obtain the map revision from FEMA (where possible). At locations such as Verde Lane, this information was not specified and, therefore, an estimate for the required length was made using the aerial photo.

- Due to restricted space through the existing channel that traverses the Palm Valley golf course, the proposed channel improvement through this area was modified *not to* include the additional landscape area (equal to 30% of the channel footprint area) and to include a single 20-foot access road on the west (upstream) side of the channel only.

- From approximately the existing RID Overchute (Station 66+04.07) to Station 71+33.24, the overall proposed channel section was narrowed while maintaining desired flow depth required to hold the (approximate) existing channel profile through the golf course. This was done by steepening the existing side slopes from 9:1 to 4:1 and by increasing the bottom width from 102 feet to 116 feet. This was required to get the channel through the relatively narrow corridor between the existing homes on the west and east sides of the existing golf course, respectively.

- According to the HEC-2 (as-built model) for the existing Palm Valley Golf Course channel, several of the reaches have an adverse grade. Minor regrading will be required to create an overall positive longitudinal slope. Additional survey will be needed.

- According to the HEC-2 (as-built model) for the existing Palm Valley Golf Course channel, the interior crossings of the wash are generally equipped with low flow crossing (small diameter pipes) and are flooded during low frequency events.

- The existing bridge crossing the existing Bullard Wash at I-10 has an approximate capacity of 3,000 cfs (assuming 4 feet of freeboard from the WSEL to the low chord (LC) of the bridge) up to 9,000 cfs (assuming 1 feet of freeboard from the WSEL to the LC of the bridge). This estimate was determined by performing a normal depth calculation using recent field survey data collected at the bridge location by URS.

- Using the information describing the cross section along the existing Bullard Wash Channel at the existing RID overchute structure (from HEC-2 model prepared for Palm Valley by the WLB Group and B&R Engineering), URS performed a normal depth calculation to verify the capacity of the overchute. From inspection of the cross sections in the HEC-2 model located at RM 6.688 and 6.679 (up and downstream of the RID overchute, respectively), it was determined that there is an adverse slope across the structure. URS proposes to improve the structure by creating a positive slope of approximately 0.002 ft/ft. Normal depth calculations showed that the structure could convey as much as 4,700 cfs.

AT&SF Railroad Channel

- Very flat channel grades were required through the area where the proposed channel alignment turns 90 degrees from south to west along the existing railroad alignment. Through this area, the channel grades are approximately s = 0.0015 ft/ft due to adverse

slope conditions. Flat channel slopes were also required to achieve reasonable "relative" invert elevations when comparing the proposed bottom elevation in the adjacent off-line basin with the corresponding channel invert. It was very difficult to achieve WSELs within the channel and the basin that did not cause a "back" flow condition to occur in the channel. Sedimentation and minimum velocity need to be considered during final design of these channel sections.

- The adjacent topography is relatively flat, and off-site flow will have to be routed to specified inflow structures or catch basins.

- The proposed channel will have to either be placed within a culvert from approximately Station 154+44 to Station 172+02 (1/3-mile) or be reduced in cross section to be no wider than approximately 40 feet. This is due to a potential conflict with the relatively wide proposed channel footprint and an existing sewage treatment plant located on the west side of the railroad in this area. By making the channel concrete (n = 0.013), with 2:1 side slopes, an 8.5-foot bottom width, and a depth of flow of 4.9 feet, the channel would be approximately 26 feet to 30 feet wide including daylighting. If a 12-foot access road were maintained on the west side of the channel only, the total top width would be approximately 38 feet to 42 feet. This would be a very tight fit but is feasible. If this is not acceptable, a vertical wall channel with fencing could be used through this area using a depth of flow of 4.7 feet, a bottom width of 15 feet, and a concrete lining. This would result in a daylighted top width of approximately 16.5 feet. If a single access road were used on the west side of the channel of 12 feet, the total top width would be approximately 28.5 feet. This would leave adequate room for the channel through this reach; however; there would not be room for the multi-use aspects using this type of section. The channel could also be piped through this area within an underground box structure with a maintenance road on top. All of the above alternatives would likely result in a mixed flow regime from the subcritical upper reaches to supercritical through this area and back to subcritical just downstream. Such a situation is likely to cause a hydraulic jump downstream of the supercritical channel reach where the flow regime would transition back to subcritical. The above alternatives were not considered in the cost estimate as that was beyond the scope of this project. However, subsequent studies that focus on this particular facility should consider those as options and determine the associated cost impacts of each. The cost impacts of these options on the overall ADMP Update project will not be significant since they are for approximately 1/3 mile of an overall 51.1 miles of proposed channels.

Figure 3.7 shows the channel alignment relative to the existing sewage treatment plant.

I-10 West Channel

- The proposed upstream end of the channel was shifted approximately 1,338 feet east of 191st Avenue. This was done to eliminate conflicts between the proposed channel alignment and several existing structures (north of I-10). Since there is a significant discharge diverted south beneath I-10 approximately 630 feet upstream of the proposed channel inlet, the channel will be designed to accommodate this additional flow. However, discharge currently diverted south must now be conveyed east to the proposed channel. This will require a fairly large (seven-barrel 10-foot x 4-foot RCB) box structure.

- The portion of the proposed channel from approximately 181st Lane to 180th Drive (Station 46+50.46 to Station 57+40) will be put into an underground storm drain system. This is due to a lack of area between the existing I-10 right-of-way and the existing development north of I-10. Through this area, a concrete channel was considered with 2:1 side slopes; however, there was not room for an adequate operation and maintenance (O&M) along the channel alignment. Further, the transition from a grass channel to the concrete portion would require large radius curves. The curves would be required to transition from the relatively wide grass channel that is further offset north of I-10 to a much narrower concrete section.

- Similarly, the portion of the proposed I-10 West Channel between the proposed on-line basin just east of Citrus Road and the proposed on-line basin at the interchange of I-10 and the proposed SR 303L will be put into an underground storm drain system. As before, this is due to the lack of area required for a surface channel between the proposed right-of-way for the improved I-10 interchange with the proposed SR 303L freeway and the existing development adjacent to I-10 on the north.

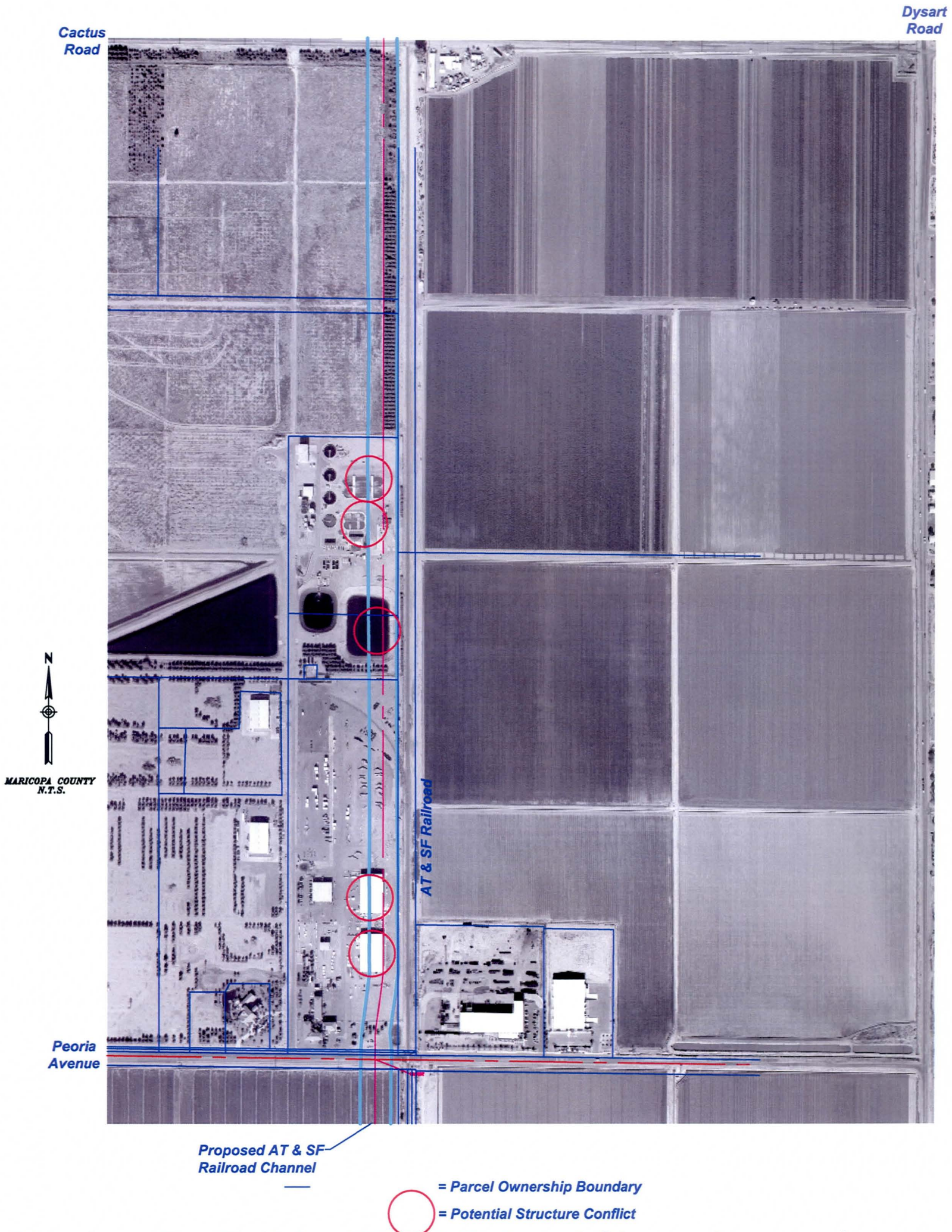
- Due to the amount of right-of-way required by the proposed I-10 interchange with the proposed SR 303L freeway, the proposed retention basin just east of Citrus Road will be on-line instead of off-line. The storm drain described above will daylight in the proposed on-line detention basin located at the intersection of I-10 and SR 303L.

Figure 3.8 shows the portions of the channel that were put into a storm drain.

I-10 Central Channel

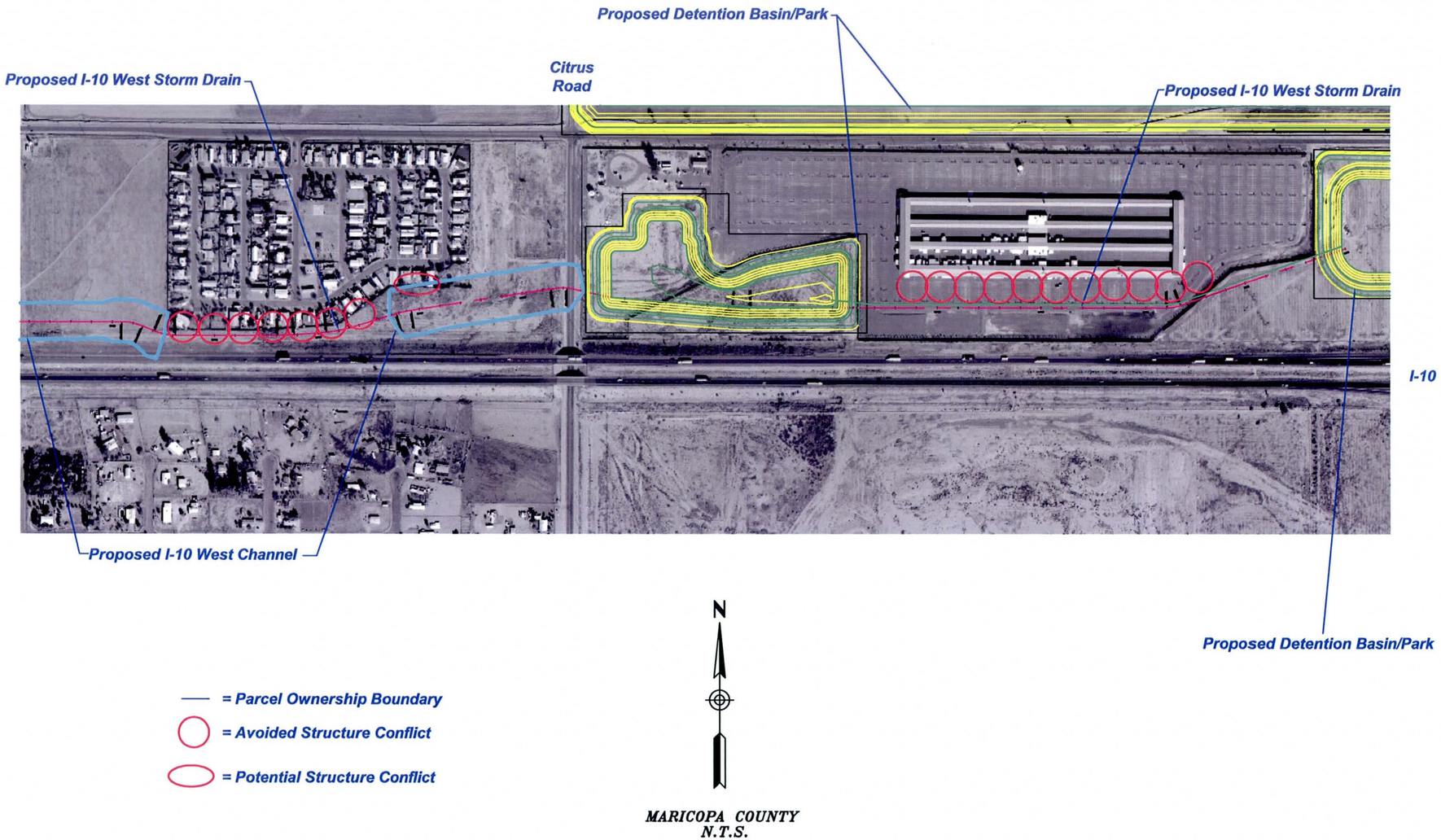
- The range of discharges along this channel is very low. They range from approximately 80 cfs to 250 cfs. Since the regional criteria state a minimum of approximately 500 cfs, it is recommended that local municipalities build this facility.

- All of the discharge from this channel is combined with the "flow-by" discharge from the Bullard Wash Channel at the off-line basin north of I-10. The flow is then conveyed south in the Bullard Wash Channel. The discharge from the I-10 Central channel is *not* combined within the off-line basin located along the proposed Bullard Wash Channel just north of I-10 since the peaks are not significant and do not result in adverse impacts to the proposed downstream channel.



Structure Conflict(s) - AT&SF Railroad Channel January 2005

Loop 303 Corridor/White Tanks ADMP Update URS FIGURE 3.7



Structure Conflict(s) - I-10 West Channel

January 2005

Loop 303 Corridor/White Tanks ADMP Update

URS

FIGURE 3.8

ADOT Basin Improvements

- The ADOT Basins will not drain within the 36-hour time frame required by the FCDMC. Therefore, an improved outlet was required to drain the basins within the specified time limit. See Appendix A-III for a detailed explanation of the drain time computation. See *Figure 3.9* for the proposed ADOT Basin Improvements.

3.4 ENVIRONMENTAL IMPACTS OF THE SELECTED ALTERNATIVE

3.4.1 Cultural Resource Impact Summary

The Selected Alternative has the potential to adversely affect a variety of archaeological and historical resources, but none of the alternatives considered under Levels I and II of the ADMP Update would have avoided such impacts. The assessment of potential impacts was based on information from prior studies, which identified numerous archaeological and historical resources in the project area.

Prehistoric archaeological resources (primarily remnants of villages, canals, and temporary camps or food processing locations of the Hohokam culture) are concentrated along the margins of the Gila River, and to a lesser degree along the Agua Fria River and the foothills of the White Tank Mountains. Many of these archaeological resources were recorded decades ago, and subsequent development has disturbed or hidden these sites. Therefore, their locations often are ambiguous and their condition is unknown. Intact remnants of Hohokam villages and irrigation canal systems have been found below the plow zone or beneath urban development throughout the Phoenix Basin. Proposed facilities in the vicinity of archaeological sites may require archaeological testing, and perhaps data recovery studies to mitigate project impacts on resources evaluated as eligible for the Arizona or National Registers of Historic Places. Such studies take time and can be expensive.

Numerous historic-age sites and structures also have been identified in the project area, including the Beardsley Canal, RID Canal, Buckeye Canal, Old Buckeye Canal, Airline Canal, Phoenix Main Line of the Southern Pacific Railroad (now Union Pacific), and AT&SF Railroad spur. The condition, historical significance, and Register eligibility of these features at the locations where they could be affected will need to be determined as planning continues. In general, a perpendicular crossing of such features is unlikely to result in substantial impacts but may require some form of mitigation, usually by compiling historical documentation. Paralleling such features for substantial distances with new features is more of a concern, but these features have been upgraded and maintained and their historic settings are being altered rapidly as urbanization continues. Other recorded historic-era sites include remnants of early habitations or other features related to agricultural settlement of the area, such as trash deposits.

The following impacts could result from the implementation of the facilities proposed as part of the Selected Alternative:

- Two Hohokam village sites, a Hohokam artifact scatter, the Hohokam Canal Liberty irrigation system, and an Archaic artifact scatter could be disturbed or destroyed.

- The historic-age Beardsley, Roosevelt, and Buckeye canals and Phoenix Main Line of Southern Pacific Railroad (as well as other historic resources that appear to lack historic significance) could be crossed or paralleled.

Table 3.2 summarizes the cultural resource impacts of the Selected Alternative. *Figure 3.10* shows a cultural/historical overlay with the Selected Alternative.

Table 3.2
Cultural Resource Impact Summary of the Preferred/Selected Alternative on the Project Area

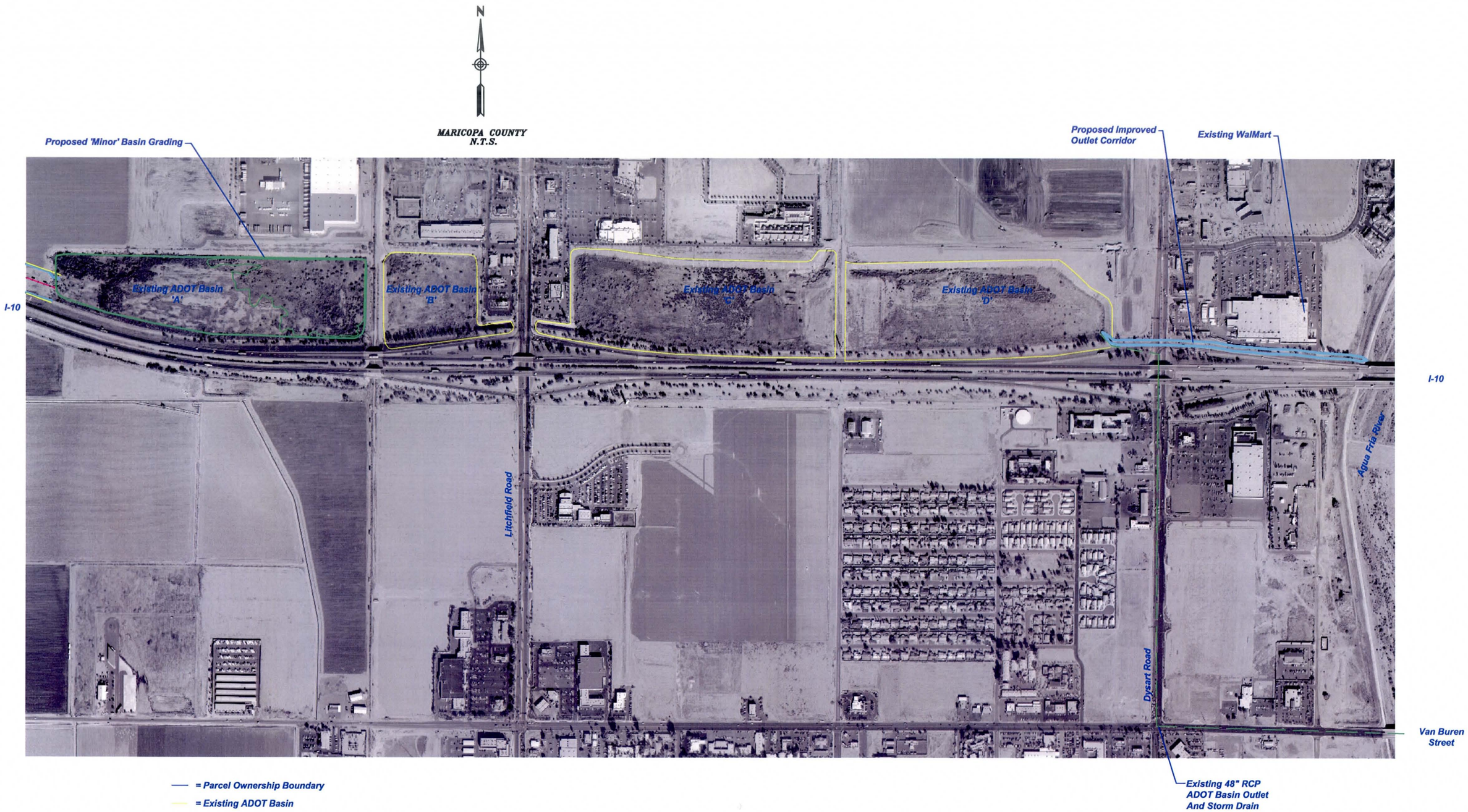
	Potential Impacts[1]	
	Prehistoric Resources	**Historic Resources**
Preferred Alternative	crosses edge of Morocco Ruin (Hohokam village), condition unknown crosses Alkali Ruin (Hohokam village), status unknown crosses AZ T:11:5 (ASM), artifact scatter, status unknown crosses Canal Liberty system, condition unknown near AZ T:7:68 (ASM), Archaic artifact scatter, recommended eligible	crosses Phoenix Main Line of Southern Pacific Railroad, eligible crosses and parallels Beardsley Canal, eligible, crosses Roosevelt Canal, recommended eligible crosses Buckeye Canal, recommended eligible crosses AT&SF railroad spur, recommended ineligible crosses Old Buckeye Canal, recommended ineligible near AZ T:7:175 (ASM), historic trash, recommended ineligible

[1] The analysis of impacts is very preliminary because the condition of many recorded resources is unknown, the significance of most of the recorded resources has not been formally evaluated, and other resources could be identified with the area of potential effect. More detailed analyses should be pursued as planning continues and impact zones can be defined more precisely.

As planning continues and more detailed designs are developed for the specific components of the Selected Alternative, intensive field surveys should be undertaken to ensure compliance with the Arizona Antiquities Act. Needs for right-of-way across any State Trust land or other state permits would entail requirements for the lead state agency to comply with the State Historic Preservation Act. Similarly, any federal permits would require compliance with Section 106 of the National Historic Preservation Act.

3.4.2 Socioeconomic Impacts

Enhanced flood protection within the ADMP Update project area would have positive socioeconomic impacts. Other positive impacts would result from the multiple uses, particularly for recreational uses, that some of the facilities would incorporate.



Proposed ADOT Basin Improvements

January 2005

Loop 303 Corridor/White Tanks ADMP Update

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FIGURE 3.9

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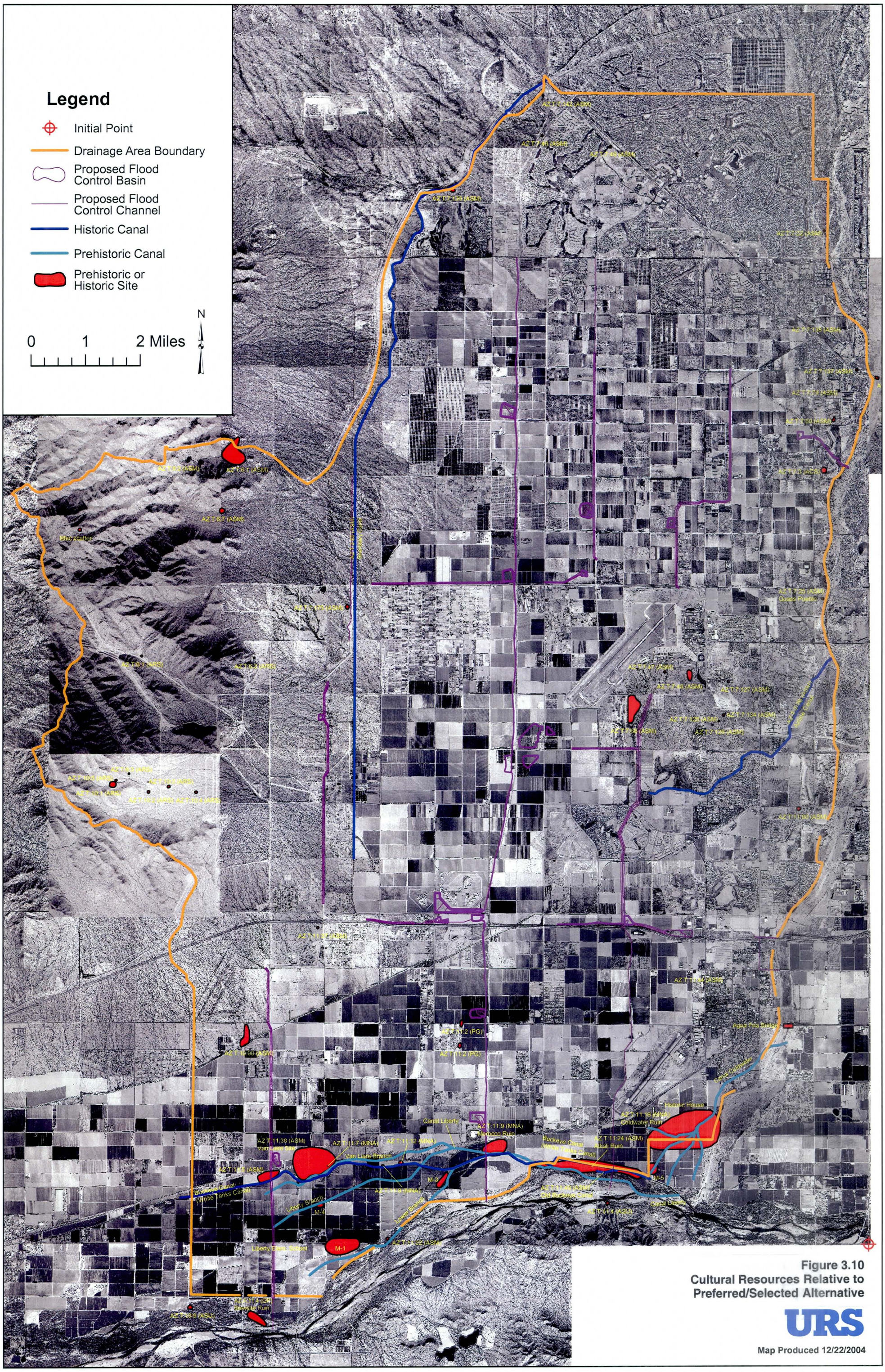

Figure 3.10
Cultural Resources Relative to Preferred/Selected Alternative

URS

Map Produced 12/22/2004

Negative impacts would derive primarily from acquiring rights-of-way for the proposed facilities. Taking of rights-of-way across undeveloped desert lands would have relatively minor economic or social impacts. Most of the project area is productive agricultural land, much of which is being redeveloped for residential and commercial uses. Taking of residences or business would be adverse impacts. Throughout the planning process, efforts have been made to identify alternatives that minimize residentially and commercially developed areas to reduce right-of-way costs and socioeconomic impacts on area residents. The area is urbanizing rapidly, and future planning should work to identify and acquire specific rights-of-way that minimize impacts on residential and commercial properties.

3.4.3 Ecological Resources Summary

The *Level I Alternatives Report (Volume I)* and the *Level II Phase II Technical Memorandum (Volume II) dated June 2004* and submitted under separate cover provide good background information regarding the type of habitats found within the project area. These documents also describe each of the proposed alternatives and their potential to affect threatened and endangered species and Arizona species of concern.

To supplement the information found within the above-referenced reports, this document will also summarize preliminary data as they pertain to the species that are federally listed as threatened or endangered, migratory (Peregrine Falcon), and highly sensitive (Sonoran desert tortoise).

Like the previous alternatives analyzed, the Selected Alternative has been reviewed and found to have the potential to affect the Sonoran desert tortoise, Southwestern Willow Flycatcher, Cactus Ferruginous pygmy-owl, and Yuma Clapper Rail. The Selected Alternative should not have any impact on the Peregrine Falcon.

Table 3.3 contains a summary of the potential impacts on the ecological resources within the ADMP Update project area as a result of the Selected Alternative.

For more information regarding the potential for environmental, cultural/historic, socioeconomic and ecological impacts, due to the implementation of the Selected Alternative, refer to Section 5.0 of the *Level I Alternatives Analysis Report*, dated May 2003 and Sections 4.1 and 4.2 of the *Data Collection Report*, dated May 2003.

3.5 PROPOSED CHANNEL AND BASIN DISCHARGES

3.5.1 Proposed Channel Discharges

As discussed under previous sections of this report, there were two hydrologic models used to develop discharges for use in the preliminary design of the facilities proposed with the preferred/ selected alternative. *Table 3.4A* provides a summary of concentration points along proposed channels and the corresponding peak flow rates from the following hydrologic models:

- Existing condition hydrology with proposed projects in place, 100-year event
- Future condition hydrology with proposed projects in place, 100-year event
- Existing condition hydrology with proposed projects in place, 10-year event
- Future condition hydrology with proposed projects in place, 10-year event

Table 3.4B and *Table 3.4C* provide a summary of inflow and outflow at all of the proposed basin locations associated with the Selected Alternative for the 100-year and 10-year storm events, respectively. *Figure 3.11* provides a plan view of the proposed facilities for the Selected Alternative and the associated concentration points from the HEC-1 hydrology model.

3.6 FUTURE DESIGN CONSIDERATIONS

Several of the facilities proposed with the selected alternative are associated with issues that must be addressed in detail during the final design phase. There were also general issues that came to light and will require thorough review upon final design. Each proposed facility associated with a significant issue (or issues) that must be addressed upon final design, is listed below with a brief description of the issue to be addressed. In addition, any general issues that will require more detailed consideration during final design have been listed.

3.6.1 Ecological Resources

In order to make a fairly comprehensive evaluation and make a determination on the extent of the potential impacts to these species and their associated habitats (riparian habitat along the Gila River and Sonoran desert scrub) a qualified biologist must complete the following steps:

- Conduct comprehensive site visit to completely evaluate the habitat suitability for each species identified.
- Conduct a survey of the upland areas for desert tortoise.
- Evaluate the amount and frequency of additional water that would be entering the Gila River as a result of the preferred/ selected alternative. This is done in an effort to estimate the impact of any additional water on the existing habitat and the species associated with that habitat.
- Evaluate the extent to which any existing habitat will be lost in both the riparian and upland areas of the Sonoran desert scrub.
- Correspond with the Arizona Game and Fish Department and the U.S. Fish and Wildlife Service in regard to the findings of the detailed analysis of the potential effects to these species due to the implementation of the Selected Alternative.

SUB BASIN MAP
LOOP 303 CORRIDOR/WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE
PROPOSED\WITH PROJECTS IN PLACE

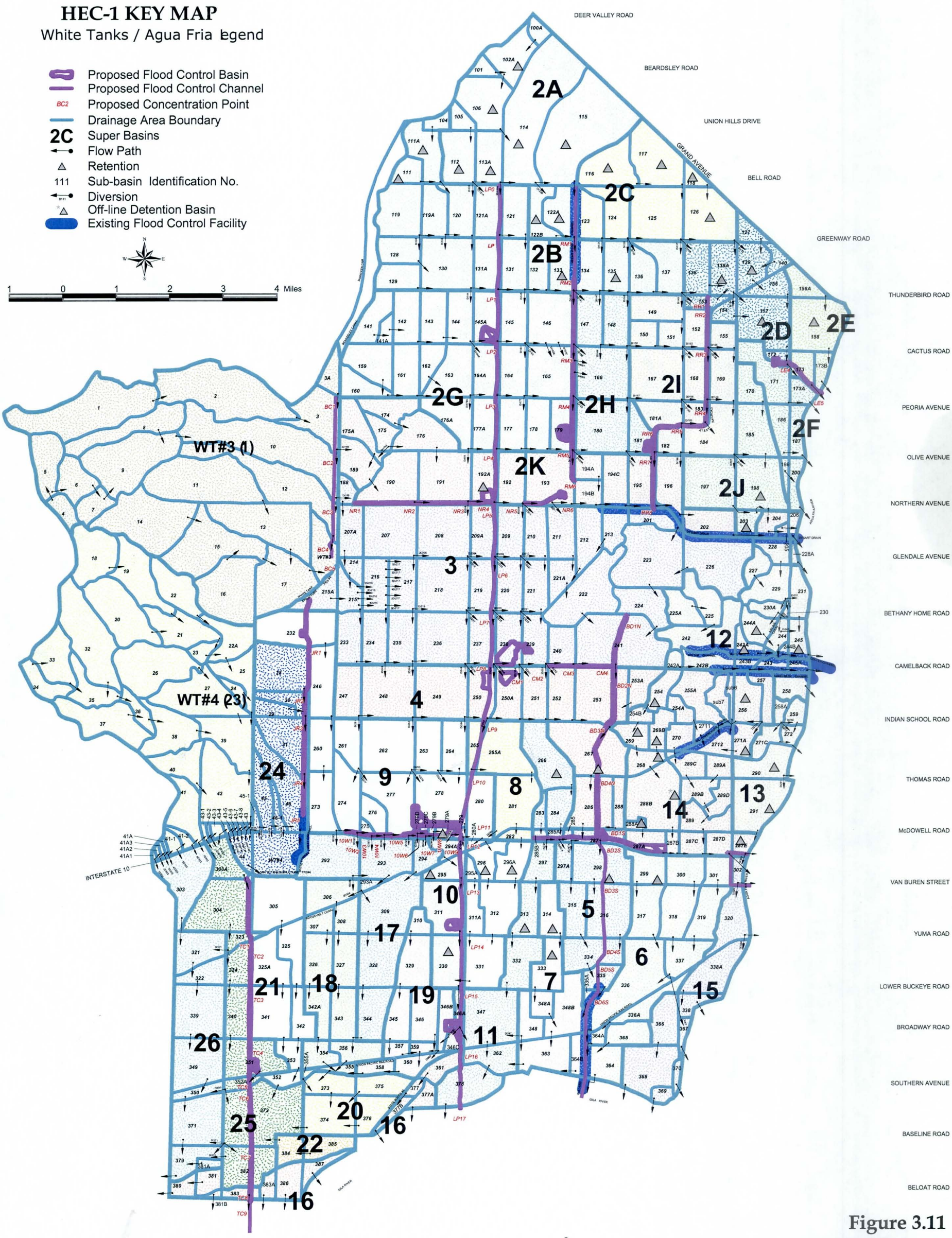

Figure 3.11

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Map Produced 12/22/2004

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Table 3.3
Preferred/Selected Alternative
Potential Impacts to Ecological Resources

		Potential Effects to Bald Eagle	Potential Effects to Yuma Clapper Rail	Potential Effects to Cactus Ferruginous Pygmy-owl	Potential Effects to Southwestern Willow Flycatcher	Potential impacts to Peregrine falcon	Potential Impacts to Sonoran desert tortoise	Potential to Impact Waters of the United States
Selected Alternative		●	●	●	●		●	●

Table 3.4A
Preferred/Selected Alternative
Discharge Summary

Proposed Channel	**[1]Proposed Concentration Point**	**Existing With Projects 100-year**	**Existing With Projects 10-year**	**Future With Projects 100-year**	**Future With Projects 10-year**
Camelback Channel	!CM2	372	166	338	168
	!CM3	485	246	489	250
	!CM4	783	306	1122	502
	!BD2N	3244	1433	3700	972
Jackrabbit Channel					
	!JR1	953	392	916	0
	!JR2	813	341	757	1
	!JR3	933	381	631	2
	!JR4	1324	465	707	1
	!JR5	1683	576	977	1
SR 303L Channel					
	!LP0	772	199	815	0
	!LP	854	241	663	1
	!LP1	1612	740	958	101
	!LP2	2898	1297	1372	90
	!LP3	2140	658	765	5
	!LP4	2636	890	928	3
	!LP5	2624	888	926	5
	!LP6	1539	1108	1177	194
	!LP7	1770	1189	1247	289
	!LP8	2097	1544	1533	401
	!LP9	557	276	120	0
	!LP10	624	310	133	0
	!LP11	988	457	610	27
	!LP12	1127	457	467	66
	!LP13	697	141	187	0
	!LP14	695	203	129	0
	!LP15	676	209	293	0
	!LP16	751	246	300	0
	!LP17	447	224	422	230
Northern Channel					
	!NR1	256	110	233	0
	!NR2	1309	395	698	0

Table 3.4A (continued)
Preferred/Selected Alternative
Discharge Summary

Proposed Channel	[1]Proposed Concentration Point	Existing With Projects 100-year	Existing With Projects 10-year	Future With Projects 100-year	Future With Projects 10-year
	!NR3	2246	804	1197	1
	!NR4	2308	823	1169	0
	!NR5	262	129	262	129
	!NR6	477	239	477	239
Reems Channel					
	!RM1	709	29	709	0
	!RM2	957	180	699	1
	!RM3	1366	349	627	1
	!RM4	1640	532	606	1
	!RM5	2179	804	818	308
	!RM6	826	680	749	386
AT & SF Railroad Channel					
	!RR1	425	159	256	0
	!RR2	492	194	227	5
	!RR3	785	313	318	5
	!RR4	936	374	517	13
	!RR5	970	363	466	110
	!RR6	1733	782	853	167
	!RR7	1770	809	866	278
	!RR8	1585	594	911	327
Lower El Mirage Channel					
	!LE1	683	160	815	105
	!LE2	808	209	1007	140
	!LE3	1386	245	1384	92
	!LE4	1356	236	1387	94
	!LE5	865	135	880	99
Bullard Channel					
	!BD1N	2103	1039	2296	919
	!BD2N	3244	1433	3700	972
	!BD3N	3410	1545	3307	953
	!BD4N	3248	1444	2945	855
	!BD1S	3556	1574	2798	833
	!BD2S	2321	810	1557	549
	!BD3S	2494	805	1716	548
	!BD4S	2691	807	1933	566
	!BD5S	2652	847	2180	626
	!BD6S	2633	835	2201	673
I-10 West Channel					
	!10W1	970	280	815	66
	!10W2	1010	325	755	63
	!10W3	1046	324	715	44
	!10W4	1175	395	852	102
	!10W5	1588	575	1280	269
	!10W6	1590	575	1275	266
	!10W7	1593	578	1278	260
	!10W8	743	476	627	189
	!10W9	743	476	626	182
	!10W10	742	475	629	179

Table 3.4A (continued)
Preferred/Selected Alternative
Discharge Summary

Proposed Channel	[1]Proposed Concentration Point	Existing With Projects 100-year	Existing With Projects 10-year	Future With Projects 100-year	Future With Projects 10-year
Tuthill Channel					
	!TC1	1417	506	1269	18
	!TC2	1553	545	1312	18
	!TC3	1491	510	996	20
	!TC4	1546	565	781	13
	!TC5	1926	688	945	13
	!TC6	646	113	129	2
	!TC7	1323	545	756	8
	!TC8	1506	651	747	279
	!TC9	1503	647	708	220
I-10 East Diversion Channel					
	10CE-US	575	180	395	119
	10CE1	556	172	390	118
I-10 Central Channel					
	!10C1	79	39	12	0
	!10C2	131	68	21	0
	!10C3	170	88	24	0
	!10C4	243	124	44	0

Table 3.4B
Preferred/Selected Alternative
100-Year, 24-Hour Hydrology Basin Discharge Summary

		100-Year, 24-Hour Existing Condition Hydrology							100-Year, 24-Hour Future Condition Hydrology						
		Q_{in}			$Q_{channel}$	Q_{out}		$Q_{combined}$	Q_{in}			$Q_{channel}$	Q_{out}		$Q_{combined}$
Facility ID	***Location***	$Q_{from\ west}$ (cfs)	$Q_{from\ north}$ (cfs)	[2]$Q_{combined}$ (cfs)	Q_{bypass} (cfs)	Q_{south} (cfs)	Q_{east} (cfs)	Q_{east} (cfs)	$Q_{from\ west}$ (cfs)	$Q_{from\ north}$ (cfs)	[2]$Q_{combined}$ (cfs)	Q_{bypass} (cfs)	Q_{south} (cfs)	Q_{east} (cfs)	Q_{east} (cfs)
Jackrabbit Basin	*SRJR1*	n/a	850	850	289	62	n/a	*148*	n/a	815	815	98	6	n/a	*102*
Union Pacific Basin	*SRTC5*	n/a	1637	1637	103	544	n/a	*614*	n/a	847	847	102	103	n/a	*129*
Reems Road Basin	*SRRM5*	649	1640	1752	639	198	n/a	*818*	651	606	211	607	0	n/a	*607*
[1]*Bullard Basin*	*SRRM6*	106	2625	2682	931	1436	575	*2239*	79	2103	2155	694	997	395	*1519*
AT&SF Basin	*SRRR7*	0	1721	1439	431	198	n/a	*1659*	0	847	437	429	0	n/a	*703*
[3]*El Mirage Basin*	*SRLE4*	n/a	1312	1312	45	n/a	n/a	*852*	n/a	1343	1343	45	n/a	n/a	*870*
SR 303L Basin(s)															
Cactus Road/SR 303L Basin	*SRLP2*	n/a	2311	2311	587	311	n/a	*587*	n/a	1331	1331	41	120	n/a	*113*
Northern Avenue / SR 303L Basin	*SRLP5*	2308	2590	4241	939	442	n/a	*1380*	1169	850	746	939	0	n/a	*939*
LAFB Crash-Zone Basins (composite)	*SRCM1*	395	2102	2102	n/a	182	158	*n/a*	269	1580	1580	n/a	99	3	*n/a*
I-10 / SR 303L Basin(s)	*SRLP12*	742	1127	1781	n/a	701	n/a	*n/a*	629	467	1063	n/a	132	n/a	*n/a*
Buckeye Road / SR 303L Basin	*SRLP14*	n/a	695	695	n/a	523	n/a	*n/a*	n/a	129	129	n/a	97	n/a	*n/a*
MC 85 / SR 303L Basin	*SRLP16*	n/a	751	751	n/a	448	n/a	*n/a*	n/a	300	300	n/a	51	n/a	*n/a*
I-10 West Basin	*SR10W7*	1588	136	1593	n/a	741	741	*n/a*	1272	136	1278	n/a	625	625	*n/a*
[4]*Lower Northern Basin*	*NR6RET*	245	251	477	n/a	n/a	n/a	*n/a*	245	251	477	n/a	n/a	n/a	*n/a*

1. $Q_{combined}$ in the outflow column (at this location), indicates the flow south in Bullard Wash
2. Represents the combined inflow to the basin. Does not include flow by if basin is offline.
3. $Q_{combined}$ in represents the total outflow from the basin in the southeast direction
4. No outflow since this basin is equalized with existing Falcon Dunes Basin.

Table 3.4C
Preferred/Selected Alternative
10-Year, 24-Hour Hydrology Basin Discharge Summary

		10-Year, 24-Hour Existing Condition Hydrology							10-Year, 24-Hour Future Condition Hydrology						
		Q_{in}			$Q_{channel}$	Q_{out}		$Q_{combined}$	Q_{in}			$Q_{channel}$	Q_{out}		$Q_{combined}$
Facility ID	**Location**	$Q_{from\ west}$ (cfs)	$Q_{from\ north}$ (cfs)	[2]$Q_{combined}$ (cfs)	Q_{bypass} (cfs)	Q_{south} (cfs)	Q_{east} (cfs)	Q_{east} (cfs)	$Q_{from\ west}$ (cfs)	$Q_{from\ north}$ (cfs)	[2]$Q_{combined}$ (cfs)	Q_{bypass} (cfs)	Q_{south} (cfs)	Q_{east} (cfs)	Q_{east} (cfs)
Jackrabbit Basin	*SRJR1*	n/a	303	303	72	0	n/a	*89*	n/a	0	0	2	0	n/a	*0*
Union Pacific Basin	*SRTC5*	n/a	616	616	89	0	n/a	*72*	n/a	10	10	0	0	n/a	*2*
Reems Road Basin	*SRRM5*	311	532	190	614	0	n/a	*614*	309	1	0	308	0	n/a	*308*
[1]*Bullard Basin*	*SRRM6*	57	1187	1202	387	456	180	*779*	0	545	545	270	300	119	*549*
AT&SF Basin	*SRRR7*	0	776	379	430	0	n/a	*622*	0	161	9	269	0	n/a	*272*
[3]*El Mirage Basin*	*SRLE4*	n/a	206	206	29	n/a	n/a	*150*	n/a	0	0	26	n/a	n/a	*26*
SR 303L Basin(s)															
Cactus Road/SR 303L Basin	*SRLP2*	n/a	1270	1270	26	50	n/a	*48*	n/a	89	89	0	0	n/a	*0*
Northern Avenue / SR 303L Basin	*SRLP5*	823	872	622	940	0	n/a	*940*	0	2	0	1	0	n/a	*1*
LAFB Crash-Zone Basins (composite)	*SRCM1*	251	1582	1582	n/a	18	0	*n/a*	137	530	530	n/a	0	0	*n/a*
I-10 / SR 303L Basin(s)	*SRLP12*	475	457	904	n/a	13	n/a	*n/a*	179	66	177	n/a	0	n/a	*n/a*
Buckeye Road / SR 303L Basin	*SRLP14*	n/a	203	203	n/a	3	n/a	*n/a*	n/a	0	0	n/a	0	n/a	*n/a*
MC 85 / SR 303L Basin	*SRLP16*	n/a	246	246	n/a	0	n/a	*n/a*	n/a	0	0	n/a	0	n/a	*n/a*
I-10 West Basin	*SR10W7*	574	82	578	n/a	475	475	*n/a*	257	82	260	n/a	188	188	*n/a*
[4]*Lower Northern Basin*	*NR6RET*	117	131	239	n/a	n/a	n/a	*n/a*	117	131	239	n/a	n/a	n/a	*n/a*

1. $Q_{combined}$ in the outflow column (at this location), indicates the flow south in Bullard Wash
2. Represents the combined inflow to the basin. Does not include flow by if basin is offline.
3. $Q_{combined}$ in represents the total outflow from the basin in the southeast direction
4. No outflow since this basin is equalized with existing Falcon Dunes Basin.

3.6.2 Utilities

A significant number of the 47 identified utilities within the ADMP Update project area did not respond to the repeated requests for information. Therefore, the utility conflicts noted on the 15% Level plans should not be considered complete. Upon final design a much more detailed utility search must be completed to ensure all potential conflicts are identified.

3.6.3 Hydraulic Modeling of Proposed Channels

Upon final design of any of the facilities proposed with the selected alternative, detailed hydraulic (HEC-RAS) analysis should be done to ensure the integrity of any final design. In addition, detailed consideration of proposed drop structures, existing flow regime and the potential for hydraulic jumps should be made.

3.6.4 Hydraulic Modeling of Proposed Offline Basins

During the final design phase for any of the proposed offline detention basins, a detailed analysis should be done to generate a final inflow/outflow rating curve to be used in the model. This analysis should consider and address the complexities associated with the determination of an inflow rating curve to the proposed basin from the proposed channel over a proposed lateral weir.

3.6.5 Bullard Wash Channel

Upon final design, care should be taken to adequately protect the channel and culvert at the outlet to avoid potential scour due to energy loss as a result of jumps or partial jumps which may occur at the culvert outlet. Also, additional constructed channel depth may be required for some locations for a distance upstream of abrupt changes in longitudinal slope where backwater effects may propagate upstream. In no case did analyzed backwater effects predicted by HEC-RAS extend more than approximately 90 feet upstream. Based on the level of detail associated with the ADMP Update, concentration points are placed at approximately 1-mile intervals therefore, 90 feet is not seen as significant.

At all but three locations, the "actual depth" of the channel exceeded the WSEL resulting from the backwater effects predicted by HEC-RAS. At these three locations, the required "constructed depth" of the channel could easily be modified or increased during final design to contain the increased WSEL without changing the proposed channel profile.

In most cases where the WSELs predicted by HEC-RAS indicated potential backwater effects, there was enough channel depth due to relatively high adjacent natural grade to contain the WSEL. However, if the WSEL exceeds the "constructed depth" proposed as part of the channel section, the proposed channel lining may not be placed on the balance of the channel bank slope which ties into natural adjacent grade. Therefore, during final design, these locations should be checked in detail and the channel section may require modification to account for the increased WSELs. The goal would be to make minimal changes to the channel section in an effort to minimize the need for significantly changing the proposed profile.

Other issues that must be addressed in detail during final design are as follows:

- Modifications to the typical channel section proposed for the Bullard Wash Channel will be required through the existing Palm Valley Golf Course (see Section 3.3.2 for details).
- Improvements to the existing RID over-chute may be required to achieve a positive longitudinal slope downstream. Inspection of the existing HEC-2 models for this segment of the existing Bullard Wash indicate an adverse slope presently exists.

3.6.6 AT&SF Railroad Channel

Due to the extremely flat terrain present along the proposed AT&SF Railroad Channel alignment, several complexities arose when determining a longitudinal channel slope relative to the proposed offline detention basin. Upon final design, these relative inverts must be checked very carefully to ensure that there are no adverse impacts due to backwater conditions. Further, the potential impacts to the proposed facility due to sedimentation and low discharge velocity should be considered.

In addition, the final design should consider modifying the proposed typical channel section adjacent to the existing sewage treatment plan located on the west side of the railroad from approximately Station 154+44 to Station 172+02 (see Section 3.3.2 for detail).

3.6.7 I-10 West Channel

The current proposed traffic interchange (TI) at I-10 and the proposed SR 303L Freeway will have a significant impact on the final design of the I-10 West Channel. This is due to the fact that the southbound to westbound ramps (from SR 303L to I-10) significantly impact both the proposed detention basin geometry at I-10 and SR 303L as well as the location of the proposed bleed pipes and outlet structures.

The current proposed TI was completed after the preparation of the conceptual design plans contained within this report. Therefore, changes to the proposed I-10 West Channel and Basin necessitated by the latest TI geometry is not indicated on the 15% Level Conceptual Design Plans.

As a result of the impacts on the proposed detention basin geometry along the proposed SR 303L Channel at I-10 and SR 303L, the proposed downstream (eastern-most) I-10 West Detention basin will likely be combined with it. This will result in the elimination of the proposed downstream reach of the I-10 West Channel connecting the eastern-most I-10 West Channel Basin with the proposed SR 303L Basin at I-10 and SR 303L.

Upon final design, close coordination with the final layout for the proposed SR 303L/I-10 TI and associated Channel and Basins must take place to ensure that the final I-10 West Channel will be compatible.

3.6.8 Camelback Channel

The portion of the proposed Camelback Channel that ties into the Bullard Wash Channel should be revisited prior to finalization of the proposed cross section. During this conceptual design, an issue arose whereby the right channel daylight line was encroaching on the existing Camelback Road. Although a potential solution for this encroachment was offered in Section 3.3.2, the situation may be aggravated by potential future roadway improvements along Camelback Road.

Upon final design, care should be taken to ensure that the proposed channel will not encroach on the existing Camelback Road. This may be accomplished through a combination of modifying the typical channel section and shifting of the proposed channel centerline laterally to the north if possible.

3.6.9 SR 303L Channel

This proposed channel includes several horizontal curves due to the proposed adjacent SR 303L Freeway alignment. The majority of the channel reaches associated with this proposed facility are flowing in a super-critical flow regime. Therefore, upon final design a detailed analysis should be done to determine the impact of such curves on the proposed 100-year water surface elevations within the proposed channel. This analysis will be used to ensure that the radii of the proposed curves do not result in detrimental cross waves which could persist downstream limiting channel capacity.

Another issue that should be addressed upon final design is that involving the proposed channel crossings at the existing BID and RID canals. Detailed survey must be obtained at these locations to ensure proper clearance for the proposed crossings. Finally, recent grading within the proposed Cotton Flower development south of Yuma Road indicates that there may be a potential for encroachment of future development on the SR 303L Channel. Therefore, upon final design, this location should be checked to determine the impacts of development on the proposed facility. If required, the proposed channel section may have to be modified through this and other reaches to accommodate such future (unforeseeable) encroachment.

3.6.10 Lower El Mirage Channel

There are significant issues that must be addressed in detail during the final design phase of this project. The main issue involving the proposed channel is the potential for conflict with future development adjacent to the proposed facility footprint. Although this conflict area is not currently developed, there are platted lots that indicate encroachment on the proposed channel.

In an effort to mitigate this encroachment, the channel geometry and typical section will likely require modification through this area. As described in detail in Section 3.3.2, the modified section could include a combination of steepened side slopes, reduced bottom width, and a single 12-foot access road (rather than dual 20-foot access roads).

In regard to the proposed offline basin care must be taken when modeling alternatives for final design. As described in Section 3.3.2, the existing channel adjacent to the proposed offline basin (terminating at El Mirage Road) is expected to silt due to ponding at the existing El Mirage Road culverts. This ponding will take place due to the existing channel invert being 5.0 feet below the El Mirage Road culvert inlet invert elevation of 1,107.6 feet. The construction plans for the existing channel show a future (silted) invert that is approximately equivalent to the existing El Mirage Road culvert invert elevation.

For the purpose of this report and analysis, simplifying assumptions were required (as detailed in Section 3.3.2) to complete a model sufficient for a preliminary conceptual level design. Upon final design, those assumptions should be revisited and revised if necessary. Further, a more detailed modeling approach may be appropriate.

3.6.11 Upper Northern Channel

Upon the future construction of the proposed White Tank Foothills development, the proposed Upper Northern Channel may require modifications to mitigate the footprint area. Such modifications may include steeper side slopes, decreased flow depth (lower n-value used with smoother channel lining), or possible relocation within an underground conduit.

3.6.12 Reems Road Channel

The existing channel segment adjacent to the Mountain Vista Ranch (MVR) development appears to lack the capacity to adequately convey the 100-year storm event and should be evaluated in more detail.

This portion of the existing Reems Road Channel will tie into the proposed (selected alternative) segments downstream. It will be critical that the total discharge carried through the existing reach upstream is entirely intercepted by the proposed downstream segment. Interception of this upstream discharge may be an issue since this segment was designed to carry the 100-year storm using the combination of the channel and the adjacent Reems Road cross section.

Future design of the selected alternative must incorporate a means of diverting the total upstream 100-year discharge (conveyed within the existing Reems Road corridor and adjacent existing channel) to the initial (upstream) reach of the proposed Reems Road Channel.

4.0 IMPLEMENTATION AND PHASING PLAN

The magnitude of the improvements proposed as part of the ADMP Update project is quite extensive. In total there are approximately 51 miles of proposed channels and 562 acres of proposed detention basin.

Due to the costs associated with flood control works, right-of-way requirements, coordination with other projects, and environmental factors for all of the proposed facilities it will not be economically feasible to construct all of the projects at once. Additionally, there is no practical need for the simultaneous construction of all proposed facilities since the project area is still being developed and will take several years to fully build out. For these reasons, a phased approach to the construction of the proposed ADMP Update facilities is recommended. Prioritizing the proposed facilities relative to one another will provide a basis for selecting which facilities will be funded and constructed first. Those projects will be given priority over others in the FCDMC CIP Program.

One important consideration when determining the construction phasing of proposed channels is the existence or non-existence of an ultimate outfall. For example, if it was determined that the construction of a specific upstream segment of the proposed Tuthill Road Channel should move forward, the initial phase of the project must consist of first building an outfall downstream. Without the existence of a positive conveyance to the ultimate outfall (the Gila/Salt River in this case), there would be no way to convey the channelized storm water runoff downstream to the Gila/Salt River and away from the adjacent development. Therefore, the phasing would need to include the construction of the lower (downstream) reaches of the proposed channel from the outfall upstream. This will be the case for all projects identified for design and construction unless an ultimate outfall already exists (as in the case of the proposed Bullard Wash Channel.

An initial/draft plan for constructing the proposed ADMP Update facilities in segments or phases is presented below as a guide.

4.1 PHASING

This plan for the build-out of individual portions of the selected alternative was developed based solely on the information available to the ADMP Update at the time of the preparation of this report. All data available to that date were obtained per the requirements detailed in the data collection phase of the project as well as multiple third-party sources of information. Such sources include data available at the MAG web site as well as general knowledge of the project area developed over the course of the project from discussions with stakeholders and meetings with those actively involved in the ongoing development of this area of the Valley.

Due to the dynamic nature of the project area and the speed with which specific factors affecting the need for a particular facility over another may change, this section presents one of several possibilities for phasing based on the current conditions in the area. As facilities proposed within the Selected Alternative move forward toward inclusion in the FCDMC Capital Improvement Plan (CIP), the phasing and implementation recommendations given below should be re-evaluated based on future conditions and modified as necessary.

Generally, the selected facilities for the Loop 303 ADMP Update project fall into three categories:

- Currently included in the FCDMC CIP and marked "active."
- Currently included in the FCDMC CIP and marked "inactive."
- Not currently included in the FCDMC CIP.

Those projects representing the third category listed above, were evaluated and prioritized using the following methodology:

- The facilities were overlaid with the current floodplain mapping available in the project area and prioritized in order of importance based on the apparent ability of that facility to mitigate existing "known" flood hazards. *See Table 4.1.* . Refer to Appendix A-VII for a detailed explanation of the proposed facility ranking system.
- The facilities were overlaid with the future land use map currently available at the MAG web site. The facilities were again ranked according to the type of planned future land use in the immediate/adjacent area. Such land uses range from very low density residential to industrial. Land uses, that involved high concentrations of people, were considered more important from a flood control perspective than those where there was more open space.
    - If a particular channel was surrounded by large amounts of residential land uses, that facility was considered more important than one that was surrounded by industrial land uses.
- As in the previous ranking, the facility prioritization was again weighted based on the percentage of the entire ADMP Update that it represented. *See Table 4.2.* Refer to Appendix A-VII for a detailed explanation of the proposed facility ranking system.
- The facilities were overlaid with the urban concentration map currently available at the MAG web site for the year 2010. This map is a representation of the future predicted urban concentration expected within the ADMP project area using census data and computer modeling.

  The facilities were ranked according to the amount of predicted urban concentration mapped within the immediate/adjacent area of each. The higher the predicted urban concentration shown adjacent to a facility, the more important it was considered for flood-control.

Table 4.1
Channel Impact to Existing Floodplains

Approximate Channel Length - ***ALL*** Projects: 56.5 miles

Channel	Relative Importance - Point Assignments (50) channel footprint through exist. floodplain [1](FP) (miles)	(30) channel footprint 0 - 1 miles from exist. [1]FP (miles)	(20) channel footprint 1 - 3 miles from exist. [1]FP (miles)	approximate length of channel (miles)	Weighted[3] Score for channel	Weighted[3] Score for ENTIRE Project
SR 303L Channel	0	2	15	17	21.2	6.4
Beardsley Channel	4	1.5	4	4	81.3	5.8
AT&SF Channel	5	1	2.5	5	66.0	5.8
Bullard Channel	4.25	2.125	2.125	4.25	75.0	5.6
Jackrabbit Channel	3	3.75	2.25	4.25	72.4	5.4
Reems Channel	4	0	4	4	70.0	5.0
I-10 West Channel	2.5	2	0	2.5	74.0	3.3
Camelback Channel	1.75	1	0	1.75	67.1	2.1
Tuthill Channel	0	2	2	6	16.7	1.8
El Mirage Channel	1	0	0	1	50.0	0.9
I-10 Central Channel	1	0	0	1.25	40.0	0.9
Upper Northern Channel	0	1	0	2.5	12.0	0.5
Lower Northern Channel	0	0.5	0	1	15.0	0.3
I-10 East Channel	0	0	0	1	0.0	0.0

Very little impact:	Low	0 -27
Fair amount of impact:	Med	27 - 54
Significant impact:	High	54 - 82

1. FP = Floodplain.
2. Data presented in the table above were derived from an overlay of the proposed facilities with the existing floodplain map.
3. See detailed explanation in Appendix A-VII.

Table 4.2
Facility Impact to Future Adjacent Land Use

URS assigned code	[1]code description	URS assigned points
R1	very low density residential	15
R2	residential (other)	20
R3	multi family residential	25
CO	commercial	8
IN	industrial	4
OF	office	8
OE	other employment	5
MU	mixed use	10
T	transportation	5
OS	open space	0
W	water	0
		100

DS = Downstream
US = Upstream

Assumptions: US development benefits from channel since it can use as an ultimate outfall
DS development benefits from channel since it is protected from offsite flooding
DS development receives a much greater benefit from the channel than us.

FROM UPSTREAM TO DOWNSTREAM

Total 'approximate' distance of ALL proposed ADMP channels: 56.5 miles

Total possible points: *100 PNTS*

channel	length (miles)	75 PNTS DS distance from channel 0 - 1 (50 pnts) (miles)	1 - 2 (25 pnts) (miles)	25 PNTS US distance from channel 0 - 1 (16 pnts) (miles)	1 - 2 (9 pnts) (miles)	adjacent channel length (miles)	channel distance as % of Total	DS weighted score	US weighted score	weighted DS & US score	total composite of weighted DS & US score[2]	Weighted Score for ENTIRE Project[2]
beardsley channel	4	R1	R1	R1	R1	0.9	22.5%	15.00	15.00	15.0		
		R2	R2	R2	R1	3.1	77.5%	20.00	18.20	19.6	18.5	1.3
bullard channel	4.25	R2	OS	MU	MU	1	23.5%	13.33	10.00	12.5		
		R2	R2	MU	MU	1	23.5%	20.00	10.00	17.5		
		CO	MU	R2	MU	1	23.5%	8.67	16.40	10.6		
		MU	MU	R2	MU	1	23.5%	10.00	16.40	11.6		
		MU	MU	R2	R2	0.25	5.9%	10.00	20.00	12.5	13.0	1.0
reems channel	4	R2	R2	R2	R3	2.25	56.3%	20.00	21.80	20.5		
		MU	MU	R1	R1	1.75	43.8%	10.00	15.00	11.3	16.4	1.2
sr 303l channel	17	R2	R2	R3	R2	3	17.6%	20.00	23.20	20.8		
		MU	R1	MU	R2	1	5.9%	11.67	13.60	12.2		
		R1	MU	R1	R1	2	11.8%	13.33	15.00	13.8		
		MU	MU	R1	R2	2	11.8%	10.00	16.80	11.7		
		MU	MU	MU	R1	2	11.8%	10.00	11.80	10.5		
		R2	R2	MU	R1	1	5.9%	20.00	11.80	18.0		
		R2	R2	OE	R1	1	5.9%	20.00	8.60	17.2		
		R2	R2	R2	R2	4	23.5%	20.00	20.00	20.0		
		MU	MU	MU	R2	1	5.9%	10.00	13.60	10.9	32.4	9.8
AT & SF channel	5	IN	R1	IN	R2	2.5	50.0%	7.67	9.76	8.2		
		MU	MU	IN	R2	1.5	30.0%	10.00	9.76	9.9		
		MU	MU	MU	MU	1	20.0%	10.00	10.00	10.0	9.1	0.8
Jackrabbit channel	4.25	R2	R1	R2	MU	2.25	52.9%	18.33	16.40	17.9		
		R1	R1	R2	MU	1.5	35.3%	15.00	16.40	15.4		
		IN	R1	IN	IN	0.5	11.8%	7.67	4.00	6.8	15.7	1.2
I-10 West channel	2.5	IN	R2	IN	IN	0.25	10.0%	9.33	4.00	8.0		
		IN	R2	R3	R1	1	40.0%	9.33	21.40	12.4		
		IN	R2	R3	MU	1.25	50.0%	9.33	19.60	11.9	11.7	0.5
Camelback channel	1.75	R2	R2	MU	MU	0.75	42.9%	20.00	10.00	17.5		
		R2	R2	MU	IN	1	57.1%	20.00	7.84	17.0	17.2	0.5
Tuthill channel	6	MU	R2	MU	IN	1	16.7%	13.33	7.84	12.0		
		R1	R2	R1	MU	2	33.3%	16.67	13.20	15.8		
		MU	R1	MU	R2	1	16.7%	11.67	13.60	12.2		
		R1	R2	R1	MU	2	33.3%	16.67	13.20	15.8	14.6	1.5
El Mirage channel	1	R2	R2	R2	MU	1	100.0%	20.00	16.40	19.1	19.1	0.3
I-10 Central channel	1.25	IN	R2	IN	R2	0.75	60.0%	9.33	9.76	9.4		
		IN	R2	IN	CO	0.5	40.0%	9.33	5.44	8.4	9.0	0.2
Upper Northern channel	2.5	R2	R1	R2	R2	1.25	50.0%	18.33	20.00	18.8		
		R1	R1	R1	R1	1.25	50.0%	15.00	15.00	15.0	16.9	0.7
Lower Northern channel	1	R1	MU	R1	R1	1	100.0%	13.33	15.00	13.8	13.8	0.2
I-10 East channel	1	IN	MU	IN	CO	1	100.0%	6.00	5.44	5.9	5.9	0.1

1. Descriptions from the MAG "Future Land Use Maricopa County, AZ" as shown on the MAG website.
2. See explanation in Appendix A-VII.

LOW	0 - 9
MED	9 - 18
HIGH	18 - 27

- If a particular channel was surrounded by a high (future) urban concentration, then that facility was considered more important than one surrounded by a relatively low future urban concentration.
- As in the previous ranking, the facility prioritization was again weighted based on the percentage of the entire ADMP Update that it represented. *See Table 4.3.* Refer to Appendix A-VII for a detailed explanation of the proposed facility ranking system.

- The facilities were overlaid with the population density map currently available at the MAG website for the year 2010. This map is a representation of the future predicted population density (in people per square mile [people/sm]) expected within the ADMP project area using census data and computer modeling.
  - The facilities were ranked according to the amount of predicted population density mapped within the immediate/ adjacent area of each. The higher the predicted population density shown adjacent to a facility the more important it was considered for flood protection.
  - If a particular channel was surrounded by a high (future) population density, then that facility was considered more important than one surrounded by a relatively low population density.
  - As in the previous ranking, the facility prioritization was again weighted based on the percentage of the entire ADMP Update that it represented. *See Table 4.4.* Refer to Appendix A-VII for a detailed explanation of the proposed facility ranking system.

As a result of the above rankings, there were four distinct categories compared in which all of the Selected Alternative facilities were ranked or prioritized against the others. Those categories outlined above are listed here in summary:

- Ability to mitigate/alleviate current/known flood hazards
- Ability to protect lives, property, and land upon ultimate build-out of the entire ADMP Update watershed area based on the current "future land use" data available
- Ability to protect lives, property, and land based on the initial locations of urban concentration taking place within the project area by the year 2010
- Ability to protect lives, property, and land based on the initial locations of population density taking place within the project area by the year 2010

Based on the above rankings, a table was created which listed each facility in order of importance for each category from most important to least important. The order of importance was indicated by the final weighted score each facility received in a particular category.

Based on this information, the weighted scores for each category were normalized to a percentage-based scale from 0 to 100 percent with zero being least important and 100 being most important. Each of the four categories was then assigned a number of points indicating its apparent relative importance to the others. The sum total of the points for each category was equal to 100 points. Using this information, the normalized scores for each of the individual categories were weighted and a composite score was estimated. See *Table 4.5A*. Refer to Appendix A-VII for a detailed explanation of the proposed facility ranking system.

Based on the final/composite score for each of the facilities and the application of some adjusting factors, a final ranking was determined and summarized on *Table 4.5B*. *Table 4.5B* shows the ranking of the Selected Alternative facilities from most important to least important based on the following information:

- The most important facilities are assigned the highest priority and are considered first phase construction candidates. The priority of these facilities is referred to as "Highest." These facilities are listed according to the score they were assigned in the FCDMC CIP program. These are facilities identified in the FCDMC CIP program as "active."
- The next set of facilities shown in the table was assigned a slightly lower priority. This priority is referred to as "High." These facilities are considered second-phase candidates. These facilities are listed according to the score they were assigned in the FCDMC CIP program. They have been identified in the FCDMC CIP program as "inactive."
- The final set of facilities shown in the table was listed using the weighted composite scores assigned per the procedure outlined above. These facilities have been further identified in the table as third, fourth, and fifth phase candidates of priority Medium, Low, and Lowest, respectively. These facilities do not yet appear in the FCDMC CIP and will likely be introduced on an individual basis in coming years. They will be added to the CIP as the need for each is re-evaluated and assessed based on updates to population density, urban concentration and other parameters impacting their relative importance.

Refer to Appendix A-VII for a detailed explanation of the proposed facility ranking system.

Final Determination of Project Phasing:

After assigning the final/composite score to each facility, some adjusting was done based on the following factors:

- Current inclusion in FCDMC CIP program and listed "active."
- Current inclusion in the FCDMC CIP program and listed "inactive."
- The necessity of a proposed facility upon the construction of other proposed facilities.

Table 4.3
Proposed Facility Impact to Future Urban Concentration

Total approximate length of ALL proposed ADMP Update channels = 56.5 miles

based on majority of surrounding area, 1 to 2 miles

Channel	(20 pts)	(35 pts)	(45 pts)	(0 pts)	(0 pts)	(100 pts) Total Adjacent Channel Length (miles)	Channel[2] weighted score points	Composite[2] relative to project
	urban concentration per square mile in 2010							
	0-1,000 (per sm)	1,001-5,000 (per sm)	5,001-10,000 (per sm)	10,001-20,000 (per sm)	more than 20000 (per sm)			
Bullard Channel - North		4.25				4.25	35.0	2.6
SR 303L Channel	7.25	9.5	0.25			17	28.8	8.7
Beardsley Channel	4					4	20.0	1.4
AT&SF Channel	2.25	2.75				5	28.3	2.5
Jackrabbit Channel	3.75	0.5				4.25	21.8	1.6
Reems Channel	1.5	2.5				4	29.4	2.1
I-10 West Channel		2.5				2.5	35.0	1.5
Camelback Channel	1.25	0.5				1.75	24.3	0.8
Tuthill Channel	6					6	20.0	2.1
El Mirage Channel		1				1	35.0	0.6
I-10 Central Channel	1	0.25				1.25	23.0	0.5
Upper Northern Channel		2.5				2.5	35.0	1.5
Lower Northern Channel		1				1	35.0	0.6
I-10 East Channel		1				1	35.0	0.6

1. Urban concentration shows a combination of population and employment - it shows the concentration of all development.
2. See explanation in Appendix A-VII.

Table 4.4
Proposed Facility Impact to Future Population Density

FROM UPSTREAM TO DOWNSTREAM

Total approximate length of ALL proposed ADMP Update channels = 56.5 miles

based on majority of surrounding area, 1 to 2 miles

Channel	(10 pts)	(20 pts)	(30 pts)	(40 pts)	(0 pts)	(100 pts) Total Adjacent Channel Length (miles)	Channel[3] weighted score points	Composite[3] relative to project
	people per square mile in 2010							
	0-50 (per sm)	50-1,000 (per sm)	1,001-2,000 (per sm)	2,001-5,000 (per sm)	more than 5,000 (per sm)			
Bullard Channel - North		4.25				4.25	20.0	1.5
SR 303L Channel		7	10			17	25.9	7.8
Beardsley Channel	2	1	1			4	17.5	1.2
AT&SF Channel		3	2			5	24.0	2.1
Jackrabbit Channel		4.25				4.25	20.0	1.5
Reems Channel		1.75	2.25			4	25.6	1.8
I-10 West Channel		2.5				2.5	20.0	0.9
Camelback Channel		1.75				1.75	20.0	0.6
Tuthill Channel		6				6	20.0	2.1
El Mirage Channel				1		1	40.0	0.7
I-10 Central Channel		1.25				1.25	20.0	0.4
Upper Northern Channel			2.5			2.5	30.0	1.3
Lower Northern Channel		1				1	20.0	0.4
I-10 East Channel		1				1	20.0	0.4

1. Urban concentration shows a combination of population and employment - it shows the concentration of all development.
2. Proposed facilities traversing areas of high population density are considered of higher relative importance to those in areas of fairly low population density.
3. See explanation in Appendix A-VII.

Table 4.5A
Ranking Summary of Proposed Facilities for Phasing Recommendation

Based on Existing Floodplains			*Based on Future Land Use*			*Based on Urban Concentration - 2010*			*Based on Population Density - 2010*		
Channel	Weighted score	Normalized score	Channel	Future Land Use composite score[1]	Normalized score	Channel	Composite[1] score	Normalized score	Channel	Score[1]	Normalized score
SR 303L Channel	6.4	100%	SR 303l Channel	9.8	100%	SR 303L Channel	8.65	100%	SR 303L Channel	7.788	100%
AT&SF Channel	5.8	92%	Tuthill Channel	1.5	16%	Bullard Channel - North	2.63	30%	Tuthill Channel	2.124	27%
Beardsley Channel	5.8	90%	Beardsley Channel	1.3	13%	AT&SF Channel	2.50	29%	AT&SF Channel	2.124	27%
Bullard Channel - North	5.6	89%	Jackrabbit Channel	1.2	12%	Tuthill Channel	2.12	25%	Reems Channel	1.814	23%
Jackrabbit Channel	5.4	85%	Reems Channel	1.2	12%	Reems Channel	2.08	24%	Bullard Channel - North	1.504	19%
Reems Channel	5.0	78%	Bullard Channel - North	1.0	10%	Jackrabbit Channel	1.64	19%	Jackrabbit Channel	1.504	19%
I-10 West Channel	3.3	51%	AT&SF Channel	0.8	8%	I-10 West Channel	1.55	18%	Upper Northern Channel	1.327	17%
Camelback Channel	2.1	33%	Upper Northern Channel	0.7	8%	Upper Northern Channel	1.55	18%	Beardsley Channel	1.239	16%
Tuthill Channel	1.8	28%	Camelback Channel	0.5	5%	Beardsley Channel	1.42	16%	I-10 West Channel	0.885	11%
El Mirage Channel	0.9	14%	I-10 West Channel	0.5	5%	Camelback Channel	0.75	9%	El Mirage Channel	0.708	9%
I-10 Central Channel	0.9	14%	El Mirage Channel	0.3	3%	El Mirage Channel	0.6195	7%	Camelback Channel	0.619	8%
Upper Northern Channel	0.5	8%	Lower Northern Channel	0.2	2%	I-10 East Channel	0.6195	7%	I-10 Central Channel	0.442	6%
Lower Northern Channel	0.3	4%	I-10 Central Channel	0.2	2%	Lower Northern Channel	0.6195	7%	Lower Northern Channel	0.354	5%
I-10 East Channel	0.0	0%	I-10 East Channel	0.1	1%	I-10 Central Channel	0.5088	6%	I-10 East Channel	0.354	5%

1. See explanation in Appendix A-VII.

Table 4.5B
Adjusted/Final Ranking for Phasing

ADJUSTED/FINAL RANKING FOR PHASING				
ADMP Update Facility	SCORE[4]	Priority	*Comments*	CIP Project
El Mirage Channel	n/a	Highest	**'80' - 1/30/2004 FCDMC CIP FY '04/05 (active) - El Mirage*	West Cactus Rd. Detention Basin & Channels - FY 2000 & 2002
	9.4	High	**'78' - 1/30/2004 FCDMC CIP FY '04/06 (inactive)*	
Reems Road Channel	36.6	Highest	**'79' - 1/30/2004 FCDMC CIP FY '04/05 (active) - Surprise*	*'71' - 1/30/2004 FCDMC CIP FY '04/05 (active) - FCDMC
Bullard Wash Channel - south	n/a	Highest	**'78' - 1/30/2004 FCDMC CIP FY '04/05 (active) - Goodyear*	Bullard Wash Channelization (Phase II)
Beardsley Channel	n/a	Highest	**'71' - 1/30/2004 FCDMC CIP FY '04/05 (active) - FCDMC*	White Tanks #3 Basin - FY 2001
	34.5	Highest	*under design by FCDMC - part of WT#3 project*	White Tanks FRS #3 North Inlet Channel (NIC)
SR 303L Channel	#N/A	High	**'78' - 1/30/2004 MCDOT CIP FY '04/06 (inactive)*	*'80' - 1/30/2004 FCDMC CIP FY '04/05 (active) - El Mirage
Jackrabbit Channel	35.4	Medium		not currently included in FCDMC CIP
Tuthill Channel	26.0	Medium	*important as an ultimate/emergency outfall from existing WT#4*	not currently included in FCDMC CIP
Bullard Channel - North	39.5	Medium		not currently included in FCDMC CIP
I-10 East Channel	4.0	Medium	*essential to the operation of the existing Bullard Wash Outfall Channel*	not currently included in FCDMC CIP
[3]ADOT Basin(s) and Outlet Improvements	n/a	Medium		not currently included in FCDMC CIP
AT&SF Channel	42.9	Low		not currently included in FCDMC CIP
I-10 West Channel	23.0	Low		not currently included in FCDMC CIP
Upper Northern Channel	14.7	Low		not currently included in FCDMC CIP
Camelback Channel	14.2	Lowest		not currently included in FCDMC CIP
I-10 Central Channel	7.6	Lowest		not currently included in FCDMC CIP
Lower Northern Channel	5.1	Lowest		not currently included in FCDMC CIP

1. When 'n/a' is listed for 'score', this indicates that the facility is part of a specific ADMP project and has been 'broken' out as a separate project by the FCDMC and is listed in the current CIP.
2. In some cases, the 'SCORE' has been disregarded based on CIP information and/or the facilities importance to a particular project that is in design.
3. Not scored since improvements for 'Post Storm' bleed time only.
4. See explanation in Appendix A-VII.

Since the FCDMC CIP program rates all of the projects listed in its program, those facilities that corresponded with the ADMP Update were considered top priority and ranked according to the CIP scoring. The facilities not currently listed in the FCDMC CIP were listed according to the score assigned based on the analysis described in the above discussion. This list was finalized by recognizing certain facts and other extenuating circumstances pertaining to specific facilities. As a result, a few facilities required a higher or lower priority than indicated by the ranking score alone. Those circumstances are briefly described below.

Exceptions to Assigned Final/Composite Score:

Beardsley Canal Channel – The relative importance of the Beardsley (WT FRS #3 inlet) channel versus the Jackrabbit Trail (WT FRS #4 inlet) channel is high since the WT FRS #3 has been identified in the FCDMC CIP. The WT FRS #3 inlet channel will serve as both a conveyance way for the incoming off-site discharge as well as protection against current flow breaks over the existing Beardsley Canal to the southeast at Cholla and Waterfall washes. Similarly, the outlet channel from WT FRS #3 (inlet channel to WT FRS #4) will be very important. This channel provides an emergency outfall for the WT FRS #3, eliminates flow breaks along the existing ditch on the west side of Jackrabbit Trail, and ties into the existing concrete inlet channel (to WT FRS #4) at approximately McDowell Road.

Construction of the WT FRS #4 inlet channel may become a high priority as a result of future road widening along Jackrabbit Trail. Recently, there have been studies done regarding the potential widening of Jackrabbit Trail from the I-10 TI north. As a part of these studies, adjacent off-site drainage alternatives and their tie-in to the existing concrete inlet channel to WT FRS #4 have been analyzed. The Beardsley Canal Channel was moved to a rank just below the WT FRS #3 project.

Tuthill Channel – This facility is very important as an emergency/ ultimate outfall from the existing WT FRS #4. This is an important aspect to the overall safe operation of the existing WT FRS #4. Although this channel did not score as a relative high priority due to its potential to eliminate existing floodplains, it was listed as one of the most important in terms of future land use. In other words, if the surrounding adjacent areas develop according to plan, this channel would serve as both an outfall for development as well as off-site flood protection for a relatively high concentration of population. It is interesting to note that according to the most recent census data used to construct both urban growth and population density mapping by MAG, in the year 2010, the Tuthill Channel area of the watershed scored in the "middle of the pack" and therefore indicated a slower rate of development than other areas throughout the balance watershed. This channel has been moved up in priority just below the Jackrabbit Trail (WT FRS #3 outlet) Channel. If not for the importance of the adequate operation of the WT FRS #4 structure, this channel would not be a relative high priority.

I-10 East Diversion Channel – Although this channel scored the lowest in all categories analyzed, it must be constructed at the time of or before the construction of the portion of the Bullard Wash Channel north of I-10. The I-10 East Diversion channel will convey the amount of discharge necessary to maintain a maximum peak flow rate at the existing Bullard Wash Outfall (south of I-10) of 3,200 cfs. Therefore, its relative importance has been raised accordingly.

ADOT basins and Outfall – These facilities could be constructed at the time of the I-10 East Channel and Bullard Wash North Channel. However, they are only required to meet drain time requirements, not for the regulation of the peak stage within the basins.

4.2 PHASING OF INDIVIDUAL FACILITIES

Each step or phase of construction will give careful consideration to proper function during the interim condition or the time prior to the ultimate build-out of a particular facility. The following section will discuss the facilities not currently included in the FCDMC CIP.

All cost estimates referred to in the following sections are based on those found within Section 5.0 of this report. The methods, criteria, and unit costs employed in developing those costs were followed as agreed between FCDMC and URS in regard to both quantity generation and cost estimates.

4.2.1 Jackrabbit Trail Channel

The phasing for the Jackrabbit Trail Channel should be done in a way that allows the channel to be constructed from the downstream segments upstream to the existing WT FRS #3. Aside from the fact that this is necessary to provide an outfall for the upstream sections of proposed channel, these downstream reaches will alleviate the existing (known) mapped floodplain hazard from approximately McDowell Road to Camelback Road. Further, future roadway widening proposed for Jackrabbit Trail will take place toward the downstream channel reaches first and therefore may be coordinated with the channel construction.

With regard to the future land use, the Jackrabbit Trail Channel is adjacent to higher density planned use at the upstream side and lower density at the downstream portion. While, development projections in this area indicate a relatively slow pace, (per the MAG '2010 Population Concentration for Interim Socioeconomic Projections') recent development activity has proven the opposite to be true. Current development suggests that the adjacent land along the full length of this proposed facility will soon be fully built-out.

Based on the fact that the development in the ultimately high concentration areas adjacent to the channel upstream is likely to occur in the near future, the right of way required for the entire facility should be acquired simultaneously. The construction sequencing/phasing should still occur from downstream to upstream to ensure runoff intercepted by the interim facility will have an ultimate outfall as construction progresses.

Due to the estimated costs associated with the proposed Jackrabbit Trail Channel, a two-part construction phasing is recommended. The first phase will tie into the existing concrete inlet channel to the existing WT FRS #4 and proceed upstream to approximately Indian

School Road. The second phase will go from the end of Phase 1 north to the existing WT FRS #3.

4.2.2 Tuthill Channel

Due to the estimated costs associated with the proposed Tuthill Channel, a two-part construction phasing is recommended. Construction Phasing for the Tuthill Channel should be done in a way that allows the channel to be built from the downstream outfall at the Gila River to the upstream terminus at WT FRS #4. This is important to provide an ultimate outfall in the event of an emergency spillway discharge from the existing WT FRS #4.

Although the proposed channel does not directly reduce a significant amount of known flooding, it will provide an outfall for a significant amount of development once the watershed is built out.

From the future projection of urban concentration, it appears that the planned development over the next six years through this portion of the watershed will take place at a relatively slow pace. The population density projections show a slightly faster pace but relative to the balance of the watershed, this area will probably be lagging. This should make the construction phasing of the Tuthill Channel from the Gila River north fairly easy.

As a strategy, the FCDMC should begin right of way acquisition prior to significant development taking place. This will help to keep the land costs to a minimum. Owning the right of way prior to major development taking place in this area could give the FCDMC opportunity to cost share the construction costs with future development. If it is not possible to acquire the entire right of way required for the Tuthill Channel at one time, right of way should be acquired from north to south since that is the direction that development is planned to occur.

4.2.3 Bullard Channel

Due to the estimated costs associated with the proposed Bullard Wash Channel, a two-part construction phasing is recommended. Phasing for the Bullard Wash Channel must be done in a way that allows the channel to be constructed from the existing downstream outfall to the upstream terminus adjacent to the southeast of LAFB. This is necessary to provide an ultimate outfall for the drainage area served by this regional drain. Since the Phase II portion of the Bullard Channel is currently under design, it is anticipated that the commencement of the design phase for this portion of the channel will not begin until Phase II is complete.

The portion of the Bullard Wash Channel from I-10 to LAFB will be constructed in two phases. The first phase will be from approximately I-10 to Indian School Road, and the second phase will be from Indian School Road to the end of the channel at LAFB.

The ultimate build-out of the Bullard Wash Channel is fairly important for many reasons. Although the existing "future land use plan" shows the Bullard Wash Channel (north of I-10) as a "Medium" in terms of the relative intensity of the adjacent ultimate build-out, it is a very important component of the ADMP for the following reasons:

- The channel is coincident with a natural drainage corridor associated with the existing Bullard Wash.
- The channel will convey discharge from the LAFB basins and serve as a regional drain for existing and future development.
- The proposed basin associated with the basin at I-10 will meter the appropriate amount of flow east to the existing ADOT basins to maintain a maximum discharge of 3,200 cfs or less for the existing Bullard Wash Outfall Channel south of I-10.

