MARANA TOWN COUNCIL
REGULAR COUNCIL MEETING
NOTICE AND AGENDA
11555 W. Civic Center Drive, Marana, Arizona 85653
Council Chambers, December 17, 2024, at or after 6:00 PM

Jon Post, Vice Mayor
Patrick Cavanaugh, Council Member
Patti Comerford, Council Member
Herb Kai, Council Member
John Officer, Council Member
Roxanne Ziegler, Council Member

Pursuant to A.R.S. §38-431.02, notice is hereby given to the members of the Marana Town Council and to the general public that the Town Council will hold a meeting open to the public on December 17, 2024, at or after 6:00 PM located in the Council Chambers of the Ed Honea Marana Municipal Complex, 11555 W. Civic Center Drive, Marana, Arizona.

ACTION MAY BE TAKEN BY THE COUNCIL ON ANY ITEM LISTED ON THIS AGENDA. Revisions to the agenda can occur up to 24 hours prior to the meeting. Revisions to the agenda appear in *italics*.

As a courtesy to others, please turn off or put in silent mode all electronic devices.

Meeting Times
Welcome to this Marana Town Council meeting. Regular Council meetings are usually held the first and third Tuesday of each month at 6:00 PM at the Ed Honea Marana Municipal Complex, although the date or time may change and additional meetings may be called at other times and/or places. Contact the Town Clerk or watch for posted agendas for other meetings. This agenda may be revised up to 24 hours prior to the meeting. In such a case a new agenda will be posted in place of this agenda.

Speaking at Meetings
If you are interested in speaking to the Council during the Call to the Public or Public Hearings, you must fill out a speaker card (located in the lobby outside the Council Chambers) and deliver it to the Town Clerk prior to the convening of the meeting.

All persons attending the Council meeting, whether speaking to the Council or not, are expected to observe the Council rules, as well as the rules of politeness, propriety, decorum and good conduct. Any person interfering with the meeting in any way, or acting rudely or loudly will be removed from the meeting and will not be allowed to return.

Accessibility
To better serve the citizens of Marana and others attending our meetings, the Council Chambers are wheelchair and handicapped accessible. Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting the Town Clerk at (520) 382-1999. Requests should be made as early as possible to arrange the accommodation.

Agendas
Copies of the agenda are available the day of the meeting in the lobby outside the Council Chambers or online at www.maranaaz.gov under Agendas and Minutes. For questions about the Council meetings, special services or procedures, please contact the Town Clerk, at (520) 382-1999, Monday through Friday from 8:00 AM to 5:00 PM.

This Notice and Agenda Posted no later than 24 hours prior to the meeting, at the Ed Honea Marana Municipal Complex, 11555 W. Civic Center Drive, the Marana Operations Center, 5100 W. Ina Road, and at www.maranaaz.gov under Agendas and Minutes.

REGULAR COUNCIL MEETING

CALL TO ORDER AND ROLL CALL

PLEDGE OF ALLEGIANCE/INVOCATION/MOMENT OF SILENCE

APPROVAL OF AGENDA

CALL TO THE PUBLIC
At this time any member of the public is allowed to address the Town Council on any issue within the jurisdiction of the Town Council, except for items scheduled for a Public Hearing at this meeting. The speaker may have up to three minutes to speak. Any persons wishing to address the Council must complete a speaker card located outside the Council Chambers and deliver it to the Town Clerk prior to the commencement of the meeting. Individuals addressing a meeting at the Call to the Public will not be provided with electronic technology capabilities beyond the existing voice amplification and recording capabilities in the facilities. Pursuant to the Arizona Open Meeting Law, at the conclusion of Call to the Public, individual members of the Council may respond to criticism made by those who have addressed the Council, and may ask staff to review the matter, or may ask that the matter be placed on a future agenda.

PROCLAMATIONS

MAYOR AND COUNCIL REPORTS: SUMMARY OF CURRENT EVENTS

MANAGER'S REPORT: SUMMARY OF CURRENT EVENTS

PRESENTATIONS

P1 Fee Structure for Marana Aquatic and Recreation Center.

CONSENT AGENDA

The Consent Agenda contains items requiring action by the Council which are generally routine items not requiring Council discussion. A single motion and affirmative vote will approve all items on the Consent Agenda, including any resolutions or ordinances. Prior to a motion to approve the Consent Agenda, any Council member may remove any item from the Consent Agenda and that item will be discussed and voted upon separately.

C1 Ordinance No. 2024.026: Relating to Administration; revising Marana Town Code Title 3 (Administration), chapter 3-5 (Claims and Settlement), sections 3-5-1 (Claims administration) and 3-5-2 (Settlement authority) to clarify roles, responsibilities, and authority related to claims and settlements; and designating an effective date (Jane Fairall)

C2 Resolution No. 2024-105: Relating to Development; approving the Final Plat for Village VI of Linda Vista Village Lots 6001-6012 and Common Areas "D" #6-1, "D" #20 & "G" #6-1, located south of Linda Vista Boulevard, approximately 0.5 miles east of Twin Peaks Road (Scott S. Radden)

C3 Resolution No. 2024-106: Relating to Development; approving the Final Plat for Village VII of Linda Vista Village, Lots 7001-7040 and Common Areas "A" #8, "D" #7, "D" #7-1, "D" #7-2, "D" #7-3, "F" #3, "G"#7-1, "G" #7-2, "G" #7-3, "G" #7-4, "G" #7-5 & "H" #4 located south of Linda Vista Boulevard, approximately 0.5 miles east of Twin Peaks Road (Scott S. Radden)

C4 Resolution No. 2024-107: Relating to Development; approving a final plat for Cypress Gardens II Lots 1-215 and Common Areas "A" (Recreation & Drainage), "B" (Landscape, Drainage and Utilities) generally located at the northwest corner of Barnett Road and Sandario Road (Scott Radden)

C5 Resolution No. 2024-111: Relating to Development; approving the Final Plat for Heritage Park Shoppes Lots 2-13 located south of Tangerine Road and east of Heritage Park Drive within a portion of Section 34, Township 11 South, Range 11 East (Brian D. Varney)

C6 Resolution No. 2024-112: Relating to Intergovernmental Relations; adopting a 2025 Town of Marana Legislative Policy Priority Program and authorizing and directing those authorized to lobby on behalf of the Town of Marana to represent and pursue it (Andrea De La Cruz)

C7 Resolution No. 2024-113: Relating to Real Estate; approving and authorizing the Town Engineer to execute a Private Drainage and Maintenance Easement Agreement in favor of D.R. Horton, Inc., granting a drainage easement and clarifying ownership and establishing maintenance obligations for the private drainage improvements to be placed on Town-owned property at Saguaro Bloom Community Park; waiving the Town's application fee for new easements (George Cardieri)

C8 Resolution No. 2024-114: Relating to Tourism; approving and authorizing the Mayor to execute an agreement between the Town of Marana and Tucson Bicycle Classic regarding participation in and financial support of the time trial stage of the Tucson Bicycle Classic (Stefanie Boe)

C9 Resolution No. 2024-115: Relating to Tourism; approving and authorizing the Mayor to execute an agreement between the Town of Marana and Project Echelon, Ltd. regarding participation in and financial support of the 2024 Project Echelon Training Weekend, including a Gran Fondo Ride for Veterans (Stefanie Boe)

C10 Resolution No. 2024-116: Relating to Budget; approving the transfer of $315,000 in budgeted expenditure authority from the West Apron Reconstruction Ph-2 project (AP047) to the Taxiway C Reconstruction, Design project (AP035) for design of the reconstruction of Taxiway C in the fiscal year 2024-2025 budget (Fausto Burruel)

C11 Approval of Regular Council Meeting Summary Minutes of November 6, 2024, approval of Regular Council Meeting Summary Minutes of November 19, 2024, and approval of Regular Council Meeting Summary Minutes of December 3, 2024 (David L. Udall)

LIQUOR LICENSES

L1 Relating to Liquor Licenses; recommendation to the Arizona Department of Liquor Licenses and Control regarding an application for a new series #012 Restaurant liquor license submitted by Bruce Robert Barro on behalf of Barro's Pizza, located at 5825 West Arizona Pavilions Drive, Tucson, Arizona, 85743 (David L. Udall)

BOARDS, COMMISSIONS AND COMMITTEES

COUNCIL ACTION

A1 Public Hearing: Ordinance No. 2024.027: Relating to Development; amending Marana Town Code Title 17 (Land Development), Chapter 17-3 (Administration and Enforcement), Section 17-3-1 (Amendment and rezoning) to add provisions establishing time frames for review of zoning applications; and declaring an emergency (Jane Fairall)

A2 Public Hearing: Ordinance No. 2024.028: Relating to Development; amending Marana Town Code Title 17 (Land Development), amending Chapter 17-6 (General and Miscellaneous Development Regulations) by adding new Section 17-6-14 entitled Accessory Dwelling Units; amending chapter 17-4 (Zoning) by making conforming amendments to sections 17-4-2 (Use matrix) and 17-4-3 (Use conditions matrix); approving the housing impact statement pertaining to this ordinance; and declaring an emergency (Jane Fairall)

A3 Public Hearing: Ordinance No. 2024.029: Relating to Land Development; adopting amendments to Marana Town Code Title 17 “Land Development”; revising Section 17-1-6 (Definitions), to add a definition for “data center”; revising Section 17-4-2 (Use matrix) Table 2 - Use matrix, to add the data center use and to provide that data centers are prohibited as a principal use in all standard Town zones and allowed as accessory uses in the Town’s industrial zones LI and HI; revising sections 17-4-8 (Industrial zoning districts) and 17-4-16 (Legacy zones) to provide regulations for data centers operating as accessory uses; revising Chapter 17-6 “General and Miscellaneous Development Regulations” to add new section 17-6-13 (Data centers) establishing that data centers may only operate in the Town as a principal use if approved in a specific plan or specific plan amendment adopted through the normal rezoning process, and establishing development regulations for data centers; and designating an effective date (Jason Angell)

Resolution No. 2024-108: Relating to Land Development; declaring as a public record filed with the Town Clerk the amendments adopted by Ordinance No. 2024.029, revisions to Title 17 "Land Development" of the Marana Town Code, including revising Section 17-1-6 (Definitions), to add

a definition for "data center"; revising Section 17-4-2 (Use matrix) Table 2 - Use matrix, to add the data center use and to provide that data centers are prohibited as a principal use in all standard Town zones and allowed as accessory uses in the Town's industrial zones LI and HI; revising sections 17-4-8 (Industrial zoning districts) and 17-4-16 (Legacy zones) to provide regulations for data centers operating as accessory uses; revising Chapter 17-6 "General and Miscellaneous Development Regulations" to add new section 17-6-13 (Data centers) establishing that data centers may only operate in the Town as a principal use if approved in a specific plan or specific plan amendment adopted through the normal rezoning process, and establishing development regulations for data centers (Jason Angell)

A4 Resolution No. 2024-109: Relating to Economic Development; amending the Marana Job Creation Incentive Program (MJCIP) to exclude data centers from the definition of "Targeted Employer" for purposes of the MJCIP (Curt Woody)

A5 Ordinance No. 2024.025: Relating to Land Development, adopting the Town of Marana Drainage Manual (Jason Angell)

Resolution No. 2024-103: Relating to Land Development, declaring as a public record filed with the Town Clerk the Town of Marana Drainage Manual adopted by Ordinance No. 2024.025 (Jason Angell)

ITEMS FOR DISCUSSION / POSSIBLE ACTION

EXECUTIVE SESSIONS

Pursuant to A.R.S. § 38-431.03, the Town Council may vote to go into executive session, which will not be open to the public, to discuss certain matters.

E1 Executive Session pursuant to A.R.S. §38-431.03 (A), Council may ask for discussion or consideration, or consultation with designated Town representatives, or consultation for legal advice with the Town Attorney, concerning any matter listed on this agenda for any of the reasons listed in A.R.S. §38-431.03 (A).

FUTURE AGENDA ITEMS

Notwithstanding the Mayor's discretion regarding the items to be placed on the agenda, if three or more Council members request that an item be placed on the agenda, it must be placed on the agenda for the second regular Town Council meeting after the date of the request, pursuant to Marana Town Code Section 2-4-2(B).

ADJOURNMENT

Council-Regular Meeting **P1**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Wayne Barnett, Deputy Director Parks & Recreation

From: Wayne Barnett, Deputy Director Parks & Recreation

Date: December 17, 2024

Strategic Plan Focus Area:
Vibrant Community, Healthy Lifestyles

Strategic Plan Focus Area Additional Info:
The Town of Marana Strategic Plan 5 identifies Healthy Lifestyles, and Vibrant Communities as two of the five areas of focus. The Marana Aquatic and Recreation Center will address these two areas by providing a variety of recreational opportunities. It will also strengthen the sense of place and create opportunities for community connections.

Subject: Fee Structure for Marana Aquatic and Recreation Center.

Discussion:

In preparation for the opening of the Marana Aquatic and Recreation Center in 2025, Parks and Recreation staff have prepared recommended fees for use of the facility. Proposed fees were presented to Mayor and Council in a Study Session on August 13, 2024. Recommendations included fees for Memberships and Day Passes, rentals of designated facility space, and fees for facility rentals outside regular center operating hours. The recommended fees reflect staff's attempt to provide reasonable opportunities for those who wish to access the amenities within the center that will require fees. Staff also provided details about the methods used to arrive at the recommended fees, including outreach to similar recreation facilities throughout the state of Arizona. Staff have updated the recommended fee proposal in response to direction from Mayor and Council, and will share those updated recommendations and present next steps in the fee adoption process.

Financial Impact:
Presentation only. No financial impact at this time.

Staff Recommendation:
Staff recommends that fees be published for the required time frame to allow public review, followed by a return to Council for a public meeting, and adoption of fees.

Suggested Motion:
Motion to direct staff to proceed with the next steps as outlined in the Marana Aquatic and Recreation Center Fee Proposal presentation.

Attachments

No file(s) attached.

Council-Regular Meeting **C1**

Meeting Date: 12/17/2024

To: Mayor and Council

From: Jane Fairall, Town Attorney

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Ordinance No. 2024.026: Relating to Administration; revising Marana Town Code Title 3 (Administration), chapter 3-5 (Claims and Settlement), sections 3-5-1 (Claims administration) and 3-5-2 (Settlement authority) to clarify roles, responsibilities, and authority related to claims and settlements; and designating an effective date (Jane Fairall)

Discussion:

The proposed ordinance amends Chapter 3-5 (Claims and Settlement) of the Marana Town Code (MTC).

On September 2, 2014, the Town Council adopted Ordinance No. 2014.022, adding Chapter 3-5 entitled "Claims and Settlement" to the Marana Town Code, authorizing the Town Manager, in consultation with the Town Attorney, to settle claims by and against the Town under the amount of $15,000. In most cases, when a claim is filed against the Town, it is forwarded to the Town's insurance carrier through the Arizona Municipal Risk Retention Pool (AMRRP). Under the Town's coverage agreement with AMRRP, the Pool is permitted to settle claims on the Town's behalf without further action by the Town. However, for some simple claims of small amounts, it is more efficient for the Town to handle and settle the claims in-house. Ordinance 2014.022 authorized the Town Manager to settle such claims, for a dollar amount under $15,000. In addition, the ordinance allowed the Town Manager to accept payment for settlement of claims by the Town against another party. In context, this scenario usually occurs when Town property is damaged by someone (most frequently due to vehicle accidents), but the amount of damage is less than the Town's insurance deductible. In these cases, it is up to the Town to seek recovery and to accept payment of claims.

Ordinance No. 2014.022 allowed the Town Manager to settle such claims, as long as they are below $15,000.

The proposed amendments to Chapter 3-5 do not substantively change any of the provisions described above. Rather, the amendments serve to clarify the roles and responsibilities of the Town Manager, the Town Attorney, the Risk Manager (a position that did not exist in the Town in 2014 and so was not mentioned in the original iteration of Chapter 3-5), and the AMRRP.

Staff Recommendation:

Staff recommends approval of the ordinance.

Suggested Motion:

I move to adopt Ordinance No. 2024.026, revising Marana Town Code Title 3 (Administration), chapter 3-5 (Claims and Settlement), sections 3-5-1 (Claims administration) and 3-5-2 (Settlement authority) to clarify roles, responsibilities, and authority related to claims and settlements; and designating an effective date.

Attachments

Ordinance No. 2024.026

MARANA ORDINANCE NO. 2024.026

RELATING TO ADMINISTRATION; REVISING MARANA TOWN CODE TITLE 3 (ADMINISTRATION), CHAPTER 3-5 (CLAIMS AND SETTLEMENT), SECTIONS 3-5-1 (CLAIMS ADMINISTRATION) AND 3-5-2 (SETTLEMENT AUTHORITY) TO CLARIFY ROLES, RESPONSIBILITIES, AND AUTHORITY RELATED TO CLAIMS AND SETTLEMENTS; AND DESIGNATING AN EFFECTIVE DATE

WHEREAS the Town Manager is authorized by Marana Town Code Section 3-2-1(G)(1) to execute, on behalf of the Town Council, general administrative supervision and control of the affairs of the Town; and

WHEREAS the Town Attorney is authorized by Town Code Section 3-2-7(C)(6) to prosecute and defend all suits, actions or causes where the Town is a party; and

WHEREAS the Town Council is authorized by A.R.S. § 9-240 to control the finances of the Town; and

WHEREAS, on September 2, 2014, the Town Council adopted Ordinance No. 2014.022, adding Chapter 3-5 entitled "Claims and Settlement" to the Marana Town Code, authorizing the Town Manager, in consultation with the Town Attorney, to settle claims by and against the Town under the amount of $15,000; and

WHEREAS the Town Council finds that the revisions to Marana Town Code Chapter 3-5 set forth in this ordinance are in the best interests of the Town of Marana.

NOW THEREFORE BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, as follows:

SECTION 1. Marana Town Code Title 3 (Administration), Chapter 3-5 (Claims and Settlement) is hereby amended as follows (with additions shown with double underlining and deletions show with ~~strikethroughs~~):

3-5-1 Claims administration

A. The town manager, in consultation with the town attorney and the risk manager, shall establish procedures to process, evaluate, investigate and report claims filed against the town.

B. The town attorney is authorized to file such claims, counter-claims, or third-party claims, and to take such other legal action, as may be necessary to seek subrogation and reimbursement or to collect for damages sustained by the town.

3-5-2 Settlement authority

A. Whenever any contemplated settlement of a claim by or against the town is for the sum of not more than $15,000, after due consideration and in the best interest of the residents of the town, the town manager, in consultation with the town attorney and the risk manager, is authorized to settle the claim.

B. ~~No settlement~~ The town manager shall not settle a claim of more than $15,000 ~~shall be entered into~~ except with the approval of the council.

C. The town's insurance provider is authorized to enter into settlements ~~or~~ in accordance with the provisions of the town's coverage agreement with ~~its~~ the insurance provider.

SECTION 2. The various town officers and employees are authorized and directed to perform all acts necessary or desirable to give effect to this ordinance.

SECTION 3. All ordinances, resolutions, or motions and parts of ordinances, resolutions, or motions of the Council in conflict with the provisions of this ordinance are hereby repealed, effective as of the effective date of this ordinance.

SECTION 4. If any section, subsection, sentence, clause, phrase or portion of this ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, the decision shall not affect the validity of the remaining portions of this ordinance.

SECTION 5. This ordinance is effective on the 31st day after its adoption.

PASSED AND ADOPTED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, Arizona, this 17th day of December 2024.

_____
Jon Post, Vice Mayor

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

Council-Regular Meeting **C2**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Scott Radden, Senior Planner

From: Scott Radden, Senior Planner

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Resolution No. 2024-105: Relating to Development; approving the Final Plat for Village VI of Linda Vista Village Lots 6001-6012 and Common Areas "D" #6-1, "D" #20 & "G" #6-1, located south of Linda Vista Boulevard, approximately 0.5 miles east of Twin Peaks Road (Scott S. Radden)

Discussion:

Request
AMH Development, LLC c/o Presidio Eng, Inc., is requesting approval of the Final Plat for Village VI of Linda Vista Village. The proposed plat includes 12 residential lots and Common Areas "D" #6-1, "D" #20 & "G" #6-1.

The Town Council adopted Resolution No. 2021-143 on November 16, 2021, approving the Amended Final Plat for Linda Vista Village at Cascada, Village I (Lots 1-39), Village II (Lots 1-93), Village III (Lots 1-131), Blocks I-VII, and Common Areas "A", "B", "C", "D", "E", "F", "G", and "H". The proposed plat is a resubdivision of Block VI, Common Area "D" #20 and portions of Common area "A" #8 and "F" #3 of the Amended Final Plat for Linda Vista Village at Cascada.

Location
The proposed plat encompasses 3 acres generally located south of Linda Vista Boulevard, approximately 0.5 miles east of Twin Peaks Road, in a portion of the NW ¼ of Section 23, Township 12 South, Range 12 East.

Zoning and Land Use
The Town Council adopted Marana Ordinance No. 2006.23 on December 5, 2006, approving the Cascada Specific Plan. The Town Council adopted Marana Ordinance 2016.001 on January 19, 2016, approving the Linda Vista Village at Cascada Specific Plan. Block VI, common areas and right-of-way associated with the proposed plat are located within Linda Vista Village at Cascada Specific Plan.

The proposed 3-acre final plat includes a total of 12 lots and three common area designations. Per the Linda Vista Village at Cascada Specific Plan, the Village VI area is designated as Employment Center, allowing for Medium Density Residential (MDR) residential development. The minimum lot size allowed per the Specific Plan is 3,500 square feet. The minimum lot size provided is 4,656 square feet. The maximum lot size proposed is 5,530 square feet and the average lot size is 4,896 square feet.

Transportation
There is one access proposed from Camino Benicardo which extends north to Linda Vista Boulevard. Approximately one-tenth mile of new public streets are proposed.

Utilities
The subdivision will be served by Marana Water. Sewer service will be provided by Pima County Regional Wastewater. Northwest Fire District, Tucson Electric Power, and Southwest Gas will provide their corresponding services.

Preliminary Plat
PRV2307-001 was approved by staff on 22 January 2024.

Staff Recommendation:
Staff has reviewed the proposed final plat against the requirements of the Linda Vista Village at Cascada Specific Plan, the Marana Town Code, and the Marana General Plan. The final plat is in substantial conformance with all required development regulations, and staff recommends approval.

Suggested Motion:
I move to adopt Resolution No. 2024-105 approving the Final Plat for Village VI of Linda Vista Village Lots 6001-6012 and Common Areas “D” #6-1, “D” #20 & “G” #6-1.

Attachments

Resolution No. 2024-105
Final Plat
Location Map
Application

MARANA RESOLUTION NO. 2024-105

RELATING TO DEVELOPMENT; APPROVING THE FINAL PLAT FOR VILLAGE VI OF LINDA VISTA VILLAGE, LOTS 6001-6012 AND COMMON AREAS "D" #6-1, "D" #20 & "G" #6-1, LOCATED SOUTH OF LINDA VISTA BOULEVARD, APPROXIMATELY 0.5 MILES EAST OF TWIN PEAKS ROAD

WHEREAS, on December 5, 2006, the Mayor and Town Council adopted Ordinance No. 2006.23, approving a rezoning of approximately 1,454 acres to create the Cascada Specific Plan; and

WHEREAS, on January 6, 2009, the Mayor and Town Council adopted Resolution No. 2009-001, approving the Final Plat for Cascada, Village I (Lots 1-430), Blocks I-XVIII, "A", "B", "C", "D" and Common Areas "A", "B", "C", "D", "E", "F", "G", "H", and "I", recorded in the Pima County Recorder's office on January 23, 2009 at Book 64 of Maps and Plats, Page 35 (Sequence 20090150376); and

WHEREAS, on January 19, 2016, the Mayor and Town Council adopted Ordinance 2016.001, approving a rezoning of 155 acres to create the Linda Vista Village at Cascada Specific Plan, which rezoned a portion of the property included within the Cascada Specific Plan; and

WHEREAS, on September 4, 2018, the Mayor and Town Council adopted Resolution No. 2018-079, approving the Preliminary Plat for Linda Vista Village at Cascada, Village I (Lots 1-39), Village II (Lots 1-93), Village III (Lots 1-131), Blocks I-VII, and Common Areas "A", "B", "C", "D", "E", "F", "G", and "H"; and

WHEREAS, on September 15, 2020, the Mayor and Town Council adopted Resolution No. 2020-099, approving the Final Plat for Linda Vista Village at Cascada, Village I (Lots 1-39), Village II (Lots 1-93), Village III (Lots 1-131), Blocks I-VII, and Common Areas "A", "B", "C", "D", "E", "F", "G", and "H"; and

WHEREAS on November 16, 2021, the Mayor and Town Council adopted Resolution No. 2021-143, approving the Amended Final Plat for Linda Vista Village at Cascada Village I (Lots 1-39), Village II (Lots 1-93), Village III (Lots 1-131), Blocks I-VII, and Common Areas "A", "B", "C", "D", "E", "F", "G", and "H" (the "Amended Linda Vista Village Plat"); and

WHEREAS Presidio Engineering on behalf of AMH Development, LLC and AMH Linda Vista Development, TRS, LLC, has applied for approval of the final plat for Village VI of Linda Vista Village, Lots 6001-6002 and Common Areas "D" #6-1, "D" #20 & "G" #6-1 (the "LVV Village VI Plat"); and

WHEREAS the LVV Village VI Plat proposes a partial abandonment of the public

street named Camino Benicardo, as previously dedicated by the Amended Linda Vista Village Plat; and

WHEREAS the Town of Marana is authorized by A.R.S. §§ 9-240(B)(3)(e) and 28-7205 to vacate and abandon Town roadways; and

WHEREAS the Town Council finds that the Town is receiving appropriate consideration for the vacated right-of-way for purposes of A.R.S. § 28-7208 based on the respective rights and obligations of the parties under Ordinance 2016.001 and the limited marketability of the narrow strip of land being vacated; and

WHEREAS the Mayor and Town Council, at its December ___, 2024 meeting, determined that the LVV Village VI Plat and the proposed public right-of-way abandonment reflected in it should be approved.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, that the LVV Village VI Plat is hereby approved.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this ___ day of December, 2024.

_____
Jon Post, Vice Mayor

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

GENERAL NOTES

1. THE GROSS AREA OF THE SUBDIVISION IS 3.02 ACRES (131,358 S.F.). THE EXISTING ZONING IS "F" PER THE LINDA VISTA VILLAGE AT CASCADA SPECIFIC PLAN, PCZ1503-001 PER ORDINANCE NO. 2016.001.
2. TOTAL MILES OF NEW PUBLIC STREETS IS 0.1 MILES.
3. THE TOTAL NUMBER OF NEW LOTS PROPOSED WITHIN THIS PLAT IS 12. THE DENSITY IS 4.0 RAC (12 LOTS/3.02 AC).
4. THE MAXIMUM NUMBER OF DWELLING UNITS ALLOWED WITHIN THE LINDA VISTA VILLAGE (PCZ 1503-001) PROJECT IS 693.
   THE NUMBER OF DWELLING UNITS PROPOSED WITHIN THE LINDA VISTA VILLAGE PROJECT WITH THE INCLUSION OF THIS PLAT IS 341 AND IS DISTRIBUTED AS FOLLOWS:
   VILLAGE I WITH 39 LOTS (PER SEQ. NO. 20213260195)
   VILLAGE II WITH 93 LOTS (PER SEQ. NO. 20213260195)
   VILLAGE III WITH 131 LOTS (PER SEQ. NO. 20213260195)
   VILLAGE IV WITH 66 LOTS (PER SEQ. NO. 20230970006)
   VILLAGE VI WITH 12 LOTS
5. THE FOLLOWING LOT AREAS ARE PROPOSED WITHIN THIS PLAT:
   MINIMUM LOT SIZE ALLOWED 3,500 S.F.
   SMALLEST LOT 4,656 S.F., LARGEST LOT 5,530 S.F. AND AVERAGE LOT 4,896 S.F.
6. DEVELOPMENT STANDARDS ARE TO BE PER THE LINDA VISTA VILLAGE AT CASCADA SPECIFIC PLAN (PCZ1503-001), AND ARE AS FOLLOWS:

	LINDA VISTA VILLAGE S.P. "EC" LAND USE MDR DEVELOPMENT TYPE
a. MAXIMUM GROSS DENSITY:	6 RAC
b. MINIMUM LOT SIZE:	3500 S.F.
c. MAXIMUM LOT COVERAGE:	65%
d. MAXIMUM BUILDING HEIGHT:	28 FEET
e. BUILDING SETBACKS:	
A. FRONT:	
(i) MAIN STRUCTURE:	10 FEET*
(ii) FRONT LOADING GARAGE:	20 FEET**
(iii) SIDE LOADING GARAGE:	10 FEET*
(iv) SETBACKS STAGGERING:	A MINIMUM OF 20% ON EVERY THIRD LOT SO THAT THE FRONT SETBACK WILL NOT BE THE SAME FOR THREE CONSECUTIVE HOMES
B. SIDE	
(i) MAIN STRUCTURE:	0 FEET
(ii) MINIMUM BETWEEN BUILDINGS:	10 FEET
(iii) SIDE YARD ADJACENT TO STREET:	10 FEET
C. REAR	
(i) MAIN STRUCTURE:	10 FEET
(ii) REAR LOADING GARAGES:	FROM ALLEY, LESS THAN OR EQUAL TO 5 FEET OR GREATER THAN 18 FEET
(iii) ACCESSORY STRUCTURES:	0 FEET
f. MINIMUM LOT WIDTH:	NONE
g. MINIMUM LOT DEPTH:	NONE
h. BUILDING MASS:	PER RESIDENTIAL DESIGN CRITERIA AND THE DEVELOPMENT REVIEW COMMITTEE (DRC)
* EFFECTIVE MAIN STRUCTURE FRONT SETBACK IS 15 FEET DUE TO THE DEDICATION OF A 15' PUBLIC UTILITY, ROADWAY MAINTENANCE AND SIGNAGE EASEMENT.	
** MEASURED FROM BACK OF SIDEWALK OR PEDESTRIAN ACCESSWAY	

7. PARKING PROVISIONS INCLUDE TWO (2) ON-SITE PARKING SPACES FOR EACH LOT. TOTAL PARKING PROVIDED IS 24 SPACES (12 LOTS X 2).
8. THIS DEVELOPMENT WILL COMPLY THE LINDA VISTA VILLAGE AT CASCADA SPECIFIC PLAN (PCZ1503-001). IF AN ISSUE, CONDITION OR SITUATION ARISES THAT IS NOT ADDRESSED OR PROVIDED FOR WITHIN THE RESPECTIVE APPLICABLE SPECIFIC PLANS, THE REGULATIONS OF THE TOWN OF MARANA LAND DEVELOPMENT CODE THAT ARE CURRENT AT THE TIME OF DEVELOPMENT PERMITTING SHALL APPLY.
9. PLAT AREA TOTALS (SEE SHEET 2 FOR ADDITIONAL DETAILS).
   A. COMMON AREAS "D" – OPEN SPACE / DRAINAGE / PASSIVE RECREATION AREA, 46,311 S.F. (1.06± AC.).
   B. COMMON AREAS "G" – OPEN SPACE / PUBLIC UTILITIES / MAINTENANCE, SIGNAGE, LANDSCAPE, SIDEWALK AND ACCESS, 5,321 S.F. (0.12± AC.).
   C. RESIDENTIAL DEVELOPMENT AREA: BLOCK VI, LOTS 6001-6012, 58,745 S.F. (1.35± AC.).
   D. RIGHT-OF-WAY AREA: 20,981 S.F. (0.48± AC.).
10. OBJECTS AND MATERIALS WITHIN THE SIGHT VISIBILITY TRIANGLES SHALL BE PLACED SO AS NOT TO INTERFERE WITH A VISIBILITY PLANE DESCRIBED BY TWO HORIZONTAL LINES LOCATED 30 INCHES AND 72 INCHES ABOVE FINISHED GRADE OF THE ROADWAY SURFACE, AND SHALL CONFORM TO THE TOWN OF MARANA SUBDIVISION STREET STANDARDS.
11. ACCORDING TO THE DRAINAGE REPORT PREPARED BY CMG, DATED JUNE 30, 2023 (DRA2307-001) CMG PROJECT NO. 21-061, THIS SUBDIVISION IS LOCATED WITHIN THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOODPLAIN (ZONE A01) IN ACCORDANCE WITH FLOOD INSURANCE RATE MAP (FIRM) PANEL NO. 04019C1065L EFFECTIVE DATE JUNE 16, 2011. PROPOSED SUBDIVISION DEVELOPMENT AREAS ARE LOCATED WITHIN ZONE A01. UNTIL A LETTER OF MAP REVISION (LOMR) HAS BEEN ACCEPTED BY FEMA AND A REVISED MAP HAS BEEN SUBMITTED TO THE TOWN OF MARANA, THE ACTIVITIES THAT TAKE PLACE IN THE PROPOSED (ZONE A01) AREA SHALL GO THROUGH THE TOWN OF MARANA FLOODPLAIN PERMITTING PROCESS.
12. ALL NEW AND EXISTING UTILITIES WITHIN OR CONTIGUOUS TO THE SITE SHALL BE PLACED UNDERGROUND EXCEPT ELECTRICAL TRANSMISSION LINES CARRYING 48KV OR GREATER, AND THOSE LINES WHICH CAN BE SHOWN TO EXIST IN CURRENT OR FUTURE ELECTRICAL TRANSMISSION CORRIDORS.
13. INSTALLATION OF ITEMS SUCH AS LANDSCAPING, IRRIGATION, SIGNAGE, MONUMENTS, WALLS AND DRAINAGE IMPROVEMENTS IN THE PUBLIC RIGHTS-OF-WAY SHALL REQUIRE A PERPETUAL LICENSE AGREEMENT FOR INSTALLATION, MAINTENANCE AND INDEMNIFICATION. THE LICENSE AGREEMENT SHALL BE EXECUTED AND APPROVED BY THE TOWN OF MARANA PRIOR TO APPROVAL OF THE CLOSEOUT PACKAGE FOR THIS PROJECT.
14. THIS SUBDIVISION IS LOCATED WITHIN THE TOWN OF MARANA WATER SERVICE AREA, WHICH HAS BEEN DESIGNATED AS HAVING AN ASSURED WATER SUPPLY UNDER A.R.S. §45-576.
15. APPROVAL OF THIS PLAT DOES NOT AFFIRM, CERTIFY OR APPROVE ANY LAND DIVISION THAT MAY BE CONTRARY TO STATE LAW, NOR DOES IT CERTIFY THE EXISTENCE OF, OR COMPLIANCE WITH ANY DEED RESTRICTIONS OR EASEMENTS.
16. THE AREA BETWEEN 100-YEAR FLOOD LIMITS REPRESENTS AN AREA THAT MAY BE SUBJECT TO FLOODING FROM A 100-YEAR FREQUENCY FLOOD AND ALL LAND IN THIS AREA WILL BE RESTRICTED TO USES THAT ARE COMPATIBLE WITH FLOODPLAIN MANAGEMENT AS APPROVED BY THE FLOODPLAIN ADMINISTRATOR.
17. NO FURTHER LOT SPLITTING SHALL BE DONE WITHOUT THE WRITTEN APPROVAL OF THE TOWN OF MARANA.
18. THE PROFESSIONAL ENGINEER OF RECORD SHALL CERTIFY AS TO THE FORM, LINE AND FUNCTION OF ALL PUBLIC AND PRIVATE ROADWAYS AND DRAINAGE STRUCTURES BEFORE THE RELEASE OF ASSURANCES.
19. ALL LOT, BLOCK, RIGHT-OF-WAY AND CENTERLINE MONUMENTS SET ARE TO BE IN COMPLIANCE WITH THE ARIZONA STATE BOARD OF TECHNICAL REGISTRATION SUBSTANTIVE POLICY STATEMENT EFFECTIVE FEBRUARY 22, 2011, AS FOLLOWS: ALL MONUMENTS SET SHALL BE UNDER THE DIRECT SUPERVISION OF THE SURVEYOR OF RECORD. IF FOR ANY REASON THE SURVEYOR OF RECORD IS NOT AVAILABLE TO SUPERVISE THE SETTING OF THE INTERIOR CORNER MONUMENTS, SUBSEQUENT TO THE RECORDING OF THE FINAL PLAT, THE REPLACEMENT SURVEYOR SHALL SET MONUMENTS WITH HIS/HER IDENTIFYING NUMBER AND A RECORD OF SURVEY SHALL BE RECORDED IN ACCORDANCE WITH THE STATE STATUTES.
20. THE PROPERTY SUBJECT TO THIS FINAL PLAT INCLUDES A SPECIAL FLOOD HAZARD AREA (SFHA) ASSOCIATED WITH THE PLATTED BOUNDARY. A CLOMR, CASE NUMBER 22-09-0417R HAS BEEN ACCEPTED BY FEMA AND A LOMR HAS BEEN SUBMITTED TO FEMA. IF THE SUBMITTED LOMR IS NOT ACCEPTED BY FEMA AND DOES NOT BECOME EFFECTIVE, THEN THE PROPERTY OWNER SHALL SUBMIT AN AMENDED FINAL PLAT THAT INCLUDES THE INFORMATION REQUIRED IN MARANA TOWN CODE SECTION 17-15-10, PARAGRAPH (E), SUBPARAGRAPHS (2), (3), (4) AND (8) PRIOR TO ANY DEVELOPMENT WITHIN THE PLATTED BOUNDARY.
21. PORTIONS OF THE ADJACENT RIGHTS-OF-WAY AS ESTABLISHED BY THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA (SEQ. NO. 20213260195), WILL BE ABANDONED OR RELEASED BY THIS PLAT. THE ABANDONMENT OF PUBLIC RIGHTS-OF-WAY (PURSUANT TO A.R.S. §28-7205) AS SHOWN ON THIS PLAT (REFER TO SHEET 2 OF THIS PLAT) IS ACCOMPLISHED PURSUANT TO THE MARANA TOWN COUNCIL RESOLUTION APPROVING THIS PLAT.

Presidio ENGINEERING INC
Civil • Land Development • Water Resources
190 S. Stratford Dr. Suite 105 • Tucson, Arizona 85716
(520) 795-7255 • Fax (520) 795-6747

CERTIFICATION

I HEREBY CERTIFY THAT THE BOUNDARY SURVEY AS SHOWN ON THIS PLAT WAS PERFORMED UNDER MY DIRECTION AND THAT ALL EXISTING AND PROPOSED SURVEY MONUMENTS AND MARKERS SHOWN ARE CORRECTLY DESCRIBED. I FURTHER CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECTION.

REGISTERED LAND SURVEYOR — CERTIFICATE NO. 22245 — MICHAEL AMERSON — 10-15-2024 — ARIZONA U.S.A.

MICHAEL AMERSON — P.L.S. NO. 22245
AMERSON SURVEYING, INC.
4552 E. CAMP LOWELL DR.
TUCSON, AZ 85712
(520) 325-5883

I HEREBY CERTIFY THAT THE FLOOD PLAIN LIMITS AND EROSION HAZARD SETBACKS AS SHOWN ON THIS PLAT WERE PREPARED UNDER MY DIRECTION.

JOHN D. WOOD — P.E. NO. 21734

Registered Professional Engineer — CERTIFICATE NO. 21734 — JOHN D. WOOD — 10/15/24 — Date Signed — ARIZONA U.S.A. — (CIVIL)

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECTION AND THAT ALL INTERIOR GEOMETRY AND EASEMENTS WERE REVIEWED AND SHOWN UNDER MY SUPERVISION.

JOHN D. WOOD — P.E. NO. 21734

Registered Professional Engineer — CERTIFICATE NO. 21734 — JOHN D. WOOD — 10/15/24 — Date Signed — ARIZONA U.S.A. — (CIVIL)

RECORDING

STATE OF ARIZONA)
) SS
COUNTY OF PIMA)

NO:_____
FEE:_____

THIS INSTRUMENT WAS FILED FOR RECORD AT THE REQUEST OF PRESIDIO ENGINEERING, INC.,
ON THIS _____ DAY OF _____, 20___, IN SEQUENCE NO. _____ OF,
PIMA COUNTY RECORDS

GABRIELLA CAZARES-KELLY, PIMA COUNTY RECORDER

BY:_____ _____
DEPUTY DATE

DEDICATION

WE THE UNDERSIGNED, HEREBY WARRANT THAT WE ARE ALL AND THE ONLY PARTIES HAVING ANY FEE TITLE INTEREST IN THE LAND SHOWN ON THIS PLAT, AND WE CONSENT TO THE SUBDIVISION OF THIS LAND IN THE MANNER SHOWN ON THIS PLAT. WE HEREBY DEDICATE TO THE TOWN OF MARANA ALL RIGHTS-OF-WAY SHOWN ON THIS PLAT, INCLUDING ALL STREETS, ALLEYS, DRAINAGEWAYS, AND EASEMENTS, INCLUDING NO ACCESS EASEMENTS. UTILITY EASEMENTS AS SHOWN ON THIS PLAT ARE DEDICATED TO THE TOWN OF MARANA, PIMA COUNTY, AND ALL PUBLIC AND PRIVATE UTILITY COMPANIES FOR THE PURPOSE OF INSTALLATION AND MAINTENANCE OF, AND ACCESS TO, PUBLIC AND PRIVATE UTILITIES AND PUBLIC SEWERS. NO ACCESS EASEMENTS SHOWN ON THIS PLAT ARE DEDICATED TO THE TOWN OF MARANA FOR THE PURPOSE OF ACCESS CONTROL TO ADJACENT RIGHTS-OF-WAY. OTHER EASEMENTS SHOWN ON THIS PLAT ARE DEDICATED TO THE TOWN OF MARANA FOR THE PURPOSE OR PURPOSES NOTED ON THIS PLAT. PRIVATE EASEMENTS SHOWN ON THIS PLAT ARE DEDICATED TO AN ASSOCIATION OF INDIVIDUAL LOT OWNERS AS ESTABLISHED BY COVENANTS, CONDITIONS AND RESTRICTIONS RECORDED IN DKT. 13480, AT PG. 1394 AND AMENDED BY SEQUENCE NO. 20220660632 IN THE OFFICE OF THE RECORDER OF PIMA COUNTY.

WE THE UNDERSIGNED, OUR SUCCESSORS AND ASSIGNS, DO HEREBY HOLD THE TOWN OF MARANA, ITS EMPLOYEES, OFFICERS, AND AGENTS HARMLESS FROM AND AGAINST ANY AND ALL CLAIMS FOR DAMAGES RELATED TO THE USE OF THESE LANDS NOW AND IN THE FUTURE BY REASON OF FLOODING, FLOWAGE, EROSION, OR DAMAGE CAUSED BY WATER, WHETHER SURFACE, FLOOD, OR RAINFALL. NATURAL DRAINAGE SHALL NOT BE ALTERED, DISTURBED, OR OBSTRUCTED WITHOUT THE APPROVAL OF THE TOWN OF MARANA.

PRIVATE DRAINAGEWAYS AND COMMON AREAS AS SHOWN ON THIS PLAT ARE RESERVED FOR THE PRIVATE USE AND CONVENIENCE OF ALL OWNERS OF PROPERTY WITHIN THIS SUBDIVISION AND THEIR GUESTS AND INVITEES. COMMON AREAS, BUT NOT NATURAL UNDISTURBED OPEN SPACE, ARE GRANTED AS EASEMENTS TO THE TOWN OF MARANA, PIMA COUNTY, AND ALL PUBLIC AND PRIVATE UTILITY COMPANIES FOR THE PURPOSE OF INSTALLATION AND MAINTENANCE OF, AND ACCESS TO, UNDERGROUND PUBLIC AND PRIVATE UTILITIES AND SEWERS. PRIVATE DRAINAGEWAYS ARE ALSO RESERVED FOR THE FLOW OF WATER, WHETHER SURFACE, FLOOD, OR RAINFALL, FROM THIS SUBDIVISION AND OTHER LANDS AS APPROVED BY THE TOWN ENGINEER. TITLE TO ALL PRIVATE DRAINAGEWAYS AND COMMON AREA SHALL BE VESTED IN AN ASSOCIATION OF INDIVIDUAL LOT OWNERS AS ESTABLISHED BY COVENANTS, CONDITIONS AND RESTRICTIONS RECORDED IN DKT. 13480 AT PG. 1394 AND AMENDED BY SEQUENCE NO. 20220660632. IN THE OFFICE OF THE RECORDER OF PIMA COUNTY, ARIZONA. EACH AND EVERY LOT OWNER WITHIN THE SUBDIVISION SHALL BE A MEMBER OF THE ASSOCIATION, WHICH IS RESPONSIBLE FOR THE CONTROL, MAINTENANCE, SAFETY, AND LIABILITY OF THE PRIVATE DRAINAGEWAYS AND COMMON AREA WITHIN THIS SUBDIVISION.

STEWART TITLE & TRUST OF TUCSON, AN ARIZONA CORPORATION AS TRUSTEE UNDER TRUST NUMBER 3772 ONLY AND NOT OTHERWISE, AS TO A PORTION OF COMMON AREA "G"#6-1.

BY: _____ DATE: _____
ERIK ZWERK, TRUST OFFICER

STEWART TITLE & TRUST OF TUCSON, AN ARIZONA CORPORATION AS TRUSTEE UNDER TRUST NUMBER 3773 ONLY AND NOT OTHERWISE AS TO LOTS 6001-6012, COMMON AREAS "D"#6-1, "D"#20 AND A PORTION OF COMMON AREA "G"#6-1.

BY: _____ DATE: _____
ERIK ZWERK, TRUST OFFICER

ACKNOWLEDGEMENT FOR TRUST #3772

STATE OF ARIZONA)
) SS
COUNTY OF PIMA)

ON THIS _____ DAY OF _____, 20___. BEFORE ME, PERSONALLY APPEARED THE UNDERSIGNED OFFICIAL, _____ WHO ACKNOWLEDGED TO BE THE TRUST OFFICER OF STEWART TITLE & TRUST OF TUCSON, AN ARIZONA CORPORATION, AS TRUSTEE UNDER TRUST NO. 3772, AND NOT IN ITS CORPORATE CAPACITY, AND BEING AUTHORIZED SO TO DO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSE THEREIN.

MY COMMISSION EXPIRES: _____ _____
NOTARY PUBLIC

ACKNOWLEDGEMENT FOR TRUST #3773

STATE OF ARIZONA)
) SS
COUNTY OF PIMA)

ON THIS _____ DAY OF _____, 20___. BEFORE ME, PERSONALLY APPEARED THE UNDERSIGNED OFFICIAL, _____ WHO ACKNOWLEDGED TO BE THE TRUST OFFICER OF STEWART TITLE & TRUST OF TUCSON, AN ARIZONA CORPORATION, AS TRUSTEE UNDER TRUST NO. 3773, AND NOT IN ITS CORPORATE CAPACITY, AND BEING AUTHORIZED SO TO DO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSE THEREIN.

MY COMMISSION EXPIRES: _____ _____
NOTARY PUBLIC

BENEFICIARY OF TRUST #3772

AMH DEVELOPMENT, LLC, A DELAWARE LIMITED LIABILITY COMPANY
23975 PARK SORRENTO, SUITE 300
CALABASAS, CA 91302
ATTN: LEGAL DEPARTMENT
(747) 292-9275

BENEFICIARY OF TRUST #3773

AMH LINDA VISTA DEVELOPMENT, TRS, LLC,
A DELAWARE LIMITED LIABILITY COMPANY
23975 PARK SORRENTO, SUITE 300
CALABASAS, CA 91302
ATTN: LEGAL DEPARTMENT
(747) 292-9275

ABBREVIATION

AC	ACRE	LS	LAND SURVEYOR
BC1	INDICATES BOUNDARY CURVE NUMBER (SEE TABLE ON SHT. 2)	MAG	MAGNETIC
BL1	INDICATES BOUNDARY LINE NUMBER (SEE TABLE ON SHT. 2)	MIN	MINIMUM
BK	BOOK	N/A	NOT APPLICABLE
BM	BENCH MARK	OIP	OPEN IRON PIN
(C)	CALCULATED DIMENSION	PCP	PLASTIC CAP
C2	INDICATES CURVE NUMBER (SEE TABLE ON SHT. 3)	PAG	PIMA ASSOCIATION OF GOVERNMENTS
C.A.	COMMON AREA	PC	PIMA COUNTY
DKT	DOCKET	PG.	PAGE
DTL.	DETAIL	Q100	100-YR FLOW
ESMT	EASEMENT	(R)	RECORD DIMENSION
FFE	FINISHED FLOOR ELEVATION	(RAD)	RADIAL BEARING
FND	FOUND	RM	ROAD MAPS
FP	FLOOD PLAIN	R/W	RIGHT-OF-WAY
FPL1	INDICATES 100-YEAR FLOOD PLAIN LIMIT LINE NUMBER (SEE TABLE ON SHT. 3)	SEQ. NO.	INDICATES SEQUENCE NUMBER
ID	INTERIOR DIAMETER	S.F.	SQUARE FOOTAGE
IR	IRON ROD	SHT.	SHEET
L2	INDICATES LINE NUMBER (SEE TABLE ON SHT. 3)	STD.	STANDARD
		SVT	INDICATES SIGHT VISIBILITY TRIANGLE LIMITS

BASIS OF ELEVATION

NGS DESIGNATION 261+04.8 PID CZ0530, A SURVEY DISK IN A CULVERT MARKED 2136.58 261.04.04 AZHD SET IN THE CENTER OF THE NORTHEAST HEADWALL OF A CONCRETE CULVERT UNDER THE FRONTAGE ROAD, 0.90 MILES NORTHWEST OF THE CORTARO ROAD OVERPASS, 124.00 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS AND 16.00 FEET NORTHEAST OF THE FRONTAGE ROAD,
ELEVATION BEING 2138.24 FEET (NAVD 88).

BASIS OF BEARING

THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 23, TOWNSHIP 12 SOUTH, RANGE 12 EAST, GILA AND SALT RIVER MERIDIAN, AS SHOWN ON MARANA CENTER FINAL BLOCK PLAT RECORDED IN SEQUENCE NO. 20142340180, BEARING BEING: N 00°30'54" W.

SHEET INDEX

SHEET 1 ..... COVER SHEET & GENERAL NOTES
SHEET 2 ..... KEYNOTES, BOUNDARY TIES & COMMON AREA MAP
SHEET 3 ..... VILLAGE VI SUBDIVISION & FLOODPLAIN

ASSURANCES

ASSURANCES IN THE FORM OF A THIRD PARTY TRUST AGREEMENT FROM STEWART TITLE AND TRUST OF TUCSON, AN ARIZONA CORPORATION AS TRUSTEE UNDER TRUST NO'S. 3772 AND 3773 AS RECORDED IN SEQ. NO. _____ IN THE OFFICE OF THE RECORDER OF PIMA COUNTY, ARIZONA HAVE BEEN PROVIDED TO GUARANTEE INSTALLATION OF REQUIRED STREET, SEWER, ELECTRIC, GAS, WATER, UTILITIES, DRAINAGE, FLOOD CONTROL AND OTHER SUBDIVISION IMPROVEMENTS MEETING ESTABLISHED MINIMUM STANDARDS OF DESIGN AND CONSTRUCTION.

BY:_____ _____
TOWN OF MARANA DATE

ASSURED WATER SUPPLY

A CERTIFICATE OF ASSURED WATER SUPPLY HAS BEEN RECEIVED FROM THE DIRECTOR OF WATER RESOURCES.

BY:_____ _____
MARANA WATER DIRECTOR DATE

APPROVAL:

BY: _____ P.E. _____
MARANA TOWN ENGINEER/DEVELOPMENT ENGINEER DATE

_____ _____
MARANA PLANNING MANAGER DATE

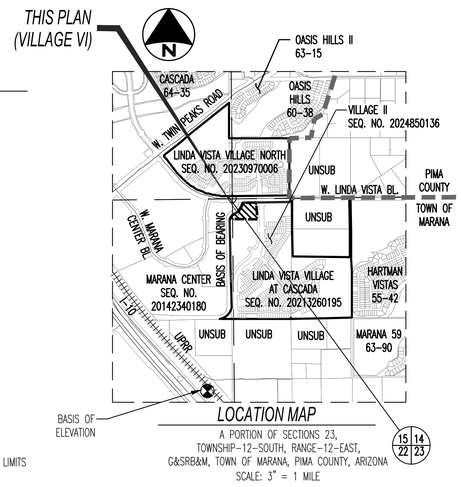
_____ _____
PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT DATE

I, _____, CLERK OF THE TOWN OF MARANA HEREBY CERTIFY THAT THIS PLAT WAS APPROVED BY THE TOWN COUNCIL OF THE TOWN OF MARANA ON THE _____ DAY OF _____, 20___.

_____ _____
CLERK OF THE TOWN OF MARANA DATE

ADMINISTRATIVE ADDRESS:

6093 W. LINDA VISTA BLVD., TUCSON, AZ 85742



LOCATION MAP

A PORTION OF SECTIONS 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRB&M, TOWN OF MARANA, PIMA COUNTY, ARIZONA
SCALE: 3" = 1 MILE

LEGEND

EXISTING	PROPOSED
	RIGHT-OF-WAY LINE
	100 YEAR FLOODPLAIN LIMITS LINE
○	INDICATES SURVEY MONUMENT AS NOTED
●	INDICATES NUMBER 4 REBAR TO BE SET UPON COMPLETION OF CONSTRUCTION AND STAMPED BY AN R.L.S.
■	INDICATES FOUND BRASS CAP SURVEY MONUMENT
×	INDICATES CALCULATED POINT, NOTHING FOUND OR SET
★	INDICATES LOT ACCESS DRIVEWAYS WILL NOT BE LOCATED WITHIN RETURNS
	INDICATES SECTION LINE
	INDICATES LINDA VISTA VILLAGE AT CASCADA PROJECT BOUNDARY
	INDICATES PLAT BOUNDARY
	INDICATES LOT LINE/C.A. LINE
	INDICATES EASEMENT LINE.
	INDICATES CENTERLINE OF RIGHT-OF-WAY
	INDICATES SIGHT VISIBILITY TRIANGLE
1	INDICATES EASEMENT NOTE (SEE SHT. 3 FOR EASEMENT NOTES)
⊗	INDICATES PROJECT BENCHMARK
□	INDICATES SURVEY MONUMENT PER PAG STD DTL. NO. 103 TO BE SET BY ARIZONA RLS UPON COMPLETION OF CONSTRUCTION
	INDICATES FLOW DIRECTION

FINAL PLAT FOR VILLAGE VI OF LINDA VISTA VILLAGE

LOTS 6001-6012 AND COMMON AREAS "D"#6-1, "D"#20 & "G"#6-1

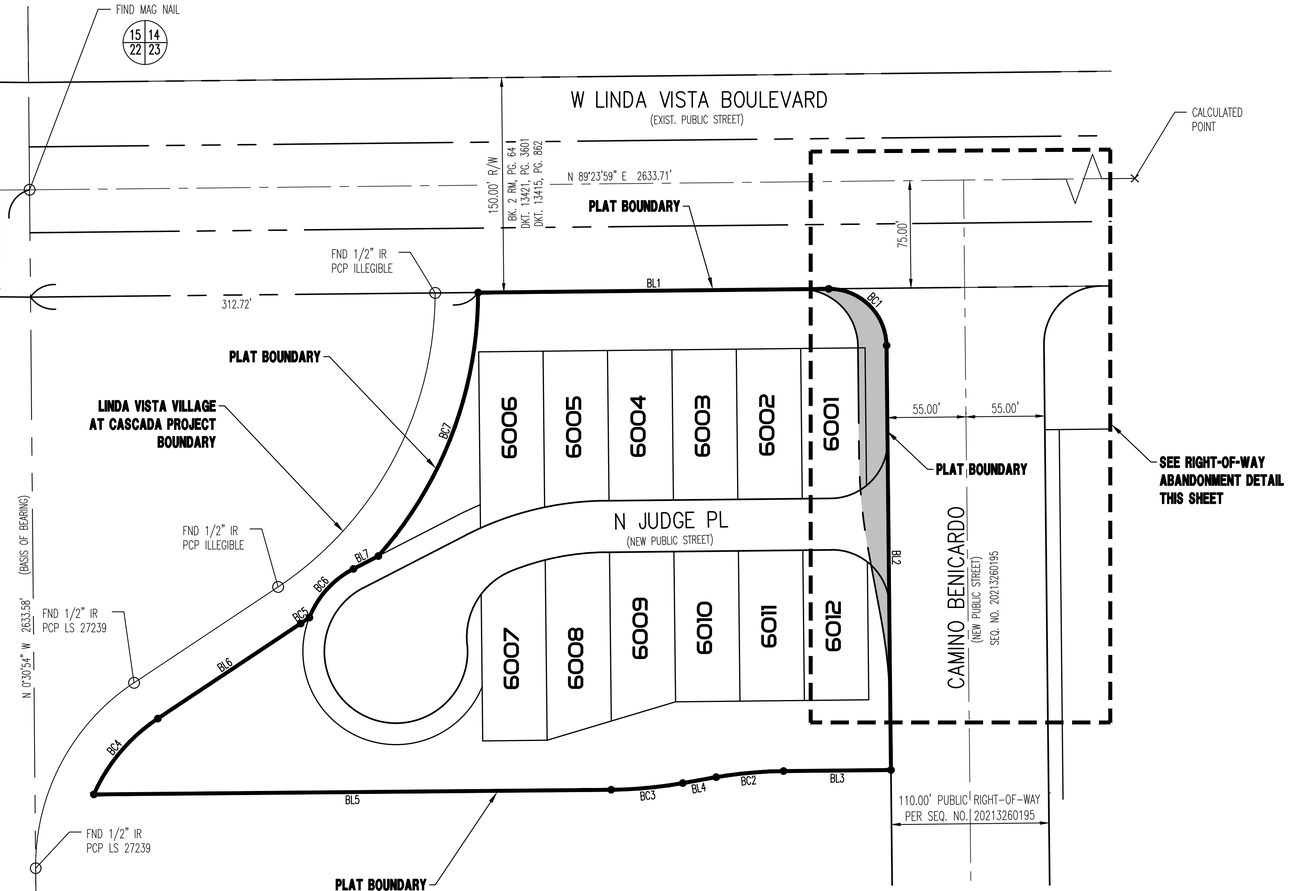
BEING A RESUBDIVISION OF BLOCK VI, COMMON AREA "D" #20 AND PORTIONS OF COMMON AREAS "A" #8 AND "F" #3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA

PRV2402-005

REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001
OCTOBER 15, 2024 SCALE: AS SHOWN
PRESIDIO JOB No. 114024-10-0106 SHEET 1 OF 3

SEQ. NO. _____

SEQ. NO.



BOUNDARY TIES LAYOUT

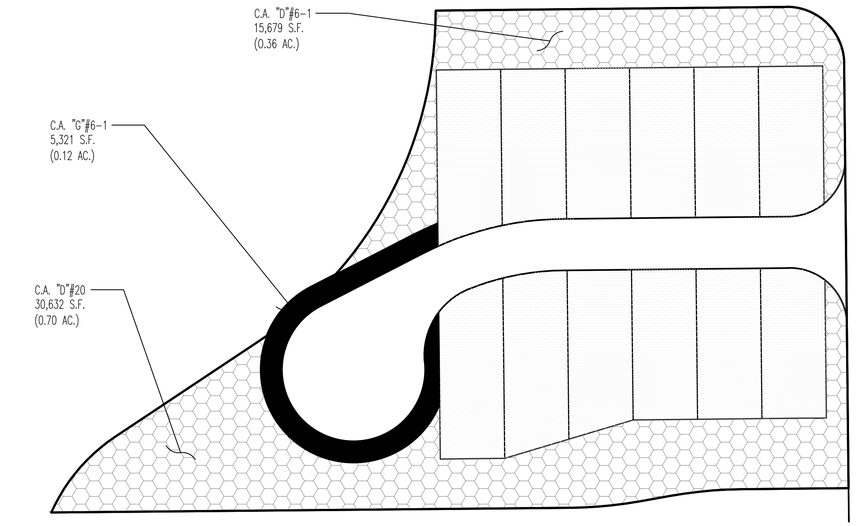
N

0' 50' 100'

SCALE 1"=50'

BOUNDARY LINE DATA TABLE (MASTER LIST)		
NUMBER	BEARING	DISTANCE
BL1	N 89°23'59" E	244.99'
BL2	N 00°35'52" W	296.70'
BL3	S 89°24'08" W	75.02'
BL4	S 79°52'55" W	21.24'
BL5	S 89°29'06" W	361.49'
BL6	N 56°21'48" E	119.88'
BL7	N 62°46'19" E	19.57'

BOUNDARY CURVE DATA TABLE (MASTER LIST)			
NUMBER	LENGTH	RADIUS	DELTA
BC1	62.83'	40.00'	90°00'09"
BC2	49.85'	300.00'	9°31'13"
BC3	50.28'	300.00'	9°36'11"
BC4	70.26'	124.00'	32°27'58"
BC5	7.40'	276.97'	1°31'52"
BC6	46.87'	65.00'	41°18'53"
BC7	201.38'	276.97'	41°39'34"



LEGEND

- COMMON AREA "A" – NATURAL UNDISTURBED OPEN SPACE (N/A TO THIS PLAT)
- COMMON AREA "B" – OPEN SPACE / PASSIVE RECREATION (N/A TO THIS PLAT)
- COMMON AREA "C" – OPEN SPACE / ACTIVE RECREATION (N/A TO THIS PLAT)
- COMMON AREA "D" – OPEN SPACE / DRAINAGE / PASSIVE RECREATION
- COMMON AREA "E" – OPEN SPACE / DRAINAGE (N/A TO THIS PLAT)
- COMMON AREA "F" – OPEN SPACE / DRAINAGE / PUBLIC UTILITIES / PASSIVE RECREATION (N/A TO THIS PLAT)
- COMMON AREA "G" – OPEN SPACE / PUBLIC UTILITIES / MAINTENANCE, SIGNAGE, LANDSCAPE, SIDEWALK & ACCESS
- COMMON AREA "H" – OPEN SPACE / DRAINAGE / PUBLIC UTILITIES / SLOPES (N/A TO THIS PLAT)
- RIGHT-OF-WAY
- RESIDENTIAL DEVELOPMENT AREAS

AREA TOTALS

I. TOTAL THIS PLAT

COMMON AREA "A" = (NOT A PART OF THIS PLAT)

COMMON AREA "B" = (NOT A PART OF THIS PLAT)

COMMON AREA "C" = (NOT A PART OF THIS PLAT)

COMMON AREA "D" = 46,311 S.F. (1.06± AC.)

COMMON AREA "E" = (NOT A PART OF THIS PLAT)

COMMON AREA "F" = (NOT A PART OF THIS PLAT)

COMMON AREA "G" = 5,321 S.F. (0.12± AC.)

COMMON AREA "H" = (NOT A PART OF THIS PLAT)

RIGHT-OF-WAY = 20,981 S.F. (0.48± AC.)

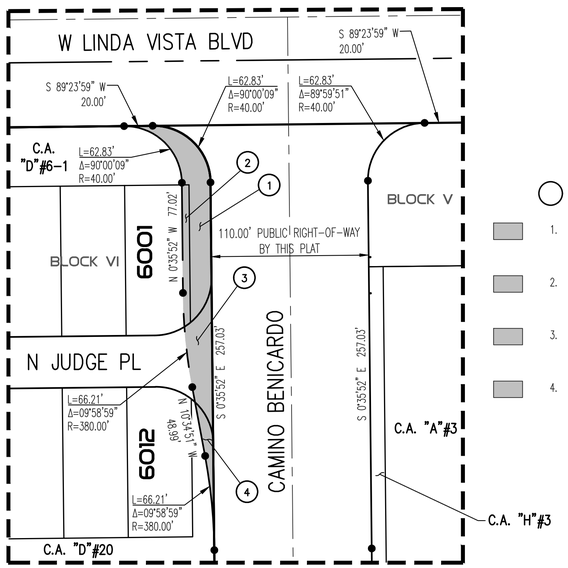
RESIDENTIAL DEVELOPMENT AREA (VILLAGE VI) = 58,745 S.F. (1.35± AC.)

COMMON AREA DELINEATION

N

0' 50' 100'

SCALE 1"=50'



RIGHT-OF-WAY ABANDONMENT DETAIL

N

0' 50' 100'

SCALE 1"=50'

RIGHT-OF-WAY ABANDONMENT KEYNOTES

1. A PORTION OF EXISTING CAMINO BENICARDO PUBLIC RIGHT-OF-WAY PER SEQ. NO. 20213260195, M&P ABANDONED BY THIS PLAT. THE AREA, AS DEFINED BY THIS PLAT, WILL UNIFY WITH C.A. "D" #6-1.
2. A PORTION OF EXISTING CAMINO BENICARDO PUBLIC RIGHT-OF-WAY PER SEQ. NO. 20213260195, M&P ABANDONED BY THIS PLAT. THE AREA, AS DEFINED BY THIS PLAT, WILL UNIFY WITH LOT 6001.
3. A PORTION OF EXISTING CAMINO BENICARDO PUBLIC RIGHT-OF-WAY PER SEQ. NO. 20213260195, M&P ABANDONED BY THIS PLAT. THE AREA, AS DEFINED BY THIS PLAT, WILL UNIFY WITH N JUDGE PL.
4. A PORTION OF EXISTING CAMINO BENICARDO PUBLIC RIGHT-OF-WAY PER SEQ. NO. 20213260195, M&P ABANDONED BY THIS PLAT. THE AREA, AS DEFINED BY THIS PLAT, WILL UNIFY WITH C.A. "D" #20.

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
22245
MICHAEL AMERSON
Date signed 10-15-24
ARIZONA U.S.A.