From the future projection of urban concentration and population density, it appears that the total development over the next six years through this portion of the watershed will take place at a relatively constant pace. However, this area will not be as quick to develop as other portions of the ADMP project area. Therefore, there should be time for the various phases of the Bullard Wash Channel to be completed as development proceeds.

4.2.4 I-10 East Channel

Since the proposed I-10 East Channel is relatively short (approximately one mile in length), this channel should be constructed as part of a single phase. Although this channel is not as high a priority as others found within the ADMP Update from the stand point of known flood hazards, future land use or projected urban concentration and/or population density, its relatively high priority is derived from its function. In other words, this channel is critical to the ability of the proposed basin located at the intersection of the Bullard Wash Channel and I-10 in limiting downstream discharges within the Bullard Wash Outfall Channel to a maximum of 3,200 cfs or less.

Based on the above function, this channel should be built prior to or concurrent with the proposed Bullard Wash Channel north of I-10.

4.2.5 Proposed ADOT Basin Improvements

Since these improvements are not necessary in regard to the existing basin ability to regulate the peak stage, they are required to meet the 36-hour drain time requirement. Some regarding of the western-most basin would be required to properly daylight the proposed I-10 East Channel and should be done prior to or concurrent with its construction.

From a safety and maintenance standpoint, the outlet improvements should be constructed at the time of the connection from the I-10/Bullard Wash Channel Basin. This will ensure that the basin will drain all of the impounded volume within the time 36-hour time limit, which will reduce the inherent safety hazard.

4.2.6 AT&SF Railroad Channel

Due to the estimated costs associated with the proposed AT&SF Railroad Channel, a two-part construction phasing is recommended. Phasing for this channel must be done in a way that allows the channel to be constructed from the downstream outfall at the existing Dysart Drain to the upstream terminus at Thunderbird Road. The

initial phase from the Dysart Drain upstream should include the proposed basin located at approximately Olive Avenue.

This basin is required to attenuate the peak discharges concentrated by the proposed channel. The metered outflow from the basin has been designed to combine with the discharge hydrograph present within the Dysart Drain. The resultant combined hydrograph will not exceed the original design flow in the Dysart Drain.

Construction of this channel will be beneficial to the surrounding area due to the relatively quick development that is projected in the future. This channel will alleviate/reduce the existing ponding currently present on the upstream (west/north) side of the existing railroad embankment.

Although the relative importance of this channel to the others proposed with the ADMP Update was high based on the criteria evaluated, it has been moved down in the phasing in favor of other facilities, such as the I-10 East Channel that are necessary for the proper performance of other high priority projects.

Construction of the first phase should be fairly simple since the two miles from the existing Dysart Drain north to Litchfield Road are projected to develop relatively slowly compared with the second phase from approximately Litchfield Road to Waddell Road.

4.2.7 Upper Northern Channel

Since the proposed Upper Northern Channel is approximately 2.5 miles, this project should be constructed as a single phase.

The ultimate build-out through this area was as indicated by the future land use plan was estimated to be of a "Medium" intensity relative to other areas within the watershed. Although the speed with which this ultimate build-out will occur is considered "Medium" to "High" in relative intensity as indicated by the urban concentration and population density data, respectively, the overall reduction in known flooding is relatively low.

Given the above information, the Upper Northern Channel is considered to be of average priority. However, given the relatively quick pace of adjacent development, it is recommended that this facility by constructed prior to the I-10 West Channel.

4.2.8 I-10 West Channel

Since the proposed I-10 West Channel is approximately 2.5 miles, this project should be constructed as a single phase.

This facility will reduce the existing floodplain/ponding along the upstream/north side of the I-10 embankment. The ultimate build-out through this area (as indicated by the future land use plan) was estimated to be of a "Medium" intensity relative to other areas within the watershed. However, the speed with which this ultimate build-out will occur is also considered a "Medium" in relative intensity as indicated by the urban concentration and population density data.

Given the above information, the I-10 West Channel is considered to be of average priority. It is suggested that this facility be constructed coincidentally with the widening of I-10.

4.2.9 Camelback Channel

The proposed Camelback Channel is approximately 1.75 miles and therefore should be constructed as a single phase.

The ultimate build-out through this area as indicated by the future land use plan was estimated to be of a "Medium" intensity relative to other areas within the watershed. The speed with which this ultimate build-out will occur is considered "Medium" to "Low" in relative intensity as indicated by the urban concentration and population density data, respectively. Although the channel would reduce an existing known floodplain hazard, the priority is not as great as in other cases based on the relatively slow development projected for the adjacent land parcels.

The existing Palm Valley/Pebble Creek development is also planning to build an interim facility that will be designed to protect the planned development south of Camelback from offsite discharges. This interim channel will be a simple earthen channel that will be replaced by the proposed Camelback Channel upon ultimate build-out of the improvements suggested in the ADMP Update.

Given the above information, the Camelback Channel is considered to be of below average priority.

4.2.10 I-10 Central Channel

The proposed I-10 Central Channel is approximately 1.25 miles, and therefore should be constructed as a single phase.

Although the ultimate build-out through this area as indicated by the future land use plan was estimated to be of a "Medium" intensity relative to other areas within the watershed, the speed with which this ultimate build-out will occur is considered "Low" to "Medium" in relative intensity as indicated by the urban concentration and population density data, respectively. This channel would also reduce some existing known ponding along portions of the northern I-10 embankment.

The contributing watershed area to this proposed facility is not very large relative to others proposed with the ADMP Update. Given this fact combined with the above information, the priority for this facility is not as great as in other improvements.

Given the above information, the I-10 Central Channel is considered to be of relatively low priority.

4.2.11 Lower Northern Channel

The proposed Lower Northern Channel is approximately 1.00 mile, and therefore should be constructed as a single phase.

The ultimate build-out through this area as indicated by the future land use plan was estimated to be of a "Medium" intensity relative to other areas within the watershed. Also, the speed with which this ultimate build out will occur is considered "Medium" in relative

intensity as indicated by the urban concentration and population density data respectively. This channel would not significantly reduce existing known ponding or flooding.

Additionally, the contributing watershed area to this proposed facility is not very large relative to others proposed with the ADMP Update. Given this fact combined with the above information, the priority for this facility very low.

It should be noted that the priority associated with each of the facilities proposed with the ADMP is relative to the other facilities. Therefore, a relative priority of "Low" does not indicate that the facility is not required. Rather, this indicates that the facility may be in an area that is slower to develop. Ultimately, all of the facilities proposed with the ADMP Update are considered important to the overall flood protection throughout the project area.

4.3 IMPLEMENTATION

Given the preliminary phasing plan developed above and shown on *Table 4.6*, an implementation plan for the ultimate design and construction of each proposed facility is necessary. The following section describes an implementation plan based on the preliminary/ draft information currently available.

In an effort to expedite the implementation of the design and construction phases of high priority facilities identified in the Selected Alternative, obtaining good project partners to cost share and allow for multi-use as well as future operation and maintenance agreements is essential. Such partnerships could take place between many different entities from jurisdictional agencies to large development companies present within the ADMP Project area such as SunCor, Westcor, Del Webb, Continental Homes, and others.

Implementation should consider multi-use opportunities as they relate to other large-scale projects such as the West Valley Multi-Modal Transportation Corridor Master Plan (WV-TCMP). Through coordination of specific Selected Alternative facilities with segments, links and/or key components of the WV-TCMP, cost sharing and operation and maintenance responsibilities may be shared and therefore, alleviate some of the factors that serve to slow down the design and construction of proposed projects.

With completion of the ADMP Update Plan, each project stakeholder is encouraged to aid in the implementation process by working closely with the FCDMC and local developers to ensure that the final design and construction of specific ADMP facilities identified as 'high priority' and present within their respective jurisdictional boundaries moves forward per the criteria and requirements detailed on the 15% level conceptual design plans. See *Figure 4.1* for a schematic for the proposed implementation based on ranking.

4.3.1 Required Elements for Successful Implementation

- Involvement of all project stakeholders (specifically the governmental jurisdictions present within the project area) is critical to the ultimate implementation of the plan
- Ongoing consensus of project stakeholders with the ADMP Update over time – in order to ensure the ultimate build-out of the Selected Alternative over time, the individual jurisdictions present within the ADMP Update project area must remain committed to ultimate build out of the ADMP facilities. The continued partnership between each of the local agencies and the FCDMC will be required over time to ensure such consensus continues.

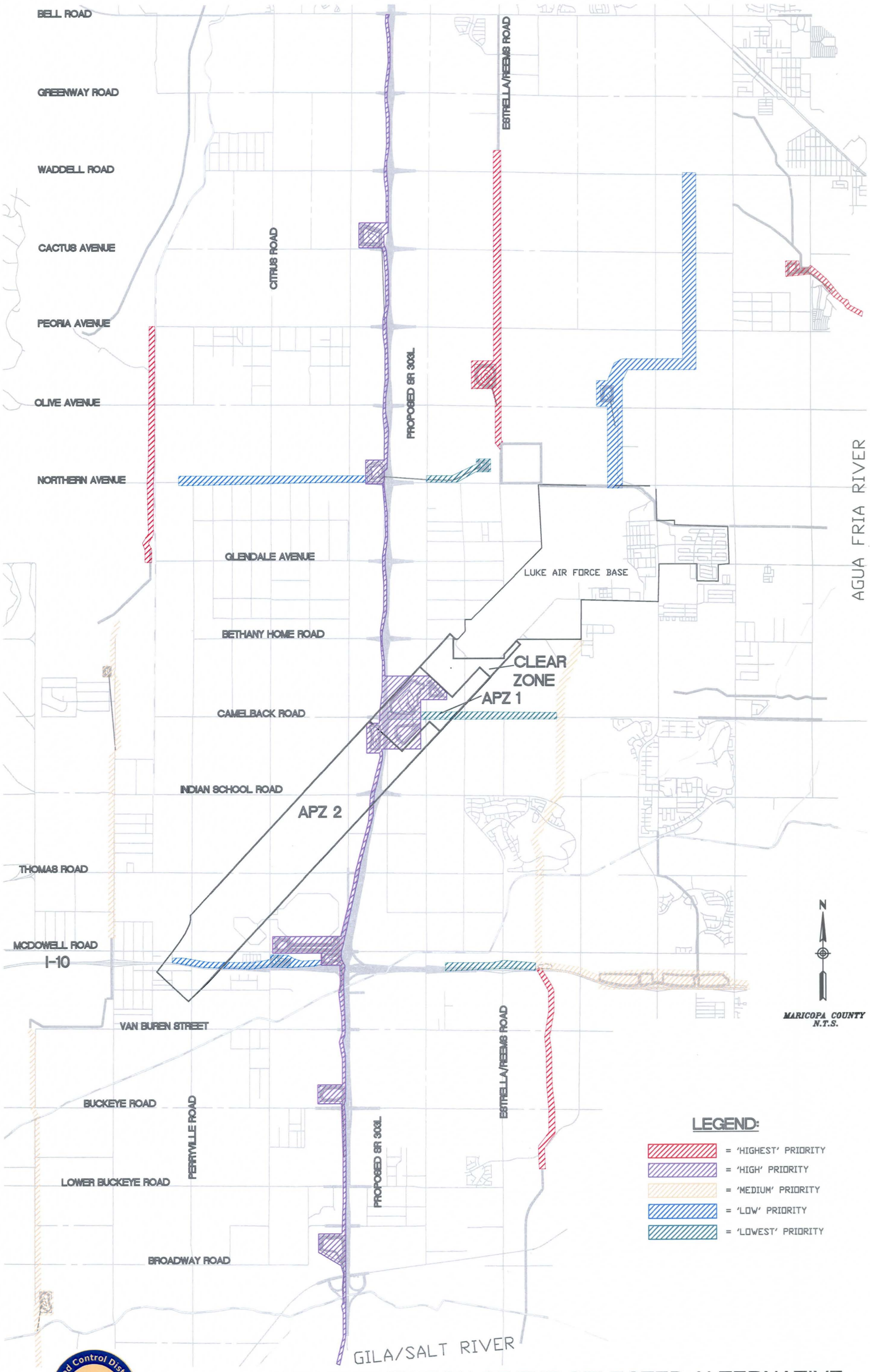
The ultimate build-out or construction of all the facilities recommended by the Selected Alternative will be completed over a relatively long period of time due to limited financial resources. Therefore, the most critical factor contributing to the success or failure of the ultimate implementation and construction of the Selected Alternative will likely be dependent upon a continuation of partnering and coordination between the many jurisdictional agencies impacted. Along with continued partnership, a common vision for the ultimate build-out of the ADMP Update will also be critical.

Due to the very high cost associated with the detailed design and subsequent construction of all the proposed facilities, an action plan for long-term cooperation must be put into place. Such a plan will facilitate the prioritizing and programming of individual projects on an ongoing basis. Some recommendations for securing and preserving continued long-term commitment to the ADMP Update among the stakeholder agencies affected are listed below:

- The FCDMC should identify the portions of the proposed ADMP Update facilities that are contained within various cities located in the project area
- Using the identified facilities, the FCDMC should work with the appropriate city governments to develop either informal collaboration or a formal IGA. This will ensure that both the FCDMC and the particular city are in agreement regarding the importance of the specific facility and the vision behind its ultimate construction.
- Encourage local cities to show their complete support for the ADMP Update by developing formal resolutions, which would help to solidify long-term vision and partnership.

Through the above-recommended process, the FCDMC may develop lasting cost sharing partnerships with other jurisdictional agencies impacted by the Selected Alternative. Such cost sharing partnerships will keep the costs of the specific projects at a manageable/practical scale for each of the individual parties involved.

The process described above is not a new concept and has actually begun with this initial phase of the ADMP Update project. Through multiple stakeholder's meetings as well as informational meetings for developers and public meetings held at various times throughout the project area, the FCDMC has been reaching out to the various communities present within the project area in an attempt to begin the types of partnerships discussed above. Early in this ADMP update project, the stakeholders impacted by the Selected Alternative flood control facilities were identified and actively involved in both the



Flood Control District of Maricopa County

IMPLEMENTATION OF THE SELECTED ALTERNATIVE

URS

January 2005
Figure 4.1

Table 4.6
Preliminary Phasing Plan for ADMP Update Flood Control Facilities

channel	From	To	Approximate Distance (mi)	Potential to Alleviate Known Flood Hazards			Relative Intensity of Future Land Use			Relative Intensity of Urban Concentration - 2010			Relative Intensity of Population Density - 2010		
				HIGH	MEDIUM	LOW	HIGH	MEDIUM	LOW	HIGH	MEDIUM	LOW	HIGH	MEDIUM	LOW
Jackrabbit															
Phase 1	WT FRS #4 inlet channel	Indian School Road	2.00	●				●			●			●	
Phase 2	Indian School Road	WT FRS #3	2.25		●		●					●		●	
Tuthill															
Phase 1	Gila River	Broadway Road	3.00			●		●				●		●	
Phase 2	Broadway Road	WT FRS #4	3.00			●		●				●		●	
Bullard North															
Phase 1	I-10	Indian School Road	2.25	●				●			●			●	
Phase 2	Indian School Road	Bethany Home Road	2.00	●				●			●			●	
I-10 East															
Phase 1	ADOT Basin	I-10				●			●		●			●	
ADOT Basins	Bullard Avenue	Dysart Road	2.00	-----			-----			-----			-----		
AT&SF															
Phase 1	Northern	Litchfield Road	2.00	●					●			●		●	
Phase 2	Litchfield Road	Waddell	3.00	●				●			●		●		
Upper Northern															
Phase 1	SR 303L	Perryville Road	2.50			●		●			●		●		
I-10 West															
Phase 1	I-10	Perryville Road	2.50	●				●			●			●	
Camelback															
Phase 1	Bullard Wash	Sarival Avenue	1.75	●				●				●		●	
I-10 Central															
Phase 1	Bullard Wash	Sarival Avenue	1.25		●			●				●		●	
Lower Northern															
Phase 1	Reems	Sarival Avenue	1.00			●		●			●			●	

identification of potential problems and the development of solutions to those problems. Stakeholders were given an active role in the determination of not only the location for the proposed flood control facilities but also the vision for the ultimate design and construction of those facilities. Throughout this ADMP Update project, there has been a general consensus among stakeholders that all of the proposed flood control facilities should be designed and constructed with attention to the following elements:

- Flood control and protection of lives and property
- Multi-use opportunities
- Recreational components
- Conformance with adjacent landscape character as defined by the various future land use and character plans produced by the area jurisdictions/stakeholders

All of the above elements may not be practical or feasible in every case but should be given due consideration during the design process. These elements are seen as a way of enhancing the adjacent land use throughout the community while at the same time, providing the necessary flood control.

This approach to the ultimate implementation of the preferred/ selected alternative is currently being used on several projects throughout the county. A few examples follow:

- ***West Valley Multi-Modal Transportation Corridor Master Plan, by the Maricopa Association of Governments*** – This project involves several stakeholders including the FCDMC. The ultimate build out of this project will be over a period of 20 to 30 years and will require significant partnering efforts sustained over time. For more detailed information regarding this project, the proposed implementation and partnering aspects, etc., refer to the MAG website.

- ***El Rio Watercourse Master Plan*** – This project will incorporate solutions and restoration features designed to make the Gila River a multi-use and environmentally compatible watercourse. The FCDMC is partnering with several cities (including Buckeye, Avondale and Goodyear) on this project to create a multi-use recreational corridor along the river while simultaneously providing adequate flood control. The project will provide an incentive for high-end economic development. This development will enhance the economic base of each of the cities impacted by the restoration project. For more information on the project, refer to the FCDMC website.

- ***Bullard Wash Channel Improvements Phase II*** – This is a continuation of the existing Bullard Outfall Channel as well as part of this ADMP Update. This portion of the Bullard Wash Channel (from approximately Lower Buckeye Road north to I-10) represents a distinct 'phase' in the ultimate construction of the total proposed channel from the existing outfall to LAFB. The success of this project is dependent upon the strength of the partnership, which currently exists between the City of Goodyear and the FCDMC. Like this ADMP Update, this phase of the proposed Bullard Wash Channel will incorporate multi-use/ recreational aspects with the practical benefits of regional flood control. The completion of this project will enhance the overall community and provide an amenity to area residents as well as draw in other users whose presence may serve to boost the local economy. For more information about this project, refer to the FCDMC website.

- ***White Tanks FRS #3 North Inlet Channel (NIC)*** – This channel was proposed with this ADMP project as the Beardsley Canal Channel. The FCDMC has placed a high priority on this channel and has since begun the process of securing a cost-sharing partner (the Maricopa Water District, MWD) and has scheduled the design project for April of 2004. The MWD owns the Beardsley Canal and has an interest in the completion of this proposed facility since it will provide protection for the existing Beardsley Canal from overtopping during significant storm events. This added protection helps reduce the annual O&M costs associated with the canal. By investing its financial resources into this one time cost, the MWD can realize an annual O&M savings over the long term.

- ***The Reems Road Channel Project*** – This proposed channel and basin were identified by the ADMP Update and have been moving forward via an IGA between the FCDMC and the City of Surprise. The City of Surprise has a vested interest in the completion of this project as does the FCDMC. This channel will protect adjacent land from existing shallow sheet flooding including, the existing City of Surprise wastewater treatment plant and several roadways. To date, FCDMC has begun land acquisition and design for the segment of the facility located between Olive Avenue and Northern Avenue.

- ***White Tanks FRS #3*** – The FCDMC (in conjunction with the Natural Resources Conservation Service [NRCS]) is currently in the process of designing improvements to rehabilitate this existing structure. The structure is approximately 40 years old and is need of significant improvements to meet the current State Dam safety regulations/requirements. The NRCS is developing a work plan to secure Federal Funding for the project. For more information on this project, refer to the FCDMC website.

- ***The proposed Lower El Mirage Basin and Channel*** – This proposed facility from the southwest corner of the intersection of El Mirage Road and Cactus Road to the Agua Fria River is currently a high priority in the FCDMC CIP. The FCDMC is working with the City of El Mirage to complete this final segment of the existing El Mirage Wash channelization upstream. The basin portion of this facility is listed 'active' in the CIP and in the design phase. The channel portion is currently listed 'in-active' in the CIP.

Ongoing revisions to the prioritization of projects identified by the Selected Alternative according to future population and urbanization projections will be required. Periodic adjustments due to geographic

deviations in area development from those projected and mapped by MAG will require the following at a minimum:

- Close coordination with local jurisdictional agencies regarding geographical locations throughout the area that will develop at a higher rate than others:
  - Routine inspection and updates to current future land use and character plans as well as potential changes to them in the future.
  - Use of census and other data to determine areas of highest growth at any particular time.
- Identifying future funding options/sources:
  - Socioeconomic data associated with the areas of projected high density/urbanization in the future to allow projected tax base data
  - Future planned developments and potential for cost sharing/ partnering with large private developers.
  - Coordination with local jurisdictions in developing potential partnering (IGA) to share costs.

The FCDMC currently performs a prioritization process of proposed projects upon completion of an initial study done at the planning phase. Once a preferred alternative has been identified, the FCDMC introduces it into its CIP which is a process that includes the ranking or prioritizing of a proposed project with regard to considerations including cost, level of protection, available vs. required funds, relative need within the community, and others. If the identified project is contained within a specific city or town, that jurisdiction may choose to submit the identified project through the FCDMC's CIP for ranking and FCDMC assistance, or complete the implementation themselves.

The FCDMC has already begun the process of incorporating some of the facilities proposed with the Selected Alternative into its CIP program as well as developing project-share agreements with different agencies. Those facilities already introduced into the FCDMC CIP are listed below in order of ranking:

- *West Cactus Road detention basin and channels (El Mirage)*
- *Reems Channel*
- *Bullard Wash channelization (Phase II)*
- *White Tanks FRS #3 basin*
- *SR 303L Channel*
- *White Tanks FRS #3 Inlet Channel (North Inlet Channel)*
- *White Tanks FRS #3 Outlet Channel (Jackrabbit Channel)*
- *White Tanks FRS #4 Outlet Channel (Tuthill Channel)*

Each of the projects listed above has already been prioritized and determined to be of a more significant urgency than the other proposed elements of the Selected Alternative. All of these projects are addressed in some detail on the FCDMC website at http://www.fcd.maricopa.gov/. These projects have been introduced to the CIP either by the FCDMC or the individual municipalities within which the facilities are contained and have identified cost-share partners.

Implementation and Partnering Tools:

As part of an IGA for an ADMP Update project between the FCDMC and a particular city there may be certain tools available to the agencies that help secure participation and potential financial partnership with local developers. One such tool would be to obtain a waiver/variance or exception to certain city regulations or ordinances that would allow a developer to maximize the development potential of his/her land while meeting the spirit of the cities original ordinance/regulation.

As an example, a waiver or variance for the onsite retention requirement in the City of Surprise General Provisions could be obtained. In exchange for financial support from a developer adjacent to a proposed ADMP Update facility, the City could agree to allow the development to minimize the land required for onsite retention. This could be done by allowing for a variance to the retention requirements that would only require a pre-post peak discharge analysis. Also, the City could allow a portion of the multi-use channel corridor adjacent to a particular development to count toward the developments minimum open space requirement in return for the developer's participation in the completion of regional trail link proposed within an adjacent ADMP Update channel.

Other examples of tools that could be used to secure project partners through variances to existing ordinances might include the following:

- A variance on the City of Surprise "Maintenance and Repair Guarantee" provision – this is a two-year maintenance and repair guarantee made by the developer covering all errors and omissions in the design and/or construction of all public improvements. In return for financial participation, the city could change the requirement from two years to one year.
- Partnering between the FCDMC and developers in regard to existing mapped floodplains. For example, the FCDMC could agree to prepare a CLOMR for development planned adjacent to an existing floodplain in return for the developers aid in cost sharing and constructing the channel improvements. The main incentive for the developer would be the additional land retained from the narrower floodplain due to the channel improvements.
- Relaxing of "sole access" requirements on the part of cities and FCDMC in an attempt to promote a multi-use aesthetic corridor. This would allow adjacent development to boost sales by promoting its access to these greenbelt type facilities. The obvious benefit to development would be the ability to charge a premium for lots or phases that are adjacent to the multi-use

corridor. In return, the developer might agree to participate financially in the construction of the facility.

Another potential source of project funding for a portion of the proposed ADMP Update facilities, might be available through another extension of the Transportation Equity Act for the 21st Century (TEA-21) or a reauthorization of the legislation. Currently, it is set to expire on May 31, 2005. If re-authorized, the legislation could result in federal funds that might be available indirectly through potential project partners for portions of the proposed multi-use facilities under the ADMP Update. Use of the TEA-21 funds might be a possibility if a proposed ADMP Update facility is constructed as a multi-use corridor serving as a link between proposed regional trails. FCDMC could explore partnering opportunities with the Maricopa County Trail Commission for any projects that could feasibly be used as links or connections within the regional system.

5.0 MAINTENANCE PLAN

One significant component of the ADMP Update is the O&M of the proposed flood control facilities. On average, this is approximately 20% of the total estimated cost associated with the overall ADMP Update project. The operation and maintenance costs estimated for this ADMP Update were based on actual costs provided URS by FCDMC. The costs were considered for a 50-year life cycle. For the detailed cost estimates associated with each proposed facility for the Selected Alternative, refer to Tables A-6.1 – A-6.14 located in Appendix A-VI of this report.

Some major factors that may help limit the O&M costs associated with the ADMP Update channels are listed below:

- Mild side slopes – In general, a mild side slope will limit the potential for channel erosion. In most cases, the Selected Alternative calls for channel side slopes of 6:1. There are a few exceptions where available space for the channel corridor is limited or where the channel is being designed in conjunction with another agency. For example, the SR 303L channel will be a concrete lined channel with 2:1 side slopes per ADOT requirements.
- Sub-critical flow – The Selected Alternative is designed to use relatively mild sloped channels, which result in low velocity and sub critical flow.
- Avoid sharp curves – Sharp and closely spaced curves are not part of the Selected Alternative.
- Limit entrance of uncontrolled runoff – Local runoff should be concentrated and conveyed to the channel using some type of structure such as catch basins or scuppers.
- Placement of multi-use features – Placement of proposed trails, play areas and/or irrigation systems above those areas within the channel/basin that receive frequent inundation.
- Limit ability of vegetative growth through concrete lined channels – For channels lined with concrete, adequate maintenance must be done to ensure vegetation growth does not increase flow resistance and result in overtopping. Such overtopping could result in the erosion of the over bank material and induce failure of the lining.
- Routine clearing of debris and sediment deposition in concrete lined channels – For channels lined with concrete, adequate maintenance must be done to ensure deposited sediments and/or debris do not increase flow resistance and result in overtopping. Such overtopping could result in the erosion of the overbank material and induce failure of the lining.
- Key-in of concrete channel lining – Concrete channel linings should be properly keyed into the adjacent over-banks to limit the potential for erosion and potential failure of the lining.
- Ease of access – The easier it is to access the portions of the facility that will require the most maintenance will limit the time and therefore, cost associated with any maintenance required.
- Do not use loose riprap on drop structures – This will eliminate erosion and instability potential across the drop structure.

In general, the maintenance associated with the facilities proposed as part of the Selected Alternative is expected to be fairly intense. This is inherent to grass lined structures that employ multi-use and aesthetic components. Such facilities require routine watering and basic upkeep of the vegetation associated with both the aesthetic and multi-use components as well the lining itself.

In addition to the costs associated with such upkeep of these types of facilities, several logistical factors must be addressed and solutions implemented. Some of these are listed below:

- Water supply for watering vegetation present within the facility for both lining and landscaping.
- Availability of staff to actively maintain the facility.
- Availability of the equipment required for the upkeep and maintenance of such facilities.
- Plan for potential secondary erosion tendencies at proposed drop structures that may be revealed after construction. This can be done by establishing provisions for this possibility in construction contracts and budgets.
- Plan for drop structure maintenance such as silt/sediment removal, rock replacement, debris removal, erosion repair, structural repairs and removal of graffiti.
- Plan for the hydraulic consequences of access ramps in supercritical channels. The hydraulic effect of such ramps on sub critical channels is generally minor. However, in super critical channels, the effects can be significant. Such effects might include oblique waves or hydraulic jumps which could threaten the overall integrity of the channel structure. The following should be considered to minimize such effects:
  - Ramps should be directed in a downstream direction.
  - The approaching Froude number should not exceed 2.2 for a "one-sided" ramp configuration.
- Plan for access ramps to be placed upstream and downstream of every proposed culvert and street crossing.
- Provide easy access over and around proposed drop structures.

- Maintain funding for unscheduled maintenance required after unpredictable future storms and/or flooding. Such maintenance includes:
  - Repairs to the embankment to prevent erosion or earth fill sloughing from weakening the embankment.
  - Removal of debris following large storm events.
  - Repairs to inlet and outlet channels necessary to maintain capacity and stop erosion.
- Plan for scheduled maintenance activities such as:
  - Routine trash removal.
  - Pruning of aesthetic landscaping.
  - Mowing and maintaining grass basin and/or channel lining.
- Selection of landscape species that will minimize pruning, trimming and other maintenance requirements.
- Specify the use of the largest plants possible given budget constraints. This will minimize potential for damage during the initial growth seasons.
- Provide adequate spacing between plantings to allow for easy access of maintenance equipment.
- Use irrigation systems that will operate under sand or soil deposition.
- Install irrigation systems in areas not likely to experience significant erosion within the facility.
- Protect irrigation lines crossing channels through increased "bury" depth or concrete encasement.
- Install irrigation controls in areas not likely to experience inundation.
- Install signs made from corrosion resistant materials and place them in areas less likely to collect debris.
- Provide internal drainage to eliminate nuisance ponding on upper tiers in multi-use basins
- Maintain relatively flat internal slopes within multi-tier basins to facilitate mowing activity.

The O&M associated with the multi-use/aesthetic facilities primarily proposed as part of the Selected Alternative should be carefully considered and the above recommendations considered at all subsequent phases of design and construction.

Future cost share arrangements should include provisions for the ongoing O&M costs anticipated for each proposed facility over the course of its useful design life. Such provisions should clearly state the approximate funding required for both scheduled and non-scheduled maintenance, as well as the agency responsible for providing the identified O&M tasks.

Failure to adequately maintain the proposed facilities could lead to a reduction in the flood protection provided by the facility and/or a diminished useful life.

6.0 QUANTITY/COST

A final cost estimate was prepared as part of the Level III analysis. Quantities were computed for the major components associated with the Selected Alternative. A contingency of 30% was applied to the overall cost as a result of the limited amount of detail available at this level of analysis.

Several simplifying assumptions were made to facilitate the preparation of an "order of magnitude" type cost estimate for the Selected Alternative.

The cost estimate provided in this report should not be used for actual final cost information. As described above, the level of detail for a planning study of this type does not require a precise amount; rather an approximate order of magnitude cost that may be used for future project funding.

6.1.1 Basic Assumptions

Several assumptions/limitations were used to prepare this cost estimate. These assumptions and limitations are listed below:

- Culverts were sized to create no headwater at the inlets. During final design, the size of these structures may be reduced if headwater computations show no adverse impacts to the upstream reach of the proposed channel facility.
- Detailed quantities regarding inlet/outlet aprons, filter fabric, tow-downs and other details were not considered.
- All non-concrete facilities were considered to be earthen with grass linings. The only exception is the SR 303L channel, which was considered a standard reinforced concrete lined channel section.
- Velocities in grass-lined channels were limited to a maximum of 6 f/s to minimize erosion during large runoff events. The velocities in the concrete lined SR 303L channel were limited to 15 f/s.
- Land acquisition quantities were based on a single value of $60,000/acre as provided to URS by the FCDMC.
- If channel slopes did not produce velocities of more than 6 f/s (for grass lined channels) or 15 f/s (for concrete lined channels), drop structures were not designed.
- Cut quantities were calculated using the average end area method and applied along proposed channel reaches and within proposed detention basins.
- Hydroseed quantities (where applicable) were based on the approximate required footprint for a given facility.
- Land acquisition quantities were based on the approximate required footprint for a given facility. The channel top widths (including the 20-foot operation and maintenance road) were increased by 30 percent to allow for aesthetics/multi-use features. Additionally, proposed basin footprints were increased by 30 percent or 30 feet (whichever was greater) to account for aesthetic/multi-use features. In the case of the ADOT basins, only right-of-way outside the limits of the existing right-of-way was considered a land acquisition quantity. As an exception to the above, the SR 303L channel width was based only on a single 20-foot operation and maintenance road on the west plus an adjacent 10-foot landscape easement.

6.1.2 Quantities Calculations Methodology

The methodology followed when computing the quantities was fairly simple. The importance of consistency between the calculations from previous levels of analysis and this Level III analysis was considered a very important aspect of the computations. Consistency is important to a meaningful comparison between the proposed alternatives under previous levels of analysis and the Selected Alternative selected by the Level III analysis. The discussion below summarizes the methodology followed when calculating the quantities used to determine the cost estimate for the Selected Alternative.

As an organizational tool and in an effort to maintain consistency, spreadsheets were used to tabulate the quantities required for the Selected Alternative. The quantities estimated include, right-of-way requirements, channel excavation, hydroseed area, grouted riprap and/or concrete drop structures, energy dissipaters, excavation for detention/retention basins, culverts for major road crossings with inlet and outlet headwalls, post storm low flow pipes, 50-year operation and maintenance costs, utility relocations, landscape/aesthetics, proposed bridges, pedestrian crossings and concrete channel lining estimates when necessary.

6.1.2.1 Proposed Channel Quantities

The conceptual design of the channels identified for the Selected Alternative was based upon results of the HEC-1 study. To design the channel reaches associated with the Selected Alternative, rates of flow were taken from the HEC-1 output file. Using those discharges shown at the concentration points along each proposed channel reach, an Excel spreadsheet was used to determine the required channel section geometry. For a given reach between concentration points, for example, major street intersections, the reach was assumed to have a uniform channel section throughout. The following list describes the process followed:

- Each channel reach was assigned a discharge (taken from the downstream concentration point of the reach), slope, length, side slope(s), and roughness coefficient.

- From these values, the individual reaches were sized—by varying depth, slope and width—using the manning equation to compute normal depth.

- For channel sizing, a list of criteria was established; the assumed uniform channel flow velocity was to be kept at or below 6 f/s for grass lined channels and 15 f/s for concrete lined channels. The trapezoidal channel side slopes were set at 6 horizontal to 1 vertical for grass linings and 2 horizontal to 1 vertical for concrete linings. A Manning's Roughness value set at 0.03 for grass linings and 0.013 for concrete linings. Modified channel slopes were assigned a minimum value of 0.2 percent (0.002), and the depth of flow was generally limited to 6 feet. In a very few cases channel daylighting at ultimate outfall locations required longitudinal channel grades of less than 0.002 f/f. After sizing each channel reach according to the assigned criteria, the computed channel geometry was used to create channel section templates.

- The excavation, right-of-way and hydroseed area quantities were calculated from section templates applied to proposed channel alignments & vertical profiles using an existing digital terrain model.

- For the right-of-way width, the top width of the channel was imported using the daylight catch points. These points were calculated based on the proposed channel section templates attached to the proposed horizontal and vertical channel alignments and overlaid with the existing topography. Lines connecting these points, known as daylight lines, give a reasonable approximation of the total expected channel footprint based on the defined cross section geometry of each reach.

6.1.2.2 Calculation of Drop Structure Quantities

Slopes for some of the channel reaches required modification from the existing condition to meet the specified channel design criteria. Channel slopes were flattened to achieve velocities at or below the maximum established for the proposed channel lining. In the case where channel slopes were flattened significantly from existing ground, hydraulic drops required within the reach to account for the difference in hydraulic elevation from the top of the reach to the bottom. Across these drops, hydraulic jumps may form in the channel. When this takes place, additional armoring may be required within the channel to protect against turbulence and energy losses associated with the jump location.

6.1.2.3 Calculation of Culvert and Bridge Quantities

Culverts were sized based on the assumption that the maximum allowable headwater elevation at the inlet would not exceed the 100-year depth of flow in the channel at that location. When practical, culvert slopes were increased as much as possible to ease maintenance required due to siltation. The program CulvertMaster v2.0 by Haestad Methods Inc. was used to determine the actual size and number or required barrels.

Bridges were sized and used as an alternative to culverts in locations where the channel hydraulics dictated their use. Bridges were sized based on a simple square foot computation obtained by multiplying the required bridge span (L) by the approximate roadway width (W).

6.1.2.4 Calculation of Detention Basin Quantities

Detention basin quantities were computed using Autodesk Land Desktop (LDD). Basin contour lines defining the basin bottom, top, perimeter access road and landscape area were drawn in accordance with the required area, volume, depth and side slope criteria determined by analysis run with the HEC-1 model. Once drawn, the lines defining a basin were used to create 3-dimensional surface models from which LDD both daylighted the basin and computed earthwork quantities.

6.1.2.5 Landscape and Aesthetic Treatment

Landscape and aesthetic treatment quantities were based on the proposed facility footprint area, the proposed theme and the desired future landscape character for the adjacent property. For a detailed explanation of the proposed Landscape and Aesthetic Treatment, refer to the ***Design Report***.

6.1.2.6 Proposed Channel and Basin Operation and Maintenance

The operation and maintenance quantities were based on a lineal foot (channels) and acre (basin) basis. The quantities were taken directly from the footprint areas and proposed channel lengths proposed for each facility.

6.1.2.7 Utility Relocation Quantities

Proposed utility relocation quantities were based the following assumptions:

- Any utility in conflict with a proposed channel or basin will require relocation.

- The quantity for the proposed relocation will be on a lineal foot basis and will be the total length of the utility crossing the proposed channel or basin footprint.

6.1.2.8 Post Storm Drain Pipe Quantities

This quantity was based on the number and size of pipes determined to drain the basin within the 36-hour time frame per county regulations. Using the procedure detailed in Section 2.2.3.3.1 above, the quantities were estimated. The actual pipe lengths were based on distances required to daylight from the basin bottom elevation to the outfall point downstream.

6.2 UNIT COSTS

The unit costs used with the quantity take-offs described above, were developed from several sources. For ease of discussion, the unit costs were categorized by the source data in "Cost Groups" A through F. Refer to ***Appendix A-V*** for tables showing inflation adjustments made to unit costs obtained from past (actual) contractor bid sources

supplied by ADOT. The following is a list of sources used to develop the unit costs:

Cost Group A – This group includes proposed RCP pipe costs. These unit costs were obtained from actual contractor bid data contained within an ADOT Excel spreadsheet, 'ADOTConst1997.XLS'. Multiple bids for the same item/quantity were averaged and used as a basis. The actual unit cost used with this estimate was computed by applying the annual inflation rates since 1997 to the unit cost basis value.

Cost Group B – The unit costs in this group were derived from experience and knowledge and B&M by URS staff. These costs did not require adjustment for inflation.

- Concrete, in CY
- Steel, in pounds
- Rip Rap Energy Dissipater, each
- Structural Backfill, in CY
- Structural Excavation, in CY
- Single Span Bridge, in SF

Cost Group C – The unit costs in this group were recently provided to URS by FCDMC staff. These costs did not require adjustment for inflation.

- Land, in acres
- Structure Relocations, each

Cost Group D – The unit costs in this group were provided to URS by FCDMC staff. These costs were based on actual costs from 2002. Therefore, they were adjusted for the annual inflation rates for 2002 to 2003 and 2003 to present.

- Channel Operation and Maintenance, in lineal feet
- Basin Operation and Maintenance, in acres

Cost Group E – The unit costs in this group were provided to URS by FCDMC staff via e-mail correspondence on July 17, 2001. Therefore, they were adjusted for the annual inflation rates for 2001 to 2002, 2002 to 2003 and 2003 to present.

- Grouted Rip-Rap, in CY
- Channel Excavation, in CY
- Fill, in CY
- Hydroseed, in AC
- Basin Excavation, in CY

Cost Group F – The unit costs in this group were determined from experience and knowledge and B&M by URS staff experienced in utilities and relocation. No adjustments for inflation were required for these costs.

- Miscellaneous Utility Relocations, in LF, EA

6.3 AESTHETICS AND MULTI-USE UNIT COSTS

The unit costs listed below were developed based on the proposed facility treatments resulting from aesthetic/multi-use evaluations and analysis. These unit costs will apply to each of the proposed facilities for the Selected Alternative.

Cost for landscape and aesthetic themes/features are based upon a required footprint area calculated for each channel and basin. Costs include plantings, irrigation, hardscape features, and labor. Theses costs do not include and future amenities.

- Jackrabbit Channel weighted average square foot cost is $1.55.
- SR303L Channel average square foot cost is $1.53.
- Reems Channel average square foot cost is $1.49.
- Lower Northern Channel average square foot cost is $1.56.
- Upper Northern Channel average square foot cost is $1.55.
- Lower El Mirage Channel average square foot cost is $1.56.
- I-10 West Channel average square foot cost is $1.55.
- I-10 Central Channel average square foot cost is $1.48.
- Camelback Channel average square foot cost is $1.55.
- AT&SF Railroad Channel average square foot cost is $1.46.
- ADOT Basin Improvements average square foot cost is $1.40.
- Tuthill Channel average square foot cost is $1.47.
- Bullard Channel North average square foot cost is $1.57.
- I-10 East Diversion Channel (to ADOT Basins) average square foot cost is $1.50.
- I-10 West Channel average square foot cost is $1.55.

Note that the FCDMC maximum spending allowance on landscape aesthetics is $1.00 per square foot. Any cost above this maximum allowance must be negotiated or paid by others.

6.4 COST ESTIMATE AND RESULTS

Table 6.1 shows the results of the cost estimate. This information may be used as an order of magnitude cost associated with the ADMP Update project as a whole. The individual channel and basin components that make up the total estimate may be used by the FCDMC to program funding amounts appropriate to each identified project in the CIP. See Table(s) 6.2 through 6.15 for the detailed cost estimate associated with each proposed facility. For detail cost information associated with the SR 303L Channel, refer to *Tables A-6.1* through *A-6.14*.

Table 6.1
Loop 303 Corridor/White Tanks
Area Drainage Master Plan Update
Cost Estimate Summary

	Cost			
	Option A		Option B	
Channel	Construction	O&M[2]	Construction	O&M[2,3]
Camelback Channel	$3,129,361	$964,498	$3,892,370	$964,498
Jackrabbit Channel	$16,584,924	$3,242,263	$19,353,080	$3,242,263
SR 303L	$128,759,209	$17,758,643	$153,911,454	$17,758,643
Upper Northern Channel	$7,549,870	$1,913,876	$8,906,010	$1,913,876
Lower Northern Channel	$4,127,113	$646,765	$4,999,460	$646,765
Reems Channel	$20,589,933	$3,311,511	$23,426,647	$3,311,511
AT & SF Railroad Channel	$20,208,708	$3,972,422	$23,027,516	$3,972,422
Lower El Mirage Channel	$5,807,596	$845,754	$6,016,384	$845,754
Bullard Channel	$25,254,638	$3,602,137	$29,340,790	$3,602,137
I-10 West Channel	$9,345,399	$1,654,347	$10,315,123	$1,654,347
Tuthill Channel	$31,582,746	$5,318,862	$35,501,937	$5,318,862
I-10 East Diversion Channel	$2,470,263	$490,439	$2,874,051	$490,439
I-10 Central Channel	$2,013,119	$948,137	$2,416,868	$948,137
ADOT Basin Improvements	$3,654,829	$98,668	$4,268,850	$98,668
Sub Total =	*$281,077,708*	*$44,768,324*	*$328,250,541*	*$44,768,324*
Engineering (10% Construction) =	*$28,107,771*		*$32,825,054*	
30% Contingency =	*$84,323,312*		*$98,475,162*	
Total =	*$393,508,791*		*$459,550,757*	
Total Including O&M =	$438,277,114		$504,319,080	

1. Option A refers to improvements with minimal landscaping costs, while Option B includes the complete landscape/multi-use cost estimate associated with the proposed channel themes.
2. Operation and maintenance costs for a 50-year life cycle.
3. Operation and maintenance costs are shown to be equal for option 'B' due to the lack of specific cost data used. The data used did not specify type or extent of of vegetation and landscape present within the existing channels that formed the basis for these costs. It is reasonable to expect that with more extensive landscape and vegetation inherent to 'Option B', these costs may be higher than those under 'Option A'. A more detailed estimate will be required upon final design.

7.0 FIFTEEN PERCENT CONCEPTUAL DESIGN PLANS

This section contains the 15% Level Conceptual Design Plans associated with the Selected Alternative. Proposed channels and basins identified on the Selected Alternative exhibit *Figure 3.1B* labeled "under development" have not been included in the conceptual design plans. These facilities include the following:

- The proposed channel adjacent to the Beardsley Canal on the west.
- The proposed channelization of the existing Bullard Wash south of I-10 to the existing Bullard Outfall Channel.

Refer to the "Loop 303 Corridor/White Tanks ADMP Update Landscape Aesthetics and Multi-Use Design Guidelines for Flood Control Facilities," by Logan Simpson Design, for a comprehensive narrative accompanied by detailed sketches of the proposed landscape/multi-use characteristics for each of the Selected Alternative facilities.

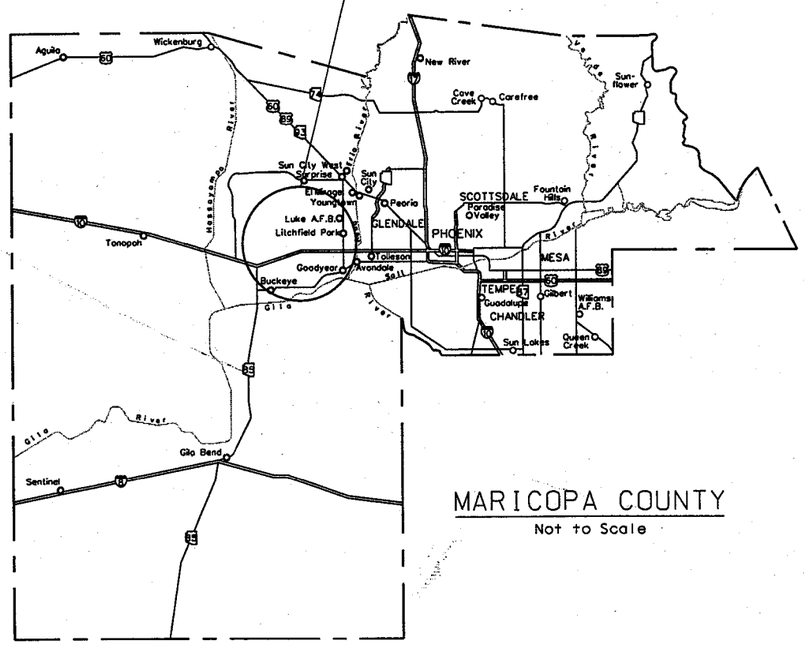
URS

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

IN COOPERATION WITH THE FCDMC
PRELIMINARY PLAN AND PROFILE
LOOP 303 AREA DRAINAGE MASTER PLAN
FCD PROJECT NO. FCD99-40

FINAL
LEVEL III 15% CONCEPTUAL DESIGN PLANS

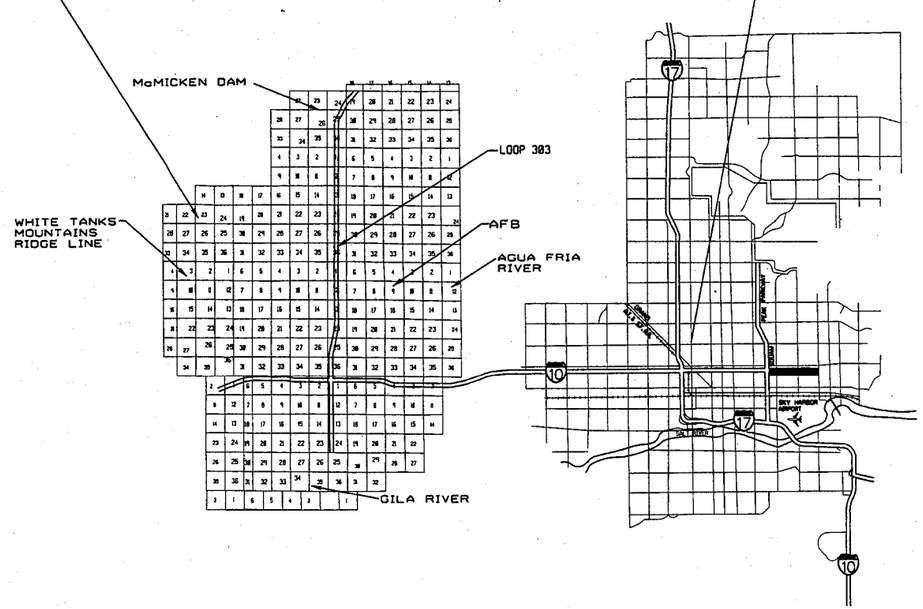
PROJECT LOCATION



MARICOPA COUNTY
Not to Scale

LOOP 303 PROJECT AREA BOUNDARY

DOWNTOWN PHOENIX



VICINITY MAP
Not to Scale

Registered Professional Engineer (Civil)
CERTIFICATE NO. 38656
ELLIOT SILVERSTON
Date Signed 3-2-05
ARIZONA, U.S.A.

PRELIMINARY - NOT FOR CIRCULATION

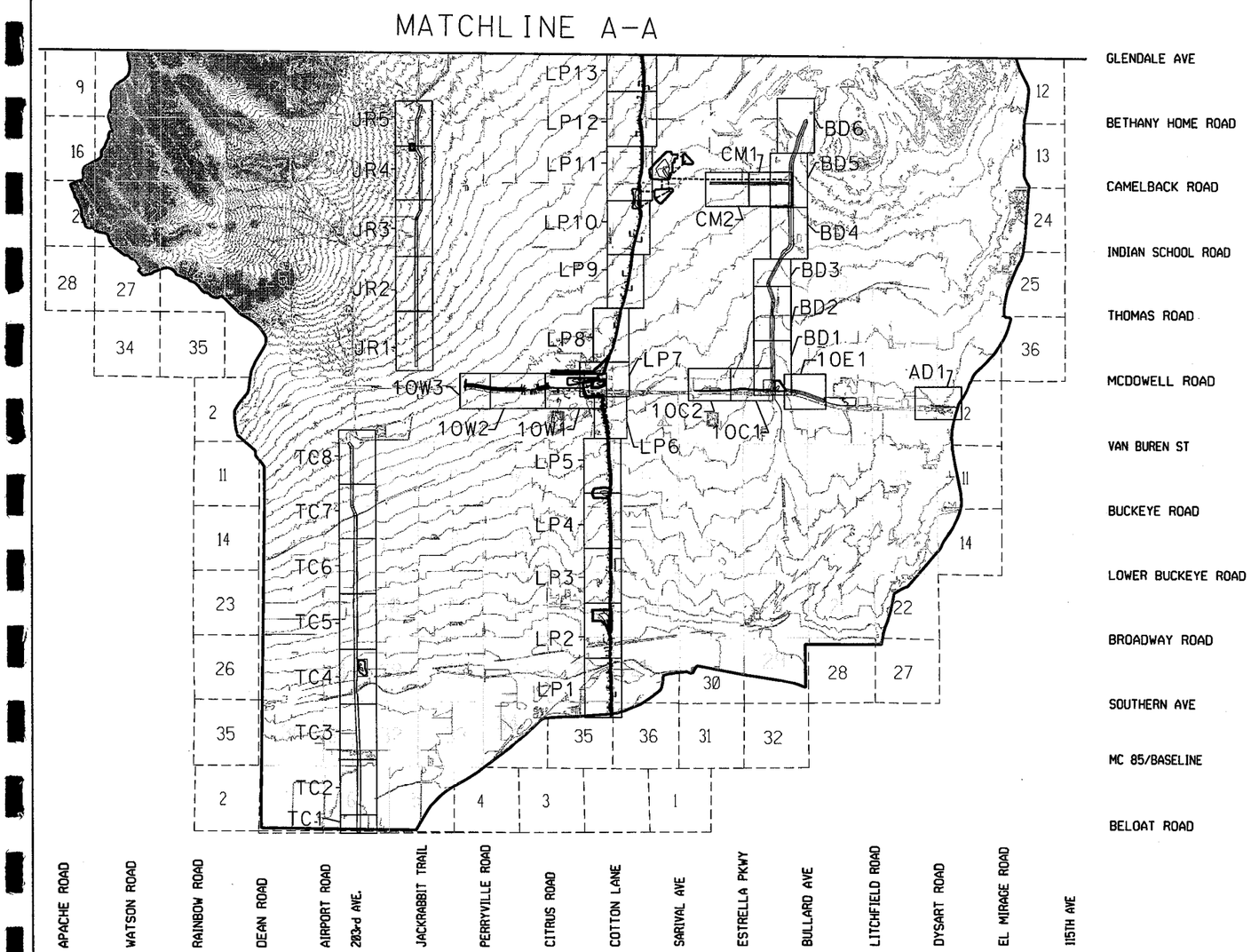
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

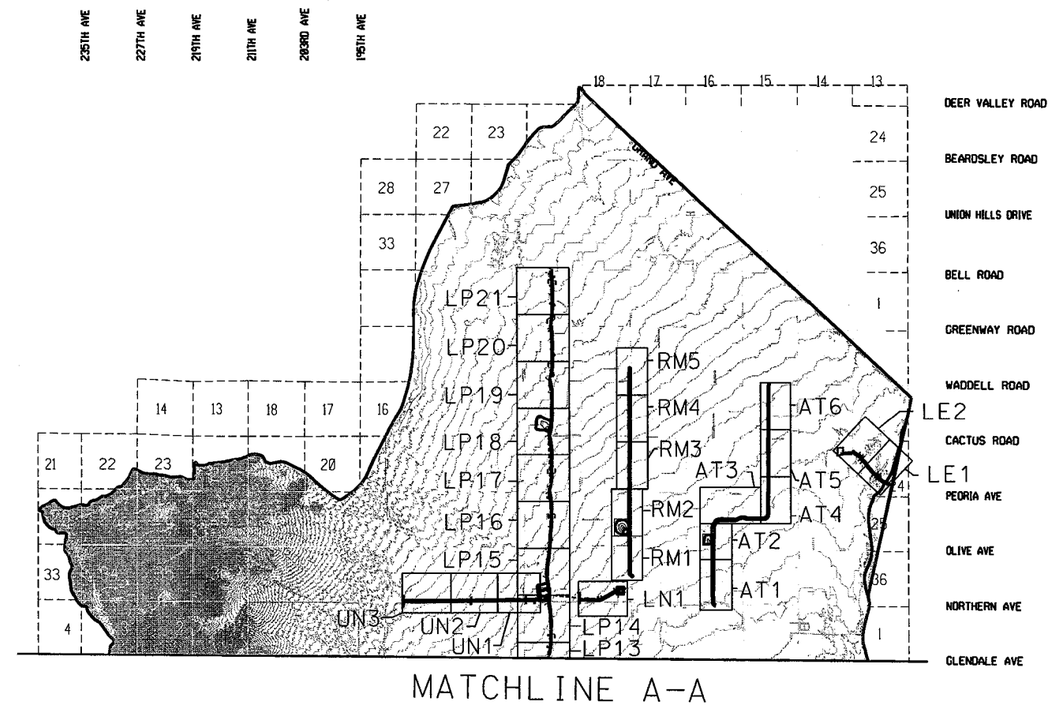
CHIEF ENGINEER AND GENERAL MANAGER

BOARD OF DIRECTORS OF THE FLOOD CONTROL DISTRICT

ANDY KUNASEK - CHAIRMAN

DISTRICT 1	FULTON BROCK
DISTRICT 2	DON STAPLEY
DISTRICT 3	ANDY KUNASEK
DISTRICT 4	JAN BREWER
DISTRICT 5	MARY ROSE WILCOX





NO.	REVISION	BY	DATE
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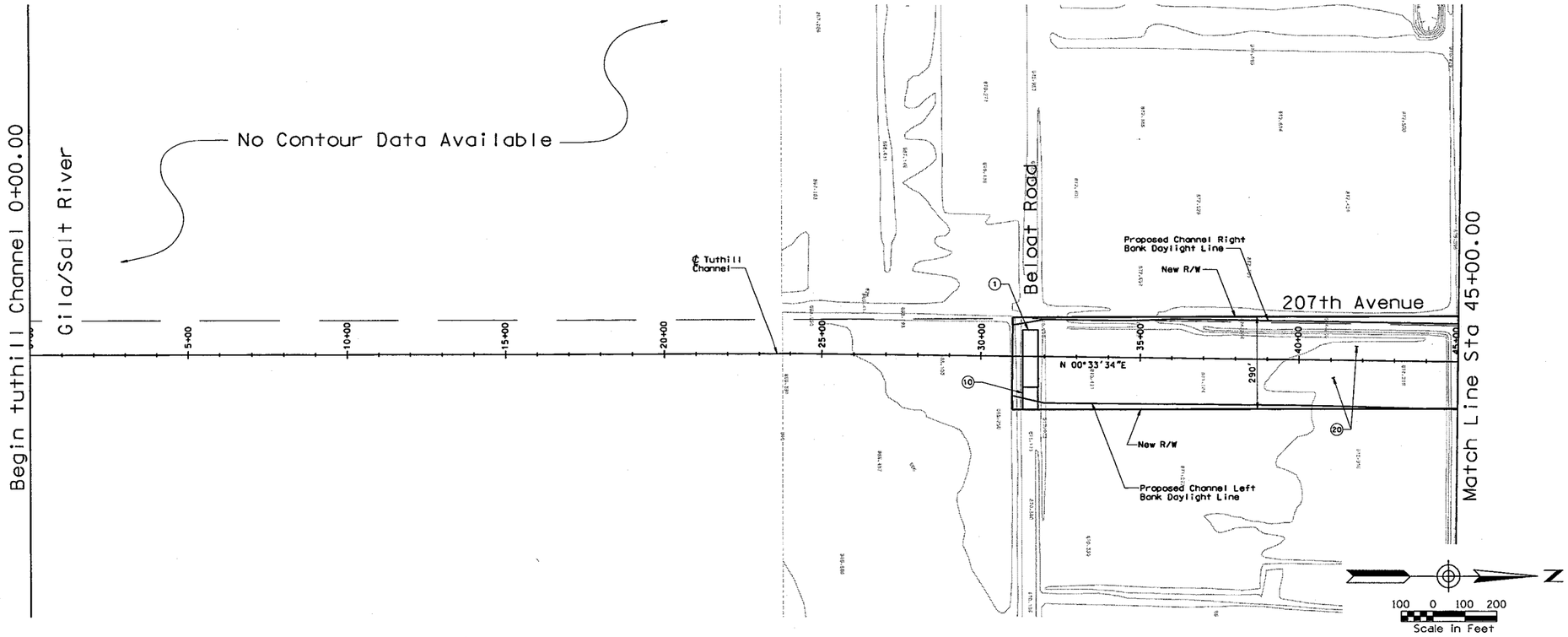
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

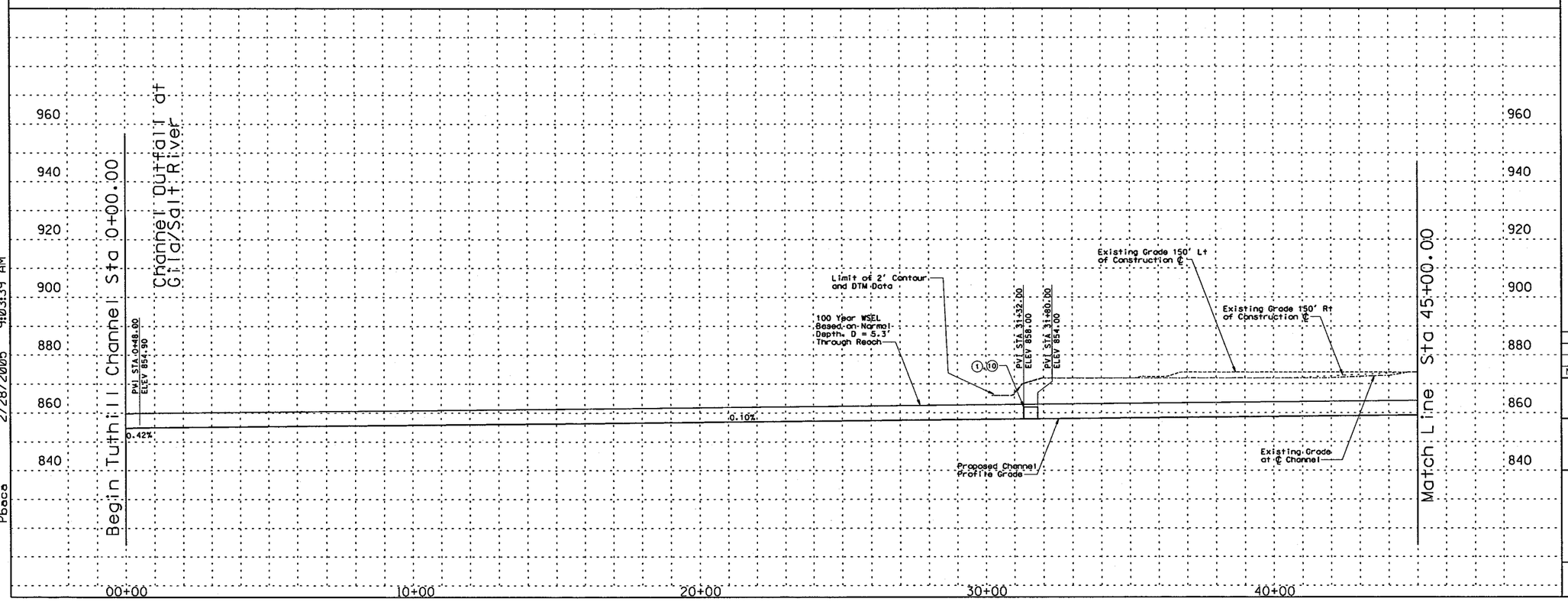
LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO. | CHANNEL CUT SHEET INDEX | SHEET OF





REMOVE

CONSTRUCT

STA 0+00.00 TO STA 45+00.00. CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 0+00.00 TO STA 45+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 0+00.00 TO STA 45+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT.

(1) INSTALL 14 BARREL 10' x 4' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

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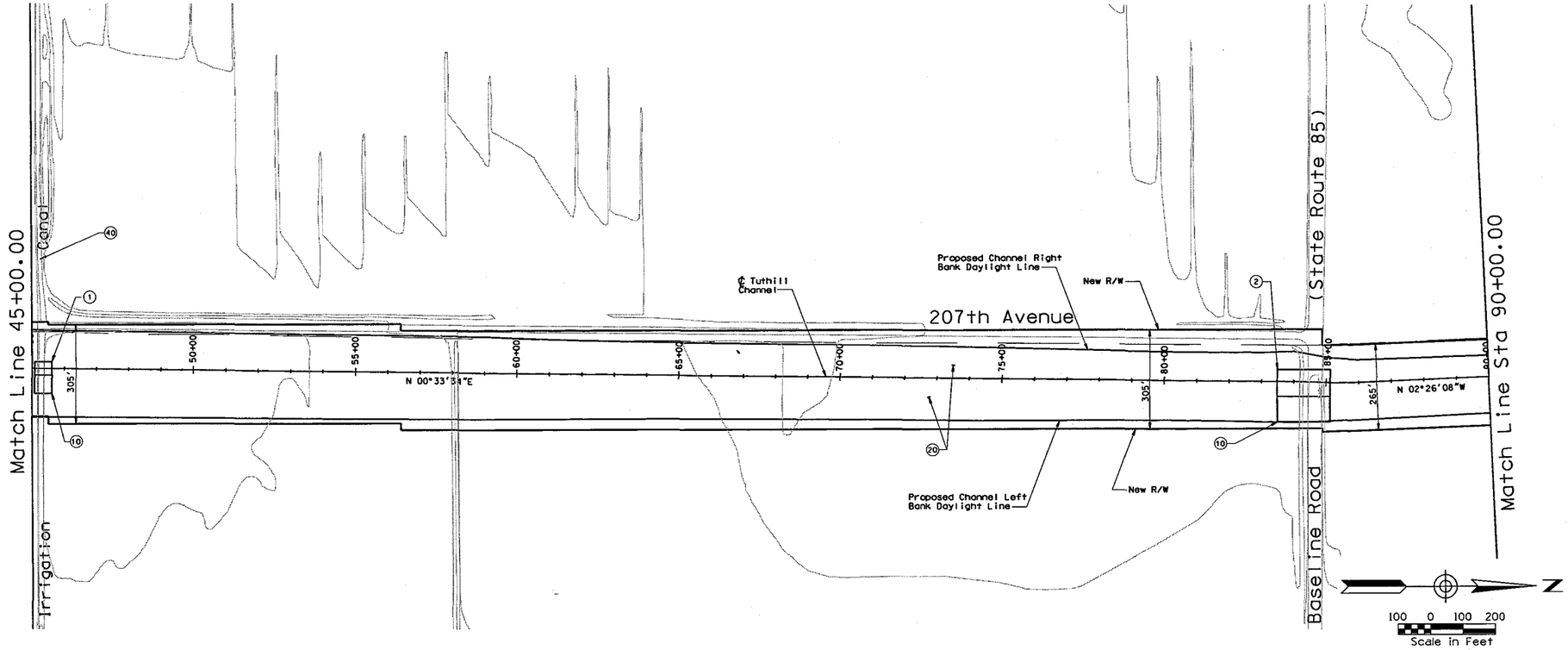

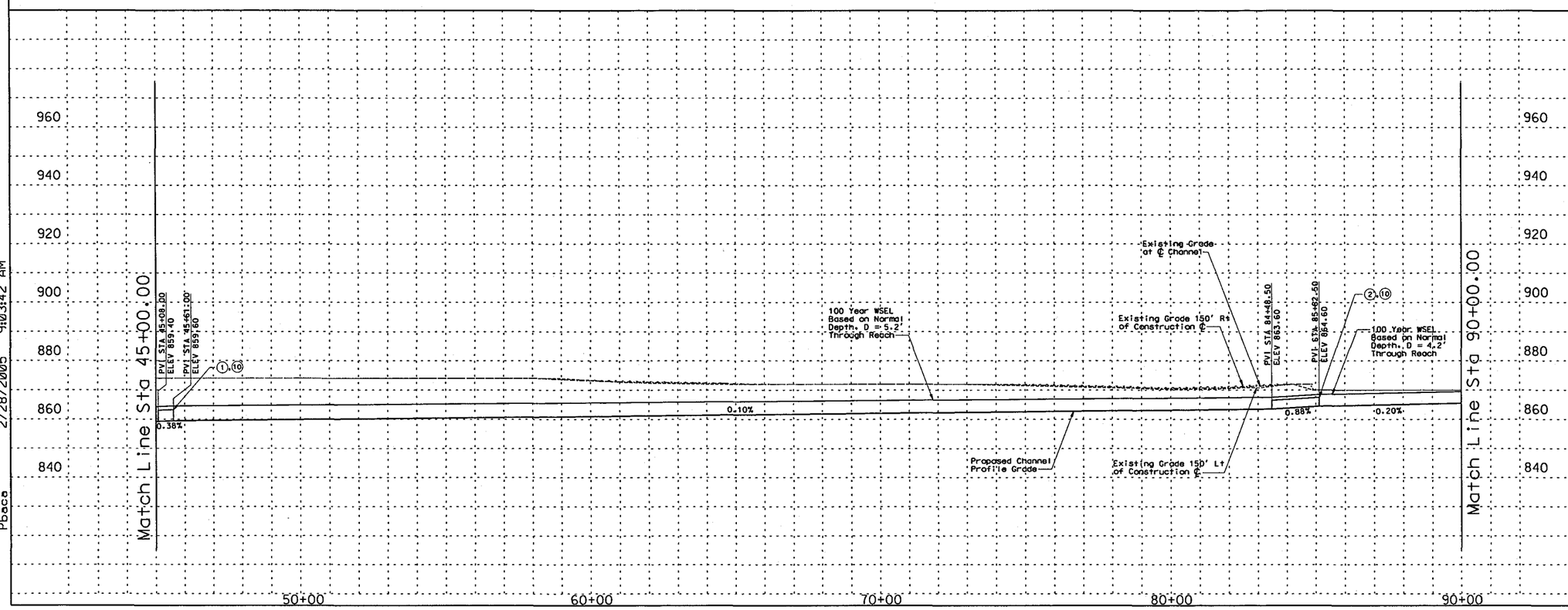

REMOVE

CONSTRUCT

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STA 45+00.00 TO STA 90+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 45+00.00 TO STA 90+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT.

(1) INSTALL 11 BARREL 10' x 5' RCB

(2) INSTALL 7 BARREL 10' x 4' RCB. SEE CROSSING DETAIL C.9.

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) SIPHON CANAL AT PROPOSED CHANNEL CROSSING. SEE DETAIL C.8.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

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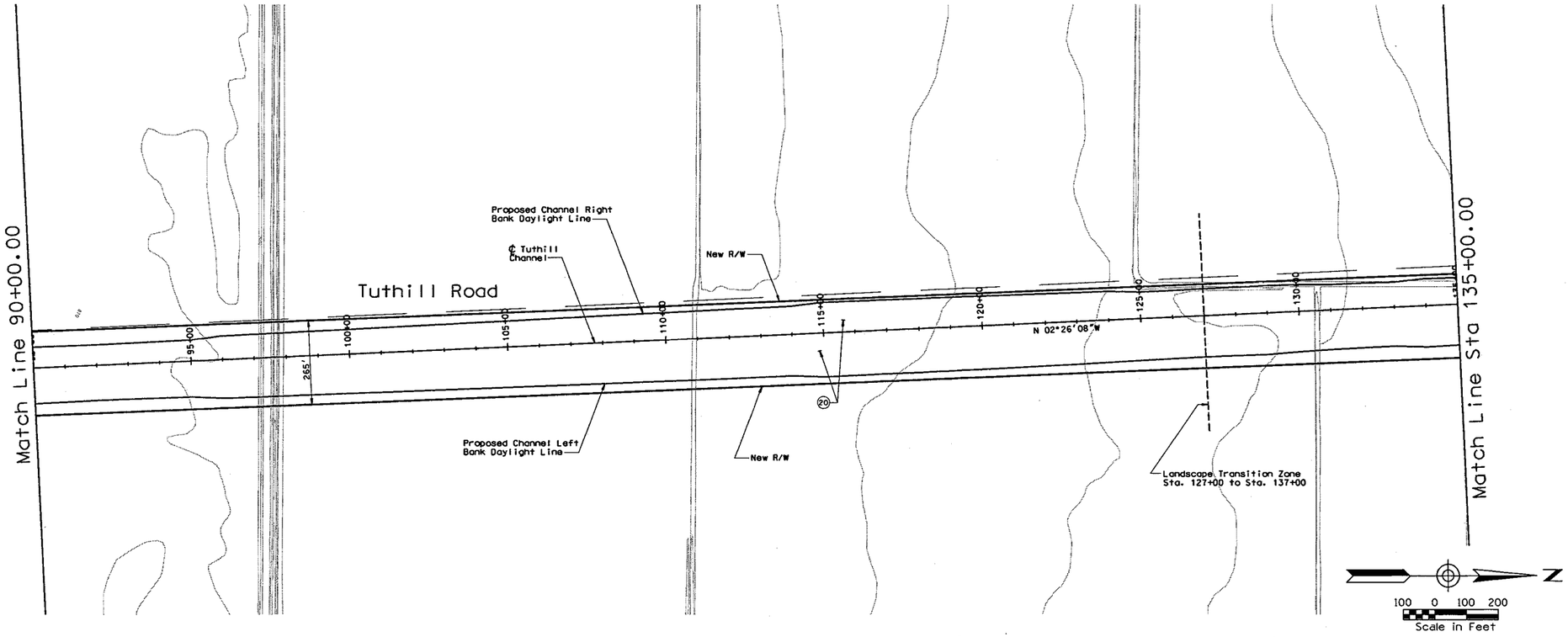

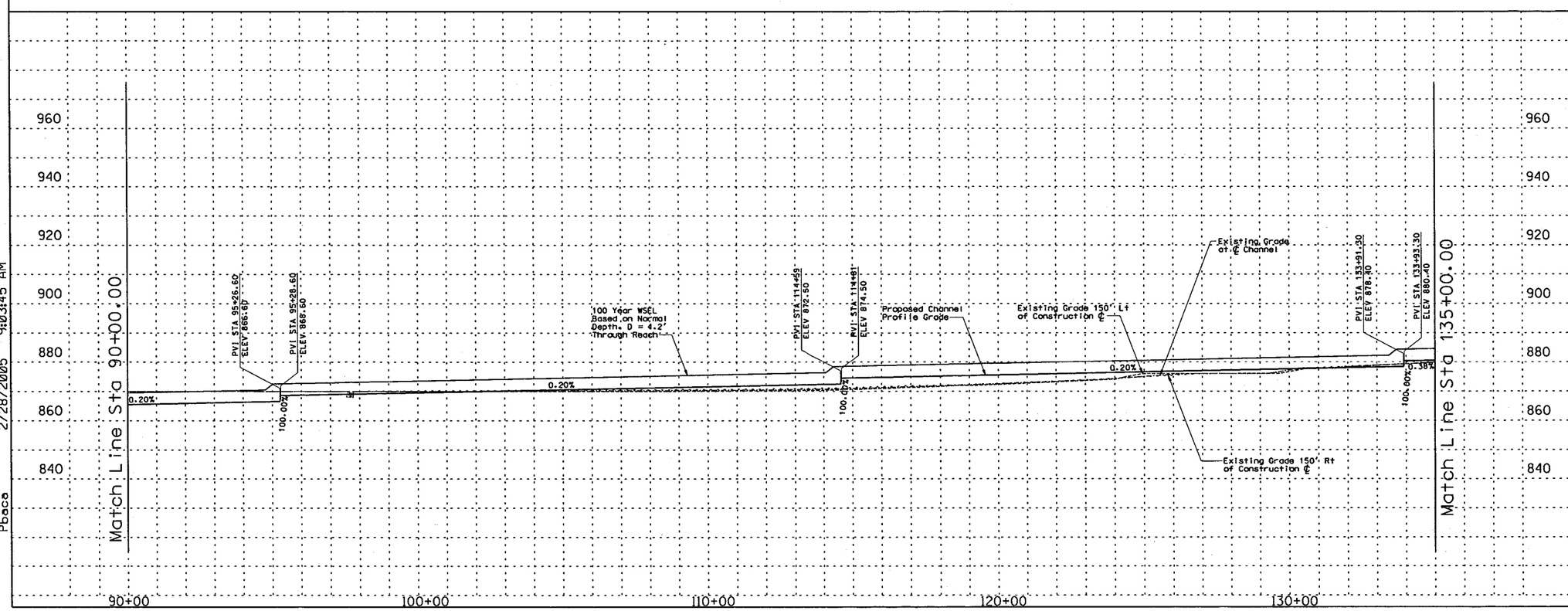

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STA 90+00.00 TO STA 135+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 90+00.00 TO STA 135+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT.

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL
PLAN & PROFILE

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
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DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

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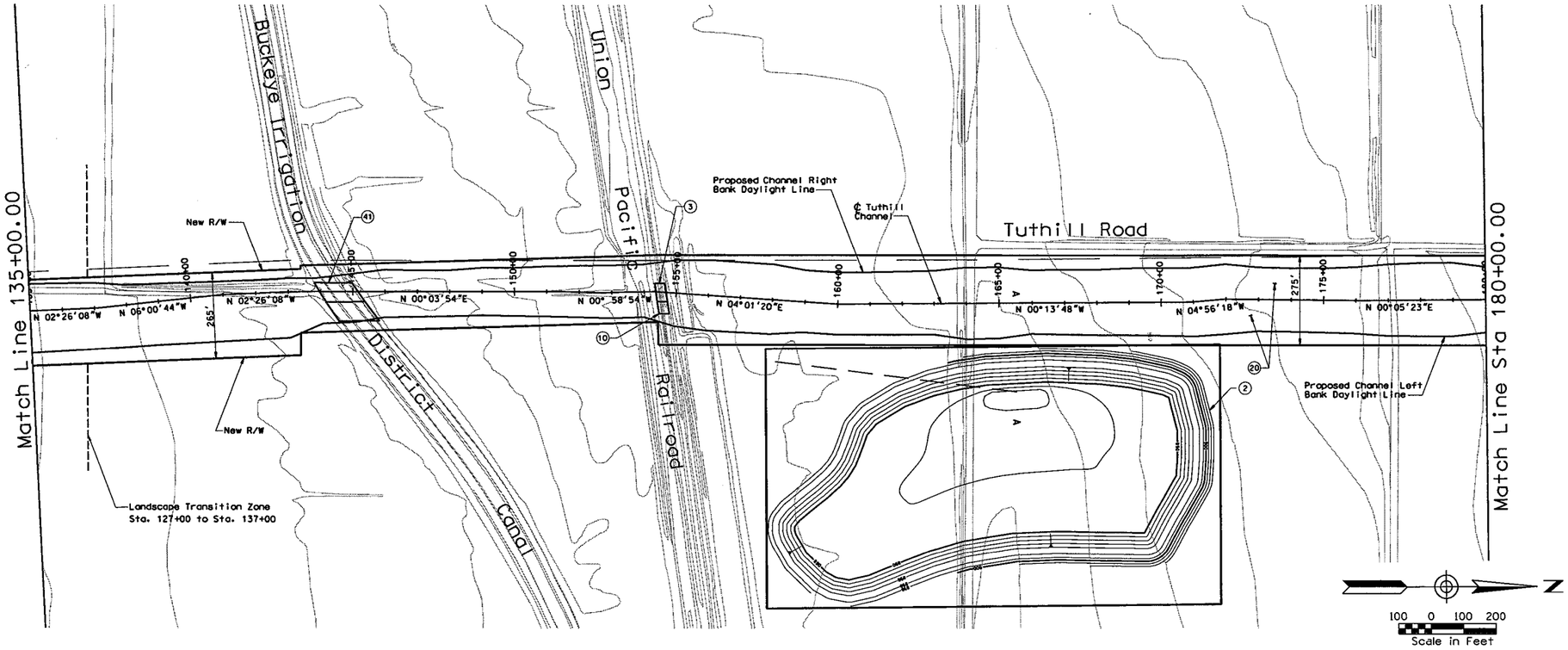

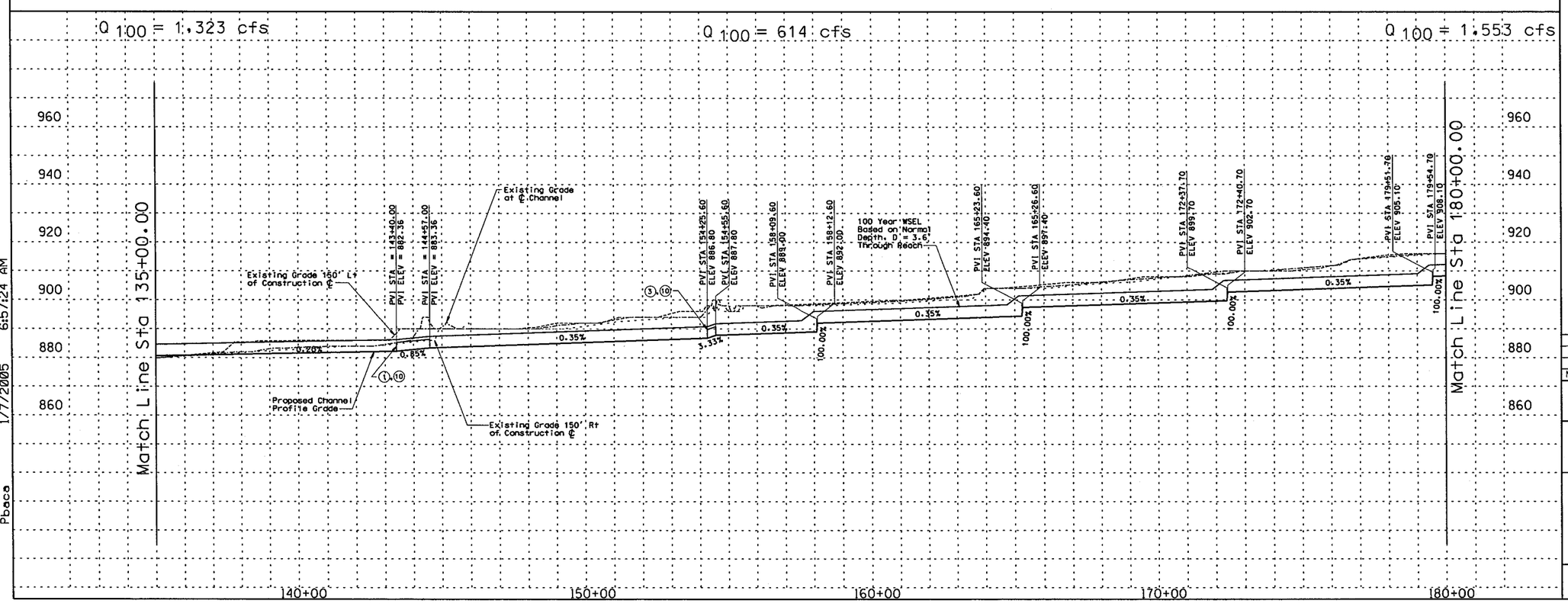

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CONSTRUCT

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STA 135+00.00 TO STA 180+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 135+00.00 TO STA 180+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT.

(2) CONSTRUCT 104 AF OFFLINE DETENTION BASIN/PARK SEE GENERAL NOTES BELOW FOR DETAILS

(3) INSTALL 8 BARREL 10' X 5' RCB

(10) SEE CROSSING DETAIL C.11.

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(41) CANAL TO BE RELOCATED IN A SIPHON SEE DETAIL C.10.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

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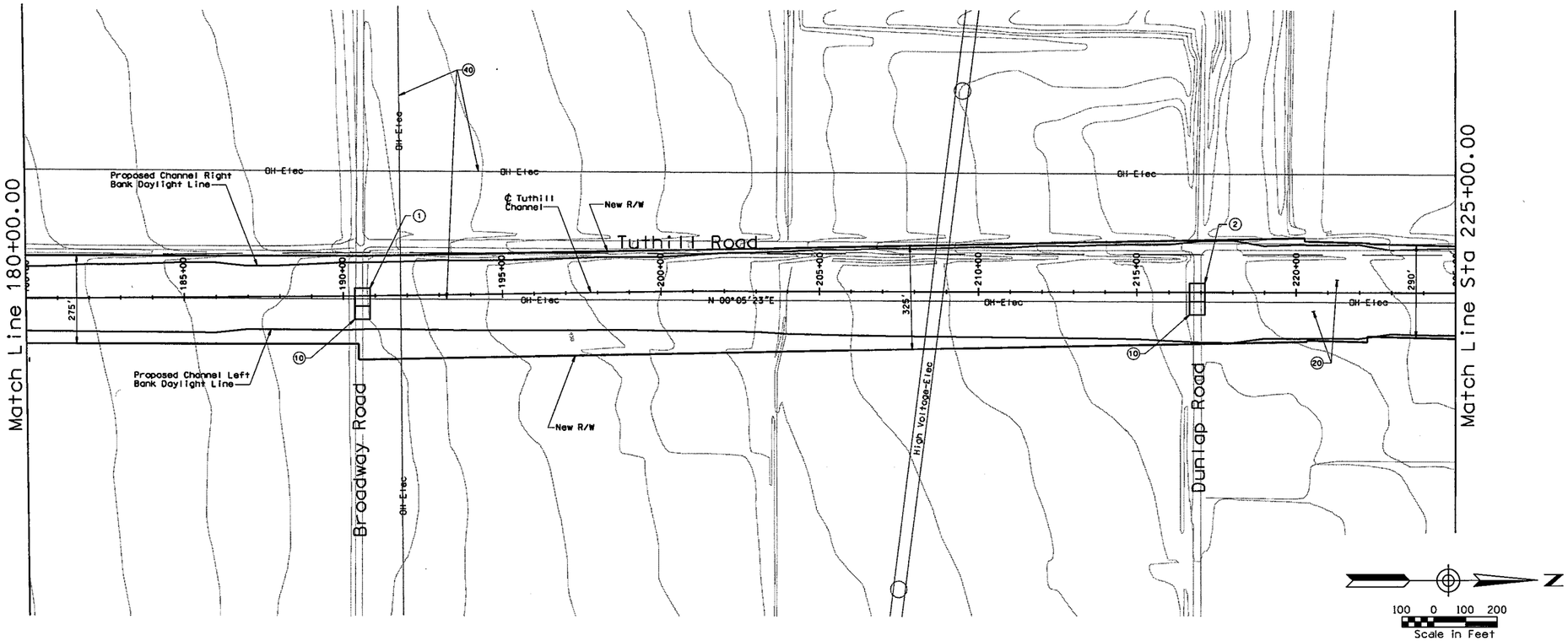

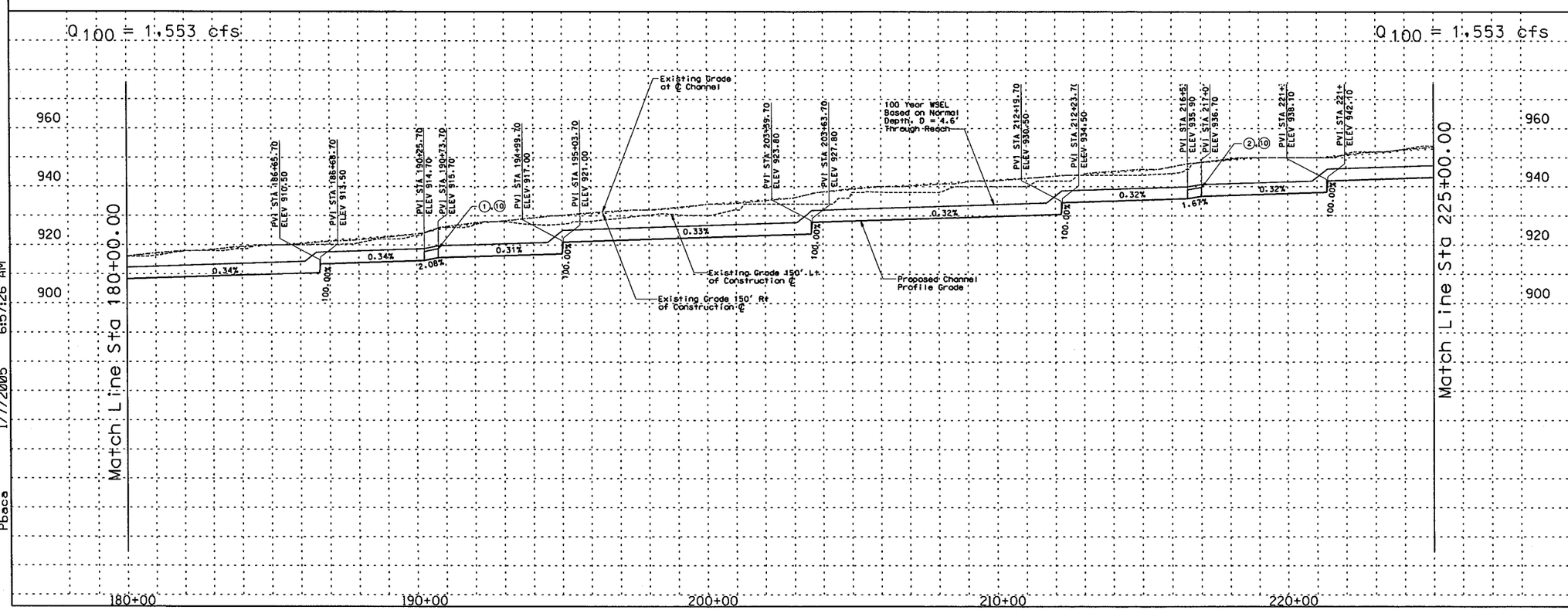

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STA 180+00.00 TO STA 225+00.00. CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 180+00.00 TO STA 225+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 180+00.00 TO STA 225+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT.