Registered Professional Engineer
CERTIFICATE NO.
21734
JOHN D. WOOD
Date signed 10/15/24
ARIZONA U.S.A.
(Civil)

Registered Professional Engineer
CERTIFICATE NO.
21734
JOHN D. WOOD
Date signed 10/15/24
ARIZONA U.S.A.
(Civil)

IN COMPLIANCE WITH CERTIFICATION STATEMENT SHOWN ON SHEET 1

FINAL PLAT FOR VILLAGE VI OF LINDA VISTA VILLAGE

LOTS 6001-6012 AND COMMON AREAS "D"#6-1, "D"#20 & "G"#6-1

BEING A RESUBDIVISION OF BLOCK VI, COMMON AREA "D" #20 AND PORTIONS OF COMMON AREAS "A" #8 AND "F" #3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA

PRV2402-005

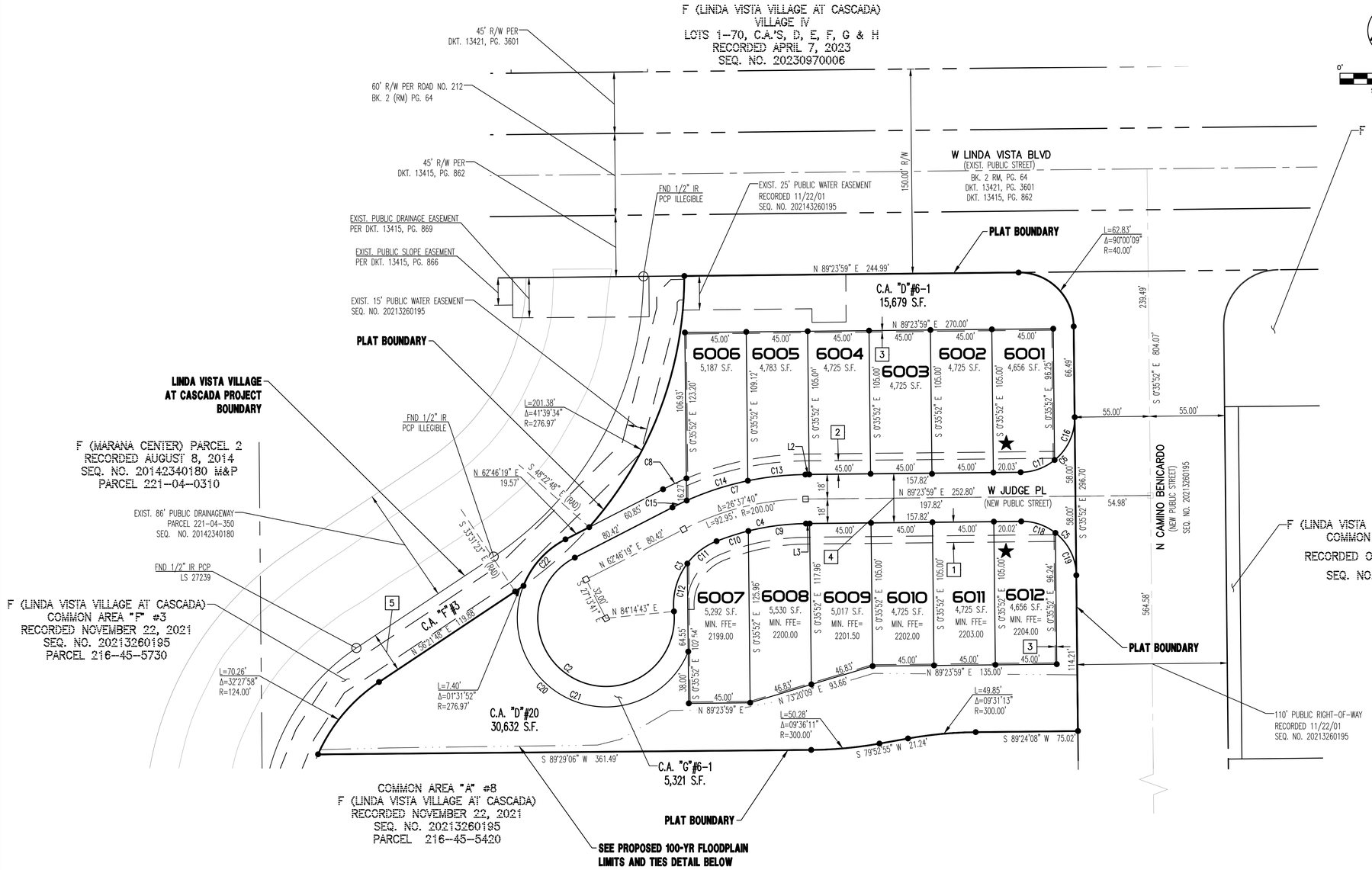
REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001

OCTOBER 15, 2024 SCALE: AS SHOWN

PRESIDIO JOB No. 114024-10-0106 SHEET **2** OF **3**

SEQ. NO. _____

Presidio ENGINEERING INC.
Civil • Land Development • Water Resources
190 S. Stratford Dr. Suite 105 • Tucson, Arizona 85716
(520) 795-7255 • Fax (520) 795-6747



EASEMENT / RIGHT-OF-WAY KEYNOTES

(MASTER LIST)

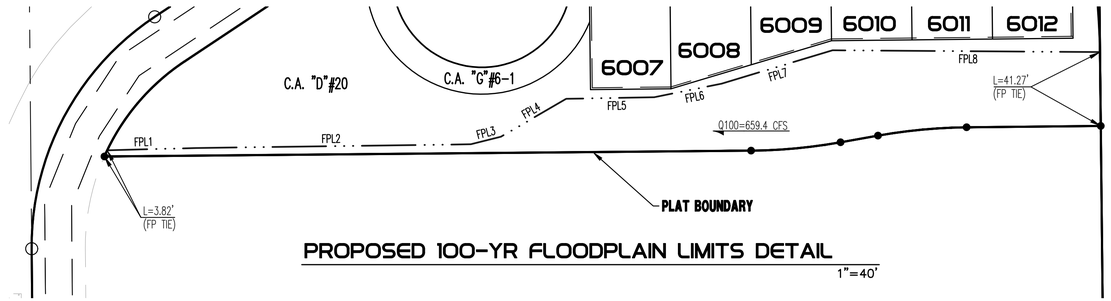
1. NEW 15' PUBLIC UTILITY, ROADWAY MAINTENANCE AND SIGNAGE EASEMENT BY THIS PLAT.
2. NEW 10' PRIVATE HOA PEDESTRIAN, SIDEWALK, AND LANDSCAPE EASEMENT BY THIS PLAT.
3. NEW 1' VEHICLE NO ACCESS EASEMENT BY THIS PLAT.
4. NEW 36' PUBLIC RIGHT-OF-WAY DEDICATED BY THIS PLAT.
5. NEW 30' PUBLIC WATER EASEMENT GRANTED BY VILLAGE VII FINAL PLAT.

LINE DATA TABLE
MASTER LIST

NUMBER	BEARING	DISTANCE
L1	N 27°13'41" W	32.00'
L2	S 89°23'59" W	2.80'
L3	N 89°23'59" E	2.80'

CURVE DATA TABLE
MASTER LIST

NUMBER	LENGTH	RADIUS	DELTA
C1	92.95'	200.00'	26°37'40"
C2	216.88'	50.00'	248°31'36"
C3	64.60'	50.00'	74°01'22"
C4	67.12'	182.00'	21°07'54"
C5	62.83'	40.00'	90°00'09"
C6	62.83'	40.00'	89°59'51"
C7	101.31'	218.00'	26°37'40"
C8	18.91'	233.00'	4°38'57"
C9	42.59'	182.00'	13°24'31"
C10	24.53'	182.00'	7°43'23"
C11	27.29'	50.00'	31°16'28"
C12	37.30'	50.00'	42°44'53"
C13	42.47'	218.00'	11°09'45"
C14	47.24'	218.00'	12°25'00"
C15	11.60'	218.00'	3°02'55"
C16	35.86'	40.00'	51°21'42"
C17	26.97'	40.00'	38°38'10"
C18	26.98'	40.00'	38°38'27"
C19	35.86'	40.00'	51°21'42"
C20	250.37'	65.00'	220°41'43"
C21	203.50'	65.00'	179°22'50"
C22	46.87'	65.00'	41°18'53"



PROPOSED 100-YR FLOODPLAIN LIMITS DETAIL

1"=40'

FLOOD PLAIN LINE DATA TABLE
MASTER LIST

NUMBER	BEARING	DISTANCE
FPL1	N 88°33'20" E	49.48'
FPL2	N 89°12'48" E	153.81'
FPL3	N 75°54'59" E	17.31'
FPL4	N 59°53'19" E	42.20'
FPL5	N 88°55'35" E	49.19'
FPL6	N 78°38'06" E	38.49'
FPL7	N 73°16'49" E	64.78'
FPL8	S 89°36'37" E	149.45'

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
22245
MICHAEL AMERSON
EXPIRES 10-31-24
ARIZONA U.S.A.

Registered Professional Engineer
CERTIFICATE NO.
21734
JOHN D. WOOD
10/15/24
Date Signed
ARIZONA U.S.A.

Registered Professional Engineer
CERTIFICATE NO.
21734
JOHN D. WOOD
10/15/24
Date Signed
ARIZONA U.S.A.

IN COMPLIANCE WITH CERTIFICATION STATEMENT SHOWN ON SHEET 1

FINAL PLAT FOR VILLAGE VI OF LINDA VISTA VILLAGE

LOTS 6001-6012 AND COMMON AREAS "D"#6-1, "D"#20 & "G"#6-1

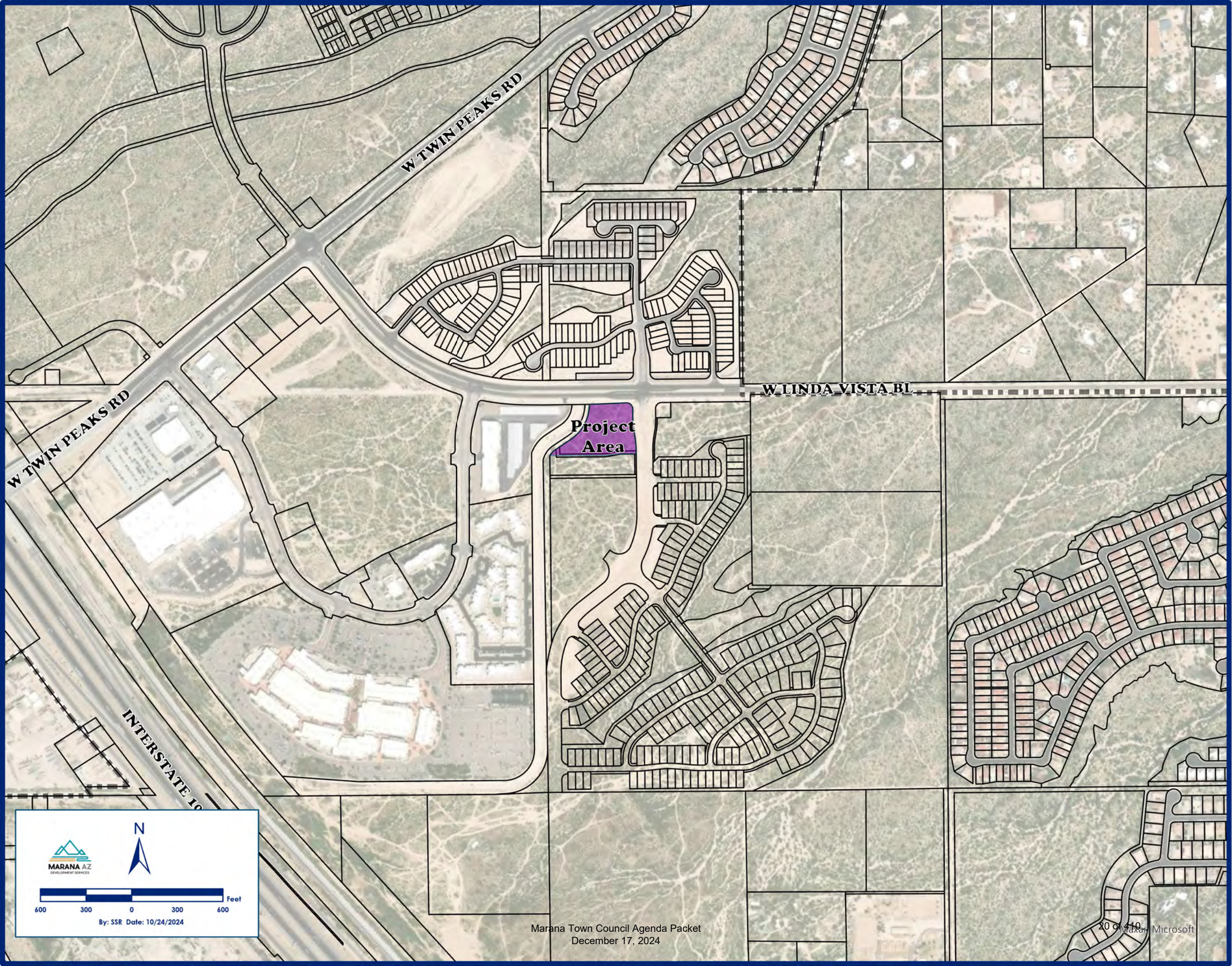
BEING A RESUBDIVISION OF BLOCK VI, COMMON AREA "D" #20 AND PORTIONS OF COMMON AREAS "A" #8 AND "F" #3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA

PRV2402-005

REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001
OCTOBER 15, 2024 SCALE:
PRESIDIO JOB No. 114024-10-0106 SHEET 3 OF 3

SEQ. NO. _____

Presidio ENGINEERING, INC.
Civil • Land Development • Water Resources
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(520) 795-7255 • Fax (520) 795-6747


W TWIN PEAKS RD
W TWIN PEAKS RD
W LINDA VISTA BL
Project Area
INTERSTATE 10
N
MARANA AZ
DEVELOPMENT SERVICES
600 300 0 300 600
Feet
By: SSR Date: 10/24/2024

MARANA AZ

Development Services / maranaAZ.gov
11555 West Civic Center Drive / Marana, AZ 85653
Ph (520) 382-2600 / Fax (520) 382-2641

PROJECT APPLICATION

APPLICATION TYPE

❑ Annexation	❑ Development Plan	❑ Development Plan Package	❑ General Plan Amendment
❑ Rezone	❑ Minor Land Division	❑ Translational Rezone	❑ Conditional Use Permit
❑ Specific Plan	❑ Landscape Plan	❑ Native Plant Plan/Exception	❑ SWPP
❑ Variance	❑ Hydraulic Model	❑ Sewer Capacity Assurance	❑ Sign Program
☒ Plat	❑ Improvement Plan	❑ Report (Type): _____	❑ Other: _____

PROJECT INFORMATION

Project Name: Village VI (Lots 6001-6012) and C.A. D#6-1, D#20 & G#6-1of Linda Vista Village	
Description of Project: Single Family Detached Residential	Number of Lots: 12
Parcel No.(s): See attached	Gross Area (Acres):
Project Address: 6093 W. Linda Vista Blvd.	
Ref. Project No.: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001	

CONTACT INFORMATION

Owner: See attached	Contact Name: Erik Zwerk		
Address: 3939 E. Broadway Blvd.	City: Tucson	State: AZ	Zip: 85711
Email: erik.zwerk@stewart.com	Phone No.: (520) 327-7373		
Applicant: AMH Development, LLC c/o Presidio Eng	Contact Name: Tanya Washington/Andie Hemmah		
Address: 190 S. Stratford Dr. #105	City: Tucson	State: AZ	Zip: 85716
Email: tanya@presidioengineering.com	Phone No.: (520) 795-7255 Ext. 104		
Consultant/Engineer: Presidio Engineering, Inc.	Contact Name: John D. Wood, P.E.		
Address: 190 S. Stratford Dr. #105	City: Tucson	State: AZ	Zip: 85716
Email: john@presidioengineering.com	Phone No.: (520) 795-7255 Ext. 103		

APPLICANT AUTHORIZATION

By signing below, I hereby acknowledge that I have read the information provided online at maranaaz.gov/arsnotice and certify that the information set forth in this application are true and correct to the best of my knowledge. I am either the owner of the property or I have been **authorized in writing** by the owner to file this application. (If the applicant is not the owner, attach written authorization from the owner)

ERIC CHENEY		2/8/24
Applicant Name (PRINT)	Signature	Date

FOR OFFICIAL USE ONLY

Project No._____ **Date Received**_____

Revision Date 05/16/2023

Project Name:

Village VI (Lots 6001 – 6012) Linda Vista Village

Property Owner:

Stewart Title and Trust of Tucson, Trust Nos. 3772 and 3773
ATTN: Erik Zwerk
3939 E. Broadway Blvd.
Tucson, AZ 85711
(520) 327-7373
erik.zwerk@stewart.com

Tax Parcel Nos.

216-45-5660 216-45-6290

Portions of Tax Parcel Nos.

216-45-5420 216-45-5730

Council-Regular Meeting **C3**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Scott Radden, Senior Planner

From: Scott Radden, Senior Planner

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Resolution No. 2024-106: Relating to Development; approving the Final Plat for Village VII of Linda Vista Village, Lots 7001-7040 and Common Areas "A" #8, "D" #7, "D" #7-1, "D" #7-2, "D" #7-3, "F" #3, "G"#7-1, "G" #7-2, "G" #7-3, "G" #7-4, "G" #7-5 & "H" #4 located south of Linda Vista Boulevard, approximately 0.5 miles east of Twin Peaks Road (Scott S. Radden)

Discussion:

Request
AMH Development, LLC c/o Presidio Eng, Inc., is requesting approval of the Final Plat for Village VII of Linda Vista Village. The proposed plat includes 40 residential lots and Common Areas "A" #8, "D" #7, "D" #7-1, "D" #7-2, "D" #7-3, "F" #3, "G"#7-1, "G" #7-2, "G" #7-3, "G" #7-4, "G" #7-5 & "H" #4.

The Town Council adopted Resolution No. 2021-143 on November 16, 2021, approving the amended final plat for Linda Vista Village at Cascada, Village I (Lots 1-39), Village II (Lots 1-93), Village III (Lots 1-131), Blocks I-VII, and Common Areas "A", "B", "C", "D", "E", "F", "G", and "H". The proposed plat is a resubdivision of Block VII, Common Area "D" #7 & "H" #4 and portions of Common areas "A" #8 and "F" #3 of the Amended Final Plat for Linda Vita Village at Cascada, as recorded in Sequence No 20213260195.

Location
The proposed plat encompasses 12.3 acres generally located south of Linda Vista

Boulevard, approximately 0.5 miles east of Twin Peaks Road, in a portion of the NW ¼ of Section 23, Township 12 South, Range 12 East.

Zoning and Land Use
The Town Council adopted Marana Ordinance No. 2006.23 on December 5, 2006, approving the Cascada Specific Plan. The Town Council adopted Marana Ordinance 2016.001 on January 19, 2016, approving the Linda Vista Village at Cascada Specific Plan. Block VI, common areas and right-of-way associated with the proposed plat are located within Linda Vista Village at Cascada Specific Plan.

The proposed 12.3-acre final plat includes a total of 40 lots, and twelve common area designations. Per the Linda Vista Village at Cascada Specific Plan, Village VII lots are designated as Employment Center, allowing for Medium Density Residential (MDR) residential development. The minimum lot size allowed per the Specific Plan is 3,500 square feet. The minimum lot size provided is 4,448 square feet. The maximum lot size proposed is 5,923 square feet and the average lot size is 4,878 square feet.

Transportation
There two accesses proposed from Camino Benicardo which extends north to Linda Vista Boulevard. Approximately three-tenths of a mile of new public streets are proposed.

Utilities
The subdivision will be served by Marana Water. Sewer service will be provided by Pima County Regional Wastewater. Northwest Fire District, Tucson Electric Power, and Southwest Gas will provide their corresponding services.

Preliminary Plat
PRV2307-001 approved by Staff on 22 January 2024.

Staff Recommendation:
Staff has reviewed the proposed amended final plat against the requirements of the Linda Vista Village at Cascada Specific Plan, the Marana Town Code, and the Marana General Plan. The final plat is in substantial conformance with all required development regulations, and staff recommends approval.

Suggested Motion:
I move to adopt Resolution No. 2024-106 approving the Final Plat for Village VII of Linda Vista Village Lots 7001-7040 and Common Areas “A” #8, “D” #7, “D” #7-1, “D” #7-2, “D” #7-3, “F” #3, “G”#7-1, “G” #7-2, “G” #7-3, “G” #7-4, “G” #7-5 & “H” #4.

Attachments

Resolution No. 2024-106
Final Plat

MARANA RESOLUTION NO. 2024-106

RELATING TO DEVELOPMENT; APPROVING THE FINAL PLAT FOR VILLAGE VII OF LINDA VISTA VILLAGE, LOTS 7001-7040 AND COMMON AREAS "A" #8, "D" #7, "D" #7-1, "D" #7-2, "D" #7-3, "F" #3, "G"#7-1, "G" #7-2, "G" #7-3, "G" #7-4, "G" #7-5 & "H" #4, LOCATED SOUTH OF LINDA VISTA BOULEVARD, APPROXIMATELY 0.5 MILES EAST OF TWIN PEAKS ROAD

WHEREAS, on December 5, 2006, the Mayor and Town Council adopted Ordinance No. 2006.23, approving a rezoning of approximately 1,454 acres to create the Cascada Specific Plan; and

WHEREAS, on January 6, 2009, the Mayor and Town Council adopted Resolution No. 2009-001, approving the Final Plat for Cascada, Village I (Lots 1-430), Blocks I-XVIII, "A", "B", "C", "D" and Common Areas "A", "B", "C", "D", "E", "F", "G", "H", and "I", recorded in the Pima County Recorder's office on January 23, 2009 at Book 64 of Maps and Plats, Page 35 (Sequence 20090150376); and

WHEREAS, on January 19, 2016, the Mayor and Town Council adopted Ordinance 2016.001, approving a rezoning of 155 acres to create the Linda Vista Village at Cascada Specific Plan, which rezoned a portion of the property included within the Cascada Specific Plan; and

WHEREAS, on September 4, 2018, the Mayor and Town Council adopted Resolution No. 2018-079, approving the Preliminary Plat for Linda Vista Village at Cascada, Village I (Lots 1-39), Village II (Lots 1-93), Village III (Lots 1-131), Blocks I-VII, and Common Areas "A", "B", "C", "D", "E", "F", "G", and "H"; and

WHEREAS, on September 15, 2020, the Mayor and Town Council adopted Resolution No. 2020-099, approving the Final Plat for Linda Vista Village at Cascada, Village I (Lots 1-39), Village II (Lots 1-93), Village III (Lots 1-131), Blocks I-VII, and Common Areas "A", "B", "C", "D", "E", "F", "G", and "H"; and

WHEREAS on November 16, 2021, the Mayor and Town Council adopted Resolution No. 2021-143, approving the Amended Final Plat for Linda Vista Village at Cascada Village I (Lots 1-39), Village II (Lots 1-93), Village III (Lots 1-131), Blocks I-VII, and Common Areas "A", "B", "C", "D", "E", "F", "G", and "H"; and

WHEREAS Presidio Engineering on behalf of AMH Development, LLC and AMH Linda Vista Development, TRS, LLC, has applied for approval of the final plat for Village VII of Linda Vista Village, Lots 7001-7040 and Common Areas "A" #8, "D" #7, "D" #7-1, "D" #7-2, "D" #7-3, "F" #3, "G"#7-1, "G" #7-2, "G" #7-3, "G" #7-4, "G" #7-5 & "H" #4 (the "LVV Village VII Plat"); and

WHEREAS the Mayor and Town Council, at its December ___, 2024 meeting, determined that the LVV Village VII Plat should be approved.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, that the LVV Village VII Plat is hereby approved.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this ___ day of December, 2024.

_____
Jon Post, Vice Mayor

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

GENERAL NOTES

1. THE GROSS AREA OF THE SUBDIVISION IS 12.30 ACRES (535,628 S.F.). THE EXISTING ZONING IS "F" PER THE LINDA VISTA VILLAGE AT CASCADA SPECIFIC PLAN, PCZ1503-001 PER ORDINANCE NO. 2016.001.
2. TOTAL MILES OF NEW PUBLIC STREETS IS 0.3 MILES.
3. THE TOTAL NUMBER OF NEW LOTS PROPOSED WITHIN THIS PLAT IS 40. THE DENSITY IS 3.3 RAC (40 LOTS/12.30 AC).
4. THE MAXIMUM NUMBER OF DWELLING UNITS ALLOWED WITHIN THE LINDA VISTA VILLAGE (PCZ 1503-001) PROJECT IS 693.
   THE NUMBER OF DWELLING UNITS PROPOSED WITHIN THE LINDA VISTA VILLAGE PROJECT WITH THE INCLUSION OF THIS PLAT IS 381 AND IS DISTRIBUTED AS FOLLOWS:
   VILLAGE I WITH 39 LOTS (PER SEQ. NO. 20213260195)
   VILLAGE II WITH 93 LOTS (PER SEQ. NO. 20213260195)
   VILLAGE III WITH 131 LOTS (PER SEQ. NO. 20213260195)
   VILLAGE IV WITH 66 LOTS (PER SEQ. NO. 20230970006)
   VILLAGE VI WITH 12 LOTS
   VILLAGE VII WITH 40 LOTS
5. THE FOLLOWING LOT AREAS ARE PROPOSED WITHIN THIS PLAT:
   MINIMUM LOT SIZE ALLOWED 3,500 S.F.
   SMALLEST LOT 4,448 S.F., LARGEST LOT 5,923 S.F. AND AVERAGE LOT 4,878 S.F.
6. DEVELOPMENT STANDARDS ARE TO BE PER THE LINDA VISTA VILLAGE AT CASCADA SPECIFIC PLAN (PCZ1503-001), AND ARE AS FOLLOWS:

	LINDA VISTA VILLAGE S.P. "EC" LAND USE MDR DEVELOPMENT TYPE
a. MAXIMUM GROSS DENSITY:	6 RAC
b. MINIMUM LOT SIZE:	3500 S.F.
c. MAXIMUM LOT COVERAGE:	65%
d. MAXIMUM BUILDING HEIGHT:	28 FEET
e. BUILDING SETBACKS:	
A. FRONT:	
(i) MAIN STRUCTURE:	10 FEET*
(ii) FRONT LOADING GARAGE:	20 FEET**
(iii) SIDE LOADING GARAGE:	10 FEET*
(iv) SETBACKS STAGGERING:	A MINIMUM OF 20% ON EVERY THIRD LOT SO THAT THE FRONT SETBACK WILL NOT BE THE SAME FOR THREE CONSECUTIVE HOMES
B. SIDE	
(i) MAIN STRUCTURE:	0 FEET
(ii) MINIMUM BETWEEN BUILDINGS:	10 FEET
(iii) SIDE YARD ADJACENT TO STREET:	10 FEET
C. REAR	
(i) MAIN STRUCTURE:	10 FEET
(ii) REAR LOADING GARAGES:	FROM ALLEY, LESS THAN OR EQUAL TO 5 FEET OR GREATER THAN 18 FEET
(iii) ACCESSORY STRUCTURES:	0 FEET
f. MINIMUM LOT WIDTH:	NONE
g. MINIMUM LOT DEPTH:	NONE
h. BUILDING MASS:	PER RESIDENTIAL DESIGN CRITERIA AND THE DEVELOPMENT REVIEW COMMITTEE (DRC)
* EFFECTIVE MAIN STRUCTURE FRONT SETBACK IS 15 FEET DUE TO THE DEDICATION OF A 15' PUBLIC UTILITY, ROADWAY MAINTENANCE AND SIGNAGE EASEMENT.	
** MEASURED FROM BACK OF SIDEWALK OR PEDESTRIAN ACCESSWAY	

7. PARKING PROVISIONS INCLUDE TWO (2) ON-SITE PARKING SPACES FOR EACH LOT. TOTAL PARKING PROVIDED IS 80 SPACES (40 LOTS X 2).
8. THIS DEVELOPMENT WILL COMPLY THE LINDA VISTA VILLAGE AT CASCADA SPECIFIC PLAN (PCZ1503-001). IF AN ISSUE, CONDITION OR SITUATION ARISES THAT IS NOT ADDRESSED OR PROVIDED FOR WITHIN THE RESPECTIVE APPLICABLE SPECIFIC PLANS, THE REGULATIONS OF THE TOWN OF MARANA LAND DEVELOPMENT CODE THAT ARE CURRENT AT THE TIME OF DEVELOPMENT PERMITTING SHALL APPLY.
9. PLAT AREA TOTALS (SEE SHEET 2 FOR ADDITIONAL DETAILS).
   A. COMMON AREAS "A" – NATURAL UNDISTURBED OPEN SPACE (WITH REVEGETATED UTILITY EASEMENTS), 79,159 S.F. (1.82± AC.).
   B. COMMON AREAS "D" – OPEN SPACE / DRAINAGE / PASSIVE RECREATION AREA, 133,938 S.F. (3.07± AC.).
   C. COMMON AREAS "F" – OPEN SPACE / DRAINAGE / PUBLIC UTILITIES / PASSIVE RECREATION AREA, 51,497 S.F. (1.18± AC.).
   D. COMMON AREAS "G" – OPEN SPACE / PUBLIC UTILITIES / MAINTENANCE, SIGNAGE, LANDSCAPE, SIDEWALK AND ACCESS, 13,433 S.F. (0.31± AC.).
   E. COMMON AREAS "H" – OPEN SPACE / DRAINAGE / PUBLIC UTILITIES / SLOPES, 6,869 S.F. (0.16± AC.).
   F. RESIDENTIAL DEVELOPMENT AREA: BLOCK VII, LOTS 7001–7040, 195,126 S.F. (4.48± AC.).
   G. RIGHT-OF-WAY AREA: 66,510 S.F. (1.53± AC.).
10. OBJECTS AND MATERIALS WITHIN THE SIGHT VISIBILITY TRIANGLES SHALL BE PLACED SO AS NOT TO INTERFERE WITH A VISIBILITY PLANE DESCRIBED BY TWO HORIZONTAL LINES LOCATED 30 INCHES AND 72 INCHES ABOVE FINISHED GRADE OF THE ROADWAY SURFACE, AND SHALL CONFORM TO THE TOWN OF MARANA SUBDIVISION STREET STANDARDS.
11. ACCORDING TO THE DRAINAGE REPORT PREPARED BY CMG, DATED JUNE 30, 2023 (DRA2307-001) CMG PROJECT NO. 21-061, THIS SUBDIVISION IS LOCATED WITHIN THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOODPLAIN (ZONE A01) IN ACCORDANCE WITH FLOOD INSURANCE RATE MAP (FIRM) PANEL NO. 04019C1065L EFFECTIVE DATE JUNE 16, 2011. PROPOSED SUBDIVISION DEVELOPMENT AREAS ARE LOCATED WITHIN ZONE A01. UNTIL A LETTER OF MAP REVISION (LOMR) HAS BEEN ACCEPTED BY FEMA AND A REVISED MAP HAS BEEN SUBMITTED TO THE TOWN OF MARANA, THE ACTIVITIES THAT TAKE PLACE IN THE PROPOSED (ZONE A01) AREA SHALL GO THROUGH THE TOWN OF MARANA FLOODPLAIN PERMITTING PROCESS.
12. ALL NEW AND EXISTING UTILITIES WITHIN OR CONTIGUOUS TO THE SITE SHALL BE PLACED UNDERGROUND EXCEPT ELECTRICAL TRANSMISSION LINES CARRYING 48KV OR GREATER, AND THOSE LINES WHICH CAN BE SHOWN TO EXIST IN CURRENT OR FUTURE ELECTRICAL TRANSMISSION CORRIDORS.
13. INSTALLATION OF ITEMS SUCH AS LANDSCAPING, IRRIGATION, SIGNAGE, MONUMENTS, WALLS AND DRAINAGE IMPROVEMENTS IN THE PUBLIC RIGHTS-OF-WAY SHALL REQUIRE A PERPETUAL LICENSE AGREEMENT FOR INSTALLATION, MAINTENANCE AND INDEMNIFICATION. THE LICENSE AGREEMENT SHALL BE EXECUTED AND APPROVED BY THE TOWN OF MARANA PRIOR TO APPROVAL OF THE CLOSEOUT PACKAGE FOR THIS PROJECT.
14. THIS SUBDIVISION IS LOCATED WITHIN THE TOWN OF MARANA WATER SERVICE AREA, WHICH HAS BEEN DESIGNATED AS HAVING AN ASSURED WATER SUPPLY UNDER A.R.S. §45-576.
15. APPROVAL OF THIS PLAT DOES NOT AFFIRM, CERTIFY OR APPROVE ANY LAND DIVISION THAT MAY BE CONTRARY TO STATE LAW, NOR DOES IT CERTIFY THE EXISTENCE OF, OR COMPLIANCE WITH ANY DEED RESTRICTIONS OR EASEMENTS.
16. THE AREA BETWEEN 100-YEAR FLOOD LIMITS REPRESENTS AN AREA THAT MAY BE SUBJECT TO FLOODING FROM A 100-YEAR FREQUENCY FLOOD AND ALL LAND IN THIS AREA WILL BE RESTRICTED TO USES THAT ARE COMPATIBLE WITH FLOODPLAIN MANAGEMENT AS APPROVED BY THE FLOODPLAIN ADMINISTRATOR.
17. NO FURTHER LOT SPLITTING SHALL BE DONE WITHOUT THE WRITTEN APPROVAL OF THE TOWN OF MARANA.
18. THE PROFESSIONAL ENGINEER OF RECORD SHALL CERTIFY AS TO THE FORM, LINE AND FUNCTION OF ALL PUBLIC AND PRIVATE ROADWAYS AND DRAINAGE STRUCTURES BEFORE THE RELEASE OF ASSURANCES.
19. ALL LOT, BLOCK, RIGHT-OF-WAY AND CENTERLINE MONUMENTS SET ARE TO BE IN COMPLIANCE WITH THE ARIZONA STATE BOARD OF TECHNICAL REGISTRATION SUBSTANTIVE POLICY STATEMENT EFFECTIVE FEBRUARY 22, 2011, AS FOLLOWS: ALL MONUMENTS SET SHALL BE UNDER THE DIRECT SUPERVISION OF THE SURVEYOR OF RECORD. IF FOR ANY REASON THE SURVEYOR OF RECORD IS NOT AVAILABLE TO SUPERVISE THE SETTING OF THE INTERIOR CORNER MONUMENTS, SUBSEQUENT TO THE RECORDING OF THE FINAL PLAT, THE REPLACEMENT SURVEYOR SHALL SET MONUMENTS WITH HIS/HER IDENTIFYING NUMBER AND A RECORD OF SURVEY SHALL BE RECORDED IN ACCORDANCE WITH THE STATE STATUTES.
20. THE PROPERTY SUBJECT TO THIS FINAL PLAT INCLUDES A SPECIAL FLOOD HAZARD AREA (SFHA) ASSOCIATED WITH THE PLATTED BOUNDARY. A CLOMR, CASE NUMBER 22-09-0417R HAS BEEN ACCEPTED BY FEMA AND A LOMR HAS BEEN SUBMITTED TO FEMA. IF THE SUBMITTED LOMR IS NOT ACCEPTED BY FEMA AND DOES NOT BECOME EFFECTIVE, THEN THE PROPERTY OWNER SHALL SUBMIT AN AMENDED FINAL PLAT THAT INCLUDES THE INFORMATION REQUIRED IN MARANA TOWN CODE SECTION 17-15-10, PARAGRAPH (E), SUBPARAGRAPHS (2), (3), (4) AND (8) PRIOR TO ANY DEVELOPMENT WITHIN THE PLATTED BOUNDARY.

CERTIFICATION

I HEREBY CERTIFY THAT THE BOUNDARY SURVEY AS SHOWN ON THIS PLAT WAS PERFORMED UNDER MY DIRECTION AND THAT ALL EXISTING AND PROPOSED SURVEY MONUMENTS AND MARKERS SHOWN ARE CORRECTLY DESCRIBED. I FURTHER CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECTION.

REGISTERED LAND SURVEYOR — CERTIFICATE NO. 22245 — MICHAEL AMERSON — Date Signed 10-16-24 — ARIZONA U.S.A.

MICHAEL AMERSON — P.L.S. NO. 22245
AMERSON SURVEYING, INC.
4552 E. CAMP LOWELL DR.
TUCSON, AZ 85712
(520) 325-5883

I HEREBY CERTIFY THAT THE FLOOD PLAIN LIMITS AND EROSION HAZARD SETBACKS AS SHOWN ON THIS PLAT WERE PREPARED UNDER MY DIRECTION.

JOHN D. WOOD — P.E. NO. 21734

Registered Professional Engineer (Civil) — CERTIFICATE NO. 21734 — JOHN D. WOOD — Date Signed 10/16/24 — ARIZONA U.S.A.