(1) INSTALL 7 BARREL 10' x 5' RCB

(2) INSTALL 6 BARREL 10' X 6' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 180+00.00 TO 225+00.00	SHEET TC5

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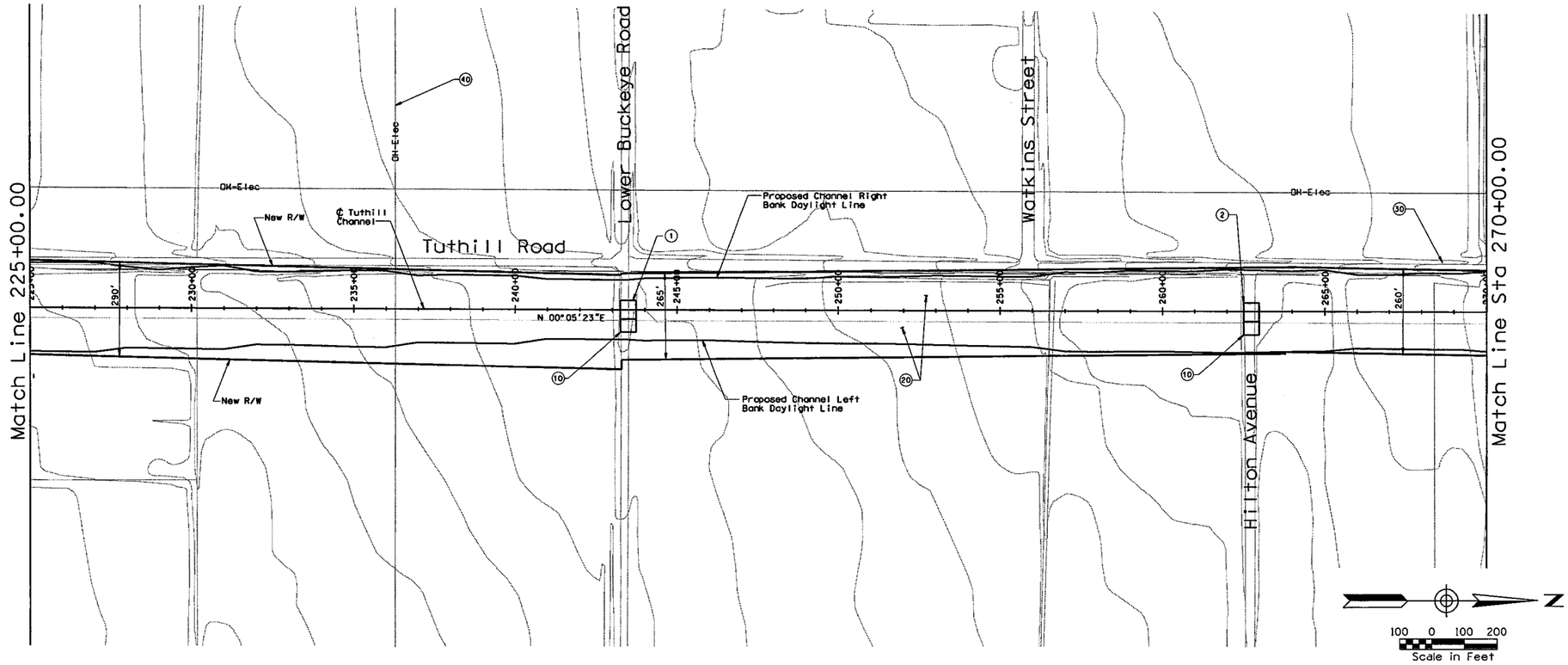

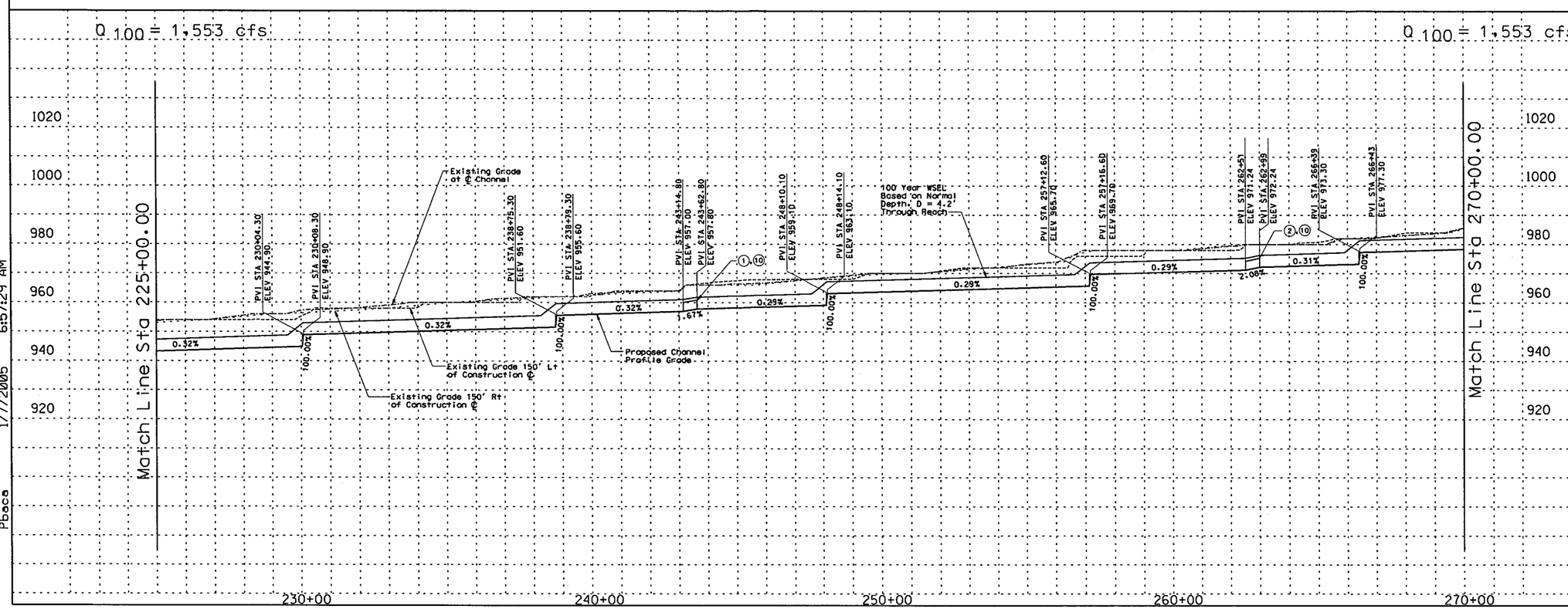

REMOVE

CONSTRUCT

STA 225+00.00 TO STA 270+00.00. CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 225+00.00 TO STA 270+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 225+00.00 TO STA 270+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT.

(1) INSTALL 7 BARREL 10' x 5' RCB

(2) INSTALL 6 BARREL 10' X 5' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(30) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL SIX BARREL 72" RCP

(40) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

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DRAWING NO.	PLAN AND PROFILE SHEET STA. 225+00.00 TO 270+00.00	SHEET TC6

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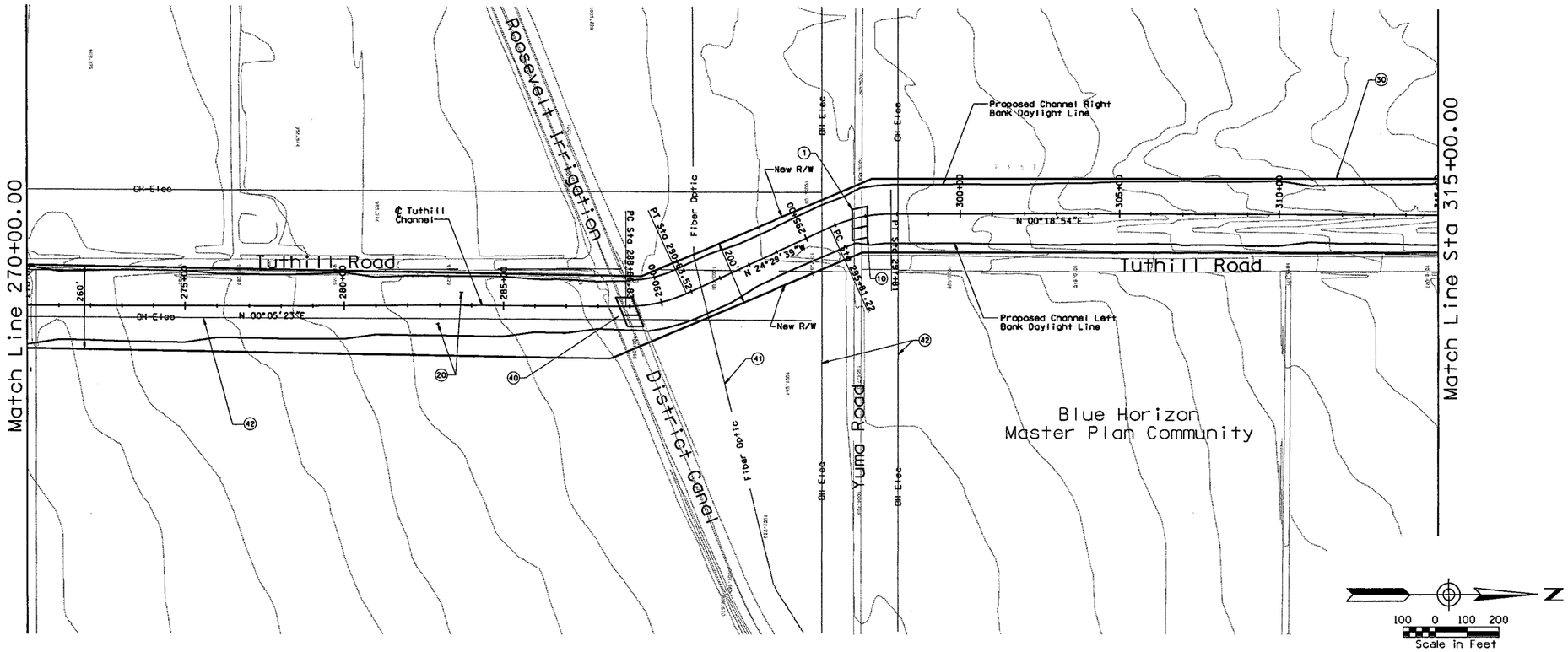

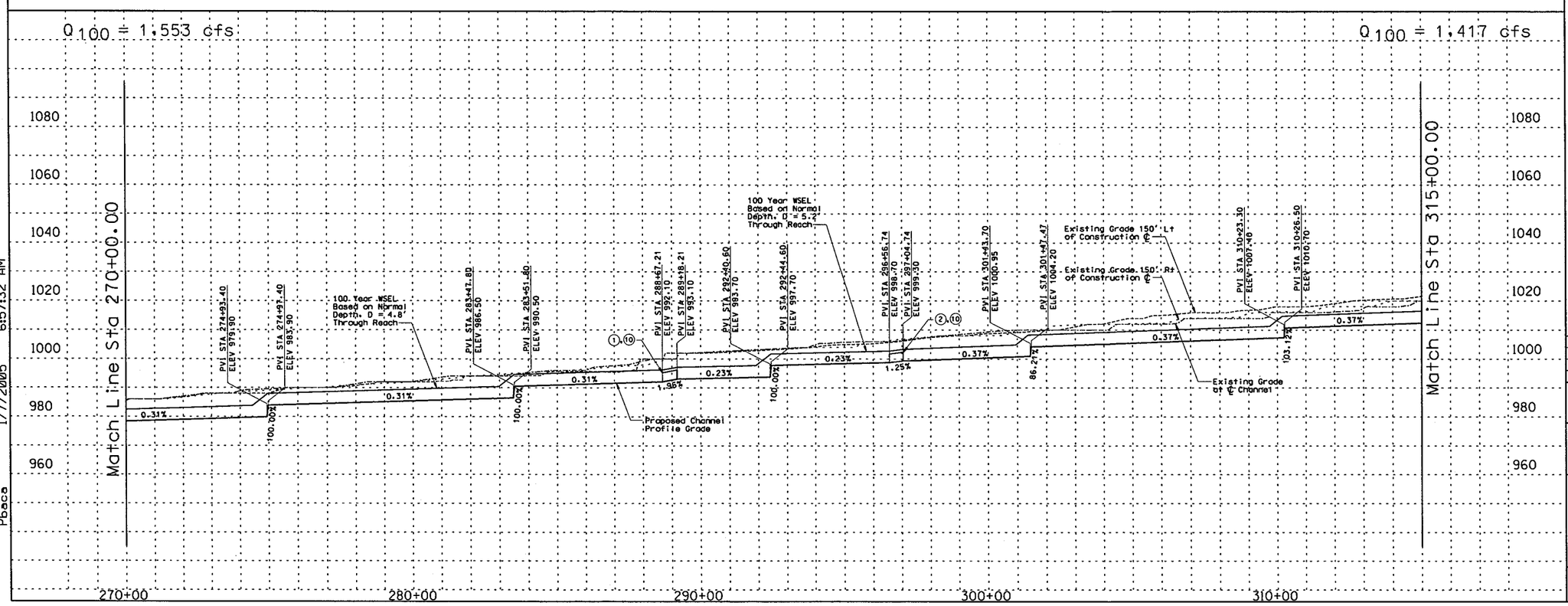

REMOVE

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STA 270+00.00 TO STA 315+00.00, CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 270+00.00 TO STA 315+00.00, PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 270+00.00 TO STA 315+00.00, CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT.

(1) INSTALL 6 BARREL 10' X 5' RCB

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(30) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL TWO BARREL 60" RCP

(40) SIPHON CANAL AT PROPOSED CHANNEL CROSSING. SEE DETAIL C.12

(41) RELOCATE FIBER OPTIC LINE

(42) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
PRELIMINARY, NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC, CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 270+00.00 TO 315+00.00	SHEET TC7

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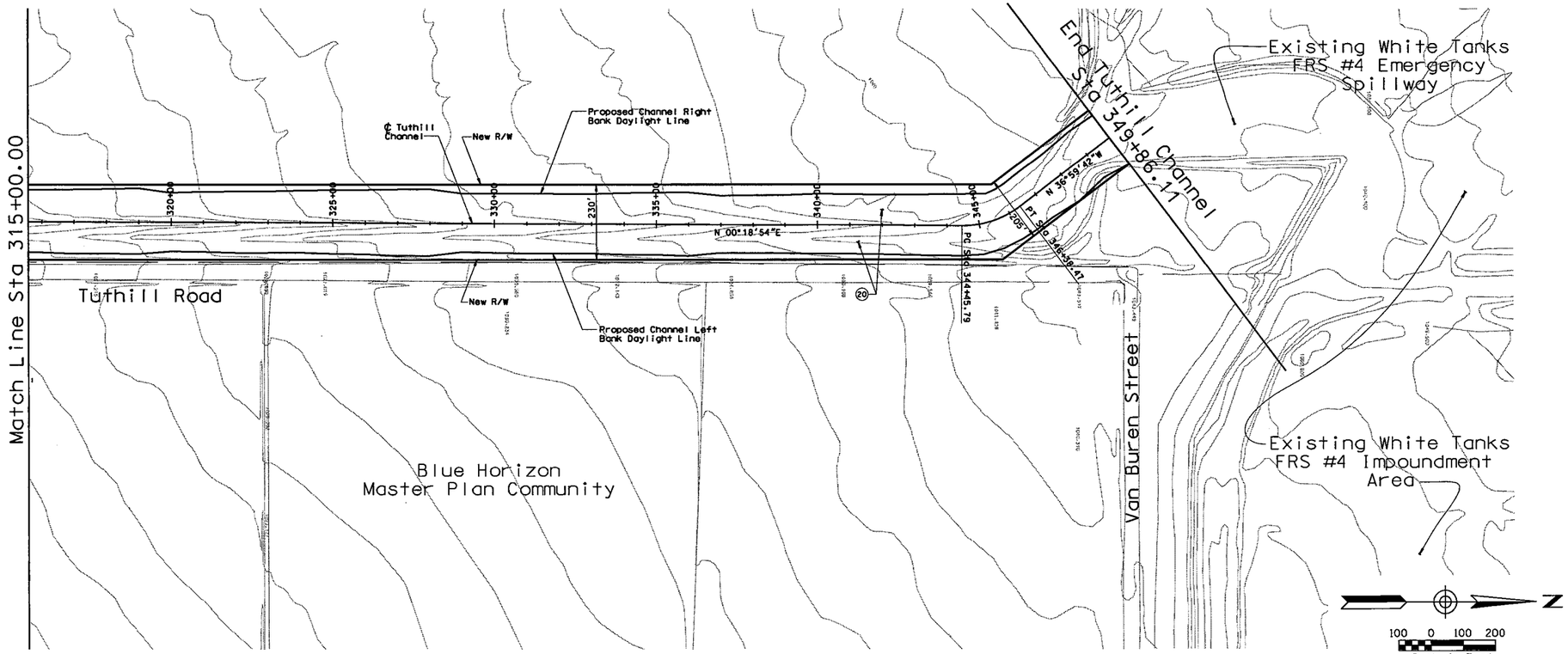

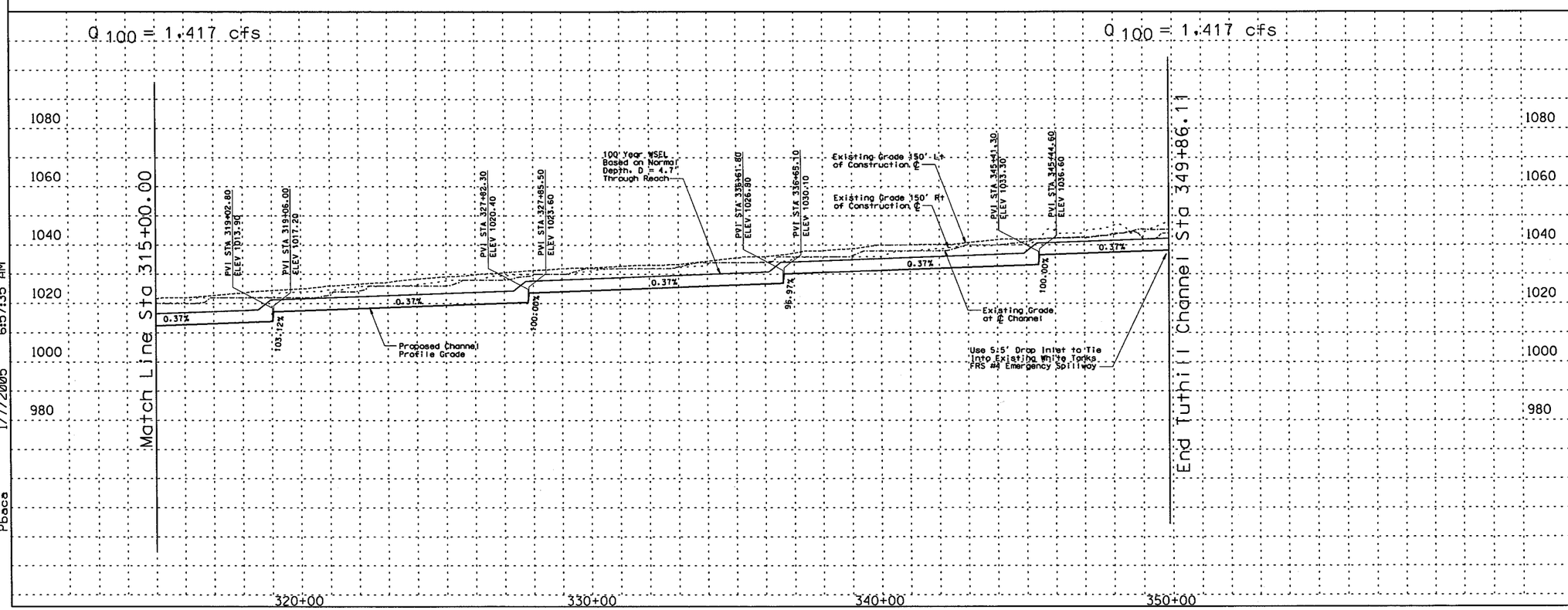

REMOVE

CONSTRUCT

STA 315+00.00 TO STA 349+86.11. CONSTRUCT 3486.11 LIN. FT EARTH CHANNEL

STA 315+00.00 TO STA 349+86.11. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 315+00.00 TO STA 349+86.11. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT.

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 315+00.00 TO 349+86.11	SHEET TC8

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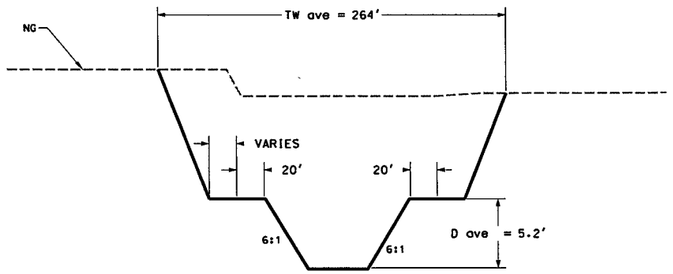
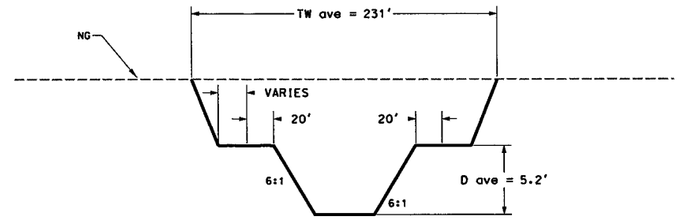
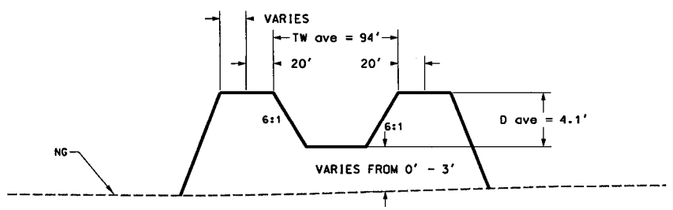


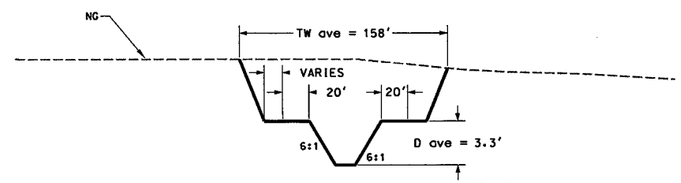
Sta 0+00.00 - Sta 45+08.00



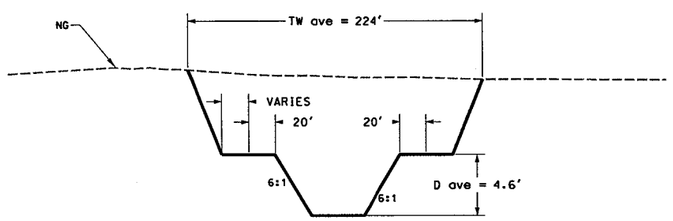
Sta 45+61.00 - Sta 83+98.00



Sta 85+12.00 - Sta 143+90.00



Sta 144+57.00 - Sta 154+25.60



Sta 154+55.60 - Sta 190+25.70

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL TYPICAL CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TYPICAL CHANNEL SECTIONS	SHEET

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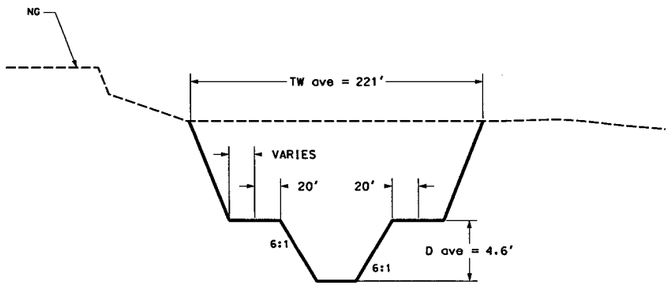
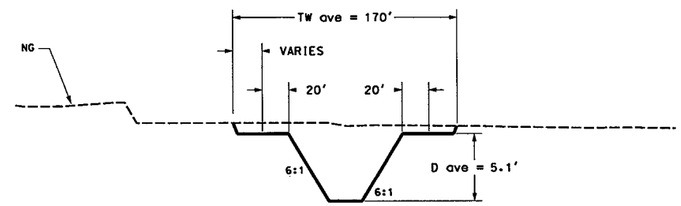
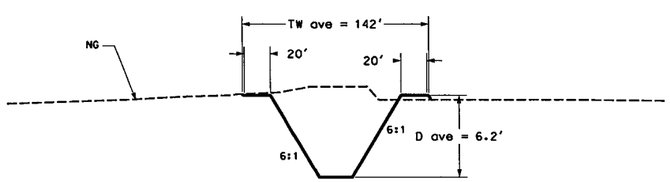


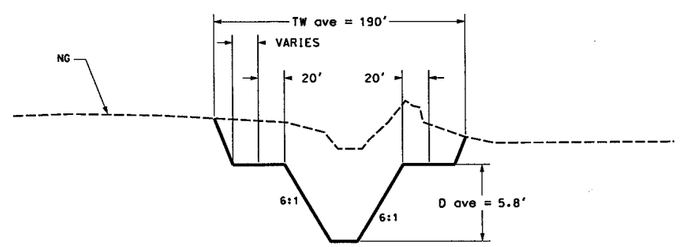
Sta 190+73.70 - Sta 216+53.70



Sta 243+14.80 - Sta 287+98.00



Sta 288+49.00 - Sta 296+72.00



Sta 297+20.00 - Sta 349+86.11

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL TYPICAL CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TYPICAL CHANNEL SECTIONS	SHEET

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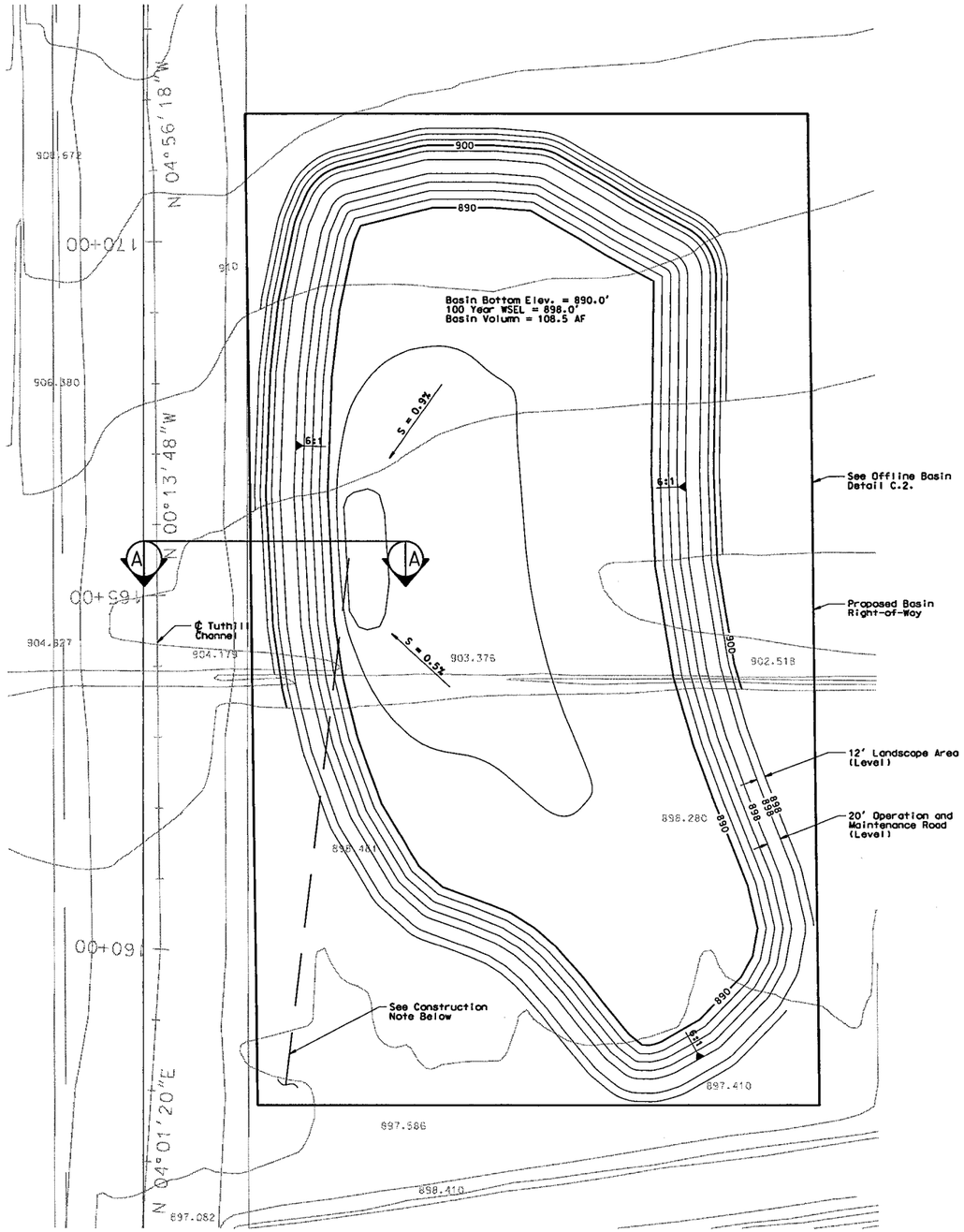
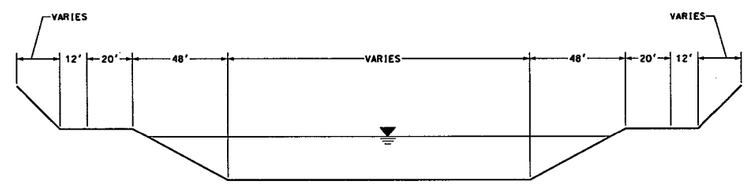
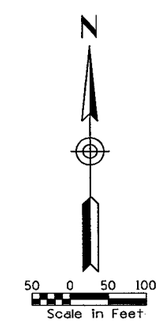




TYPICAL SECTION A-A

NOT TO SCALE



REMOVE

CONSTRUCT

CONSTRUCTION NOTE:
INSTALL 54" LOW FLOW POST STORM DRAIN.
2100 LF AT S = 0.22%.
DAYLIGHT IN TUTHILL CHANNEL AT STA. 144+57.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

TUTHILL CHANNEL DETENTION BASIN
PLAN & SECTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TUTHILL CHANNEL BASIN PLAN	SHEET OF

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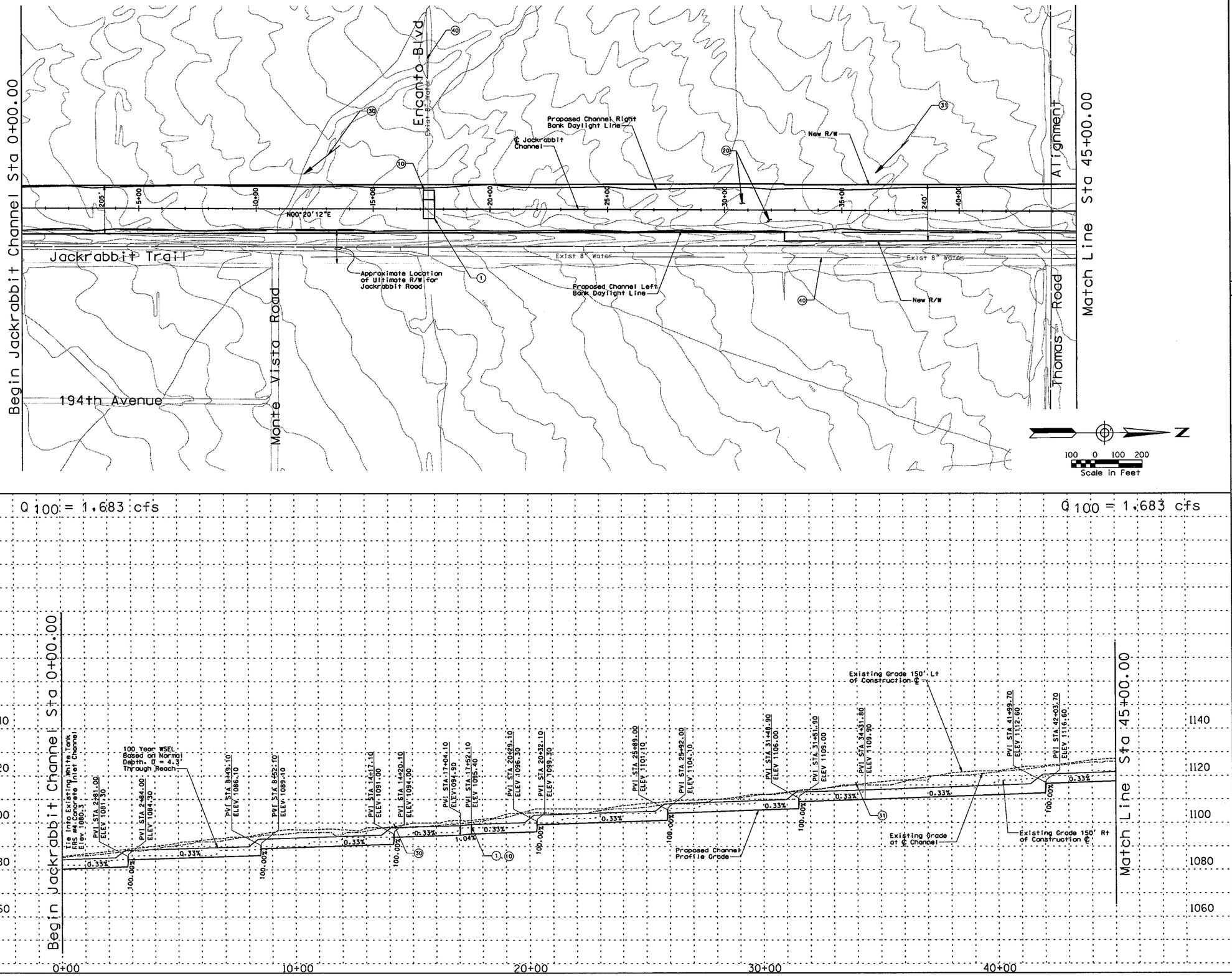

REMOVE

CONSTRUCT

STA 00+00.00 TO STA 45+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 45+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 00+00.00 TO STA 45+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 9 BARREL 10' x 4' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(30) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 FOUR BARREL 48" RCP

(31) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 SINGLE BARREL 36" RCP

(40) RELOCATE WATERLINE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

JACKRABBIT CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 0+00.00 TO 45+00.00	SHEET JR1

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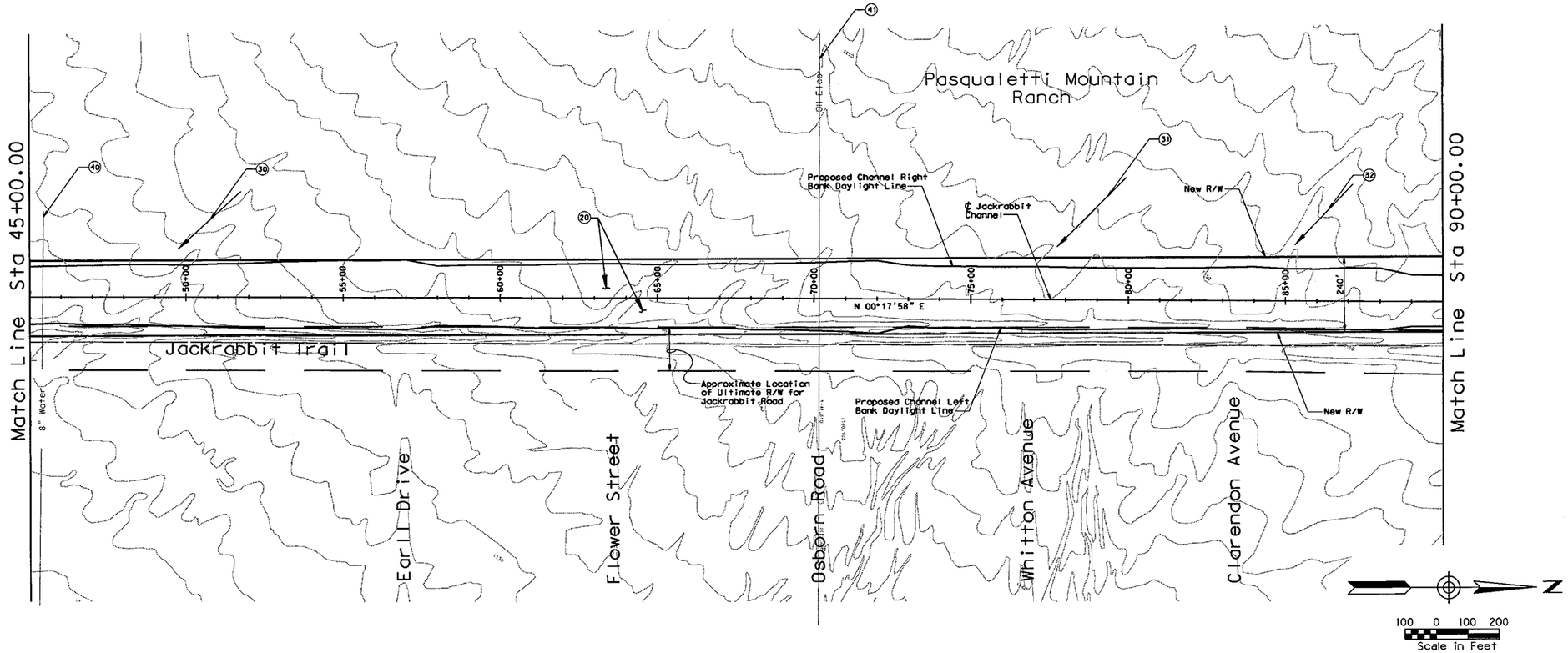

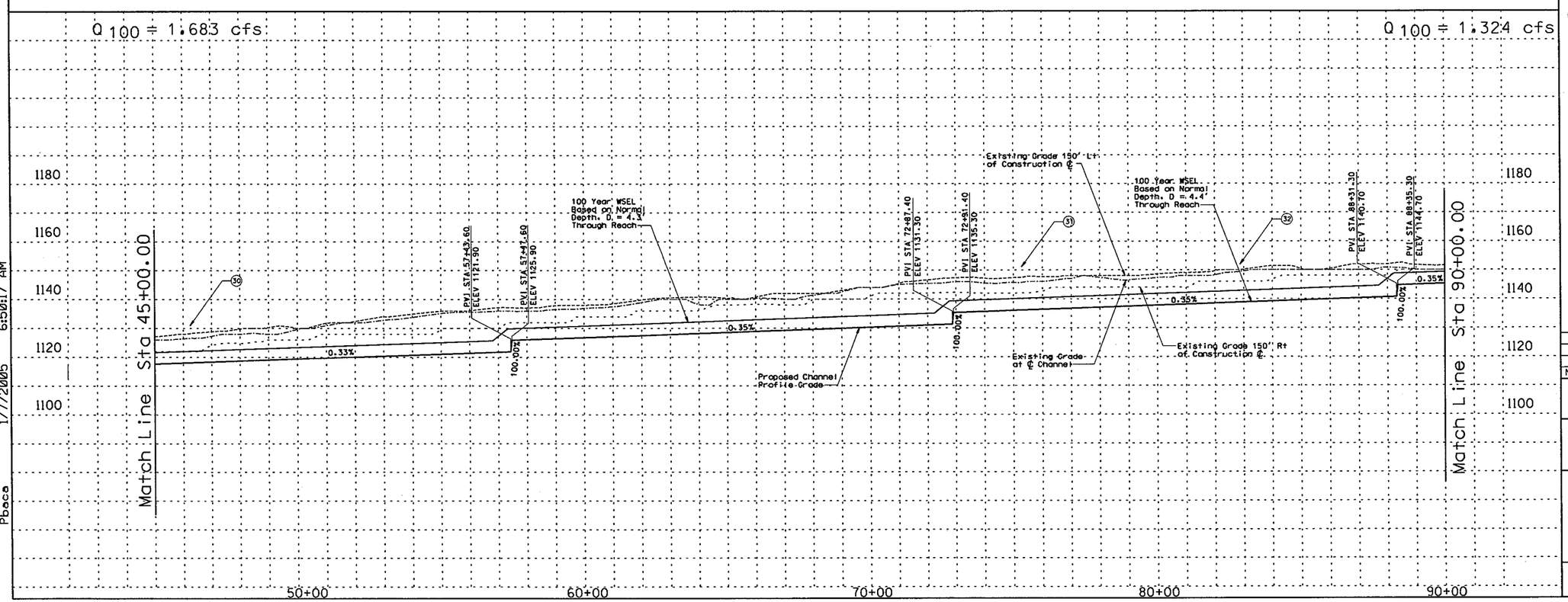

REMOVE

CONSTRUCT

STA 45+00.00 TO STA 90+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 45+00.00 TO STA 90+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 45+00.00 TO STA 90+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(30) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 TWO BARREL 48" RCP

(31) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 TWO BARREL 48" RCP

(32) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 SINGLE BARREL 30" RCP

(40) RELOCATE WATERLINE

(41) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

JACKRABBIT CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 45+00.00 TO 90+00.00	SHEET JR2

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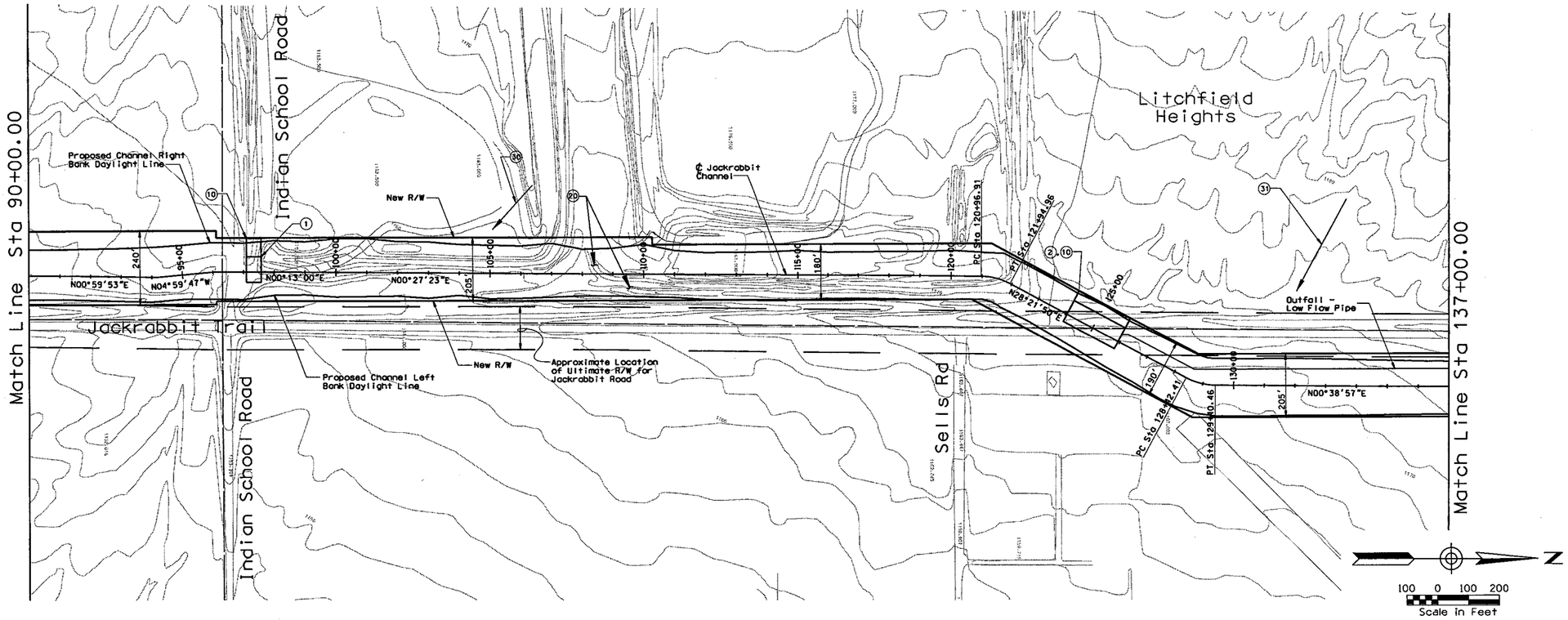

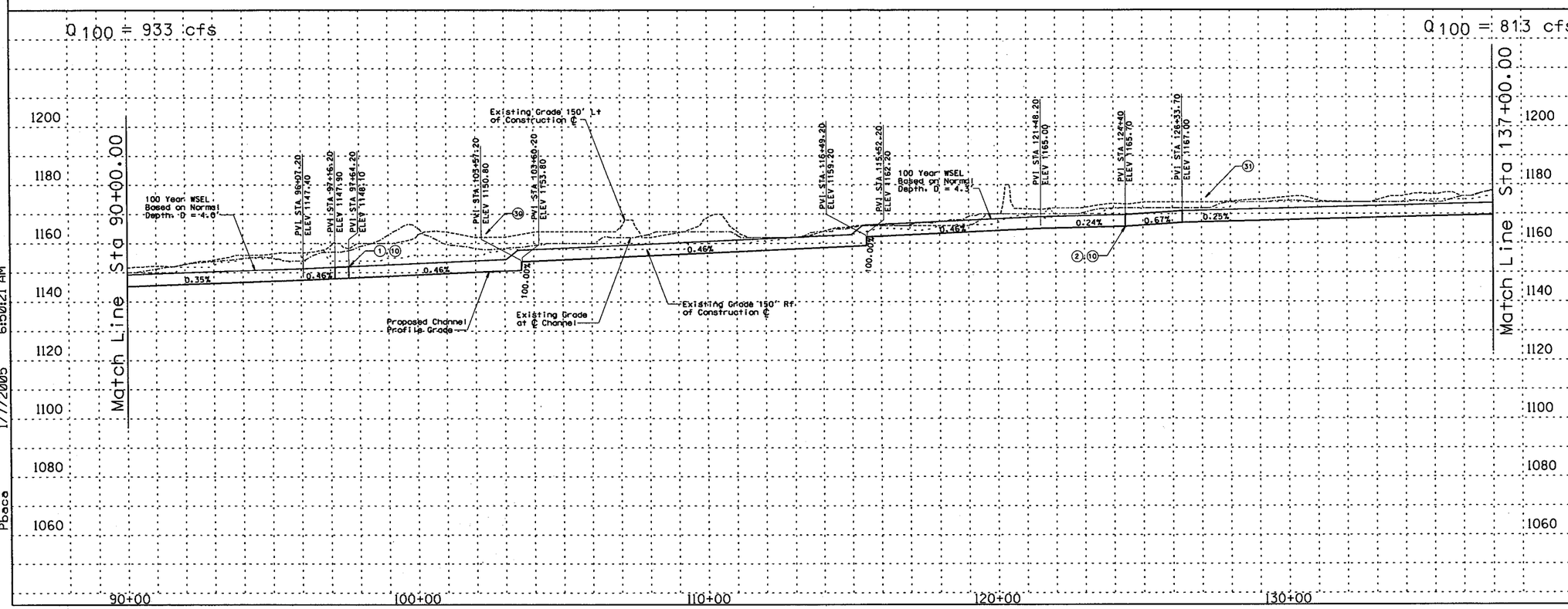

REMOVE

CONSTRUCT

STA 90+00.00 TO STA 137+00.00 CONSTRUCT 4700 LIN. FT EARTH CHANNEL

STA 90+00.00 TO STA 137+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 90+00.00 TO STA 137+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 9 BARREL 10' x 4' RCB

(2) INSTALL 4 BARREL 10' x 4' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(30) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 THREE BARREL 48" RCP

(31) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 FOUR BARREL 48" RCP

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

JACKRABBIT CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 90+00.00 TO 137+00.00	SHEET JR3

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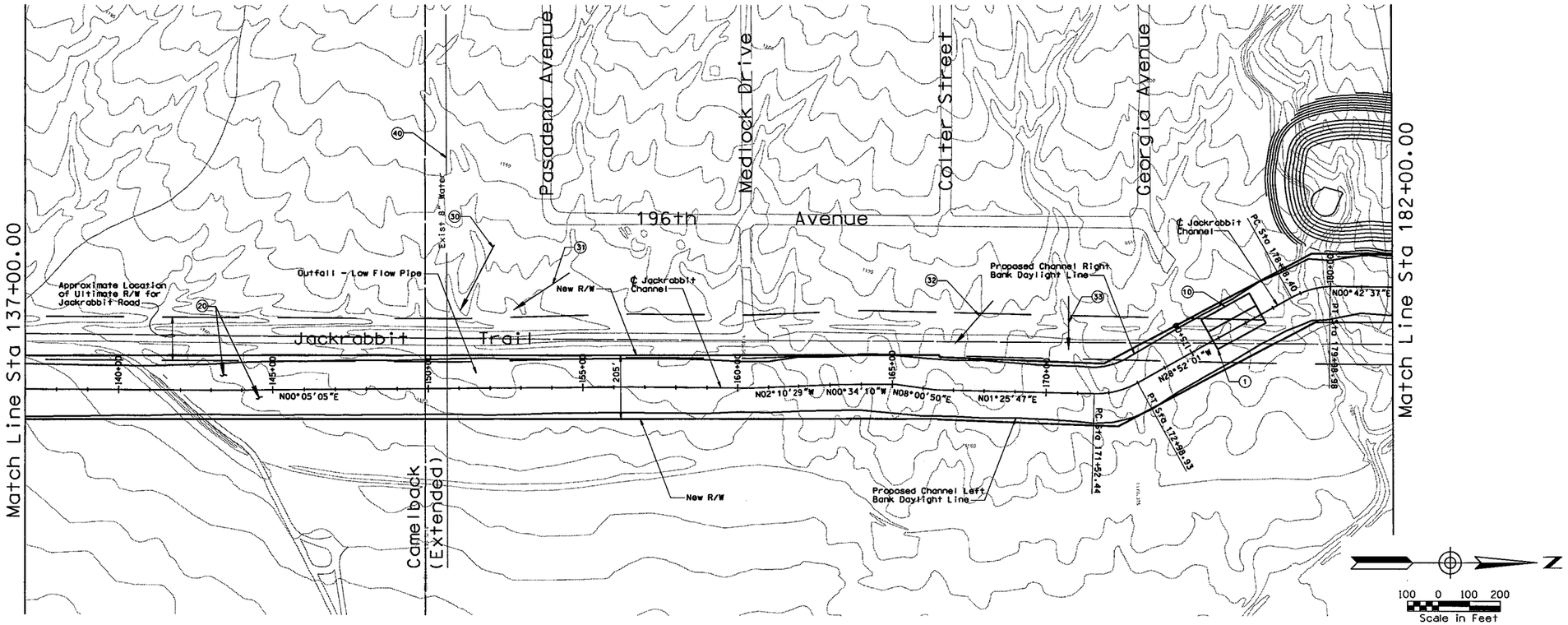

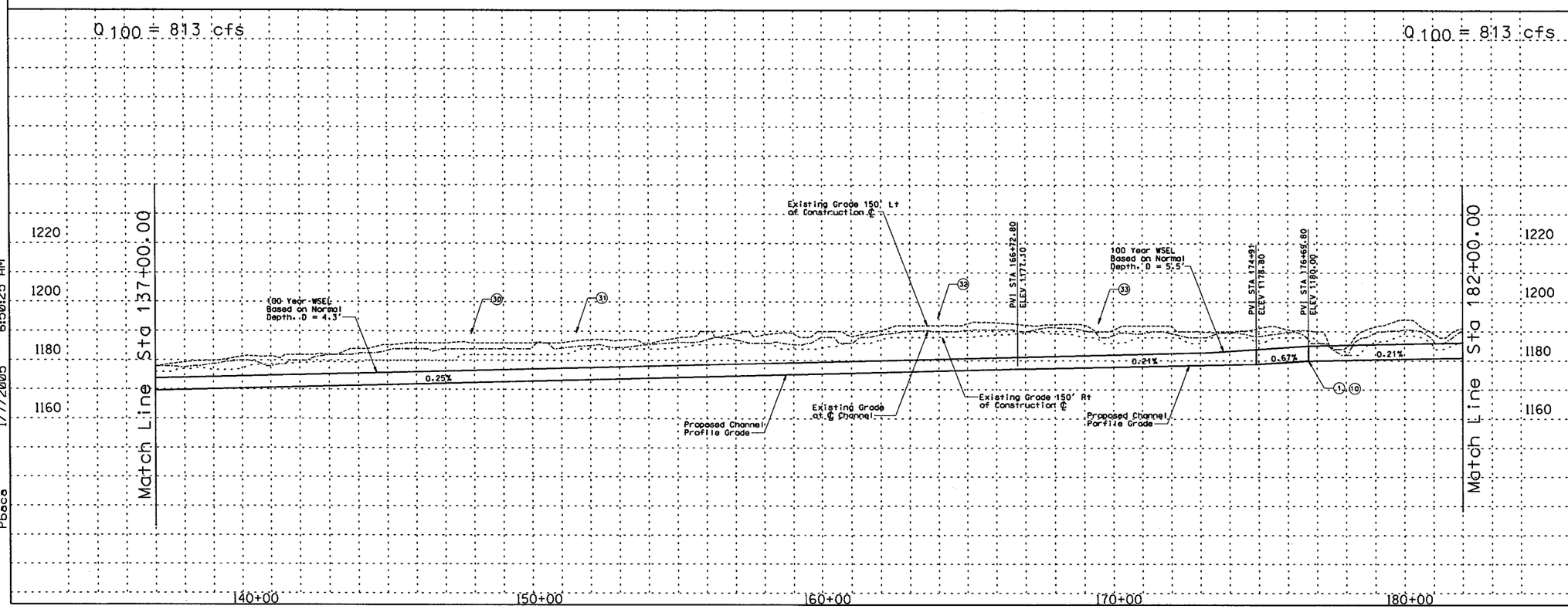

REMOVE

CONSTRUCT

STA 137+00.00 TO STA 182+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 137+00.00 TO STA 182+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 137+00.00 TO STA 182+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 4 BARREL 10' x 4' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(30) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 TWO BARREL 30" RCP

(31) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 SINGLE BARREL 48" RCP

(32) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 SINGLE BARREL 36" RCP

(33) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 EIGHT BARREL 66" RCP

(40) RELOCATE WATERLINE

GENERAL NOTES:
PRELIMINARY, NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC, CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

JACKRABBIT CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 137+00.00 TO 182+00.00	SHEET JR4

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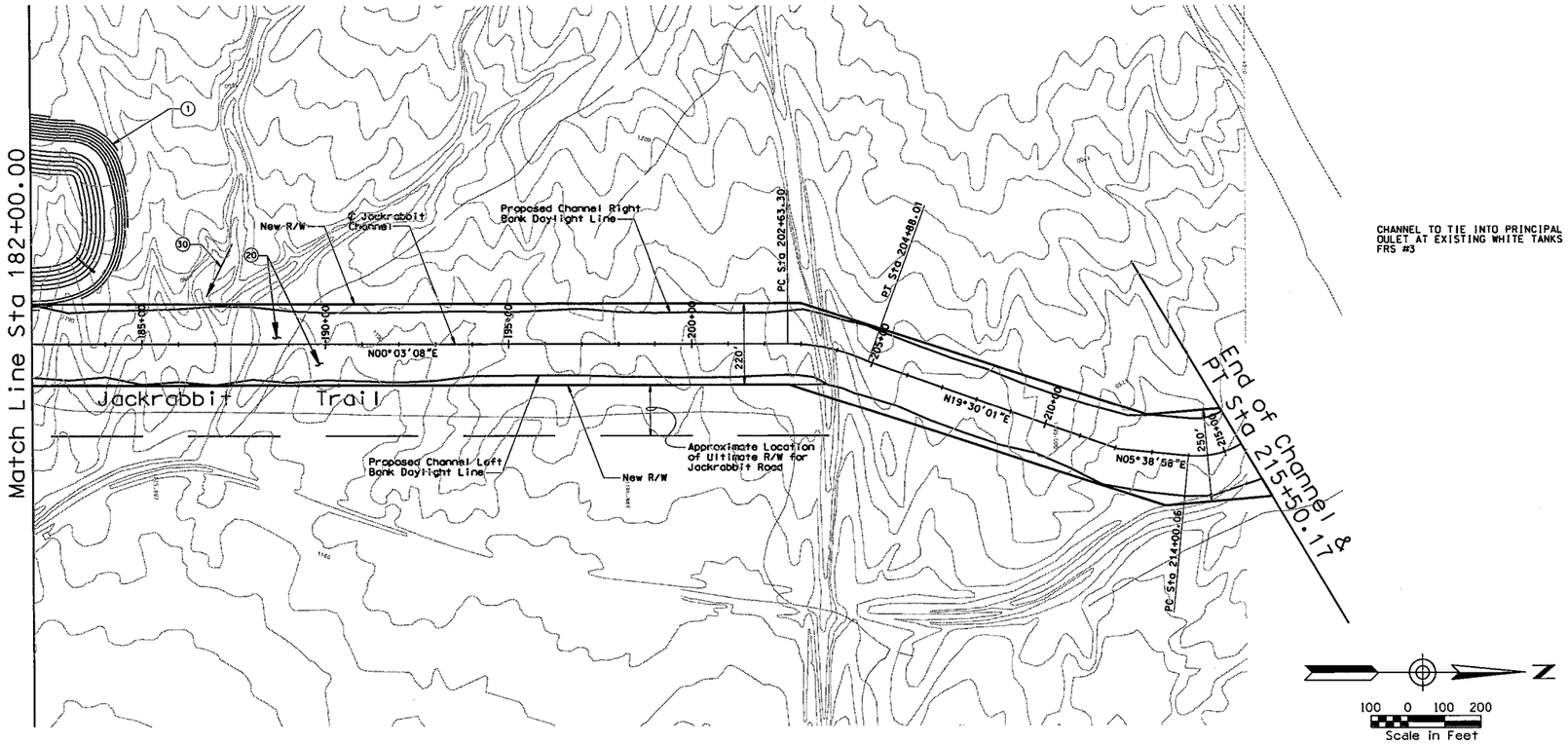

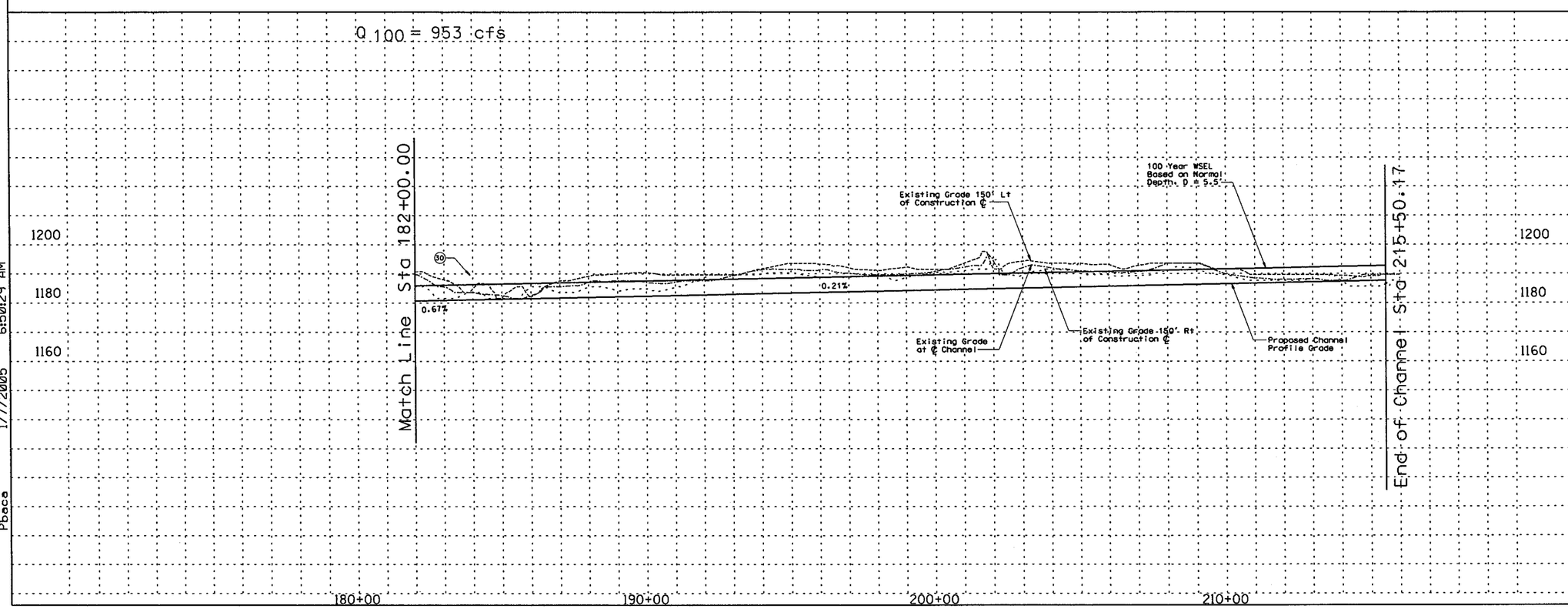

REMOVE

CONSTRUCT

STA 182+00.00 TO STA 215+50.17 CONSTRUCT 3350 LIN. FT EARTH CHANNEL

STA 182+00.00 TO STA 215+50.17. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 182+00.00 TO STA 215+50.17. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) CONSTRUCT 42 AF OFFLINE DETENTION BASIN/PARK

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(30) SIGNIFICANT ADJACENT INFLOW LOCATION. INSTALL 1 TWO BARREL 66" RCP

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

JACKRABBIT CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 182+00.00 TO 215+50.17	SHEET JR5

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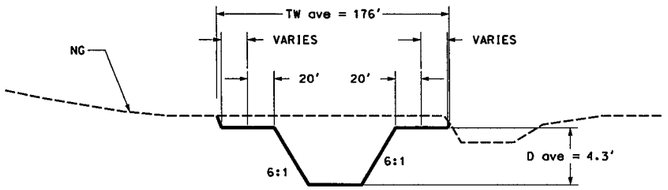
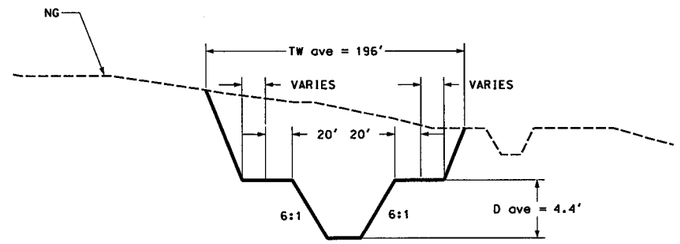
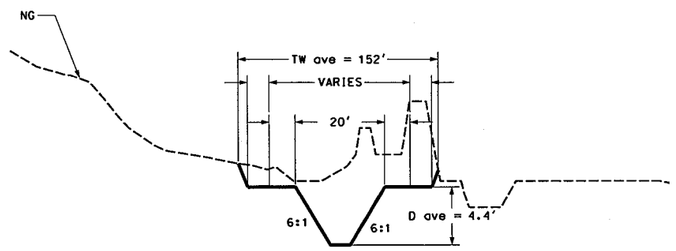


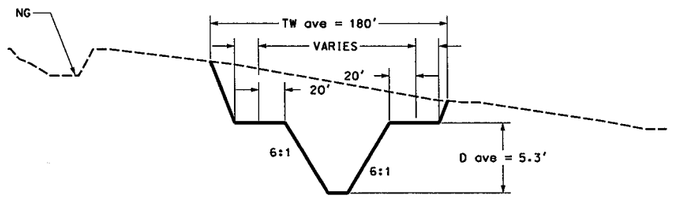
Sta 0+00.00 - Sta 61+75.39



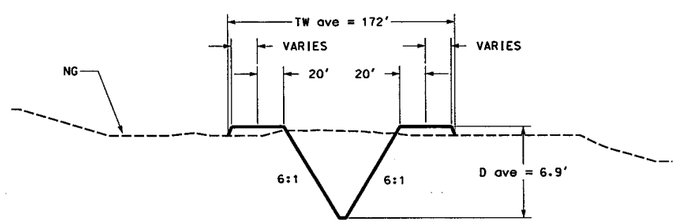
Sta 61+75.39 - Sta 96+07.00



Sta 97+16.00 - Sta 121+48.17



Sta 124+40.00 - Sta 166+72.42



Sta 166+72.42 - Sta 215+50.17

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

JACKRABBIT CHANNEL
CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TYPICAL CHANNEL SECTIONS	SHEET

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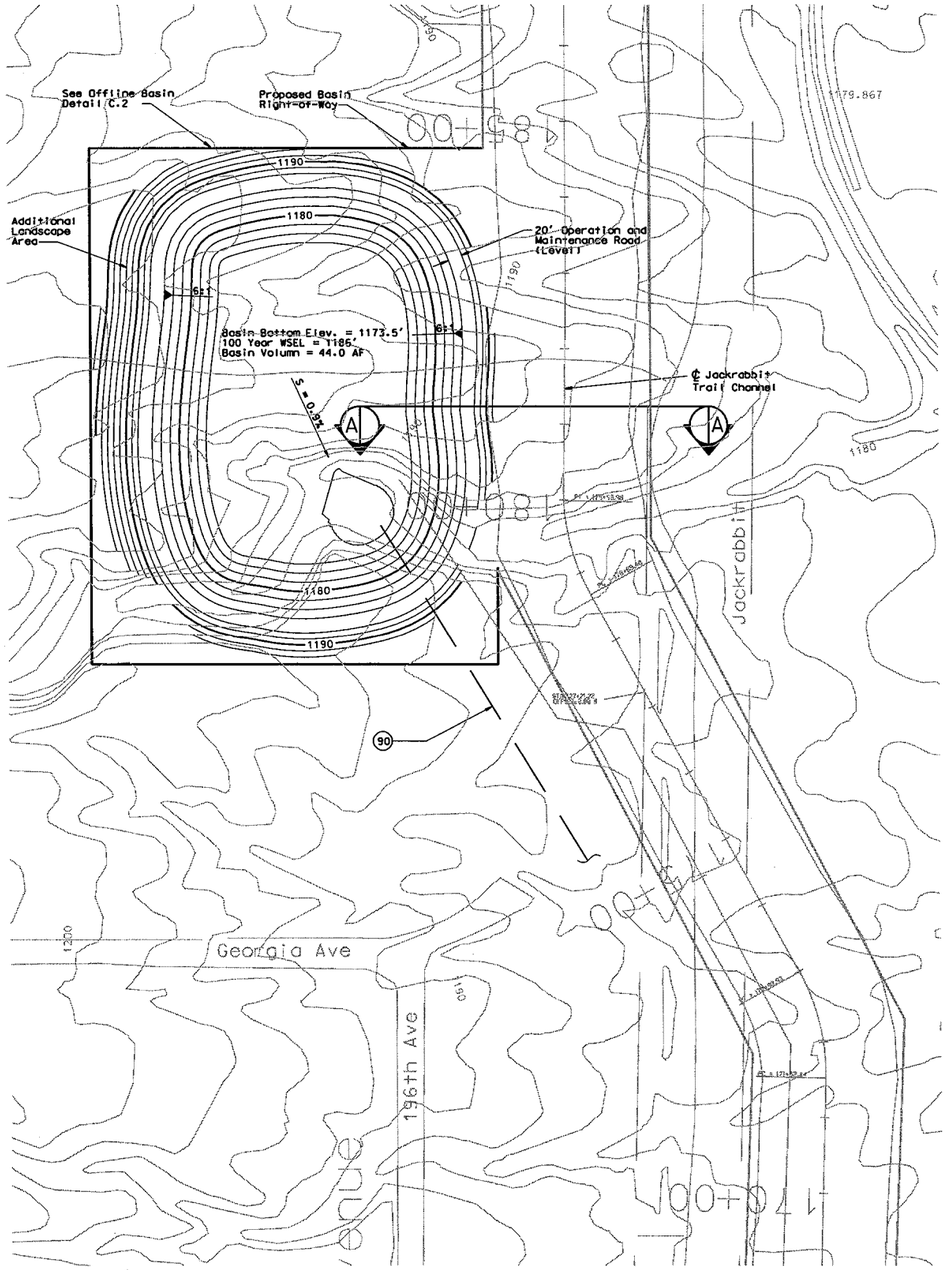
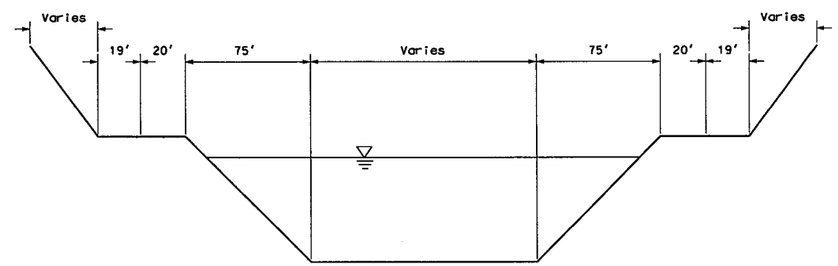
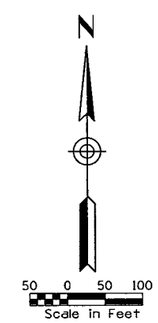




TYPICAL SECTION A-A

NOT TO SCALE



REMOVE

CONSTRUCT

(90) INSTALL 30" LOW FLOW POST STORM DRAIN.
8323 LF AT S = 0.22%.
DAYLIGHT IN JACKRABBIT CHANNEL AT STA. 125+80.13.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

JACKRABBIT CHANNEL DETENTION BASIN
PLAN & SECTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	JACKRABBIT CHANNEL BASIN PLAN	SHEET OF

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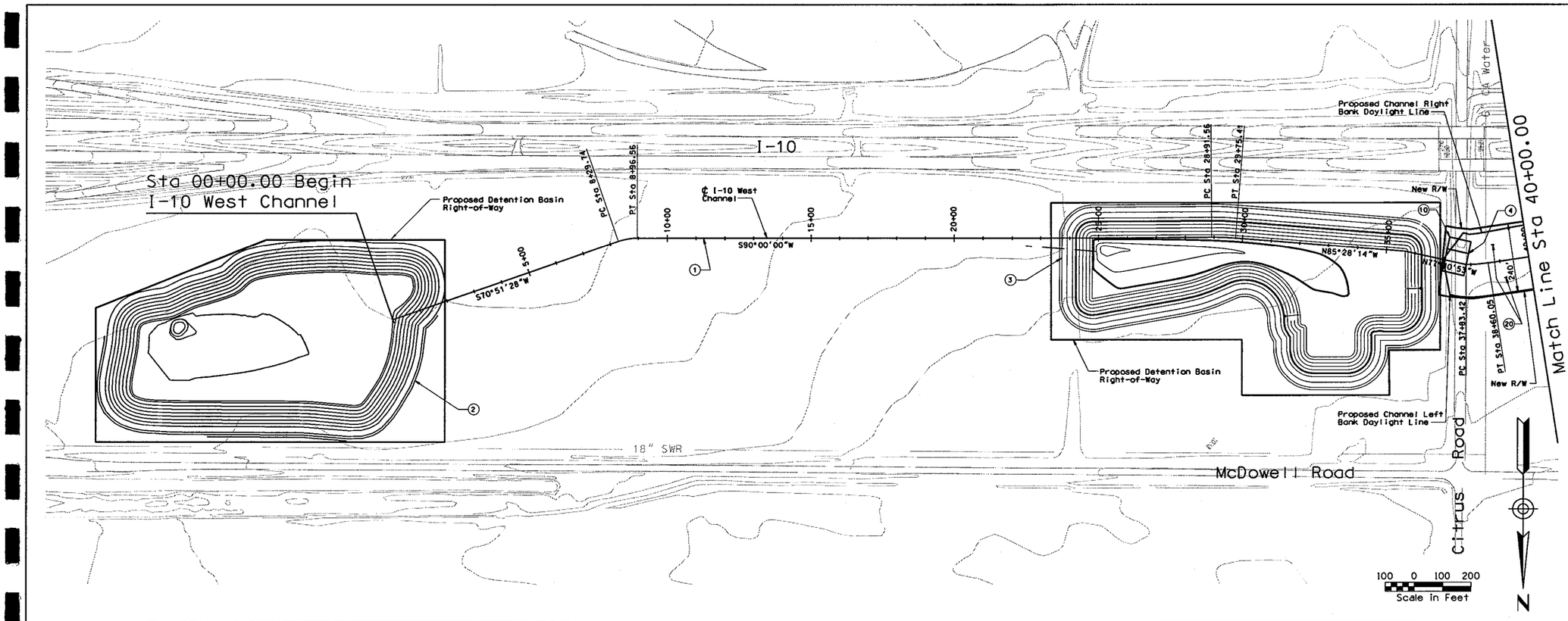
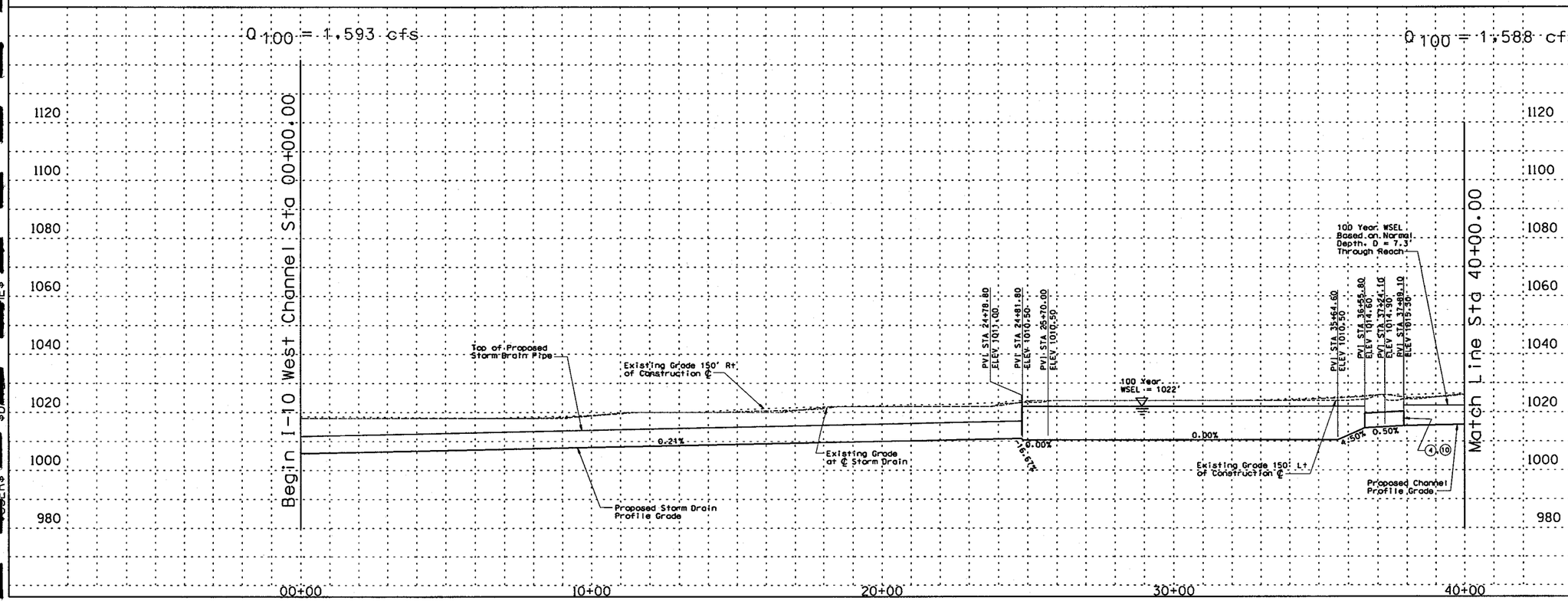




REMOVE

CONSTRUCT

STA 00+00.00 TO STA 40+00.00 CONSTRUCT 4000 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 40+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 00+00.00 TO STA 40+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

1. CONSTRUCT THREE BARREL 6' X 4' RCB STORM DRAIN
2. CONSTRUCT 269.4 AF ON-LINE DETENTION BASIN/PARK
3. CONSTRUCT 85.2 AF ON-LINE DETENTION BASIN/PARK
4. INSTALL 9 BARREL 10' x 5' RCB
10. INSTALL 8' x 10' PEDESTRIAN CROSSING
20. CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE CONCEPT & BASIN SHOWN FROM STA 0+00.00 TO APPROXIMATELY CITRUS RD WILL REQUIRE SIGNIFICANT REVISION DUE TO THE NEW/ RECENT I-10/SR 303L TI PROPOSED TO THE EAST. NEW ACCESS RAMP CONFIGURATIONS POSE CONFLICTS WITH THE CONCEPTS PRESENTED HERE.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

I-10 WEST CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

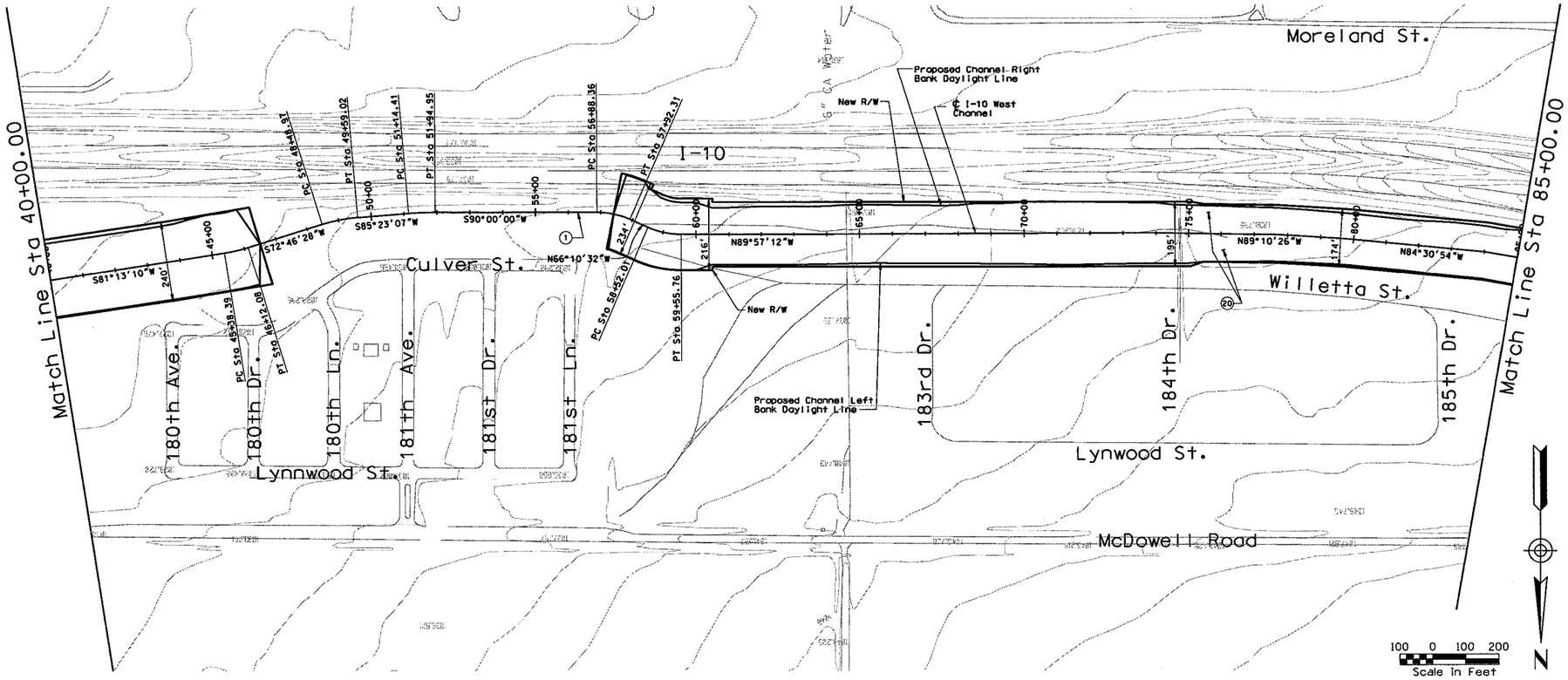
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

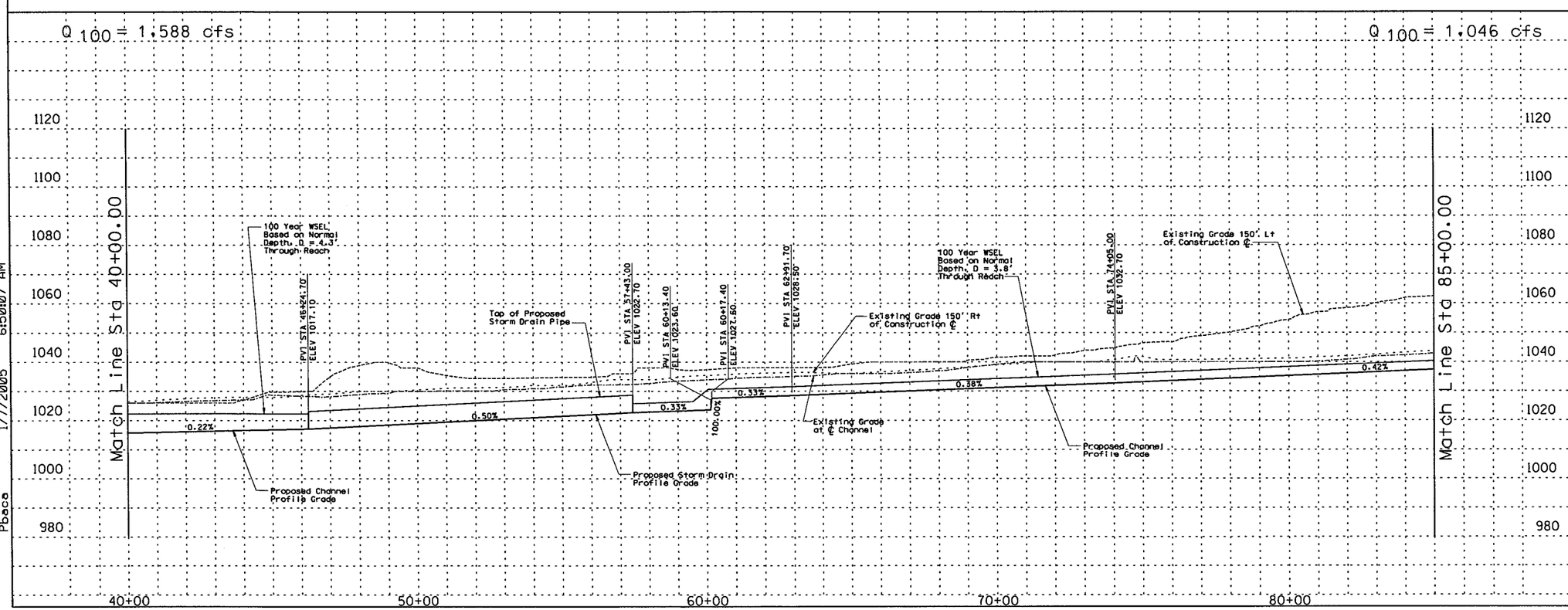
LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 00+00.00 TO 40+00.00	SHEET 10W1