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECTION AND THAT ALL INTERIOR GEOMETRY AND EASEMENTS WERE REVIEWED AND SHOWN UNDER MY SUPERVISION.

JOHN D. WOOD — P.E. NO. 21734

RECORDING

STATE OF ARIZONA)
) SS
COUNTY OF PIMA)

NO:_____
FEE:_____

THIS INSTRUMENT WAS FILED FOR RECORD AT THE REQUEST OF PRESIDIO ENGINEERING, INC.,
ON THIS _____ DAY OF _____, 20___, IN SEQUENCE NO. _____ OF,
PIMA COUNTY RECORDS

GABRIELLA CAZARES-KELLY, PIMA COUNTY RECORDER

BY:_____ _____
DEPUTY DATE

DEDICATION

WE THE UNDERSIGNED, HEREBY WARRANT THAT WE ARE ALL AND THE ONLY PARTIES HAVING ANY FEE TITLE INTEREST IN THE LAND SHOWN ON THIS PLAT, AND WE CONSENT TO THE SUBDIVISION OF THIS LAND IN THE MANNER SHOWN ON THIS PLAT. WE HEREBY DEDICATE TO THE TOWN OF MARANA ALL RIGHTS-OF-WAY SHOWN ON THIS PLAT, INCLUDING ALL STREETS, ALLEYS, DRAINAGEWAYS, AND EASEMENTS, INCLUDING NO ACCESS EASEMENTS. UTILITY EASEMENTS AS SHOWN ON THIS PLAT ARE DEDICATED TO THE TOWN OF MARANA, PIMA COUNTY, AND ALL PUBLIC AND PRIVATE UTILITY COMPANIES FOR THE PURPOSE OF INSTALLATION AND MAINTENANCE OF, AND ACCESS TO, PUBLIC AND PRIVATE UTILITIES AND PUBLIC SEWERS. NO ACCESS EASEMENTS SHOWN ON THIS PLAT ARE DEDICATED TO THE TOWN OF MARANA FOR THE PURPOSE OF ACCESS CONTROL TO ADJACENT RIGHTS-OF-WAY. OTHER EASEMENTS SHOWN ON THIS PLAT ARE DEDICATED TO THE TOWN OF MARANA FOR THE PURPOSE OR PURPOSES NOTED ON THIS PLAT. PRIVATE EASEMENTS SHOWN ON THIS PLAT ARE DEDICATED TO AN ASSOCIATION OF INDIVIDUAL LOT OWNERS AS ESTABLISHED BY COVENANTS, CONDITIONS AND RESTRICTIONS RECORDED IN DKT. 13480 AT PG. 1394 AND AMENDED BY SEQUENCE NO. 20220660632 IN THE OFFICE OF THE RECORDER OF PIMA COUNTY.

WE THE UNDERSIGNED, OUR SUCCESSORS AND ASSIGNS, DO HEREBY HOLD THE TOWN OF MARANA, ITS EMPLOYEES, OFFICERS, AND AGENTS HARMLESS FROM AND AGAINST ANY AND ALL CLAIMS FOR DAMAGES RELATED TO THE USE OF THESE LANDS NOW AND IN THE FUTURE BY REASON OF FLOODING, FLOWAGE, EROSION, OR DAMAGE CAUSED BY WATER, WHETHER SURFACE, FLOOD, OR RAINFALL. NATURAL DRAINAGE SHALL NOT BE ALTERED, DISTURBED, OR OBSTRUCTED WITHOUT THE APPROVAL OF THE TOWN OF MARANA.

PRIVATE DRAINAGEWAYS AND COMMON AREAS AS SHOWN ON THIS PLAT ARE RESERVED FOR THE PRIVATE USE AND CONVENIENCE OF ALL OWNERS OF PROPERTY WITHIN THIS SUBDIVISION AND THEIR GUESTS AND INVITEES. COMMON AREAS, BUT NOT NATURAL UNDISTURBED OPEN SPACE, ARE GRANTED AS EASEMENTS TO THE TOWN OF MARANA, PIMA COUNTY, AND ALL PUBLIC AND PRIVATE UTILITY COMPANIES FOR THE PURPOSE OF INSTALLATION AND MAINTENANCE OF, AND ACCESS TO, UNDERGROUND PUBLIC AND PRIVATE UTILITIES AND SEWERS. PRIVATE DRAINAGEWAYS ARE ALSO RESERVED FOR THE FLOW OF WATER, WHETHER SURFACE, FLOOD, OR RAINFALL, FROM THIS SUBDIVISION AND OTHER LANDS AS APPROVED BY THE TOWN ENGINEER. TITLE TO ALL PRIVATE DRAINAGEWAYS AND COMMON AREA SHALL BE VESTED IN AN ASSOCIATION OF INDIVIDUAL LOT OWNERS AS ESTABLISHED BY COVENANTS, CONDITIONS AND RESTRICTIONS RECORDED IN DKT. 13480 AT PG. 1394 AND AMENDED BY SEQUENCE NO. 20220660632. IN THE OFFICE OF THE RECORDER OF PIMA COUNTY, ARIZONA. EACH AND EVERY LOT OWNER WITHIN THE SUBDIVISION SHALL BE A MEMBER OF THE ASSOCIATION, WHICH IS RESPONSIBLE FOR THE CONTROL, MAINTENANCE, SAFETY, AND LIABILITY OF THE PRIVATE DRAINAGEWAYS AND COMMON AREA WITHIN THIS SUBDIVISION.

STEWART TITLE & TRUST OF TUCSON, AN ARIZONA CORPORATION AS TRUSTEE UNDER TRUST NUMBER 3772 ONLY AND NOT OTHERWISE, AS TO COMMON AREAS "D"#7, "F"#3 & "H"#4 AND A PORTION OF COMMON AREAS "G"#7-4 AND "G"#7-5.

BY: _____ DATE: _____
ERIK ZWERK, TRUST OFFICER

STEWART TITLE & TRUST OF TUCSON, AN ARIZONA CORPORATION AS TRUSTEE UNDER TRUST NUMBER 3773 ONLY AND NOT OTHERWISE, AS TO LOTS 7001-7040 AND COMMON AREA A#8, "D"#7-1, "D"#7-2, "D"#7-3, "G"#7-1, "G"#7-2, "G"#7-3 AND A PORTION OF COMMON AREAS "G"#7-4 AND "G"#7-5.

BY: _____ DATE: _____
ERIK ZWERK, TRUST OFFICER

ACKNOWLEDGEMENT FOR TRUST #3772

STATE OF ARIZONA)
) SS
COUNTY OF PIMA)

ON THIS _____ DAY OF _____, 20___. BEFORE ME, PERSONALLY APPEARED THE UNDERSIGNED OFFICIAL, _____ WHO ACKNOWLEDGED TO BE THE TRUST OFFICER OF STEWART TITLE & TRUST OF TUCSON, AN ARIZONA CORPORATION, AS TRUSTEE UNDER TRUST NO. 3772, AND NOT IN ITS CORPORATE CAPACITY, AND BEING AUTHORIZED SO TO DO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSE THEREIN.

MY COMMISSION EXPIRES: _____ _____
NOTARY PUBLIC

ACKNOWLEDGEMENT FOR TRUST #3773

STATE OF ARIZONA)
) SS
COUNTY OF PIMA)

ON THIS _____ DAY OF _____, 20___. BEFORE ME, PERSONALLY APPEARED THE UNDERSIGNED OFFICIAL, _____ WHO ACKNOWLEDGED TO BE THE TRUST OFFICER OF STEWART TITLE & TRUST OF TUCSON, AN ARIZONA CORPORATION, AS TRUSTEE UNDER TRUST NO. 3773, AND NOT IN ITS CORPORATE CAPACITY, AND BEING AUTHORIZED SO TO DO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSE THEREIN.

MY COMMISSION EXPIRES: _____ _____
NOTARY PUBLIC

BENEFICIARY OF TRUST #3772

AMH DEVELOPMENT, LLC, A DELAWARE LIMITED LIABILITY COMPANY
23975 PARK SORRENTO, SUITE 300
CALABASAS, CA 91302
ATTN: LEGAL DEPARTMENT
(747) 292-9275

BENEFICIARY OF TRUST #3773

AMH LINDA VISTA DEVELOPMENT, TRS, LLC,
A DELAWARE LIMITED LIABILITY COMPANY
23975 PARK SORRENTO, SUITE 300
CALABASAS, CA 91302
ATTN: LEGAL DEPARTMENT
(747) 292-9275

ABBREVIATION

AC	ACRE	L2	INDICATES LINE NUMBER (SEE TABLE ON SHT. 3)
BC1	INDICATES BOUNDARY CURVE NUMBER (SEE TABLE ON SHT. 2)	LS	LAND SURVEYOR
BL1	INDICATES BOUNDARY LINE NUMBER (SEE TABLE ON SHT. 2)	MAG	MAGNETIC
BK	BOOK	MIN	MINIMUM
BM	BENCH MARK	N/A	NOT APPLICABLE
(C)	CALCULATED DIMENSION	OIP	OPEN IRON PIN
C2	INDICATES CURVE NUMBER (SEE TABLE ON SHT. 3)	PCP	PLASTIC CAP
C.A.	COMMON AREA	PAG	PIMA ASSOCIATION OF GOVERNMENTS
CFS	CUBIC FEET PER SECOND	PC	PIMA COUNTY
DKT	DOCKET	PG.	PAGE
DTL.	DETAIL	Q100	100-YR FLOW
ESMT	EASEMENT	(R)	RECORD DIMENSION
EXIST.	EXISTING	(RAD)	RADIAL BEARING
FFE	FINISHED FLOOR ELEVATION	RM	ROAD MAPS
FND	FOUND	R/W	RIGHT-OF-WAY
FP	FLOOD PLAIN	SEQ. NO.	INDICATES SEQUENCE NUMBER
FPL1	INDICATES 100-YEAR FLOOD PLAIN LIMIT LINE NUMBER (SEE TABLE ON SHT. 3)	S.F.	SQUARE FOOTAGE
ID	INTERIOR DIAMETER	SHT.	SHEET
IR	IRON ROD	STD.	STANDARD
		SVT	INDICATES SIGHT VISIBILITY TRIANGLE LIMITS

BASIS OF ELEVATION

NGS DESIGNATION 261+04.8 PID CZ0530, A SURVEY DISK IN A CULVERT MARKED 2136.58 261.04.04 AZHD SET IN THE CENTER OF THE NORTHEAST HEADWALL OF A CONCRETE CULVERT UNDER THE FRONTAGE ROAD, 0.90 MILES NORTHWEST OF THE CORTARO ROAD OVERPASS, 124.00 FEET SOUTHWEST OF THE SOUTHWEST RAIL OF THE RAILROAD TRACKS AND 16.00 FEET NORTHEAST OF THE FRONTAGE ROAD,
ELEVATION BEING 2138.24 FEET (NAVD 88).

BASIS OF BEARING

THE WEST LINE OF THE NORTHWEST QUARTER OF SECTION 23, TOWNSHIP 12 SOUTH, RANGE 12 EAST, GILA AND SALT RIVER MERIDIAN, AS SHOWN ON MARANA CENTER FINAL BLOCK PLAT RECORDED IN SEQUENCE NO. 20142340180,
BEARING BEING: N 00°30'54" W.

SHEET INDEX

SHEET 1 ..... COVER SHEET & GENERAL NOTES
SHEET 2 ..... BOUNDARY TIES
SHEET 3 ..... COMMON AREA / INDEX MAP / KEYNOTES
SHEETS 4–7 ..... VILLAGE VII SUBDIVISION & FLOODPLAIN
SHEET 8 ..... LINE AND CURVE DATA TABLE SHEETS

ASSURANCES

ASSURANCES IN THE FORM OF A THIRD PARTY TRUST AGREEMENT FROM STEWART TITLE AND TRUST OF TUCSON, AN ARIZONA CORPORATION AS TRUSTEE UNDER TRUST NO'S. 3772 AND 3773 AS RECORDED IN SEQ. NO. _____ IN THE OFFICE OF THE RECORDER OF PIMA COUNTY, ARIZONA HAVE BEEN PROVIDED TO GUARANTEE INSTALLATION OF REQUIRED STREET, SEWER, ELECTRIC, GAS, WATER, UTILITIES, DRAINAGE, FLOOD CONTROL AND OTHER SUBDIVISION IMPROVEMENTS MEETING ESTABLISHED MINIMUM STANDARDS OF DESIGN AND CONSTRUCTION.

BY:_____ _____
TOWN OF MARANA DATE

ASSURED WATER SUPPLY

A CERTIFICATE OF ASSURED WATER SUPPLY HAS BEEN RECEIVED FROM THE DIRECTOR OF WATER RESOURCES.

BY:_____ _____
MARANA WATER DIRECTOR DATE

APPROVAL:

BY: _____ P.E. _____
MARANA TOWN ENGINEER/DEVELOPMENT ENGINEER DATE

_____ _____
MARANA PLANNING MANAGER DATE

_____ _____
PIMA COUNTY REGIONAL WASTEWATER RECLAMATION DEPARTMENT DATE

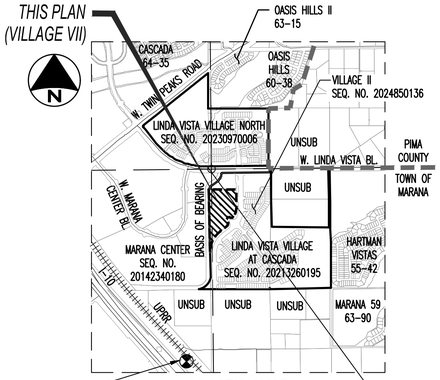
I, _____, CLERK OF THE TOWN OF MARANA HEREBY CERTIFY THAT THIS PLAT WAS APPROVED BY THE TOWN COUNCIL OF THE TOWN OF MARANA ON THE _____ DAY OF _____, 20___.

_____ _____
CLERK OF THE TOWN OF MARANA DATE

ADMINISTRATIVE ADDRESS:

6093 W. LINDA VISTA BLVD., TUCSON, AZ 85742

THIS PLAN (VILLAGE VII)



LOCATION MAP

A PORTION OF SECTION 23,
TOWNSHIP-12-SOUTH, RANGE-12-EAST,
G&SRB&M, TOWN OF MARANA, PIMA COUNTY, ARIZONA
SCALE: 3" = 1 MILE

LEGEND

EXISTING		PROPOSED
	RIGHT-OF-WAY LINE	
	100 YEAR FLOODPLAIN LIMITS LINE	
○	SURVEY MONUMENT AS NOTED	
●	INDICATES NUMBER 4 REBAR TO BE SET UPON COMPLETION OF CONSTRUCTION AND STAMPED BY AN R.L.S.	
■	INDICATES FOUND BRASS CAP SURVEY MONUMENT	
×	INDICATES CALCULATED POINT, NOTHING FOUND OR SET	
★	INDICATES LOT ACCESS DRIVEWAYS WILL NOT BE LOCATED WITHIN RETURNS	
	INDICATES SECTION LINE	
	INDICATES PLAT BOUNDARY	
	INDICATES EASEMENT LINE	
	INDICATES CENTERLINE OF RIGHT-OF-WAY	
	SIGHT VISIBILITY TRIANGLE	
1	INDICATES EASEMENT NOTE (SEE SHT. 3 FOR EASEMENT NOTES)	
	INDICATES CONTINUATION OF LINE OR CURVE DATA TO MATCHING SHEET	
⊗	PROJECT BENCHMARK	
□	SURVEY MONUMENT PER PAG STD DTL. NO. 103 TO BE SET BY ARIZONA RLS UPON COMPLETION OF CONSTRUCTION	
BCSM	BRASS CAP SURVEY MONUMENT	
	FLOW DIRECTION	

FINAL PLAT FOR VILLAGE VII OF LINDA VISTA VILLAGE

LOTS 7001–7040 AND COMMON AREAS "A"#8, "D"#7, "D"#7-1, "D"#7-2, "D"#7-3, "F"#3, "G"#7-1, "G"#7-2, "G"#7-3, "G"#7-4 "G"#7-5 & "H"#4

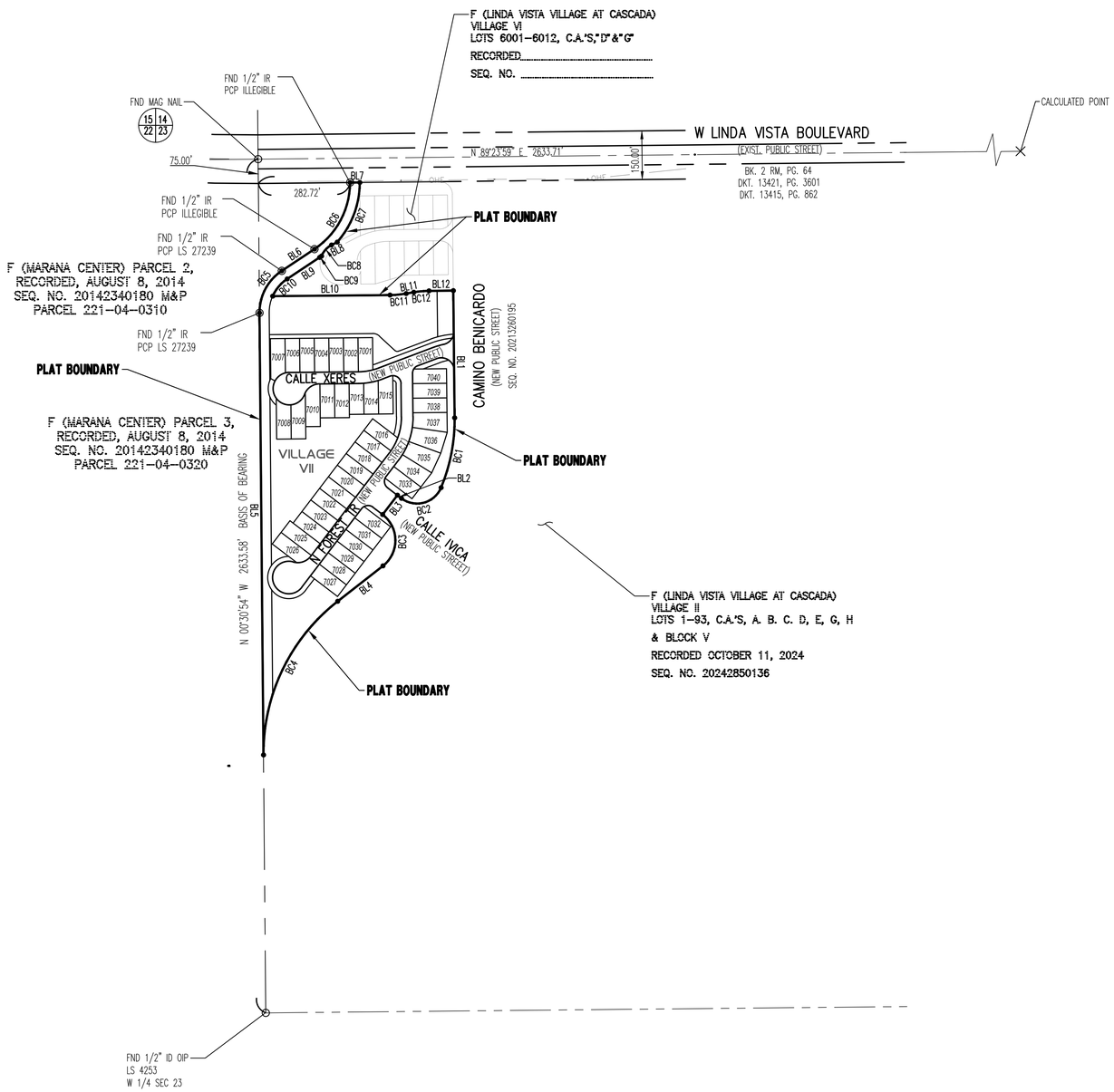
BEING A RESUBDIVISION OF BLOCK VII AND COMMON AREAS "D"#7 & "H"#4 AND PORTIONS OF COMMON AREAS "A"#8 AND "F"#3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195 AND AS MODIFIED BY THE VILLAGE VI OF LINDA VISTA VILLAGE FINAL PLAT AS RECORDED IN SEQUENCE NO. 2024_____; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA

PRV2402-006

REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001
OCTOBER 16, 2024 SCALE: AS SHOWN
PRESIDIO JOB No. 114024-10-0106 SHEET 1 OF 8

SEQ. NO._____

Presidio ENGINEERING, INC.
Civil • Land Development • Water Resources
190 S. Stratford Dr. Suite 105 • Tucson, Arizona 85716
(520) 795-7255 • Fax (520) 795-6747



PROJECT LAYOUT

0' 200' 400'

SCALE 1"=200'

BOUNDARY LINE DATA TABLE MASTER LIST		
NUMBER	BEARING	DISTANCE
BL1	S 00°35'52" E	392.36'
BL2	N 52°43'40" W	15.60'
BL3	S 37°16'20" W	75.00'
BL4	S 52°00'09" W	177.27'
BL5	N 00°30'54" W	1364.00'
BL6	N 56°21'48" E	120.95'
BL7	N 89°23'59" E	30.00'
BL8	S 62°46'19" W	19.57'
BL9	S 56°21'48" W	119.88'
BL10	N 89°29'06" E	361.49'
BL11	N 79°52'55" E	21.24'
BL12	N 89°24'08" E	75.02'

BOUNDARY CURVE DATA TABLE MASTER LIST			
NUMBER	LENGTH	RADIUS	DELTA
BC1	221.00'	545.00'	23°14'00"
BC2	146.10'	80.00'	104°38'12"
BC3	182.79'	100.00'	104°43'49"
BC4	545.38'	595.00'	52°31'03"
BC5	152.88'	154.00'	56°52'42"
BC6	242.58'	246.97'	56°16'39"
BC7	201.38'	276.97'	41°39'34"
BC8	46.87'	65.00'	41°18'53"
BC9	7.40'	276.97'	1°31'52"
BC10	70.26'	124.00'	32°27'58"
BC11	50.28'	300.00'	9°36'11"
BC12	49.85'	300.00'	9°31'13"

SEQ. NO.

Registered Professional Engineer
CERTIFICATE NO. 21734
JOHN D. WOOD
Date Signed 10-16-24
ARIZONA U.S.A.

Registered Professional Engineer
CERTIFICATE NO. 21734
JOHN D. WOOD
Date Signed 10-16-24
ARIZONA U.S.A.

REGISTERED LAND SURVEYOR
CERTIFICATE NO. 22245
MICHAEL AMERSON
Date Signed 10-16-24
ARIZONA U.S.A.

IN COMPLIANCE WITH CERTIFICATION STATEMENT SHOWN ON SHEET 1

FINAL PLAT FOR VILLAGE VII OF LINDA VISTA VILLAGE

LOTS 7001–7040 AND COMMON AREAS "A"#8, "D"#7, "D"#7–1, "D"#7–2, "D"#7–3, "F"#3, "G"#7–1, "G"#7–2, "G"#7–3, "G"#7–4 "G"#7–5 & "H"#4

BEING A RESUBDIVISION OF BLOCK VII AND COMMON AREAS "D"#7 & "H"#4 AND PORTIONS OF COMMON AREAS "A"#8 AND "F"#3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195 AND AS MODIFIED BY THE VILLAGE VI OF LINDA VISTA VILLAGE FINAL PLAT AS RECORDED IN SEQUENCE NO. 2024_____; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP–12–SOUTH, RANGE–12–EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA.

PRV2402–006

REFERENCE: PRV2307–001, PRV2108–001, PRV1707–001, PCZ1503–001

OCTOBER 16, 2024 SCALE: AS SHOWN

PRESIDIO JOB No. 114024–10–0106 SHEET **2** OF **8**

Presidio ENGINEERING INC
Civil • Land Development • Water Resources
190 S. Stratford Dr. Suite 105 • Tucson, Arizona 85716
(520) 795–7255 • Fax (520) 795–6747

SEQ. NO._____

LEGEND

- COMMON AREA "A" – NATURAL UNDISTURBED OPEN SPACE
- COMMON AREA "B" – OPEN SPACE / PASSIVE RECREATION (N/A TO THIS PLAT)
- COMMON AREA "C" – OPEN SPACE / ACTIVE RECREATION (N/A TO THIS PLAT)
- COMMON AREA "D" – OPEN SPACE / DRAINAGE / PASSIVE RECREATION
- COMMON AREA "E" – OPEN SPACE / DRAINAGE (N/A TO THIS PLAT)
- COMMON AREA "F" – OPEN SPACE / DRAINAGE / PUBLIC UTILITIES / PASSIVE RECREATION
- COMMON AREA "G" – OPEN SPACE / PUBLIC UTILITIES / MAINTENANCE, SIGNAGE, LANDSCAPE, SIDEWALK & ACCESS
- COMMON AREA "H" – OPEN SPACE / DRAINAGE / PUBLIC UTILITIES / SLOPES
- RIGHT-OF-WAY
- RESIDENTIAL DEVELOPMENT AREAS

AREA TOTALS

I. TOTAL THIS PLAT

COMMON AREA "A" =68,254 S.F. (1.57 AC.)

COMMON AREA "B" = (NOT PART OF THIS PLAT)

COMMON AREA "C" = (NOT PART OF THIS PLAT)

COMMON AREA "D" = 133,939 S.F. (3.07 AC.)

COMMON AREA "E" = (NOT PART OF THIS PLAT)

COMMON AREA "F" = 51,497 S.F. (1.18 AC.)

COMMON AREA "G" = 13,433 S.F. (0.31 AC.)

COMMON AREA "H" = 6,869 S.F. (0.16 AC.)

RIGHT-OF-WAY = 66,510 S.F. (1.53 AC.)

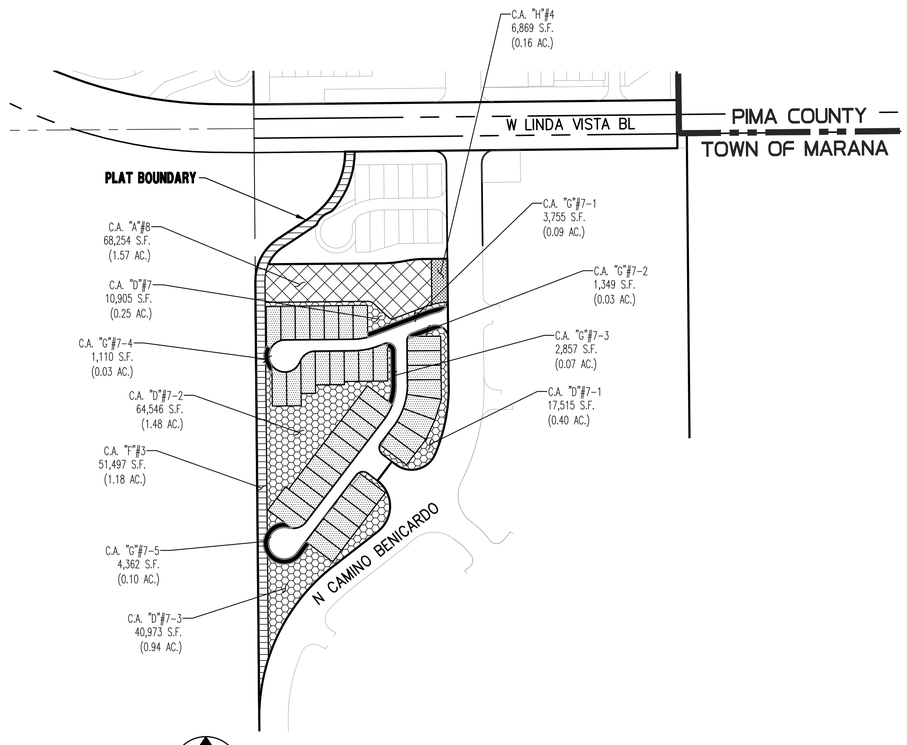
RESIDENTIAL DEVELOPMENT AREA (VILLAGS VII) = 195,126 S.F. (4.48 AC.)

EASEMENT / RIGHT-OF-WAY KEYNOTES

(MASTER LIST)

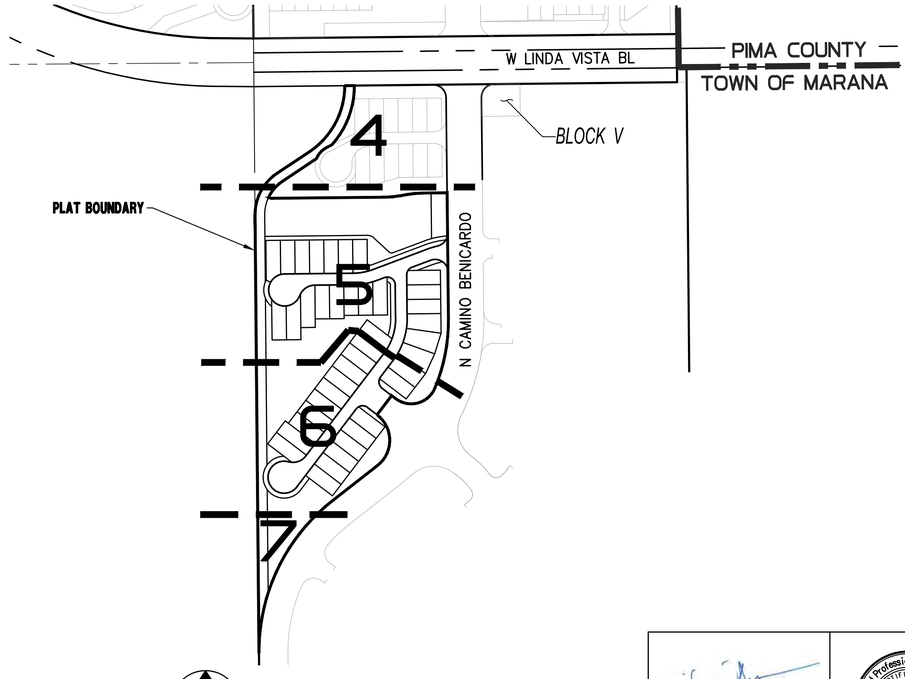
1. NEW 15' PUBLIC UTILITY, ROADWAY MAINTENANCE AND SIGNAGE EASEMENT BY THIS PLAT.
2. NEW 10' PRIVATE HOA PEDESTRIAN, SIDEWALK, AND LANDSCAPE EASEMENT BY THIS PLAT.
3. NEW 1' VEHICLE NO ACCESS EASEMENT BY THIS PLAT.
4. NEW 36' PUBLIC RIGHT-OF-WAY DEDICATED BY THIS PLAT.
5. NEW 25' PUBLIC SEWER EASEMENT DEDICATED BY THIS PLAT.
6. EXISTING 15' PUBLIC WATER EASEMENT PER SEQ. NO. 20213260195, M&P RELEASED BY THIS PLAT.
7. NEW 30' PUBLIC WATER EASEMENT GRANTED BY THIS PLAT.

SEQ. NO.



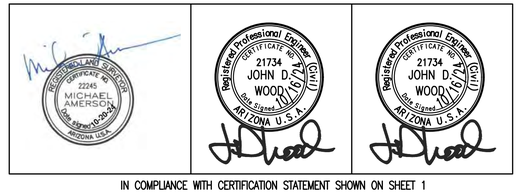
COMMON AREA DETAIL

N.T.S.



VILLAGE VII SHEET INDEX

N.T.S.



IN COMPLIANCE WITH CERTIFICATION STATEMENT SHOWN ON SHEET 1

FINAL PLAT FOR VILLAGE VII OF LINDA VISTA VILLAGE

LOTS 7001-7040 AND COMMON AREAS "A"#8, "D"#7, "D"#7-1, "D"#7-2, "D"#7-3, "F"#3, "G"#7-1, "G"#7-2, "G"#7-3, "G"#7-4 "G"#7-5 & "H"#4

BEING A RESUBDIVISION OF BLOCK VII AND COMMON AREAS "D"#7 & "H"#4 AND PORTIONS OF COMMON AREAS "A"#8 AND "F"#3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195 AND AS MODIFIED BY THE VILLAGE VI OF LINDA VISTA VILLAGE FINAL PLAT AS RECORDED IN SEQUENCE NO. 2024_____; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA

PRV2402-006

REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001

OCTOBER 16, 2024 SCALE: AS SHOWN

PRESIDIO JOB No. 114024-10-0106 SHEET **3** OF **8**

Presidio
Civil • Land Development • Water Resources
190 S. Stratford Dr. Suite 105 • Tucson, Arizona 85716
(520) 795-7255 • Fax (520) 795-6747

SEQ. NO._____

F (LINDA VISTA VILLAGE AT CASCADA)
VILLAGE IV
LOTS 1-70, C.A.'S, D, E, F, G & H
RECORDED APRIL 7, 2023
SEQ. NO. 20230970006

45' R/W PER ROAD NO. 212
BK. 2 (RM) PG. 64

50' R/W PER ROAD NO. 212
BK. 2 (RM) PG. 64

45' R/W PER
DKT. 13415, PG. 862

EXIST. PUBLIC DRAINAGE EASEMENT
PER DKT. 13415, PG. 869

EXIST. PUBLIC SLOPE EASEMENT
PER DKT. 13415, PG. 866

FND 1/2" IR
PCP ILLEGIBLE

EXIST. 25' PUBLIC WATER EASEMENT
SEQ. NO. 202143260195

W LINDA VISTA BL
(EXIST. PUBLIC STREET)
BK. 2 RM, PG. 64
DKT. 13421, PG. 3601
DKT. 13415, PG. 862

VILLAGE VI BOUNDARY

75.00'

N 89°23'59" E
30.00'

L=242.58'
Δ=56°16'39"
R=246.97'

7

6

PLAT BOUNDARY

L=201.38'
Δ=41°39'34"
R=276.97'

F (LINDA VISTA VILLAGE AT CASCADA)
VILLAGE VI
LOTS 6001-6012, C.A.'S,"D"&"G"
RECORDED.....
SEQ. NO. .....

511.36'

N CAMINO BENICARDO
(NEW PUBLIC STREET)
SEQ. NO. 20213260195

F (LINDA VISTA VILLAGE AT CASCADA)
BLOCK V
RECORDED OCTOBER 11, 2024
SEQ. NO. 20242850136

FND 1/2" IR PCP
LS 27239

C.A. "F"#3
51,497 S.F.