☐ REMOVE ☐

○ CONSTRUCT ○

STA 40+00.00 TO STA 85+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 40+00.00 TO STA 85+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 40+00.00 TO STA 85+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) CONSTRUCT 1118.3 LF THREE BARREL 10' X 6' RCB STORM DRAIN

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

I-10 WEST CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 40+00.00 TO 85+00.00	SHEET 10W2

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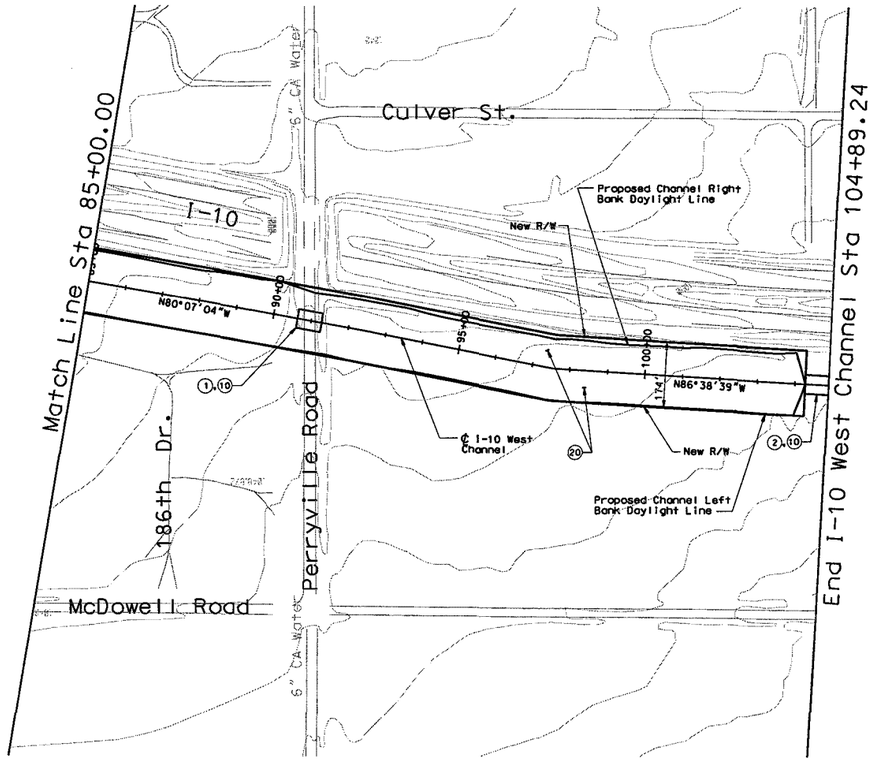

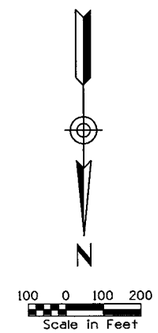

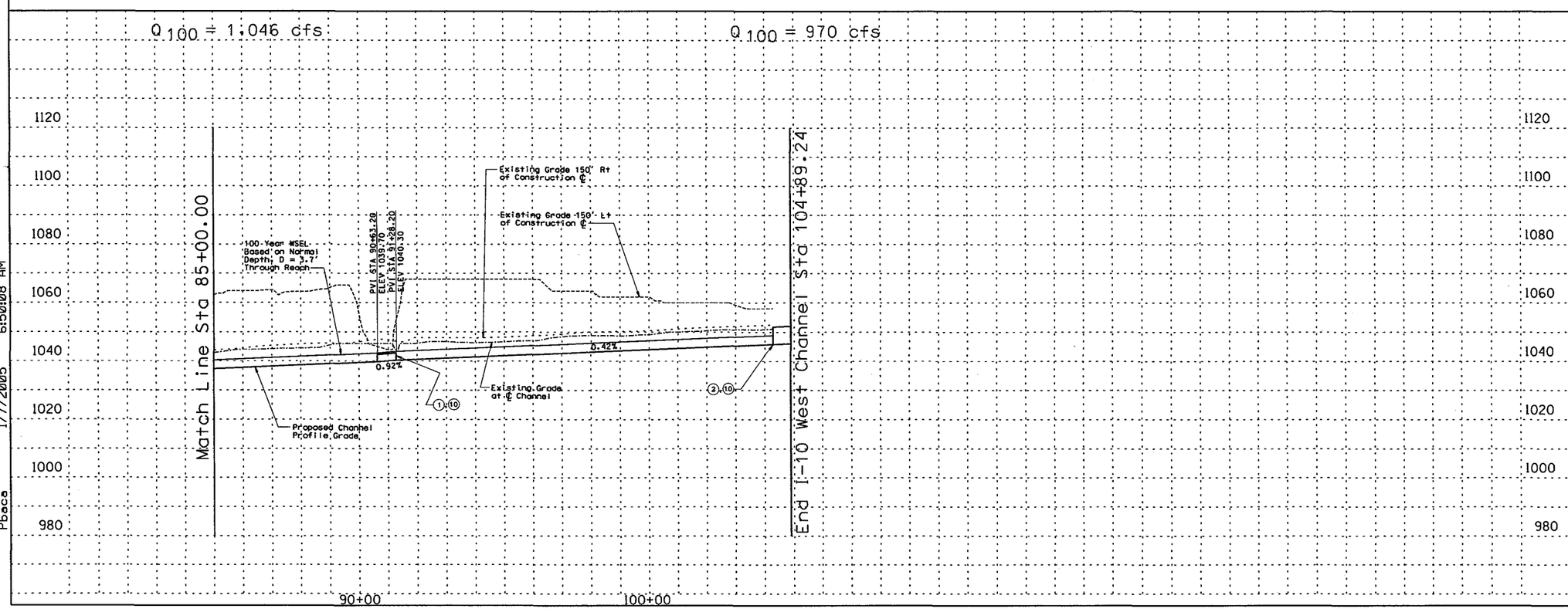

REMOVE

CONSTRUCT

STA 85+00.00 TO STA 104+27.24 CONSTRUCT 4000 LIN. FT EARTH CHANNEL

STA 85+00.00 TO STA 104+27.24. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 85+00.00 TO STA 104+27.24. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL SIX BARREL 10' X 4' RCB STORM DRAIN

(2) INSTALL FIVE BARREL 10' X 4' RCB STORM DRAIN

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

I-10 WEST CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 85+00.00 TO 104+27.24	SHEET 10W3

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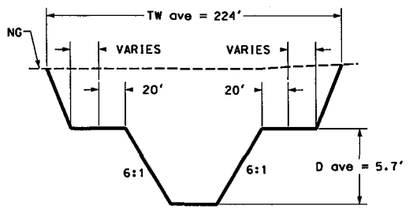
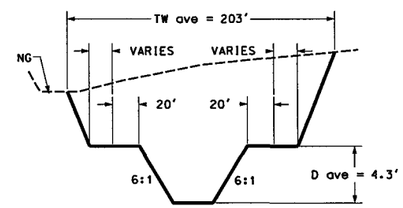
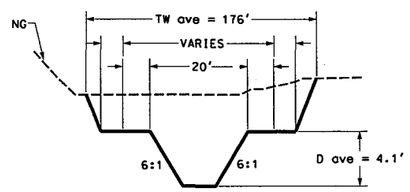


Sta 37+83.42 - Sta 46+12.08



Sta 57+00.00 - Sta 62+91.72



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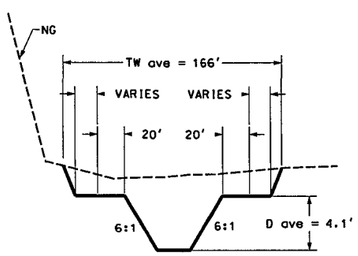

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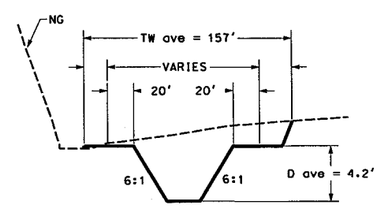

Sta 91+28.21 - Sta 104+89.24

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

I-10 WEST CHANNEL
CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TYPICAL CHANNEL SECTIONS	SHEET

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1/7/2005 7:01:29 AM
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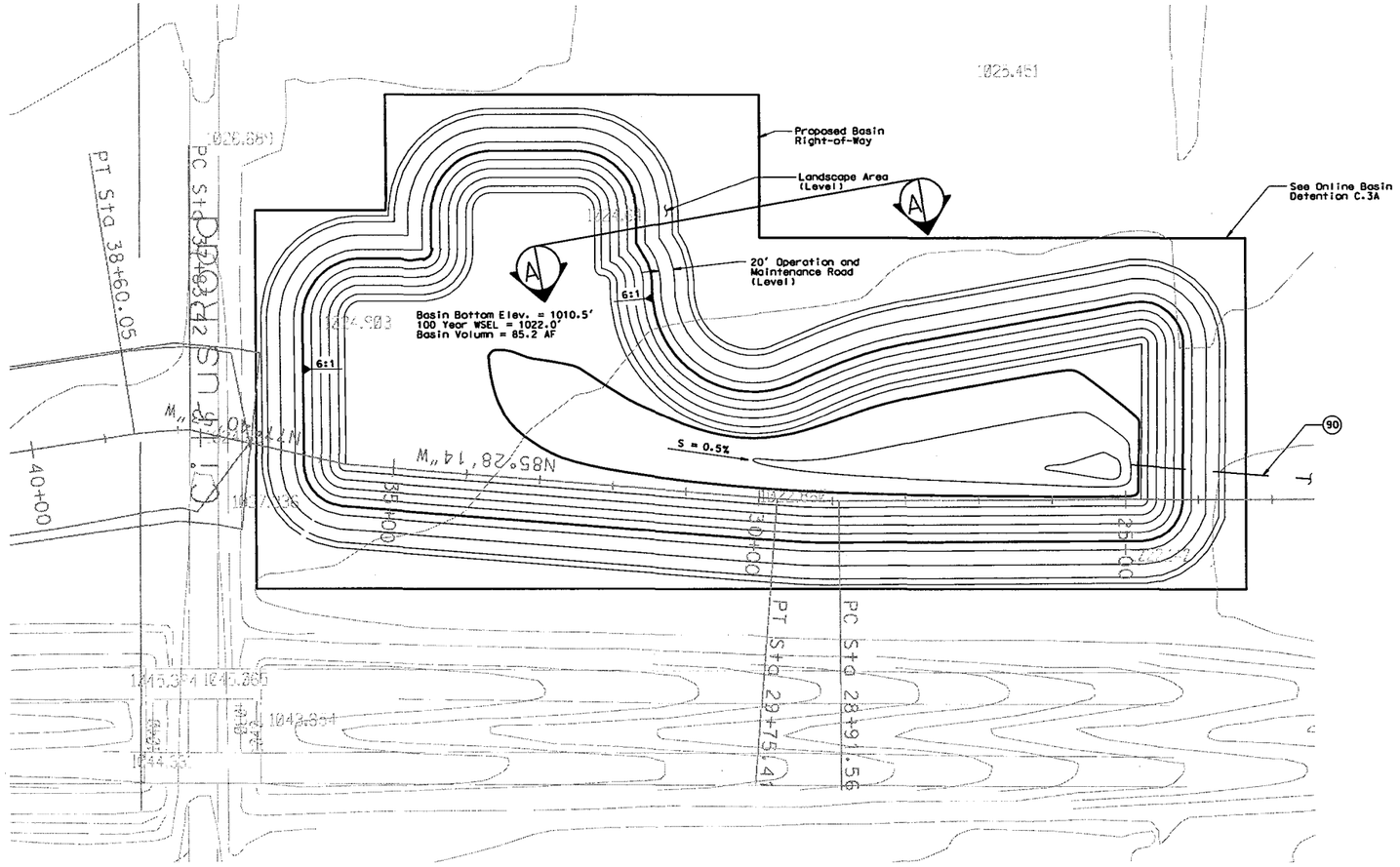
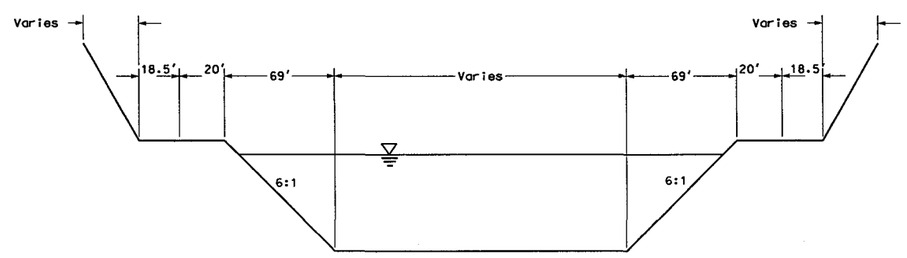
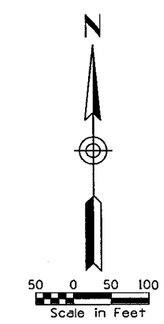




TYPICAL SECTION A-A

NOT TO SCALE



REMOVE

CONSTRUCT

(90) INSTALL 36" LOW FLOW POST STORM DRAIN.
2487 LF. AT S = 0.2% DAYLIGHT IN I-10 BASIN.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE – LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE CONCEPT & BASIN SHOWN HERE WILL REQUIRE SIGNIFICANT CHANGE DUE TO THE NEW/RECENT I-10/SR 303I TI PROPOSED ADJACENT ON THE EAST. NEW ACCESS RAMP CONFIGURATIONS POSE SIGNIFICANT CONFLICTS WITH THE CONCEPT PRESENTED HERE. THIS BASIN WILL LIKELY BE COMBINED WITH THE PROPOSED BASIN SOUTH OF MCDOWELL ROAD AT THE I-10/SR 303L PROPOSED TI.

I-10 WEST CHANNEL DETENTION BASIN PLAN & SECTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	I-10 WEST CHANNEL BASIN	SHEET OF

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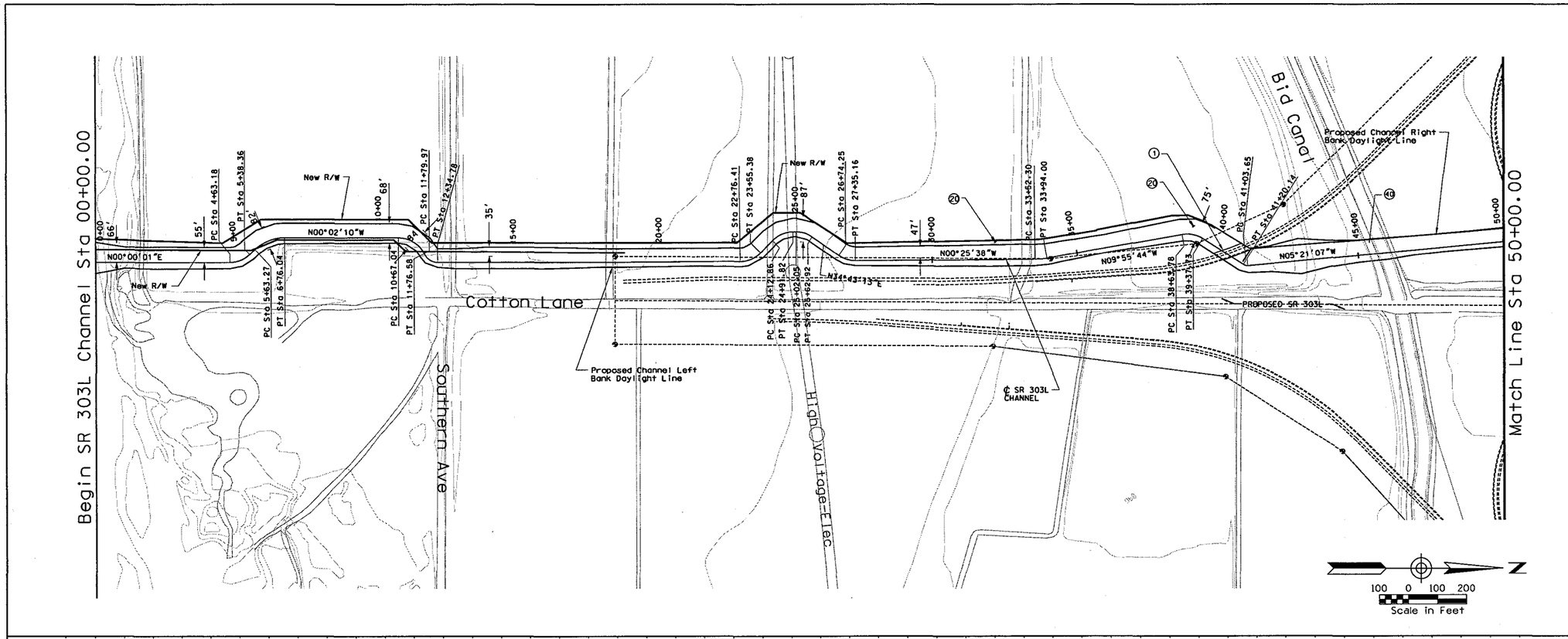

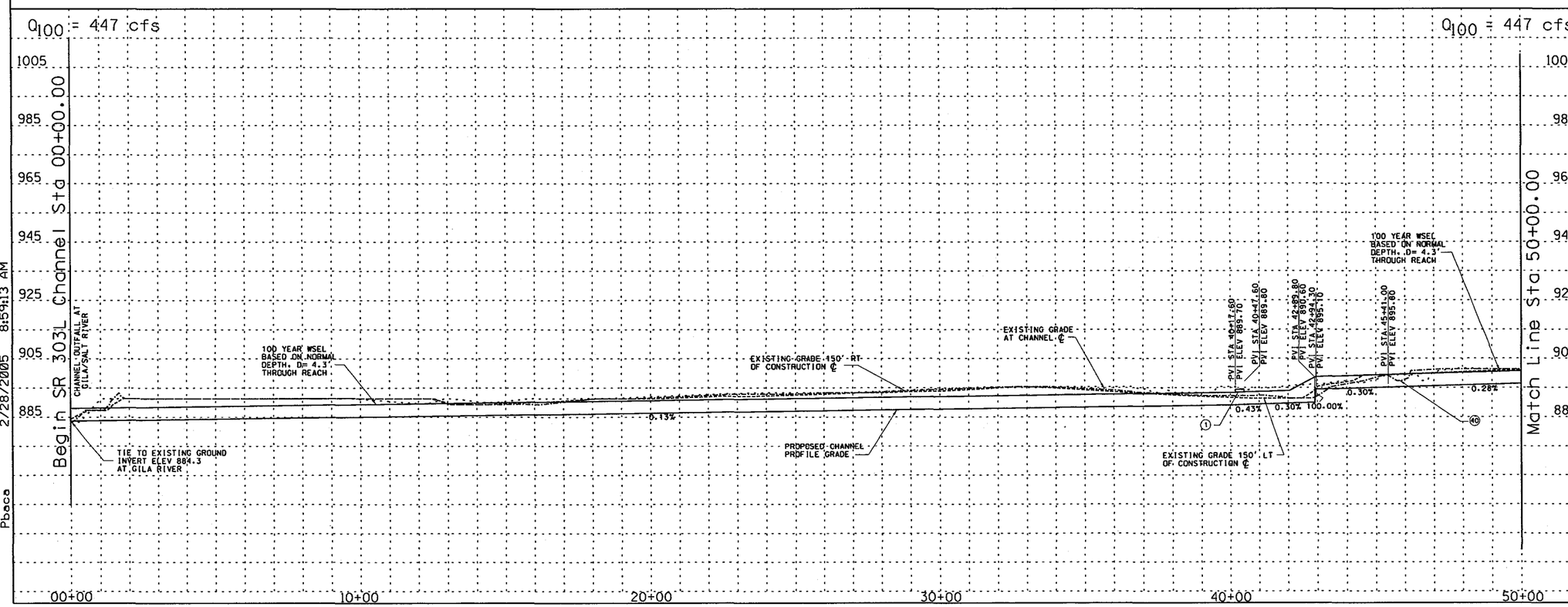

REMOVE

CONSTRUCT

STA 00+00.00 TO STA 50+00.00 CONSTRUCT 5000 LIN. FT CONCRETE CHANNEL

STA 00+00.00 TO STA 50+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 81.5 LIN. FT BY 30 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) INSTALL A 73 LIN. FT SIPHON FOR EXISTING BID CANAL. SEE DETAIL C.5.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
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1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 0+00.00 TO 50+00.00	SHEET LP1

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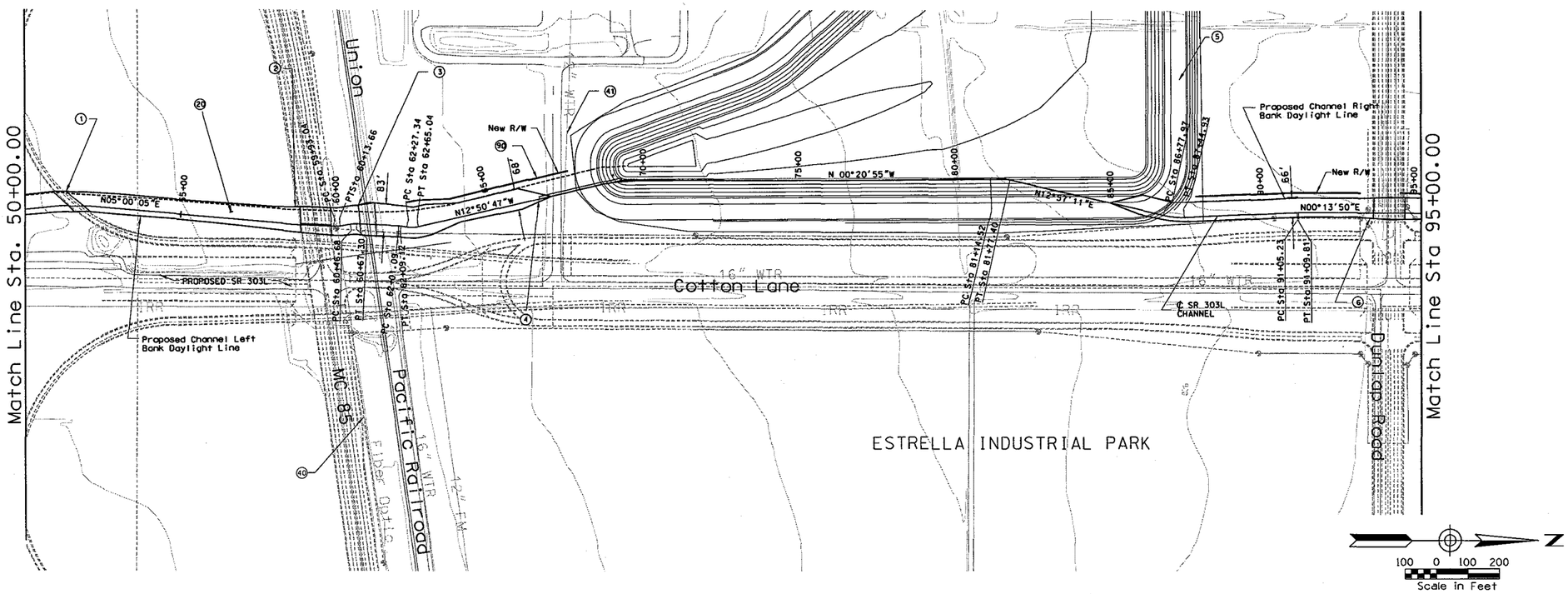

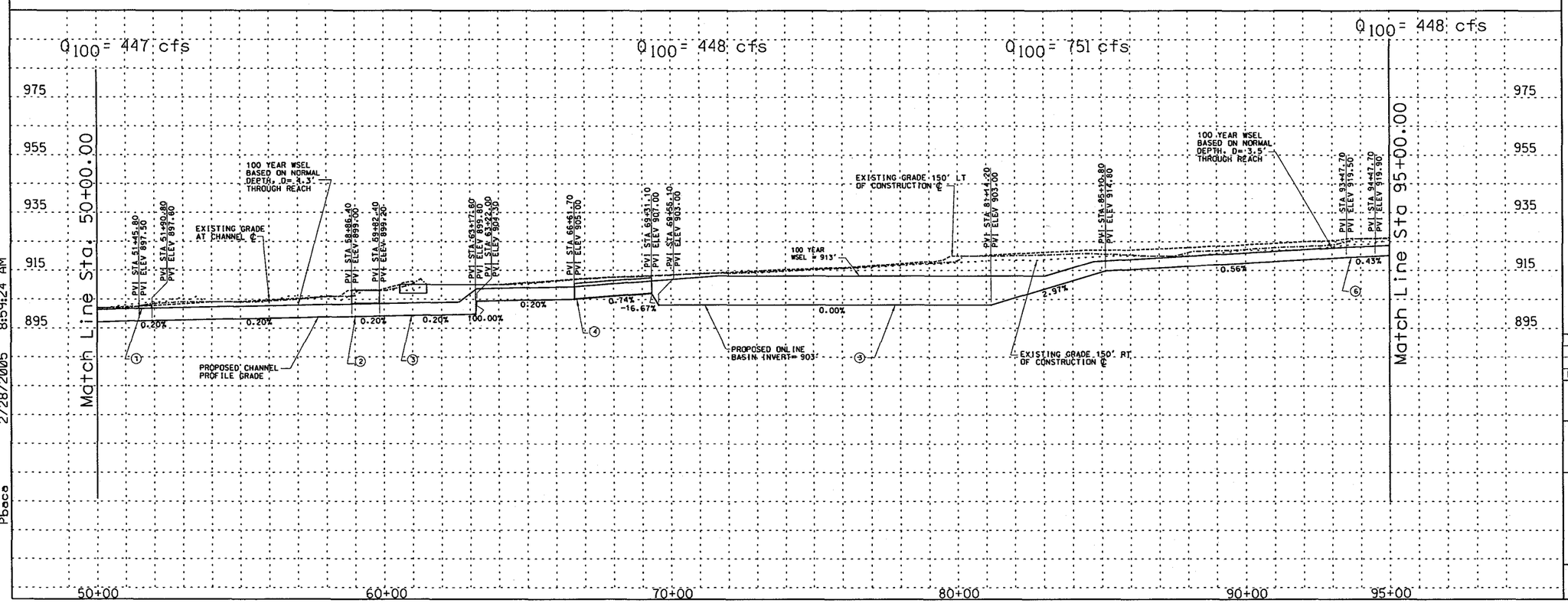

REMOVE

CONSTRUCT

STA 50+00.00 TO STA 95+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 50+00.00 TO STA 95+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

1. CONSTRUCT 78 LIN. FT BY 45 FT WIDE SINGLE SPAN BRIDGE
2. CONSTRUCT 87LIN. FT BY 96 FT WIDE SINGLE SPAN BRIDGE
3. CONSTRUCT 104 LIN. FT BY 35 FT WIDE SINGLE SPAN BRIDGE
4. INSTALL 4 BARREL 48" RCP BASIN OUTLET
5. CONSTRUCT 325 AF ONLINE DETENTION BASIN/PARK
6. CONSTRUCT 71.5 LIN. FT BY 100 FT WIDE SINGLE SPAN BRIDGE
20. CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.
40. RELOCATE FIBER OPTIC LINE
40. RELOCATE WATER
40. CONSTRUCT 2872 LIN . FT POST STORM DRAIN

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 50+00.00 TO 95+00.00	SHEET LP2

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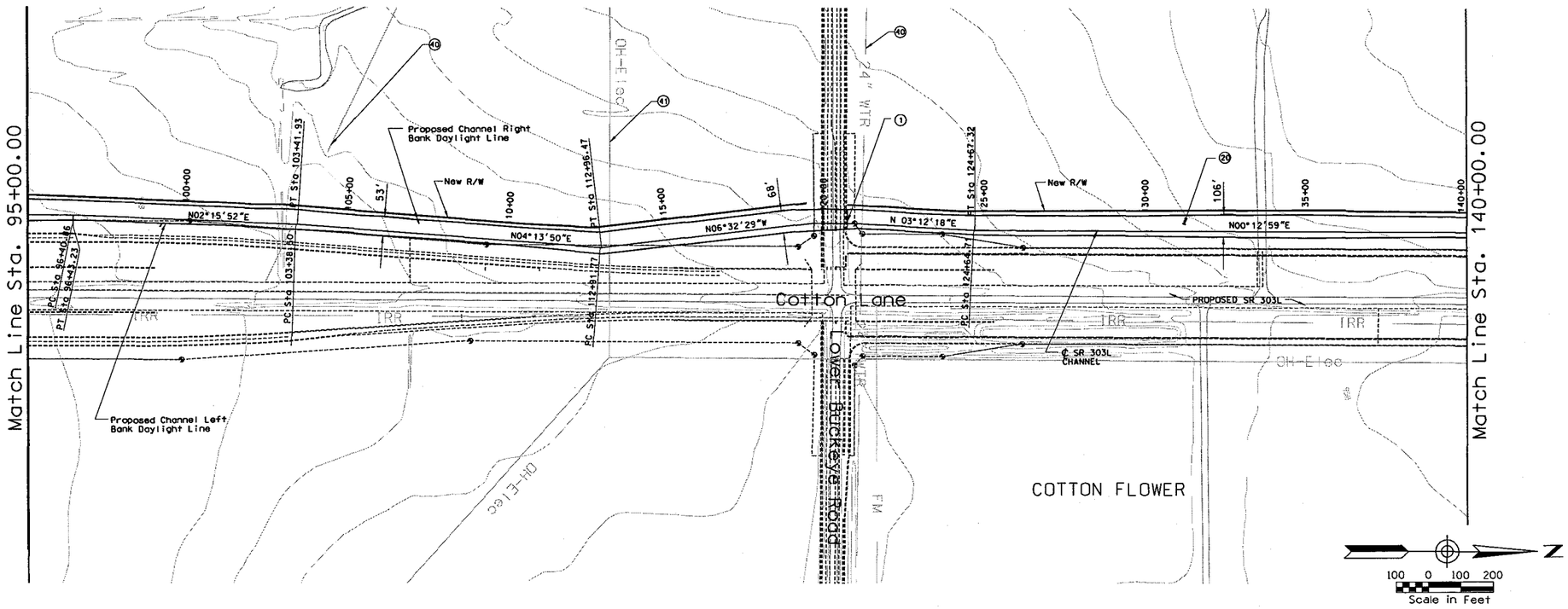

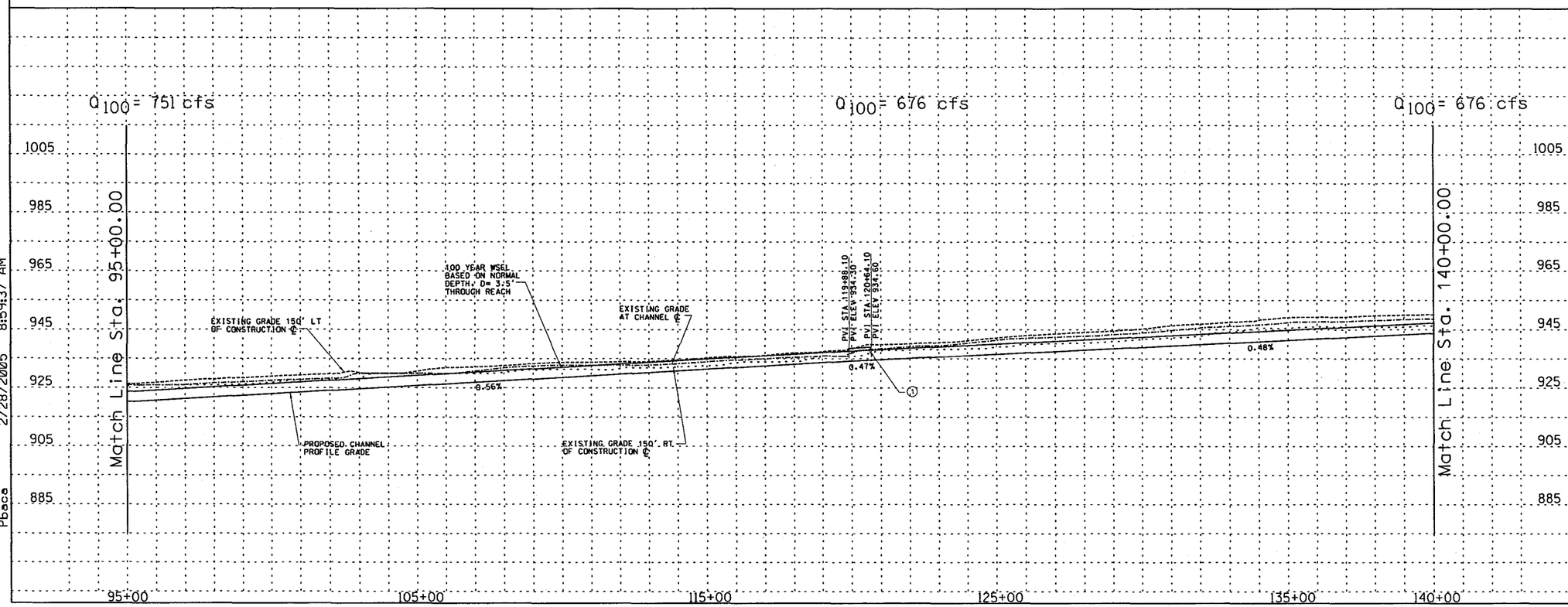

REMOVE

CONSTRUCT

STA 95+00.00 TO STA 140+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 95+00.00 TO STA 140+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 65 LIN. FT BY 76 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE WATER

(41) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 95+00.00 TO 140+00.00	SHEET LP3

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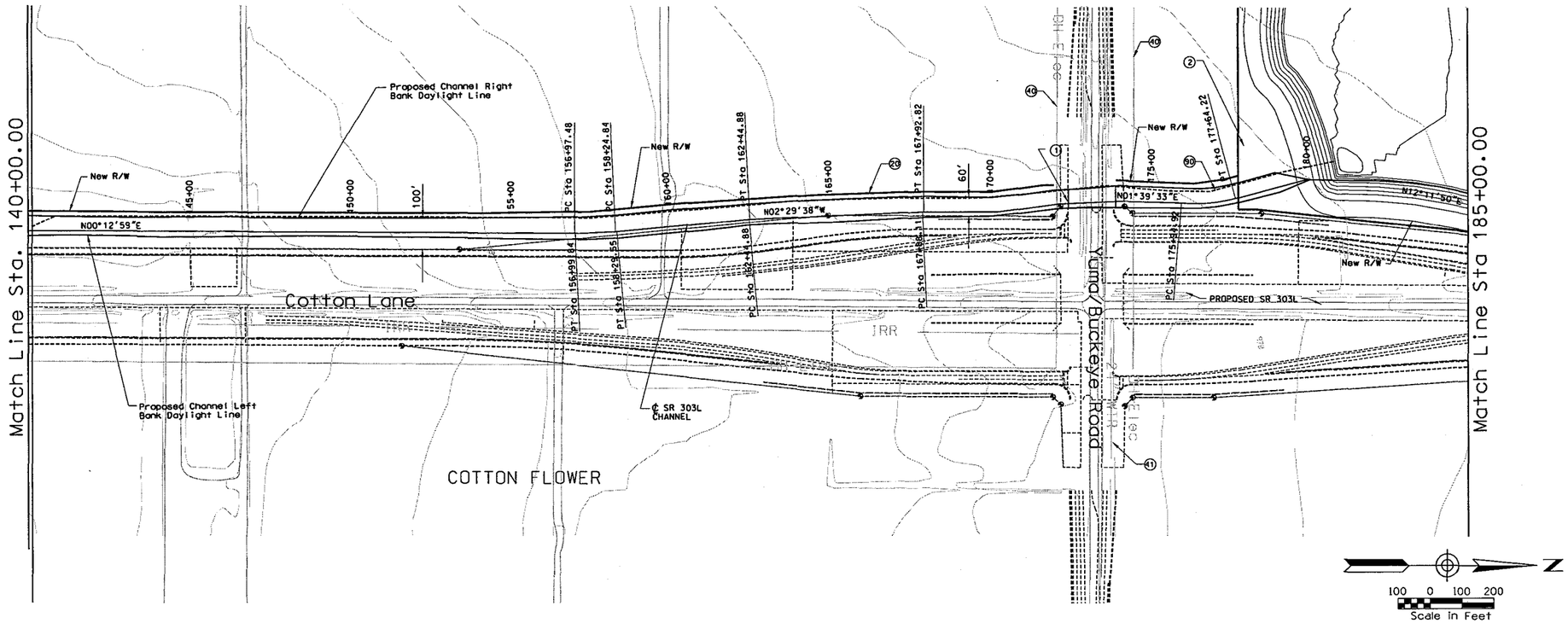

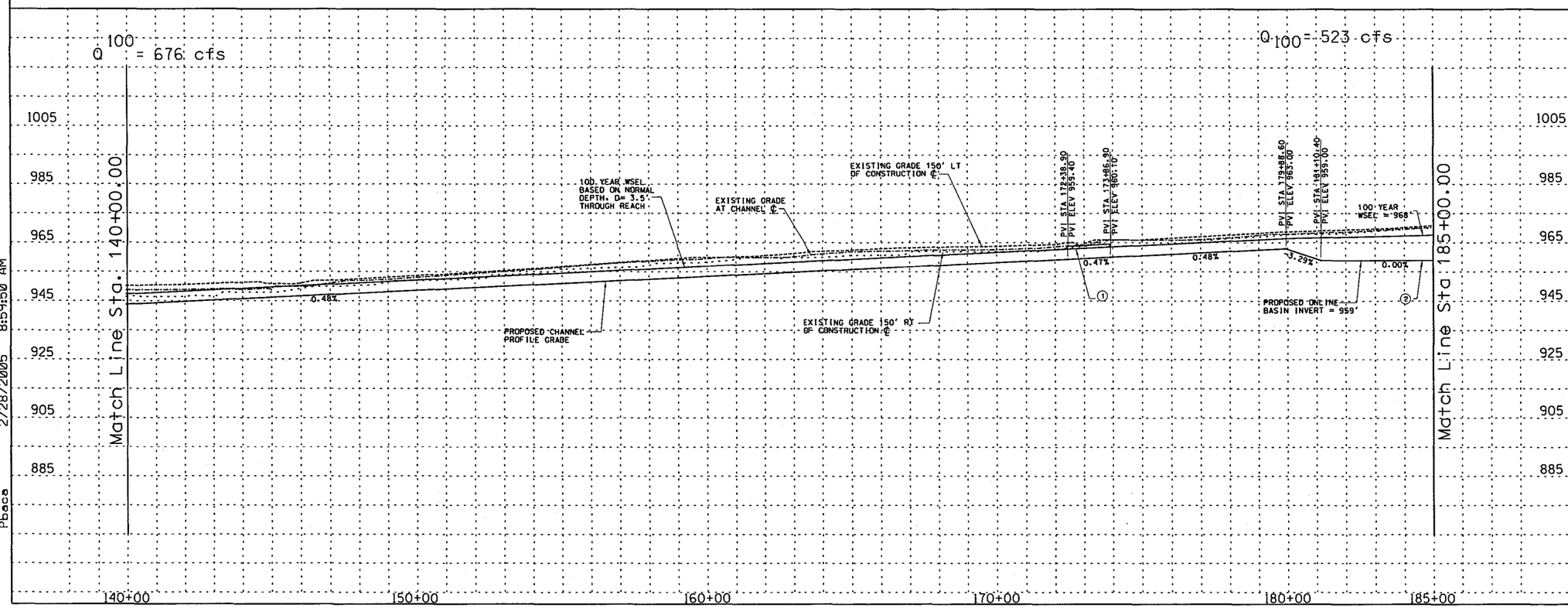

REMOVE

CONSTRUCT

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STA 140+00.00 TO STA 185+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 69 LIN. FT BY 148 FT WIDE SINGLE SPAN BRIDGE

(2) CONSTRUCT 190 AF ONLINE DETENTION BASIN/PARK

(2a) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(4a) RELOCATE OVERHEAD ELECTRIC

(41) RELOCATE WATER

(9a) CONSTRUCT 4092 LIN. FT POST STORM DRAIN

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 140+00.00 TO 185+00.00	SHEET LP4

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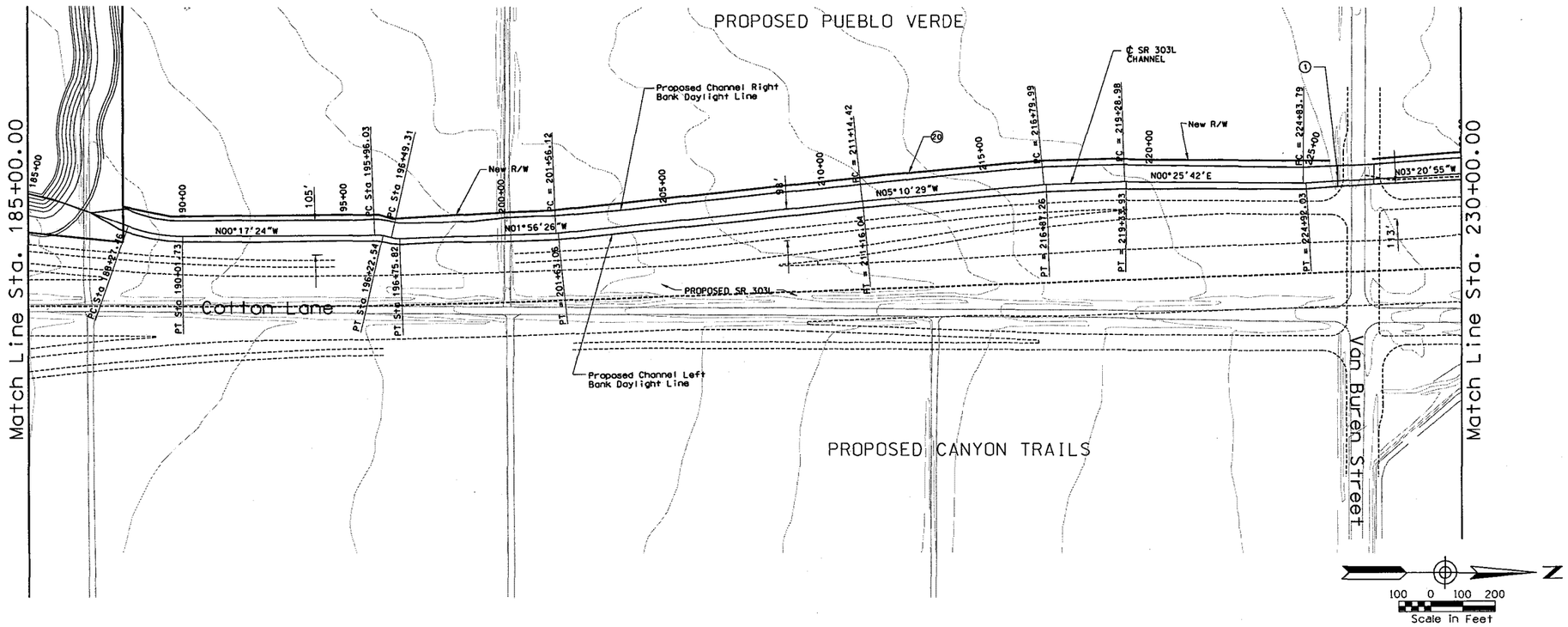

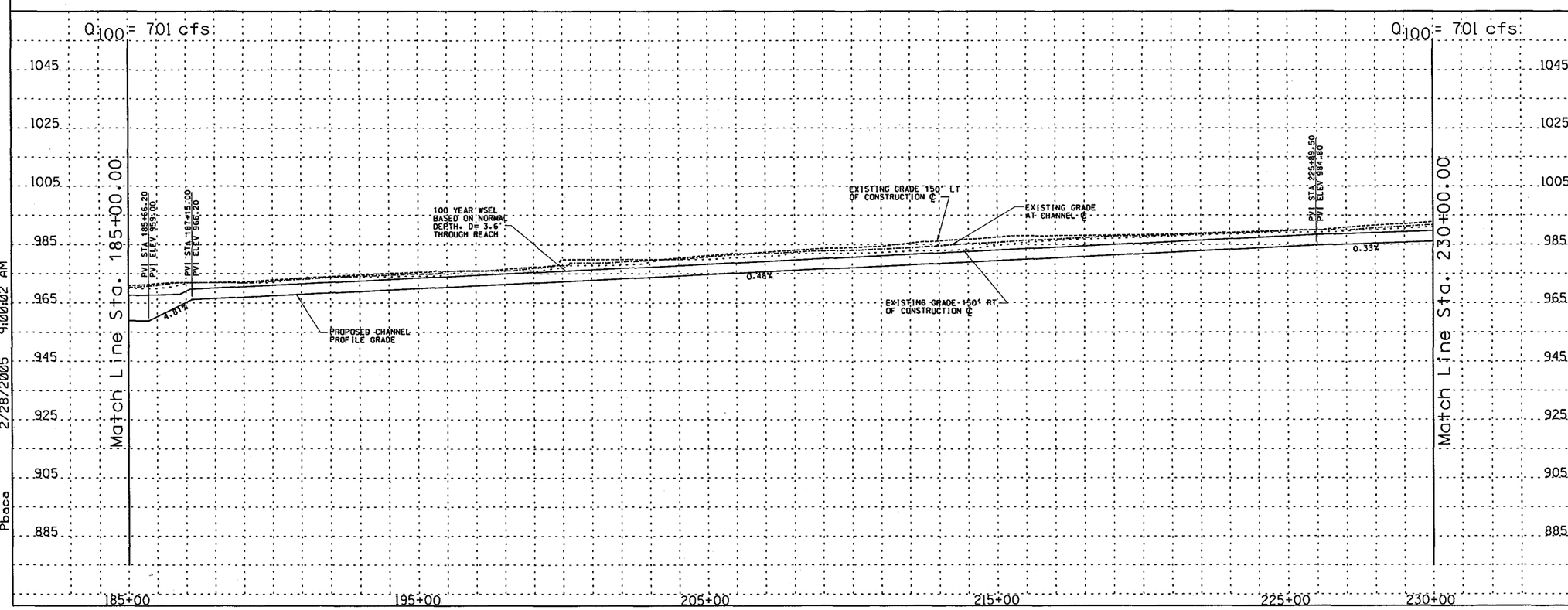

REMOVE

CONSTRUCT

STA 185+00.00 TO STA 230+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 185+00.00 TO STA 230+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 205 LIN. FT BY 24 FT WIDE LONG SPAN CULVERT

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY, NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC, CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 185+00.00 TO 230+00.00	SHEET LP5

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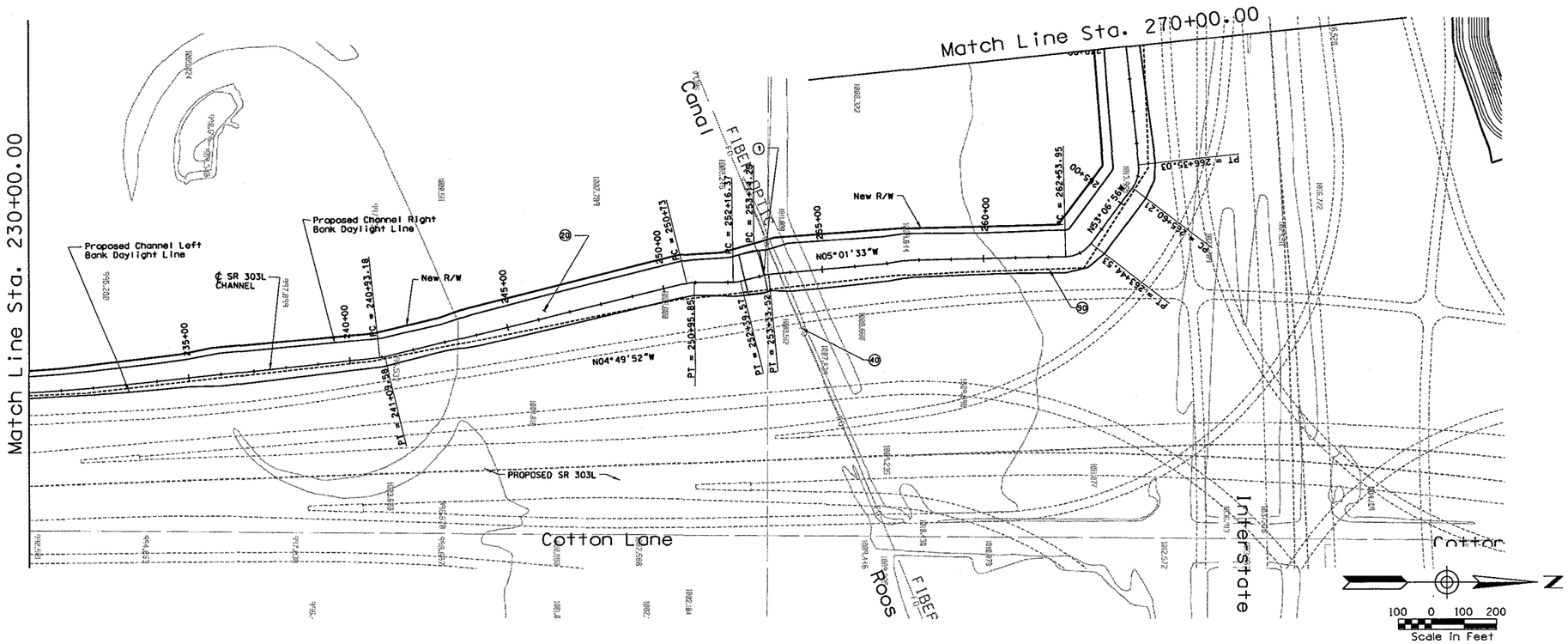

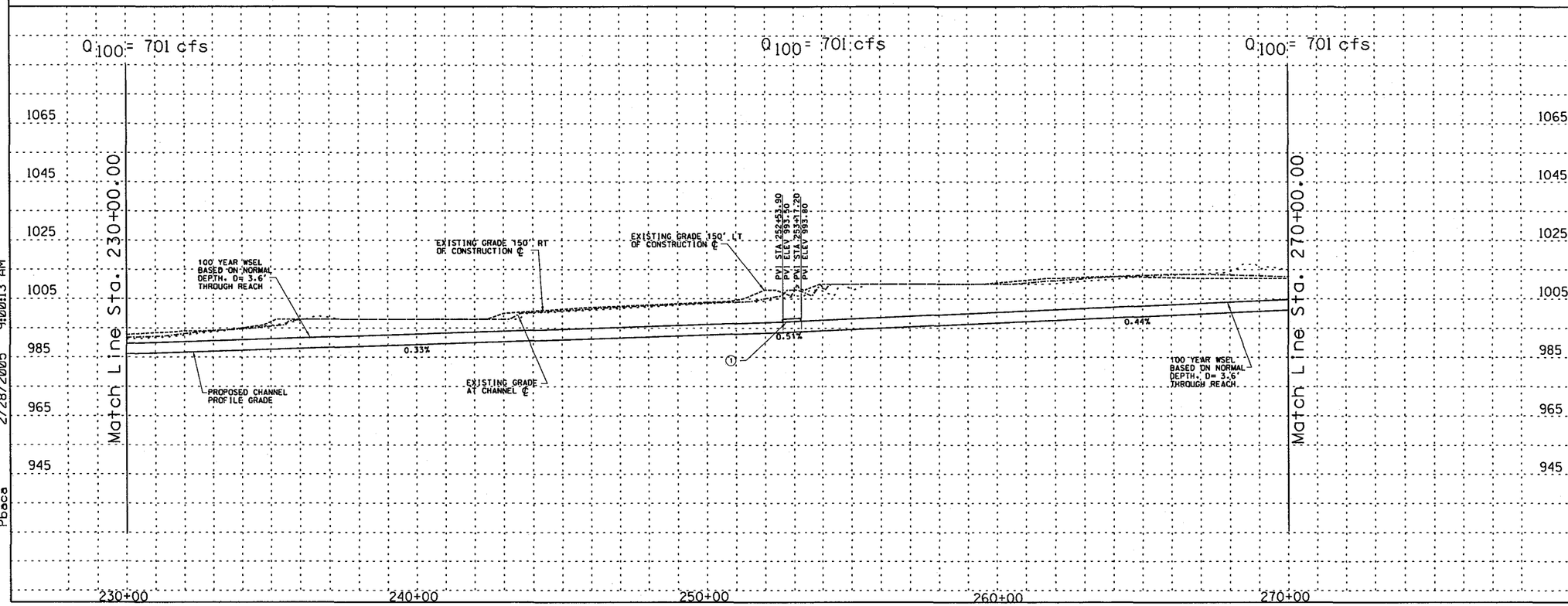

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CONSTRUCT

STA 230+00.00 TO STA 270+00.00 CONSTRUCT 4000 LIN. FT CONCRETE CHANNEL

STA 230+00.00 TO STA 270+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 370 LIN. FT BY 24 FT WIDE 5-30' SPAN(S) BRIDGE SEE DETAIL C.7.

(10) INSTALL 8' X 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE FIBER OPTIC LINE

(90) CONSTRUCT 6094 LIN. FT POST STORM DRAIN

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE SHEET

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 230+00.00 TO 270+00.00	SHEET LP6

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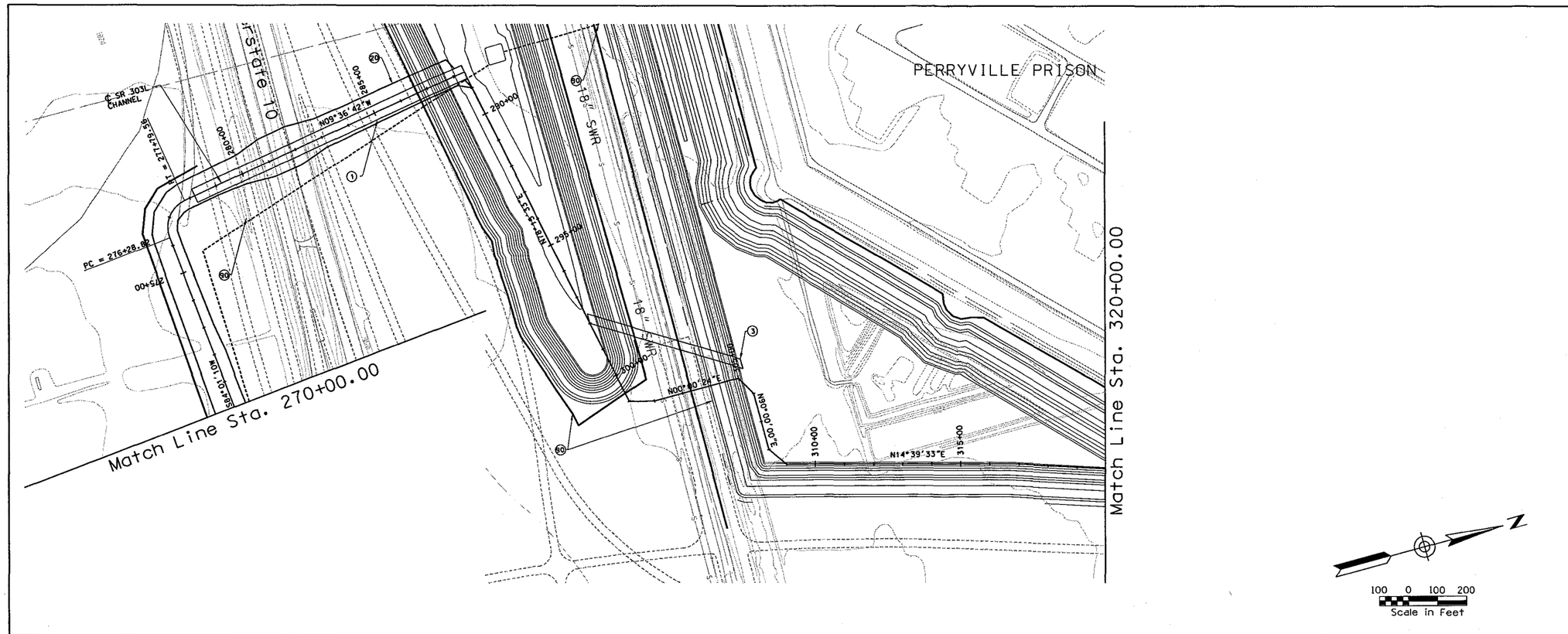

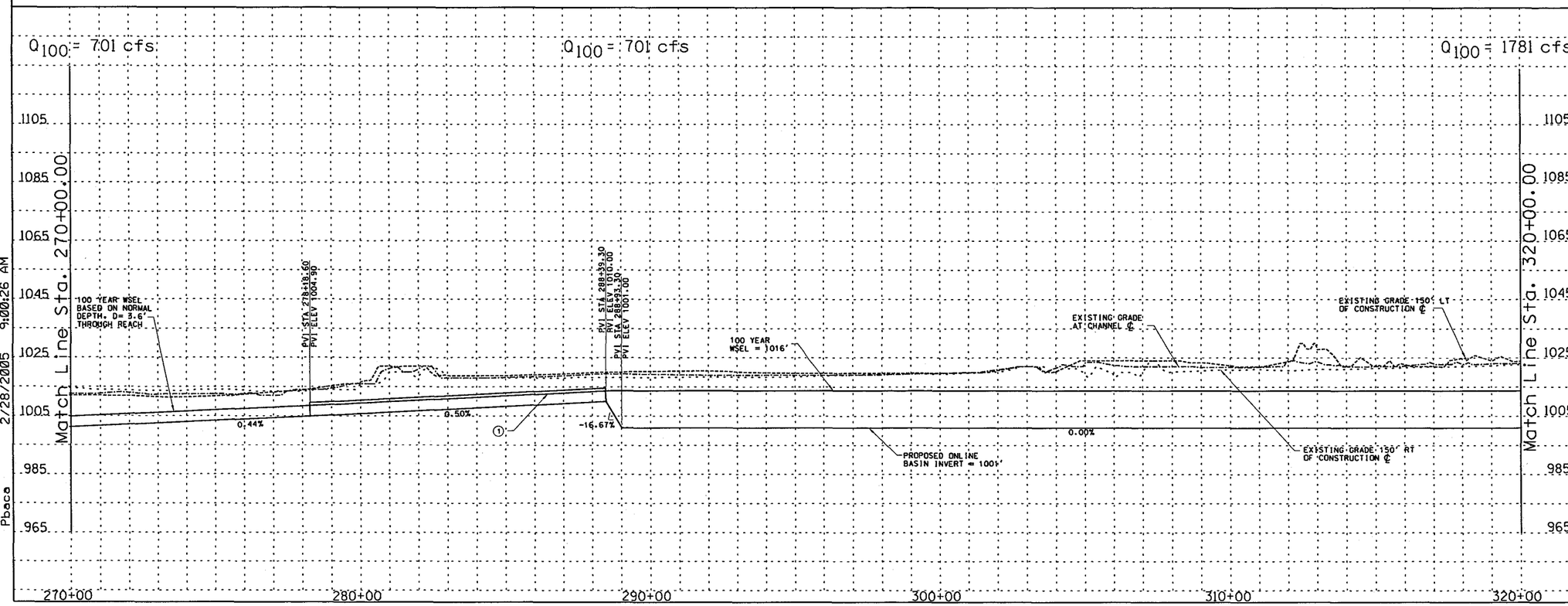

REMOVE

CONSTRUCT

STA 270+00.00 TO STA 320+00.00 CONSTRUCT 5000 LIN. FT CONCRETE CHANNEL

STA 270+00.00 TO STA 320+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 1021 LIN. FT. 4 BARREL 72" RCP BASIN OUTLET

(2) CONSTRUCT 590 AF ONLINE DETENTION BASIN/PARK

(3) INSTALL EQUALIZER CB 450 LIN. FT. 3 BARREL 10' X 6'.

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED MARCH 2004.

(40) RELOCATE SEWER

(50) INSTALL LOW FLOW DRAIN PIPE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 270+00.00 TO 320+00.00	SHEET LP7

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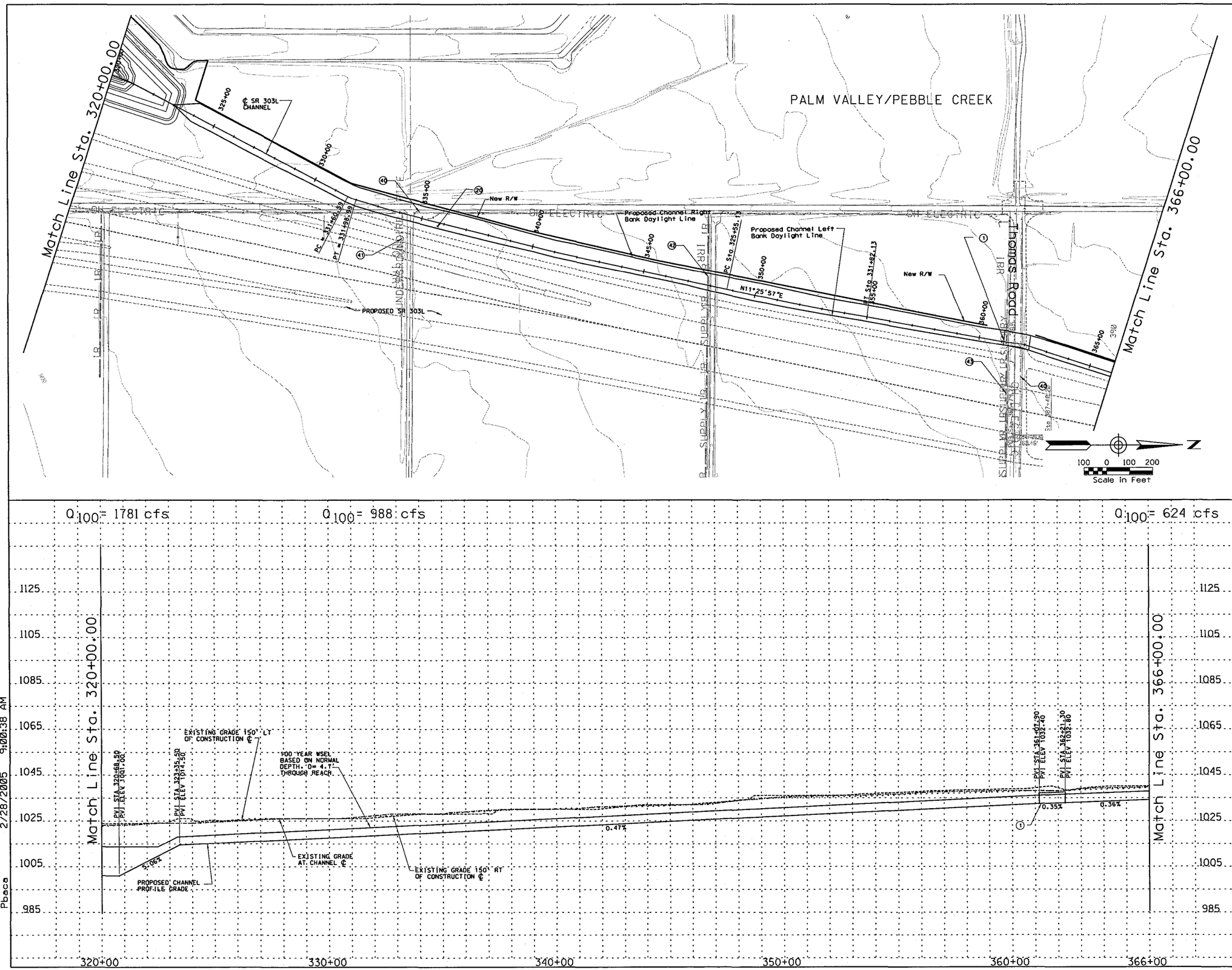

REMOVE

CONSTRUCT

STA 320+00.00 TO STA 366+00.00 CONSTRUCT 4600 LIN. FT CONCRETE CHANNEL

STA 320+00.00 TO STA 366+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 33 LIN. FT BY 111 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE OVERHEAD ELECTRIC

(41) RELOCATE IRRIGATION PIPE

(42) RELOCATE IRRIGATION LATERAL

(43) RELOCATE IRRIGATION SUPPLY

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 320+00.00 TO 366+00.00	SHEET LP8

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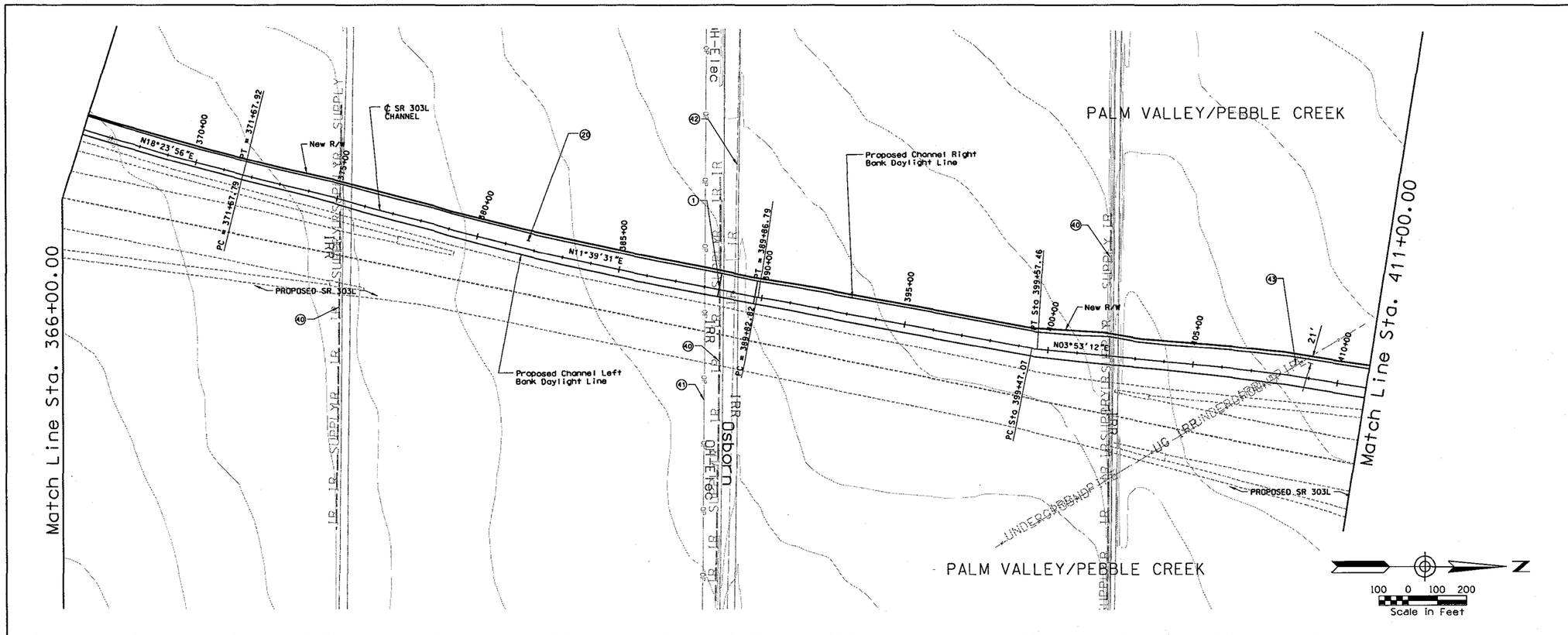

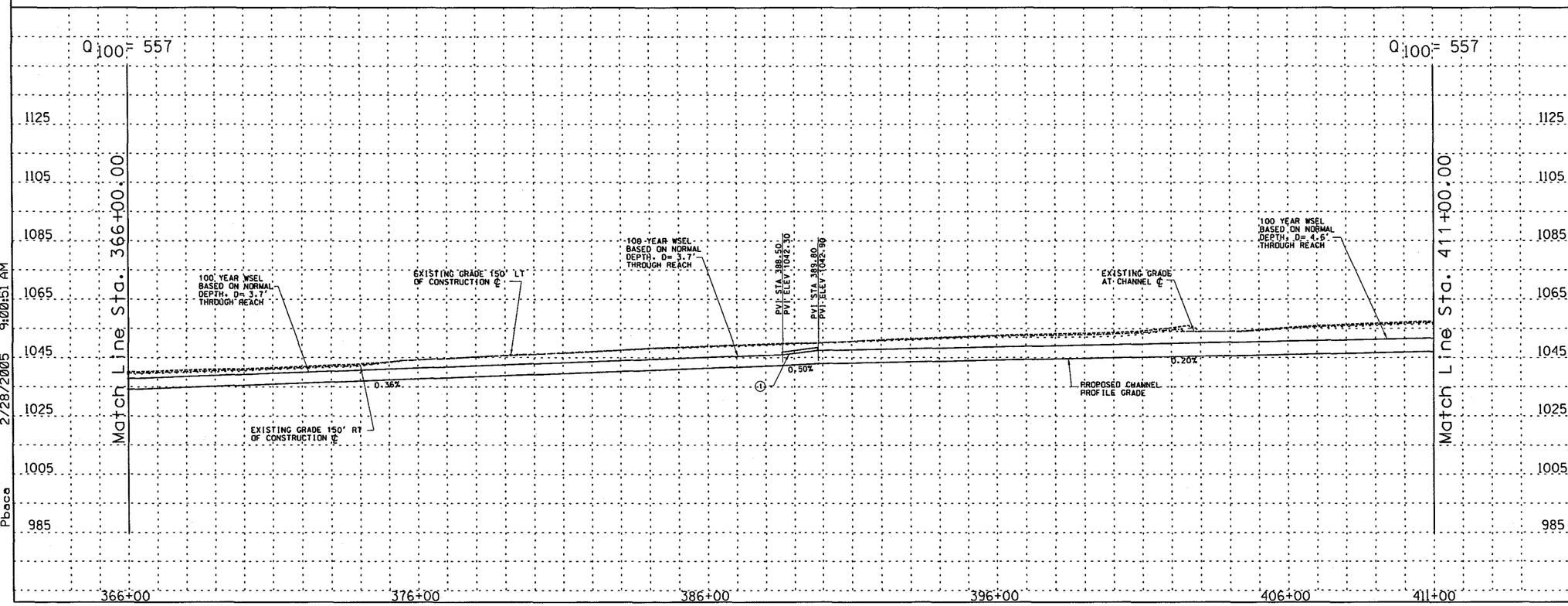

REMOVE

CONSTRUCT

STA 366+00.00 TO STA 411+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 366+00.00 TO STA 411+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 80 LIN. FT BY 125 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE IRRIGATION SUPPLY

(41) RELOCATE OVERHEAD ELECTRIC

(42) RELOCATE IRRIGATION

(43) RELOCATE IRRIGATION PIPE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 366+00.00 TO 411+00.00	SHEET LP9

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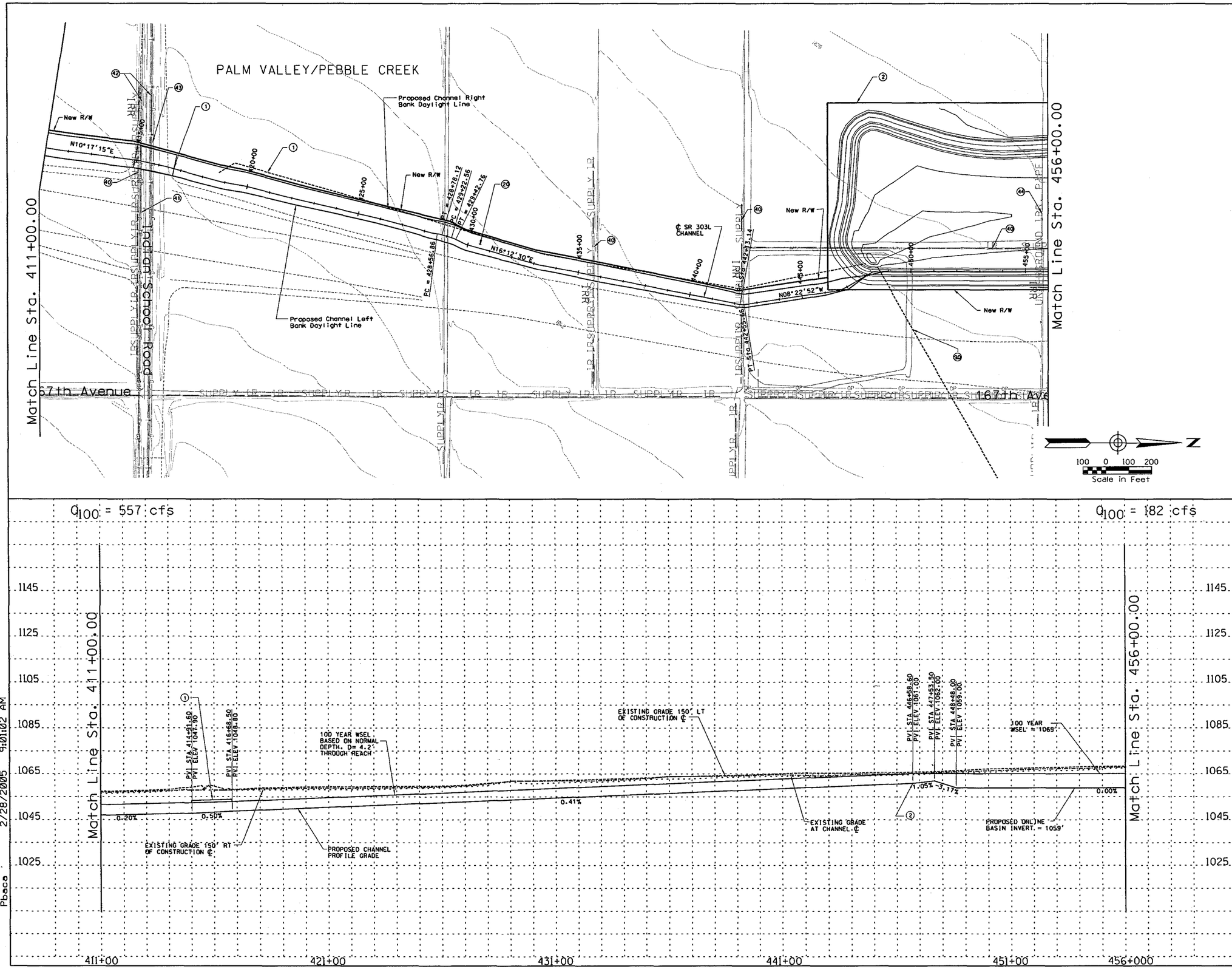

REMOVE

CONSTRUCT

STA 411+00.00 TO STA 456+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 411+00.00 TO STA 456+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

1. CONSTRUCT 24 LIN. FT BY 186 FT WIDE BRIDGE
2. CONSTRUCT 120.2 AF ONLINE DETENTION BASIN/PARK
26. CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.
40. RELOCATE IRRIGATION SUPPLY
41. RELOCATE OVERHEAD ELECTRIC
41. RELOCATE TELEPHONE
42. RELOCATE GAS
43. RELOCATE IRRIGATION PIPE
90. INSTALL LOW FLOW DRAIN PIPE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
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1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 411+00.00 TO 456+00.00	SHEET LP10

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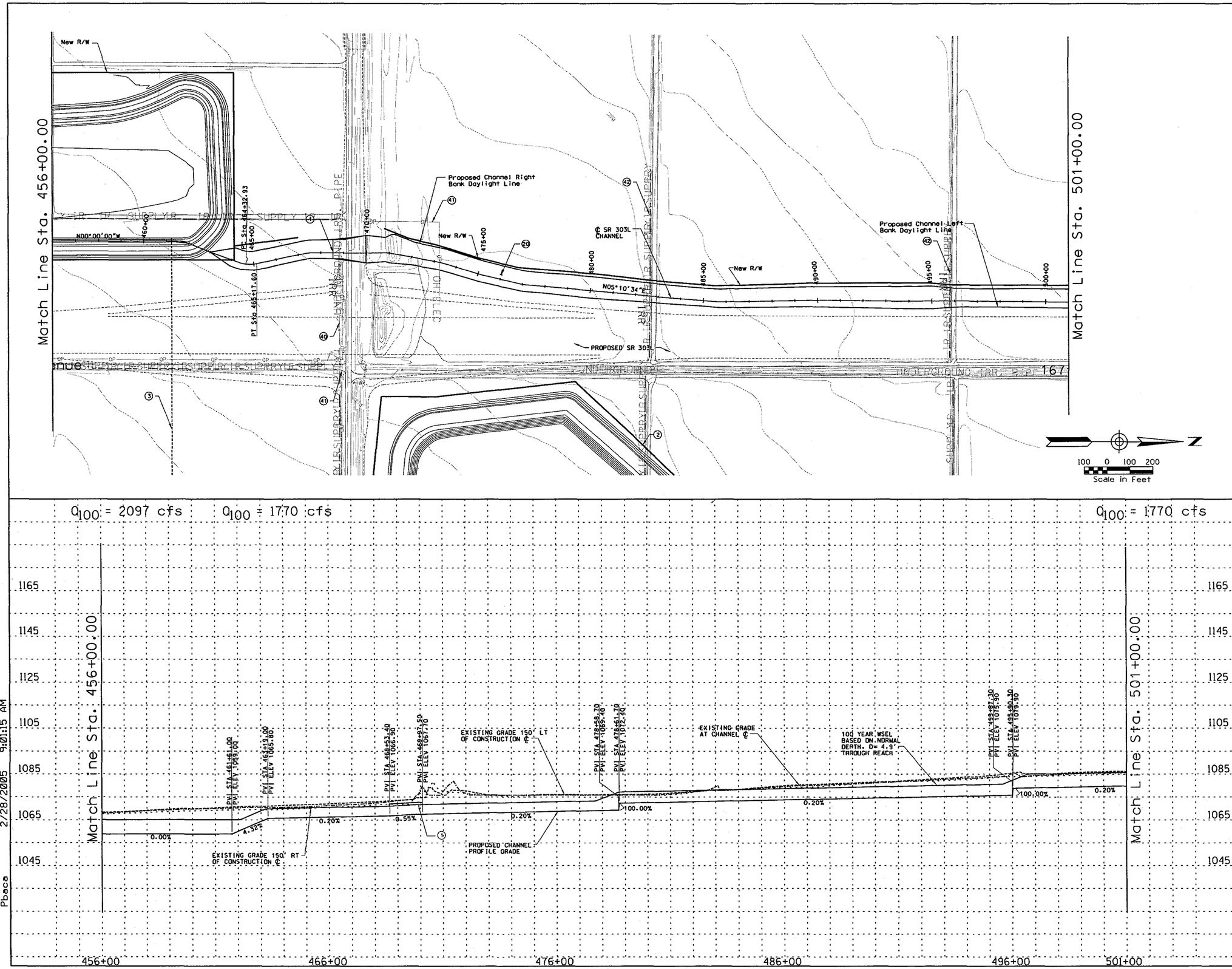

REMOVE

CONSTRUCT

STA 456+00.00 TO STA 501+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 456+00.00 TO STA 501+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

1. CONSTRUCT 69 LIN. FT BY 146 FT WIDE SINGLE SPAN BRIDGE
2. CONSTRUCT 130.7 AF DETENTION BASIN/ PARK
3. INSTALL 1204 LIN. FT. 4-BARREL 10'X6' RCB EQUALIZER
10. INSTALL 8' X 10' PEDESTRIAN CROSSING
20. CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED MARCH 2004.
40. RELOCATE IRRIGATION PIPE
41. RELOCATE OVERHEAD ELECTRIC
42. RELOCATE IRRIGATION SUPPLY

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 456+00.00 TO 501+00.00	SHEET LP11

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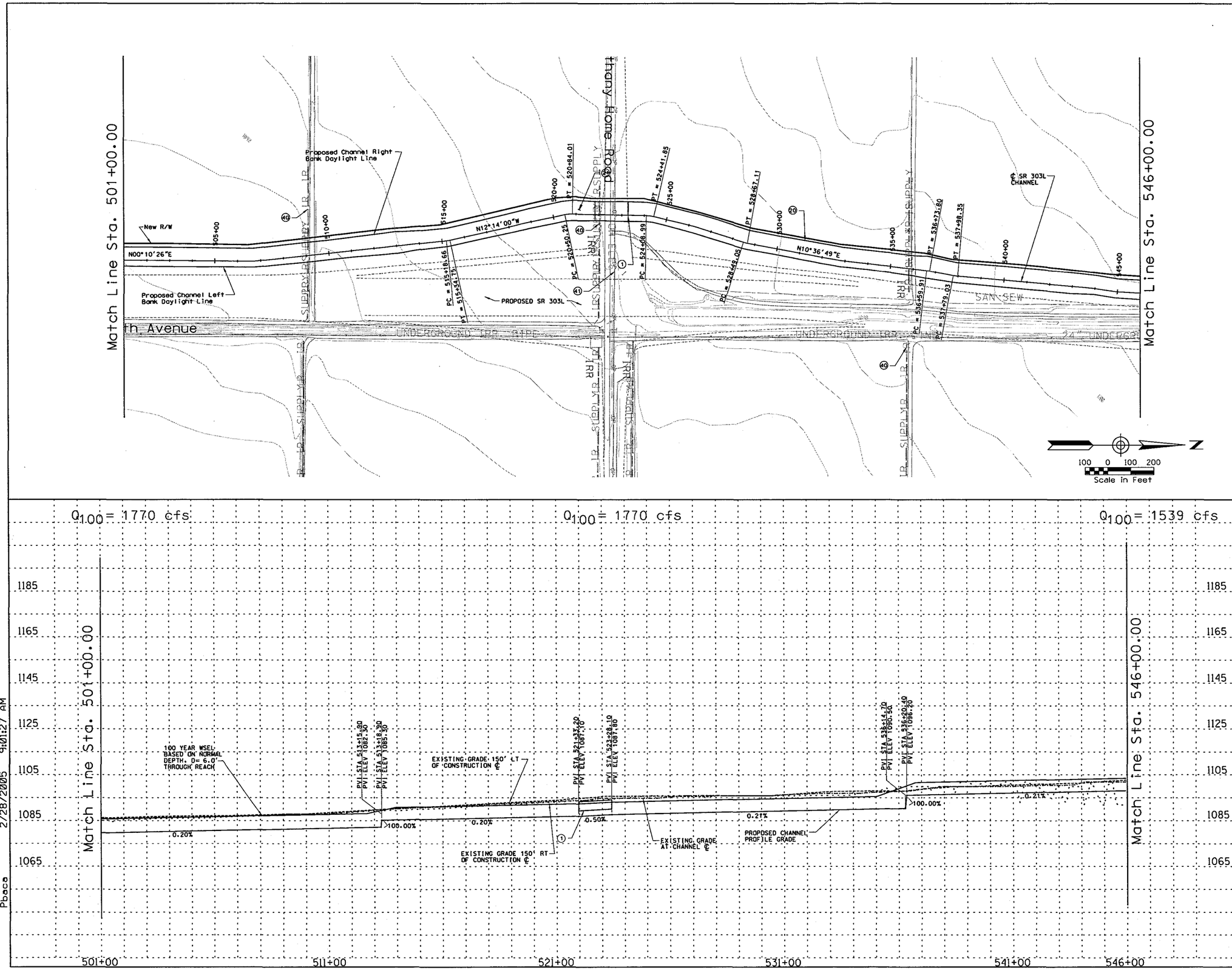

REMOVE

CONSTRUCT

STA 501+00.00 TO STA 546+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 501+00.00 TO STA 546+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 365 LIN. FT BY 48 FT WIDE SINGLE SPAN BRIDGE

(29) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(46) RELOCATE IRRIGATION SUPPLY

(41) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 501+00.00 TO 546+00.00	SHEET LP12