FND 1/2" IR
PCP ILLEGIBLE

S 37°45'25" E (RAD)
S 33°31'23" E (RAD)

19.57'
N 62°46'19" E

W JUDGE PL
(NEW PUBLIC STREET)

586.36'

F (LINDA VISTA VILLAGE AT CASCADA)
COMMON AREA "H" #3
RECORDED OCTOBER 11, 2024
SEQ. NO. 20242850136

F (MARANA CENTER) PARCEL 2,
RECORDED, AUGUST 8, 2014
SEQ. NO. 20142340180 M&P
PARCEL 221-04-0310

L=152.88'
Δ=56°52'42"
R=154.00'

S 56°21'48" W 170.95'

N 56°21'48" E 119.88'

L=46.87'
Δ=41°18'53"
R=65.00'

L=7.40'
Δ=01°31'52"
R=276.97'

55.00'

55.00'

110.00' PUBLIC RIGHT-OF-WAY

EXIST

MATCH LINE - SEE SHEET 5

L=70.26'
Δ=32°27'58"
R=124.00'

WASH 3
C.A. "A"#8
79,159 S.F.

PLAT BOUNDARY

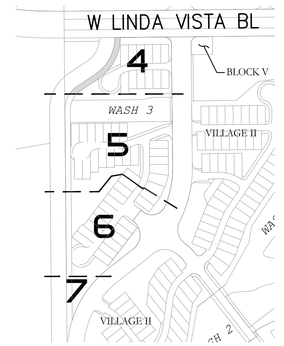
C.A. "H"#4
6,869 S.F.

Q100=659.4 CFS

86' PUBLIC DRAINAGEWAY
PARCEL 221-04-0350
SEQ. NO. 20142340180

FND 1/2" IR PCP
LS 27239

0' 40' 80'
SCALE 1"=40'
C.I.=1'



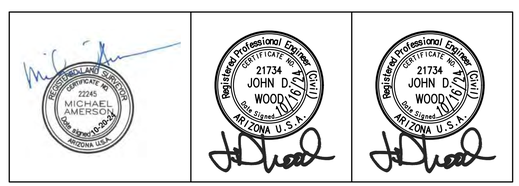
VILLAGE VII-SHEET INDEX
1"=400'

SEQ. NO.

EASEMENT / RIGHT-OF-WAY KEYNOTES

(SEE MASTER LIST ON SHEET 3)

6. EXISTING 15' PUBLIC WATER EASEMENT PER SEQ. NO. 20213260195, M&P RELEASED BY THIS PLAT.
7. NEW 30' PUBLIC WATER EASEMENT GRANTED BY THIS PLAT.



IN COMPLIANCE WITH CERTIFICATION STATEMENT SHOWN ON SHEET 1

FINAL PLAT FOR
VILLAGE VII OF LINDA VISTA VILLAGE

LOTS 7001-7040 AND COMMON AREAS "A"#8, "D"#7, "D"#7-1, "D"#7-2, "D"#7-3, "F"#3, "G"#7-1, "G"#7-2, "G"#7-3, "G"#7-4 "G"#7-5 & "H"#4

BEING A RESUBDIVISION OF BLOCK VII AND COMMON AREAS "D"#7 & "H"#4 AND PORTIONS OF COMMON AREAS "A"#8 AND "F"#3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195 AND AS MODIFIED BY THE VILLAGE VI OF LINDA VISTA VILLAGE FINAL PLAT AS RECORDED IN SEQUENCE NO. 2024_____; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA

PRV2402-006

REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001
OCTOBER 16, 2024 SCALE: AS SHOWN
PRESIDIO JOB No. 114024-10-0106 SHEET **4** OF **8**

Presidio ENGINEERING, INC.
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190 S. Stratford Dr. Suite 105 • Tucson, Arizona 85716
(520) 795-7255 • Fax (520) 795-6747

SEQ. NO._____

MATCH LINE – SEE SHEET 4

6007 6008 6009 6010 6011 6012

F (LINDA VISTA VILLAGE AT CASCADA C.A. "D" #20
RECORDED, ...
SEQ. NO. .....

PLAT BOUNDARY

WASH 3
C.A. "A" #8
68,254 S.F.

SEE PROPOSED 100-YR FLOODPLAIN LIMITS AND TIES DETAIL BELOW

Q100=659.4 CFS

C.A. "F" #3
51,497 S.F.

C.A. "G" #7-1
3,755 S.F.

C.A. "H" #4
6,869 S.F.

C.A. "D" #7
10,905 S.F.

C.A. "G" #7-2
1,349 S.F.

C.A. "G" #7-4
1,110 S.F.

C.A. "G" #7-3
2,857 S.F.

C.A. "D" #7-2
64,546 S.F.

C.A. "D" #7-1
17,515 S.F.

7007 5,333 S.F. MIN. FFE= 2193.50
7006 4,731 S.F. MIN. FFE= 2194.50
7005 4,725 S.F. MIN. FFE= 2195.50
7004 4,725 S.F. MIN. FFE= 2196.00
7003 4,725 S.F. MIN. FFE= 2197.00
7002 4,725 S.F. MIN. FFE= 2198.00
7001 4,641 S.F. MIN. FFE= 2198.50
7011 4,725 S.F.
7012 4,725 S.F.
7013 4,278 S.F.
7014 4,447 S.F.
7015 5,011 S.F.
7010 5,578 S.F.
7008 4,982 S.F.
7009 5,224 S.F.
7016 4,583 S.F.
7017
7018
7019
7020
7033
7034
7035 5,845 S.F.
7036 5,922 S.F.
7037 5,634 S.F.
7038 4,725 S.F.
7039 4,725 S.F.
7040 4,708 S.F.

CALLE XERES
(NEW PUBLIC STREET)

N FOREST TR (NEW PUBLIC STREET)

N CAMINO BENICARDO
(NEW PUBLIC STREET)
SEQ. NO. 20212260195

CALLE GUARDAMAR
(NEW PUBLIC STREET)

FND 1/2" IR PCP LS 27239

PLAT BOUNDARY

EXIST. 86' PUBLIC DRAINAGEWAY
PARCEL 221-04-0350
SEQ. NO. 20142340180

F. (MARANA CENTER) PARCEL 2, RECORDED, AUGUST 8, 2014 SEQ. NO. 20142340180 M&P PARCEL 221-04-0310

F. (MARANA CENTER) PARCEL 3, RECORDED, AUGUST 8, 2014 SEQ. NO. 20142340180 M&P PARCEL 221-04-0320

F. (LINDA VISTA VILLAGE AT CASCADA) VILLAGE III LOTS 1-93, C.A.'S, A, B, C, D, E, G, H & BLOCK V RECORDED OCTOBER 11, 2024 SEQ. NO. 20242850136

CURVE DATA TABLE (SEE MASTER LIST ON SHEET 8)			
NUMBER	LENGTH	RADIUS	DELTA
C1	69.81'	200.00'	20°00'00"
C2	52.36'	200.00'	15°00'00"
C3	132.19'	200.00'	37°52'12"
C4	217.21'	50.00'	248°53'59"
C5	60.13'	50.00'	68°53'59"
C6	63.53'	182.00'	20°00'00"
C7	76.10'	218.00'	20°00'00"
C8	48.00'	25.00'	110°00'00"
C9	31.99'	218.00'	8°24'26"
C10	54.74'	40.00'	78°24'26"
C11	76.79'	40.00'	110°00'00"
C12	30.54'	25.00'	70°00'00"
C13	144.09'	218.00'	37°52'12"
C14	120.29'	182.00'	37°52'12"
C19	91.04'	65.00'	80°14'53"
C21	61.00'	233.00'	15°00'00"
C22	29.85'	167.00'	10°14'28"
C23	12.73'	167.00'	4°22'04"
C24	55.92'	167.00'	19°11'07"
C25	15.71'	10.00'	90°00'00"

CURVE DATA TABLE (SEE MASTER LIST ON SHEET 8)			
NUMBER	LENGTH	RADIUS	DELTA
C46	8.12'	40.00'	11°37'54"
C47	65.99'	182.00'	20°46'30"
C48	45.80'	182.00'	14°25'05"
C50	33.26'	218.00'	8°44'27"
C51	45.08'	218.00'	11°50'54"
C52	45.08'	218.00'	11°50'54"
C63	32.39'	65.00'	28°32'51"
C64	51.44'	65.00'	45°20'21"
C65	7.22'	65.00'	6°21'42"
C66	23.00'	245.00'	5°22'43"

CURVE DATA TABLE (SEE MASTER LIST ON SHEET 8)			
NUMBER	LENGTH	RADIUS	DELTA
C26	11.90'	50.00'	13°38'09"
C27	41.23'	50.00'	47°15'01"
C28	56.25'	50.00'	64°27'09"
C29	51.92'	50.00'	59°29'40"
C30	55.91'	50.00'	64°04'01"
C31	6.16'	50.00'	7°03'26"
C32	53.97'	50.00'	61°50'33"
C33	16.01'	218.00'	4°12'32"
C34	45.81'	218.00'	12°02'25"
C35	14.27'	218.00'	3°45'03"
C36	8.73'	25.00'	20°00'00"
C37	39.27'	25.00'	90°00'00"
C38	45.47'	182.00'	14°18'54"
C39	18.06'	182.00'	5°41'06"
C40	16.29'	25.00'	37°20'14"
C41	14.25'	25.00'	32°39'46"
C42	39.13'	40.00'	56°02'56"
C43	37.66'	40.00'	53°57'04"
C44	33.36'	40.00'	47°47'29"
C45	13.25'	40.00'	18°59'04"

LINE DATA TABLE (SEE MASTER LIST ON SHEET 8)		
NUMBER	BEARING	DISTANCE
L1	N 00°35'52" W	32.00'
L4	S 89°24'08" W	0.92'
L6	N 84°24'08" E	2.90'

FLOOD PLAIN LINE DATA TABLE MASTER-LIST		
NUMBER	BEARING	DISTANCE
FPL1	S 63°26'06" E	17.19'
FPL2	S 14°13'11" E	18.88'
FPL3	S 71°54'43" W	32.19'
FPL4	S 89°42'31" W	326.53'
FPL5	N 47°42'04" W	84.49'
FPL6	S 69°28'18" W	85.49'
FPL7	S 71°44'17" W	70.77'
FPL8	S 81°11'26" W	31.81'

PROPOSED 100-YR FLOODPLAIN LIMITS DETAIL
1"=40'

EASEMENT / RIGHT-OF-WAY KEYNOTES
(SEE MASTER LIST ON SHEET 3)

1. NEW 15' PUBLIC UTILITY, ROADWAY MAINTENANCE AND SIGNAGE EASEMENT BY THIS PLAT.
2. NEW 10' PRIVATE HOA PEDESTRIAN, SIDEWALK, AND LANDSCAPE EASEMENT BY THIS PLAT.
3. NEW 1' VEHICLE NO ACCESS EASEMENT BY THIS PLAT.
4. NEW 36' PUBLIC RIGHT-OF-WAY DEDICATED BY THIS PLAT.
6. EXISTING 15' PUBLIC WATER EASEMENT PER SEQ. NO. 20213260195, M&P RELEASED BY THIS PLAT.
7. NEW 30' PUBLIC WATER EASEMENT GRANTED BY THIS PLAT.

W LINDA VISTA BL
BLOCK V
WASH 3
VILLAGE II
4
5
6
7

VILLAGE VII-SHEET INDEX
1"=400'

0' 40' 80'
SCALE 1"=40'
C.I.=1'

SEQ. NO.

IN COMPLIANCE WITH CERTIFICATION STATEMENT SHOWN ON SHEET 1

FINAL PLAT FOR VILLAGE VII OF LINDA VISTA VILLAGE

LOTS 7001-7040 AND COMMON AREAS "A"#8, "D"#7, "D"#7-1, "D"#7-2, "D"#7-3, "F"#3, "G"#7-1, "G"#7-2, "G"#7-3, "G"#7-4 "G"#7-5 & "H"#4

BEING A RESUBDIVISION OF BLOCK VII AND COMMON AREAS "D"#7 & "H"#4 AND PORTIONS OF COMMON AREAS "A"#8 AND "F"#3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195 AND AS MODIFIED BY THE VILLAGE VI OF LINDA VISTA VILLAGE FINAL PLAT AS RECORDED IN SEQUENCE NO. 2024_____; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA

PRV2402-006

REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001
OCTOBER 16, 2024 SCALE: AS SHOWN
PRESIDIO JOB No. 114024-10-0106 SHEET 5 OF 8

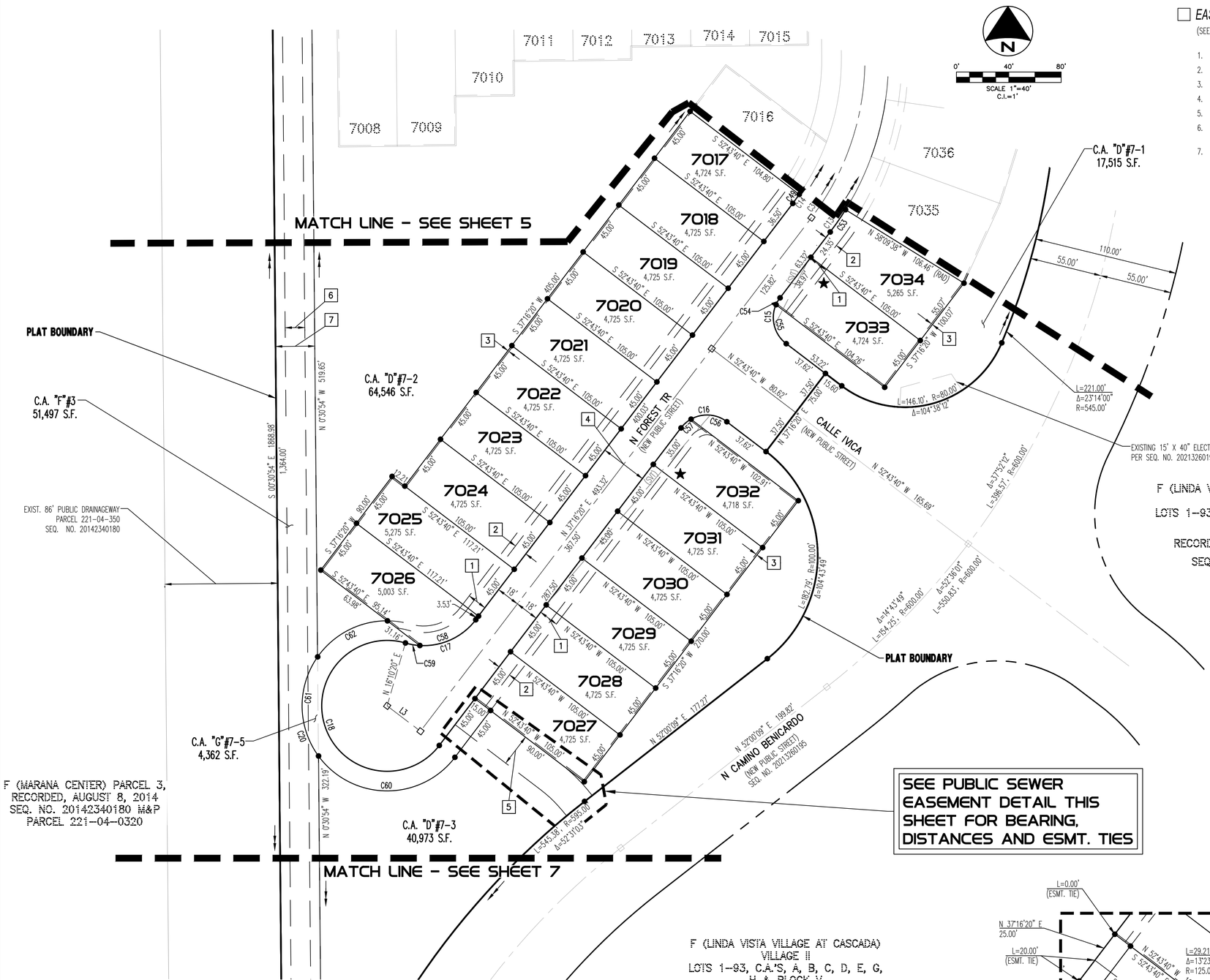
REGISTERED LAND SURVEYOR CERTIFICATE NO. 22245 MICHAEL AMERSON Date Signed 10-29-24 ARIZONA U.S.A.

Registered Professional Engineer CERTIFICATE NO. 21734 JOHN D. WOOD (Civil) Date Signed 10-29-24 ARIZONA U.S.A.

Registered Professional Engineer CERTIFICATE NO. 21734 JOHN D. WOOD (Civil) ARIZONA U.S.A.

Presidio ENGINEERING INC.
Civil • Land Development • Water Resources
190 S. Stratford Dr. Suite 105 • Tucson, Arizona 85716
(520) 795-7255 • Fax (520) 795-6747

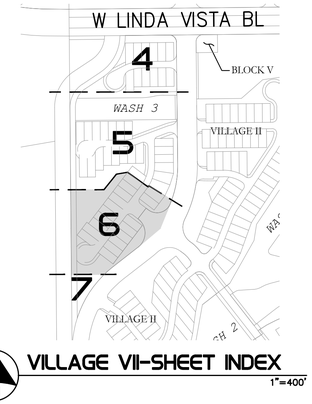
SEQ. NO._____



EASEMENT / RIGHT-OF-WAY KEYNOTES

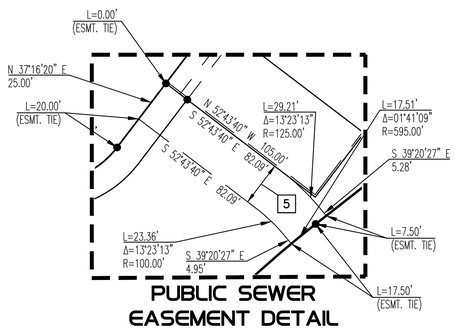
(SEE MASTER LIST ON SHEET 3)

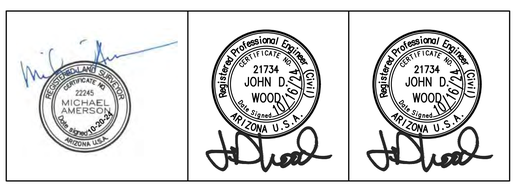
1. NEW 15' PUBLIC UTILITY, ROADWAY MAINTENANCE AND SIGNAGE EASEMENT BY THIS PLAT.
2. NEW 10' PRIVATE HOA PEDESTRIAN, SIDEWALK, AND LANDSCAPE EASEMENT BY THIS PLAT.
3. NEW 1' VEHICLE NO ACCESS EASEMENT BY THIS PLAT.
4. NEW 36' PUBLIC RIGHT-OF-WAY DEDICATED BY THIS PLAT.
5. NEW 25' PUBLIC SEWER EASEMENT DEDICATED BY THIS PLAT.
6. EXISTING 15' PUBLIC WATER EASEMENT PER SEQ. NO. 20213260195, M&P RELEASED BY THIS PLAT.
7. NEW 30' PUBLIC WATER EASEMENT GRANTED BY THIS PLAT.



LINE DATA TABLE (SEE MASTER LIST ON SHEET 8)		
NUMBER	BEARING	DISTANCE
L3	S 52°43'40" E	32.00'

CURVE DATA TABLE (SEE MASTER LIST ON SHEET 8)			
NUMBER	LENGTH	RADIUS	DELTA
C3	132.19'	200.00'	37°52'12"
C13	144.09'	218.00'	37°52'12"
C14	120.29'	182.00'	37°52'12"
C15	39.27'	25.00'	90°00'00"
C16	39.27'	25.00'	90°00'00"
C17	60.13'	50.00'	68°53'59"
C18	217.21'	50.00'	248°53'59"
C20	264.18'	65.00'	232°52'08"
C49	8.50'	182.00'	2°40'38"
C53	20.67'	218.00'	5°25'58"
C54	6.09'	25.00'	13°57'13"
C55	33.18'	25.00'	76°02'47"
C56	28.98'	25.00'	66°25'19"
C57	10.29'	25.00'	23°34'41"
C58	48.91'	50.00'	56°02'40"
C59	11.22'	50.00'	12°51'20"
C60	120.89'	65.00'	106°33'36"
C61	80.89'	65.00'	71°18'20"
C62	62.40'	65.00'	55°00'13"





IN COMPLIANCE WITH CERTIFICATION STATEMENT SHOWN ON SHEET 1

FINAL PLAT FOR VILLAGE VII OF LINDA VISTA VILLAGE

LOTS 7001-7040 AND COMMON AREAS "A"#8, "D"#7, "D"#7-1, "D"#7-2, "D"#7-3, "F"#3, "G"#7-1, "G"#7-2, "G"#7-3, "G"#7-4 "G"#7-5 & "H"#4

BEING A RESUBDIVISION OF BLOCK VII AND COMMON AREAS "D"#7 & "H"#4 AND PORTIONS OF COMMON AREAS "A"#8 AND "F"#3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195 AND AS MODIFIED BY THE VILLAGE VI OF LINDA VISTA VILLAGE FINAL PLAT AS RECORDED IN SEQUENCE NO. 2024_____; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA.

PRV2402-006

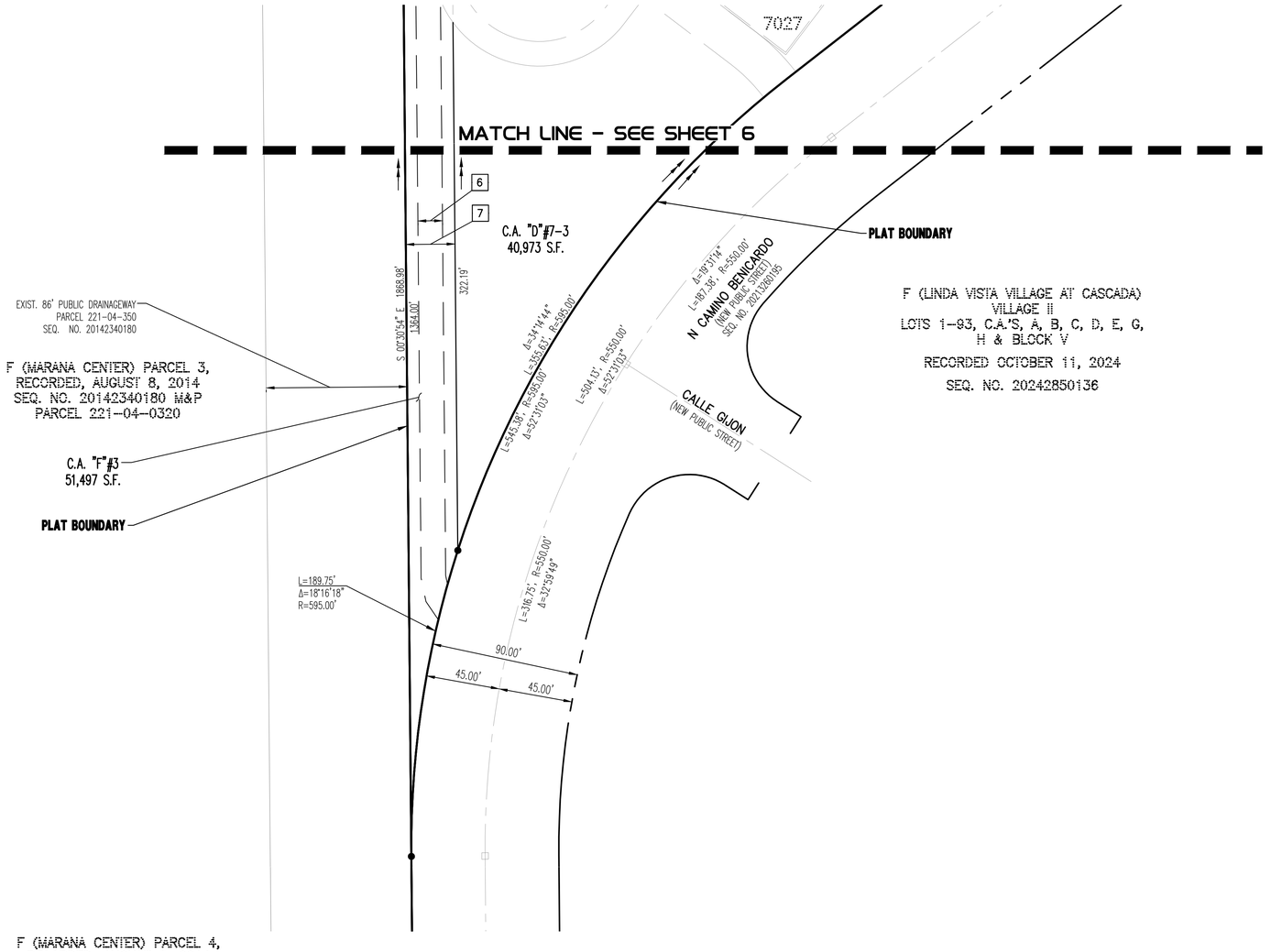
REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001

OCTOBER 16, 2024 SCALE: AS SHOWN

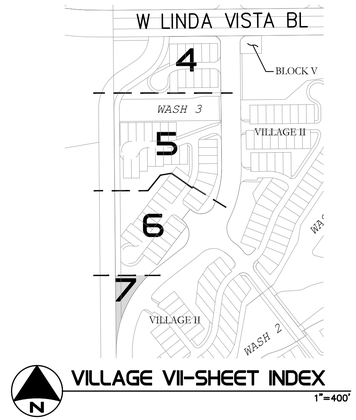
PRESIDIO JOB No. 114024-10-0106 SHEET **6** OF **8**

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SEQ. NO._____





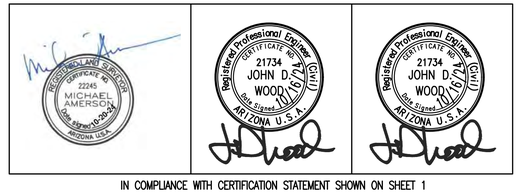


SEQ. NO. _____

EASEMENT / RIGHT-OF-WAY KEYNOTES

(SEE MASTER LIST ON SHEET 3)

6. EXISTING 15' PUBLIC WATER EASEMENT PER SEQ. NO. 20213260195, M&P RELEASED BY THIS PLAT.
7. NEW 30' PUBLIC WATER EASEMENT GRANTED BY THIS PLAT.



IN COMPLIANCE WITH CERTIFICATION STATEMENT SHOWN ON SHEET 1

FINAL PLAT FOR VILLAGE VII OF LINDA VISTA VILLAGE

LOTS 7001-7040 AND COMMON AREAS "A"#8, "D"#7, "D"#7-1, "D"#7-2, "D"#7-3, "F"#3, "G"#7-1, "G"#7-2, "G"#7-3, "G"#7-4 "G"#7-5 & "H"#4

BEING A RESUBDIVISION OF BLOCK VII AND COMMON AREAS "D"#7 & "H"#4 AND PORTIONS OF COMMON AREAS "A"#8 AND "F"#3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195 AND AS MODIFIED BY THE VILLAGE VI OF LINDA VISTA VILLAGE FINAL PLAT AS RECORDED IN SEQUENCE NO. 2024_____; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA

PRV2402-006

REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001

OCTOBER 16, 2024 SCALE: AS SHOWN

PRESIDIO JOB No. 114024-10-0106 SHEET 7 OF 8

Presidio Engineering
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(520) 795-7255 • Fax (520) 795-6747

LINE DATA TABLE MASTER LIST		
NUMBER	BEARING	DISTANCE
L1	N 00°35'52" W	32.00'
L3	S 52°43'40" E	32.00'
L4	S 89°24'08" W	0.92'
L6	N 84°24'08" E	2.90'

CURVE DATA TABLE MASTER LIST			
NUMBER	LENGTH	RADIUS	DELTA
C1	69.81'	200.00'	20°00'00"
C2	52.36'	200.00'	15°00'00"
C3	132.19'	200.00'	37°52'12"
C4	217.21'	50.00'	248°53'59"
C5	60.13'	50.00'	68°53'59"
C6	63.53'	182.00'	20°00'00"
C7	76.10'	218.00'	20°00'00"
C8	48.00'	25.00'	110°00'00"
C9	31.99'	218.00'	8°24'26"
C10	54.74'	40.00'	78°24'26"
C11	76.79'	40.00'	110°00'00"
C12	30.54'	25.00'	70°00'00"
C13	144.09'	218.00'	37°52'12"
C14	120.29'	182.00'	37°52'12"
C15	39.27'	25.00'	90°00'00"
C16	39.27'	25.00'	90°00'00"
C17	60.13'	50.00'	68°53'59"
C18	217.21'	50.00'	248°53'59"
C19	91.04'	65.00'	80°14'53"
C20	264.18'	65.00'	232°52'08"

CURVE DATA TABLE MASTER LIST			
NUMBER	LENGTH	RADIUS	DELTA
C21	61.00'	233.00'	15°00'00"
C22	29.85'	167.00'	10°14'28"
C23	12.73'	167.00'	4°22'04"
C24	55.92'	167.00'	19°11'07"
C25	15.71'	10.00'	90°00'00"
C26	11.90'	50.00'	13°38'09"
C27	41.23'	50.00'	47°15'01"
C28	56.25'	50.00'	64°27'09"
C29	51.92'	50.00'	59°29'40"
C30	55.91'	50.00'	64°04'01"
C31	6.16'	50.00'	7°03'26"
C32	53.97'	50.00'	61°50'33"
C33	16.01'	218.00'	4°12'32"
C34	45.81'	218.00'	12°02'25"
C35	14.27'	218.00'	3°45'03"
C36	8.73'	25.00'	20°00'00"
C37	39.27'	25.00'	90°00'00"
C38	45.47'	182.00'	14°18'54"
C39	18.06'	182.00'	5°41'06"
C40	16.29'	25.00'	37°20'14"

CURVE DATA TABLE MASTER LIST			
NUMBER	LENGTH	RADIUS	DELTA
C41	14.25'	25.00'	32°39'46"
C42	39.13'	40.00'	56°02'56"
C43	37.66'	40.00'	53°57'04"
C44	33.36'	40.00'	47°47'29"
C45	13.25'	40.00'	18°59'04"
C46	8.12'	40.00'	11°37'54"
C47	65.99'	182.00'	20°46'30"
C48	45.80'	182.00'	14°25'05"
C49	8.50'	182.00'	2°40'38"
C50	33.26'	218.00'	8°44'27"
C51	45.08'	218.00'	11°50'54"
C52	45.08'	218.00'	11°50'54"
C53	20.67'	218.00'	5°25'58"
C54	6.09'	25.00'	13°57'13"
C55	33.18'	25.00'	76°02'47"
C56	28.98'	25.00'	66°25'19"
C57	10.29'	25.00'	23°34'41"
C58	48.91'	50.00'	56°02'40"
C59	11.22'	50.00'	12°51'20"
C60	120.89'	65.00'	106°33'36"

CURVE DATA TABLE MASTER LIST			
NUMBER	LENGTH	RADIUS	DELTA
C61	80.89'	65.00'	71°18'20"
C62	62.40'	65.00'	55°00'13"
C63	32.39'	65.00'	28°32'51"
C64	51.44'	65.00'	45°20'21"
C65	7.22'	65.00'	6°21'42"
C66	23.00'	245.00'	5°22'43"

SEQ. NO. _____



IN COMPLIANCE WITH CERTIFICATION STATEMENT SHOWN ON SHEET 1

FINAL PLAT FOR VILLAGE VII OF LINDA VISTA VILLAGE

LOTS 7001-7040 AND COMMON AREAS "A"#8, "D"#7, "D"#7-1, "D"#7-2, "D"#7-3, "F"#3, "G"#7-1, "G"#7-2, "G"#7-3, "G"#7-4 "G"#7-5 & "H"#4

BEING A RESUBDIVISION OF BLOCK VII AND COMMON AREAS "D"#7 & "H"#4 AND PORTIONS OF COMMON AREAS "A"#8 AND "F"#3 OF THE AMENDED FINAL PLAT FOR LINDA VISTA VILLAGE AT CASCADA, AS RECORDED IN SEQUENCE NO. 20213260195 AND AS MODIFIED BY THE VILLAGE VI OF LINDA VISTA VILLAGE FINAL PLAT AS RECORDED IN SEQUENCE NO. 2024_____; AND BEING A PORTION OF THE NW 1/4 OF SEC. 23, TOWNSHIP-12-SOUTH, RANGE-12-EAST, G&SRM., TOWN OF MARANA, PIMA COUNTY, ARIZONA