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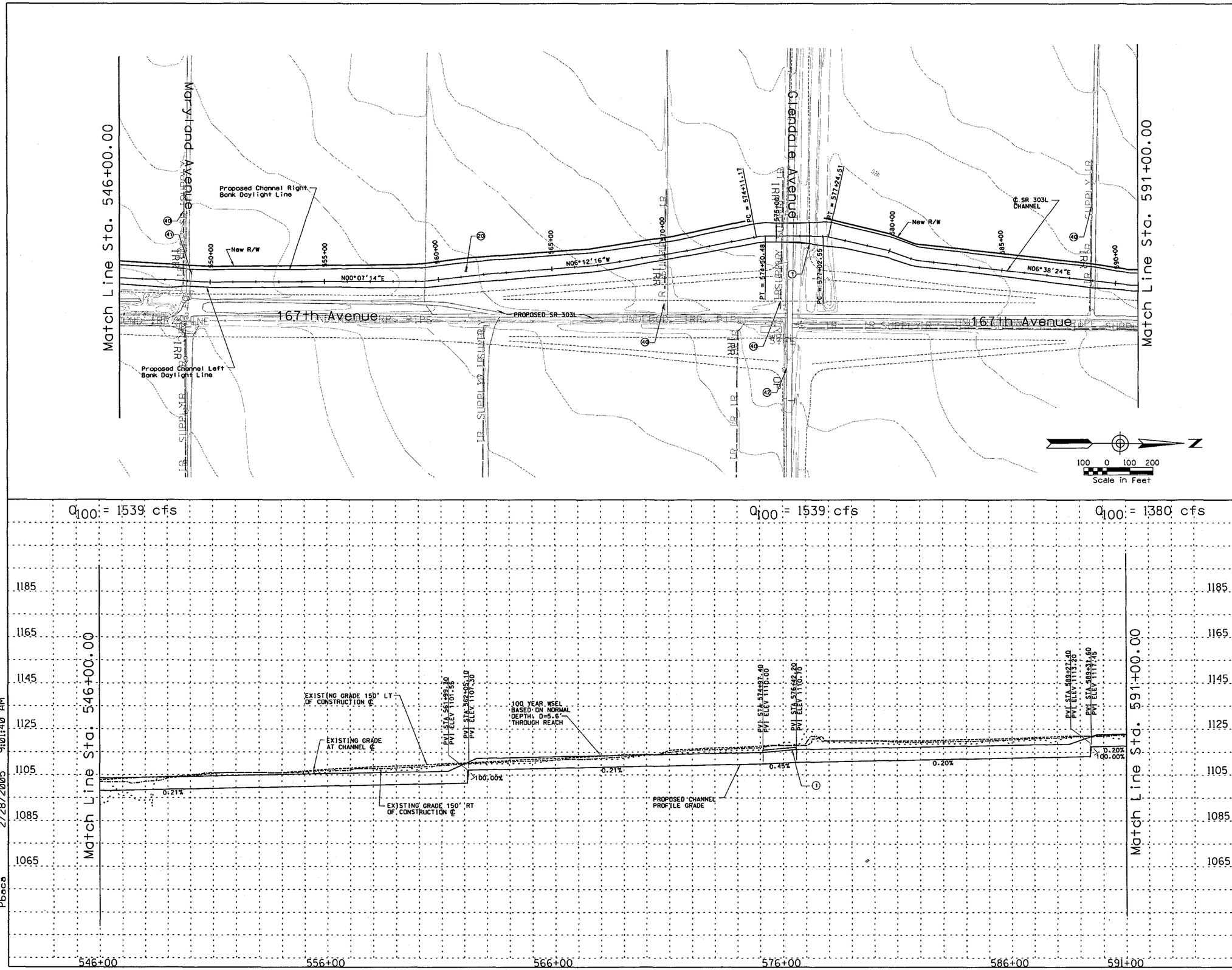

REMOVE

CONSTRUCT

STA 546+00.00 TO STA 591+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 546+00.00 TO STA 591+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 320 LIN. FT BY 41 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE IRRIGATION SUPPLY

(41) RELOCATE OVERHEAD ELECTRIC

(42) RELOCATE TELEPHONE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 546+00.00 TO 591+00.00	SHEET LP13

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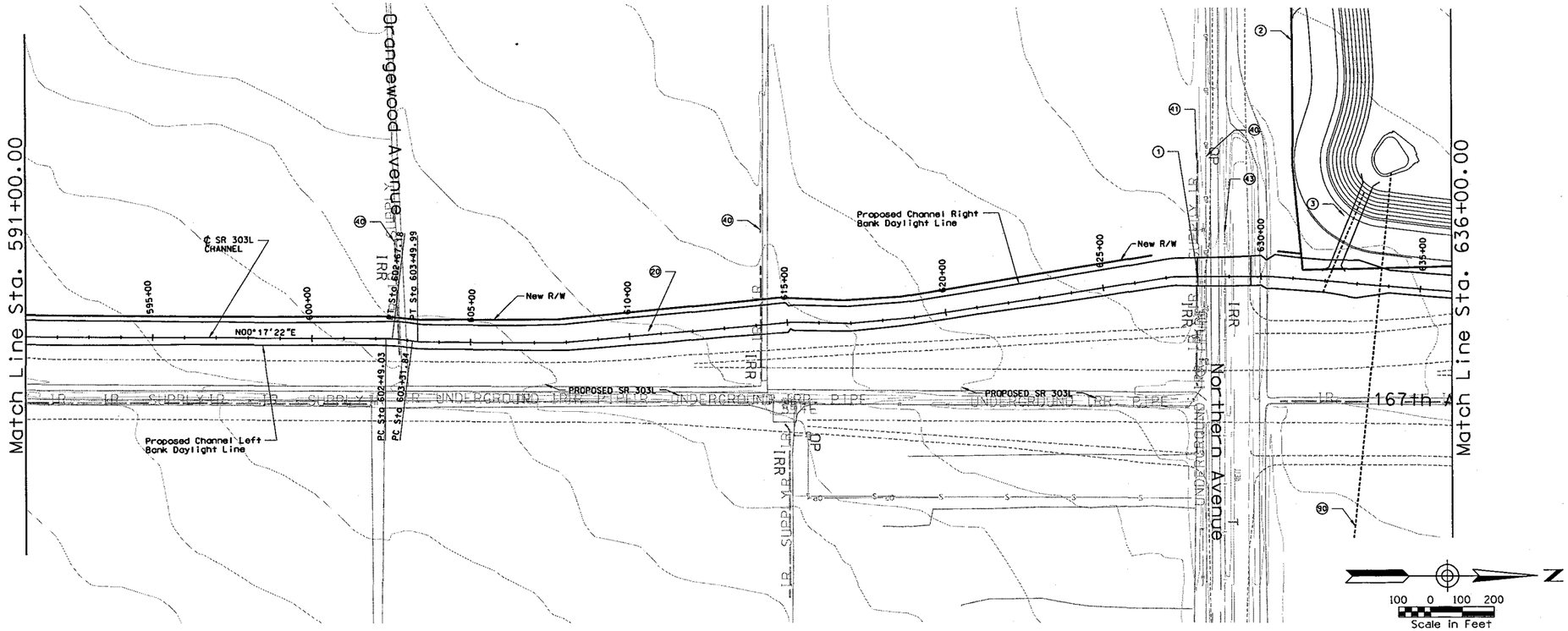

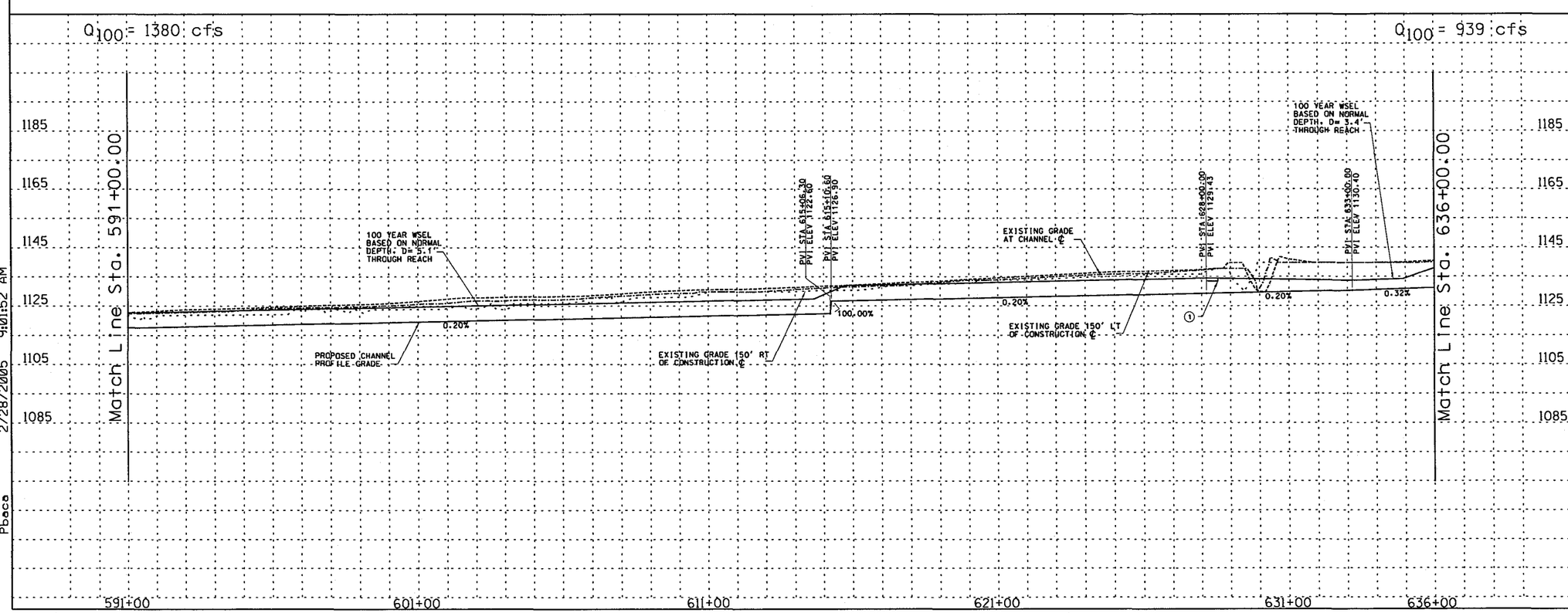

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CONSTRUCT

STA 591+00.00 TO STA 636+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 591+00.00 TO STA 636+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

1. CONSTRUCT 390 LIN. FT BY 39 FT WIDE SINGLE SPAN BRIDGE
2. CONSTRUCT 333 AF OFFLINE DETENTION BASIN/PARK
3. INSTALL 256 LIN. FT 2-BARREL, 60' RCP BASIN OUTLET
20. CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.
40. RELOCATE IRRIGATION
41. RELOCATE IRRIGATION SUPPLY
42. RELOCATE OVERHEAD ELECTRIC
43. RELOCATE TELEPHONE
80. INSTALL LOW FLOW DRAIN PIPE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 591+00.00 TO 636+00.00	SHEET LP14

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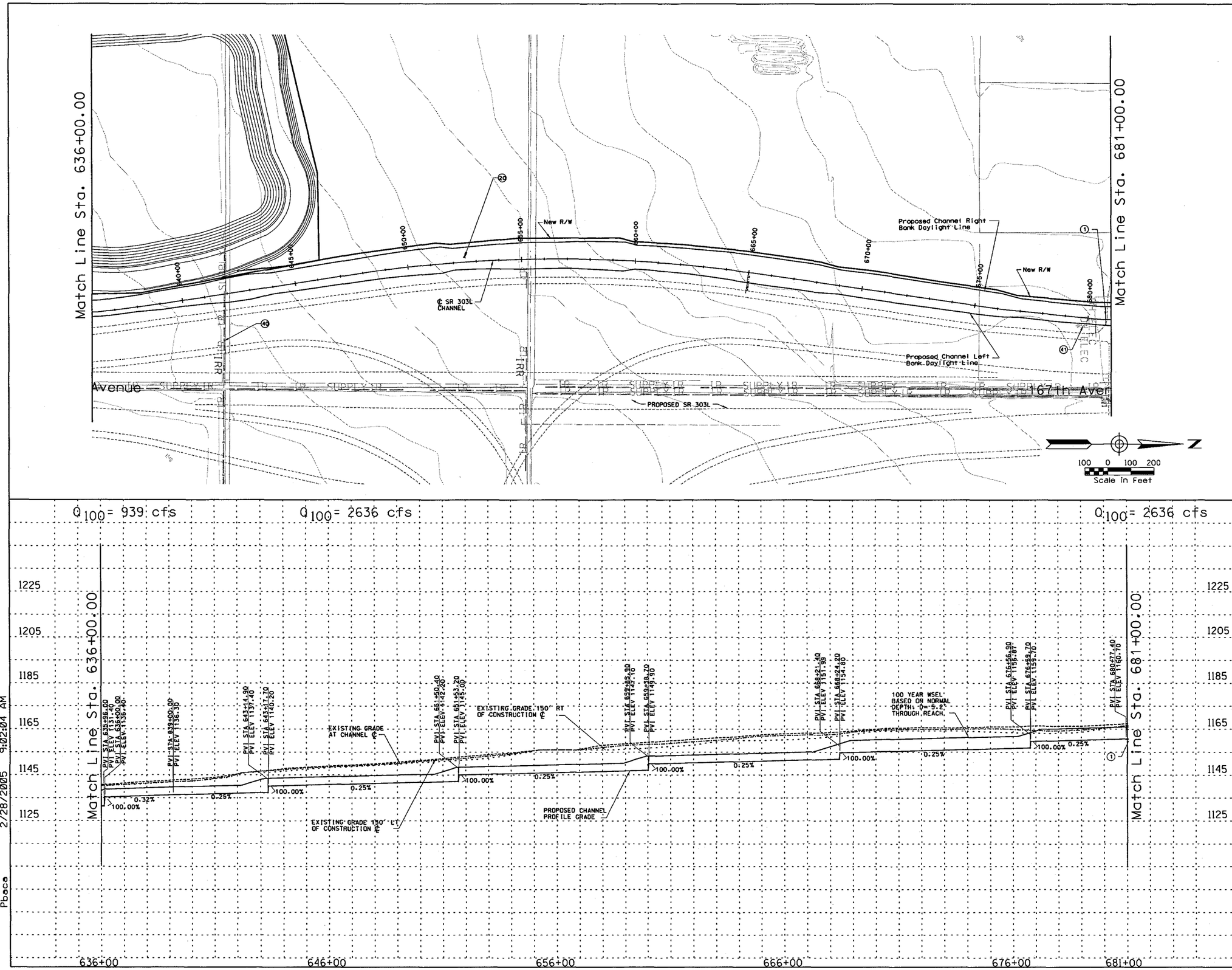

REMOVE

CONSTRUCT

STA 636+00.00 TO STA 681+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 636+00.00 TO STA 681+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 51 LIN. FT BY 211 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE IRRIGATION SUPPLY

(41) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC, CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 636+00.00 TO 681+00.00	SHEET LP15

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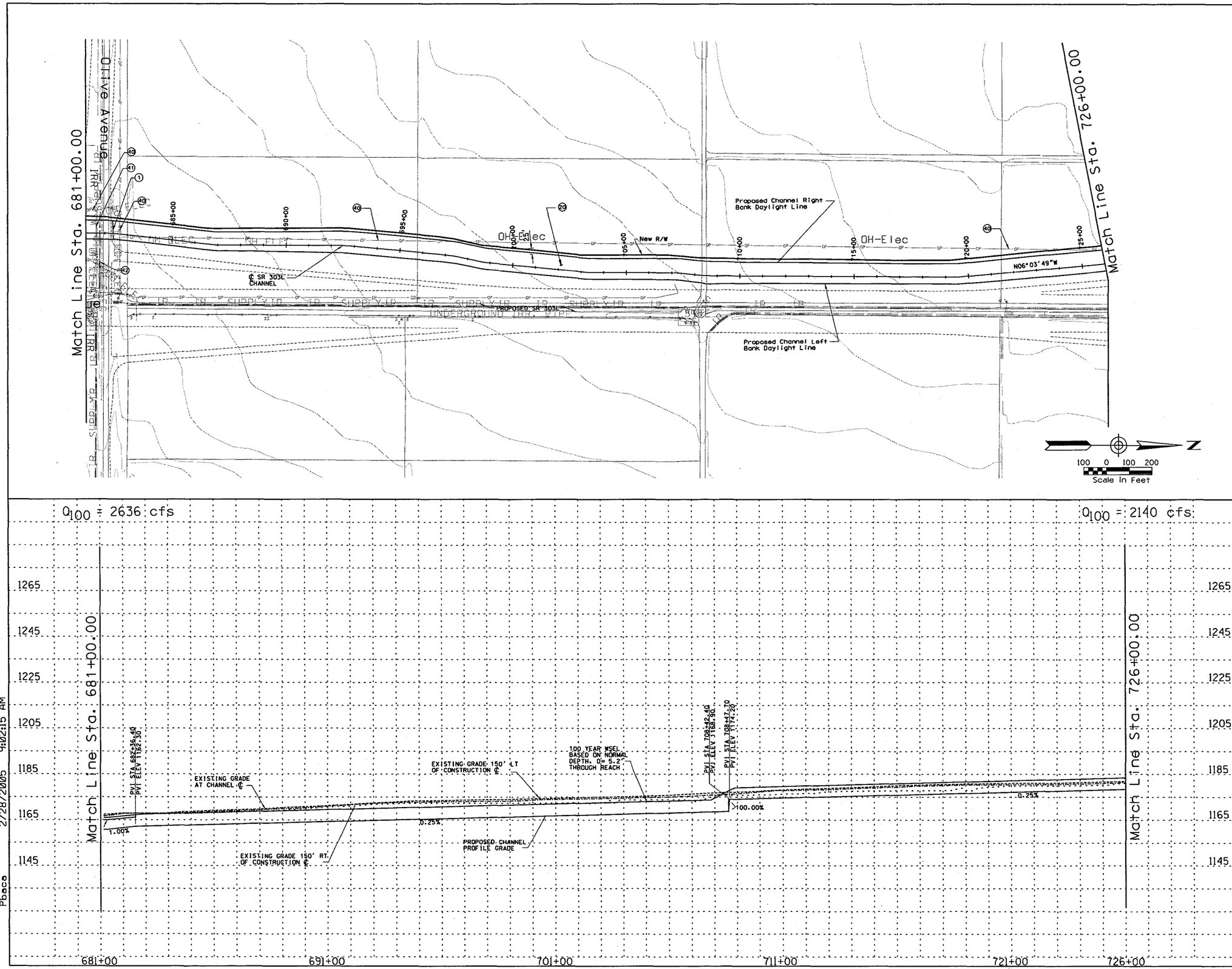

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CONSTRUCT

STA 681+00.00 TO STA 726+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 681+00.00 TO STA 726+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 5 LIN. FT BY 211 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE OVERHEAD ELECTRIC

(41) RELOCATE WATER

(42) RELOCATE IRRIGATION SUPPLY

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 681+00.00 TO 726+00.00	SHEET LP16

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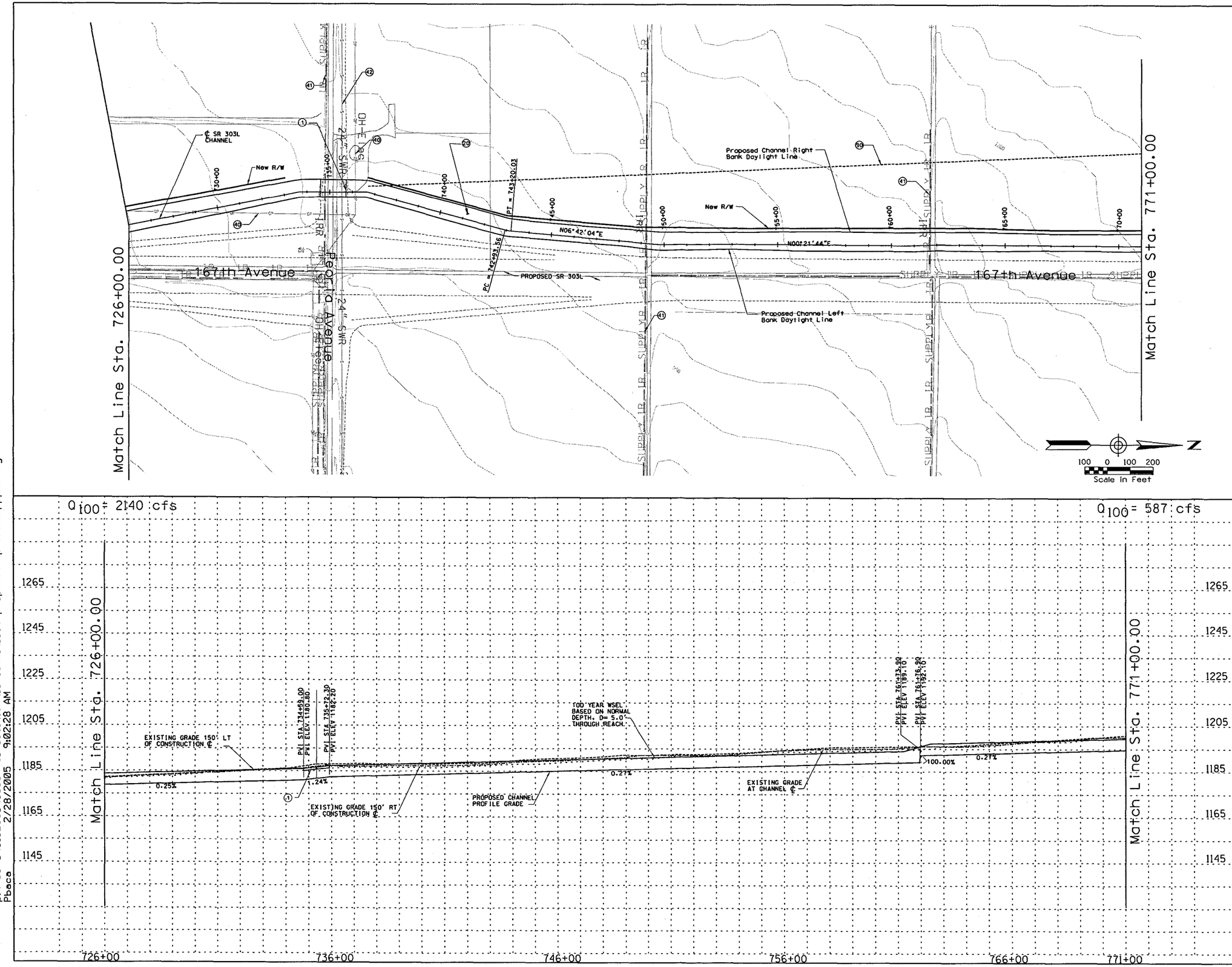

REMOVE

CONSTRUCT

STA 726+00.00 TO STA 771+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 726+00.00 TO STA 771+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 355 LIN. FT BY 47 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(90) RELOCATE OVERHEAD ELECTRIC

(90) RELOCATE IRRIGATION SUPPLY

(90) RELOCATE SEWER

(90) INSTALL LOW FLOW DRAIN PIPE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

-----	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 726+00.00 TO 771+00.00	SHEET LP17

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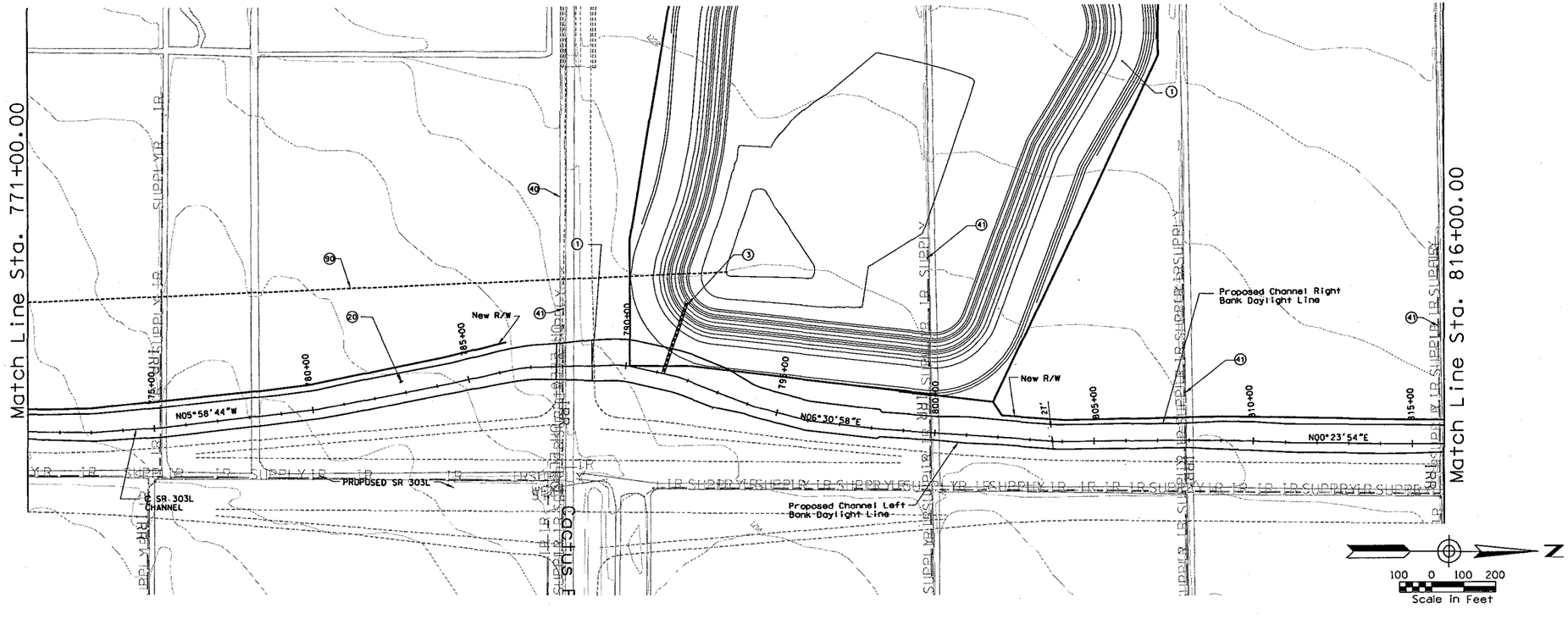

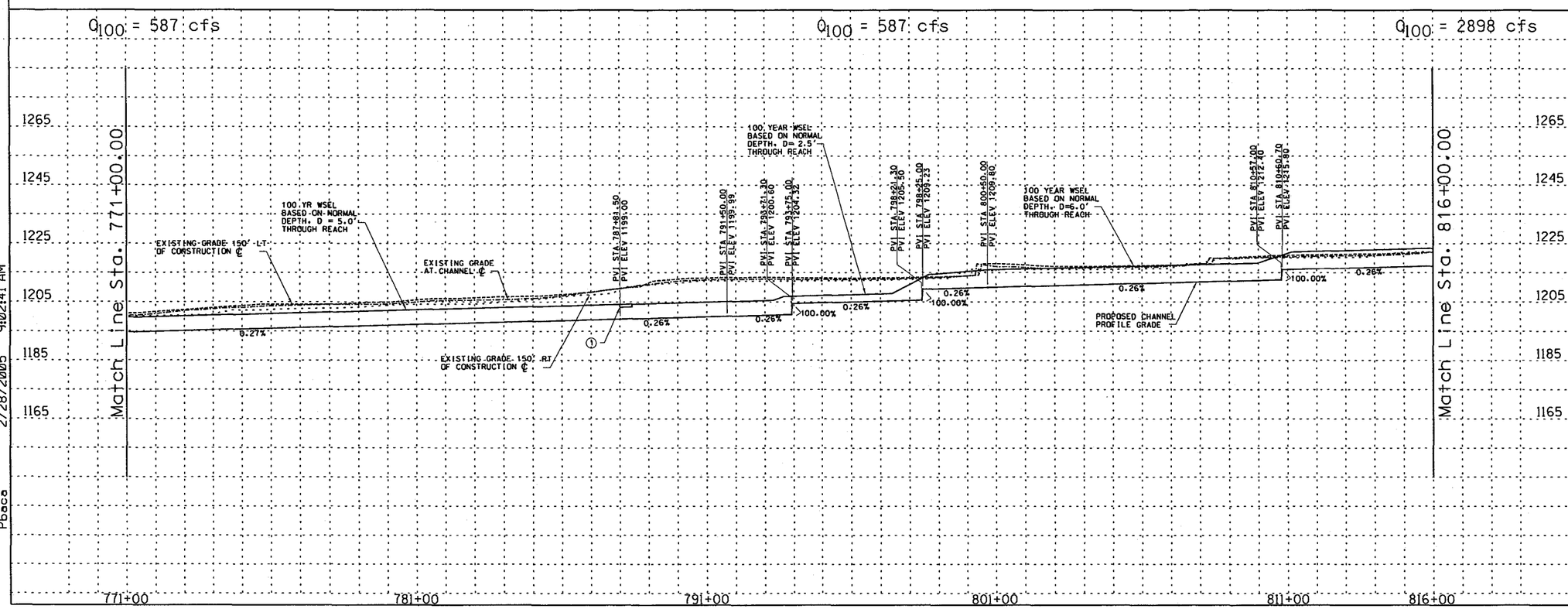

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CONSTRUCT

STA 771+00.00 TO STA 816+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 771+00.00 TO STA 816+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 360 LIN. FT BY 41 FT WIDE SINGLE SPAN BRIDGE.

(2) CONSTRUCT 440 AF OFFLINE DETENTION BASIN/PARK

(3) INSTALL 225 LIN FT 2-BARREL, 48" RCP BASIN OUTLET.

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE OVERHEAD ELECTRIC

(41) RELOCATE IRRIGATION SUPPLY

(90) INSTALL LOW FLOW DRAIN PIPE

GENERAL NOTES:
PRELIMINARY, NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC, CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 816+00.00 TO 861+00.00	SHEET LP18

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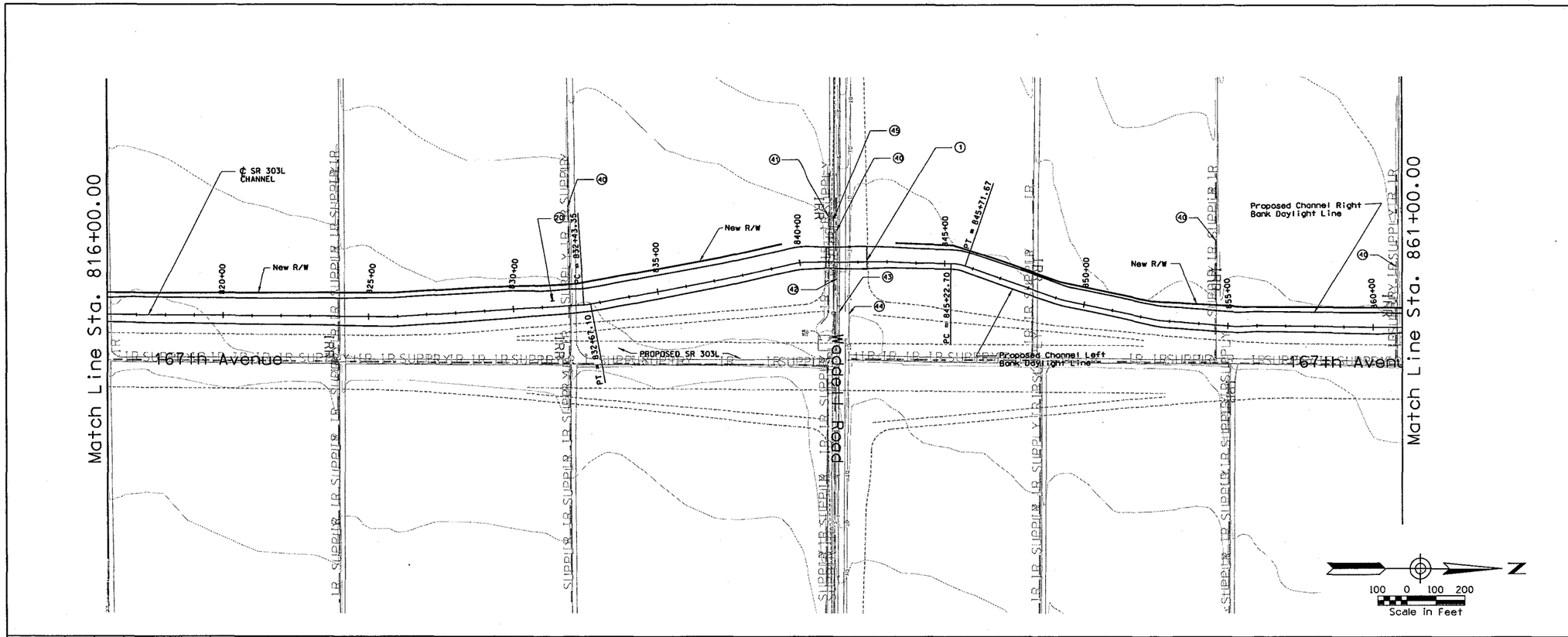

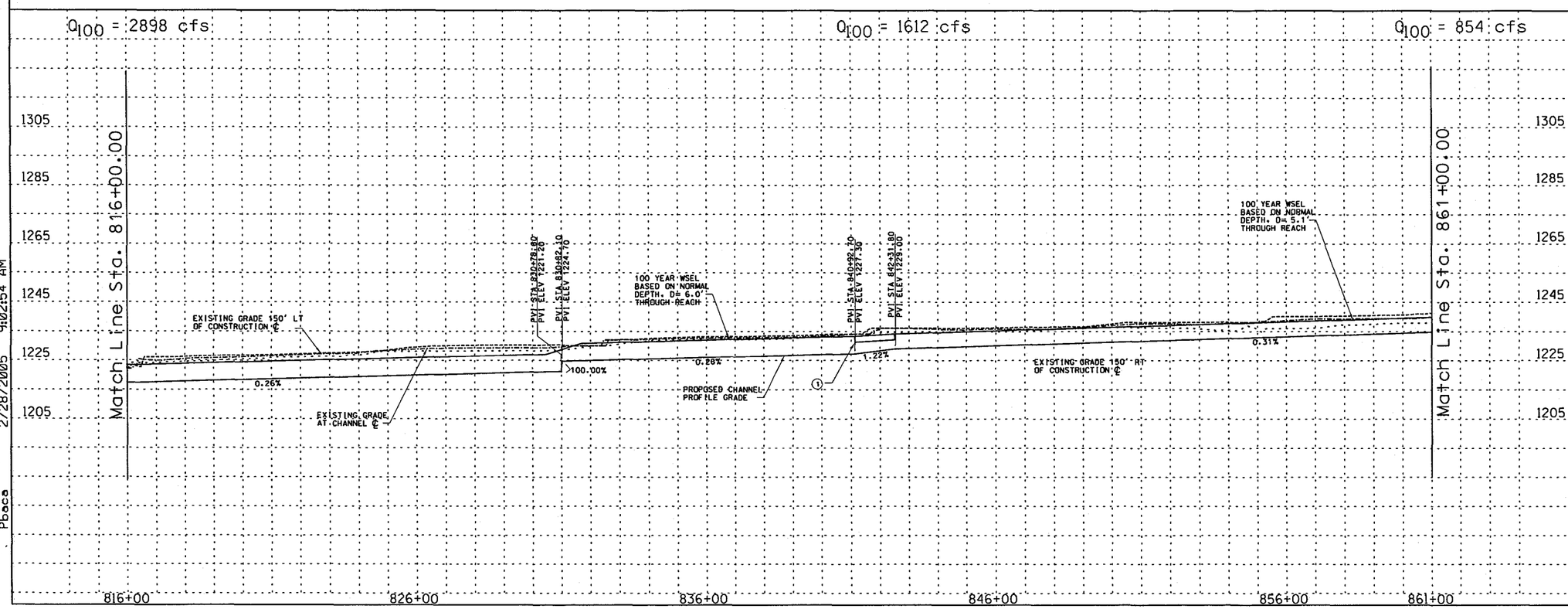

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CONSTRUCT

STA 816+00.00 TO STA 861+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 816+00.00 TO STA 861+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 380 LIN. FT BY 44 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE IRRIGATION SUPPLY

(41) RELOCATE IRRIGATION

(42) RELOCATE SEWER

(43) RELOCATE GAS

(44) RELOCATE TELEPHONE

(45) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 816+00.00 TO 861+00.00	SHEET LP19

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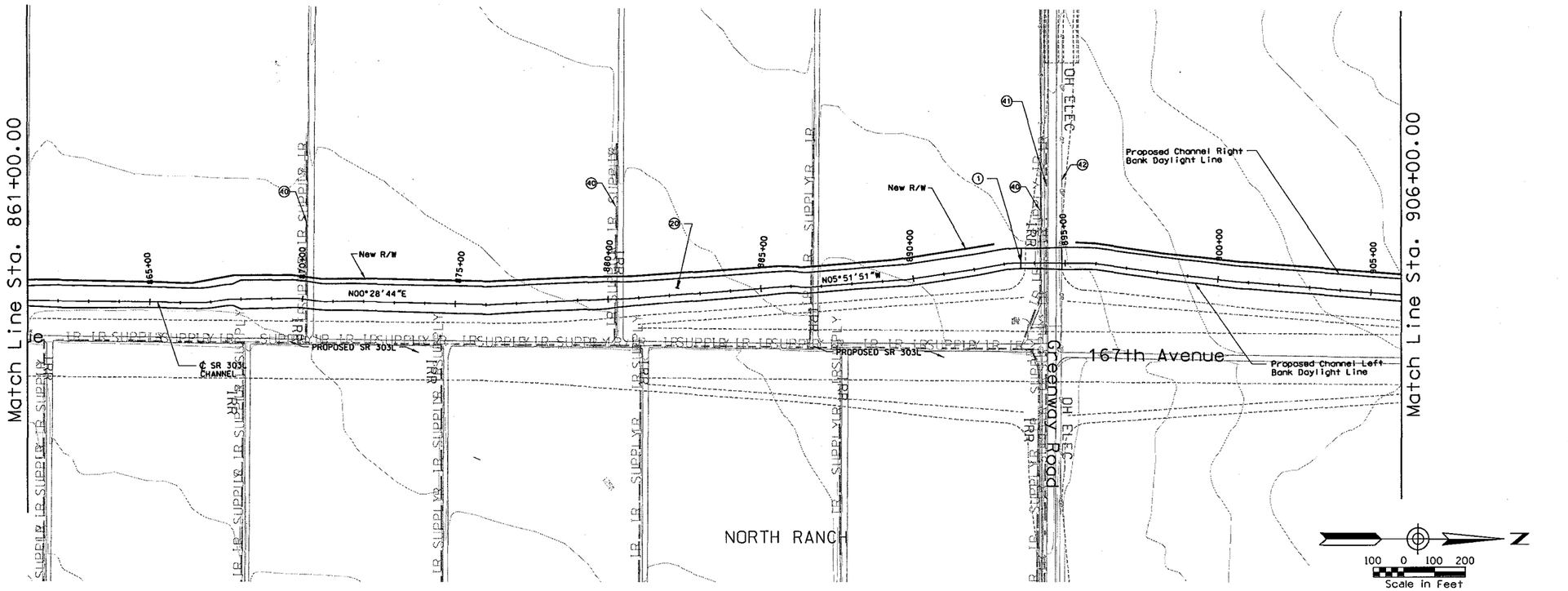

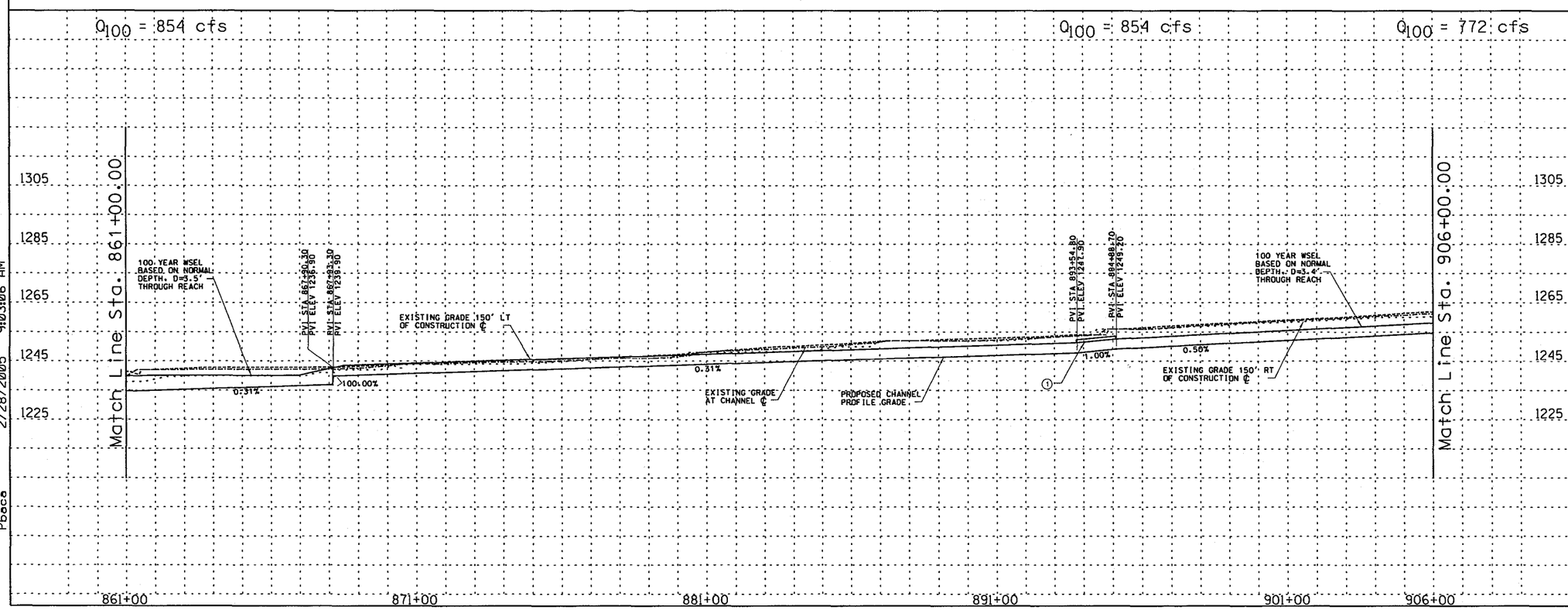

REMOVE

CONSTRUCT

STA 861+00.00 TO STA 906+00.00 CONSTRUCT 4500 LIN. FT CONCRETE CHANNEL

STA 861+00.00 TO STA 906+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 260 LIN. FT BY 36 FT WIDE SINGLE SPAN BRIDGE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE IRRIGATION SUPPLY

(41) RELOCATE IRRIGATION

(42) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
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THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 861+00.00 TO 906+00.00	SHEET LP20

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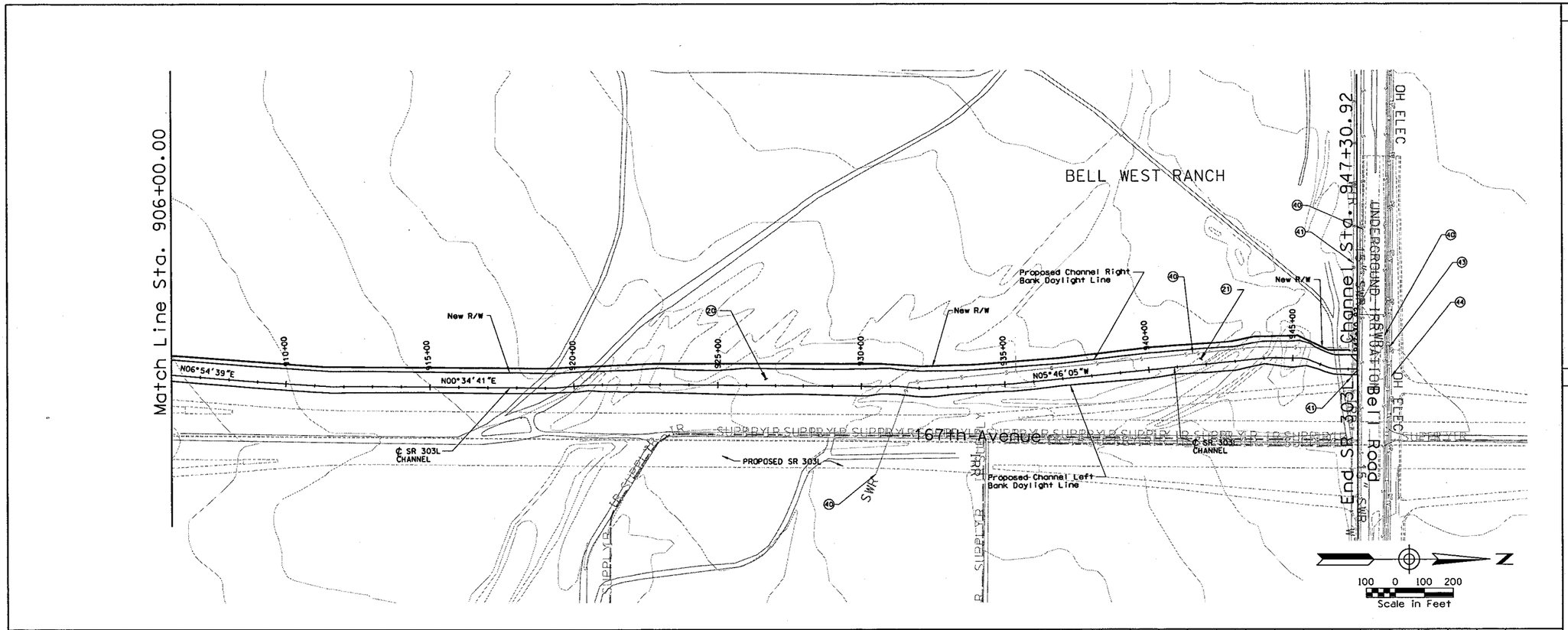

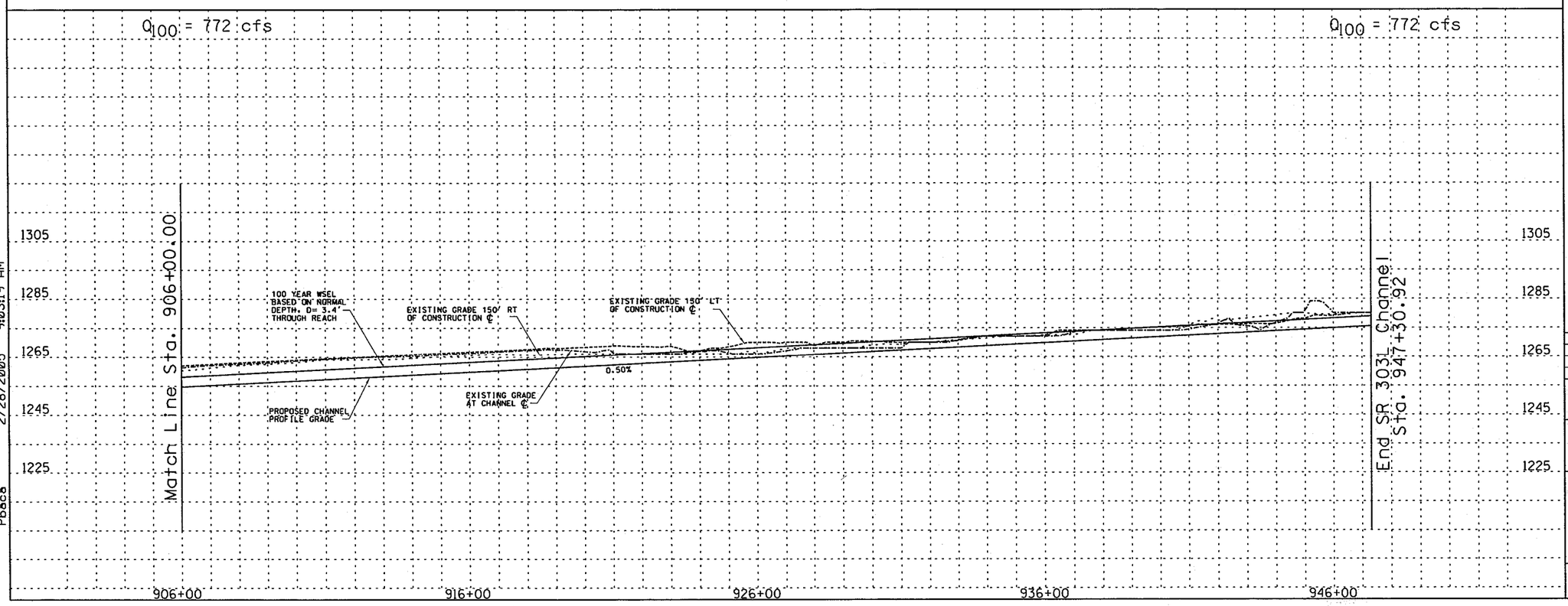

REMOVE

CONSTRUCT

STA 906+00.00 TO STA 922+49.86 CONSTRUCT 1649.86 LIN. FT CONCRETE CHANNEL

STA 906+00.00 TO STA 922+49.86. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) INSTALL 3 BARREL 10' X 4' RCB

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON WEST CHANNEL OVERBANK PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(20) RELOCATE SEWER

(20) RELOCATE WATER

(20) RELOCATE IRRIGATION PIPE

(20) RELOCATE TELEPHONE

(20) RELOCATE OVERHEAD ELECTRIC

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THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

SR 303L CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 906+00.00 TO 922+49.86	SHEET LP21

pw:\\cdmc\el52600\cadd\mic\location\level 11\303\proposed\lp\lp303.lppp22.dgn
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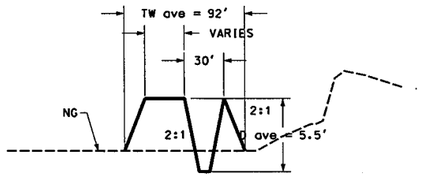

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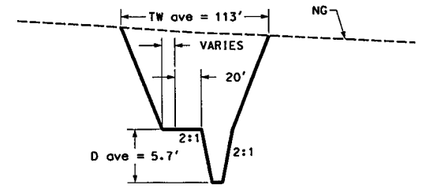

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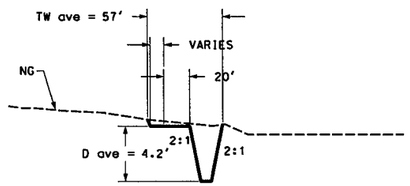

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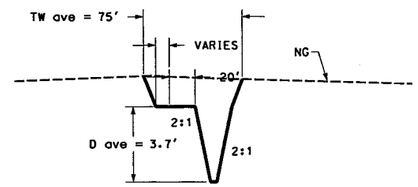

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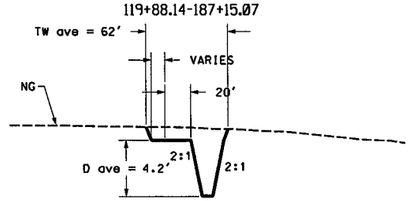

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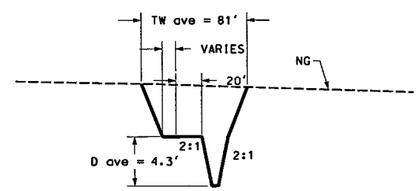

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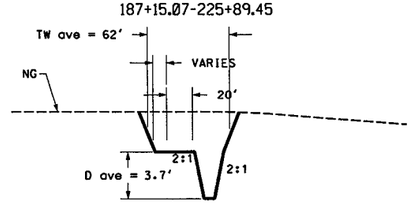

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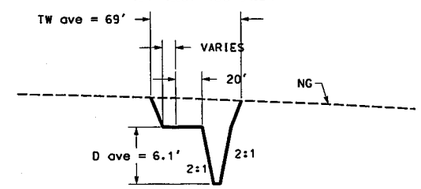

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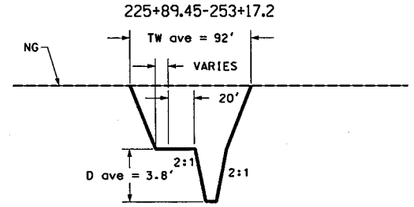

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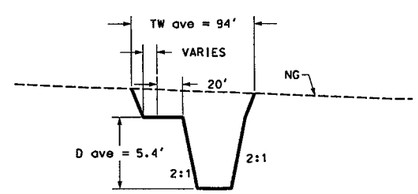

REMOVE

CONSTRUCT

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SR303L CHANNEL TYPICAL
CROSS SECTIONS - N.T.S.

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TYPICAL CHANNEL SECTIONS	SHEET

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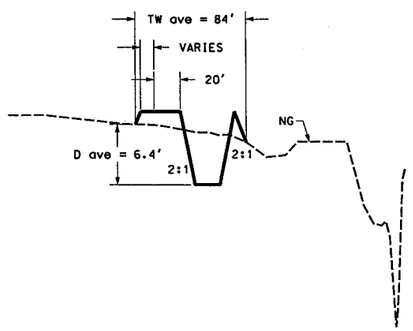

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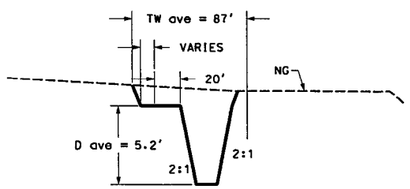

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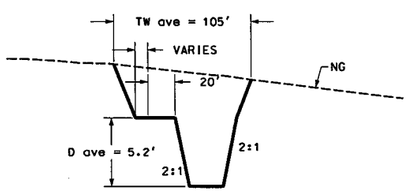

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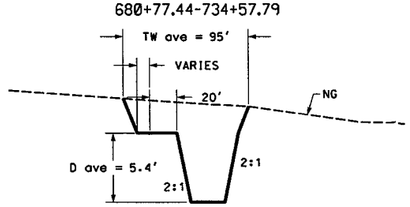

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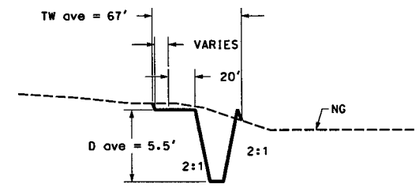

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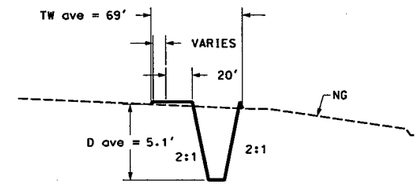

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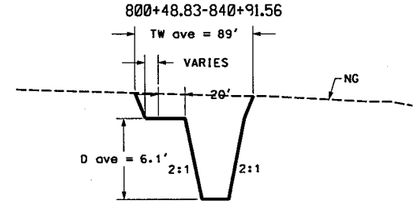

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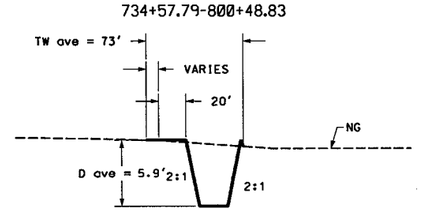

REMOVE

CONSTRUCT

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SR303L CHANNEL TYPICAL CROSS SECTIONS - N.T.S.

NO.	REVISION	BY	DATE
3			
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1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO. | TYPICAL CHANNEL SECTIONS | SHEET

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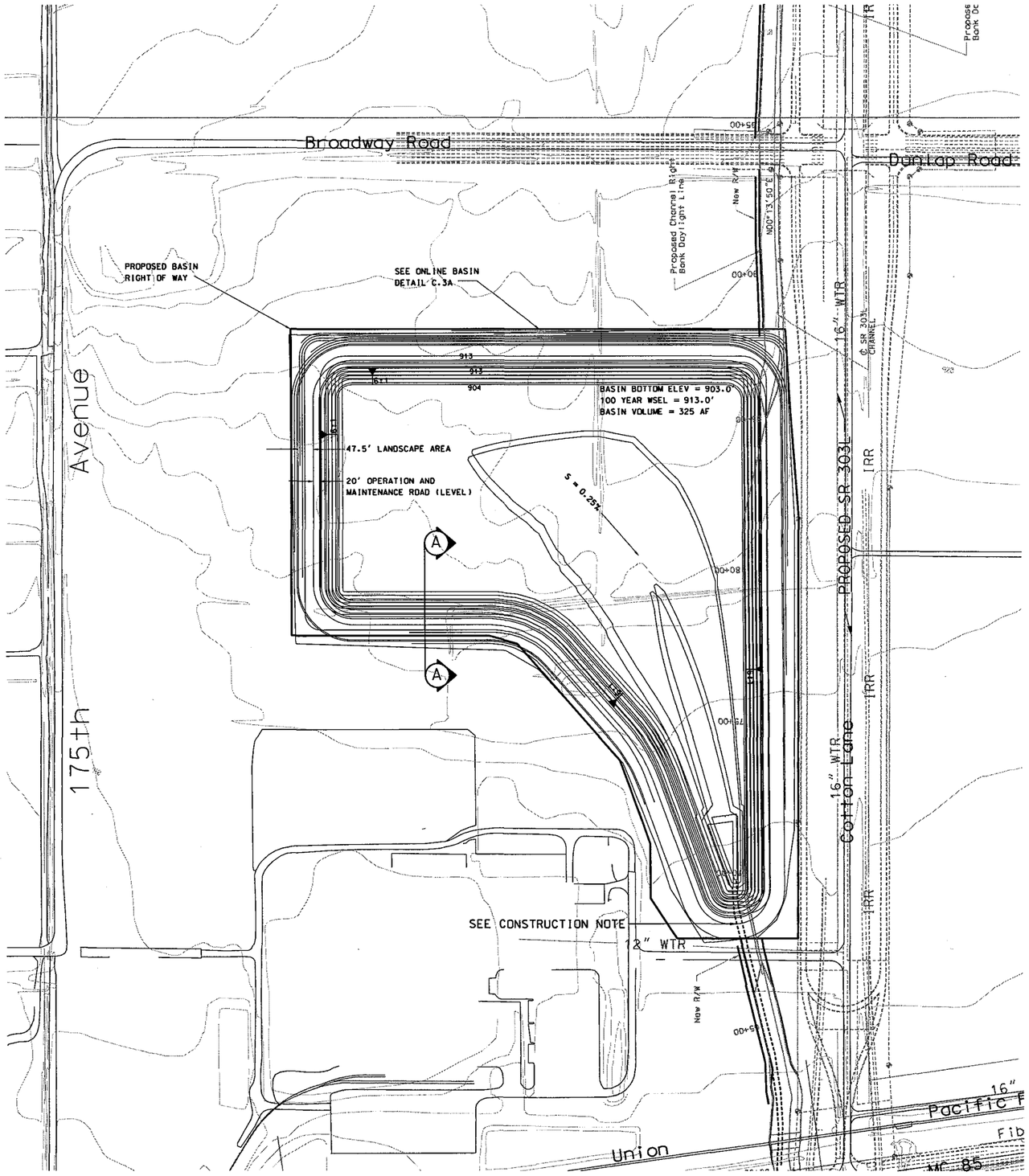

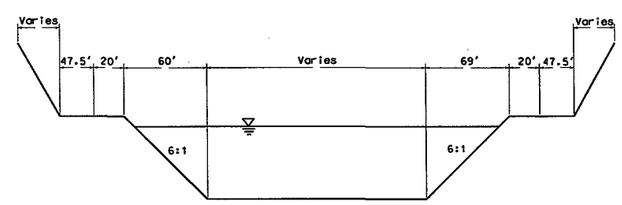

TYPICAL SECTION A-A

NOT TO SCALE

N

100 0 100 200
Scale in Feet

REMOVE

* RECREATION THEME PLAN/SECTION

CONSTRUCT

CONSTRUCTION NOTE:
INSTALL 54" LOW FLOW POST
STORM DRAIN. 2872 LF AT S=0.28%
DAYLIGHT IN SR303L CHANNEL

SR 303L CHANNEL
BASIN PLAN

NO.	REVISION	BY	DATE
3			
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1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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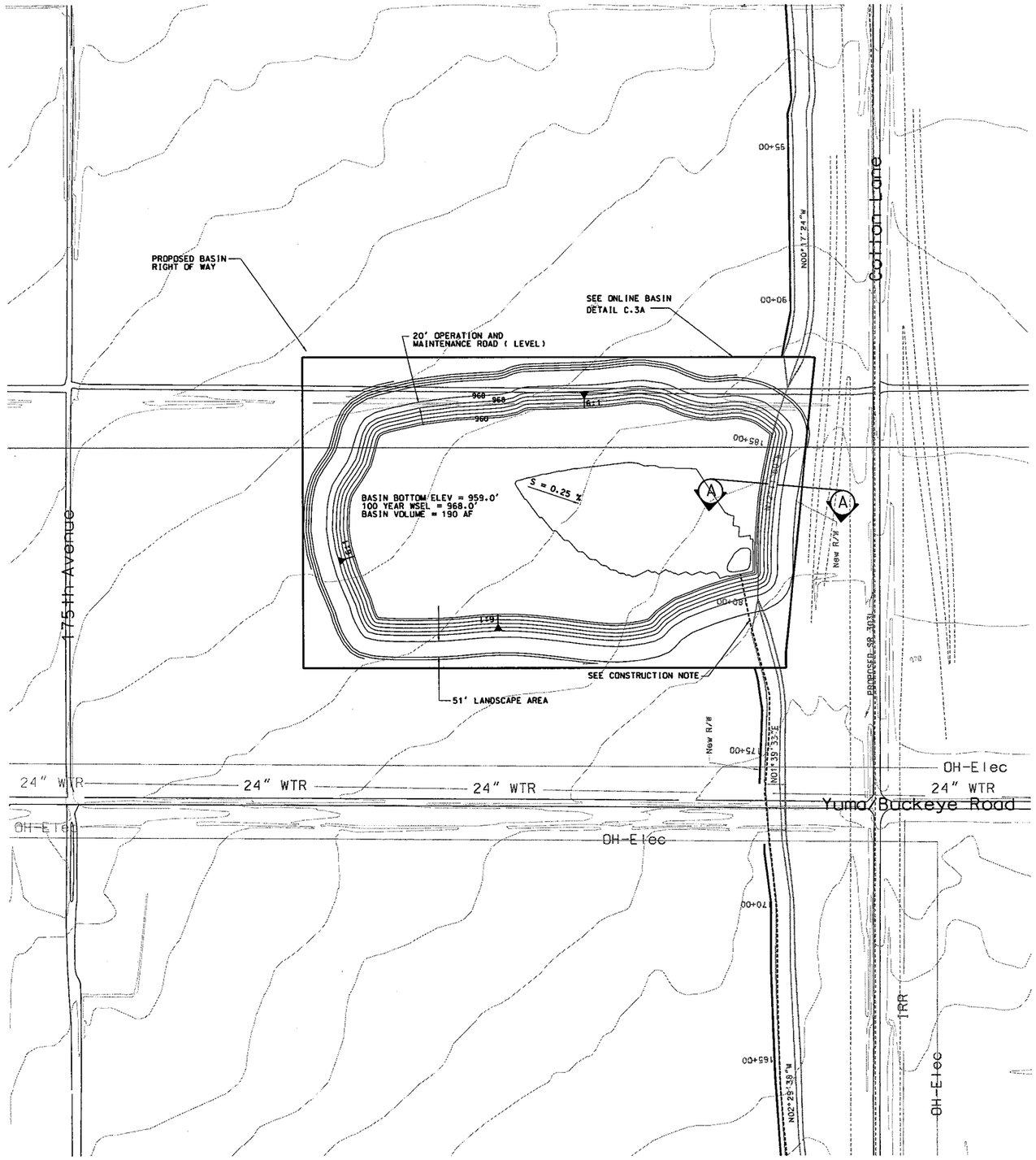
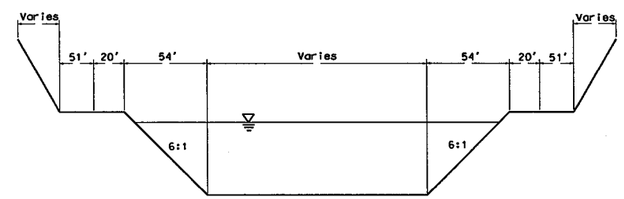
CHECKED	E.S.	11/04

URS

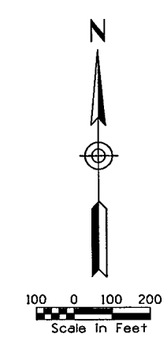
DRAWING NO.	BASIN DETAIL PLAN STA. 67+50.00 TO 87+50.00	SHEET OF -- OF --





TYPICAL SECTION A-A

NOT TO SCALE



REMOVE

* RECREATION THEME PLAN/SECTION

CONSTRUCT

CONSTRUCTION NOTE:
INSTALL 48" LOW FLOW POST
STORM DRAIN. 4092 LF AT S=0.27%
DAYLIGHT IN SR303L CHANNEL

SR 303L CHANNEL
BASIN PLAN

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

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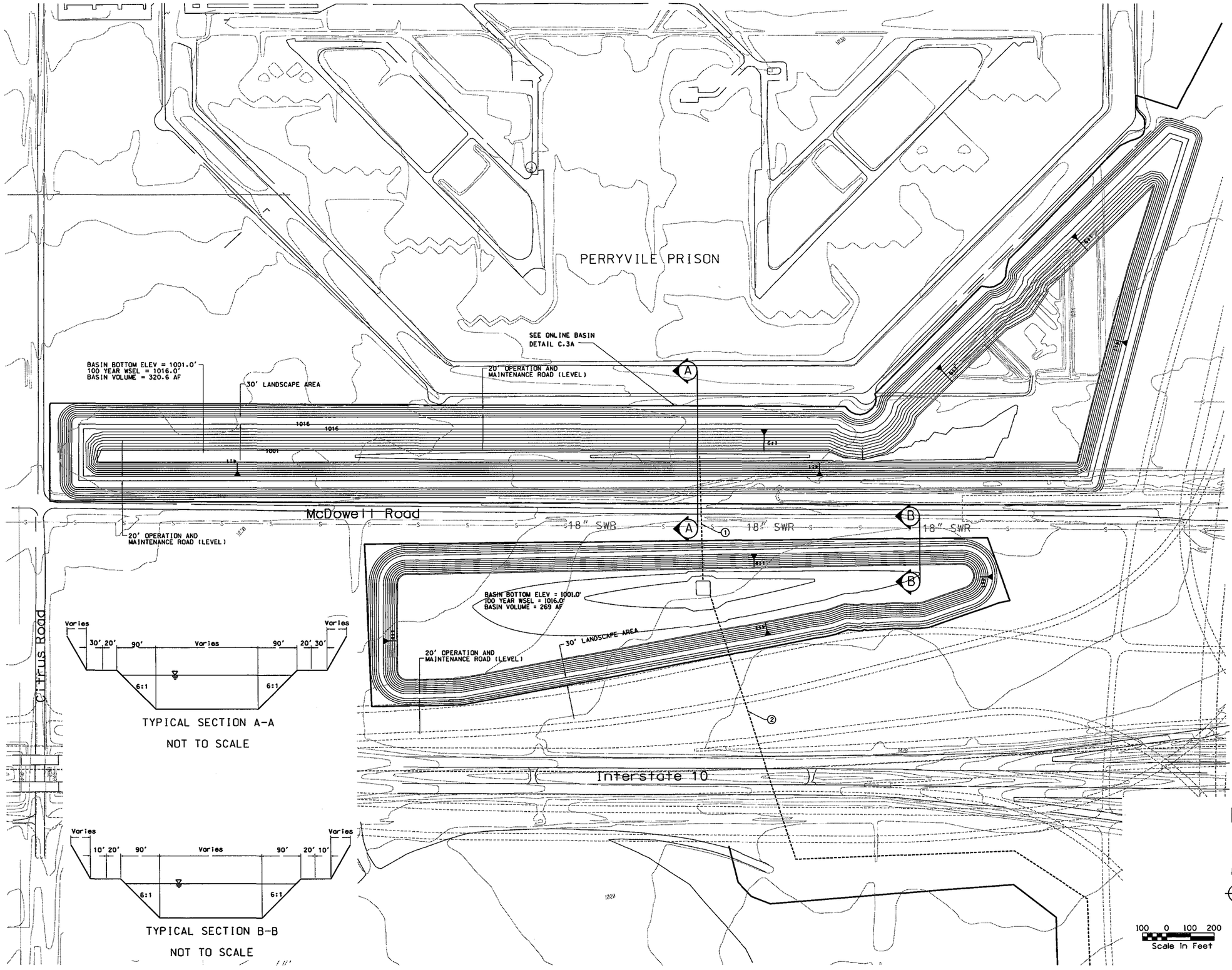
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	BASIN DETAIL PLAN STA. 178+00.00 TO 188+50.00	SHEET OF -- OF --



REMOVE

* RECREATION THEME PLAN/SECTION

CONSTRUCT

① INSTALL 48" LOW FLOW POST STORM DRAIN FROM NORTH BASIN TO SOUTH BASIN. 527.5 LF AT S = 0.19%

② INSTALL 3-54" LOW FLOW POST STORM DRAIN FROM SOUTH BASIN TO SR 303L CHANNEL. 6,094 LF AT S = 0.17%.

CONSTRUCTION NOTE:
INSTALL 3-54" RCB LOW FLOW POST
STORM DRAIN. 6094 LF AT S=0.17%
DAYLIGHT IN SR303L CHANNEL

SR 303L CHANNEL
BASIN PLAN

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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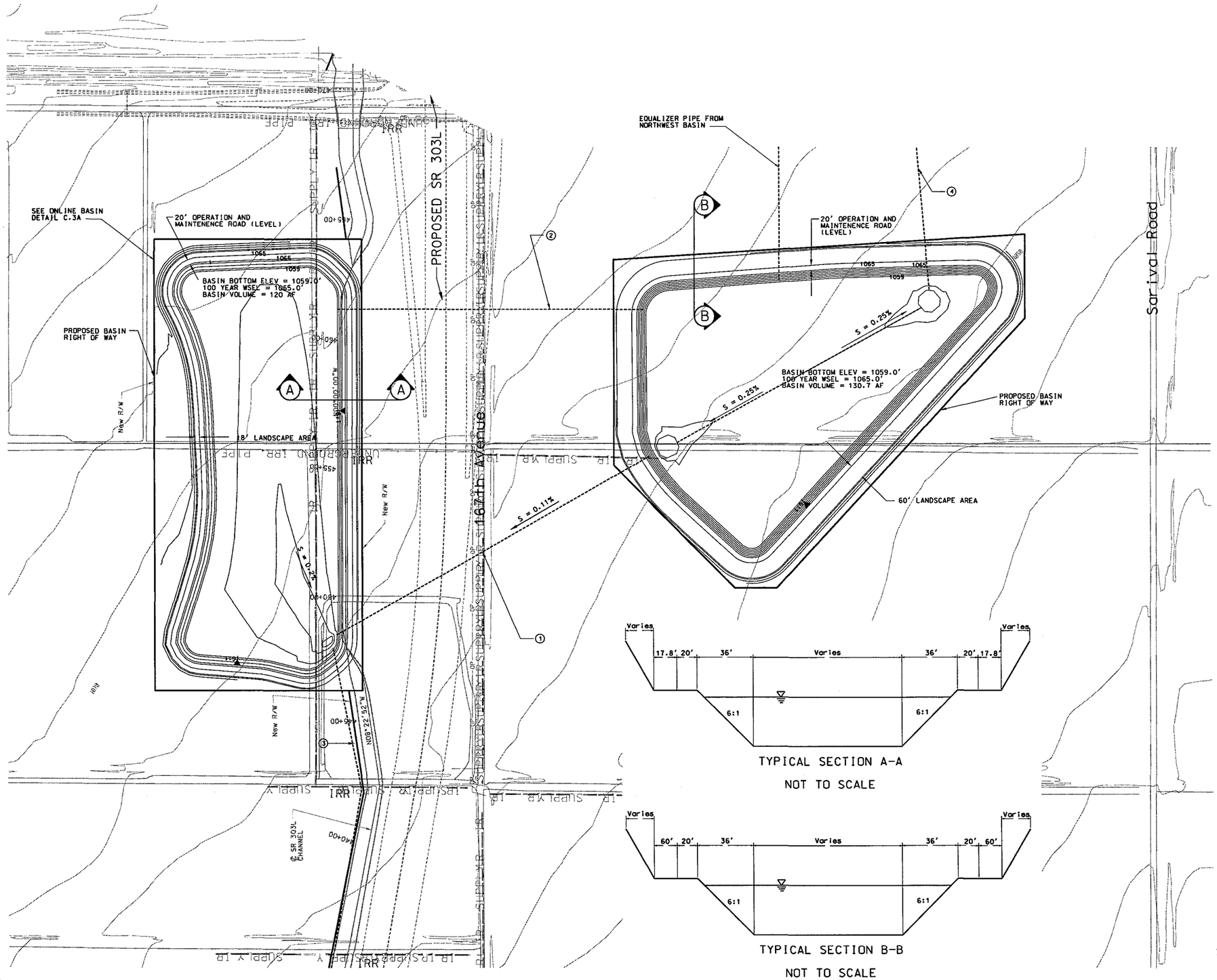
CHECKED	E.S.	11/04

URS

DRAWING NO.	BASIN DETAIL PLAN STA. 275+00.00 TO 295+00.00	SHEET OF -- OF --



REMOVE

* RECREATION/AIRCRAFT THEME PLAN/SECTION

CONSTRUCT

1. INSTALL 24"LOW FLOW POST STORM DRAIN FROM SOUTHEAST BASIN TO SOUTHWEST BASIN AT S = 0.11%.
2. INSTALL 4 - 10'X6' RCB BASIN EQUALIZER PIPE
3. INSTALL 1-36" RCP LOW FLOW POST STORM DRAIN. 2926 LF AT S=0.17% DAYLIGHT IN SR303L CHANNEL
3. INSTALL 18" RCP LOW FLOW POST STORM DRAIN FROM SOUTHEAST BASIN TO NORTHWEST BASIN AT S = 0.6%.

SR 303L CHANNEL
BASIN PLAN

NO.	REVISION	BY	DATE
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2			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
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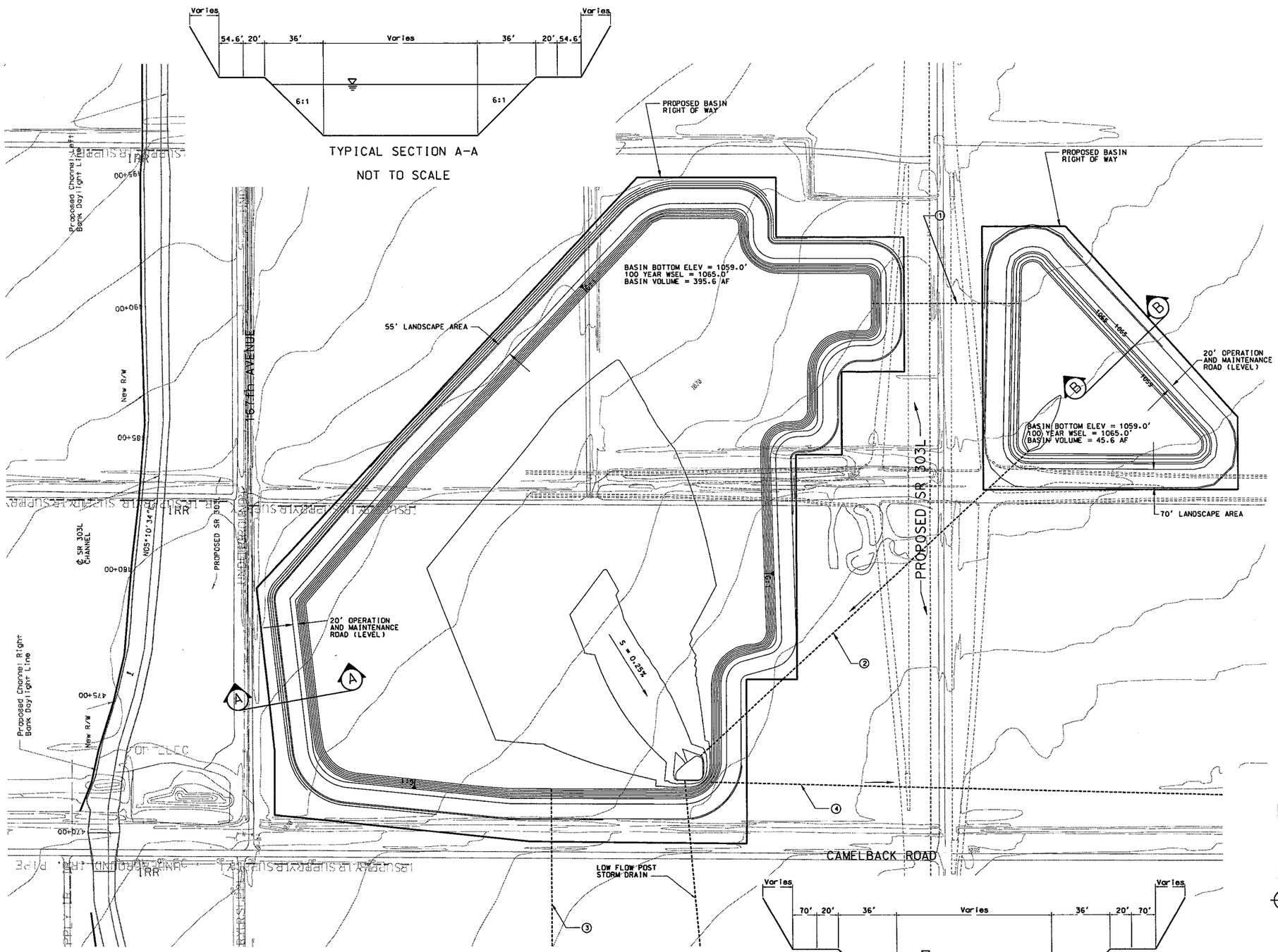
CHECKED	E.S.	11/04

URS

DRAWING NO. | BASIN DETAIL PLAN STA. 424+00.00 TO 441+00.00 | SHEET OF -- OF --



REMOVE

* RECREATION/AIRCRAFT THEME PLAN/SECTION

CONSTRUCT

1. INSTALL 559.4 LIN. FT 54" RCB EQUALIZER PIPE
2. INSTALL 1-18" RCP LOW FLOW POST STORM DRAIN. 1699 LF AT S=0.35% DAYLIGHT IN SR303L CHANNEL
3. INSTALL 907.7 LIN. FT 3 - 10'X6' RCB EQUALIZER PIPE.
4. INSTALL 1 - 54" LOW FLOW POST STORM DRAIN. 9975.5 LF AT 0.15%

SR 303L CHANNEL
BASIN PLAN

NO.	REVISION	BY	DATE
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

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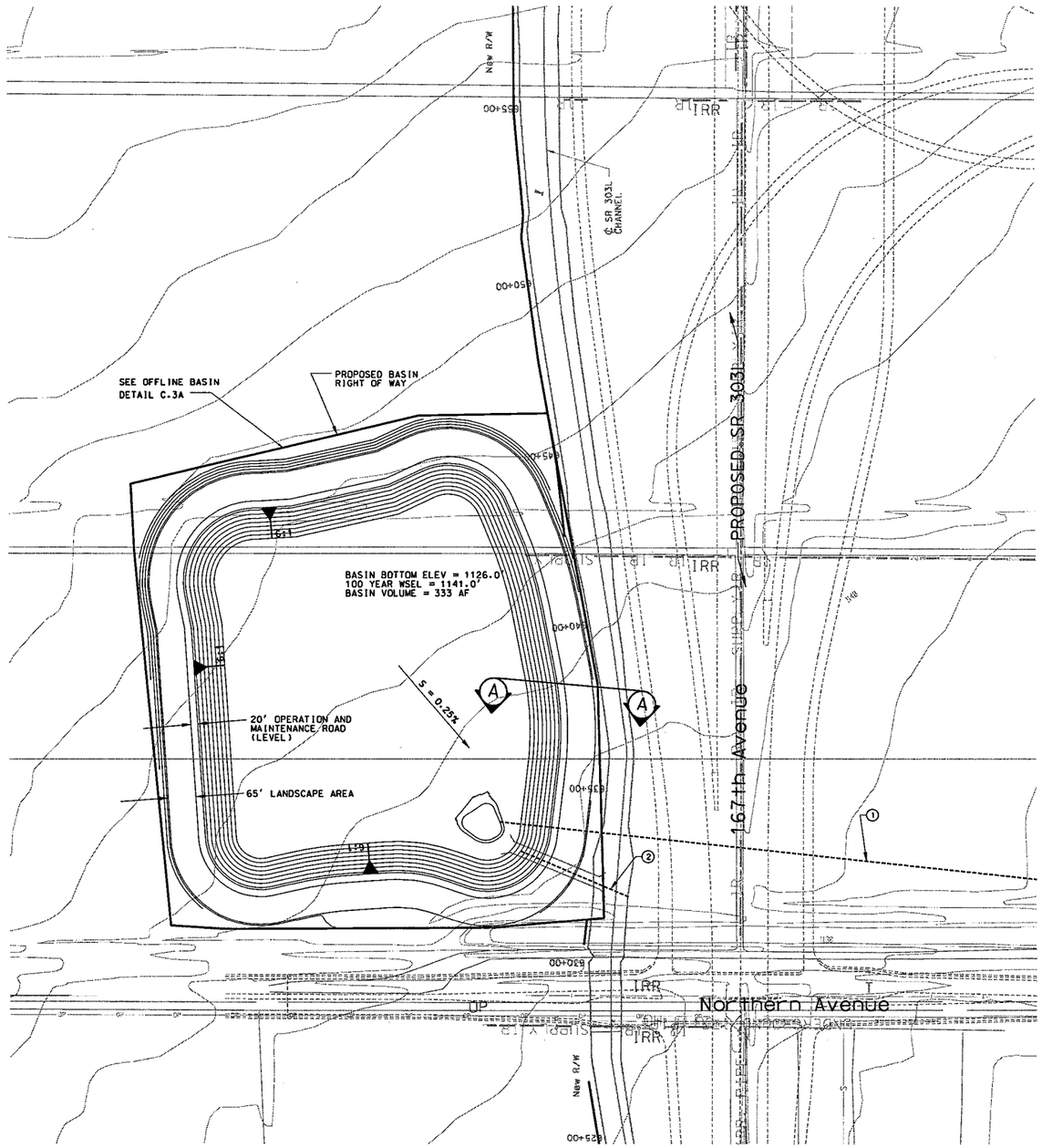
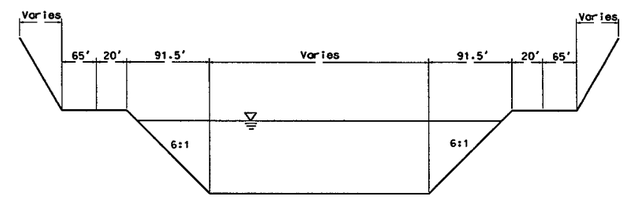
CHECKED	E.S.	11/04

URS

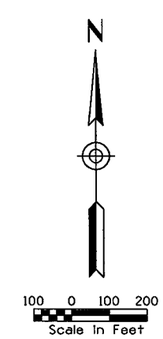
DRAWING NO. | BASIN DETAIL PLAN STA. 470+00.00 TO 495+00.00 | SHEET OF -- OF --





TYPICAL SECTION A-A

NOT TO SCALE



REMOVE

* RECREATION THEME PLAN/SECTION

CONSTRUCT

1. INSTALL 1-54" RCP LOW FLOW POST STORM DRAIN. 7120 LF AT S=0.21% DAYLIGHT IN PROPOSED BASIN AT NORTHWEST CORNER OF NORTHERN AVE AND REEMS RD.
2. INSTALL 2-60" RCP BASIN OUTFALL. 256 LIN. FT AT 0.59%

SR 303L CHANNEL
BASIN PLAN

NO.	REVISION	BY	DATE
3			
2			
1			

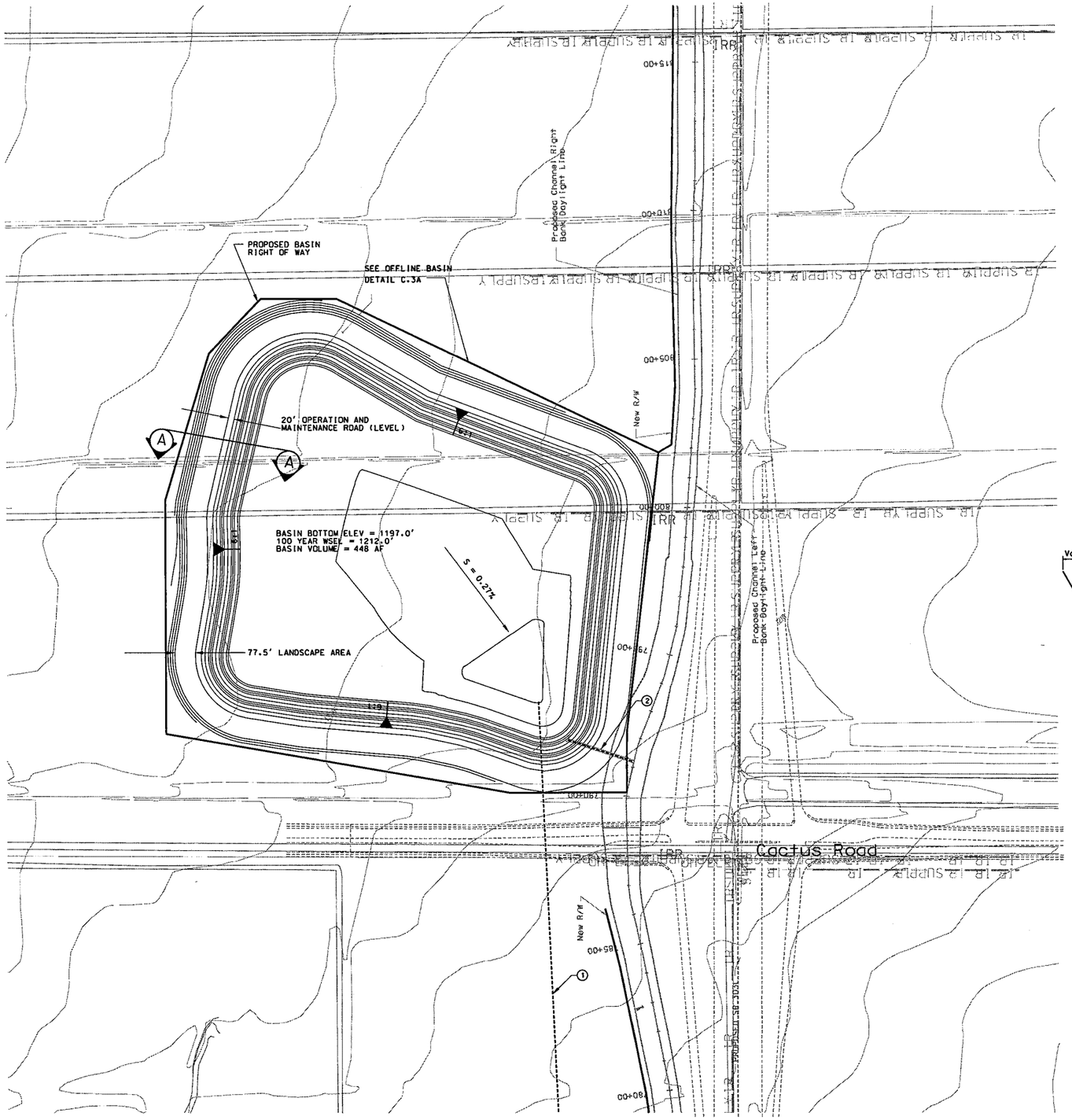
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

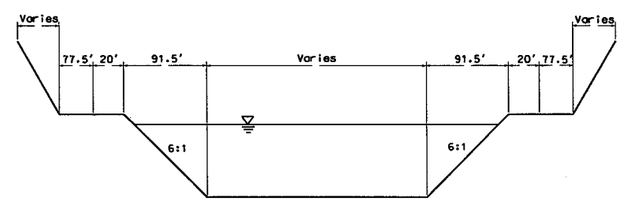
LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

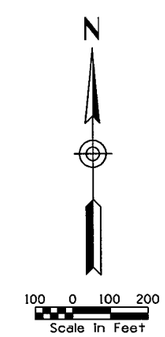
DRAWING NO. | BASIN DETAIL PLAN STA. 608+00.00 TO 622+00.00 | SHEET OF -- OF --





TYPICAL SECTION A-A

NOT TO SCALE



REMOVE

* RECREATION THEME PLAN/SECTION

CONSTRUCT

1. INSTALL 2-54" LOW FLOW POST STORM DRAIN. 5636 LF AT S=0.19% DAYLIGHT IN SR303L CHANNEL
2. INSTALL 2 - 48" RCP BASIN OUTFALL. 225 LIN. FT AT 1.3%

SR 303L CHANNEL
BASIN PLAN

NO.	REVISION	BY	DATE
3			
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1			

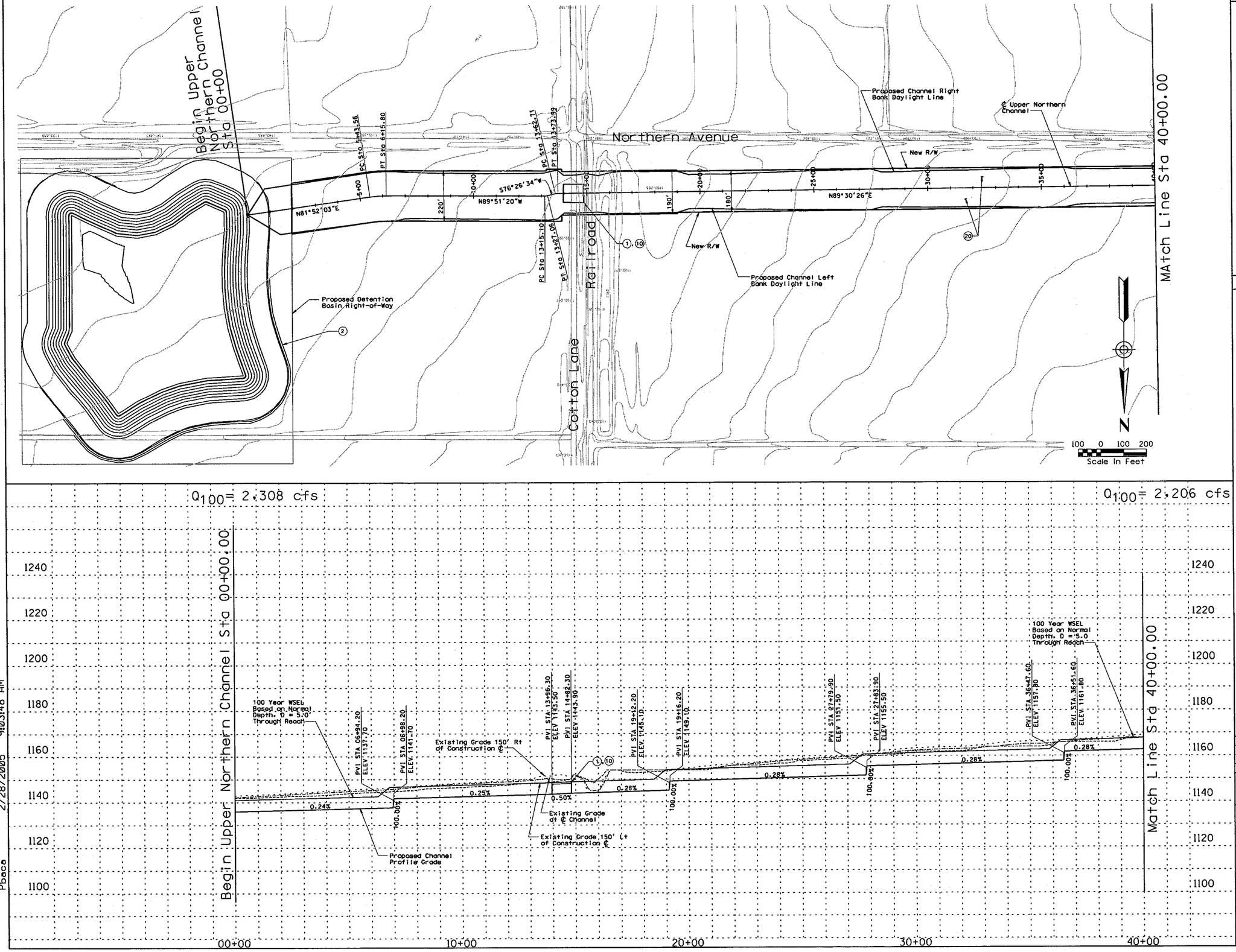
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	BASIN DETAIL PLAN STA. 766+50.00 TO 782+00.00	SHEET OF -- OF --



REMOVE

CONSTRUCT

STA 00+00.00 TO STA 40+00.00. CONSTRUCT 4000 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 40+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

STA 00+00.00 TO STA 40+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 11 BARREL 10' x 6' RCB

(2) CONSTRUCT 61.1 AF IN-LINE DETENTION BASIN/PARK

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

UPPER NORTHERN CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 00+00.00 TO 40+00.00	SHEET UNI

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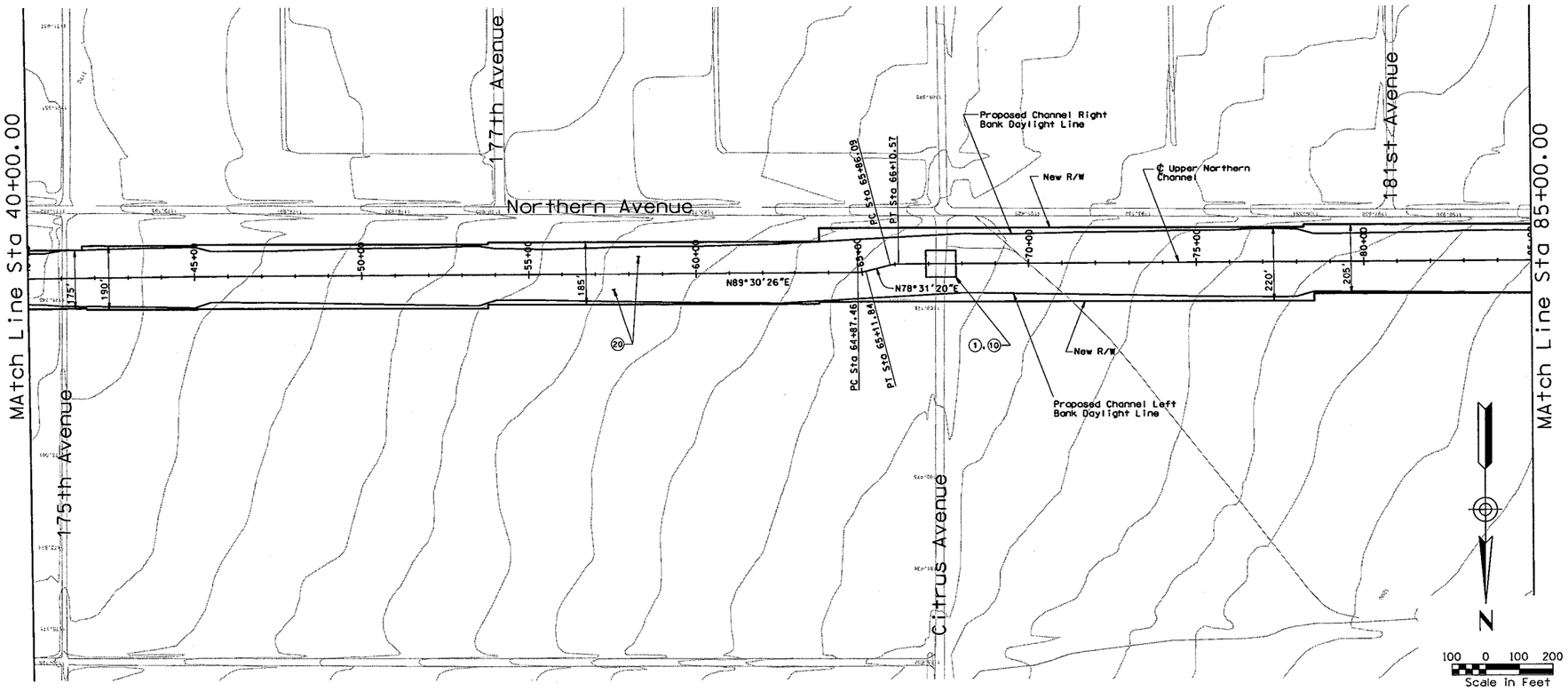

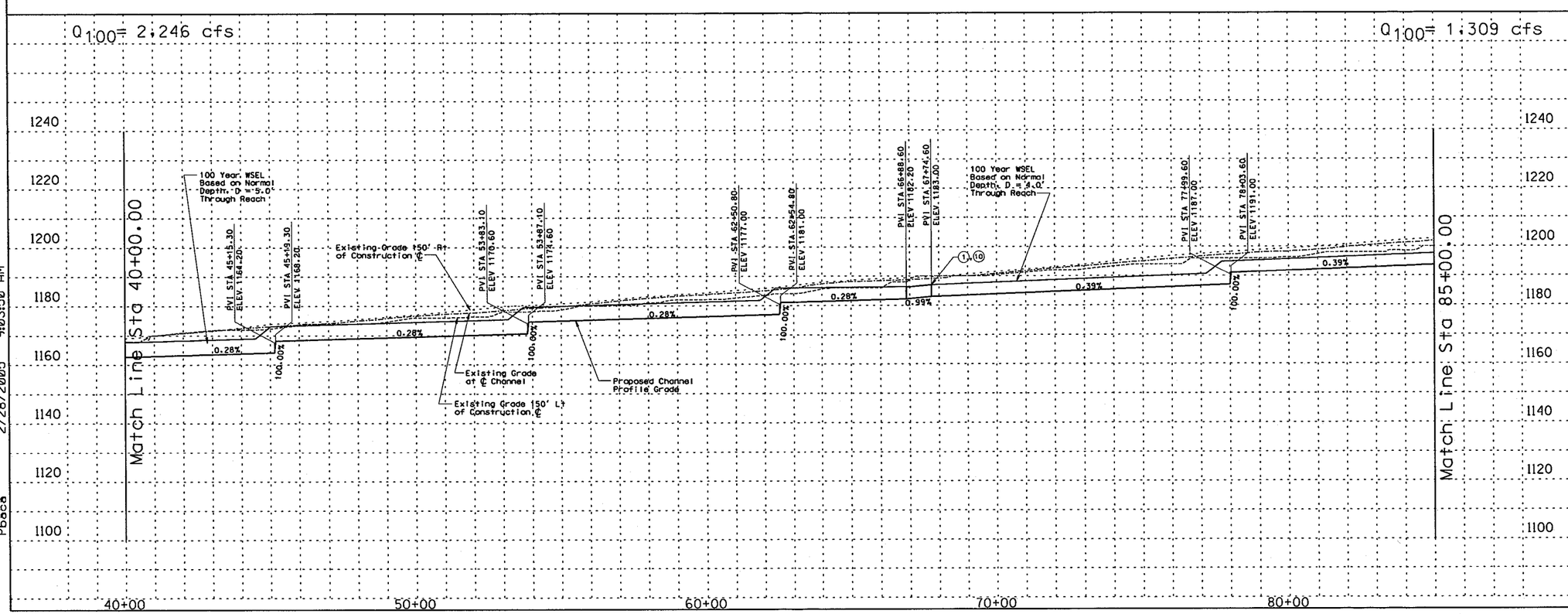

REMOVE

CONSTRUCT

STA 40+00.00 TO STA 85+00.00. CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 40+00.00 TO STA 85+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 40+00.00 TO STA 85+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 7 BARREL 10' x 6' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
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UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

UPPER NORTHERN CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 40+00.00 TO 85+00.00	SHEET UN2

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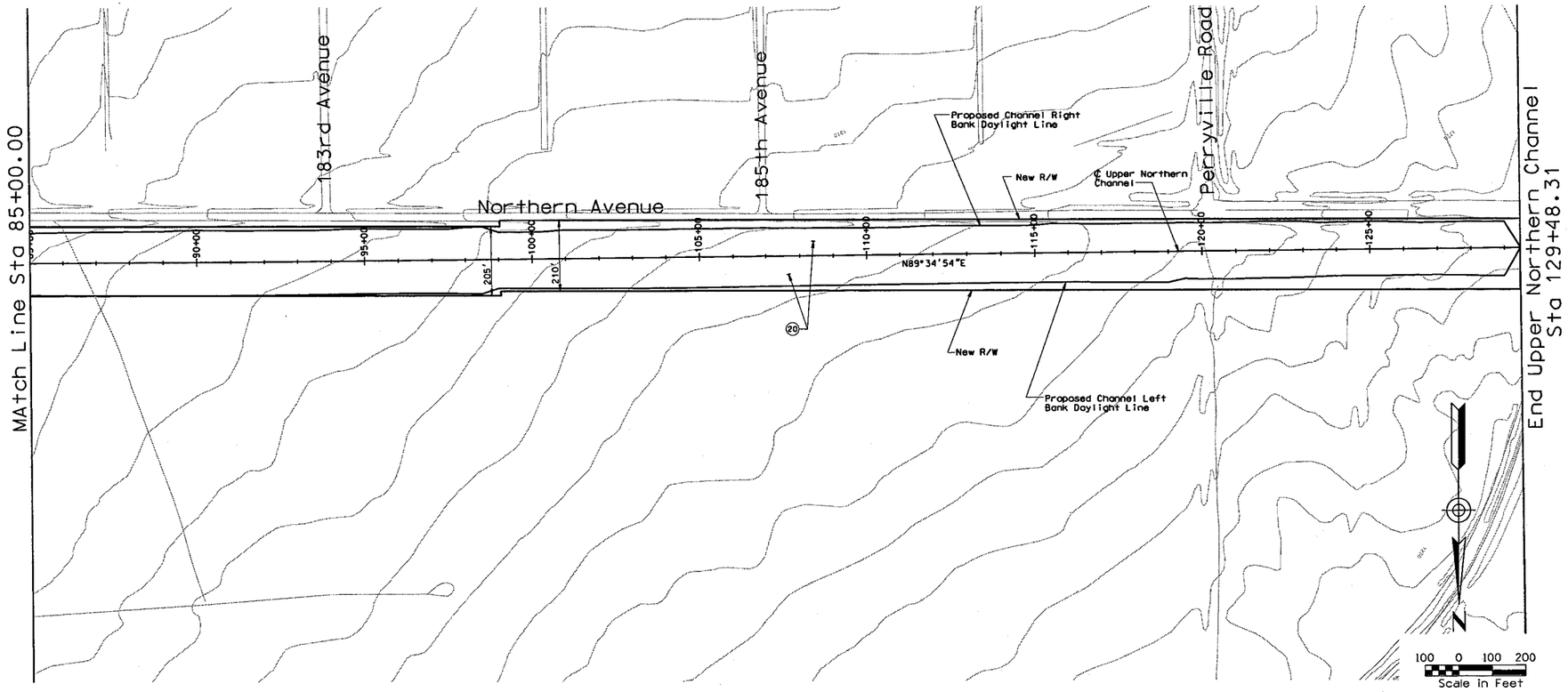

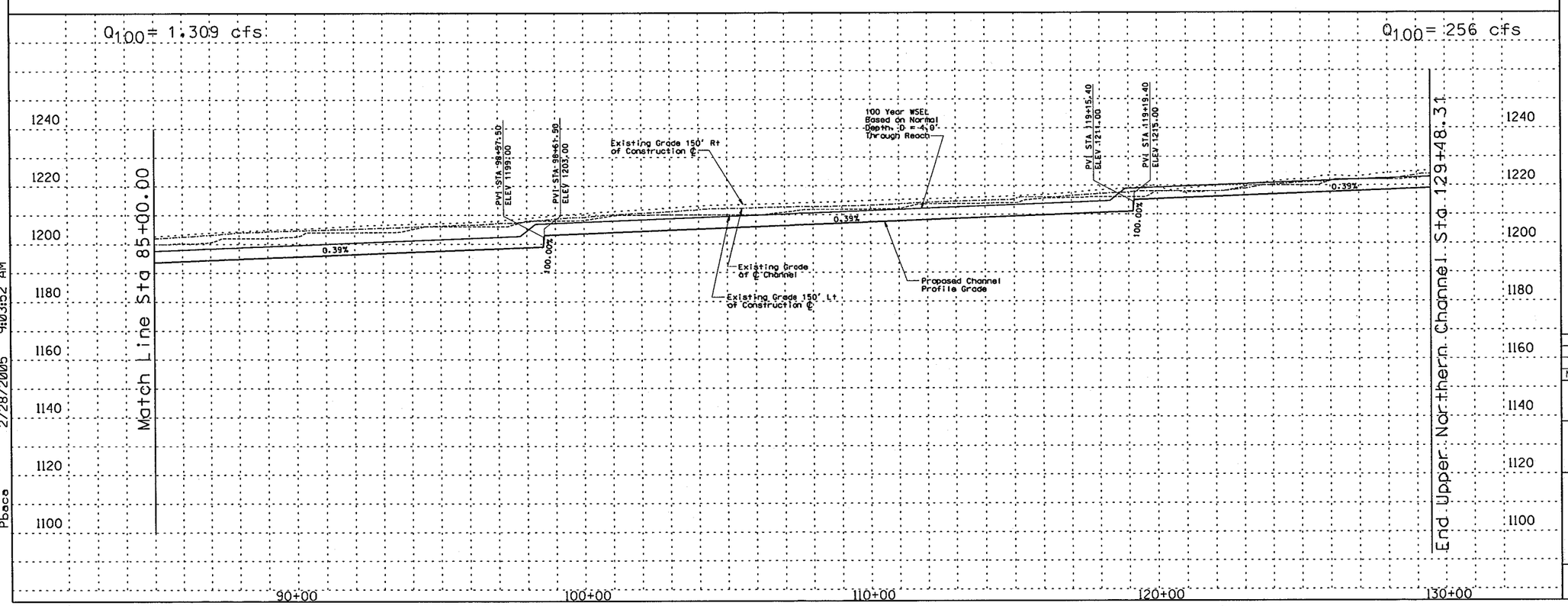

REMOVE

CONSTRUCT

STA 85+00.00 TO STA 129+48.31. CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 85+00.00 TO STA 129+48.31. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

STA 85+00.00 TO STA 129+48.31. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

UPPER NORTHERN CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 85+00.00 TO 129+48.31	SHEET UN3

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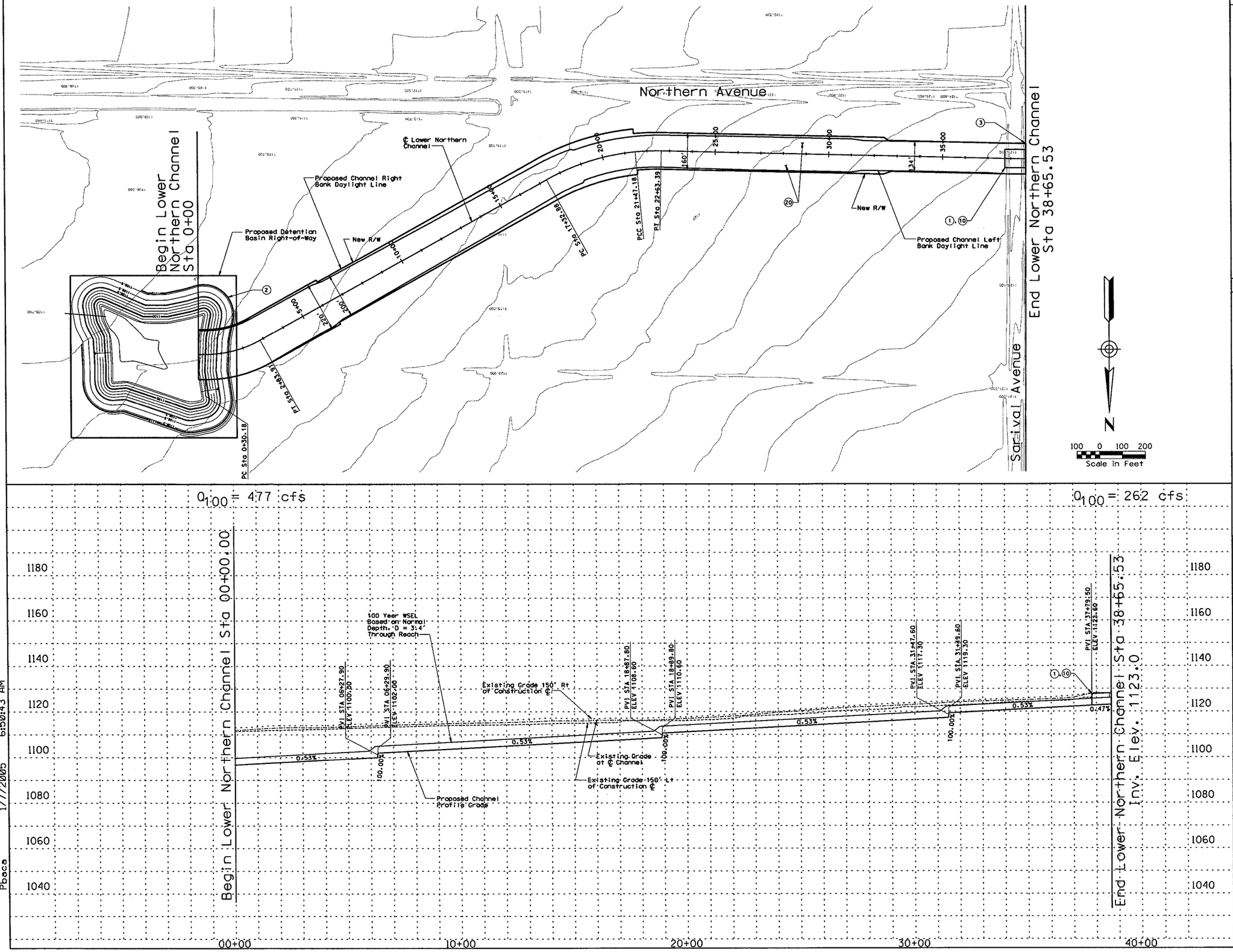

REMOVE

CONSTRUCT

STA 00+00.00 TO STA 38+65.53 CONSTRUCT 3865.53 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 38+65.53. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 00+00.00 TO STA 38+65.53. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 2 BARREL 10' x 4' RCB

(2) CONSTRUCT 61.1 AF ONLINE DETENTION BASIN/PARK SEE X.X FOR DETAILS

(10) OFFSITE FLOWS ENTER CHANNEL

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

LOWER NORTHERN CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 00+00.00 TO 38+65.53	SHEET LN1

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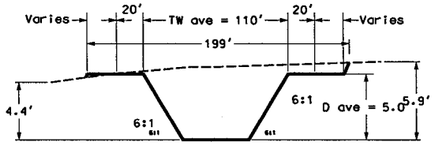
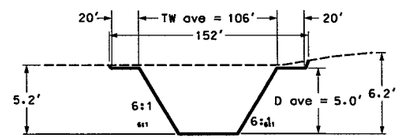


Sta 0+00.00 - Sta 13+96.33



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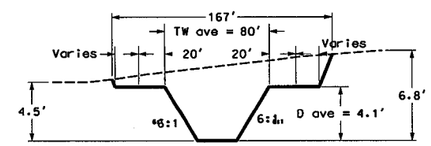
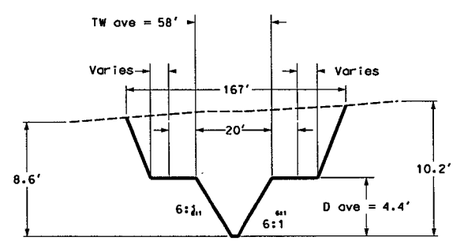


Sta 67+74.64 - Sta 129+48.31

UPPER NORTHERN



Sta 0+00.00 - Sta 67+07.18

LOWER NORTHERN

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

NORTHERN CHANNELS
CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO. | TYPICAL CHANNEL SECTIONS | SHEET

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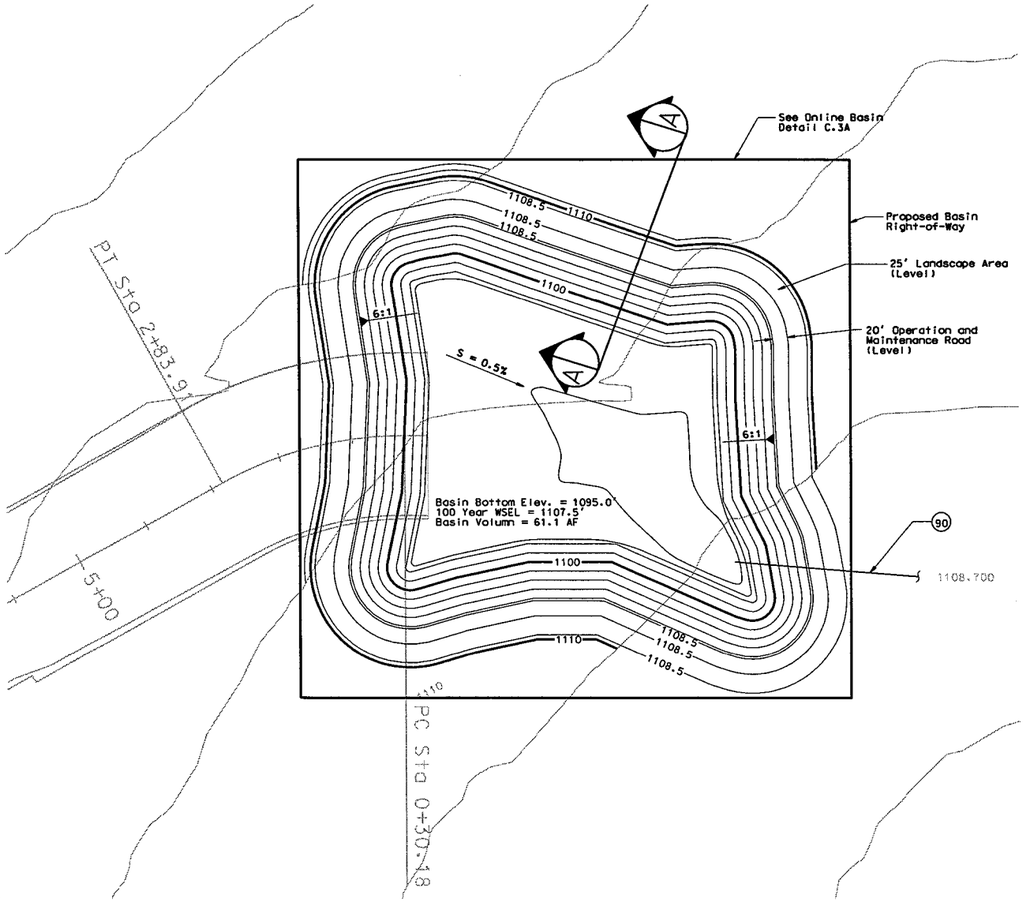
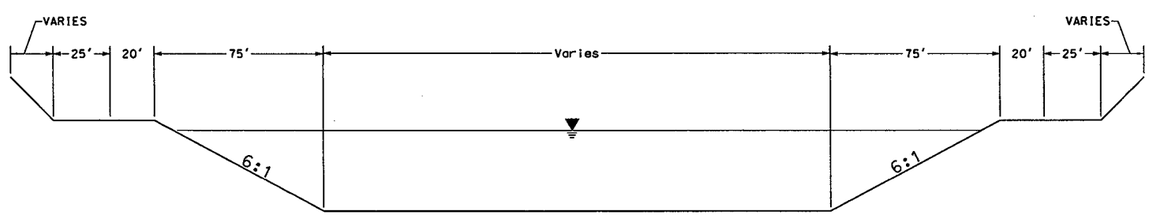
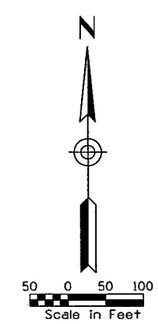




TYPICAL SECTION A-A
NOT TO SCALE



REMOVE

CONSTRUCT

(90) INSTALL 24" LOW FLOW POST STORM DRAIN 1413 LF AT S = 0.57% DAYLIGHT IN EXISTING FALCON DUNES (DYSART DRAIN) DETENTION BASIN.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

LOWER NORTHERN CHANNEL
DETENTION BASIN PLAN & SECTION

NO.	REVISION	BY	DATE
3			
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1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

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DRAWING NO.	LOWER NORTHERN CHANNEL BASIN	SHEET OF

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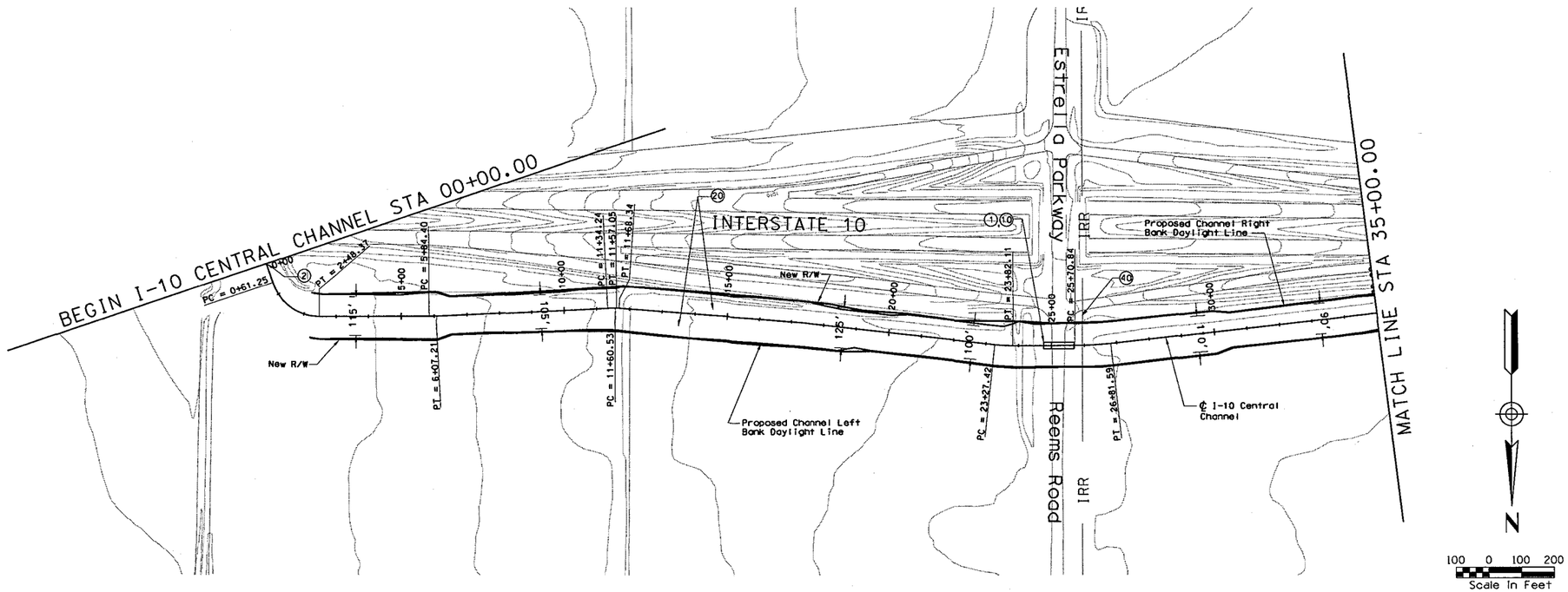

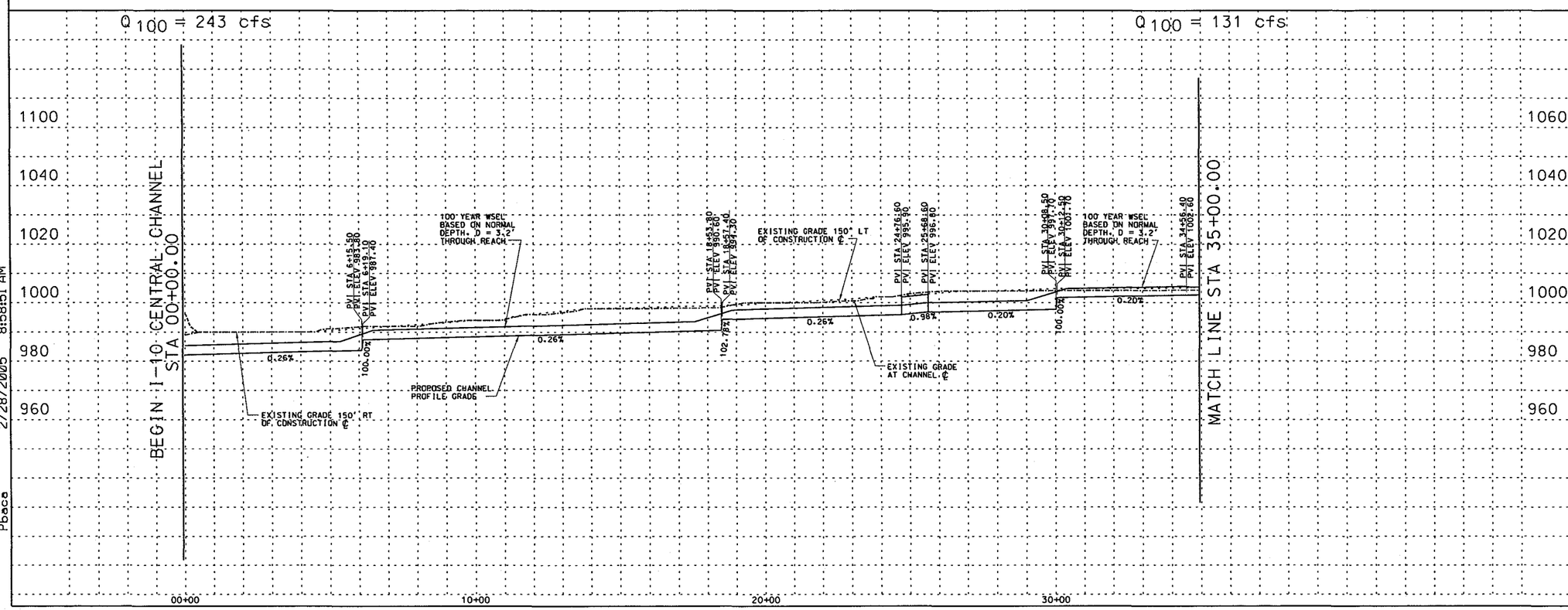

REMOVE

CONSTRUCT

STA 00+00.00 TO STA 35+00.00 CONSTRUCT 3500 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 35+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) INSTALL 4 BARREL 48" RCP

(2) CONFLUENCE WITH PROPOSED BULLARD WASH CHANNEL (BY OTHERS)

(10) INSTALL 8' X 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RT & LT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE IRRIGATION

GENERAL NOTES:
PRELIMINARY, NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

I-10 CENTRAL CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 00+00.00 TO 35+00.00	SHEET 10C1

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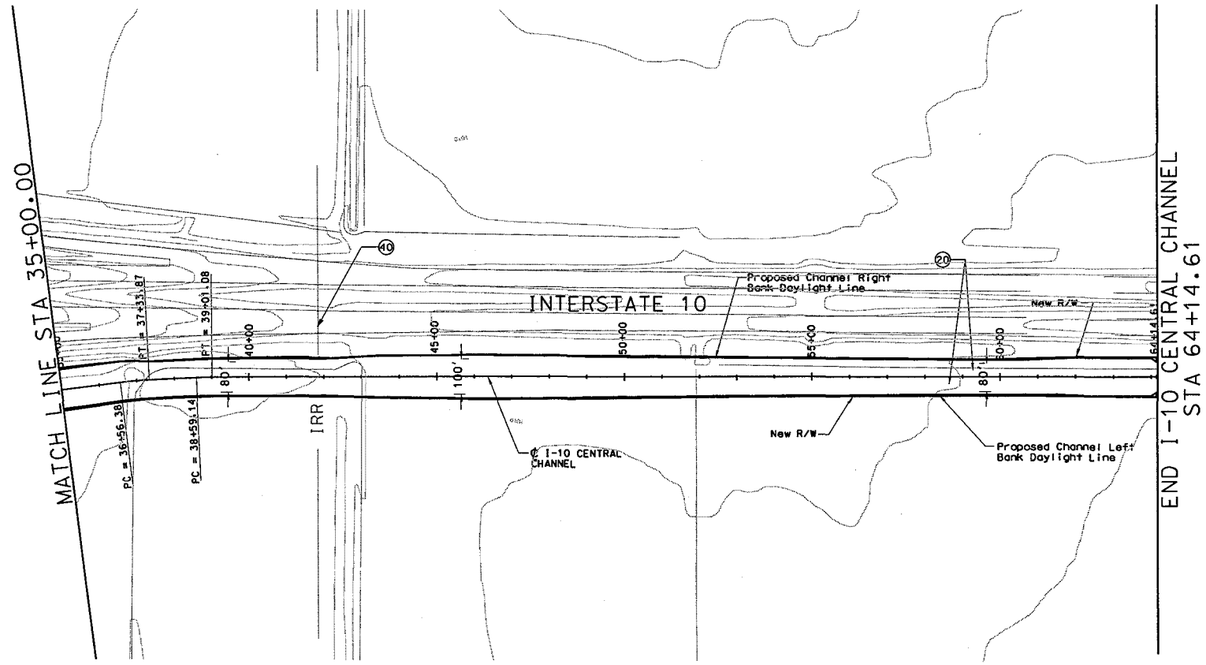

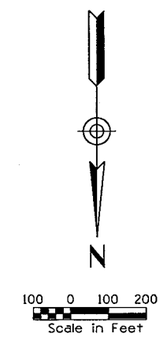

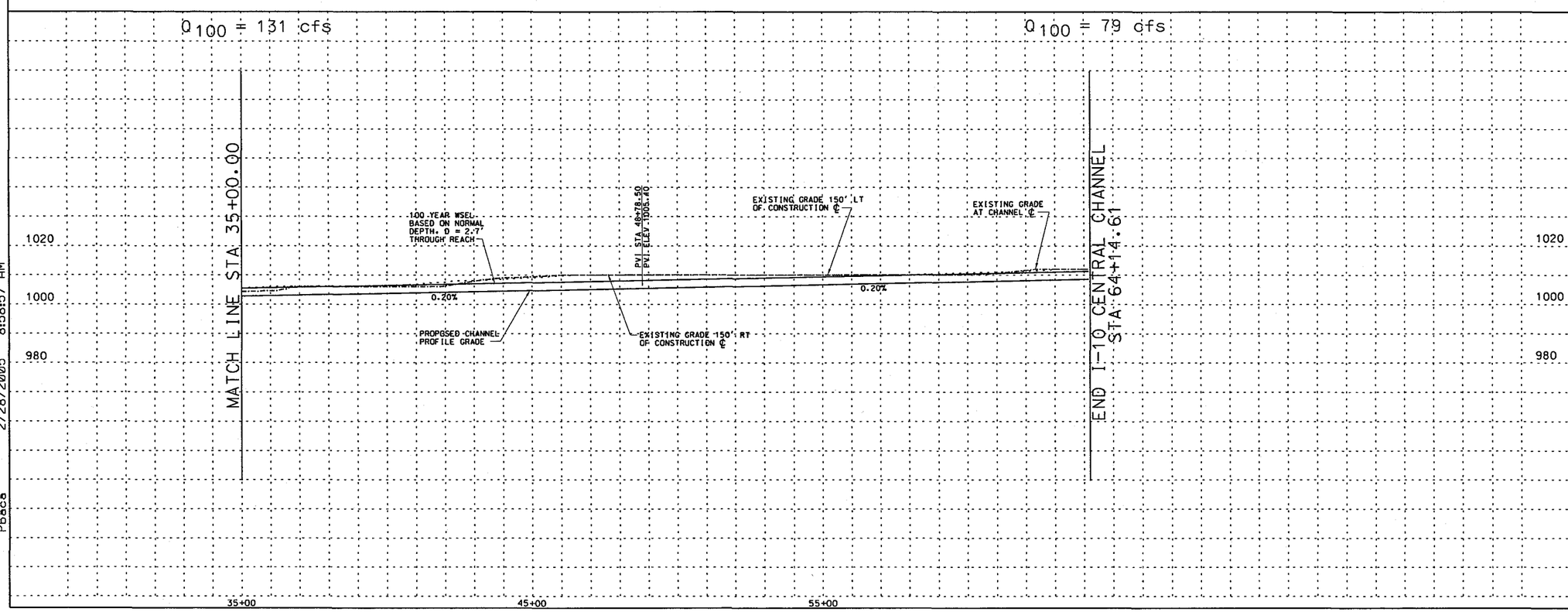

REMOVE

CONSTRUCT

STA 35+00.00 TO STA 64+14.61 CONSTRUCT 2914.31 LIN. FT EARTH CHANNEL

STA 35+00.00 TO STA 64+14.1. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RT & LT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE IRRIGTATION

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

I-10 CENTRAL CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 35+00.00 TO 64+14.61	SHEET 10C2

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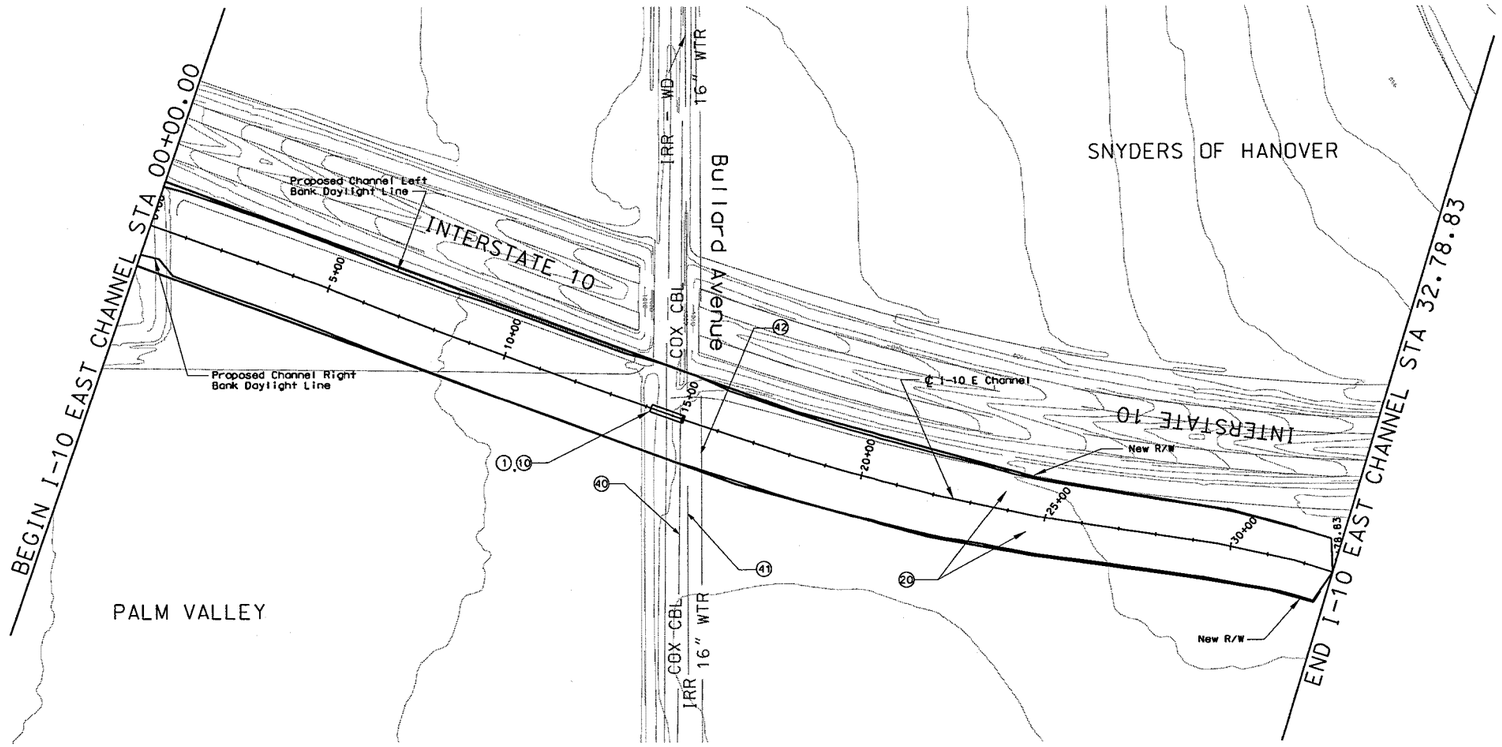

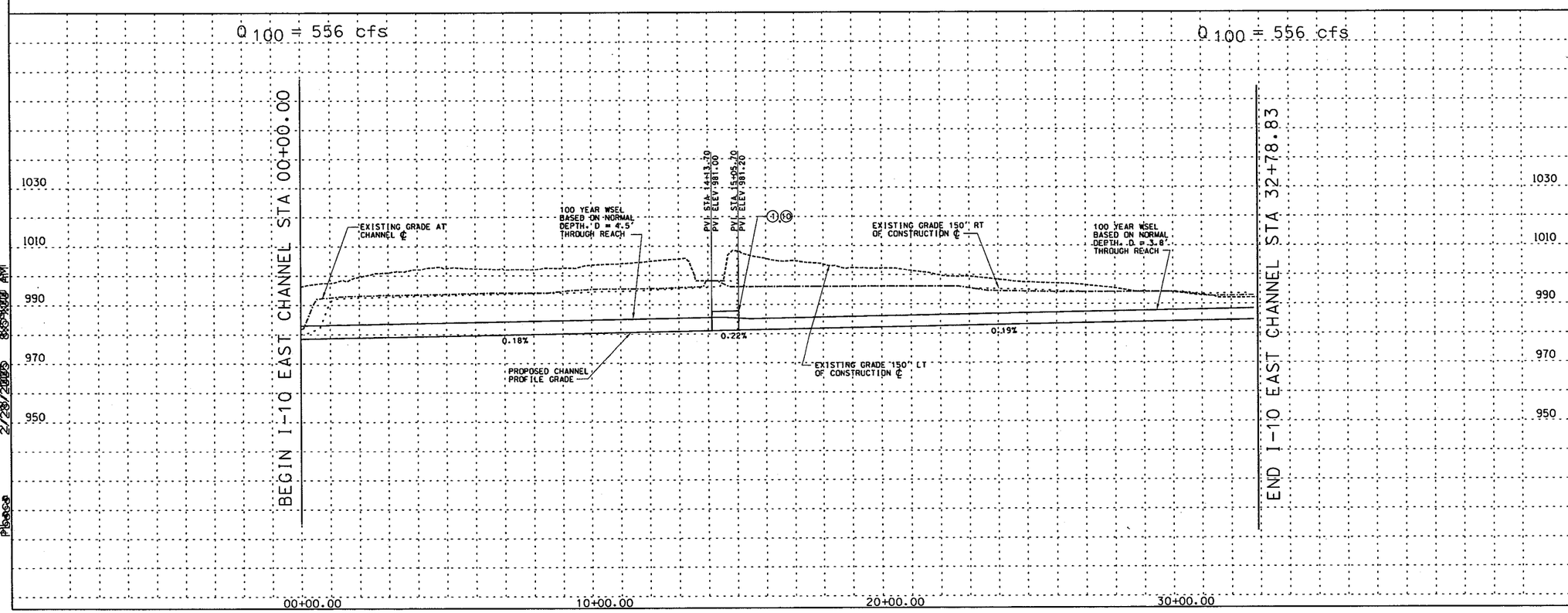

☐ REMOVE ☐

○ CONSTRUCT ○

STA 00+00.00 TO STA 32+78.83 CONSTRUCT 3278.83 LIN. FT CONCRETE CHANNEL

STA 00+00.00 TO STA 32+78.83. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) INSTALL 5 BARREL 10' X 4' RCB

(10) INSTALL 8' X 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RT & LT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE CABLE

(41) RELOCATE IRRIGATION

(42) RELOCATE WATER

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

I-10 EAST CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 00+00.00 TO 32+78.83	SHEET 10E1

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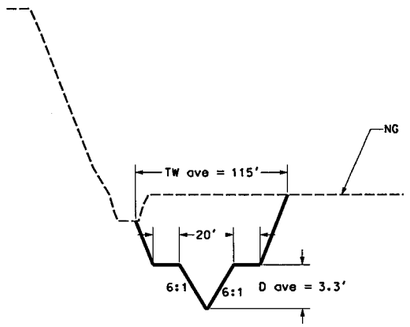

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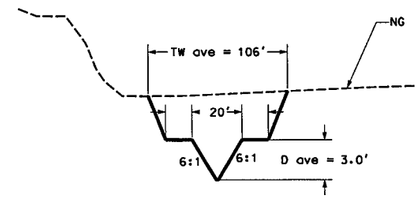

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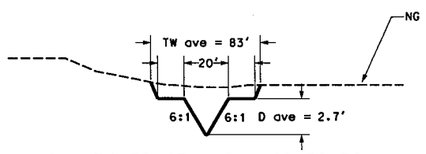

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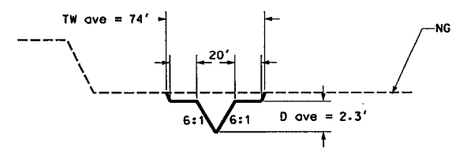
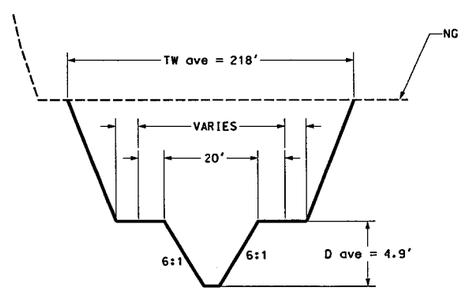


Sta 48+78.52 - Sta 64+14.61

I-10 CENTRAL CHANNEL



Sta 0+00.00 - Sta 32+78.83

I-10 EAST CHANNEL

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

I-10 CENTRAL AND EAST CHANNEL CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TYPICAL CHANNEL SECTIONS	SHEET

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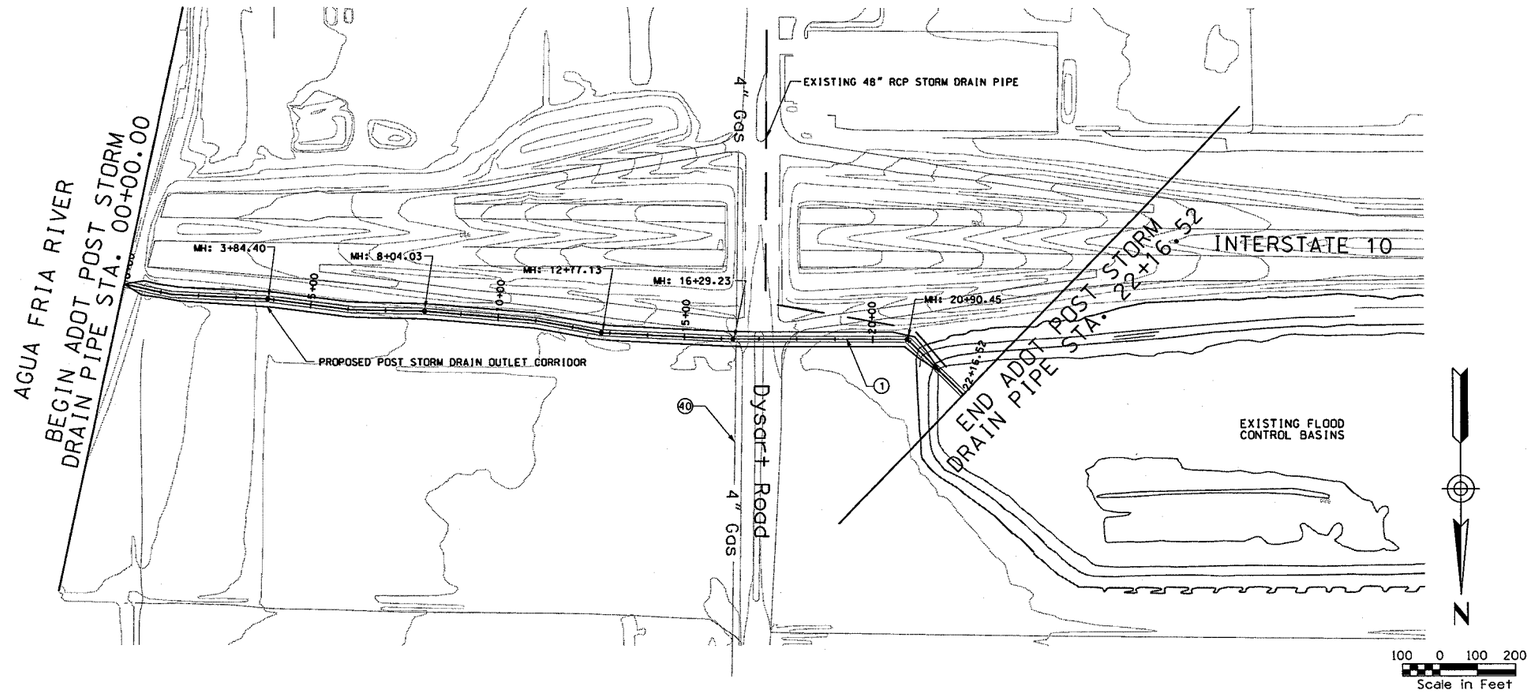

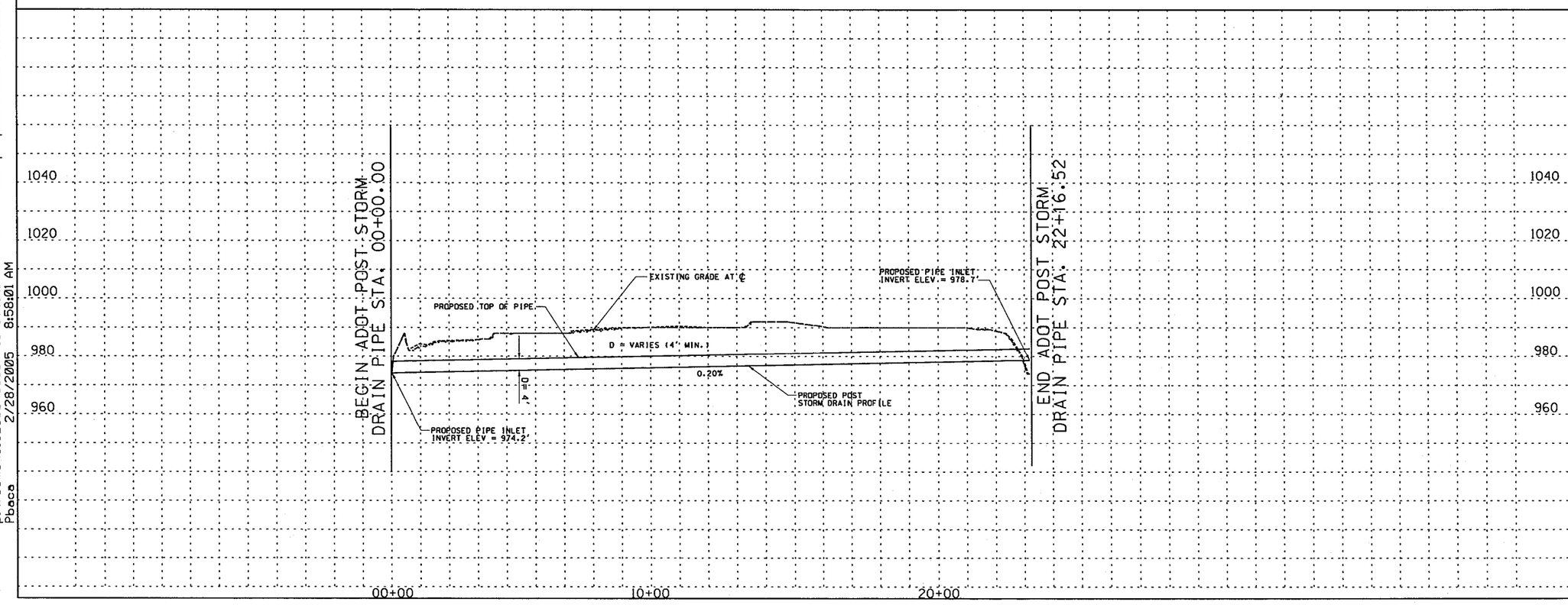

REMOVE

CONSTRUCT

STA 00+00.00 TO STA 22+16.52. CONSTRUCT 2216.52 LIN. FT OUTLET PIPE

STA 00+00.00 TO STA 22+16.52. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

1 INSTALL 2216.52 LF 4 BARREL RCP POST STORM DRAIN OUTLET

40 RELOCATE GAS

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE – LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83 AND THE VERTICAL DATUM USED WAS NGVD 1929.

PROPOSED ADOT IMPROVEMENTS
PROPOSED OUTLET PIPE PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 00+00.00 TO 22+16.52	SHEET ADI

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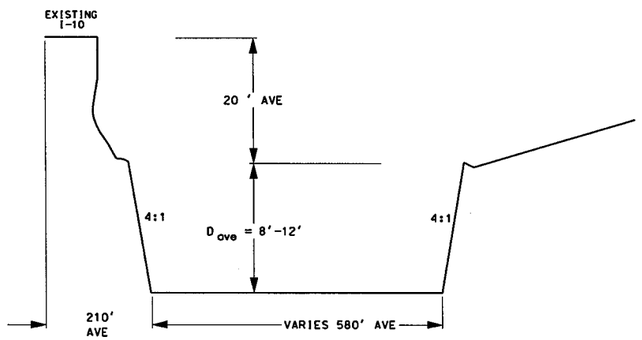

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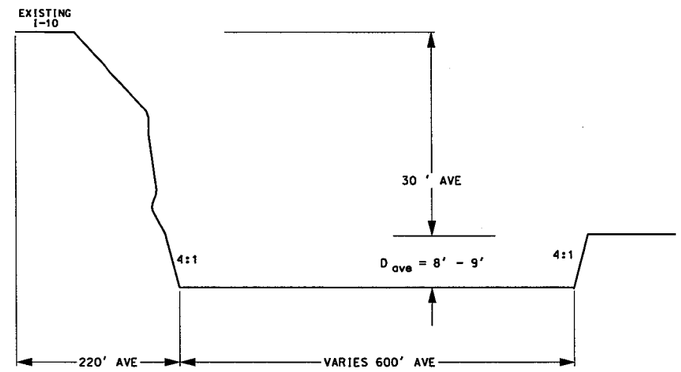

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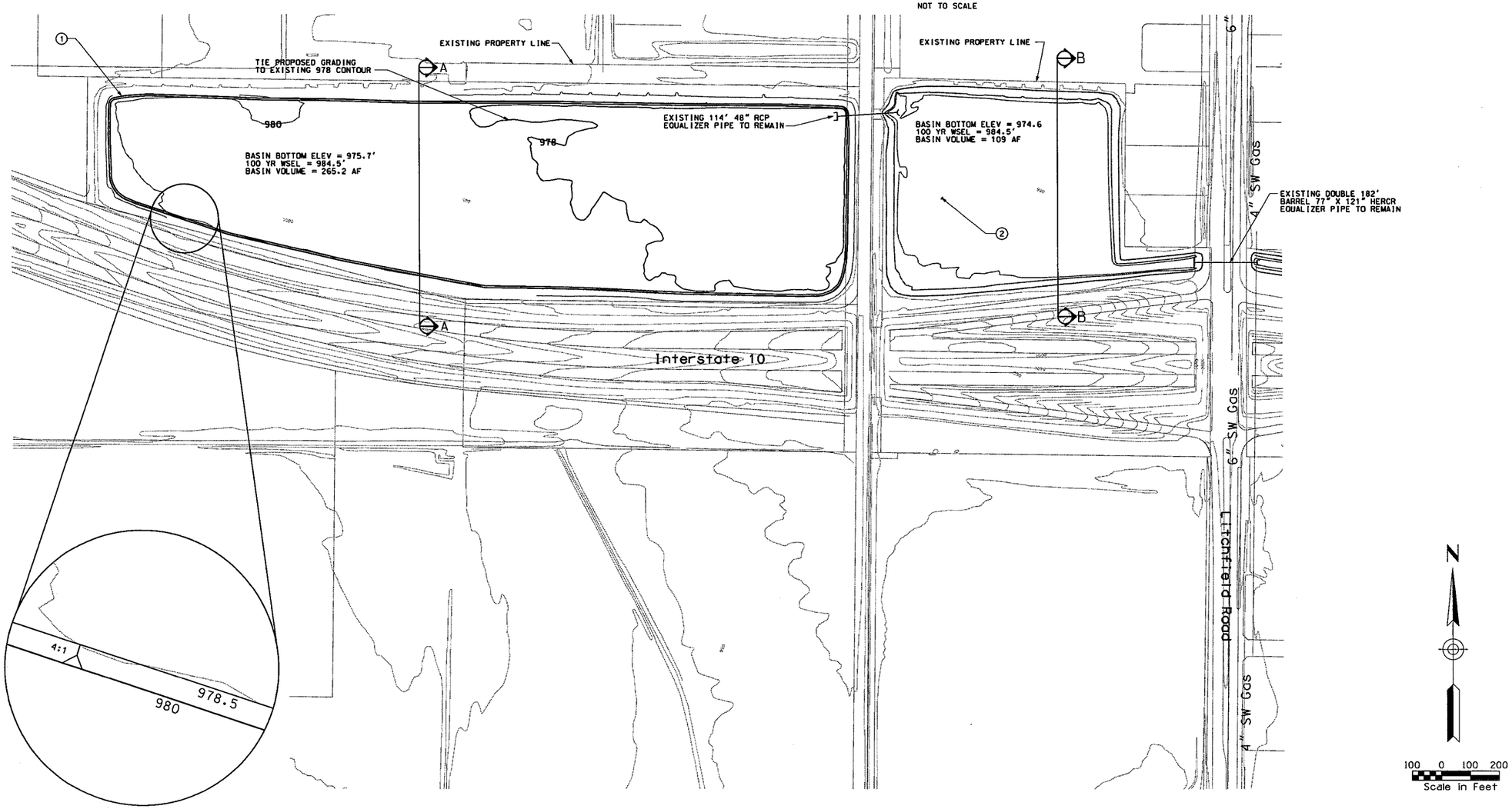

	REMOVE

CONSTRUCT

1. REGRADE BASIN BOTTOM TOE TO 978.5 ON WEST TO ALLOW DAYLIGHT OF THE I-10 EAST DIVERSION (INFLOW) CHANNEL
2. NO REGRADING IN THIS PORTION OF THE BASIN FOR FLOOD CONTROL PURPOSES

GENERAL NOTES:
PRELIMINARY, NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

WSEL'S ARE FOR THE FUTURE CONDITION WITHIN THE BASINS ONLY BASIN VOLUME ASSUMES A MAX WSEL OF 986'

PROPOSED ADOT IMPORVEMENTS
PLAN AND SECTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	BASIN DETAIL PLAN	SHEET

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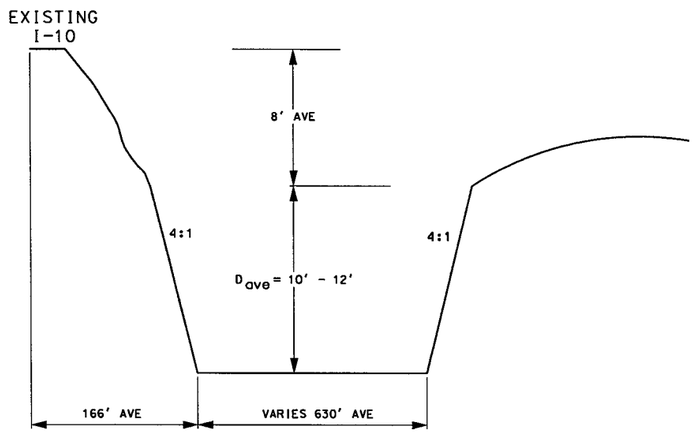
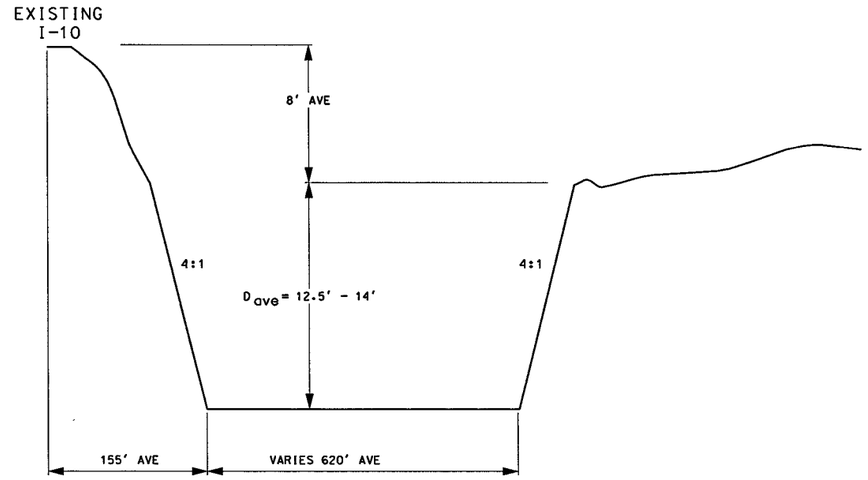


SECTION C-C
N.T.S.



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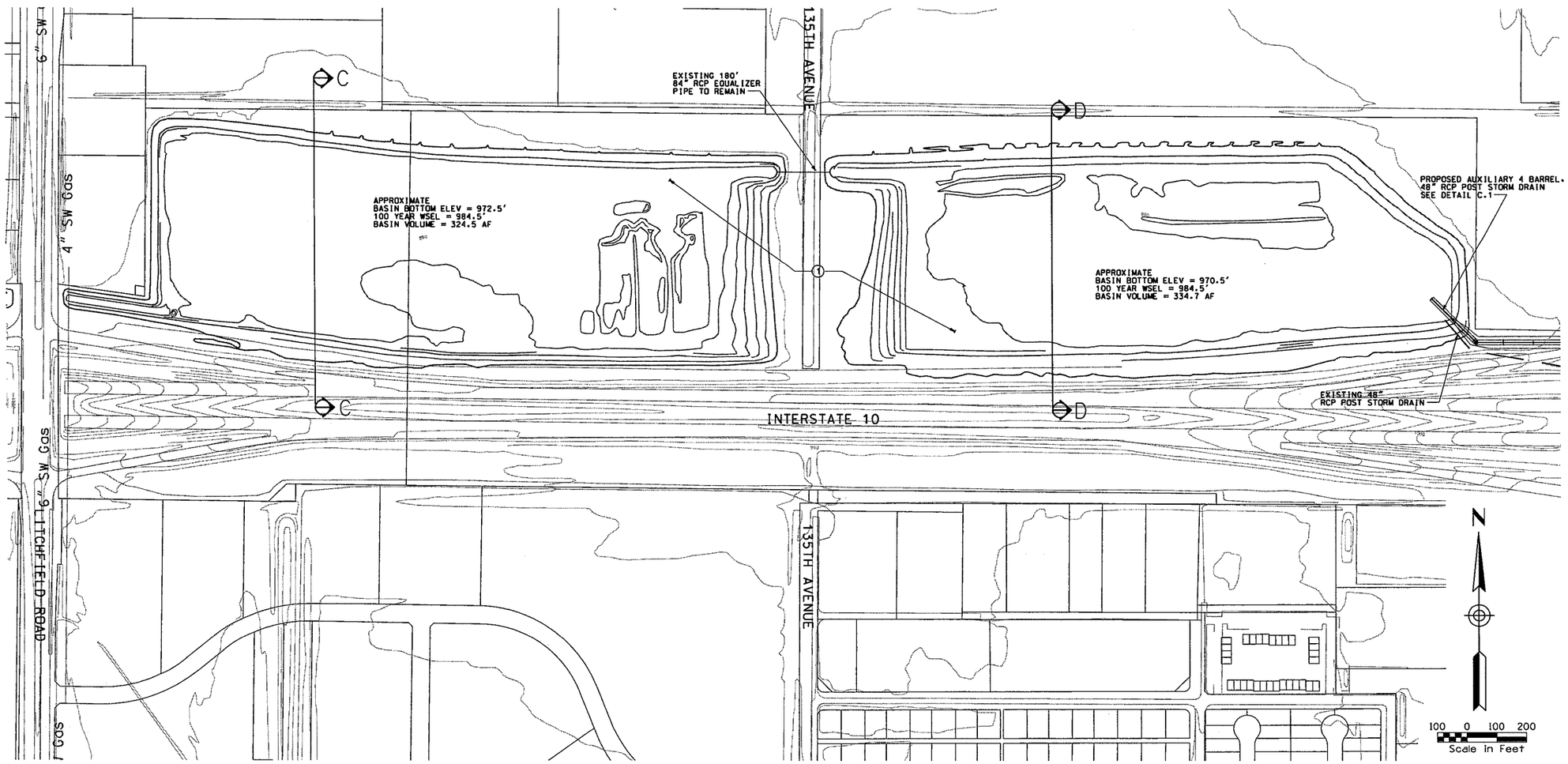

REMOVE

CONSTRUCT

① NO PROPOSED GRADING

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT
LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

WSEL'S ARE FOR THE FUTURE CONDITION WITHIN THE BASINS ONLY BASIN VOLUME ASSUMES A MAX WSEL OF 986'

PROPOSED ADOT IMPROVEMENTS
PLAN AND SECTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	BASIN DETAIL PLAN	SHEET

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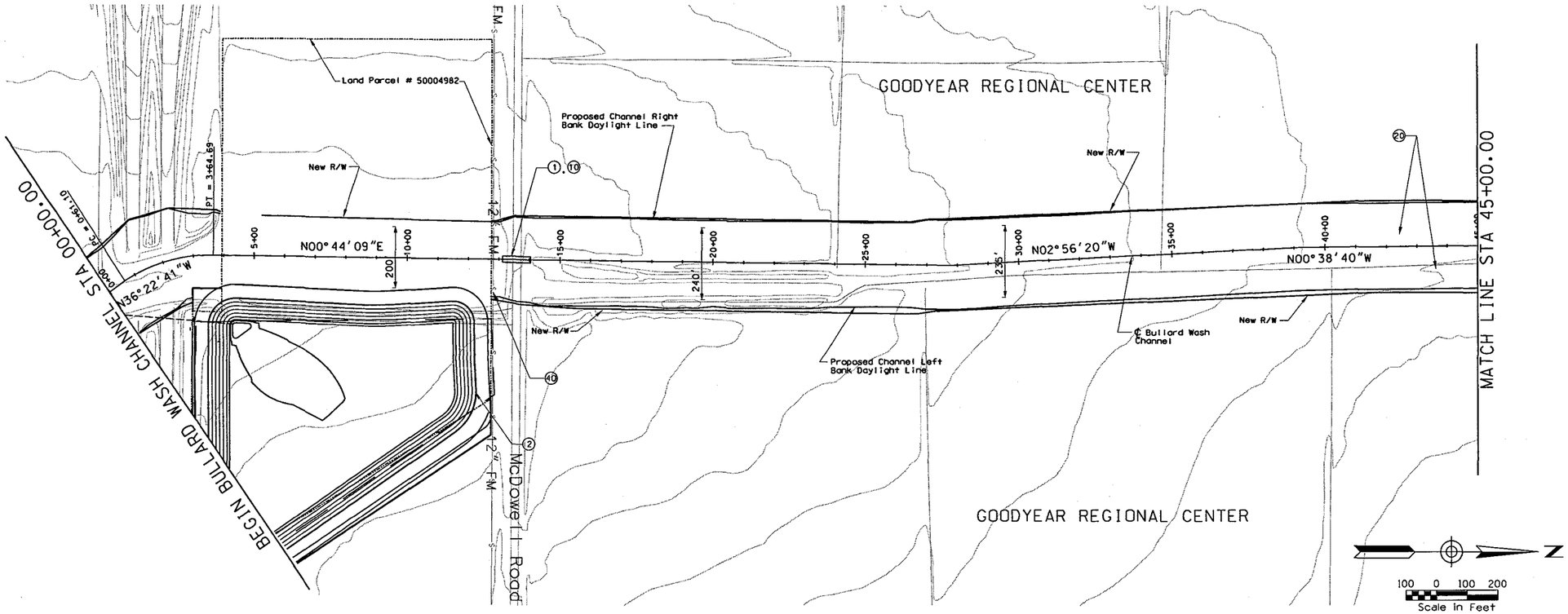

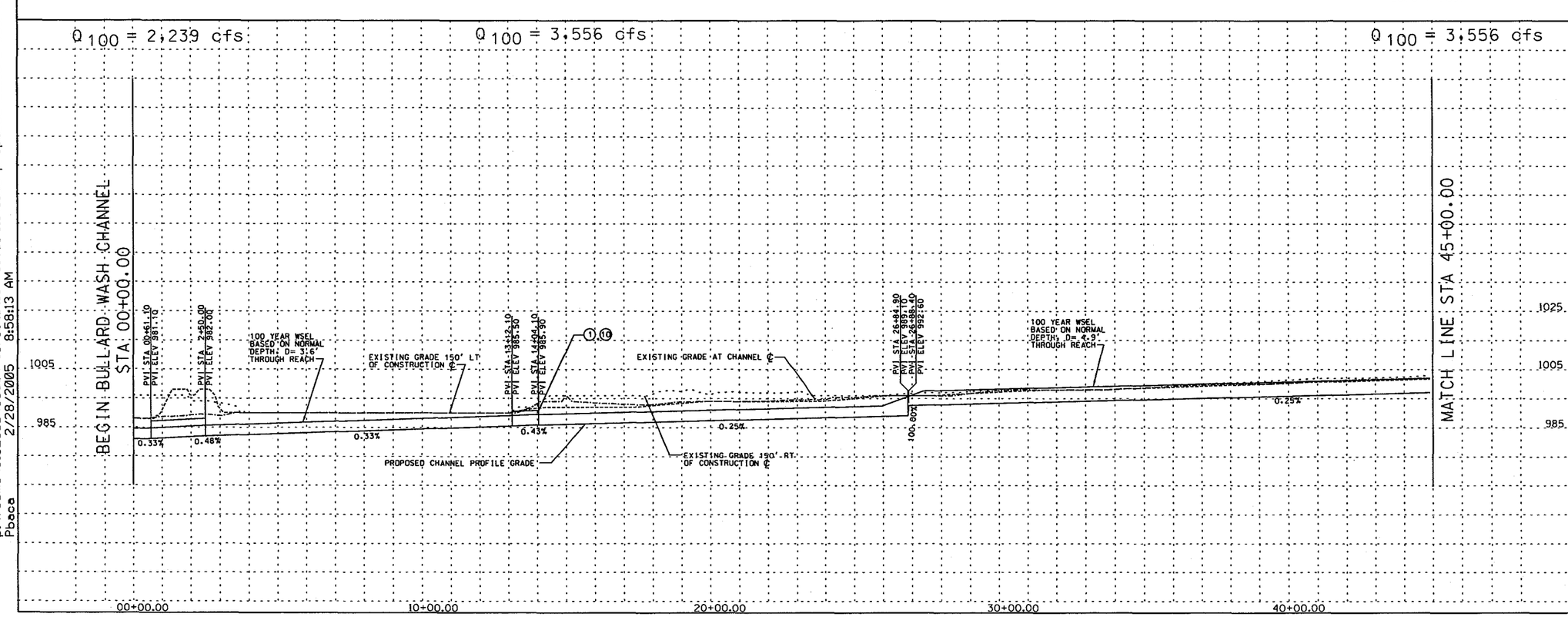

☐ REMOVE ☐

○ CONSTRUCT ○

STA 00+00.00 TO STA 45+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 45+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) INSTALL 20 BARRELL 10' X 6' RCB

(2) CONSTRUCT 138 AF OFF-LINE DETENTION BASIN/PARK.

(10) INSTALL 8' X 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND ADJACENT 10' LANDSCAPE AREA ON RT & LT OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004

(40) RELOCATE FORCE MAIN

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

BULLARD WASH CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 00+00.00 TO 45+00.00	SHEET BD1

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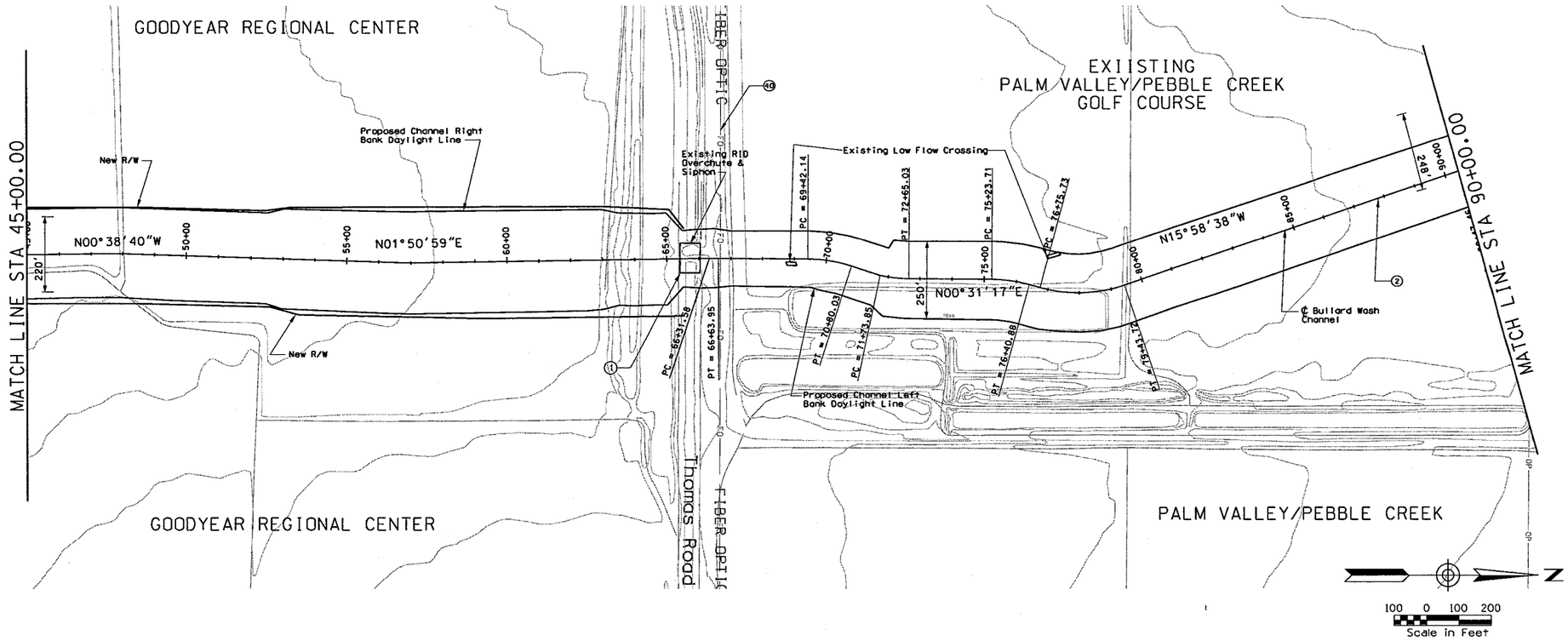

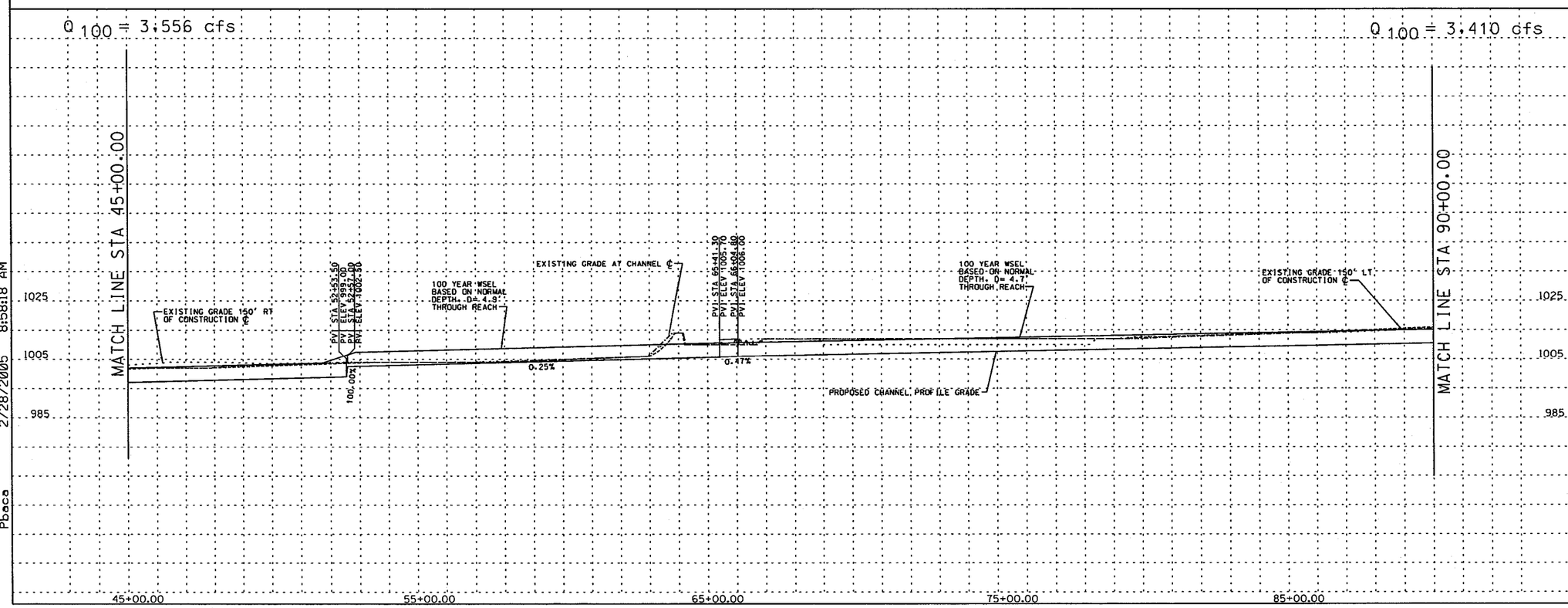

REMOVE

CONSTRUCT

STA 45+00.00 TO STA 90+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 45+00.00 TO STA 90+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) EXISTING SIPHON TO REMAIN

(2) STA 66+00 - 115+00. FOLLOW EXISTING GOLF COURSE CHANNEL FLOWLINE.