PRV2402-006

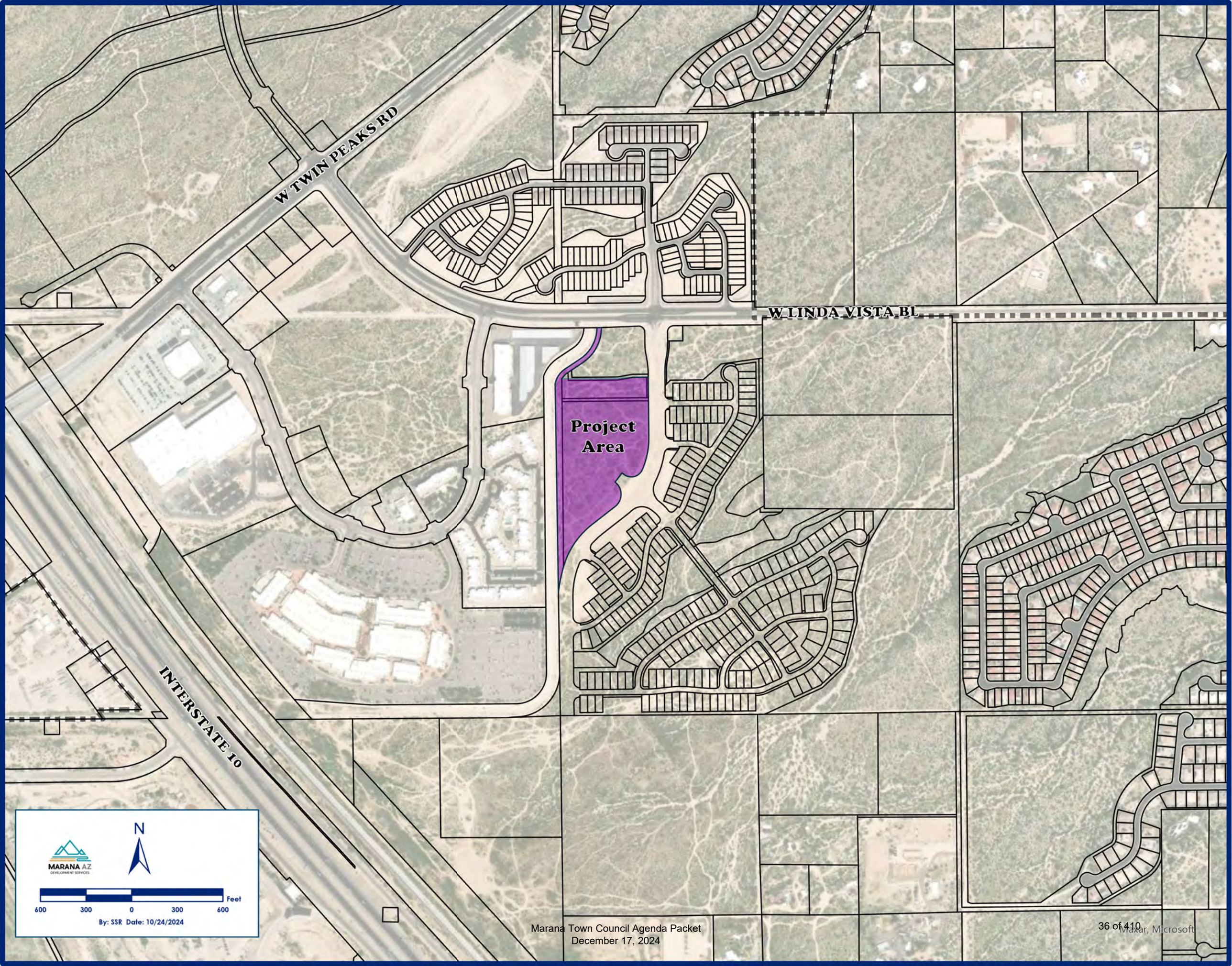
REFERENCE: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001

OCTOBER 16, 2024 SCALE: AS SHOWN

PRESIDIO JOB No. 114024-10-0106 SHEET **8** OF **8**

Presidio PROFESSIONAL SERVICES
Civil • Land Development • Water Resources
190 S. Stratford Dr. Suite 105 • Tucson, Arizona 85716
(520) 795-7255 • Fax (520) 795-6747

SEQ. NO. _____


W TWIN PEAKS RD
W LINDA VISTA BL
Project Area
INTERSTATE 10
N
MARANA AZ
DEVELOPMENT SERVICES
Feet
600
300
0
300
600
By: SSR Date: 10/24/2024
Maxar, Microsoft

MARANA AZ

Development Services / maranaAZ.gov
11555 West Civic Center Drive / Marana, AZ 85653
Ph (520) 382-2600 / Fax (520) 382-2641

PROJECT APPLICATION

APPLICATION TYPE

❑ Annexation	❑ Development Plan	❑ Development Plan Package	❑ General Plan Amendment
❑ Rezone	❑ Minor Land Division	❑ Translational Rezone	❑ Conditional Use Permit
❑ Specific Plan	❑ Landscape Plan	❑ Native Plant Plan/Exception	❑ SWPP
❑ Variance	❑ Hydraulic Model	❑ Sewer Capacity Assurance	❑ Sign Program
☒ Plat	❑ Improvement Plan	❑ Report (Type): _____	❑ Other: _____

PROJECT INFORMATION

Project Name: Village VII (Lots 6001-6012)	C.A. A#8, D#7, D#7-1, D#7-2, D#7-3, F#3, G#7-1, G#7-2, G#7-3, G#7-4, G#7-5, and H #4
Description of Project: Single Family Detached Residential	Number of Lots: 40
Parcel No.(s): See attached	Gross Area (Acres):
Project Address: 6093 W. Linda Vista Blvd.	
Ref. Project No.: PRV2307-001, PRV2108-001, PRV1707-001, PCZ1503-001	

CONTACT INFORMATION

Owner: See attached	Contact Name: Erik Zwerk		
Address: 3939 E. Broadway Blvd.	City: Tucson	State: AZ	Zip: 85711
Email: erik.zwerk@stewart.com	Phone No.: (520) 327-7373		
Applicant: AMH Development, LLC c/o Presidio Eng	Contact Name: Tanya Washington/Andie Hemmah		
Address: 190 S. Stratford Dr. #105	City: Tucson	State: AZ	Zip: 85716
Email: tanya@presidioengineering.com	Phone No.: (520) 795-7255 Ext. 104		
Consultant/Engineer: Presidio Engineering, Inc.	Contact Name: John D. Wood, P.E.		
Address: 190 S. Stratford Dr. #105	City: Tucson	State: AZ	Zip: 85716
Email: john@presidioengineering.com	Phone No.: (520) 795-7255 Ext. 103		

APPLICANT AUTHORIZATION

By signing below, I hereby acknowledge that I have read the information provided online at maranaaz.gov/arsnotice and certify that the information set forth in this application are true and correct to the best of my knowledge. I am either the owner of the property or I have been **authorized in writing** by the owner to file this application. (If the applicant is not the owner, attach written authorization from the owner)

Eric Cheney		2/8/24
Applicant Name (PRINT)	Signature	Date

FOR OFFICIAL USE ONLY

Revision Date 05/16/2023

Project No._____ **Date Received**_____

Project Name:

Village VII (Lots 7001 – 7040) Linda Vista Village

Property Owner:

Stewart Title and Trust of Tucson, Trust Nos. 3772 and 3773
ATTN: Erik Zwerk
3939 E. Broadway Blvd.
Tucson, AZ 85711
(520) 327-7373
erik.zwerk@stewart.com

Tax Parcel Nos.

216-45-5530	216-45-5420	216-45-6300
216-45-5730	216-45-6190	

Council-Regular Meeting **C4**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Scott Radden, Senior Planner

From: Scott Radden, Senior Planner

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Resolution No. 2024-107: Relating to Development; approving a final plat for Cypress Gardens II Lots 1-215 and Common Areas "A" (Recreation & Drainage), "B" (Landscape, Drainage and Utilities) generally located at the northwest corner of Barnett Road and Sandario Road (Scott Radden)

Discussion:

Request
LGI Homes-Arizona, LLC., the property owner, is requesting approval of a final plat for 215 single-family residential lots and common areas for recreation, landscape, drainage and utilities on approximately 45.8 acres of land. The proposed subdivision is a resubdivision of Cypress Gardens Lots 1 thru 165 and Common Areas "A", "B" & "C", recorded in Seq# 2014170116.

Location
The site of the proposed development is located at the northwest corner of Barnett Road and Sandario Road within a portion of Section 28, Township 11 South and Range 11 East.

Zoning and Land Use
The zoning of the subdivision is R-4 Residential, allowing single-family detached homes with a minimum lot size of 4,000 square feet. The minimum lot size provided is 4,006 square feet. The final plat maximum lot size provided is 10,311 square feet and the average lot size provided is 5,202 square feet. Houses on Lots 45-57 are restricted

to one story.

Transportation
The project proposes 1.7 miles of new public streets. Access will be provided by two points from Bill Gaudette Drive on the northern side of the subdivision, which the developer will extend as a public two-lane collector road approximately 1300 feet west of its current limit at Sandario Road. There is also one access directly from Sandario Road approximately 700 feet north of Barnett Road.

Recreation and Park Requirements
Per Chapter 17-5-3 of the Marana Town Code, 400 square feet of on-site recreation area per single-family detached residence is required. For the proposed subdivision, a minimum of 86,000 square feet of recreation area is required. A total of over 90,134 square feet of recreation area is provided.

Utilities
Cypress Gardens II is located within the Marana service area and will be provided water and sanitary sewer service. Tucson Electric Power and Southwest Gas will provide the electric and natural gas services. Other improvements include undergrounding of the CMID irrigation canal along the south boundary of the project. The Marana Planning Commission, at a regular scheduled meeting on April 24, 2024, approved (PCM2403-002) a waiver of the subdivision requirement to underground existing electrical utilities adjacent to the Cypress Gardens II residential development located on the west side of Sandario Road and north of Barnett Road due to future improvements being made.

Preliminary Plat
The Preliminary Plat for Cypress Gardens Lots 1-214 (PRV2204-002) was approved by staff on May 16, 2023.

Staff Recommendation:
Staff has reviewed the proposed final plat against the requirements of the Marana Town Code, and the Marana General Plan. The final plat is in substantial conformance with all required development regulations and staff recommends approval.

Suggested Motion:
I move to adopt Resolution 2024-107, approving a final plat for Cypress Gardens II Lots 1-215 and Common Areas "A" and "B."

Attachments

Resolution No. 2024-107
Final Plat
Location Map

MARANA RESOLUTION NO. 2024-107

RELATING TO DEVELOPMENT; APPROVING A FINAL PLAT FOR CYPRESS GARDENS II LOTS 1-215 AND COMMON AREAS "A" (RECREATION & DRAINAGE), "B" (LANDSCAPE, DRAINAGE AND UTILITIES) GENERALLY LOCATED AT THE NORTHWEST CORNER OF BARNETT ROAD AND SANDARIO ROAD

WHEREAS, on October 20, 2001, the Mayor and Town Council adopted Ordinance No. 2001.016 rezoning land at the northwest corner of Sandario and Barnett Roads from "Zone A" to "R-6" (Residential) (the "Property"); and

WHEREAS, on August 20, 2013, the Mayor and Town Council adopted Ordinance No. 2013.020 amending Ordinance No. 2001.016 by revising certain rezoning conditions in order to conform to applicable state law and to accurately reflect and conform to current Town of Marana policies and standard conditions; and

WHEREAS, on June 17, 2014, the Mayor and Town Council adopted Resolution No. 2014-057, approving the Final Plat for Cypress Gardens, Lots 1-165 and Common Areas "A'', "B", and "C" for the Property, recorded in the Pima County Recorder's office on June 20, 2014 at Sequence 20141710116 (the "Original Cypress Gardens Plat"); and

WHEREAS, on September 21, 2021, the Mayor and Town Council adopted Ordinance 2021.019 approving a rezoning of the Property from R-6 (Residential) to R-4 (Residential); and

WHEREAS LGI Homes-Arizona, LLC has applied for approval of a final plat for Cypress Gardens II Lots 1-215 and Common Areas "A" (Recreation & Drainage), "B" (Landscape, Drainage and Utilities) (the "Cypress Gardens II Plat"), being a resubdivision of Cypress Gardens, Lots 1 thru 165 and Common Areas "A", "B" & "C"; and

WHEREAS the Cypress Gardens II Plat proposes the abandonment of portions of the public rights-of-way previously dedicated by the Original Cypress Gardens Plat pursuant to A.R.S. §28-7203, in exchange for the dedication of the public rights-of-way as shown on the Cypress Gardens II Plat; and

WHEREAS the Cypress Gardens II Plat also proposes the abandonment of various easements appurtenant to the abandoned right-of-way and as previously dedicated by the Original Cypress Gardens Plat pursuant to A.R.S. §9-402(E), to be replaced with new easements of the same size and type to correspond to the new rights-of-way dedicated by the Cypress Gardens II Plat; and

WHEREAS the Mayor and Town Council, at its December ___, 2024 meeting, determined that the Cypress Gardens II Plat and the proposed public right-of-way and easement exchange reflected in it should be approved.

NOW, THEREFORE, BE IT RESOLVED by the Mayor and Council of the Town of Marana, Arizona, that the Cypress Gardens II Plat is hereby approved.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this ___ day of December, 2024.

_____
Jon Post, Vice Mayor

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

GENERAL NOTES

1. THE GROSS AREA OF THE SUBDIVISION 45.82 ACRES (±1,996,072 SF).
2. THE TOTAL NUMBER OF LOTS IS 215 (25.68 ACRES). GROSS DENSITY = 4.7 RAC.
3. THE TOTAL AREA OF COMMON AREA "A" IS 5.54 ACRES (±241,335.46 S.F.).
4. THE TOTAL AREA OF COMMON AREA "B" IS 5.21 ACRES (±226,979.0 S.F.).
5. MINIMUM ALLOWABLE LOT SIZE = 4,000 S.F.
   - 5.1. MINIMUM LOT SIZE PROVIDED = 4,006 S.F. (LOT 5)
   - 5.2. AVERAGE LOT SIZE PROVIDED = 5,202.5 S.F.
   - 5.3. LARGEST LOT SIZE PROVIDED = 10,311 S.F. (LOT 111)
6. SETBACKS REQUIRED:
   FRONT = 10' OR 20' W/ FRONT-LOADING GARAGE
   SIDE = 5'
   REAR = 10'
7. MAXIMUM ALLOWABLE BUILDING HEIGHT = 30'.
8. HOUSES ON LOTS 45-57 ARE RESTRICTED TO ONE STORY.
9. THE TOTAL MILES OF NEW PUBLIC STREETS IS 1.74.
10. PARKING SPACES: 2 PER LOT IN GARAGE, 2 PER LOT IN DRIVEWAY =860 SPACES.
11. ANY RELOCATION OR MODIFICATION OF EXISTING UTILITIES AND/OR PUBLIC IMPROVEMENTS NECESSITATED BY THE PROPOSED DEVELOPMENT WILL BE AT NO EXPENSE TO THE PUBLIC.
12. NO FURTHER LOT SPLITTING SHALL BE DONE WITHOUT THE WRITTEN APPROVAL OF THE TOWN OF MARANA.
13. EXISTING ZONING IS R4 (RESIDENTIAL) AND IS SUBJECT TO THE CONDITIONS OF ORDINANCE NO. 2021.019.
14. APPROVAL OF THIS PLAT DOES NOT AFFIRM, CERTIFY, OR APPROVE ANY LAND DIVISION THAT MAY BE CONTRARY TO STATE LAW, NOR DOES IT CERTIFY THE EXISTENCE OF, OR COMPLIANCE WITH, ANY DEED RESTRICTIONS OR EASEMENTS.
15. ALL NEW UTILITIES WITHIN OR CONTIGUOUS TO THE SITE SHALL BE PLACED UNDERGROUND, EXCEPT ELECTRICAL TRANSMISSION LINES CARRYING 48 KV OR GREATWER, AND THOSE LINES WHICH CAN BE SHOWN TO EXIST IN CURRENT OR FUTURE ELECTRICAL TRANSMISSION CORRIDORS. EXCEPT THOSE UTILITIES SUBJECT TO THE WAIVER GRANTED BY THE MARANA PLANNING COMMISSION ON 4/24/2024 PER PCM2403-002.
16. A PROFESSIONAL ENGINEER SHALL CERTIFY AS TO FORM, LINE AND FUNCTION OF ALL PUBLIC AND PRIVATE ROADWAYS AND DRAINAGE STRUCTURES BEFORE THE RELEASE OF ASSURANCES.
17. OBJECTS AND MATERIALS WITHIN SIGHT VISIBILITY TRIANGLES SHALL BE PLACED SO AS NOT TO INTERFERE WITH A VISIBILITY PLANE DESCRIBED BY TWO HORIZONTAL LINES LOCATED 30 INCHES AND 72 INCHES ABOVE FINISHED GRADE OF THE ROADWAY SURFACE, AND SHALL CONFORM TO THE TOWN OF MARANA SUBDIVISION STREET STANDARDS.
18. THE RELOCATION OF ANY UTILITIES SHALL BE AT NO EXPENSE TO THE PUBLIC, THE TOWN OF MARANA, PIMA COUNTY, OR THE CORTARO MARANA IRRIGATION DISTRICT.
19. LOTS BACKING UP TO COMMON AREAS DESIGNATED FOR RECREATION ARE ALLOWED TO CONSTRUCT ONE (1) REAR YARD PEDESTRIAN ACCESS RESTRICTED TO AN OPENING LESS THAN 36 INCHES IN WIDTH AND A GATE WHICH IS SELF-CLOSING.
20. ALL LOT, BLOCK, RIGHT-OF-WAY AND CENTERLINE MONUMENTS SET WILL BE IN COMPLIANCE WITH THE ARIZONA STATE BOARD OF TECHNICAL REGISTRATIONS SUBSTANTIVE POLICY STATEMENT EFFECTIVE FEBRUARY 22, 2011 AS FOLLOWS: ALL MONUMENTS SET SHALL BE UNDER THE DIRECT SUPERVISION OF THE SURVEYOR OF RECORD. IF, FOR ANY REASON, THE SURVEYOR OF RECORD IS NOT AVAILABLE TO SUPERVISE THE SETTING OF THE INTERIOR CORNER MONUMENTS, SUBSEQUENT TO THE RECORDING OF THE FINAL PLAT, THE REPLACEMENT SURVEYOR SHALL SET MONUMENTS WITH HIS/HER IDENTIFYING NUMBER AND A RECORD OF SURVEY SHALL BE RECORDED IN ACCORDANCE WITH THE STATE STATUTES.
21. INSTALLATION OF ITEMS SUCH AS LANDSCAPING, IRRIGATION, SIGNAGE, MONUMENTS, WALLS AND DRAINAGE IMPROVEMENTS IN THE PUBLIC RIGHT-OF-WAY SHALL REQUIRE A PERPETUAL LICENSE AGREEMENT FOR INSTALLATION, MAINTENANCE AND INDEMNIFICATION. THE LICENSE AGREEMENT SHALL BE EXECUTED AND APPROVED BY THE TOWN OF MARANA PRIOR TO APPROVAL OF THE CLOSEOUT PACKAGE FOR THIS PROJECT.
22. ANY DWELLING OVER 3,600 SQUARE FEET OF FLOOR AREA UNDER ROOF, HAVING LIMITED ACCESS OVER 150 FEET IN LENGTH, OR ACCESS GRADE OVER 15% MUST BE EVALUATED FOR ADDITIONAL FIRE PROTECTION MEASURES, INCLUDING THE POSSIBILTY OF HOME FIRE SPRINKLERS.
23. PORTIONS OF THE PUBLIC RIGHT-OF-WAY DEDICATED BY THE CYPRESS GARDENS PLAT, RECORDED IN THE PIMA COUNTY RECORDER'S OFFICE AT SEQUENCE NUMBER 20141710116, ARE BEING ABANDONED IN EXCHANGE FOR NEW PUBLIC ROADWAYS AS SHOWN ON THIS PLAT PURSUANT TO A.R.S. §28-7203 AND AS INDICATED IN THE MARANA TOWN COUNCIL RESOLUTION APPROVING THIS PLAT. ADDITIONALLY, PURSUANT TO A.R.S. § 9-402 (E), THE TOWN OF MARANA BY ITS APPROVAL OF THIS PLAT ABANDONS IN FAVOR OF THE SUBDIVIDER VARIOUS PUBLIC EASEMENTS APPURTENANT TO THE ABANDONED RIGHT-OF-WAY, INCLUDING THE 1' NO ACCESS EASEMENTS, PUBLIC UTILITY EASEMENTS, UTILITY ROADWAY MAINTENANCE AND SIGNAGE EASEMENTS, PUBLIC SEWER EASEMENTS, AND PUBLIC UTILITY AND EMERGENCY ACCESS EASEMENT IN EXCHANGE FOR NEW EASEMENTS OF THE SAME SIZE AND TYPE AS ESTABLISHED ON THIS PLAT TO CORRESPOND TO THE NEW PUBLIC ROADWAYS AS DEPICTED ON THIS PLAT.
24. AN AVIGATION EASEMENT HAS BEEN RECORDED ON THIS PROPERTY. THIS PROPERTY IS IN THE AIRPORT INFLUENCE AREA FOR THE MARANA REGIONAL AIRPORT AND IS SUBJECT TO AIRCRAFT NOISE AND AIRCRAFT OVERFLIGHT. AVIGATION EASEMENT AND RELEASE RECORDED AT SEQUENCE NO. 20141710121. THEREAFTER, NOTICE OF SCRIVENER'S ERRORS RECORDED AT SEQUENCE NO. 20141900040.

DEDICATION

WE, THE UNDERSIGNED, HEREBY WARRANT THAT WE ARE THE OWNERS AND THE ONLY PARTIES HAVING ANY INTEREST IN THE LAND SHOWN ON THIS PLAT, AND WE CONSENT TO THE SUBDIVISION OF THIS LAND IN THE MANNER SHOWN ON THIS PLAT.

WE HEREBY DEDICATE TO THE TOWN OF MARANA ALL RIGHTS-OF-WAY SHOWN ON THIS PLAT, INCLUDING ALL STREETS, ALLEYS, AND DRAINAGEWAYS, AND EASEMENTS, INCLUDING NO-ACCESS EASEMENTS. UTILITY EASEMENTS AS SHOWN ON THIS PLAT, ARE DEDICATED TO THE TOWN OF MARANA AND ALL PUBLIC AND PRIVATE UTILITY COMPANIES FOR THE PURPOSE OF INSTALLATION AND MAINTENANCE OF, AND ACCESS TO, PUBLIC AND PRIVATE UTILITIES AND PUBLIC SEWERS. NO-ACCESS EASEMENTS SHOWN ON THIS PLAT ARE DEDICATED TO THE TOWN OF MARANA FOR THE PURPOSE OF ACCESS CONTROL TO ADJACENT RIGHTS-OF-WAY. OTHER EASEMENTS SHOWN ON THIS PLAT ARE DEDICATED TO THE TOWN OF MARANA FOR THE PURPOSE OR PURPOSES NOTED ON THIS PLAT. PORTIONS OF THE PUBLIC RIGHT-OF-WAY AND PUBLIC EASEMENTS DEDICATED BYTHE PREVIOUS PLAT, RECORDED IN THE PIMA COUNTY RECORDER'S OFFICE AT SEQUENCE NUMBER 20141710116, ARE BEING ABANDONED AS SHOWN ON THIS PLAT AND AS INDICATED IN THE MARANA TOWN COUNCIL RESOLUTION APPROVING THIS PLAT.

WE, THE UNDERSIGNED, OUR SUCCESSORS AND ASSIGNS, DO HEREBY HOLD THE TOWN OF MARANA, ITS EMPLOYEES, OFFICERS, AND AGENTS HARMLESS FROM AND AGAINST ANY AND ALL CLAIMS FOR DAMAGES RELATED TO THE USE OF THESE LANDS NOW AND IN THE FUTURE BY REASON OF FLOODING, FLOWAGE, EROSION, OR DAMAGE CAUSED BY WATER, WHETHER SURFACE, FLOOD, OR RAINFALL. NATURAL DRAINAGE SHALL NOT BE ALTERED, DISTURBED, OR OBSTRUCTED WITHOUT THE APPROVAL OF THE TOWN OF MARANA.

PRIVATE DRAINAGEWAYS AND COMMON AREA AS SHOWN ON THIS PLAT ARE RESERVED FOR THE PRIVATE USE AND CONVENIENCE OF ALL OWNERS OF PROPERTY WITHIN THIS SUBDIVISION AND THEIR GUESTS AND INVITEES. COMMON AREA, BUT NOT PRIVATE DRAINAGEWAYS, ARE GRANTED AS EASEMENTS TO THE TOWN OF MARANA AND ALL PUBLIC AND PRIVATE UTILITY COMPANIES FOR THE PURPOSE OF INSTALLATION AND MAINTENANCE OF, AND ACCESS TO, UNDERGROUND PUBLIC AND PRIVATE UTILITIES AND SEWERS. PRIVATE DRAINAGEWAYS ARE ALSO RESERVED FOR THE FLOW OF WATER, WHETHER SURFACE, FLOOD, OR RAINFALL, FROM THIS SUBDIVISION AND OTHER LANDS AS APPROVED BY THE TOWN ENGINEER. TITLE TO ALL PRIVATE DRAINAGEWAYS AND COMMON AREA SHALL BE VESTED IN AN ASSOCIATION OF INDIVIDUAL LOT OWNERS AS ESTABLISHED BY COVENANTS, CONDITIONS AND RESTRICTIONS RECORDED IN SEQUENCE NUMBER _____ IN THE OFFICE OF THE RECORDER OF THE RECORDER OF PIMA COUNTY, ARIZONA. EACH AND EVERY LOT OWNER WITHIN THE SUBDIVISION SHALL BE A MEMBER OF THE ASSOCIATION, WHICH IS RESPONSIBLE FOR THE CONTROL, MAINTENANCE, SAFEVTY, AND LIABILITY OF THE PRIVATE DRAINAGEWAYS AND COMMON AREA WITHIN THIS SUBDIVISION.

TITLE SECURITY AGENCY, LLC, A DELAWARE LIMITED LIABILITY COMPANY, AS TRUSTEE ONLY, UNDER TRUST No. _____ AND NOT IN ITS CORPORATE CAPACITY.

BY:_____

ITS: TRUST OFFICER

PURSUANT TO SECTION 33-404, ARIZONA REVISED STATUTES, THE NAME AND ADDRESS OF THE SOLE BENEFICIARY OF SAID TRUST, AS DISCLOSED IN SEQUENCE NUMBER _____ PIMA COUNTY RECORDS, IS:

LGI HOMES - ARIZONA, LLC
4800 N. SCOTTSDALE ROAD, SUITE 1275
SCOTTSDALE, AZ 85251

ACKNOWLEDGEMENT

STATE OF ARIZONA)
) S.S.
COUNTY OF PIMA)

ON THIS _____ DAY OF _____, 2024, BEFORE ME, PERSONALLY APPEARED _____ WHO ACKNOWLEDGED (HIMSELF/HERSELF) TO BE THE TRUST OFFICER OF TITLE SECURITY AGENCY, LLC, AND BEING AUTHORIZED SO TO DO, EXECUTED THE FOREGOING INSTRUMENT FOR THE PURPOSE THEREIN.

IN WITNESS WHEREOF, I HERE UNTO SET MY HAND AND OFFICIAL SEAL.

MY COMMISSION EXPIRES: _____ _____
NOTARY PUBLIC

APPROVALS

_____ _____
MARANA TOWN ENGINEER/DEVELOPMENT ENGINEER DATE

_____ _____
MARANA PLANNING MANAGER DATE

_____ _____
MARANA WATER DIRECTOR DATE

ASSURED WATER SUPPLY

A CERTIFICATE OF ASSURED WATER SUPPLY HAS BEEN RECEIVED FROM THE DIRECTOR OF WATER RESOURCES.

_____ _____
MARANA WATER DIRECTOR DATE

ASSURANCE

ASSURANCE IN THE FORM OF A THIRD PARTY TRUST FROM TITLE SECURITY AGENCY, LLC AS RECORDED IN SEQUENCE NUMBER _____ IN THE OFFICE OF THE RECORDER OF PIMA COUNTY, ARIZONA HAVE BEEN PROVIDED TO GUARANTEE INSTALLATION OF REQUIRED STREET, SEWER, ELECTRIC, GAS AND WATER UTILITIES, DRAINAGE, FLOOD CONTROL AND OTHER SUBDIVISION IMPROVEMENTS MEETING ESTABLISHED MINIMUM STANDARDS OF DESIGN AND CONSTRUCTION.

_____ _____
TOWN OF MARANA DATE

CERTIFICATION

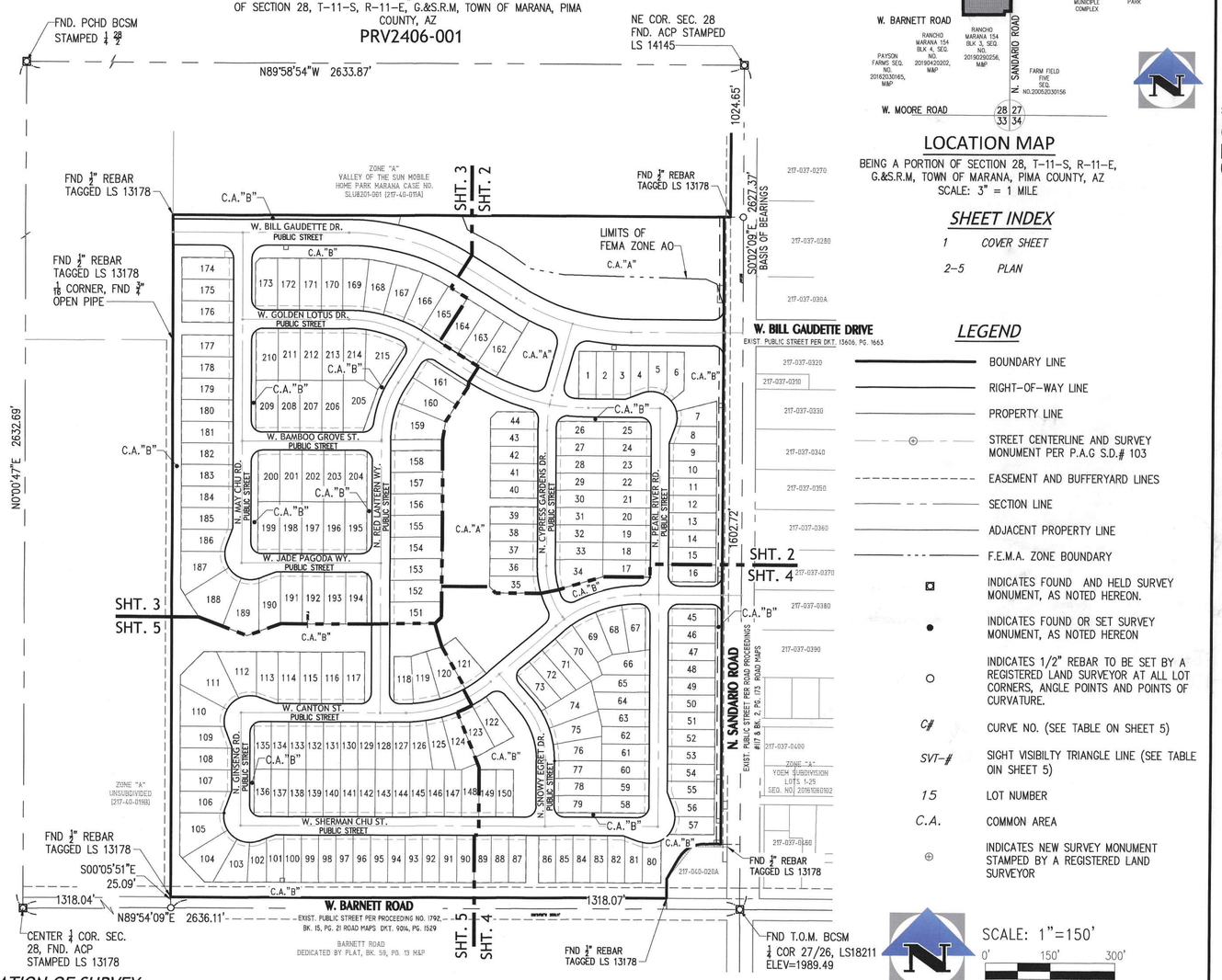
I, _____, CLERK OF THE TOWN OF MARANA, ARIZONA, HEREBY CERTIFY THAT THIS PLAT WAS APPROVED BY THE TOWN COUNCIL OF MARANA ON THE _____ DAY OF _____, 2024.

_____ _____
CLERK OF THE TOWN OF MARANA DATE

FINAL PLAT OF

CYPRESS GARDENS II

LOTS 1-215 AND COMMON AREAS "A" (RECREATION & DRAINAGE), "B" (LANDSCAPE, DRAINAGE AND UTILITIES)
BEING A A RESUBDIVISION OF CYPRESS GARDENS LOTS 1 THRU 165 AND COMMON AREAS "A", "B" & "C", SEQ #20141710116 LOCATED IN A PORTION OF SECTION 28, T-11-S, R-11-E, G.&S.R.M, TOWN OF MARANA, PIMA COUNTY, AZ
PRV2406-001



LOCATION MAP

BEING A PORTION OF SECTION 28, T-11-S, R-11-E, G.&S.R.M, TOWN OF MARANA, PIMA COUNTY, AZ
SCALE: 3" = 1 MILE

SHEET INDEX

1 COVER SHEET
2-5 PLAN

LEGEND

- BOUNDARY LINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- STREET CENTERLINE AND SURVEY MONUMENT PER P.A.G S.D.# 103
- EASEMENT AND BUFFERYARD LINES
- SECTION LINE
- ADJACENT PROPERTY LINE
- F.E.M.A. ZONE BOUNDARY
- INDICATES FOUND AND HELD SURVEY MONUMENT, AS NOTED HEREON.
- INDICATES FOUND OR SET SURVEY MONUMENT, AS NOTED HEREON
- INDICATES 1/2" REBAR TO BE SET BY A REGISTERED LAND SURVEYOR AT ALL LOT CORNERS, ANGLE POINTS AND POINTS OF CURVATURE.
- C# CURVE NO. (SEE TABLE ON SHEET 5)
- SVT-# SIGHT VISIBILITY TRIANGLE LINE (SEE TABLE OIN SHEET 5)
- 15 LOT NUMBER
- C.A. COMMON AREA
- INDICATES NEW SURVEY MONUMENT STAMPED BY A REGISTERED LAND SURVEYOR

SCALE: 1"=150'
0' 150' 300'

CERTIFICATION OF SURVEY

I HEREBY CERTIFY THAT THE BOUNDARY SURVEY AS SHOWN ON THIS PLAT WAS PERFORMED UNDER MY DIRECTION AND THAT ALL EXISTING AND PROPOSED SURVEY MONUMENTS AND MARKERS SHOWN ARE CORRECTLY DESCRIBED. I FURTHER CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECTION.

MARK MACHEN
REGISTERED LAND SURVEYOR
NUMBER 16294

REGISTERED LAND SURVEYOR CERTIFICATE NO. 16294 MARK MACHEN Date Signed 6/13/24

CERTIFICATION OF ENGINEERING

I HEREBY CERTIFY THAT THE FLOODPRONE LIMITS AND/OR EROSION HAZARD SETBACKS AS SHOWN ON THIS PLAT WERE PREPARED BY ME OR UNDER MY SUPERVISION.

PATRICK W. MARUM
REGISTERED PROFESSIONAL ENGINEER
P.E. NUMBER 16245

Registered Professional Engineer (Civil) CERTIFICATE NO. 16245 PATRICK W. MARUM Date Signed 6/13/24

BASIS OF BEARINGS:

N 00°02'09" W FOR THE EAST LINE OF THE NORTHEAST ONE-QUARTER OF SECTION 28, TOWNSHIP 11 SOUTH, RANGE 11 EAST, GILA AND SALT RIVER MERIDIAN, PIMA COUNTY, ARIZONA, BETWEEN THE MONUMENTS SHOWN HEREON.