(2G) CONSTRUCT 20' ACCESS ROAD AND ADJACENT 10' LANDSCAPE AREA ON RT. & LT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(4G) RELOCATE FIBER OPTIC LINE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

BULLARD WASH CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 45+00.00 TO 90+00.00	SHEET BD2

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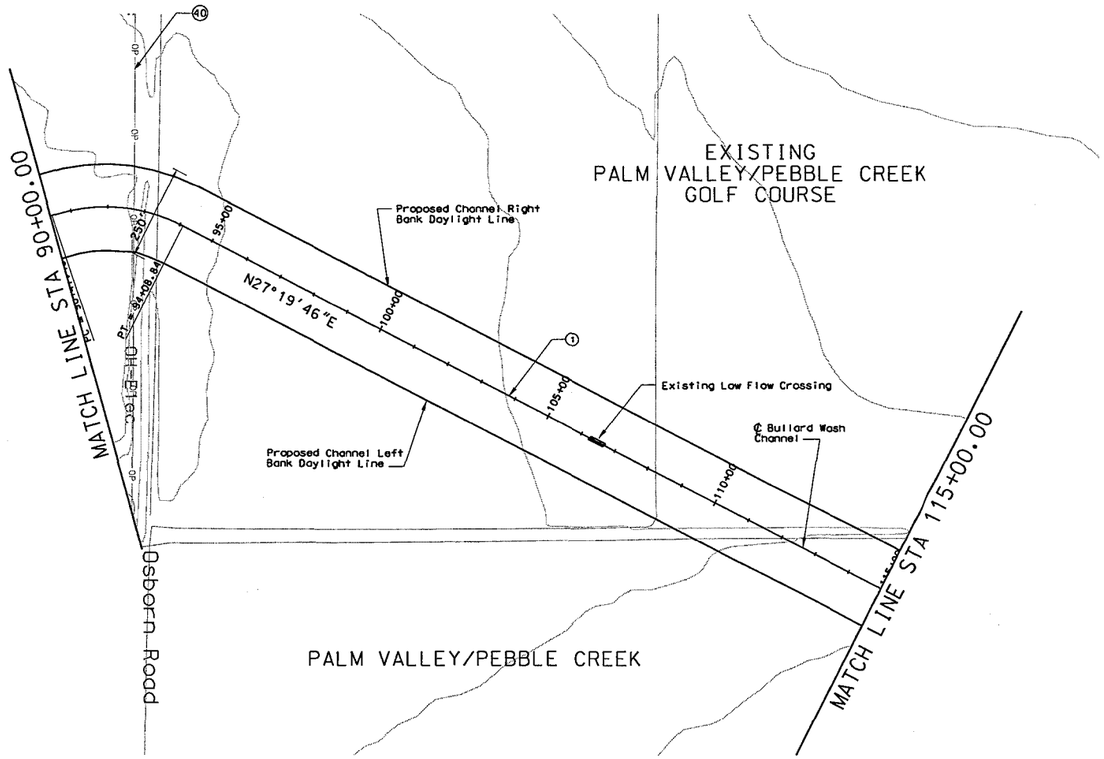

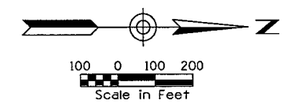

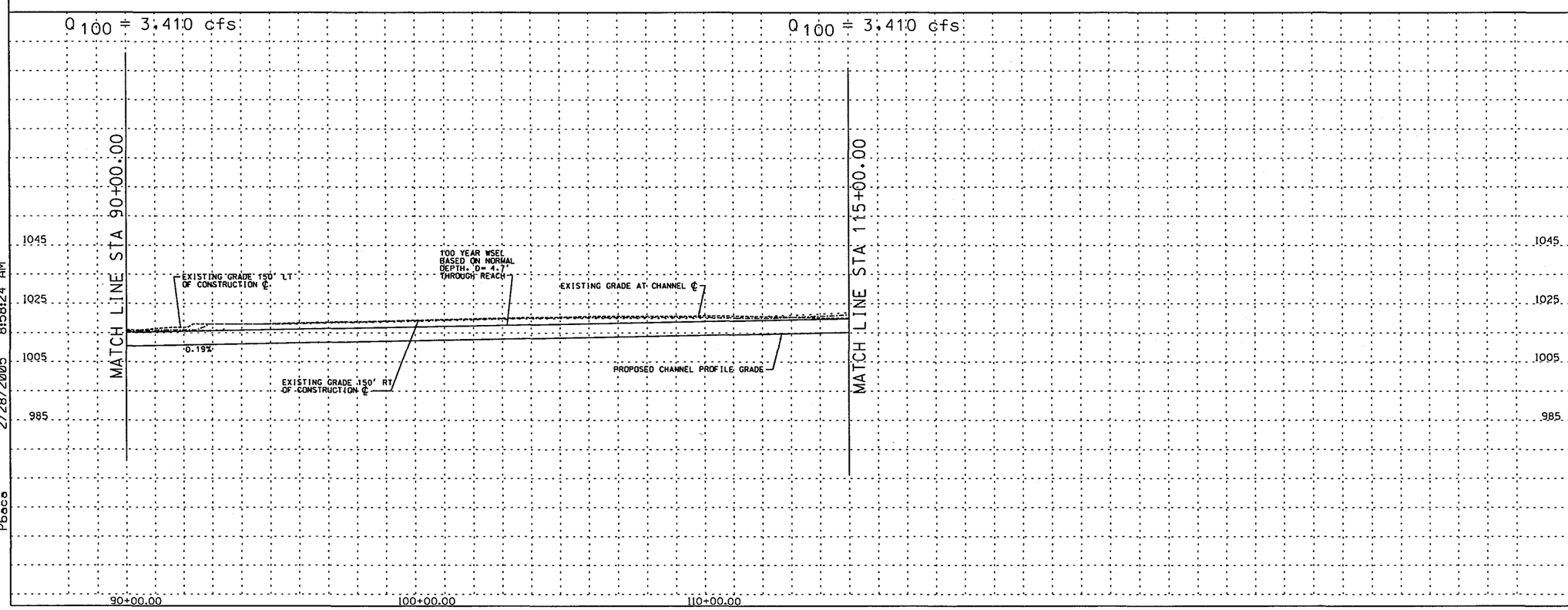

☐ REMOVE ☐

◯ CONSTRUCT ◯

STA 90+00.00 TO STA 115+00.00 CONSTRUCT 2500 LIN. FT CONCRETE CHANNEL

STA 90+00.00 TO STA 115+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) STA 60+00 - 115+00. FOLLOW EXISTING GOLF COURSE CHANNEL FLOWLINE.

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RT & LT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

BULLARD WASH CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

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DRAWING NO.	PLAN AND PROFILE SHEET STA 90+00.00 TO 115+00.00	SHEET BD3

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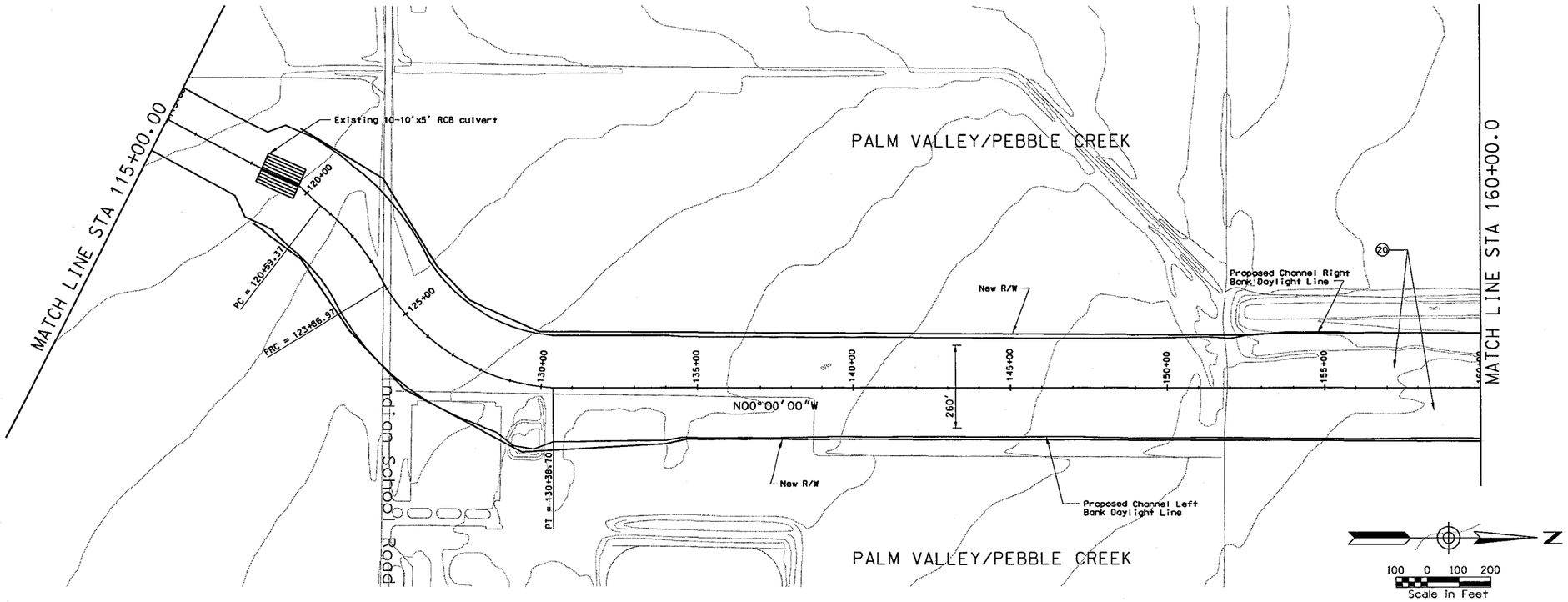

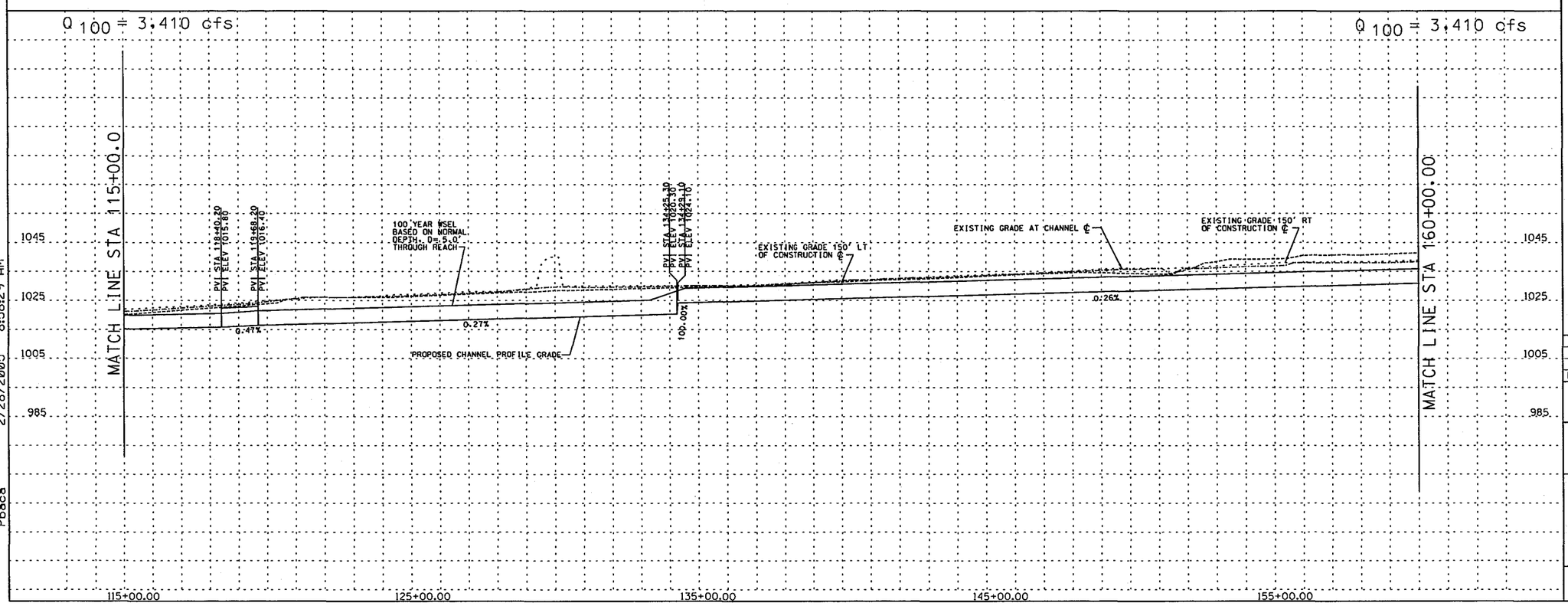

REMOVE

CONSTRUCT

STA 151+00.00 TO STA 160+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 115+00.00 TO STA 160+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RT & LT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

BULLARD WASH CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 115+00.00 TO 160+00.00	SHEET BD4

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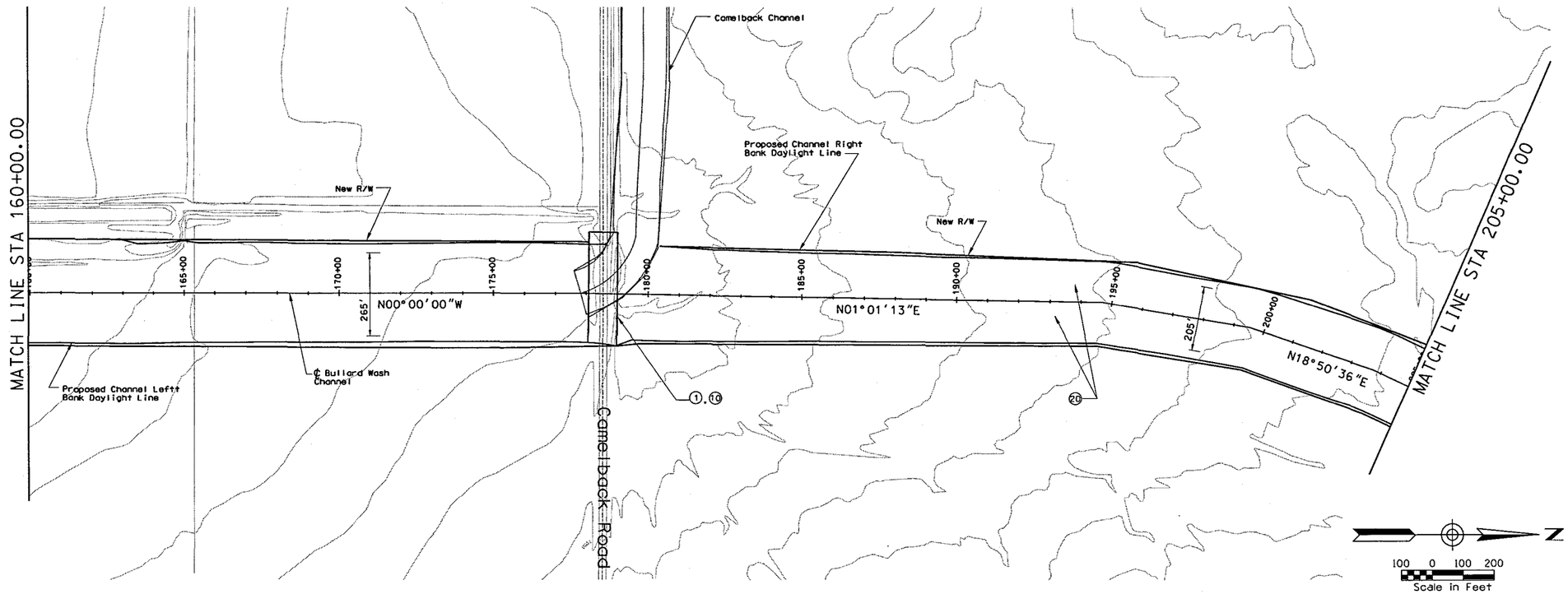

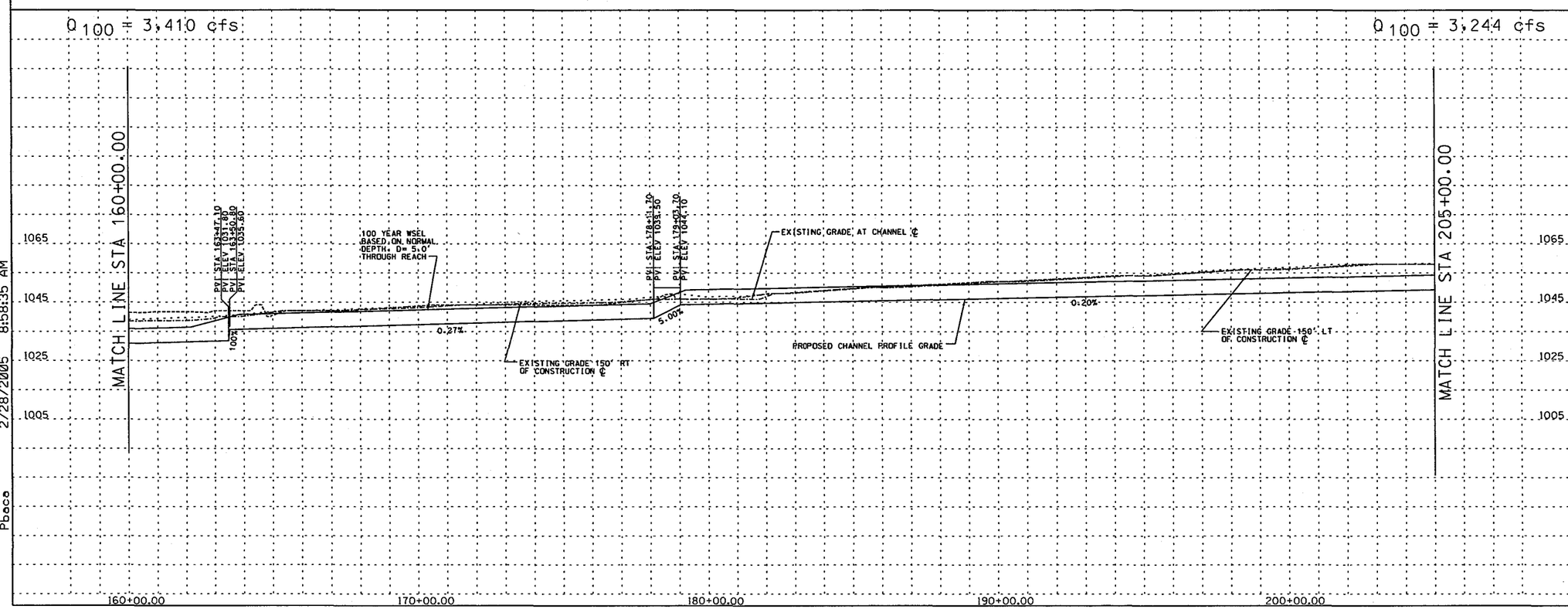

REMOVE

CONSTRUCT

STA 160+00.00 TO STA 205+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 160+00.00 TO STA 205+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONSTRUCT 334 LIN. FT BY 58 FT WIDE SINGLE SPAN BRIDGE

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RT & LT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

BULLARD WASH CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 160+00.00 TO 205+00.00	SHEET BD5

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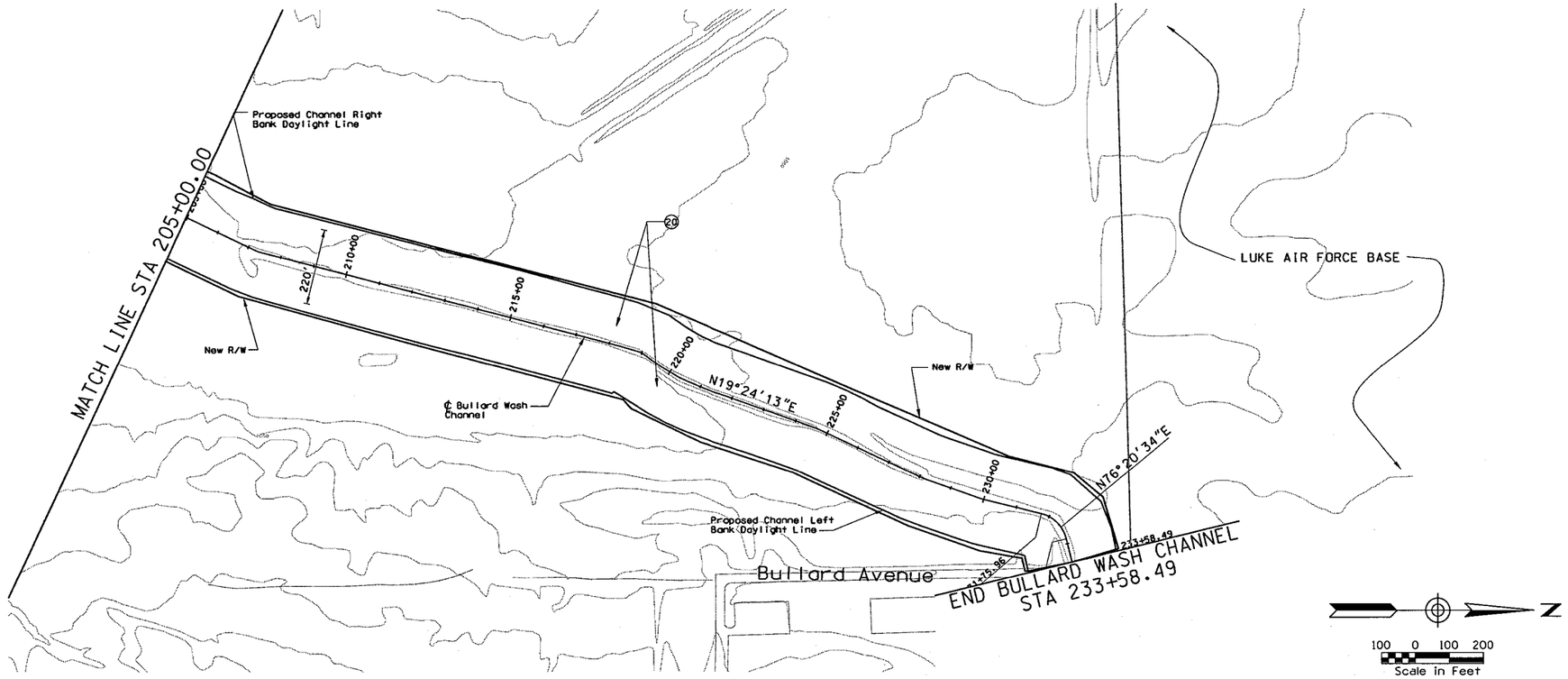

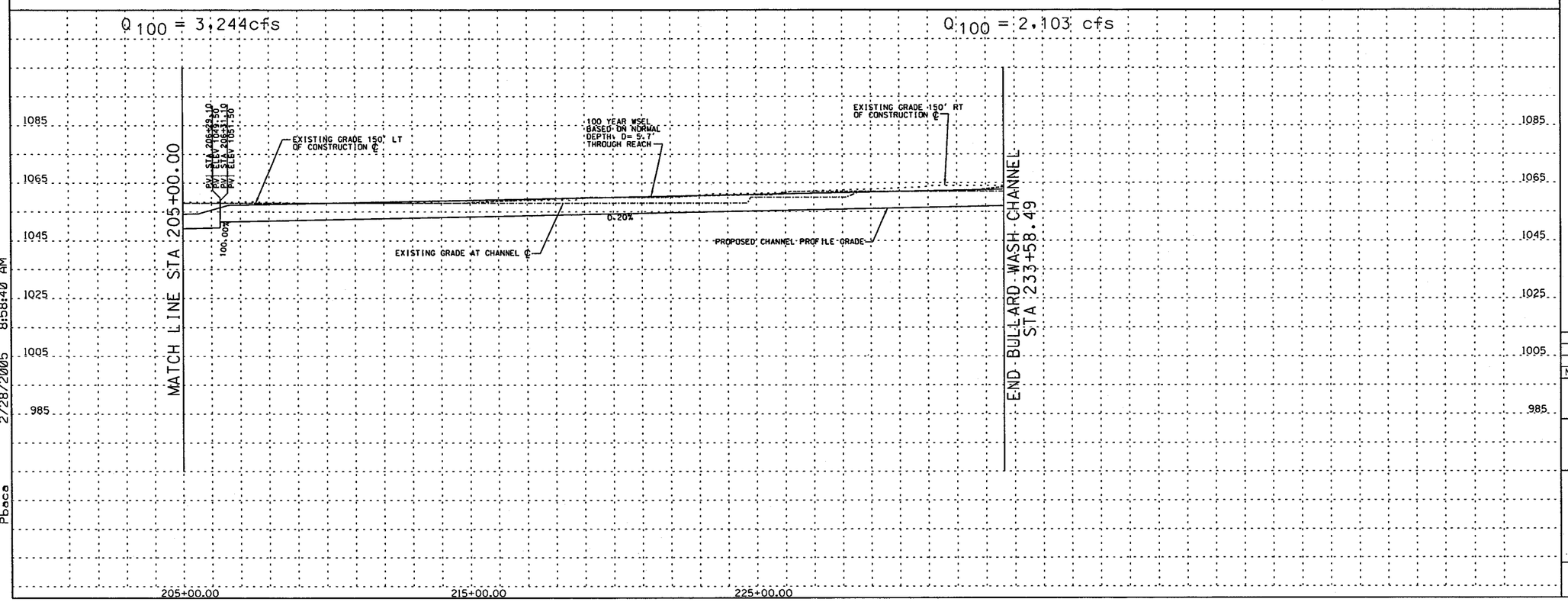

REMOVE

CONSTRUCT

STA 205+00.00 TO STA 233+58.49 CONSTRUCT 2358.49 LIN. FT EARTH CHANNEL

STA 205+00.00 TO STA 233+58.49. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RT & LT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

BULLARD WASH CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 205+00.00 TO 233+58.49	SHEET BD6

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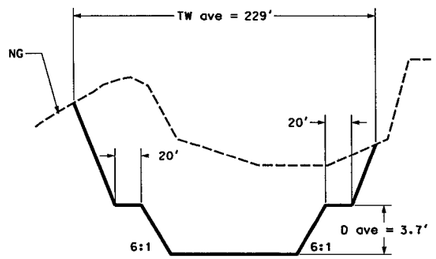
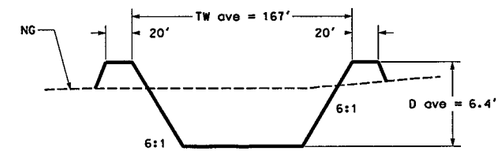


Sta 0+00.00 - Sta 13+12.10



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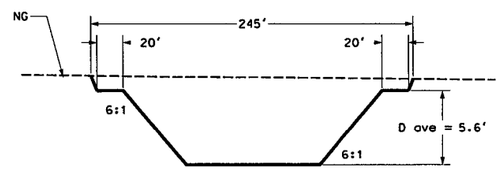

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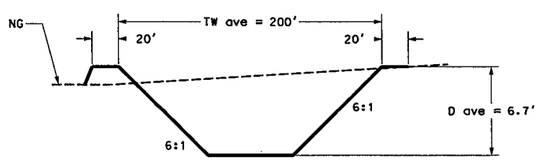

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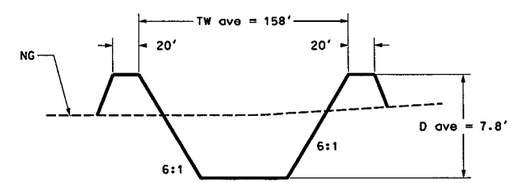

Sta 179+00.51 - Sta 233+58.49

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

BULLARD WASH CHANNEL
CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO. | TYPICAL CHANNEL SECTIONS | SHEET

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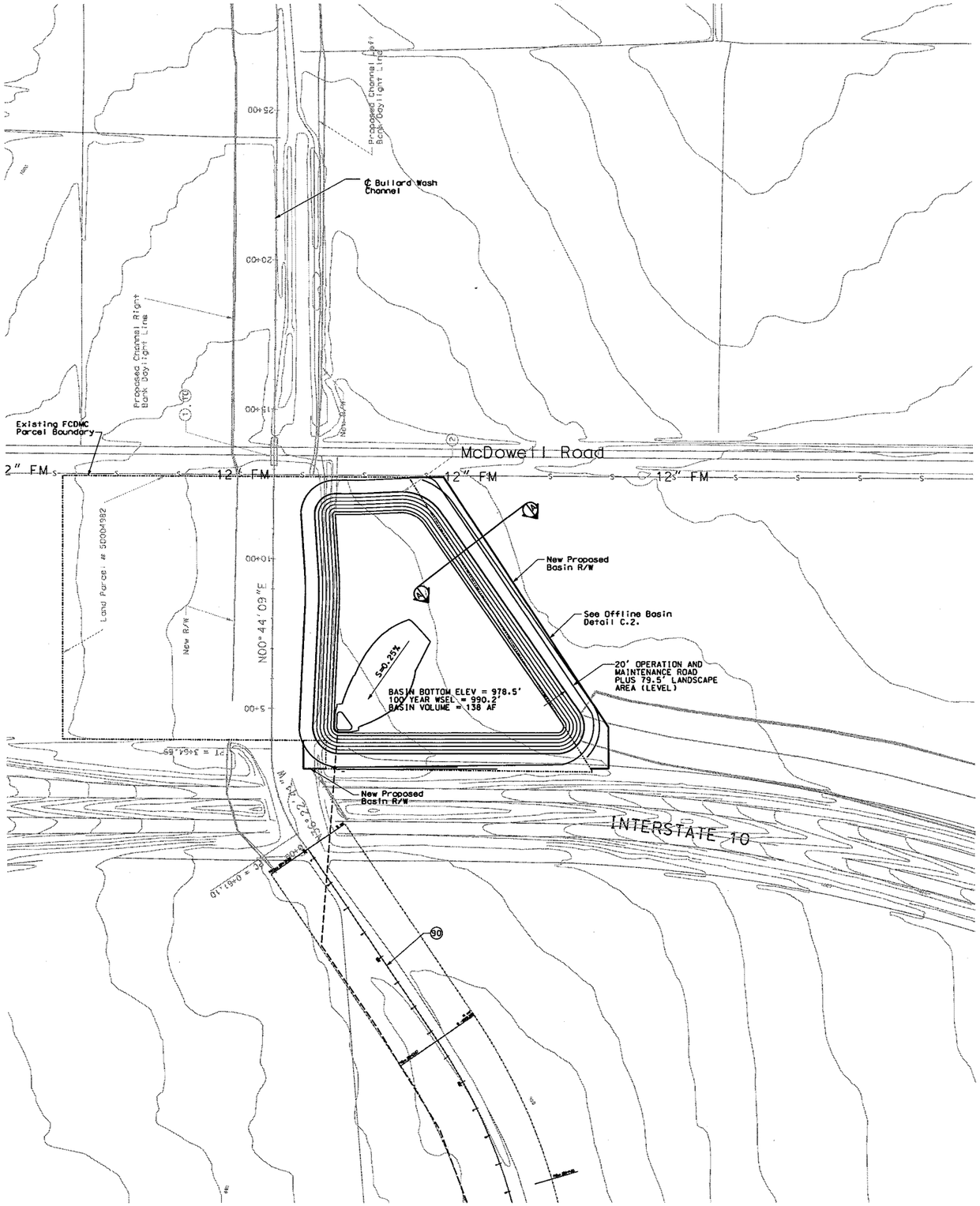

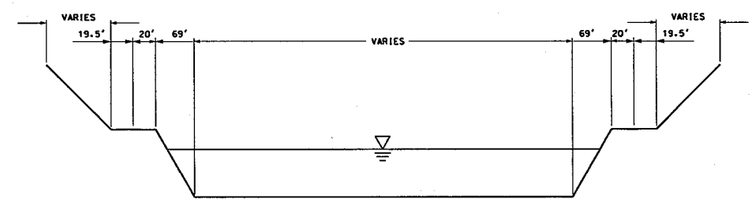

TYPICAL SECTION A-A
NOT TO SCALE

N

50 0 50 100
Scale in Feet

REMOVE

CONSTRUCT

(90) INSTALL 42" LOW FLOW POST STORM DRAIN. 4390 LF AT S=0.15% DAYLIGHT IN DOWNSTREAM BULLARD WASH CHANNEL AT STA. 229+00

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
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UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

BULLARD WASH CHANNEL
BASIN DETAIL SHEET

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	BASIN DETAIL PLAN STA. TO	SHEET

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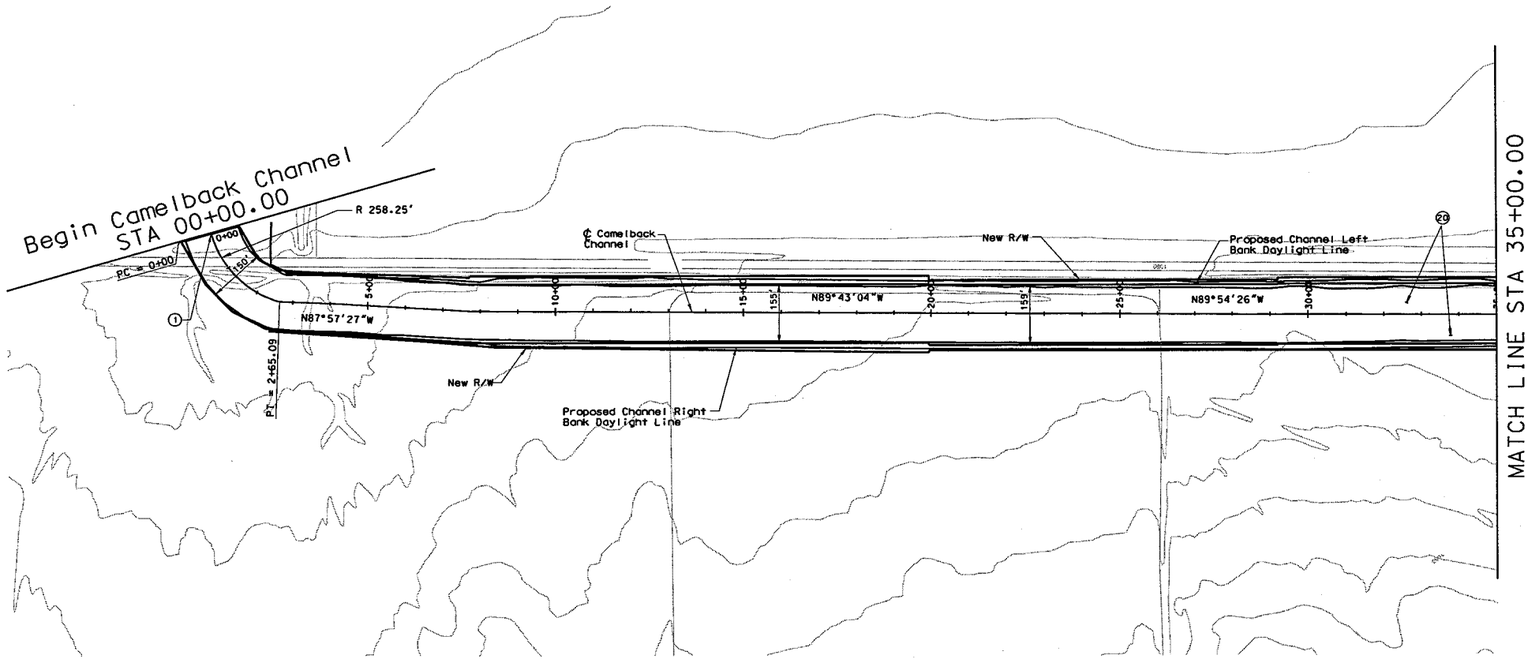

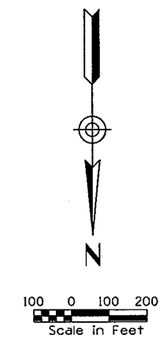

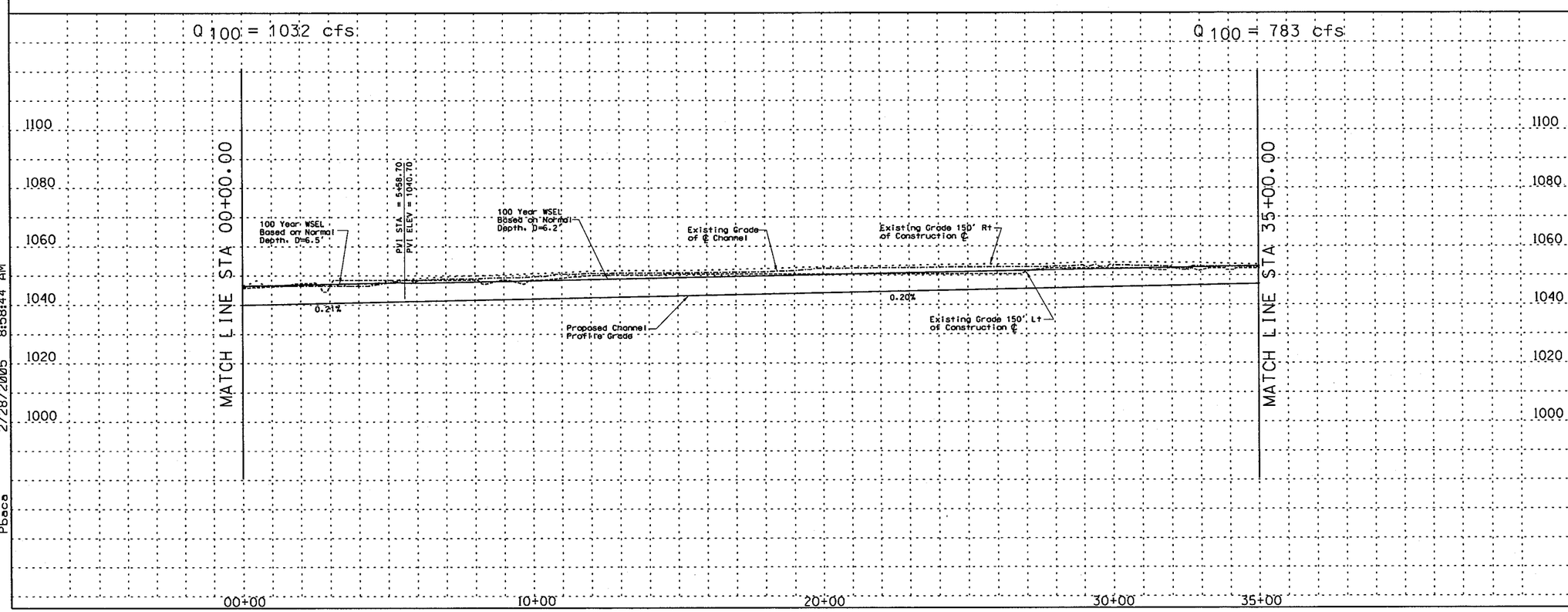

REMOVE

CONSTRUCT

STA 00+00.00 TO STA 35+00.00 CONSTRUCT 3500 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 35+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CONFLUENCE WITH PROPOSED BULLARD WASH CHANNEL

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

CAMELBACK CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 00+00.00 TO 35+00.00	SHEET CM1

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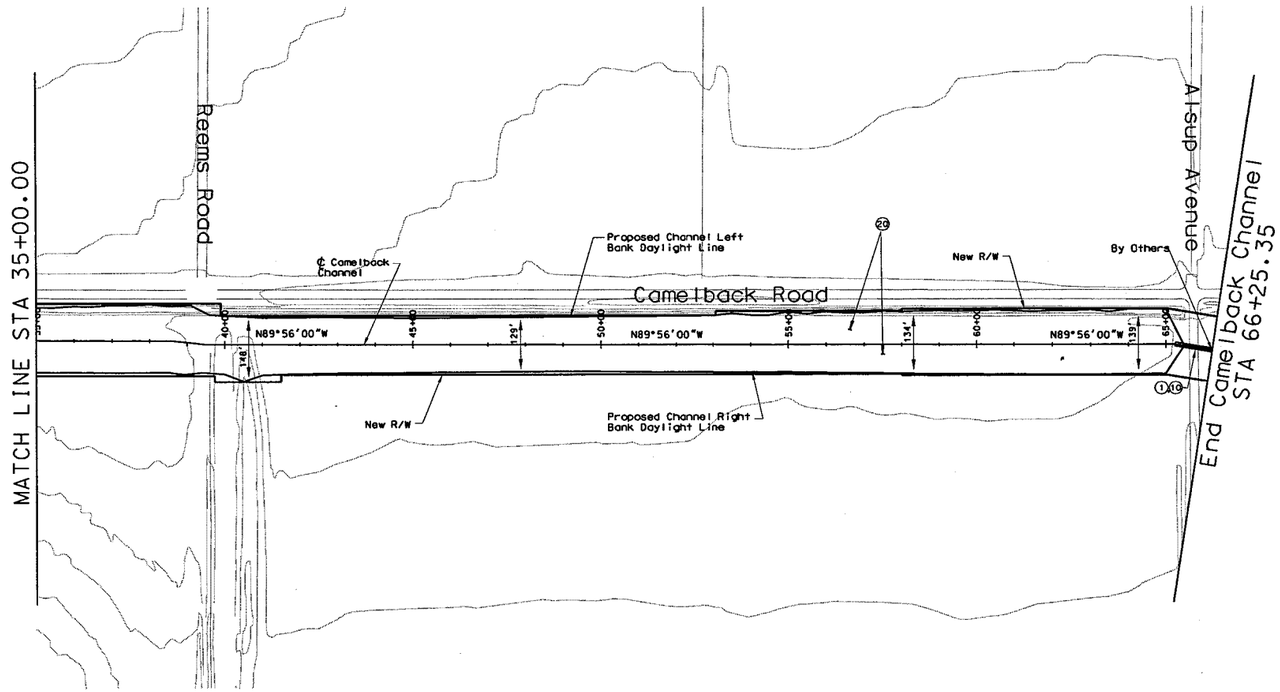

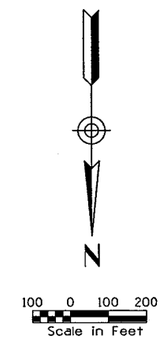

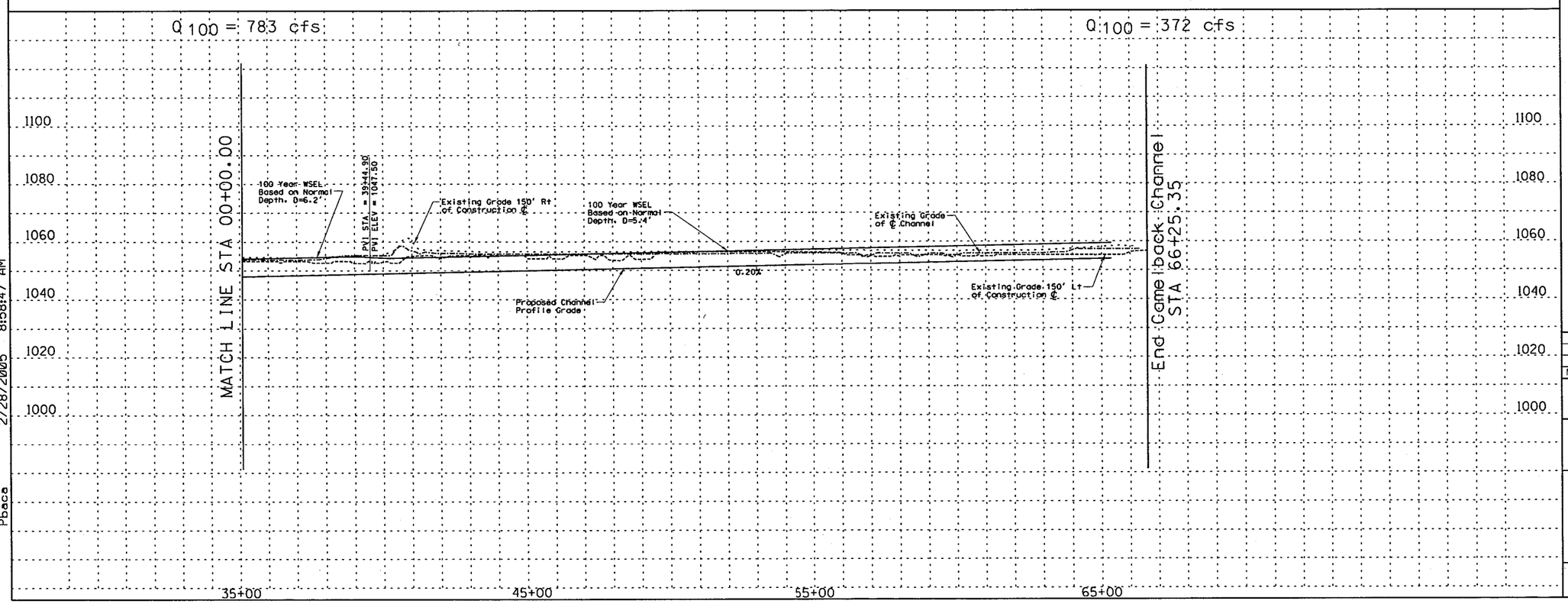

REMOVE

CONSTRUCT

STA 35+00.00 TO STA 66+25.35 CONSTRUCT 3125.35 LIN. FT EARTH CHANNEL

STA 35+00.00 TO STA 66+25.35. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

(1) CINSTALL 3 BARREL 10' X 4' RCB

(16) INSTALL 8' X 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

CAMELBACK CHANNEL
PLAN AND PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA 35+00.00 TO 66+25.35	SHEET CM2

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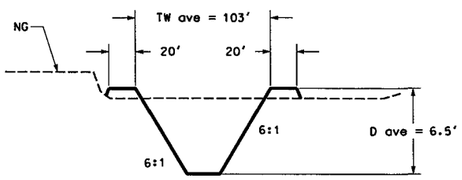

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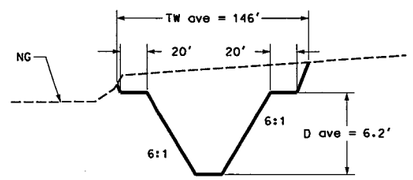

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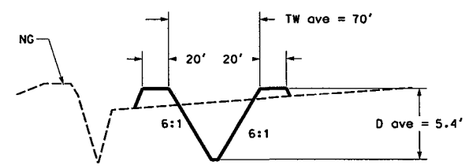

Sta 39+44.91 - Sta 66+25.35

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY, NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC, CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

CAMELBACK CHANNEL
CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO. | TYPICAL CHANNEL SECTIONS | SHEET

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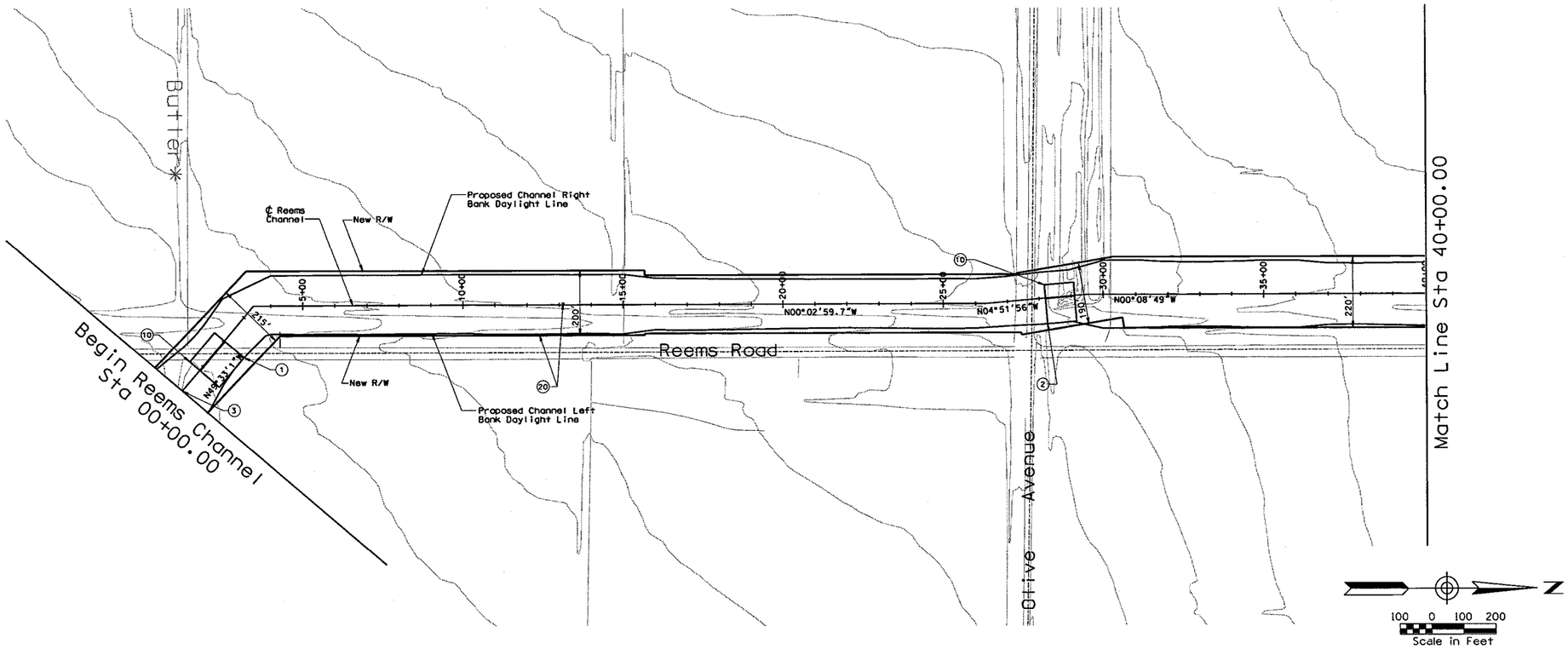

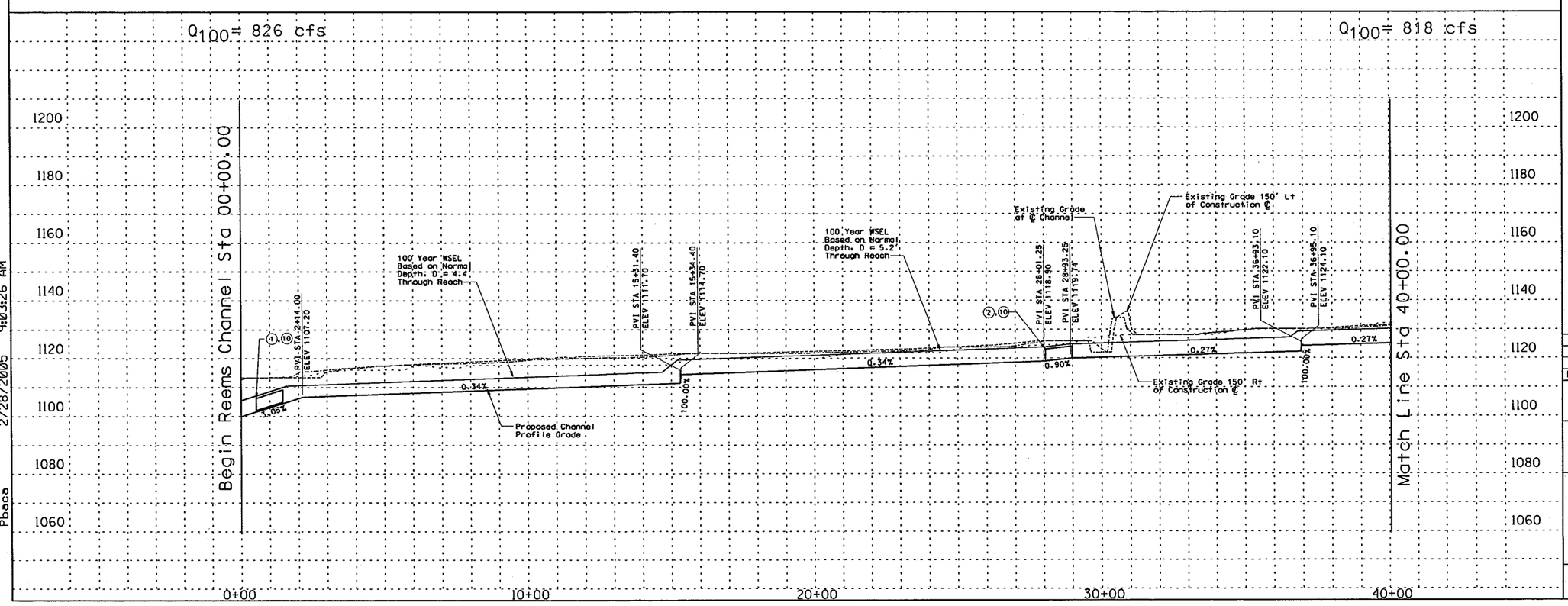

REMOVE

CONSTRUCT

STA 00+00.00 TO STA 40+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 40+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 00+00.00 TO STA 40+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 5 BARREL 10' x 4' RCB

(2) INSTALL 8 BARREL 10' x 5' RCB

(3) CHANNEL OUTFALL AT EXISTING FALCON DUNES GOLF COURSE/DETENTION BASIN

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
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THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

REEMS CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 00+00.00 TO 40+00.00	SHEET RM1

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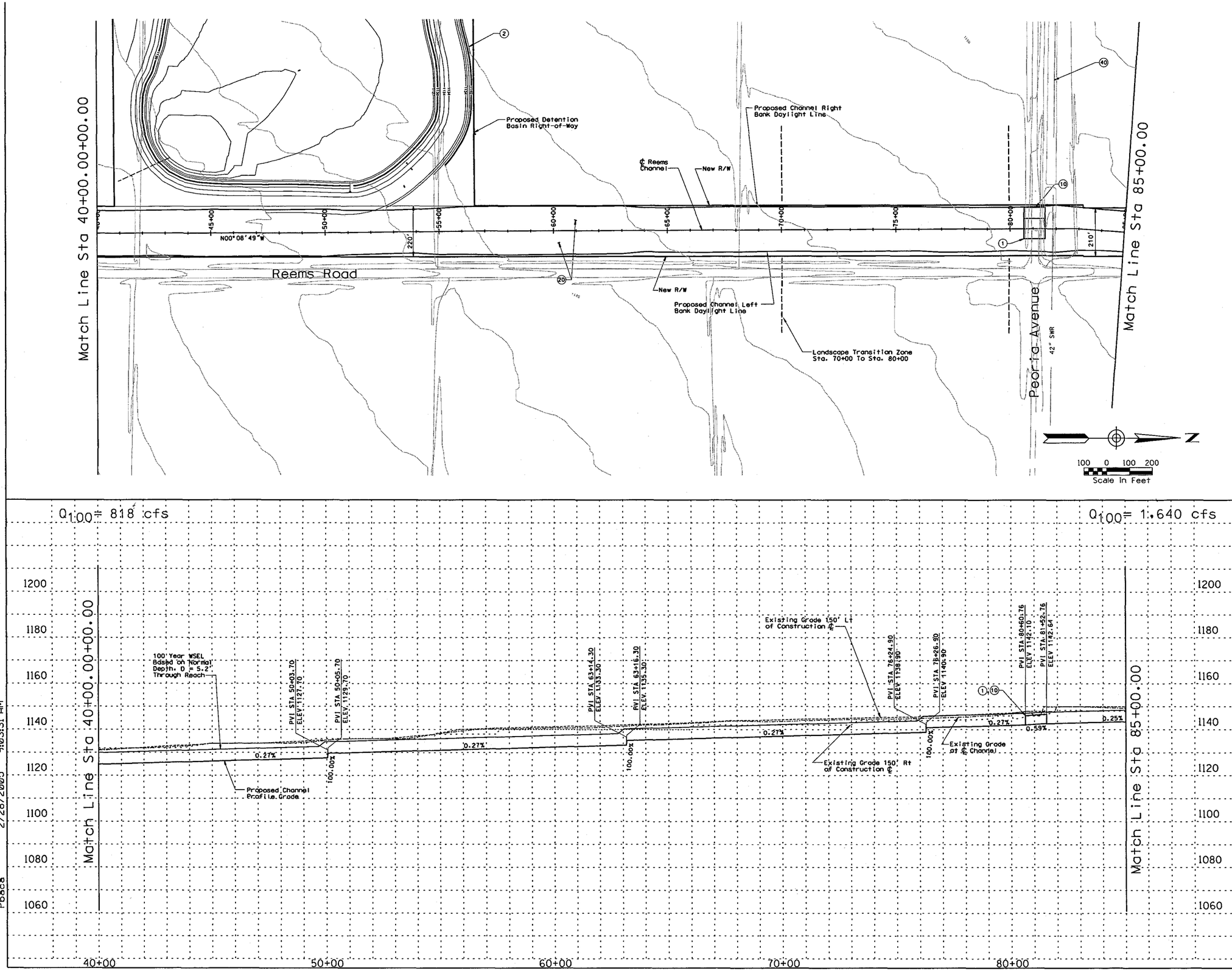

REMOVE

CONSTRUCT

STA 40+00.00 TO STA 85+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 40+00.00 TO STA 85+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 40+00.00 TO STA 85+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 9 BARREL 10' x 5' RCB

(2) CONSTRUCT 142.7 AF OFF-LINE DETENTION BASIN/PARK SEE GENERAL NOTES BELOW FOR DETAILS

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE SEWER

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

REEMS CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 40+00.00 TO 85+00.00	SHEET RM2

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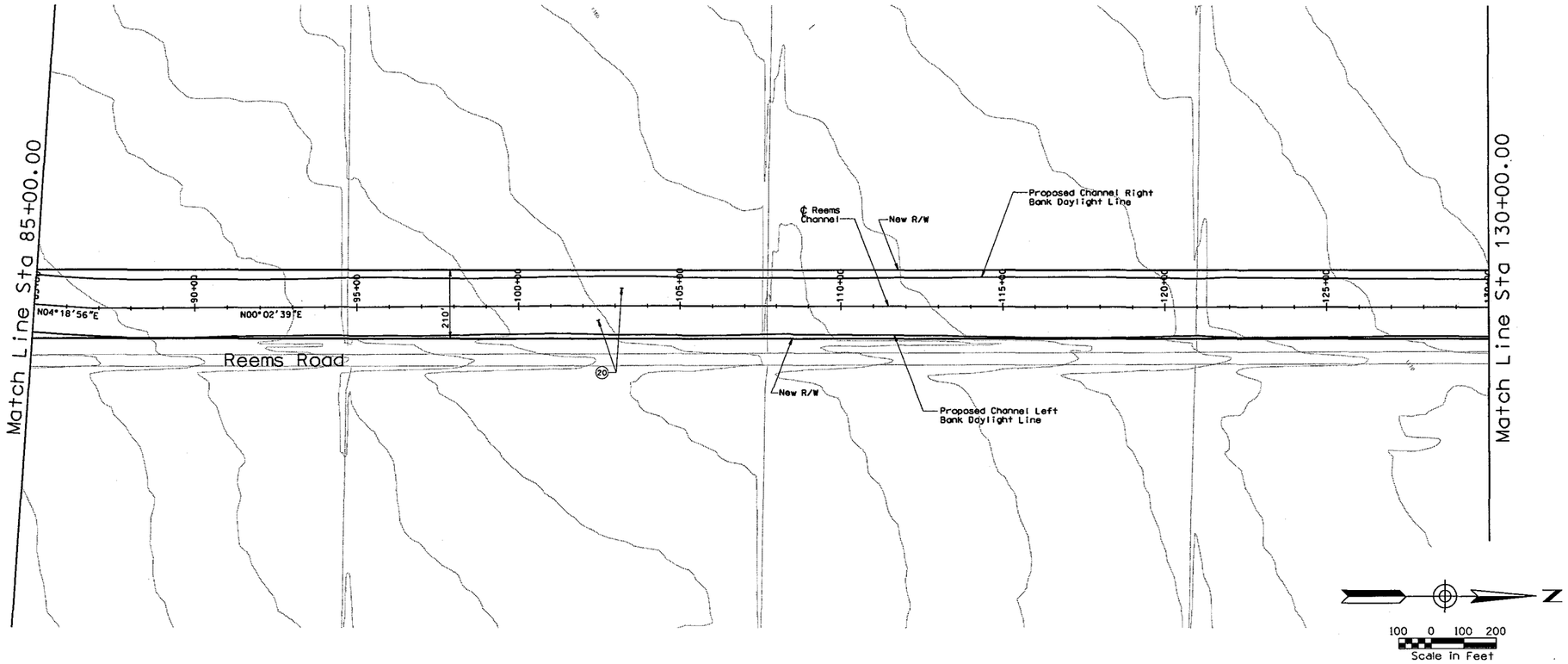

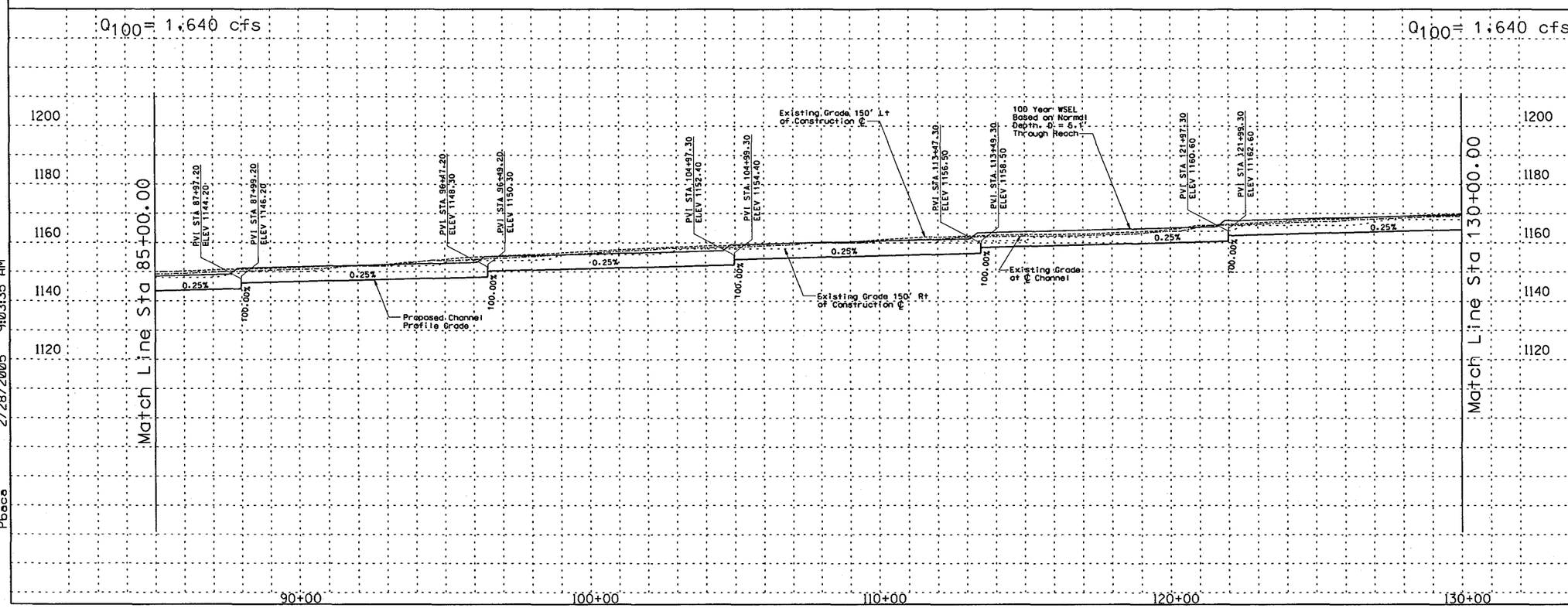

REMOVE

CONSTRUCT

STA 85+00.00 TO STA 130+00.00 CONSTRUCT 4500 LIN. FT EARTH CHANNEL

STA 85+00.00 TO STA 130+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 85+00.00 TO STA 130+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

REEMS CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
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1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 85+00.00 TO 130+00.00	SHEET RM3

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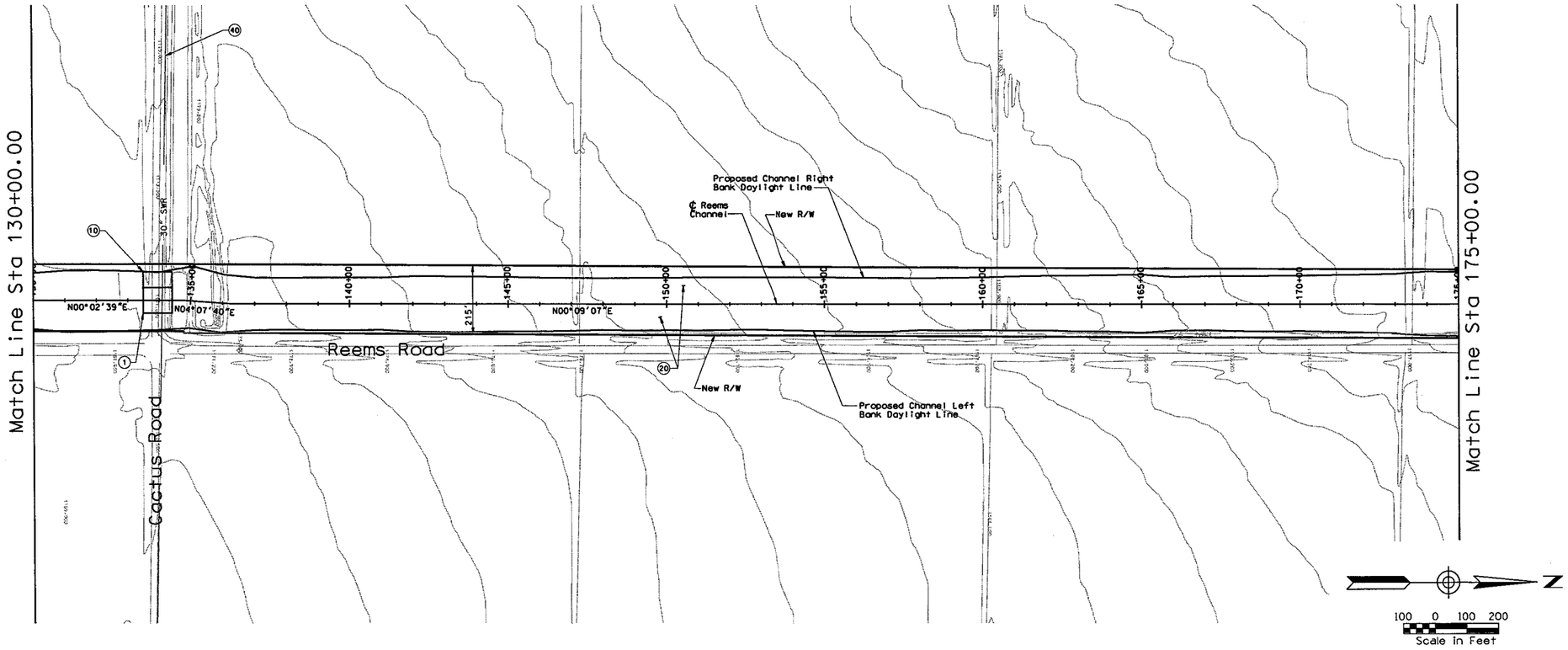

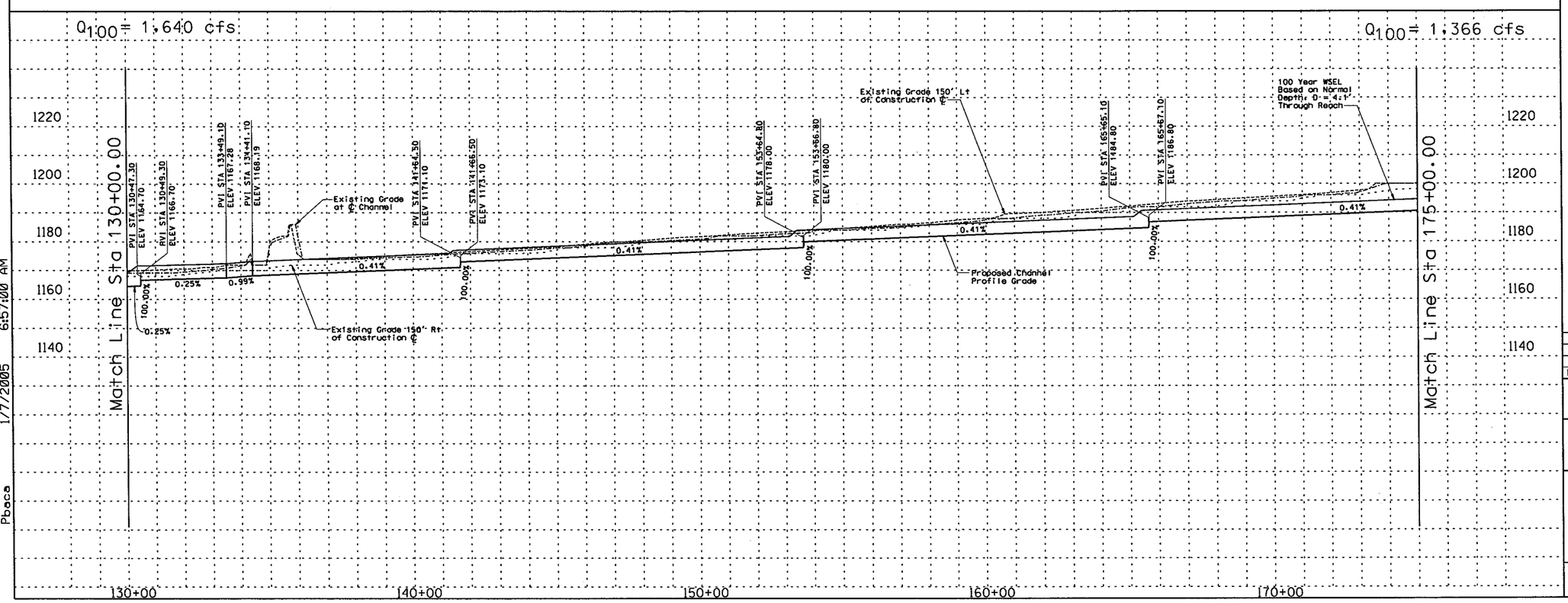

REMOVE

CONSTRUCT

STA 130+00.00 TO STA 175+00.00. CONSTRUCT 4500.00 LIN. FT EARTH CHANNEL

STA 130+00.00 TO STA 175+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

STA 130+00.00 TO STA 175+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT.

(1) INSTALL 7 BARREL 10' x 4' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE SEWER

GENERAL NOTES:
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

REEMS CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 130+00.00 TO 175+00.00	SHEET RM4

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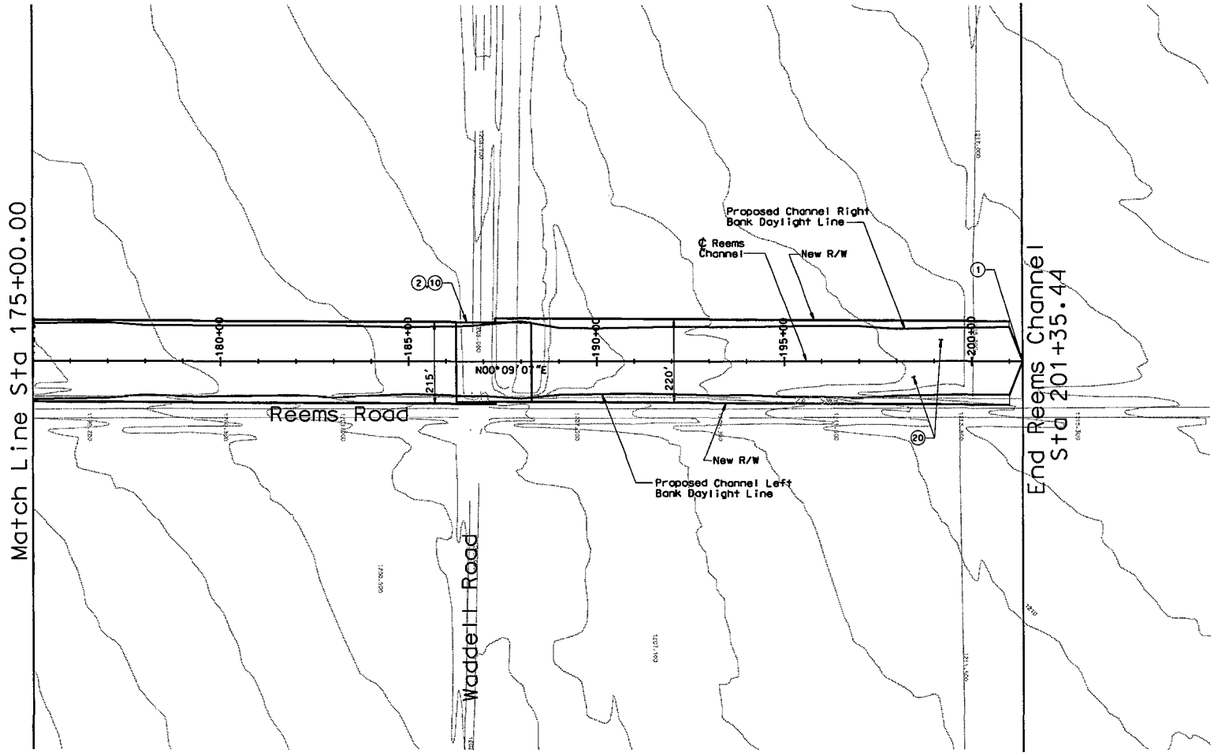

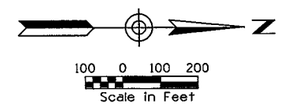

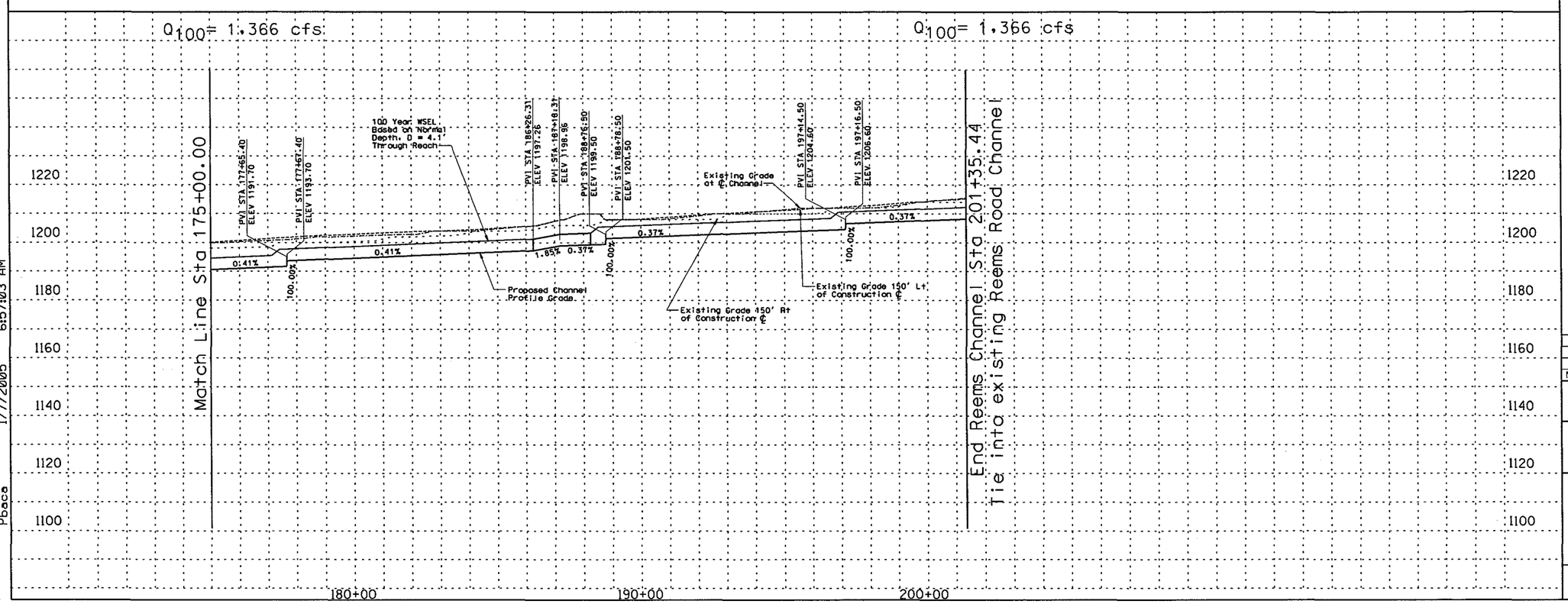

REMOVE

CONSTRUCT

STA 175+00.00 TO STA 201+35.44. CONSTRUCT 2635.44 LIN. FT EARTH CHANNEL

STA 175+00.00 TO STA 201+35.44. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

STA 175+00.00 TO STA 201+35.44. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) TIE INTO EXISTING UPSTREAM CHANNEL OUTLET BY OTHERS.

(2) INSTALL 7 BARREL 10' X 4' RCB

(10) INSTALL 8' X 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

REEMS CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
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1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 175+00.00 TO 201+35.44	SHEET RM5

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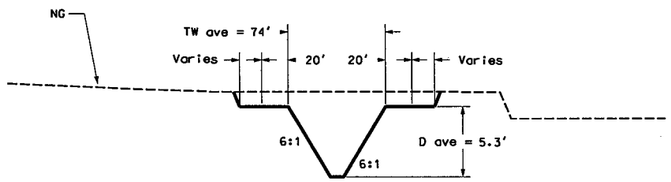
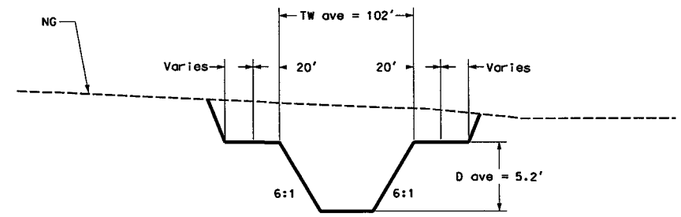
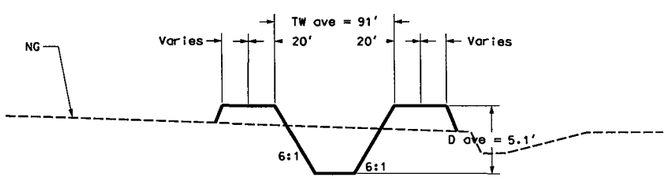


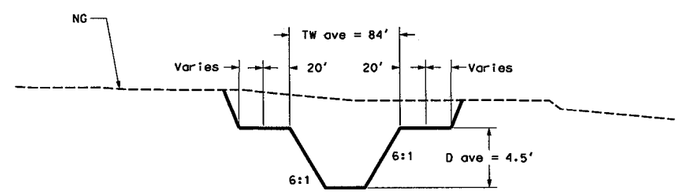
Sta 0+00.00 - Sta 28+47.25



Sta 29+39.25 - Sta 81+06.76



Sta 81+98.76 - Sta 135+95.10



Sta 136+87.10 - Sta 201+35.44

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

REEMS CHANNEL
CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TYPICAL CHANNEL SECTIONS	SHEET

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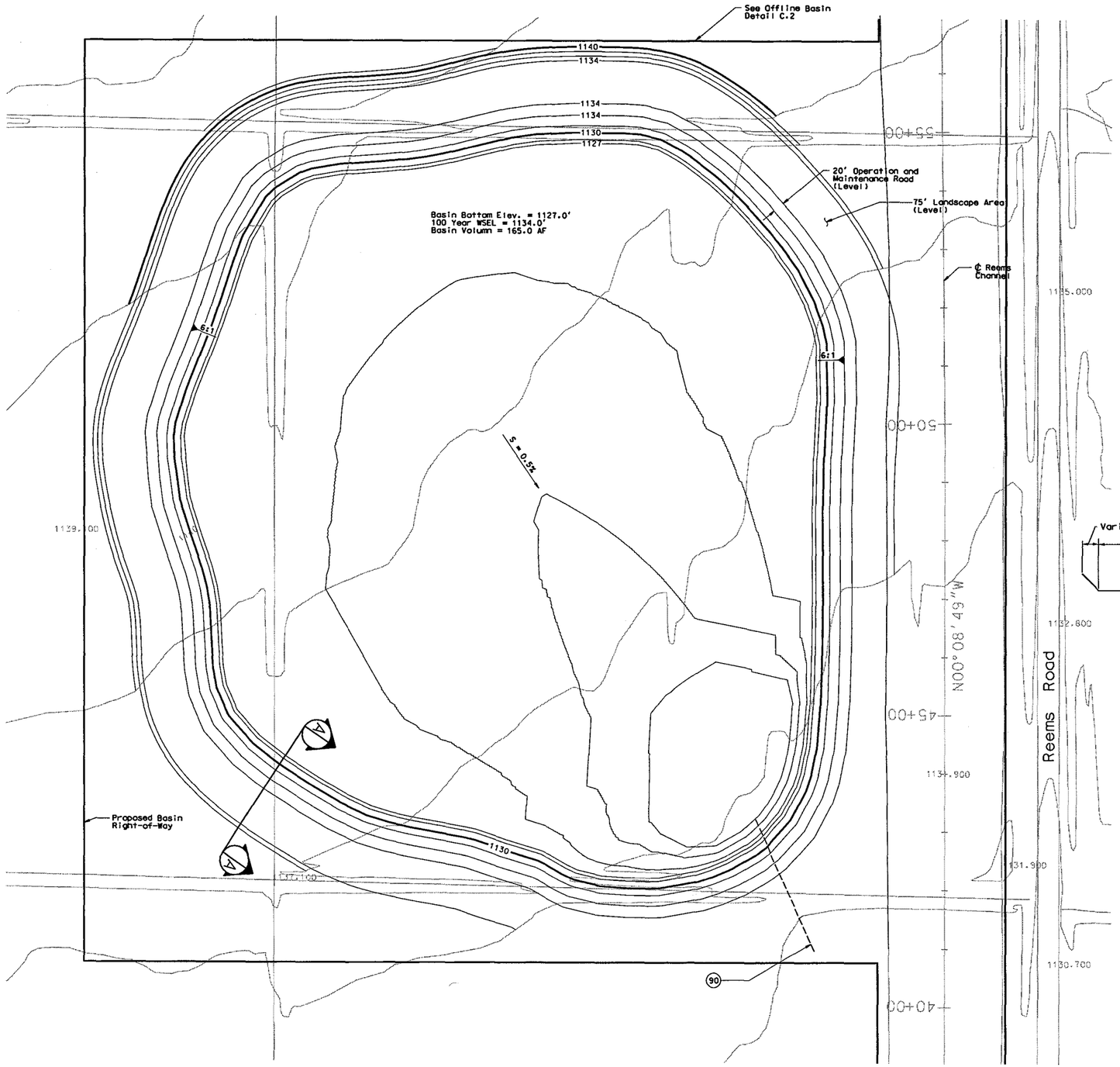
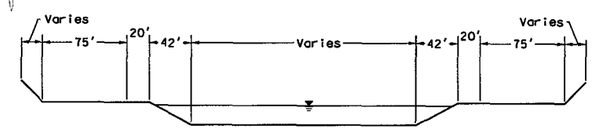
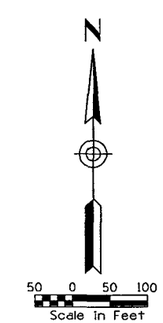




TYPICAL SECTION A-A

NOT TO SCALE



REMOVE

CONSTRUCT

(90) INSTALL 42" LOW FLOW POST STORM DRAIN.
1449 LF AT S = 0.16%.
DAYLIGHT IN REEMS CHANNEL AT STA 28+93.25.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

REEMS CHANNEL DETENTION BASIN
PLAN & SECTION

NO.	REVISION	BY	DATE
3			
2			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO. | REEMS CHANNEL BASIN PLAN | SHEET OF

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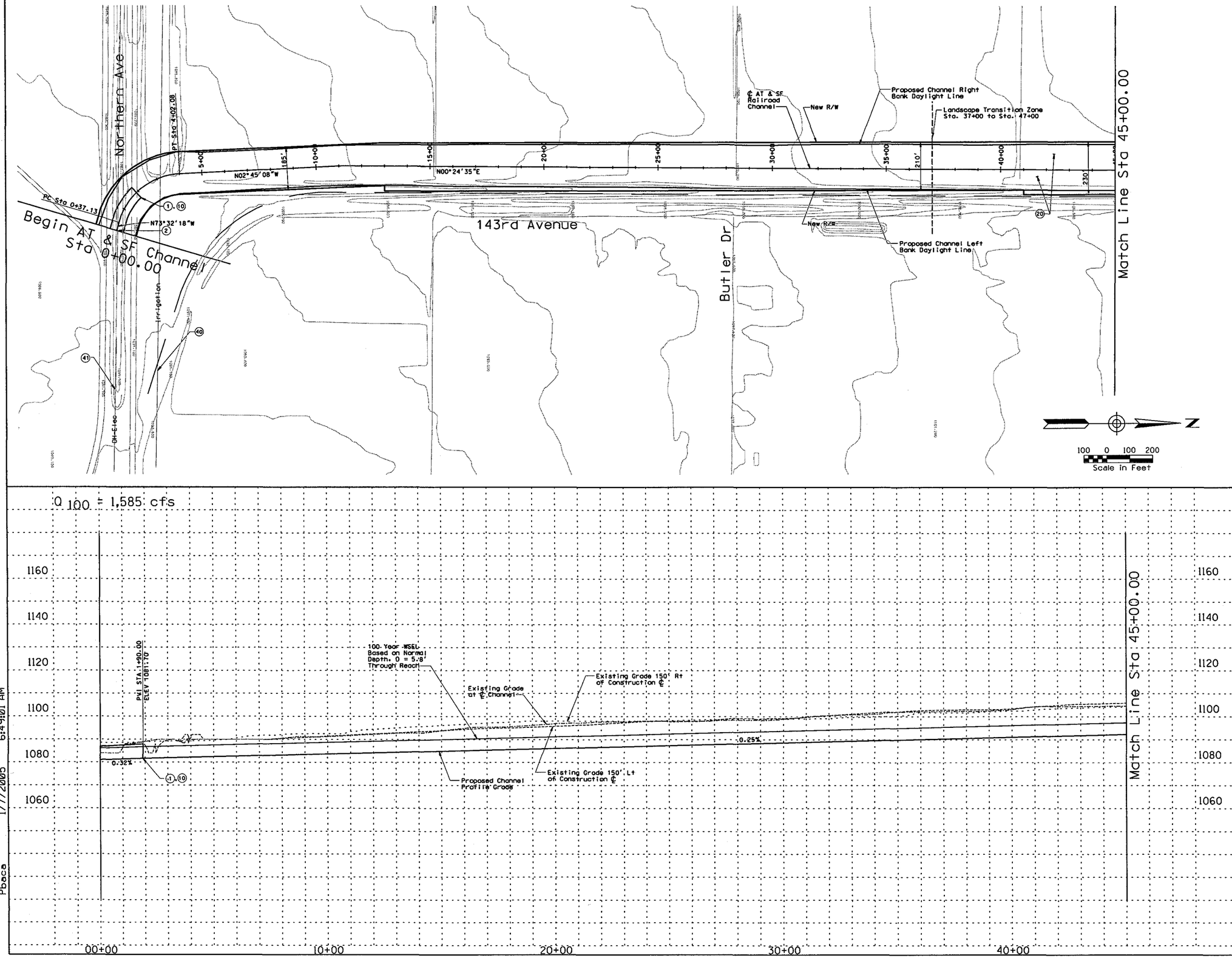

REMOVE

CONSTRUCT

STA 00+00.00 TO STA 45+00.00. CONSTRUCT 4500.00 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 45+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

STA 00+00.00 TO STA 45+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 7 BARREL 10' x 6' RCB

(2) TIE INTO EXISTING DYSART DRAIN

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE IRRIGATION

(41) RELOCATE OVERHEAD ELECTRIC

GENERAL NOTES:
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

AT & SF RAILROAD CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 00+00.00 TO 45+00.00	SHEET ATI

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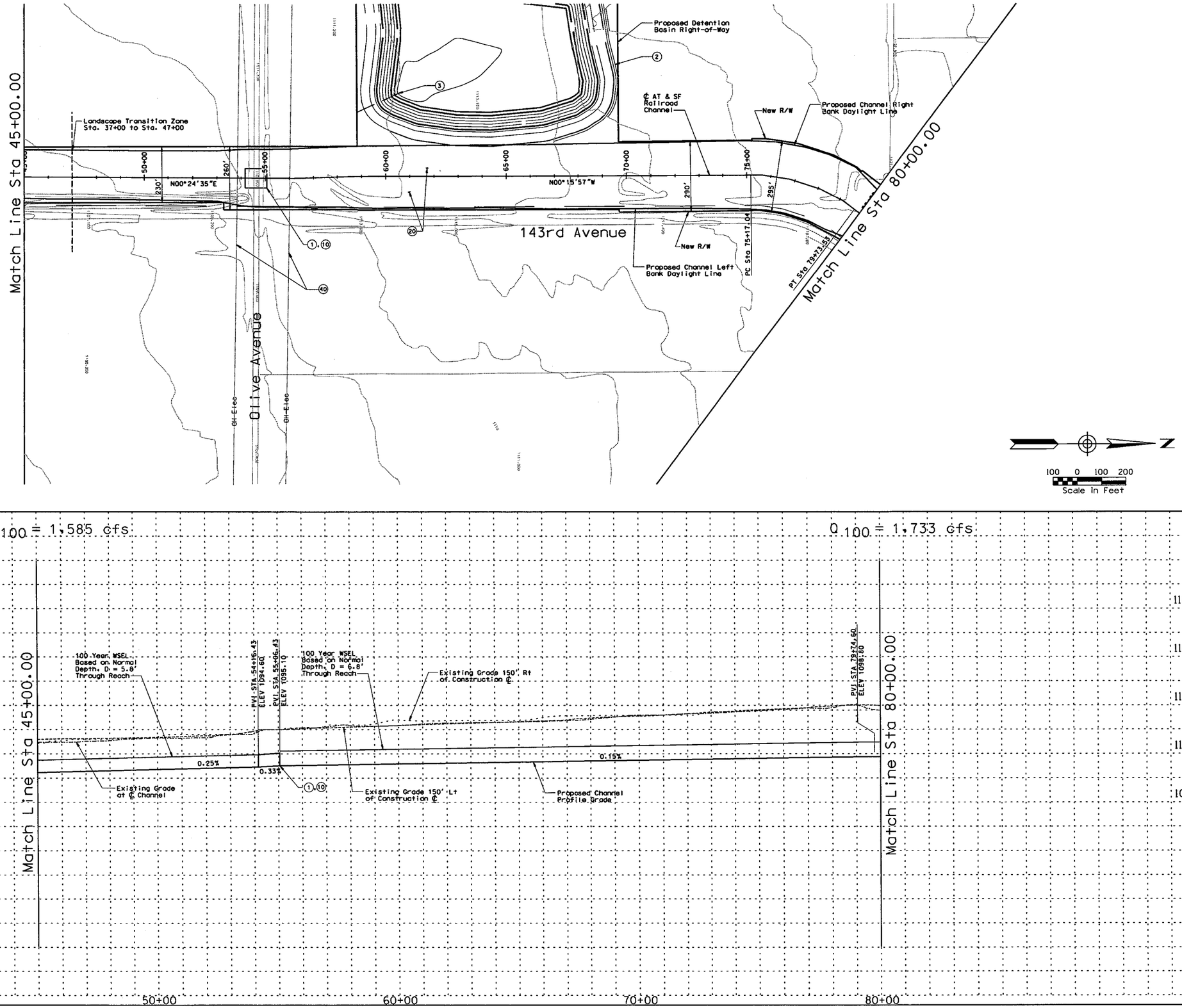

REMOVE

CONSTRUCT

STA 45+00.00 TO STA 80+00.00. CONSTRUCT 3500.00 LIN. FT EARTH CHANNEL

STA 45+00.00 TO STA 80+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

STA 45+00.00 TO STA 80+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 9 BARREL 10' x 6' RCB

(2) CONSTRUCT 142.7 AF OFFLINE DETENTION BASIN/PARK.