CIVIL ENGINEER

MARUM & ASSOCIATES ENGINEERING
ATTN: PATRICK MARUM, PE. (16245)
PMARUM@MARUMENG.COM
2730 E. BROADWAY BLVD., STE 250
TUCSON, AZ 85716
PH: (520) 448-4440

OWNER/DEVELOPER

LGI HOMES-ARIZONA, LLC
4800 N. SCOTTSDALE ROAD, SUITE 1275
SCOTTSDALE, AZ 85251
ATTN: RICK TAYRIEN
PH: (480) 612-4082

Sequence_____
Fee_____
State of Arizona_____
County of Pima_____
I hereby certify that the instrument was filed for record at the request
Of___MARUM & ASSOCIATES, INC.____
Date_____
Time_____
Witness my hand and Official Seal
day and year above written.
GABRIELLA CAZARES-KELLY, County Recorder
BY_____
Deputy

ADMINISTRATIVE ADDRESS:

13401 N. SANDARIO ROAD,
MARANA, AZ 85653

FINAL PLAT FOR

CYPRESS GARDENS II

LOTS 1-215 AND COMMON AREAS "A" (RECREATION & DRAINAGE), "B" (LANDSCAPE, DRAINAGE AND UTILITIES)

BEING A A RESUBDIVISION OF CYPRESS GARDENS LOTS 1 THRU 165 AND COMMON AREAS "A", "B" & "C", SEQ #20141710116 LOCATED IN A PORTION OF SECTION 28, T-11-S, R-11-E, G.&S.R.M, TOWN OF MARANA, PIMA COUNTY, AZ

PRV2406-001
AUGUST 2024
REF: PRV2204-002, PCZ2103-003 AND PCM2403-002

MARUM & ASSOCIATES ENGINEERING, LLC
2730 E. BROADWAY BLVD., STE. 250
TUCSON ARIZONA 85716 (520) 448-4440

Sheet 1 of 5

SEQ.#_____

DWG: N:\2020\20066 - Cypress Gardens - Brookstone\Drawings\Plans\FinalPlat\20066_FP.dwg USER: admin DATE: Oct 28, 2024
XREFS: 20066-SIX 20066_FP-BDR

SCALE: 1"=40'
0' 40' 80'

SEQ.#

W. BILL GAUDETTE DRIVE
EXIST. PUBLIC STREET PER DKT. 13606, PG. 1663

N. SANDARIO ROAD
EXIST. PUBLIC STREET PER ROAD PROCEEDINGS #117 & BK. 2, PG. 173 ROAD MAPS

MATCHLINE, SEE SHEET 4

MATCHLINE, SEE SHEET 3

217-037-027O | 217-037-028O | 217-037-030A | 217-037-032O | 217-037-031O | ZONE "A" UNSUBDIVIDED 217-037-033O | 217-037-034O | 217-037-035O | 217-037-036O | 217-037-037O | 217-037-038O

ZONE "A"
VALLEY OF THE SUN MOBILE HOME PARK
MARANA CASE NO. SL18-201-001
[217-40-011A]

N89°59'31"W 44.82'
1024.68'
29.82'
FND ½" REBAR TAGGED LS 13178
NE COR. SEC. 28 FND. ACP STAMPED LS 14145
SET ½" REBAR TAGGED LS 16294
15.00'
212.67'
267.64'
FND BCSM LS 12214 0.15' EAST OF LINE
S0°02'09"E 2627.37'
607.84'
10' SEWER ESMT PER DKT. 6575, PG. 1119
EXIST. 15'x40' ELEC. ESMT PER SEQ.# 20141710116
EXIST. 10'x10' ELEC. ESMT PER SEQ.# 20141710116
15'ADD'L R/W DEDICATED BY SEQ.#2014-1710116
10' (MIN.) BUFFERYARD PER ORDINANCE NO. 2021.019
44.83'
55.00'
55.00'
1' NVAE
506.84'
S0°01'58"E 1451.81'
N0°01'58"W 419.25'
59.25'
S17°14'27"E 54.73'
C11
5.01'
S65°04'17"E 27.78'
C12
S89°58'00"W 259.52'
214.68'
189.69'
30'
30'
C.A."B" 27,254.88 SF
N50°21'13"E (RAD) 38.65'
N75°29'25"E (RAD) 96.98'
N89°58'02"E 95.43'
N70°33'42"W (RAD)
7 4,390 SF
8 4,109 SF
9 4,400 SF
10 4,400 SF
11 4,400 SF
12 4,400 SF
13 4,400 SF
14 4,400 SF
15 4,400 SF
16 4,375 SF
N89°58'02"E 110.00'
10' P.U.E.
5.44' (SVT TIE)
SVT-25
N00°02'00"W 89.10'
6 4,217 SF
L=24.06'
L=26.32'
L=35.55'
L=0.57'
42.00'
N19°58'59"E
C26
N00°02'00"W 82.59'
N27°22'50"E (RAD) 18.19'
5 4,006 SF
L=35.72'
92.41'
N00°02'00"W
4 4,032 SF
L=13.95'
105.63'
N00°02'00"W
3 4,374 SF
12.77'
110.00'
N00°02'00"W
2 4,400 SF
10' P.U.E.
110.00'
N00°02'00"W
1 4,396 SF
L=22.62'
L=10.66'
S00°02'00"E 109.47'
N89°58'02"W 166.39'
28.00'
17.39'
(SVT TIE)
S89°58'00"W 166.39'
120.39'
N89°58'02"E 211.36'
105.00'
C25
L=16.09'
L=23.18'
17.97' (SVT-TIE)
SVT-26
L=5.18'
34.86'
N. PEARL RIVER RD.
PUBLIC STREET
S0°01'58"E 968.28'
431.84'
W. BILL GAUDETTE DR.
PUBLIC STREET
W. GOLDEN LOTUS DR.
PUBLIC STREET
FEMA ZONE AO (1' DEPTH)
LIMITS OF FEMA ZONE AO
FEMA ZONE X (SHADED)
EXIST. 10'x10' ELEC. ESMT PER SEQ.# 20141710116
C.A."A" 128,430.89 SF
326.93'
S88°35'58"E
L=263.93'
L=137.78'
C1
L=95.36'
1' NVAE
S89°59'31"E 1272.54'
747.01'
S80°31'05"E 79.70'
S55°12'49"E 81.31'
S61°21'35"E 85.43'
140.32'
N57°51'30"W 140.32'
S75°51'30"E 140.32'
20,966.34 SF 194.62
50.00'
1' NVAE
C.A."B" 2,063.28 SF
1' NVAE
106.36'
26 4,383 SF
L=26.81' (SVT TIE)
27 4,400 SF
28 4,400 SF
29 4,400 SF
30 4,400 SF
31 4,400 SF
32 4,400 SF
33 4,400 SF
34 6,022 SF
10' P.U.E.
5.74' (SVT TIE)
SVT-11
L=28.15'
L=12.55'
SVT-10
18.75'
15.14'
L=55.73'
L=47.27'
L=89.97'
C23
C3
L=9.33'
S0°01'58"E 313.89'
N. CYPRESS GARDENS DR.
PUBLIC STREET
15.83' (SVT TIE)
SVT-9
C7
S13°12'47"W (RAD)
L=40.87'
37.60'
16.29'
L=23.75'
S83°48'33"W (RAD)
111.28'
S89°58'02"W 104.38'
N45°01'58"W 21.21'
44 4,270 SF
43 4,400 SF
42 4,400 SF
41 4,400 SF
40 4,400 SF
39 4,400 SF
38 4,400 SF
37 4,400 SF
36 4,410 SF
35 4,475 SF
N89°58'02"E 88.53'
L=21.47'
L=13.07'
L=2.40'
L=20.53'
N00°01'58"W 185.00'
25.00'
N44°58'02"E 21.21'
C.A."A" 14,009.42 SF
C14
L=7.03' (SVT TIE)
SVT-8
L=16.88' (SVT TIE)
L=19.58' (SVT TIE)
C21
C4
L=48.84'
L=53.32'
32.70'
L=143.60'
L=190.81'
L=166.75'
1' NVAE
S30°16'32"W 117.74'
S26°29'51"W (RAD)
SVT-5
L=90.77'
162 6,198 SF
120.00'
N32°08'30"E
10' P.U.E.
6.72'
L=47.78'
163 6,000 SF
164 6,000 SF
N32°08'30"E 120.00'
L=10.44' (SVT TIE)
S32°08'30"W 96.43'
S08°45'14"W 42.17'
S00°01'58"E 385.00'
C.A."A" 98,895.15 SF
165 6,076 SF
166 6,712 SF
167 6,712 SF
161 5,976 SF
160 6,801 SF
159 7,849 SF
158 6,000 SF
157 6,000 SF
156 6,000 SF
155 6,000 SF
154 6,000 SF
153 6,000 SF
152 6,000 SF
151 5,887 SF
135.14'
45 4,376 SF
46 4,400 SF
67 5,126 SF
68 5,452 SF
69 5,354 SF
70 5,664 SF
71 5,041 SF
72 4,762 SF
73 4,460 SF
172.23'
W. CANTON ST.
PUBLIC STREET

Registered Professional Engineer (Civil) CERTIFICATE NO. 16245 PATRICK W. MARUM 01-30-25

REGISTERED LAND SURVEYOR CERTIFICATE NO. 16294 MARK MACHEN 01-30-25

FINAL PLAT FOR
CYPRESS GARDENS II
LOTS 1-215 AND COMMON AREAS "A" (RECREATION & DRAINAGE), "B" (LANDSCAPE, DRAINAGE AND UTILITIES)

BEING A A RESUBDIVISION OF CYPRESS GARDENS LOTS 1 THRU 165 AND COMMON AREAS "A", "B" & "C", SEQ #20141710116 LOCATED IN A PORTION OF SECTION 28, T-11-S, R-11-E, G.&S.R.M, TOWN OF MARANA, PIMA COUNTY, AZ


PRV2406-001
AUGUST 2024
REF: PRV2204-002, PCZ2103-003 AND PCM2403-002

MARUM & ASSOCIATES ENGINEERING, LLC
2730 E. BROADWAY BLVD., STE. 250
TUCSON ARIZONA 85716 (520) 448-4440

Sheet 2 of 5

SEQ.#

DWG: K:\2020\20068 - Cypress Gardens - Brookstone\Drawings\Plans\FinalPlat\20068-FP.dwg USER: admin DATE: Oct 28, 2024
XREFS: 20068-SW 20068_FP-BW



FINAL PLAT FOR

CYPRESS GARDENS II

LOTS 1-215 AND COMMON AREAS "A" (RECREATION & DRAINAGE), "B" (LANDSCAPE, DRAINAGE AND UTILITIES)

BEING A A RESUBDIVISION OF CYPRESS GARDENS LOTS 1 THRU 165 AND COMMON AREAS "A", "B" & "C", SEQ #20141710116 LOCATED IN A PORTION OF SECTION 28, T-11-S, R-11-E, G.&S.R.M, TOWN OF MARANA, PIMA COUNTY, AZ

PRV2406-001

AUGUST 2024

REF: PRV2204-002, PCZ2103-003 AND PCM2403-002

MARUM & ASSOCIATES ENGINEERING, LLC
2730 E. BROADWAY BLVD., STE. 250
TUCSON ARIZONA 85716 (520) 448-4440

Sheet 3 of 5

SEQ.#

DWG: N:\2020\20066 - Cypress Gardens - Broadstone\Drawings\Plans\FinalPlat\20066-FP.dwg USER: admin DATE: Oct 28, 2024
XREFS: 20066-SVX 20066_FP-BDR

SCALE: 1"=40'
0' 40' 80'

SEQ.#

N. SANDARIO ROAD
EXIST. PUBLIC STREET PER ROAD PROCEEDINGS #117 & BK. 2, PG. 173 ROAD MAPS

ZONE "A" YOEM SUBDIVISION LOTS 1-25 SEQ. NO. 20161060102

ZONE "A" YOEM SUBDIVISION LOTS 1-25 SEQ. NO. 20161060102

217-037-0360 | 217-037-0370 | 217-037-0380 | 217-037-0390 | 217-037-0400 | 217-037-0460

EXIST. 10'x10' ELEC. ESMT PER SEQ.# 20141710116

EXIST. 10'x10' ELEC. ESMT PER SEQ.# 20141710116

10' SEWER ESMT PER DKT.10707, PG. 709

15'ADD'L R/W DEDICATED BY SEQ.#2014-1710116

15'x15' ELEC ESMT PER SEQ.#2014-1710116

10' (MIN.) BUFFERYARD PER ORDINANCE NO. 2021.019

FND T.O.M. BCSM
¼ COR 27/26, LS18211
ELEV=1989.49

SET ½" REBAR TAGGED LS 16294

FND 4R TAGGED LS 16294

FND 4R TAGGED LS 16294

FND ½" REBAR TAGGED LS 13178

FND ½" REBAR TAGGED LS 13178

PARCEL AREA CONVEYED TO OWNER OF PARCEL 217-040-020A PER SEQUENCE NO. 20220940952.

217-040-020A

W. BARNETT ROAD
EXIST. PUBLIC STREET PER PROCEEDING NO. 1792, BK. 15, PG. 21 ROAD MAPS DKT. 9014, PG. 1529

25' C.M.I.D. PRIVATE IRRIGATION EASEMENT PER MISC. RECORDS BK. 107, PG. 151

BARNETT ROAD DEDICATED BY PLAT, BK. 59, PG. 13 M&P

W. SHERMAN CHU ST.
PUBLIC STREET

N. PEARL RIVER RD.
PUBLIC STREET

W. CANTON ST.
PUBLIC STREET

N. SNOWY EGRET DR.
PUBLIC STREET

N. CYPRESS GARDENS DR.
PUBLIC STREET

C.A."A" 98,895.15 SF

C.A."B" 27,254.88 SF

C.A."B" 950.90 SF

C.A."B" 1,998.24 SF

C.A."B" 18,932.08 SF

C.A."B" 1,009.38 SF

C.A."B" 4,762 SF

C.A."B" 5,717.76 SF

MATCHLINE, SEE SHEET 2

MATCHLINE, SEE SHEET 2

MATCHLINE, SEE SHEET 3

MATCHLINE, SEE SHEET 5

Registered Professional Engineer (Civil) CERTIFICATE NO. 16245 PATRICK W. MARUM 6/30/25

REGISTERED LAND SURVEYOR CERTIFICATE NO. 16294 MARK MACHEN 6/30/25

FINAL PLAT FOR

CYPRESS GARDENS II

LOTS 1-215 AND COMMON AREAS "A" (RECREATION & DRAINAGE), "B" (LANDSCAPE, DRAINAGE AND UTILITIES)

BEING A A RESUBDIVISION OF CYPRESS GARDENS LOTS 1 THRU 165 AND COMMON AREAS "A", "B" & "C", SEQ #20141710116 LOCATED IN A PORTION OF SECTION 28, T-11-S, R-11-E, G.&S.R.M, TOWN OF MARANA, PIMA COUNTY, AZ

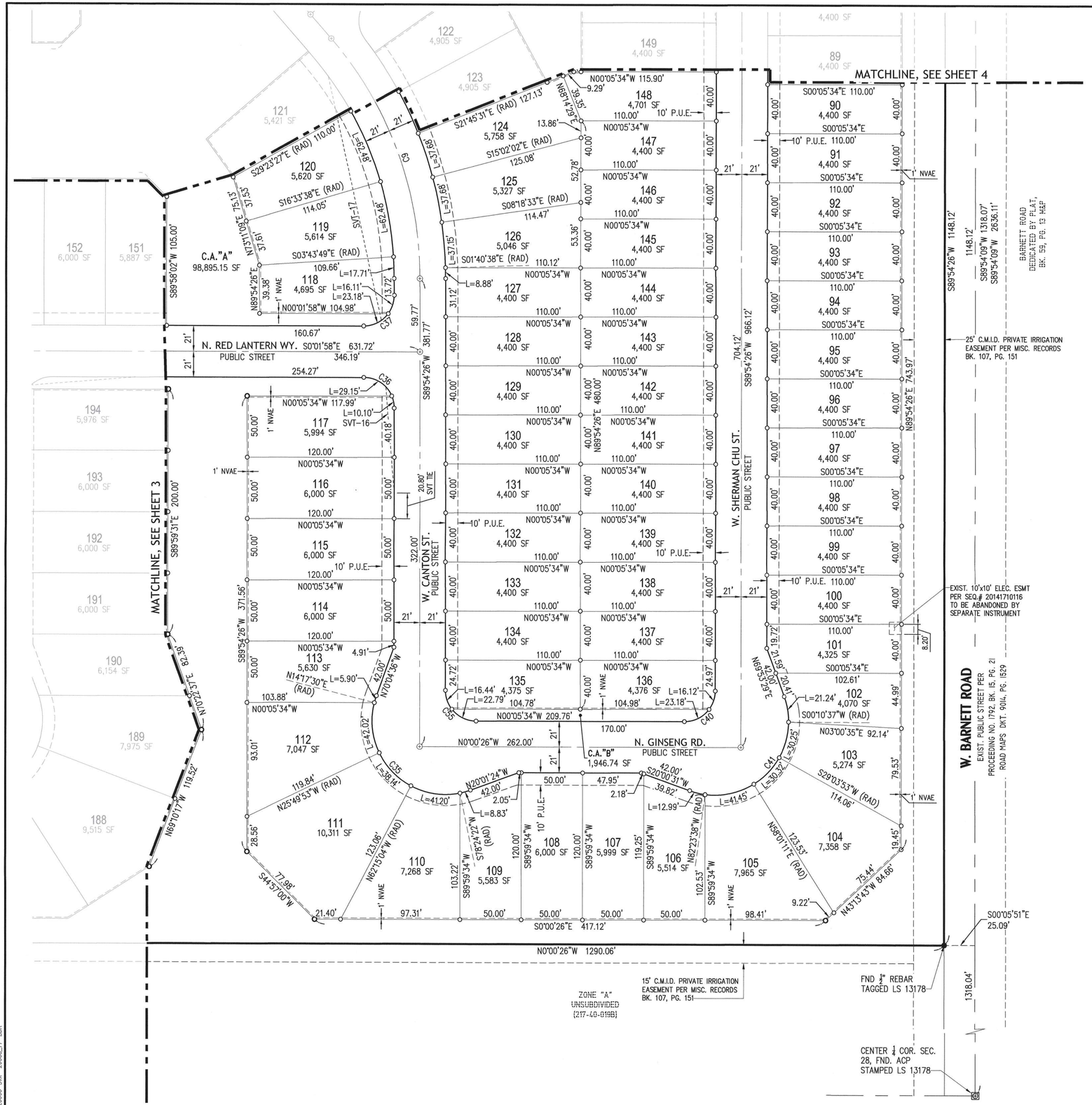
PRV2406-001
AUGUST 2024
REF: PRV2204-002, PCZ2103-003 AND PCM2403-002

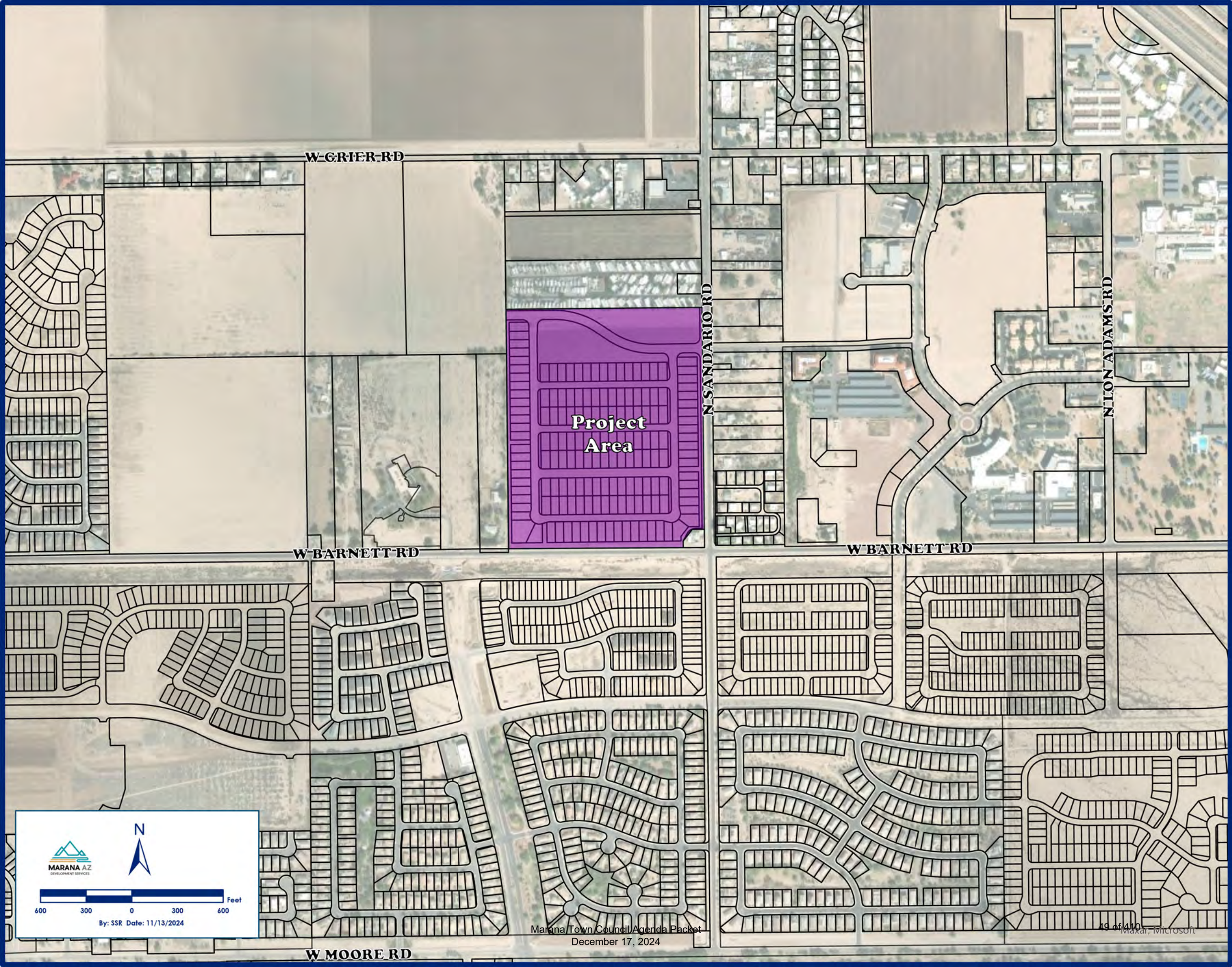
MARUM & ASSOCIATES ENGINEERING, LLC
2730 E. BROADWAY BLVD., STE. 250
TUCSON ARIZONA 85716 (520) 448-4440

Sheet 4 of 5

SEQ.#

DWG: N:\2020\20066 - Cypress Gardens - Brookstone\Drawings\Plans\FinalPlat\20066-FP.dwg USER: admin DATE: Oct 28, 2024
XREFS: 20066-SIX 20066_FP_BSE


MATCHLINE, SEE SHEET 4
MATCHLINE, SEE SHEET 3
N. RED LANTERN WY. S0°01'58"E 631.72'
PUBLIC STREET
346.19'
254.27'
160.67'
N. GINSENG RD.
PUBLIC STREET
W. SHERMAN CHU ST.
PUBLIC STREET
W. CANTON ST.
PUBLIC STREET
W. BARNETT ROAD
EXIST. PUBLIC STREET PER PROCEEDING NO. 1792, BK. 15, PG. 21 ROAD MAPS DKT. 904L, PG. 1529
BARNETT ROAD DEDICATED BY PLAT, BK. 59, PG. 13 M&P
C.A."A" 98,895.15 SF
C.A."B" 1,946.74 SF
25' C.M.I.D. PRIVATE IRRIGATION EASEMENT PER MISC. RECORDS BK. 107, PG. 151
EXIST. 10'x10' ELEC. ESMT PER SEQ.# 20141710116 TO BE ABANDONED BY SEPARATE INSTRUMENT
15' C.M.I.D. PRIVATE IRRIGATION EASEMENT PER MISC. RECORDS BK. 107, PG. 151
ZONE "A" UNSUBDIVIDED [217-40-019B]
FND ½" REBAR TAGGED LS 13178
CENTER ¼ COR. SEC. 28, FND. ACP STAMPED LS 13178
S89°58'02"W 105.00'
S89°59'31"E 200.00'
N69°10'17"W 119.52'
N0°22'57"E 82.39'
S89°54'26"W 371.56'
S89°54'26"W 381.77'
S89°54'26"W 966.12'
S89°54'26"W 704.12'
S89°54'26"W 1148.12'
S89°54'09"W 1318.07'
S89°54'09"W 2636.11'
N89°54'26"E 743.97'
N0°00'26"W 1290.06'
S0°00'26"E 417.12'
S00°05'51"E 25.09'
1318.04'
N43°13'43"W 84.66'
N0°00'26"W 262.00'
N0°00'35"E 92.14'
N00°05'34"W 115.90'
S00°05'34"E 110.00'
N00°01'58"W 104.98'
N00°05'34"W 209.76'
S00°10'37"W (RAD)
S29°23'27"E (RAD) 110.00'
S21°45'31"E (RAD) 127.13'
S15°02'02"E (RAD) 125.08'
S08°18'33"E (RAD) 114.47'
S01°40'38"E (RAD) 110.12'
S16°33'38"E (RAD) 114.05'
S03°43'49"E (RAD) 109.66'
N25°49'53"W (RAD) 119.84'
N14°17'30"E (RAD) 103.88'
S29°03'53"W (RAD) 114.06'
N62°15'04"W (RAD) 123.06'
S78°24'22"W (RAD) 103.22'
N82°23'38"W (RAD) 102.53'
N58°01'11"E (RAD) 123.53'
S44°57'00"W 77.98'
N69°53'29"E 42.00'
N70°04'36"W 42.00'
N20°01'24"W 42.00'
S20°00'31"W 42.00'
S89°59'34"W 119.25'
S89°59'34"W 120.00'
S89°59'34"W 102.53'
S89°59'34"W 123.53'
S89°59'34"W 75.44'
S89°59'34"W 97.31'
S89°59'34"W 50.00'
S89°59'34"W 50.00'
S89°59'34"W 50.00'
S89°59'34"W 50.00'
S89°59'34"W 98.41'
S89°59'34"W 21.40'
S89°59'34"W 9.22'
N89°54'26"E 480.00'
N89°54'26"E 40.00'
N00°05'34"W 117.99'
N00°05'34"W 120.00'
N00°05'34"W 50.00'
N00°05'34"W 110.00'
N00°05'34"W 110.12'
N00°05'34"W 53.36'
N00°05'34"W 52.78'
N00°05'34"W 102.61'
N00°05'34"W 44.99'
N00°05'34"W 79.53'
N00°05'34"W 19.45'
N00°05'34"W 4.91'
N00°05'34"W 103.88'
N00°05'34"W 93.01'
N00°05'34"W 24.72'
N00°05'34"W 24.97'
N00°05'34"W 19.72'
N00°05'34"W 8.20'
N00°05'34"W 170.00'
N00°05'34"W 28.56'
N00°05'34"W 21.59'
N00°05'34"W 20.41'
N00°05'34"W 75.13'
N00°05'34"W 37.53'
N00°05'34"W 37.61'
N00°05'34"W 39.38'
N00°05'34"W 13.72'
N00°05'34"W 59.77'
N00°05'34"W 40.18'
N00°05'34"W 50.00'
N00°05'34"W 50.00'
N00°05'34"W 50.00


W GRIER RD
N SANDARIO RD
N LON ADAMS RD
Project Area
W BARNETT RD
W BARNETT RD
W MOORE RD
N
MARANA AZ
DEVELOPMENT SERVICES
Feet
600
300
0
300
600
By: SSR Date: 11/13/2024
Maxar, Microsoft

MARANA AZ

Development Services / maranaplanning@maranaAZ.gov
11555 West Civic Center Drive / Marana, AZ 85653
Ph (520) 382-2600 / Fax (520) 382-2641 / maranaAZ.gov

PROJECT APPLICATION

APPLICATION TYPE

❑ Annexation	❑ Development Plan	❑ Development Plan Package	❑ General Plan Amendment
❑ Rezone	❑ Minor Land Division	❑ Significant Land Use Change	❑ Conditional Use Permit
❑ Specific Plan	❑ Landscape Plan	❑ Native Plant Plan/Exception	❑ SWPP
❑ Variance	❑ Hydraulic Model	❑ Sewer Capacity Assurance	❑ Sign Program
☒ Plat	❑ Improvement Plan	❑ Report (Type): _____	❑ Other: _____

PROJECT INFORMATION

Project Name: Cypress Gardens			
Description of Project: New Single-Family Subdivision			Number of Lots: 215
Parcel No.(s): 217-40-012B and 217-40-012C			Gross Area (Acres): 46
Project Address: 13401 N Sandario Road			
Ref. Project No.: PRV2201-002			

CONTACT INFORMATION

Owner: LGI Homes-Arizona, LLC	Contact Name: Rick Tayrien		
Address: 9105 E Del Camino Drive, Suite 118	City: Scottsdale	State: AZ	Zip: 85728
Email: rick.tayrien@lgihomes.com	Phone No.: (480) 612-4082		
Applicant: LGI Homes-Arizona, LLC	Contact Name: Rick Tayrien		
Address: 9105 E Del Camino Drive, Suite 118	City: Scottsdale	State: AZ	Zip: 85728
Email: rick.tayrien@lgihomes.com	Phone No.: (480) 612-4082		
Consultant/Engineer: Marum & Associates Eng., LLC	Contact Name: Pat Marum, P. E.		
Address: 2730 E Broadway Blvd., Suite 250	City: Tucson	State: AZ	Zip: 85716
Email: pmarum@marumeng.com	Phone No.: (520) 448-4434		

OWNER/APPLICANT AUTHORIZATION

I hereby certify that the information set forth in this application are true and correct to the best of my knowledge and that I am either the owner of the property or that I have been authorized in writing by the owner to file this application. (If applicant is not the owner, attach written authorization from the owner.)

Rick Tayrien	Rick Tayrien	4-16-2024
Applicant Name (PRINT)	Signature	Date

FOR OFFICIAL USE ONLY
Revision Date 03/29/2019

Project No._____ **Date Received**_____

Council-Regular Meeting **C5**

Meeting Date: 12/17/2024

To: Mayor and Council

From: Brian Varney, Senior Planner

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Resolution No. 2024-111: Relating to Development; approving the Final Plat for Heritage Park Shoppes Lots 2-13 located south of Tangerine Road and east of Heritage Park Drive within a portion of Section 34, Township 11 South, Range 11 East (Brian D. Varney)

Discussion:

Request
DOWL, representing the property owner, Oracle Greenock, LLC, is requesting approval of the Final Plat for Heritage Park Shoppes Lots 2-13 on approximately 14 acres located south of Tangerine Road and east of Heritage Park Drive. The plat proposes to resubdivide Lots 2-10 of The Heritage Park Shoppes Lots 1-10, Blocks A & B.

Zoning and Land Use
The zoning of the property is VC (Village Commercial) per Marana Ordinance No. 2008.03. The plat proposes 12 commercial lots and private access drives. A minimum lot size of 23,206 square feet, a maximum of 99,958 square feet, and an average of 50,938 square feet are proposed.

Access and Traffic Circulation
The subdivision will be accessed directly from Tangerine Road at three points of ingress / egress and proposes 0.3 miles of new private on-site roadways.

Infrastructure and Utilities
Water and wastewater service will be provided to the subdivision by Marana Water.

Staff Recommendation:

Staff has reviewed the proposed final plat against all applicable requirements. The proposed plat is in substantial conformance with all required development regulations, and staff recommends approval.

Suggested Motion:

I move to adopt Resolution No. 2024-111, approving the Final Plat for Heritage Park Shoppes Lots 2-13.

Attachments

Resolution No. 2024-111

Heritage Park Shoppes Lots 2-13 Final Plat

PRV2409-001 Final Plat for Heritage Park Shoppes Lots 2-13 Map

PRV2409-001 Final Plat for Heritage Park Shoppes Lots 2-13 App

---

MARANA RESOLUTION NO. 2024-111

RELATING TO DEVELOPMENT; APPROVING THE FINAL PLAT FOR HERITAGE PARK SHOPPES LOTS 2-13 LOCATED SOUTH OF TANGERINE ROAD AND EAST OF HERITAGE PARK DRIVE WITHIN A PORTION OF SECTION 34, TOWNSHIP 11 SOUTH, RANGE 11 EAST

WHEREAS on December 4, 2001 the Mayor and Council adopted Resolution No. 2001-155 approving and authorizing the Gladden Farms Blocks 1 thru 25 and A thru F Final Block Plat; and

WHEREAS on January 22, 2008, the Mayor and Council adopted Ordinance No. 2008.03 approving a rezoning of the subject property from R-8 (residential – minimum lot size of 8,000 square feet) to VC (Village Commercial); and

WHEREAS on December 15, 2009, the Mayor and Council adopted Resolution No. 2009-199 approving a final plat for The Heritage Park Shoppes Lots 1-10, Blocks A and B; and

WHEREAS DOWL, representing the property owner, has applied for approval of the Final Plat for Heritage Park Shoppes Lots 2-13, a resubdivision of Lots 2 through 10 of The Heritage Park Shoppes Lots 1-10, Blocks A and B, consisting of 14.033 acres; and

WHEREAS the Mayor and Council, at its December 17, 2024 meeting, determined that the Final Plat for Heritage Park Shoppes Lots 2-13 should be approved.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA that the Final Plat for Heritage Park Shoppes Lots 2-13 is hereby approved.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this 17th day of December 2024.