(3) LOW FLOW DRAIN

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE OVERHEAD ELECTRIC

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THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

AT & SF RAILROAD CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 45+00.00 TO 80+00.00	SHEET AT2

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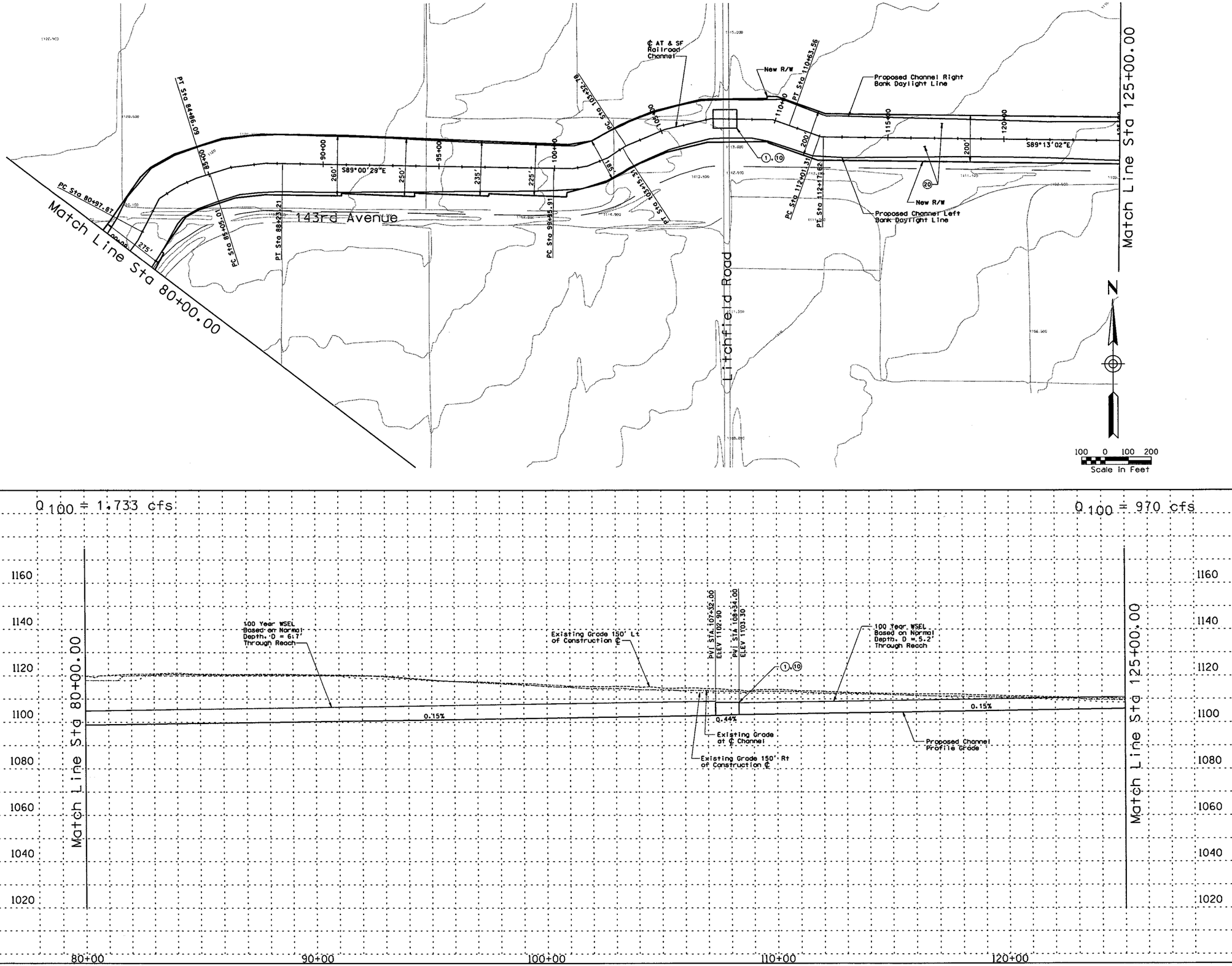

☐ REMOVE ☐

○ CONSTRUCT ○

STA 80+00.00 TO STA 125+00.00. CONSTRUCT 4500.00 LIN. FT EARTH CHANNEL

STA 80+00.00 TO STA 125+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

STA 80+00.00 TO STA 125+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 8 BARREL 10' x 4' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

AT & SF RAILROAD CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 80+00.00 TO 125+00.00	SHEET AT3

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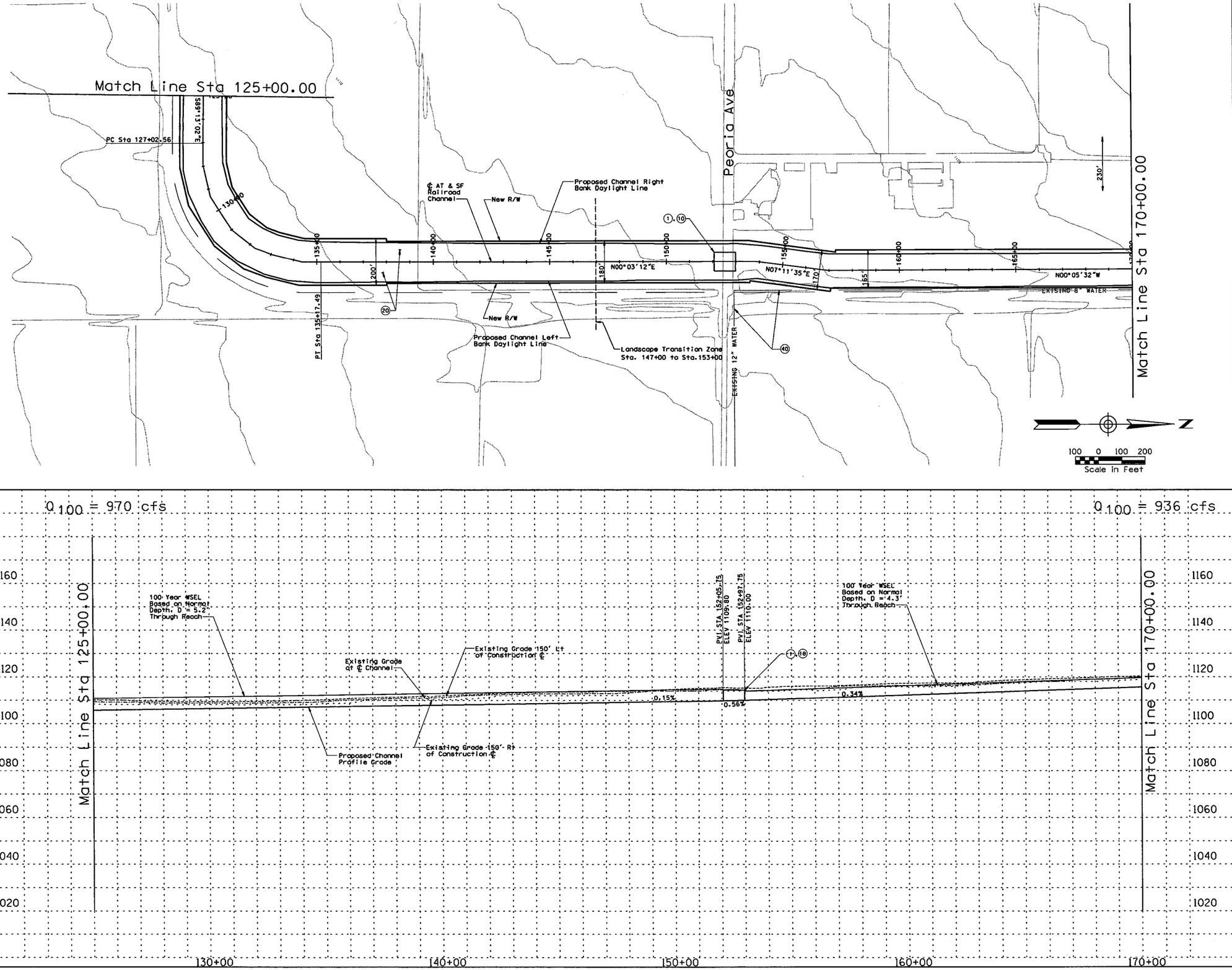

REMOVE

CONSTRUCT

STA 125+00.00 TO STA 170+00.00. CONSTRUCT 4500.00 LIN. FT EARTH CHANNEL

STA 125+00.00 TO STA 170+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

STA 125+00.00 TO STA 170+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 7 BARREL 10' x 4' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE – LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE WATER

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE – LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

AT & SF RAILROAD CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 125+00.00 TO 170+00.00	SHEET AT4

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1/7/2005 6:49:09 AM
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REMOVE

CONSTRUCT

STA 170+00.00 TO STA 215+00.00. CONSTRUCT 4500.00 LIN. FT EARTH CHANNEL

STA 170+00.00 TO STA 215+00.00. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 170+00.00 TO STA 215+00.00. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 6 BARREL 10' x 4' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE WATER LINE

(41) RELOCATE SEWER LINE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

AT & SF RAILROAD CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 170+00.00 TO 215+00.00	SHEET AT5

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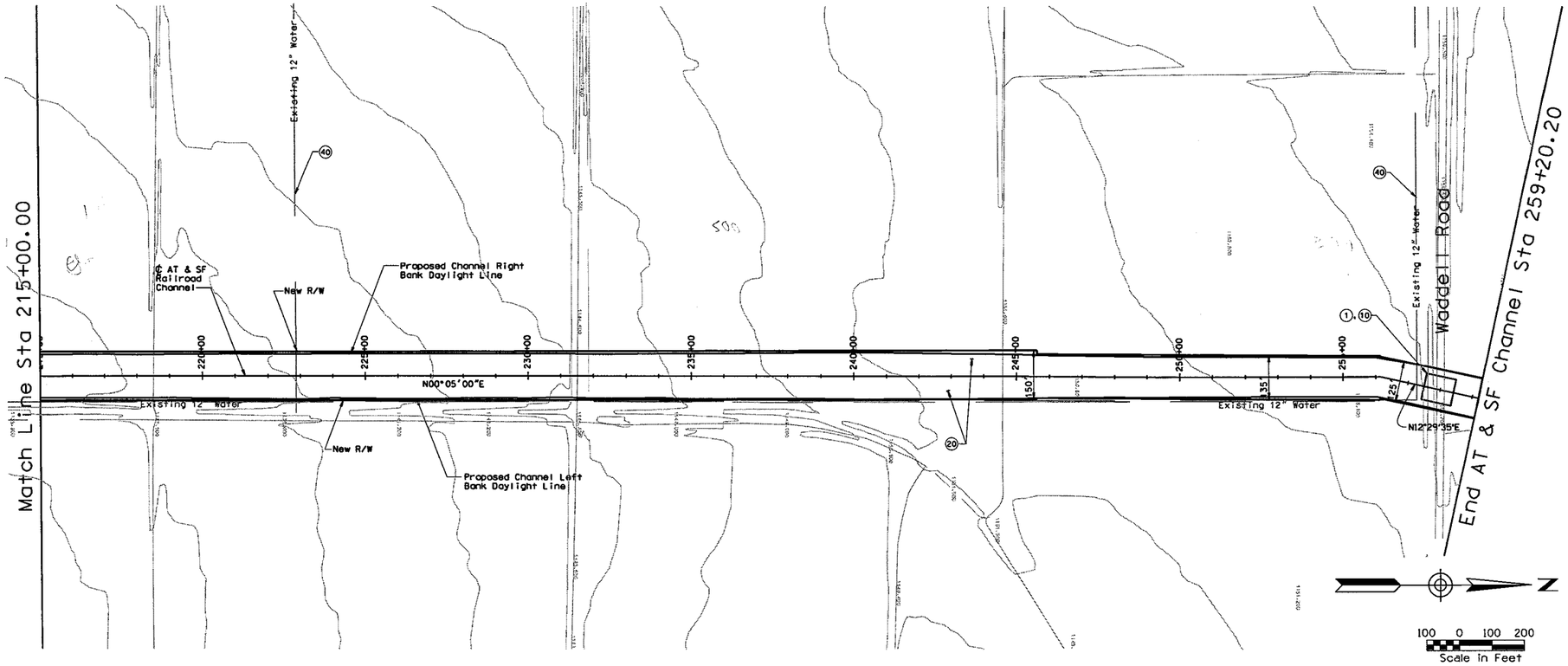

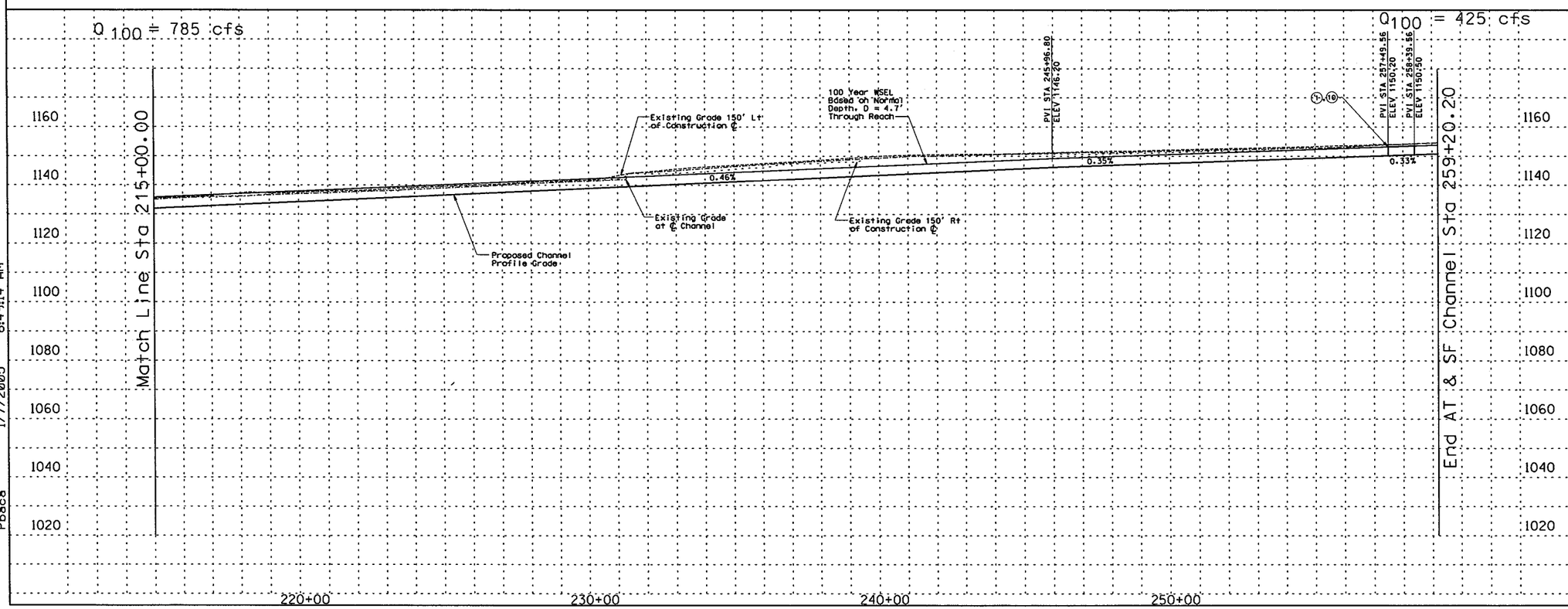

REMOVE

CONSTRUCT

STA 215+00.00 TO STA 259+20.20. CONSTRUCT 4420.20 LIN. FT EARTH CHANNEL

STA 215+00.00 TO STA 259+20.20. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE

STA 215+00.00 TO STA 259+20.20. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 3 BARREL 10' x 4' RCB

(10) INSTALL 8' x 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

(40) RELOCATE WATER LINE

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

AT & SF RAILROAD CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 215+00.00 TO 259+20.20	SHEET AT6

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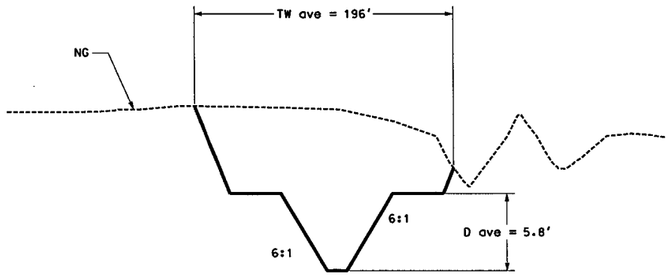
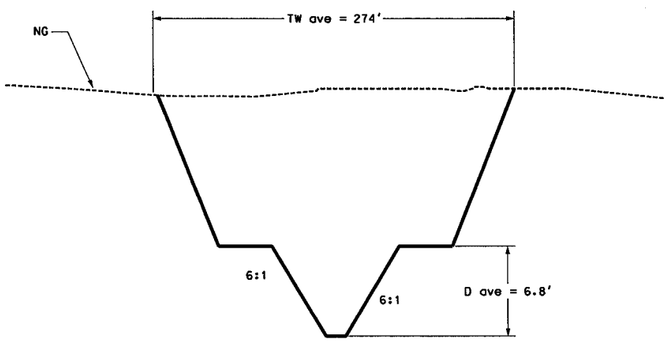
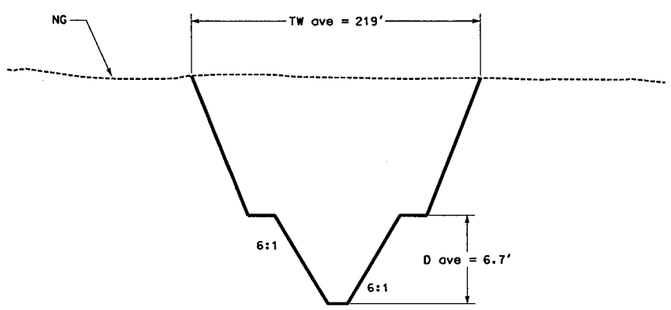


Sta 0+00.00 - Sta 54+61.43



Sta 55+51.43 - Sta 80+00.00



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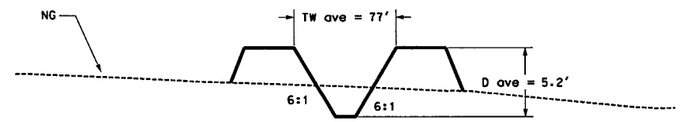

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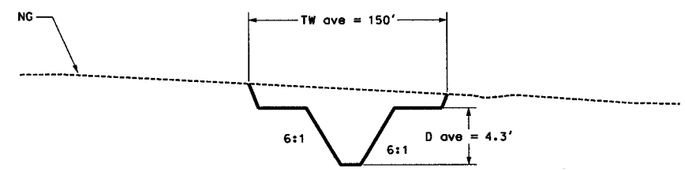
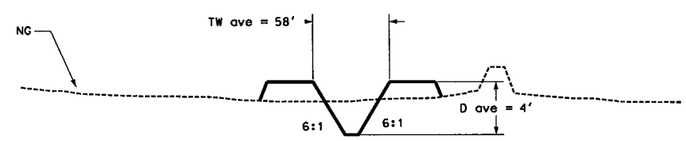


Sta 153+41.75 - Sta 205+19.88



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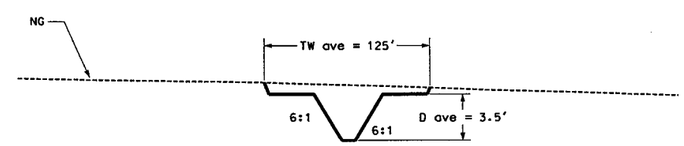

Sta 245+00.00 - Sta 259+14.05

50 0 50 100
Scale in Feet

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

AT & SF CHANNEL
CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TYPICAL CHANNEL SECTIONS	SHEET

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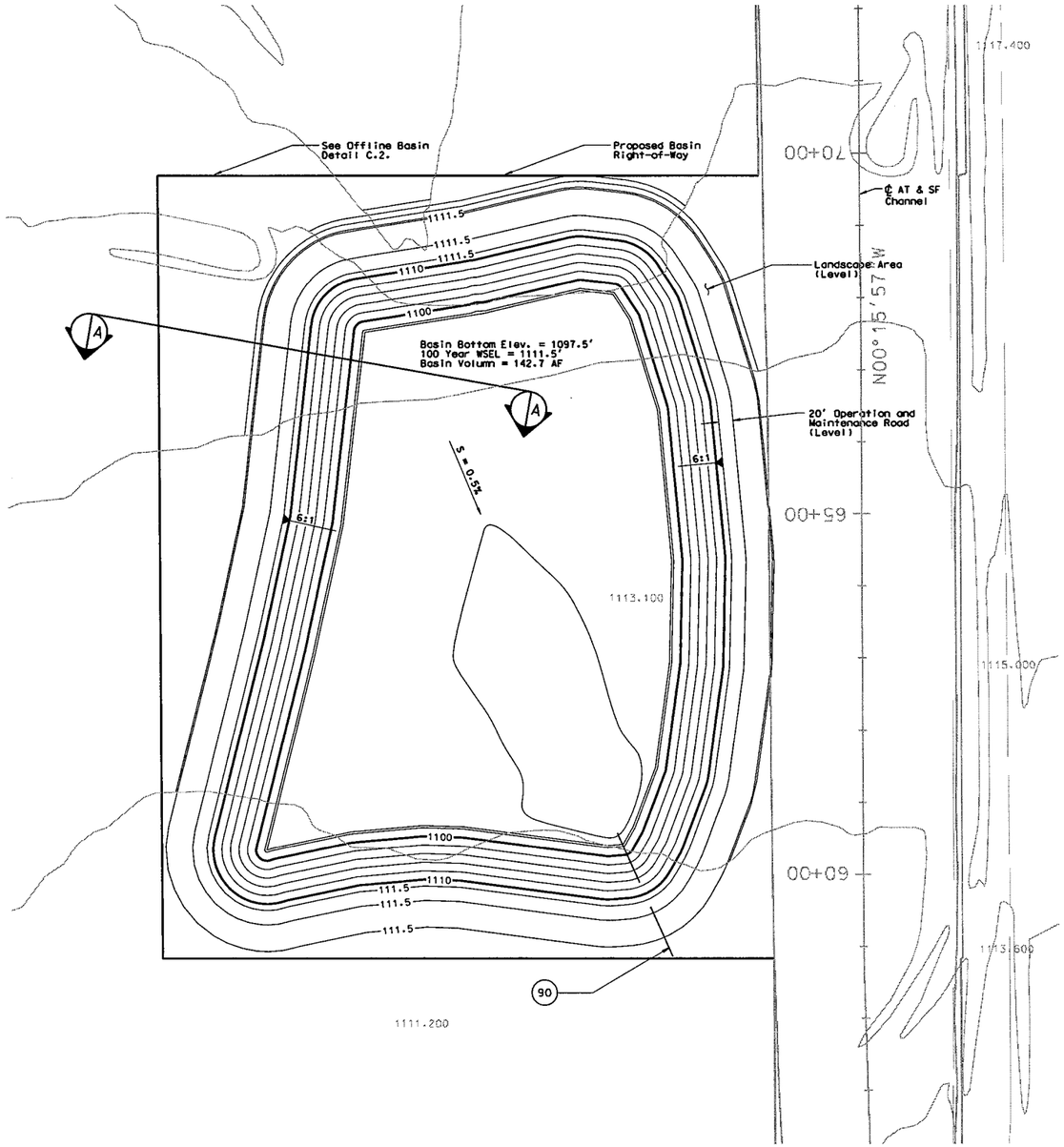
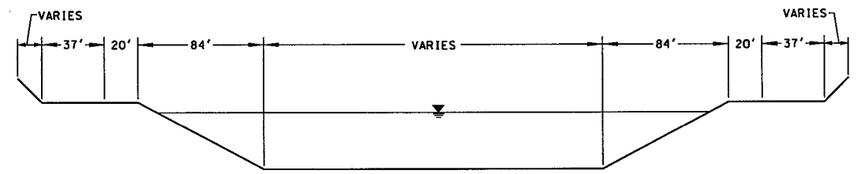
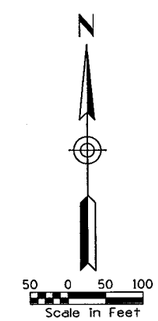




TYPICAL SECTION A-A
NOT TO SCALE



REMOVE

CONSTRUCT

(90) INSTALL 42" LOW FLOW POST STORM DRAIN.
1832 LF AT S = 0.2%.
DAYLIGHT IN AT & SF CHANNEL AT STA 42+55.60

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

AT & SF CHANNEL DETENTION BASIN
PLAN & SECTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO. | AT & SF CHANNEL BASIN PLAN | SHEET OF

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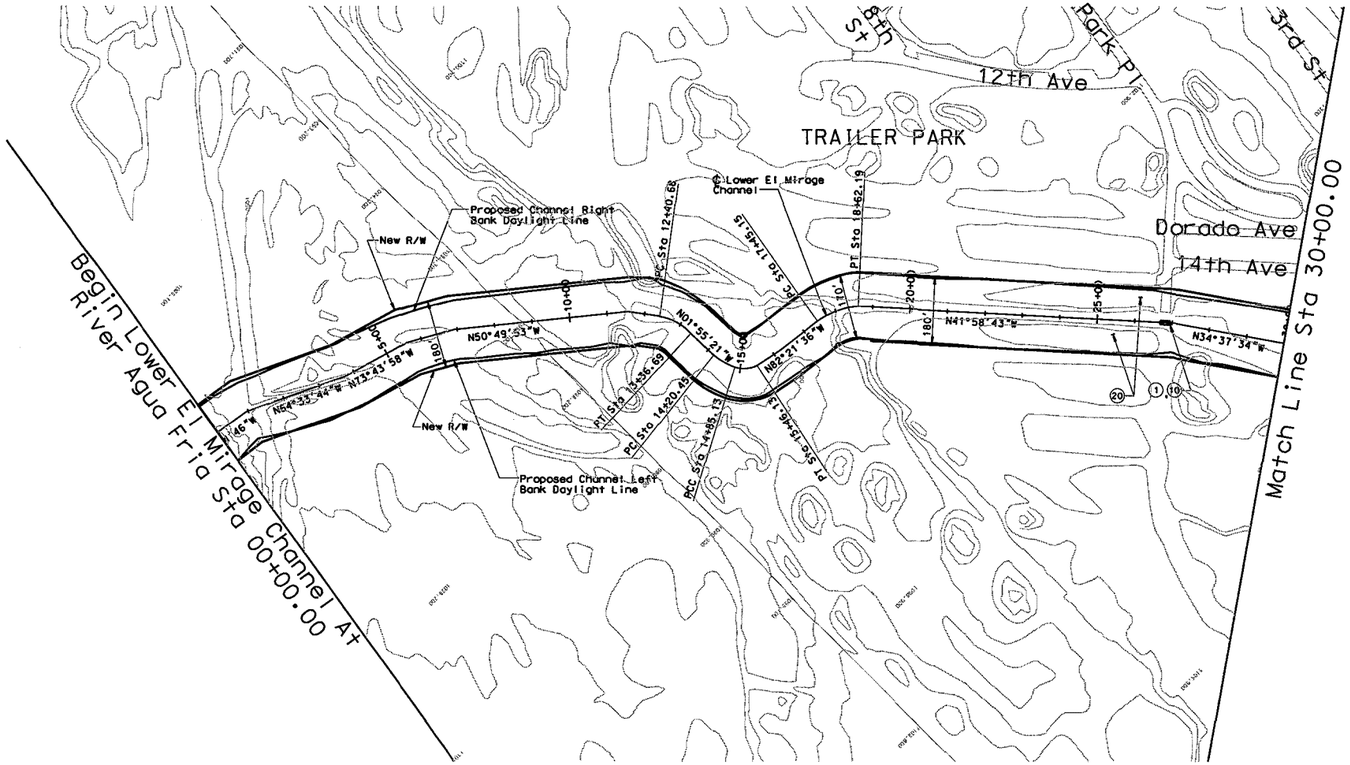

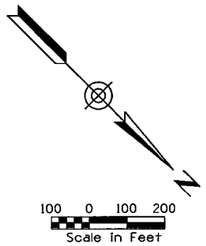

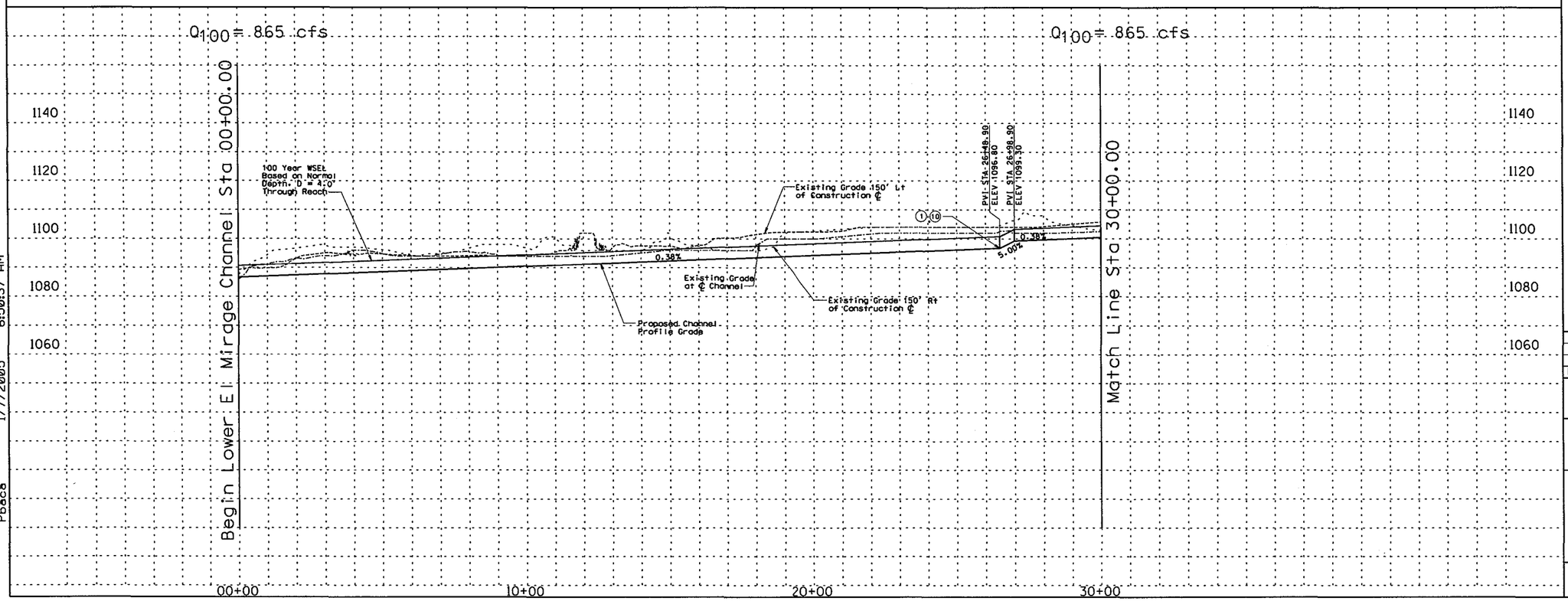

REMOVE

CONSTRUCT

STA 00+00.00 TO STA 30+00.00 CONSTRUCT 3000 LIN. FT EARTH CHANNEL

STA 00+00.00 TO STA 30+00.00, PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 00+00.00 TO STA 30+00.00, CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) INSTALL 5 BARREL 10' X 4' RCB

(10) INSTALL 8' X 10' PEDESTRIAN CROSSING

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

LOWER EL MIRAGE CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 00+00.00 TO 30+00.00	SHEET LE1

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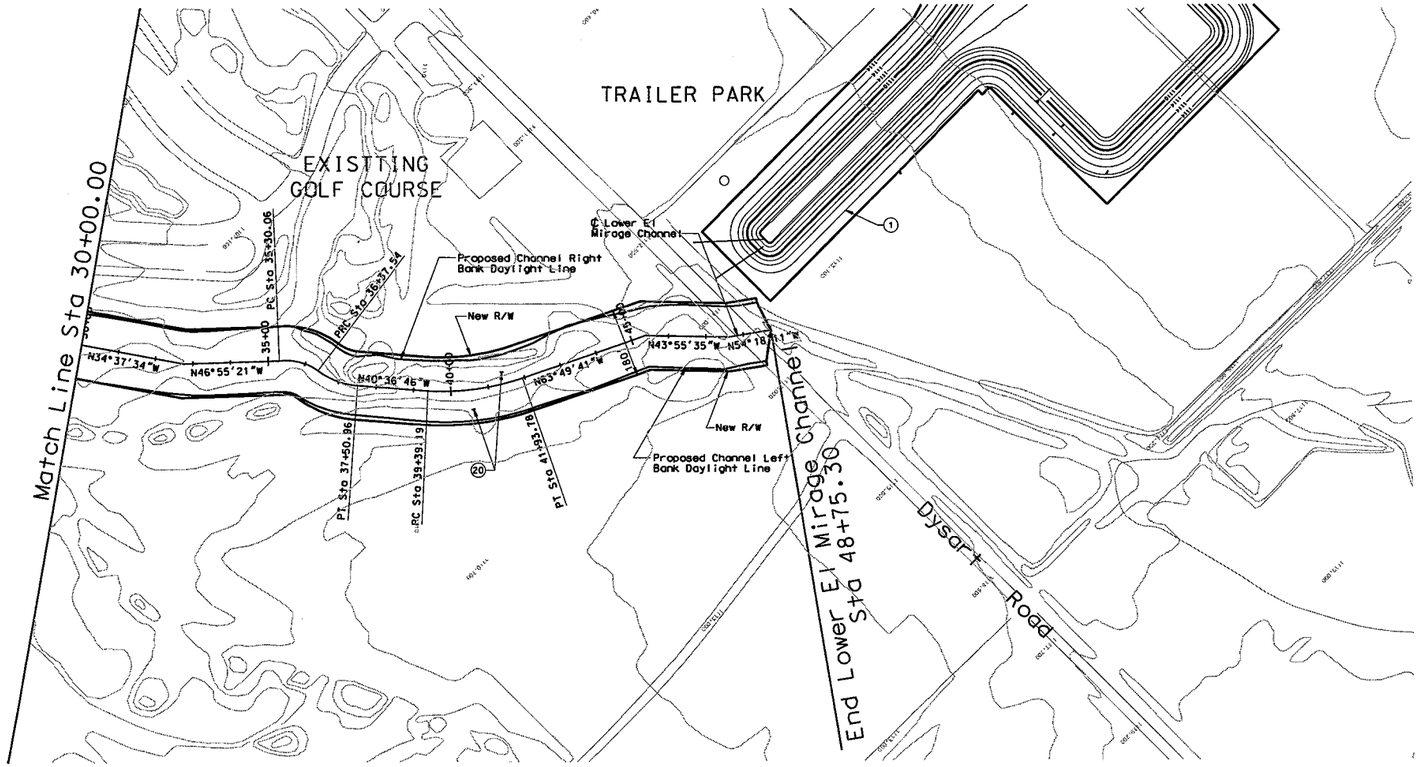

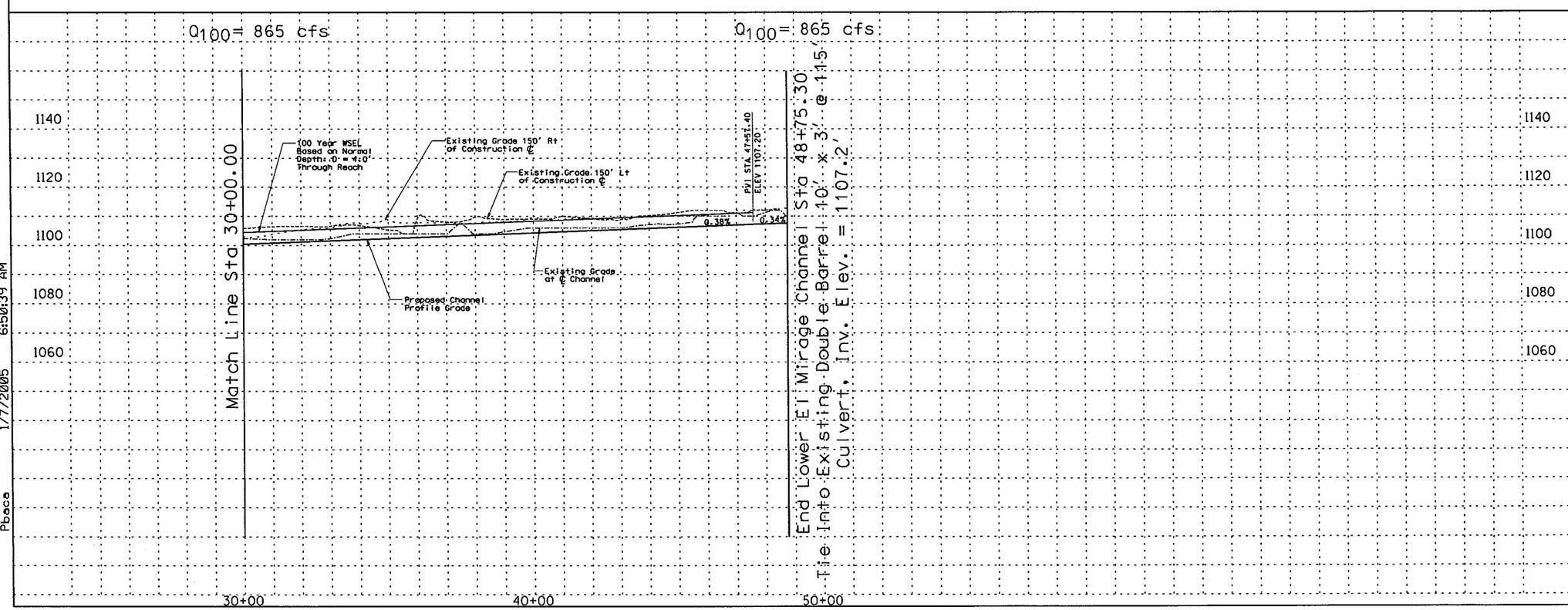

REMOVE

CONSTRUCT

STA 30+00.00 TO STA 48+75.30 CONSTRUCT 1875.30 LIN. FT EARTH CHANNEL

STA 30+00.00 TO STA 48+75.30. PROFILE AND ALIGNMENT BASED ON PRELIMINARY LAYOUTS DEVELOPED FOR THE LOOP 303 CORRIDOR/ WHITE TANKS AREA DRAINAGE MASTER PLAN UPDATE.

STA 30+00.00 TO STA 48+75.30. CONSTRUCT MULTI-USE AESTHETIC CORRIDOR WITH TRAIL SYSTEM WITHIN CHANNEL FOOTPRINT

(1) CONSTRUCT 80 AF OFF-LINE DETENTION BASIN/PARK SEE GENERAL NOTES BELOW FOR DETAILS

(20) CONSTRUCT 20' ACCESS ROAD AND LANDSCAPE AREA ON RIGHT AND LEFT CHANNEL OVERBANKS PER LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004.

GENERAL NOTES:
PRELIMINARY- NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

LOWER EL MIRAGE CHANNEL
PLAN & PROFILE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	PLAN AND PROFILE SHEET STA. 30+00.00 TO 48+75.30	SHEET LE2

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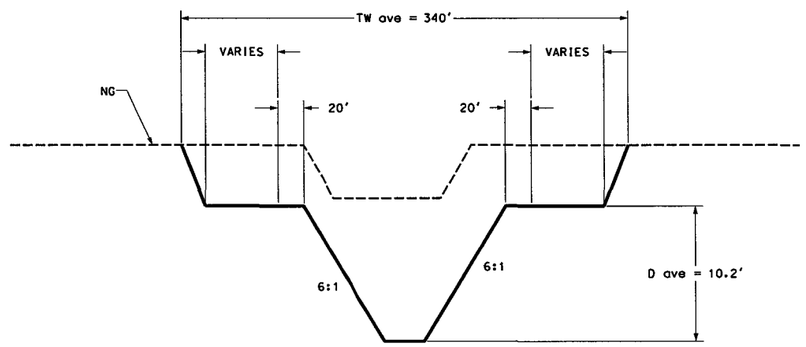

STA 0+00.00 - STA 48+75.30
N.T.S.

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
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SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

LOWER EL MIRAGE CHANNEL
CROSS SECTIONS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	TYPICAL CHANNEL SECTIONS	SHEET

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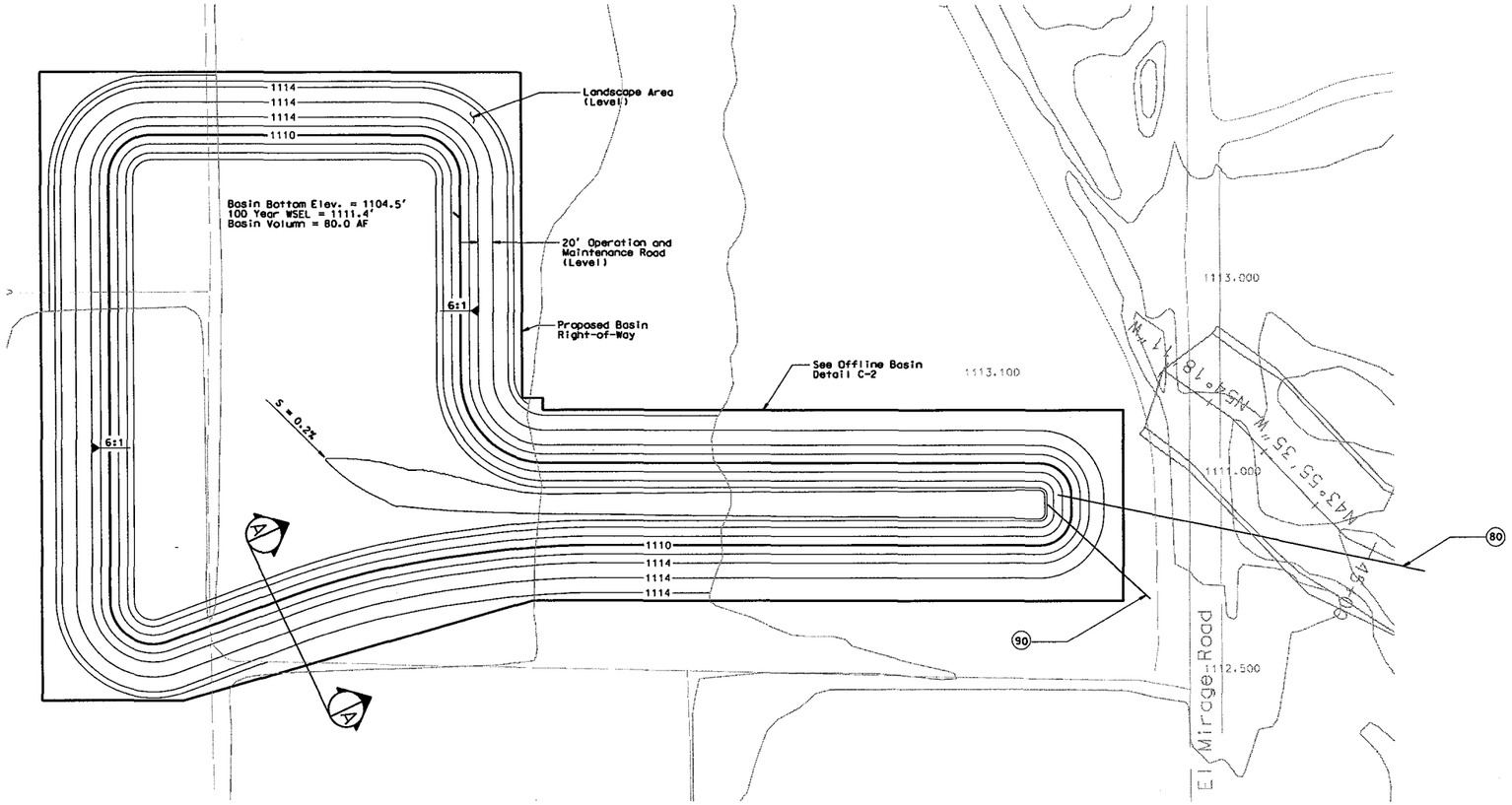
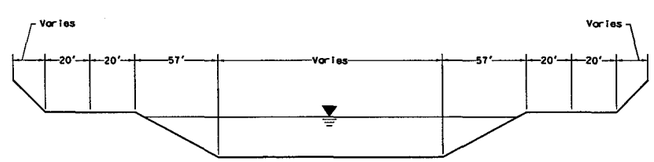
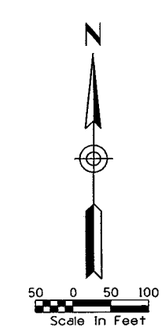




TYPICAL SECTION A-A
NOT TO SCALE



REMOVE

CONSTRUCT

(80) INSTALL 7 BARREL 60" RCP BASIN OUTLET

(90) INSTALL 30" LOW FLOW POST STORM DRAIN.
2068 LF AT S = 0.22%.
DAYLIGHT IN LOWER EL MIRAGE CHANNEL AT STA. 27+59.13.

GENERAL NOTES:
PRELIMINARY. NOT FOR CONSTRUCTION
PLANS ARE FOR CONCEPTUAL USE ONLY

UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

LOWER EL MIRAGE CHANNEL
DETENTION BASIN - PLAN & SECTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	LOWER EL MIRAGE CHANNEL BASIN	SHEET OF

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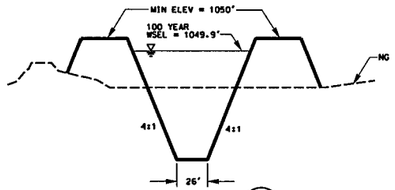
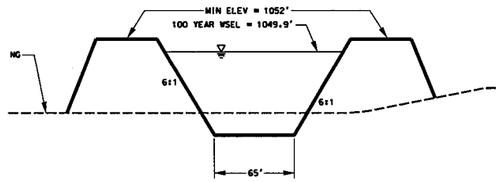
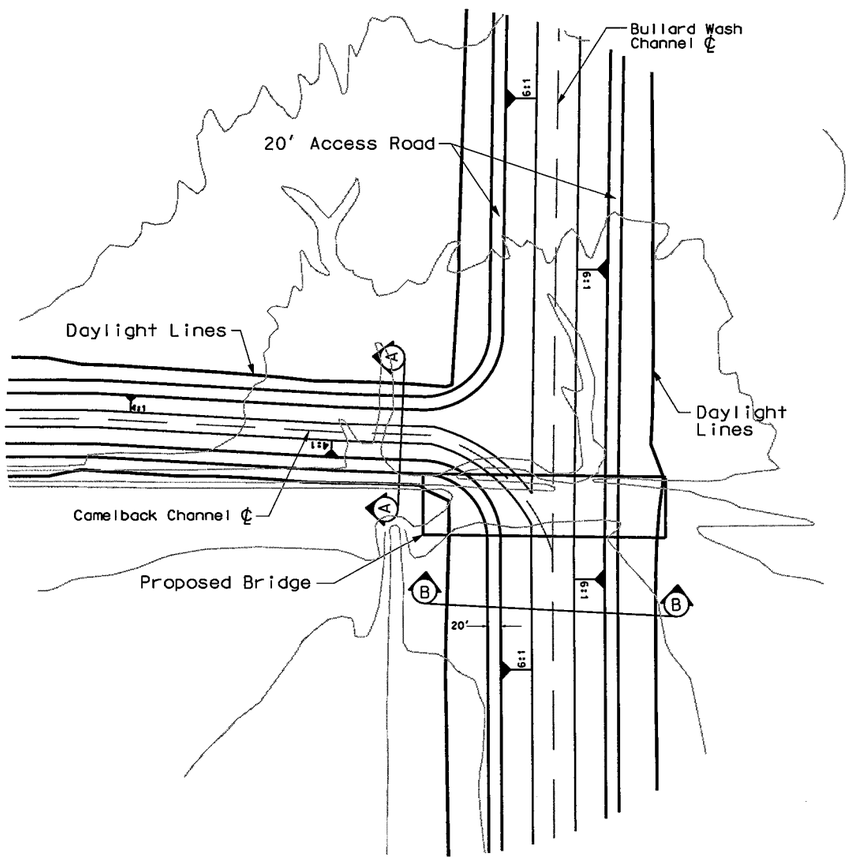


SECTION A
LOOKING UPSTREAM
(CAMELBACK CHANNEL)

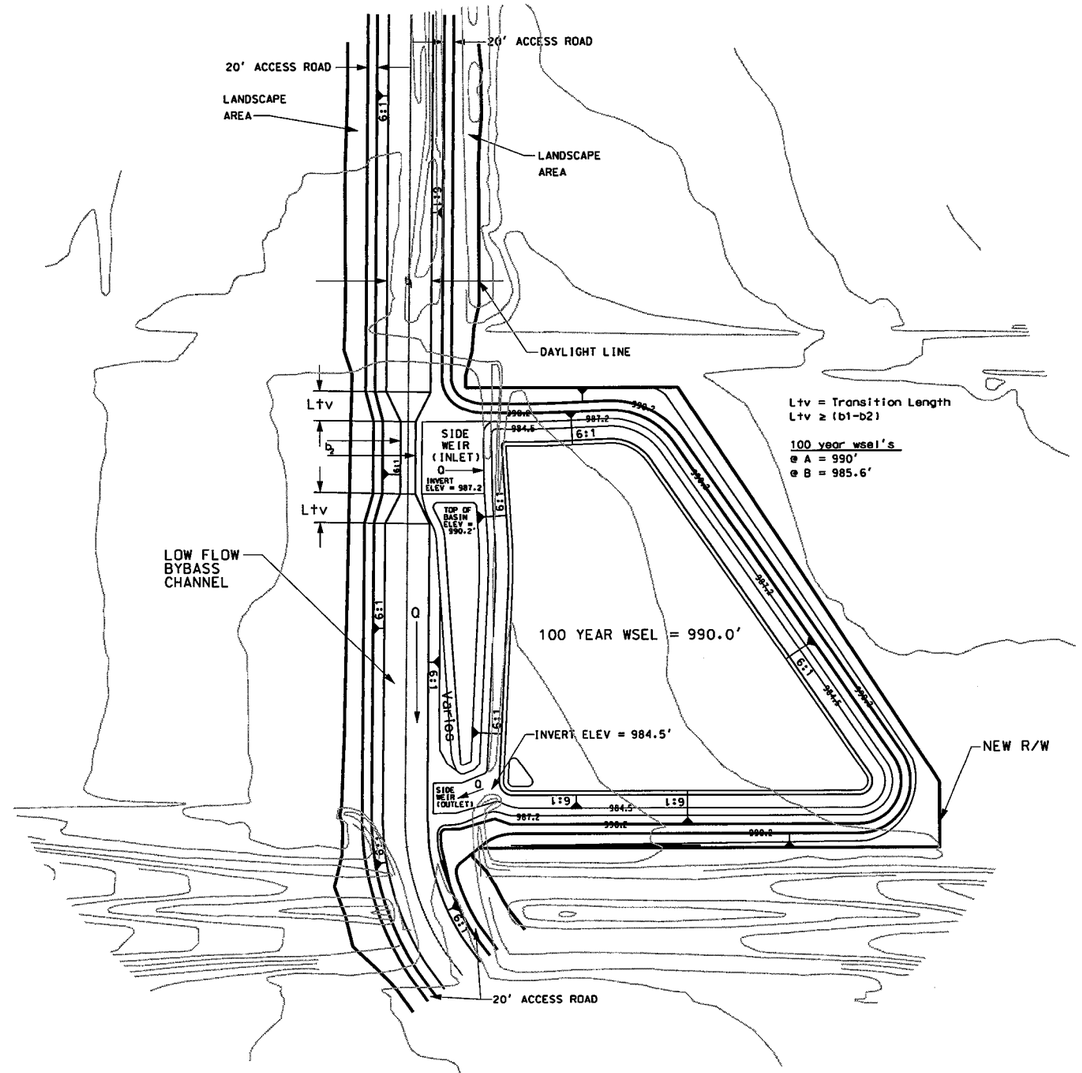


SECTION B
LOOKING UPSTREAM
(BULLARD CHANNEL)



Camelback and Bullard Wash Channel Confluence

Detail C.1
Not To Scale



Typical Offline Basin

Detail C.2
Not To Scale

N

Not To Scale

REMOVE

CONSTRUCT

GENERAL NOTES:
PRELIMINARY, NOT FOR CONSTRUCTION
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UTILITY LOCATIONS ARE SCHEMATIC. CULVERT LOCATIONS ARE APPROXIMATE

SEE LOOP 303 CORRIDOR/WHITE TANKS ADMP UPDATE - LANDSCAPE AESTHETICS AND MULTI-USE DESIGN GUIDELINES FOR FLOOD CONTROL FACILITIES DATED OCTOBER 2004 FOR IDENTIFIED CROSS SECTIONS AND LANDSCAPE AESTHETIC TREATMENTS.

THE HORIZONTAL DATUM USED WAS NAD 83. THE VERTICAL DATUM USED WAS NGVD 1929.

LOOP 303 BASIN, SECTIONS & PLAN DETAILS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

LOOP 303 CORRIDOR/WHITE TANKS
ADMP UPDATE
PROJECT CONTROL NO. FCD99-40

	BY	DATE
DESIGNED	R.J.S.	11/04
DRAWN	M.S.J.	11/04
CHECKED	E.S.	11/04

URS

DRAWING NO.	BASIN DETAIL PLAN DETAILS C.1 & C.2	SHEET

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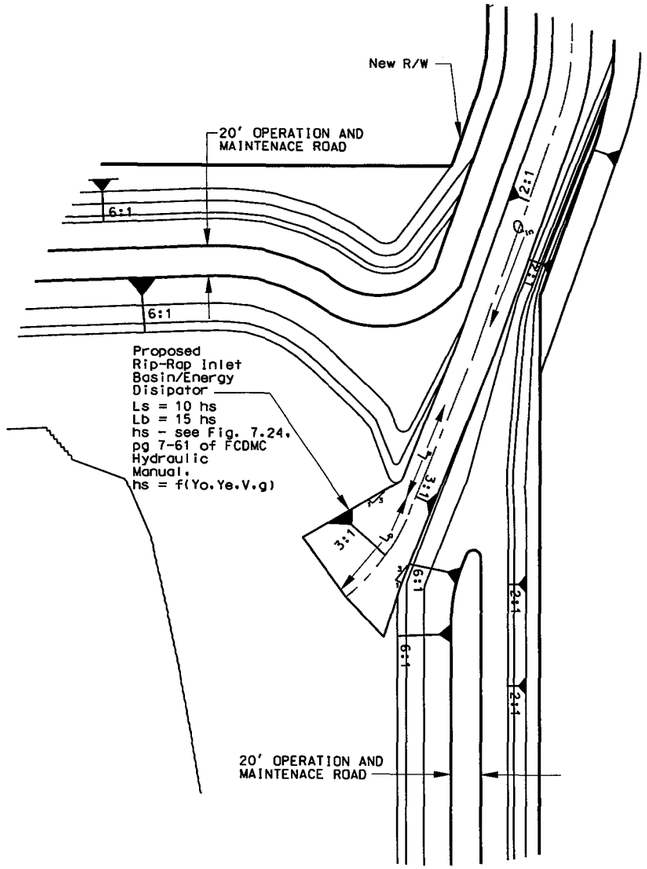
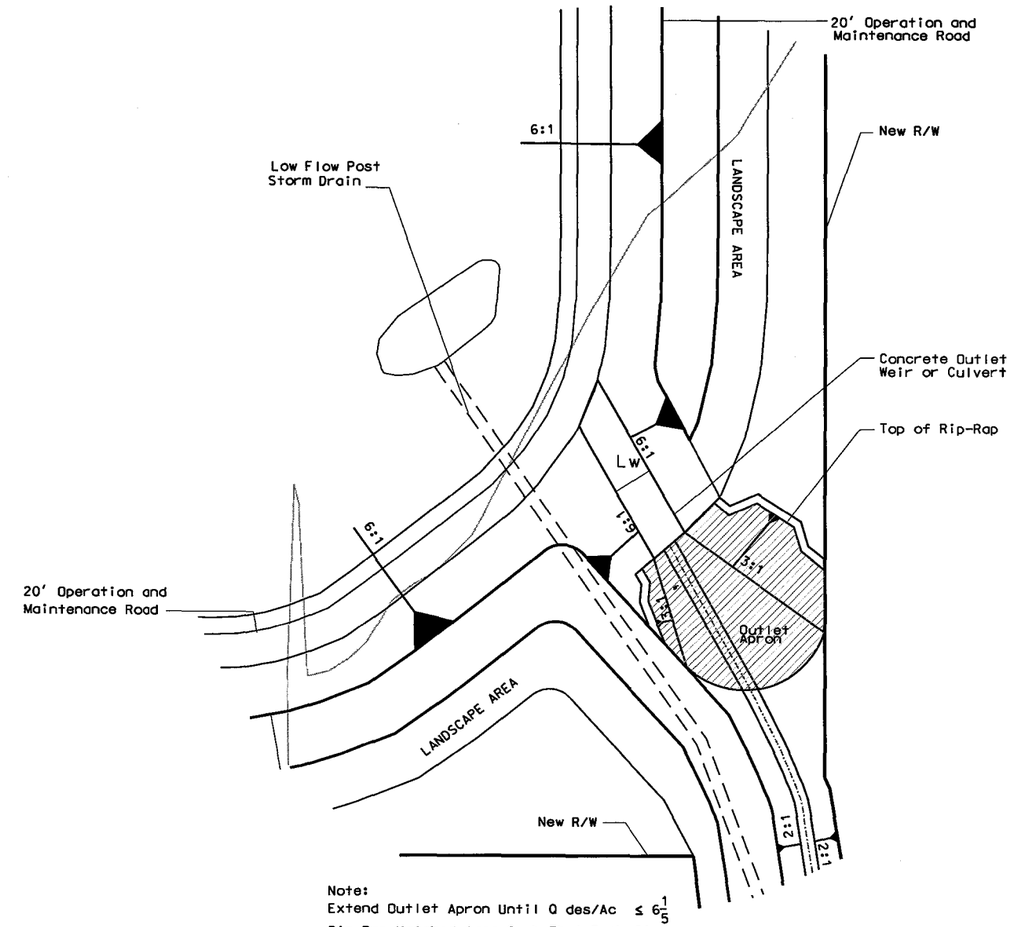


Typical Online Detention Basin Inlet

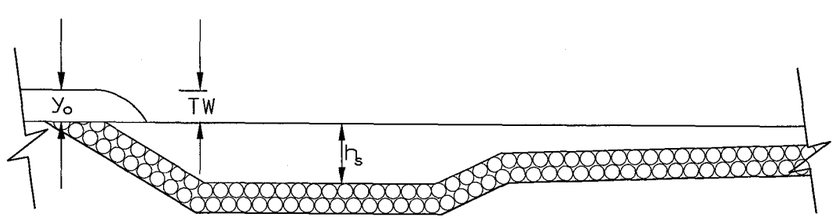
Detail C.3A
Not To Scale



Note:
Extend Outlet Apron Until Q des/Ac $\leq 6\frac{1}{5}$
Rip-Rap Hatched Area Such That Rock Size is: 2 d50 or 1.5 dmax, Lw = Weir Length

Typical Detention Basin Outlet

Detail C.3B
Not To Scale



℄ SECTION
Not To Scale

Not To Scale

REMOVE

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URS

DRAWING NO.	BASIN DETAIL PLAN Details C.3A & C.3B	SHEET

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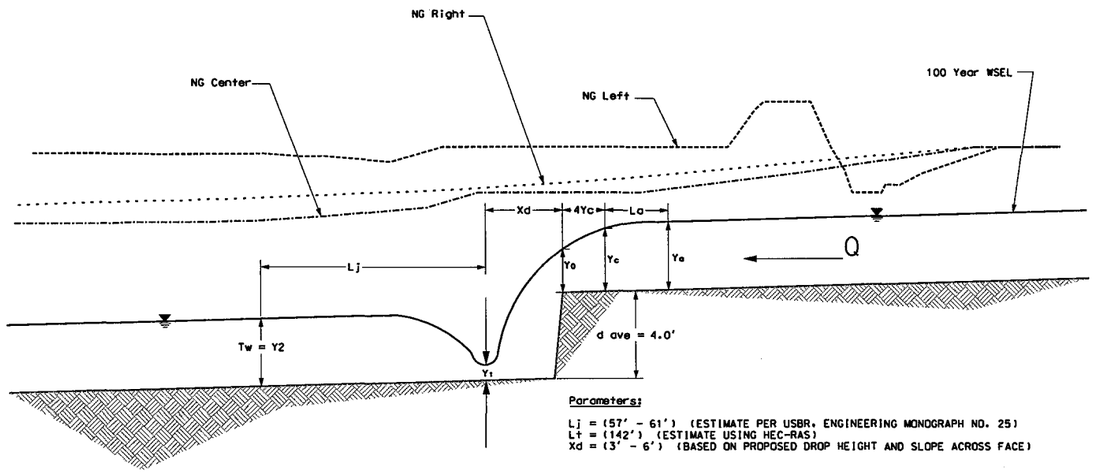
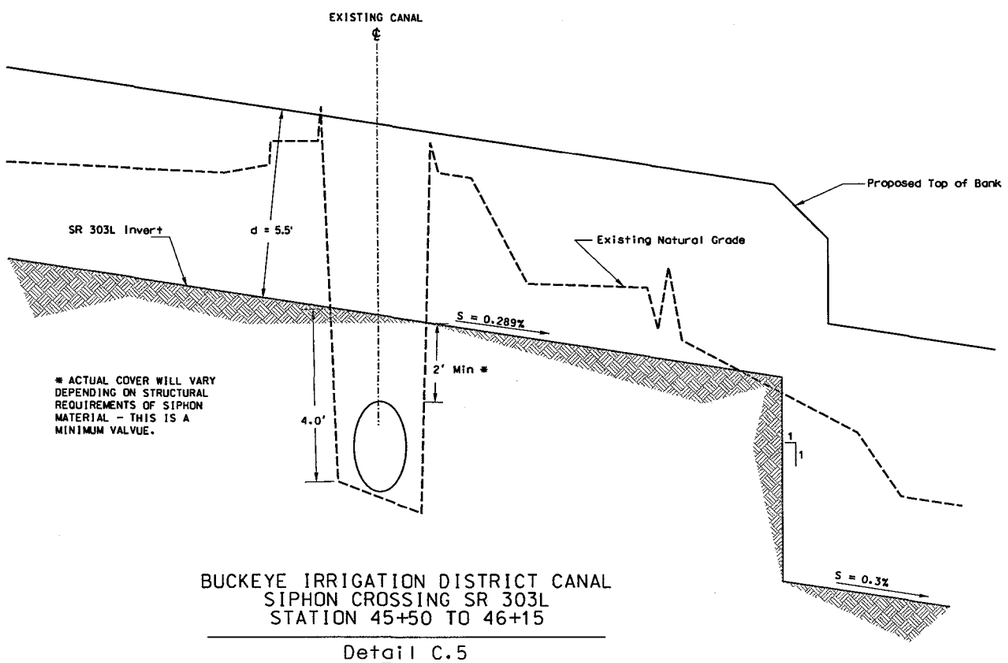
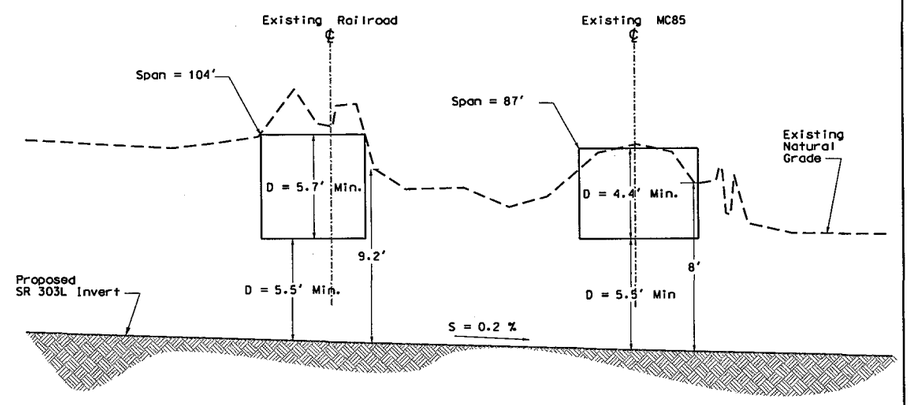


TYPICAL DROP STRUCTURE
Detail C.4
Not To Scale



BUCKEYE IRRIGATION DISTRICT CANAL
SIPHON CROSSING SR 303L
STATION 45+50 TO 46+15

Detail C.5
Not To Scale



Proposed Single-Span Crossing(s) At
Existing Railroad and MC85 Along SR 303L

Detail C.6
Not To Scale

N

Not To Scale

REMOVE

CONSTRUCT

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LOOP 303 BASIN, SECTIONS & PLAN DETAILS

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CHECKED	E.S.	11/04

URS

DRAWING NO.	BASIN DETAIL PLAN DETAILS C.4, C.5 & C.6	SHEET

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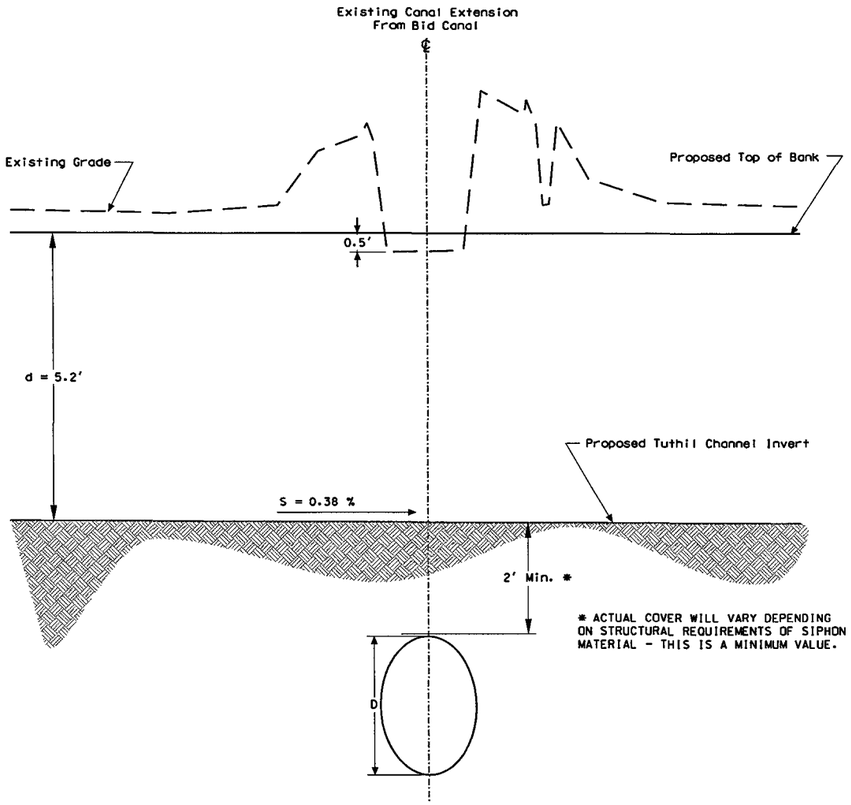
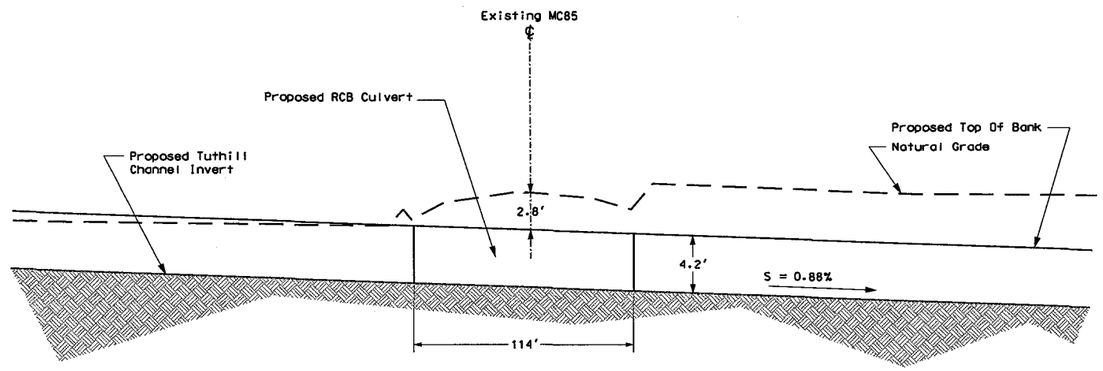


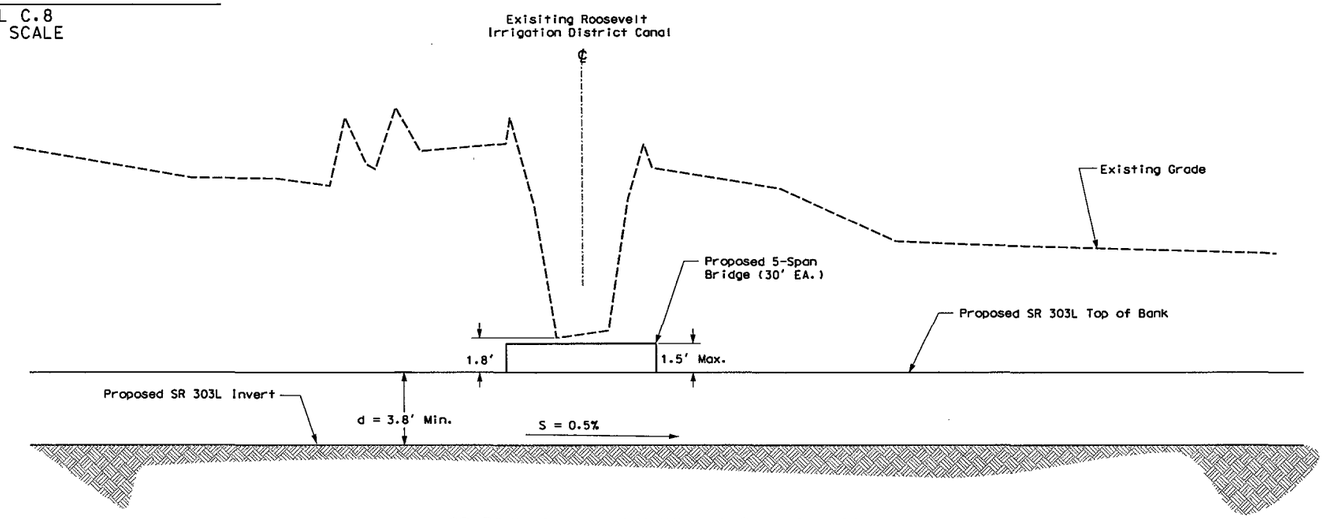
PROPOSED SIPHON FOR BID CANAL EXTENSION
CROSSING AT TUTHILL CHANNEL

DETAIL C.8
NOT TO SCALE



PROPOSED TUTHILL CHANNEL
CROSSING AT MC85

DETAIL C.9
NOT TO SCALE



SR 303L Proposed RIDCanal Crossing At
Approximate Station 252+50 to 254+00

Detail C.7
Not To Scale

N

Not To Scale

REMOVE

CONSTRUCT

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LOOP 303 BASIN, SECTIONS
& PLAN DETAILS

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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

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CHECKED	E.S.	11/04

URS

DRAWING NO.	BASIN DETAIL PLAN DETAILS C.7, C.8 & C.9	SHEET

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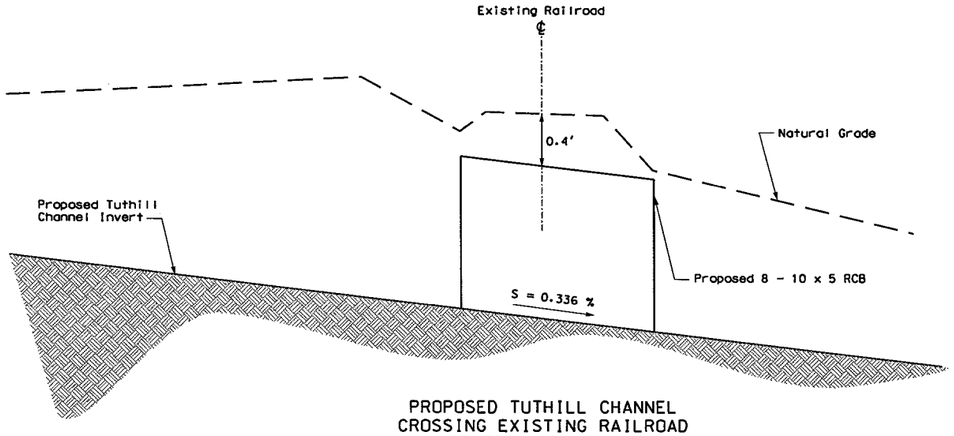
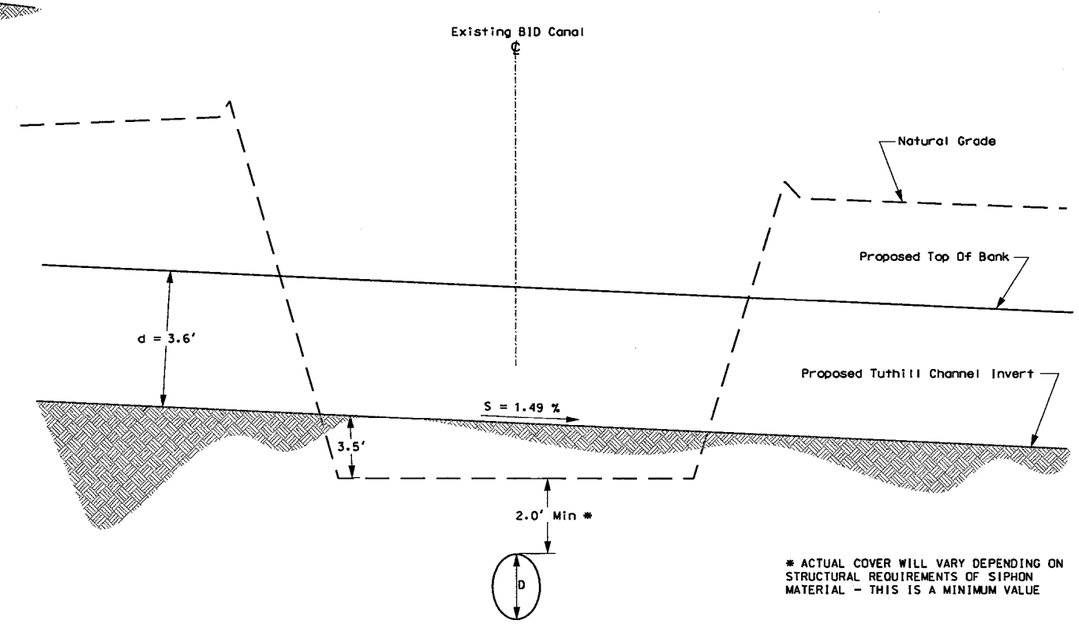


PROPOSED TUTHILL CHANNEL
CROSSING EXISTING RAILROAD
STATION 154+50.00

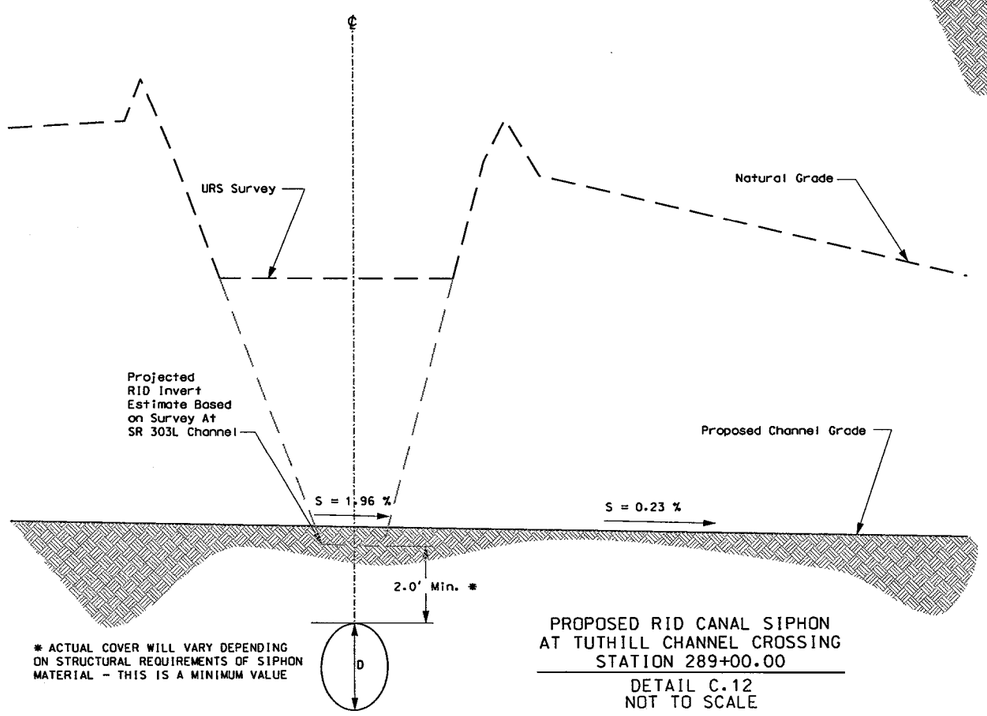
DETAIL C.11
NOT TO SCALE



* ACTUAL COVER WILL VARY DEPENDING ON
STRUCTURAL REQUIREMENTS OF SIPHON
MATERIAL - THIS IS A MINIMUM VALUE

PROPOSED BID CANAL SIPHON
AT TUTHILL CHANNEL CROSSING
STATION 143+90.00

DETAIL C.10
NOT TO SCALE



* ACTUAL COVER WILL VARY DEPENDING
ON STRUCTURAL REQUIREMENTS OF SIPHON
MATERIAL - THIS IS A MINIMUM VALUE

PROPOSED RID CANAL SIPHON
AT TUTHILL CHANNEL CROSSING
STATION 289+00.00

DETAIL C.12
NOT TO SCALE

N

Not To Scale

REMOVE

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**FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY**

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URS

DRAWING NO.	BASIN DETAIL PLAN DETAILS C.10, C.11 & C.12	SHEET

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APPENDICES SUBMITTED UNDER SEPARATE COVER