_____
Vice-Mayor Jon Post

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

FINAL PLAT FOR HERITAGE PARK SHOPPES LOTS 2-13

BEING A RESUBDIVISION OF LOTS 2 THROUGH 10 OF "FINAL PLAT FOR THE HERITAGE PARK SHOPPES LOTS 1-10, BLOCKS A & B", AS RECORDED IN BOOK 65 OF MAPS AND PLATS, PAGE 9, PIMA COUNTY RECORDER'S OFFICE (P.C.R.), SITUATE IN A PORTION OF THE SOUTH HALF OF SECTION 34, TOWNSHIP 11 SOUTH, RANGE 11 EAST, OF THE GILA AND SALT RIVER MERIDIAN, TOWN OF MARANA, PIMA COUNTY, ARIZONA:

DEDICATION

WE, THE UNDERSIGNED, HEREBY WARRANT THAT WE ARE ALL AND THE ONLY PARTIES HAVING ANY FEE TITLE INTEREST IN THE LAND SHOWN ON THIS PLAT, AND WE CONSENT TO THE SUBDIVISION OF THIS LAND IN THE MANNER SHOWN ON THIS PLAT.

WE HEREBY DEDICATE TO THE TOWN OF MARANA ALL RIGHTS-OF-WAY SHOWN ON THIS PLAT, INCLUDING EASEMENTS. UTILITY EASEMENTS AS SHOWN ON THIS PLAT, ARE DEDICATED TO THE TOWN OF MARANA, AND ALL PUBLIC AND PRIVATE UTILITY COMPANIES FOR THE PURPOSE OF INSTALLATION AND MAINTENANCE OF, AND ACCESS TO, PUBLIC AND PRIVATE UTILITIES AND PUBLIC SEWERS. OTHER EASEMENTS SHOWN ON THIS PLAT ARE DEDICATED TO THE TOWN OF MARANA FOR THE PURPOSE OR PURPOSES NOTED ON THIS PLAT.

WE, THE UNDERSIGNED, HEREBY ESTABLISH A CROSS ACCESS EASEMENT IN FAVOR OF THE CURRENT AND FUTURE OWNERS OF EACH RESPECTIVE LOT CREATED BY THIS PLAT FOR THE BENEFIT OF THE CURRENT AND FUTURE LOT OWNERS AND THEIR TENANTS, CUSTOMERS, INVITEES AND EMPLOYEES.

WE, THE UNDERSIGNED, OUR SUCCESSORS AND ASSIGNS, DO HEREBY HOLD THE TOWN OF MARANA, ITS EMPLOYEES, OFFICERS, AND AGENTS HARMLESS FROM AND AGAINST ANY AND ALL CLAIMS FOR DAMAGES RELATED TO THE USE OF THESE LANDS NOW AND IN THE FUTURE BY REASON OF FLOODING, FLOWAGE, EROSION, OR DAMAGE CAUSED BY WATER, WHETHER SURFACE, FLOOD, OR RAINFALL. NATURAL DRAINAGE SHALL NOT BE ALTERED, DISTURBED, OR OBSTRUCTED WITHOUT THE APPROVAL OF THE TOWN OF MARANA.

AN ASSOCIATION OF INDIVIDUAL LOT OWNERS WILL BE ESTABLISHED BY COMMON OPERATION AND RECIPROCAL EASEMENT AGREEMENT RECORDED IN DOCKET 13759 AT PAGE 2854, AND AS AMENDED IN SEQUENCE NO. 2020-2330663, IN THE OFFICE OF PIMA COUNTY RECORDER. EACH AND EVERY LOT OWNER WITHIN THE SUBDIVISION SHALL BE A MEMBER OF THE ASSOCIATION, WHICH IS RESPONSIBLE FOR THE CONTROL, MAINTENANCE, SAFETY, AND LIABILITY OF COMMON AREAS, LANDSCAPING, PRIVATE RETENTION AREAS, AND PRIVATE UTILITIES WITHIN THIS SUBDIVISION.

BY: FIDELITY NATIONAL TITLE AGENCY, INC. AN ARIZONA CORPORATION, AS TRUSTEE UNDER TRUST NO. 60,578 AND NOT IN ITS CORPORATE CAPACITY.

BY: _____
RACHEL TURNIPSEED DATE

ITS: TRUST OFFICER

ACKNOWLEDGEMENT

STATE OF ARIZONA)
) SS
COUNTY OF PIMA)

THIS DOCUMENT WAS ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 20___, BY RACHEL TURNIPSEED, TRUST OFFICER, FIDELITY NATIONAL TITLE AGENCY, INC., AN ARIZONA CORPORATION, AS TRUSTEE UNDER TRUST NO. 60,578 AND NOT IN ITS CORPORATE CAPACITY.

_____
NOTARY PUBLIC

_____
MY COMMISSION EXPIRES

BENEFICIARY

ORACLE GREENOCK, LLC AS THE BENEFICIARY OF TRUST 60,578
2440 SOUTH 34TH PLACE
TUCSON, ARIZONA 85713

SHEET INDEX	
1	COVER
2	OVERALL BOUNDARY, MONUMENT TABLE, LEGEND, PROPERTY LINE & CURVE TABLES
3	LOTS 2-6, 11, 12, A&UE CURVE TABLE
4	LOTS 7-10, 13, A&UE LINE TABLE

GENERAL NOTES

1. THE GROSS AREA OF THIS DEVELOPMENT IS 14.033 ACRES OR 611,260 SQUARE FEET, MORE OR LESS.
2. THE TOTAL NUMBER OF LOTS IS 12.
   THE TOTAL NUMBER BLOCKS IS 0.
3. THE EXISTING ZONING IS VC (VILLAGE COMMERCIAL) PER ORDINANCE NO. 2008.03
4. TOTAL MILES OF NEW PUBLIC OR PRIVATE STREETS IS 0.3 MILES.
5. MINIMUM ALLOWABLE LOT SIZE IS 0 PER ZONING DESIGNATION VILLAGE COMMERCIAL.
   MINIMUM ALLOWABLE SITE SIZE: 10 ACRES
   MAXIMUM ALLOWABLE FLOOR AREA RATION (FAR): 0.50
   MAXIMUM ALLOWABLE LOT COVERAGE: 55% OF THE LOT
6. MINIMUM LOT SIZE PROVIDED: 23,206 SF
   MAXIMUM LOT SIZE PROVIDED: 99,958 SF
   AVERAGE LOT SIZE PROVIDED: 50,938 SF
7. BUILDING HEIGHT: MAXIMUM 50'
   PRINCIPAL BUILDING: 50'-0"
   OTHER BUILDINGS: 30-0"
8. BUILDING SETBACKS:
   STREET: MINIMUM 30' FROM STREET LOT LINE
   SIDE: MINIMUM 20 FROM SIDE LOT LINE
   REAR: MINIMUM 20' FROM REAR LOT LINE
9. NO FURTHER LOT SPLITTING SHALL BE DONE WITHOUT THE WRITTEN APPROVAL OF THE TOWN OF MARANA.
10. THE AREA BETWEEN 100-YEAR FLOOD LIMITS REPRESENTS AN AREA THAT MAY BE SUBJECT TO FLOODING FROM A 100-YEAR FREQUENCY FLOOD AND ALL LAND IN THIS AREA WILL BE RESTRICTED TO USES THAT ARE COMPATIBLE WITH FLOODPLAIN MANAGEMENT AS APPROVED BY THE FLOODPLAIN ADMINISTRATOR.
11. ALL NEW AND EXISTING UTILITIES WITHIN OR CONTIGUOUS TO THE SITE SHALL BE PLACED UNDERGROUND EXCEPT ELECTRICAL TRANSMISSION LINES CARRYING 48KV OR GREATER, AND THOSE LINES WHICH CAN BE SHOWN TO EXIST IN CURRENT OR FUTURE ELECTRICAL TRANSMISSION CORRIDORS.
12. THE PROFESSIONAL ENGINEER OF RECORD SHALL CERTIFY AS TO THE FORM, LINE, AND FUNCTION OF ALL PUBLIC AND PRIVATE ROADWAYS AND DRAINAGE STRUCTURES BEFORE THE RELEASE OF ASSURANCES.
13. APPROVAL OF THIS PLAT DOES NOT AFFIRM, CERTIFY, OR APPROVE ANY LAND DIVISION THAT MAY BE CONTRARY TO STATE LAW, NOR DOES IT CERTIFY THE EXISTENCE OF, OR COMPLIANCE WITH, ANY DEED RESTRICTIONS OR EASEMENTS.
14. THIS DEVELOPMENT IS SUBJECT TO THE FOLLOWING: MARANA ORDINANCE NO. 2000.09, ADOPTED BY THE TOWN OF MARANA MAYOR AND COUNCIL ON NOVEMBER 7, 2000; MARANA ORDINANCE NO. 2005.026, ADOPTED BY THE MAYOR AND COUNCIL ON DECEMBER 6, 2005; AND, ORDINANCE NO. 2008.03, ADOPTED BY THE MAYOR AND COUNCIL ON JANUARY 22, 2008.
15. AN AVIGATION EASEMENT HAS BEEN RECORDED ON THIS PROPERTY. THIS PROPERTY IS IN THE AIRPORT INFLUENCE AREA FOR THE MARANA REGIONAL AIRPORT AND IS SUBJECT TO AIRCRAFT NOISE AND AIRCRAFT OVERFLIGHT. THE EASEMENT IS RECORDED IN DOCKET 13740, AT PAGE 1041.
16. INSTALLATION OF ITEMS SUCH AS LANDSCAPING, IRRIGATION, SIGNAGE, MONUMENTS, WALLS AND DRAINAGE IMPROVEMENTS IN THE PUBLIC RIGHTS-OF-WAY SHALL REQUIRE A PERPETUAL LICENSE AGREEMENT FOR INSTALLATION, MAINTENANCE AND INDEMNIFICATION. THE LICENSE AGREEMENT SHALL BE EXECUTED AND APPROVED BY THE TOWN OF MARANA PRIOR TO APPROVAL OF THE CLOSEOUT PACKAGE FOR THIS PROJECT.
17. THIS SUBDIVISION IS LOCATED WITHIN THE TOWN OF MARANA WATER SERVICE AREA, WHICH HAS BEEN DESIGNATED AS HAVING AN ASSURED WATER SUPPLY UNDER A.R.S. § 45-576.
18. OBJECTS AND MATERIALS WITHIN SIGHT VISIBILITY TRIANGLES SHALL BE PLACED SO AS NOT TO INTERFERE WITH A VISIBILITY PLANE DESCRIBED BY TWO HORIZONTAL LINES LOCATED 30" AND 72" ABOVE FINISHED GRADE OF THE ROADWAY SURFACE, AND SHALL CONFORM TO THE TOWN OF MARANA SUBDIVISION STREET STANDARDS.

BENCHMARK

AN ELEVATION OF 2008.29 WAS HELD ON A FOUND 2" BRASS CAP FLUSH, STAMPED "P.O.T. S'LT 790+30.53", PUBLISHED AS OPUS CONTROL POINT 12S11E_A15.
DATUM: PCDOT NAVD88

BASIS OF BEARING

SOUTH 00°29'38" EAST ALONG THE EAST LINE OF THE SOUTHEAST QUARTER OF SECTION 34, TOWNSHIP 11 SOUTH, RANGE 11 EAST.

MARANA TOWN COUNCIL APPROVAL

BY _____ P.E. _____
MARANA TOWN ENGINEER / DEVELOPMENT ENGINEER DATE

BY _____
MARANA PLANNING MANAGER DATE

BY _____
MARANA WATER DIRECTOR DATE

MARANA TOWN COUNCIL CERTIFICATION

I, _____, CLERK OF THE TOWN OF MARANA HEREBY CERTIFY THAT THIS PLAT WAS APPROVED BY THE TOWN COUNCIL OF THE TOWN OF MARANA ON THE _____ DAY OF _____, 2024.

BY _____
CLERK OF THE TOWN OF MARANA DATE

ASSURED WATER SUPPLY

A CERTIFICATE OF ASSURED WATER SUPPLY HAS BEEN RECEIVED FROM THE DIRECTOR OF WATER RESOURCES.

BY _____
MARANA WATER DIRECTOR DATE

THIRD PARTY TRUST ASSURANCES

ASSURANCES IN THE FORM OF A THIRD-PARTY TRUST FROM FIDELITY NATIONAL TITLE AGENCY, INC., AN ARIZONA CORPORATION AS TRUSTEE UNDER TRUST 60,578, AS RECORDED IN SEQUENCE NUMBER _____ IN THE OFFICE OF THE RECORDER OF PIMA COUNTY, ARIZONA HAVE BEEN PROVIDED TO GUARANTEE INSTALLATION OF REQUIRED STREET, SEWER, ELECTRIC, GAS AND WATER UTILITIES, DRAINAGE, FLOOD CONTROL AND OTHER SUBDIVISION IMPROVEMENTS MEETING ESTABLISHED MINIMUM STANDARDS OF DESIGN AND CONSTRUCTION.

BY: _____ DATE: _____
TOWN OF MARANA

LOT AREA TABLE		
LOT #	SQUARE FEET (SF) ±	ACRES (AC) ±
2	45,512	1.045
3	37,134	0.852
4	36,205	0.831
5	57,713	1.325
6	53,898	1.237
7	30,220	0.694
8	30,641	0.703
9	23,206	0.533
10	28,474	0.654
11	99,958	2.295
12	93,781	2.153
13	74,519	1.711
TOTAL	611,260	14.033

REFERENCE DOCUMENTS

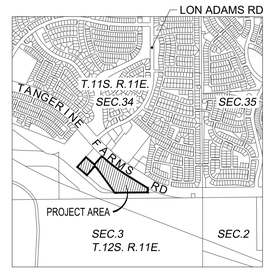
[R] THE HERITAGE PARK SHOPPES, RECORDED IN BOOK 65 OF MAPS AND PLATS, PAGE 9, PIMA COUNTY RECORDER'S OFFICE (P.C.R.)

[R1] SPECIAL WARRANTY DEED, RECORDED IN SEQUENCE NO. 2024-0940324, P.C.R.

[R2] GLADDEN FARMS, RECORDED IN BOOK 55 OF MAPS AND PLATS, PAGE 60, P.C.R.

[R3] SPECIAL WARRANTY DEED, RECORDED IN SEQUENCE NO. 2024-2970353, P.C.R.

[R4] DECLARATION OF TRUST AND AFFIDAVIT, RECORDED IN SEQUENCE NO. 2024-2950382, P.C.R.



VICINITY MAP
SECTION 34, T.11S., R.11E.
G&SR, TOWN OF MARANA
PIMA COUNTY, AZ

N

3" = 1 MILE

OWNER:

FIDELITY NATIONAL TITLE AGENCY, INC., AN ARIZONA CORPORATION AS TRUSTEE UNDER TRUST 60,578
6245 E. BROADWAY BLVD., #180
TUCSON, AZ 85711
ATTN: TRUST DEPARTMENT

SITE ADDRESS:
11381 W. TANGERINE RD.
MARANA, AZ 85653

SURVEYOR

RLF CONSULTING, LLC
2165 W. PECOS RD. SUITE 5
CHANDLER, AZ 85224
PHONE: (480) 445-9189
FAX: (480) 445-9185
CONTACT: MICHAEL E. FONDREN, R.L.S.

ENGINEER

DOWL
4686 E. VAN BUREN ST. SUITE 175
PHOENIX, AZ 85008
PHONE: (480) 753-0800
CONTACT: BRITT A. PETERSON, P.E.

SURVEY NOTES

1. ALL DISTANCES REFERENCED HEREON HAVE BEEN CALCULATED TO GROUND DISTANCES USING A COMBINED SCALE FACTOR OF 1.000137.
2. MEASUREMENTS SHOWN HEREON FALL WITHIN ACCEPTABLE TOLERANCES AS DEFINED BY THE ARIZONA MINIMUM BOUNDARY STANDARDS UNLESS OTHERWISE NOTED.
3. DISTANCES AND BEARINGS ARE MEASURED VALUES UNLESS NOTED OTHERWISE.
4. THE DESCRIPTION OF PROPERTY BOUNDARIES AND EASEMENTS SHOWN HEREON, REPRESENT THAT INFORMATION PROVIDED IN COMMITMENT FOR TITLE INSURANCE ORDER NO. FP20240822, PREPARED BY FIDELITY NATIONAL TITLE AGENCY INC., DATED OCTOBER 3, 2024 AT 7:30 A.M. ANY INFORMATION SHOWN WHICH MAY VARY FROM THE CONTENTS OF THE REPORT(S) NOTED ABOVE, REPRESENTS INFORMATION AND MEASUREMENTS FOUND DURING THE COURSE OF THE SURVEY.
5. THE PROPERTY IS LOCATED WITHIN AN AREA HAVING FLOOD ZONE "X", BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 04019C1040L, WITH A DATE OF IDENTIFICATION OF JUNE 16, 2011, REVISED APRIL 5, 2021 FOR COMMUNITY NO. 040118, IN PIMA COUNTY, STATE OF ARIZONA, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PROPERTY IS SITUATED.

PROFESSIONAL ENGINEER'S CERTIFICATION:

I HEREBY CERTIFY THAT THE FLOODPLAIN LIMITS AND EROSION HAZARD SETBACKS AS SHOWN ON THIS PLAT WERE PREPARED UNDER MY DIRECTION.

BY: _____
BRITT E. PETERSON
PROFESSIONAL ENGINEER #

DATE: _____

LAND SURVEYOR'S CERTIFICATION:

I HEREBY CERTIFY THAT THE BOUNDARY SURVEY AS SHOWN ON THIS PLAT WAS PERFORMED UNDER MY DIRECTION AND THAT ALL EXISTING AND PROPOSED SURVEY MONUMENTS AND MARKERS SHOWN ARE CORRECTLY DESCRIBED. I FURTHER CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECTION.

BY: _____ DATE: 12/02/2024
MICHAEL E. FONDREN
REGISTERED LAND SURVEYOR # 35113

RLF CONSULTING
LAND SURVEY • PLANNING • SOLUTIONS
WWW.RLFCONSULTING.COM • 480-445-9189

NO.	DATE	REVISION	BY
1	10/28	DEDICATION & NOTES REV	SJ
2	11/19	THIRD PARTY TRUST	SJ

PURPOSE: RE-PLAT

DRAWN BY: SKJ
CHECKED BY: MEF

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
35113
MICHAEL E. FONDREN
ARIZONA, U.S.A.
Date Signed 12/02/24

FINAL PLAT FOR HERITAGE PARK SHOPPES LOTS 2-13

BEING A RESUBDIVISION OF LOTS 2 THROUGH 10 OF "FINAL PLAT FOR THE HERITAGE PARK SHOPPES LOTS 1-10, BLOCKS A & B", AS RECORDED IN BOOK 65 OF MAPS AND PLATS, PAGE 9, PIMA COUNTY RECORDER'S OFFICE (P.C.R.), SITUATE IN A PORTION OF THE SOUTH HALF OF SECTION 34, TOWNSHIP 11 SOUTH, RANGE 11 EAST, OF THE GILA AND SALT RIVER MERIDIAN, TOWN OF MARANA, PIMA COUNTY, ARIZONA:

SECTION: 34
TWNSHP: 11 S.
RANGE: 11 E.

JOB NO.: 2400193

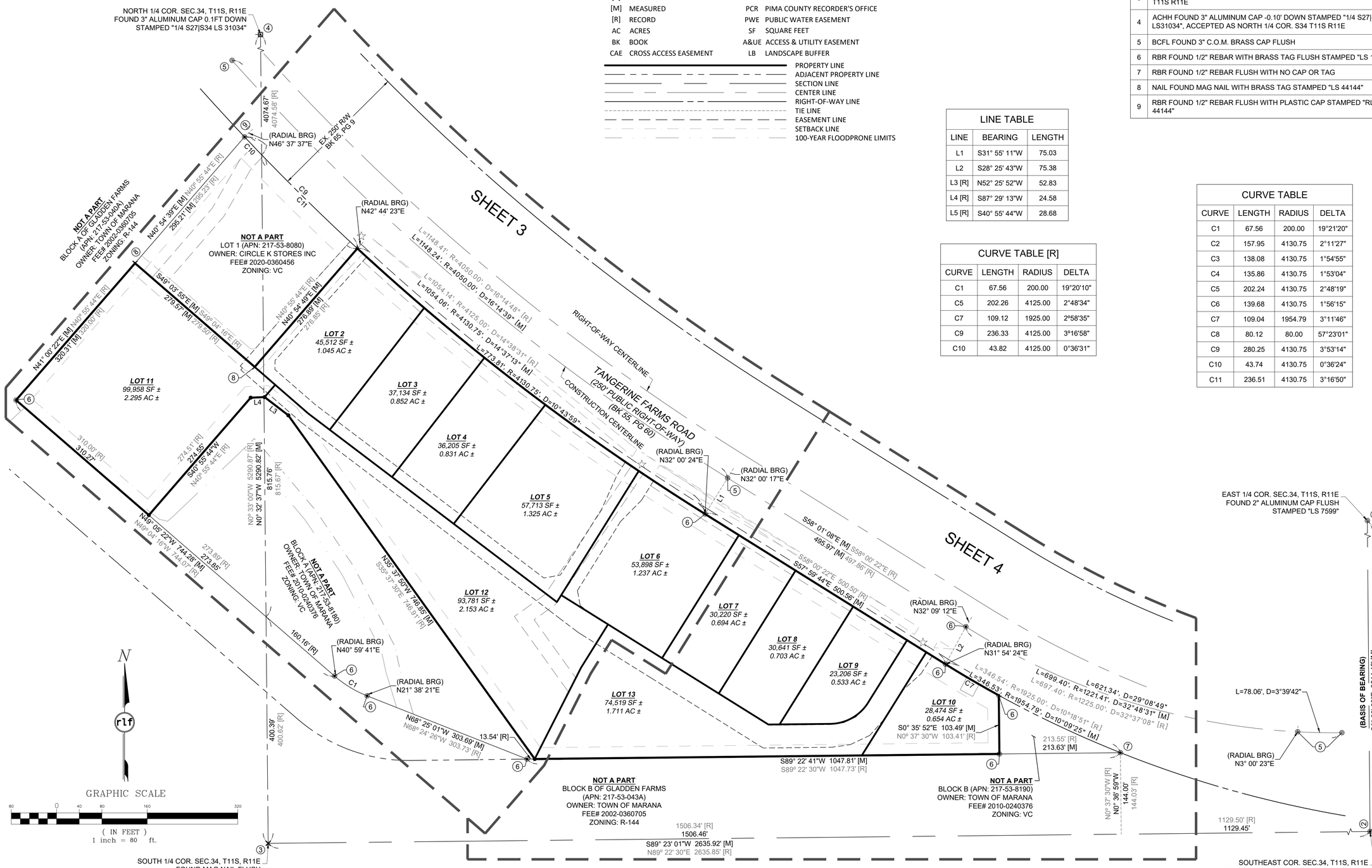
SCALE N / A

SHEET 1 OF 4

PRV2409-001
PRV-09027F

SEQUENCE NUMBER: _____

SEQUENCE NUMBER: _____



LEGEND

◎	ALUMINUM/BRASS CAP FLUSH	BRG	BEARING
⊡	ALUMINUM CAP IN HANDHOOLE	BS	BUILDING SETBACK
◉	REBAR	T.O.M.	TOWN OF MARANA
◬	PK NAIL	EHS	EROSION HAZARD SETBACK
✕	MAG NAIL	EX.	EXISTING
●	SET MONUMENT "RLS 35113"	DKT	DOCKET
☆	INGRESS/EGRESS LOCATION	LS	LANDSCAPE SETBACK
[C]	CALCULATED	NPAE	NO PUBLIC ACCESS EASEMENT
[M]	MEASURED	PCR	PIMA COUNTY RECORDER'S OFFICE
[R]	RECORD	PWE	PUBLIC WATER EASEMENT
AC	ACRES	SF	SQUARE FEET
BK	BOOK	A&UE	ACCESS & UTILITY EASEMENT
CAE	CROSS ACCESS EASEMENT	LB	LANDSCAPE BUFFER

PROPERTY LINE
ADJACENT PROPERTY LINE
SECTION LINE
CENTER LINE
RIGHT-OF-WAY LINE
TIE LINE
EASEMENT LINE
SETBACK LINE
100-YEAR FLOODPRONE LIMITS

LINE TABLE		
LINE	BEARING	LENGTH
L1	S31° 55' 11"W	75.03
L2	S28° 25' 43"W	75.38
L3 [R]	N52° 25' 52"W	52.83
L4 [R]	S87° 29' 13"W	24.58
L5 [R]	S40° 55' 44"W	28.68

CURVE TABLE [R]			
CURVE	LENGTH	RADIUS	DELTA
C1	67.56	200.00	19°20'10"
C5	202.26	4125.00	2°48'34"
C7	109.12	1925.00	2°58'35"
C9	236.33	4125.00	3°16'58"
C10	43.82	4125.00	0°36'31"

FOUND MONUMENT TABLE	
#	DESCRIPTION
1	ACFL FOUND 2" ALUMINUM CAP FLUSH STAMPED "LS 7599", ACCEPTED AS EAST 1/4 COR. SEC.34 T11S R11E
2	RBR FOUND 1/2" REBAR FLUSH WITH BRASS TAG STAMPED "RLS 22245", ACCEPTED AS SOUTHEAST COR. SEC.34 T11S R11E
3	NAIL FOUND MAG NAIL FLUSH, ACCEPTED AS SOUTH 1/4 COR. SEC.34 T11S R11E
4	ACHH FOUND 3" ALUMINUM CAP -0.10' DOWN STAMPED "1/4 S27|S34 LS31034", ACCEPTED AS NORTH 1/4 COR. S34 T11S R11E
5	BCFL FOUND 3" C.O.M. BRASS CAP FLUSH
6	RBR FOUND 1/2" REBAR WITH BRASS TAG FLUSH STAMPED "LS 17479"
7	RBR FOUND 1/2" REBAR FLUSH WITH NO CAP OR TAG
8	NAIL FOUND MAG NAIL WITH BRASS TAG STAMPED "LS 44144"
9	RBR FOUND 1/2" REBAR FLUSH WITH PLASTIC CAP STAMPED "RLS 44144"

CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	67.56	200.00	19°21'20"
C2	157.95	4130.75	2°11'27"
C3	138.08	4130.75	1°54'55"
C4	135.86	4130.75	1°53'04"
C5	202.24	4130.75	2°48'19"
C6	139.68	4130.75	1°56'15"
C7	109.04	1954.79	3°11'46"
C8	80.12	80.00	57°23'01"
C9	280.25	4130.75	3°53'14"
C10	43.74	4130.75	0°36'24"
C11	236.51	4130.75	3°16'50"

SEQUENCE NUMBER:

RLF CONSULTING
LAND SURVEY • MAPPING SOLUTIONS
WWW.RLFCONSULTING.COM • 480-456-9292

NO.	DATE	REVISION	BY
1	10/28	ADD SVT	SJ
2	11/21	REMOVE INTERNAL SVT	SJ

PURPOSE: RE-PLAT

DRAWN BY: SKJ
CHECKED BY: MEF

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
35113
MICHAEL E. FONDREN
ARIZONA, U.S.A.
12/02/24

FINAL PLAT FOR HERITAGE PARK SHOPPES LOTS 2-13

BEING A RESUBDIVISION OF LOTS 2 THROUGH 10 OF "FINAL PLAT FOR THE HERITAGE PARK SHOPPES LOTS 1-10, BLOCKS A & B", AS RECORDED IN BOOK 65 OF MAPS AND PLATS, PAGE 9, PIMA COUNTY RECORDER'S OFFICE (P.C.R.), SITUATE IN A PORTION OF THE SOUTH HALF OF SECTION 34, TOWNSHIP 11 SOUTH, RANGE 11 EAST, OF THE GILA AND SALT RIVER MERIDIAN, TOWN OF MARANA, PIMA COUNTY, ARIZONA:

SECTION: 34
TWNSHP: 11 S.
RANGE: 11 E.

JOB NO.: 2400193

SCALE 1" = 80'

SHEET 2 OF 4

PRV2409-001
PRV-09027F

SEQUENCE NUMBER:

A&UE CURVE TABLE			
CURVE	RADIUS	DELTA	LENGTH
S1	4130.75	0°14'47"	17.76
S2	4130.75	0°18'31"	22.24
S3	4130.75	0°23'45"	28.55
S4	4130.75	0°26'12"	31.49

MATCH LINE SHEET 4

EX. 125' R/W BK 65, PG 9

EX. 250' R/W BK 65, PG 9

RIGHT-OF-WAY CENTERLINE

TANGERINE FARMS ROAD
(250' PUBLIC RIGHT-OF-WAY)
(BK 55, PG 60)

CONSTRUCTION CENTERLINE

4074.67
4074.58' [R]

L=1148.41', R=4050.00', D=16°14'48" [R]
L=1148.24', R=4050.00', D=16°14'39" [M]

L=1054.14', R=4125.00', D=14°38'31" [R]
L=1054.06', R=4130.75', D=14°37'13" [M]

L=773.81', R=4130.75', D=10°43'59"

(RADIAL BRG) N46° 37' 37"E

(RADIAL BRG S1) N42° 59' 10"E

(RADIAL BRG) N42° 44' 23"E

(RADIAL BRG S2) N42° 25' 52"E

(RADIAL BRG S3) N34° 20' 24"E

(RADIAL BRG) N32° 00' 24"E

(RADIAL BRG) N32° 00' 17"E

(RADIAL BRG S4) N33° 30' 26"E

SIGHT VISIBILITY TRIANGLE

SIGHT VISIBILITY TRIANGLE

EX. 1' NPAE BK 65, PG 9

EX. 30' BS BK 65, PG 9

EX. 25' PWE BK 65, PG 9

EX. 20' BS BK 65, PG 9

EX. SHARED CIRCULATION DRIVES FEE# 2020-2330663

40' A&UE

10' LB

10' LS

60'

70.35'

118.00'

NOT A PART
LOT 1 (APN: 217-53-8080)
OWNER: CIRCLE K STORES INC
FEE# 2020-0360456
ZONING: VC

EX. 25' PWE BK 65, PG 9 TO BE EXTINGUISHED PER THIS PLAT

LOT 2
45,512 SF ±
1.045 AC ±

LOT 3
37,134 SF ±
0.852 AC ±

LOT 4
36,205 SF ±
0.831 AC ±

LOT 5
57,713 SF ±
1.325 AC ±

LOT 6
53,898 SF ±
1.237 AC ±

LOT 13
74,519 SF ±
1.711 AC ±

LOT 12
93,781 SF ±
2.153 AC ±

LOT 11
99,958 SF ±
2.295 AC ±

L=5.88', R=65.00'
Δ=5°11'02"

L=9.50', R=105.00'
Δ=5°11'02"

MATCH LINE SHEET 4

NOT A PART
BLOCK A OF GLADDEN FARMS
(APN: 217-53-040A)
OWNER: TOWN OF MARANA
FEE# 2002-0360705
ZONING: R-144

NOT A PART
BLOCK A (APN: 217-53-8180)
OWNER: TOWN OF MARANA
FEE# 2010-0240376
ZONING: VC

NOT A PART
BLOCK B OF GLADDEN FARMS
(APN: 217-53-043A)
OWNER: TOWN OF MARANA
FEE# 2002-0360705
ZONING: R-144

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

815.76'
815.67' [R]
N0° 32' 37"W 5280.82' [M]
N0° 32' 07"W 5280.87' [R]

N35° 37' 50"W 746.85' [M]
S35° 37' 30"E 746.91' [R]

N68° 25' 01"W 303.69' [M]
N68° 24' 26"W 303.73' [R]

N49° 05' 22"W 744.28' [M]
N49° 04' 16"W 744.07' [R]

S49° 03' 55"E [M] S49° 04' 16"E [R]
279.57' [M] 279.50' [R]

S49° 00' 07"E
77.40' [R]

S52° 49' 21"E 550.89'

N41° 00' 22"E [M] N40° 55' 44"E [R]
320.31' [M] 320.00' [R]

S40° 55' 44"W
274.55'
N40° 55' 44"E [R]
274.5'± [R]

N40° 54' 39"E [M] N40° 55' 44"E [R]
295.21' [M] 295.23' [R]

N40° 54' 49"E [M]
N40° 55' 44"E [R]
276.89' [M]
276.85' [R]

N37° 46' 12"E
272.38'

266.57'
S37° 46' 12"W

N37° 34' 07"E [C] N37° 34' 06"E [R]
265.34' [C] 265.16' [R]

N31° 58' 56"E [M]
N31° 58' 56"E [R]
272.91'
N31° 58' 56"E [C]
258.36' [R]

N31° 58' 56"E
256.11'

S31° 59' 38"W
90.02'

S28° 52' 52"E
169.98'

13.54' [R]

273.89' [R]
273.85'

160.16' [R]

(RADIAL BRG)
N40° 59' 41"E

(RADIAL BRG)
N21° 38' 21"E

EX. 25' EHS BK 65, PG 9

EX. 1' NPAE BK 65, PG 9

EX. 20' BS BK 65, PG 9

310.00' [R]
310.27'

48.12'
48.35' [R]

14.39'

97.53'

210.00'

N58° 00' 23"W

228.64'

136.79'

138.01'

E10 E11 E12 E13 E14 E15 E16 E17 E18 E19 E20 E21 E22 E23 E24 E25 E26 E27 E28 E29 E30 E31 E32 E33

L1 L2 L3 L4 L5

S1 S2 S3 S4

C1 C2 C3 C4 C5 C6 C9 C10 C11

NO.	DATE	REVISION	BY
1	10/28	ADD SVT	SJ
2	11/21	REMOVE INTERNAL SVT	SJ

PURPOSE:
RE-PLAT

DRAWN BY: SKJ
CHECKED BY: MEF

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
35113
MICHAEL E. FONDREN
ARIZONA U.S.A.
12/07/21

FINAL PLAT FOR HERITAGE PARK SHOPPES LOTS 2-13

BEING A RESUBDIVISION OF LOTS 2 THROUGH 10 OF "FINAL PLAT FOR THE HERITAGE PARK SHOPPES LOTS 1-10, BLOCKS A & B", AS RECORDED IN BOOK 65 OF MAPS AND PLATS, PAGE 9, PIMA COUNTY RECORDER'S OFFICE (P.C.R.), SITUATE IN A PORTION OF THE SOUTH HALF OF SECTION 34, TOWNSHIP 11 SOUTH, RANGE 11 EAST, OF THE GILA AND SALT RIVER MERIDIAN, TOWN OF MARANA, PIMA COUNTY, ARIZONA:

SECTION: 34
TWNSHP: 11 S.
RANGE: 11 E.

JOB NO.: 2400193

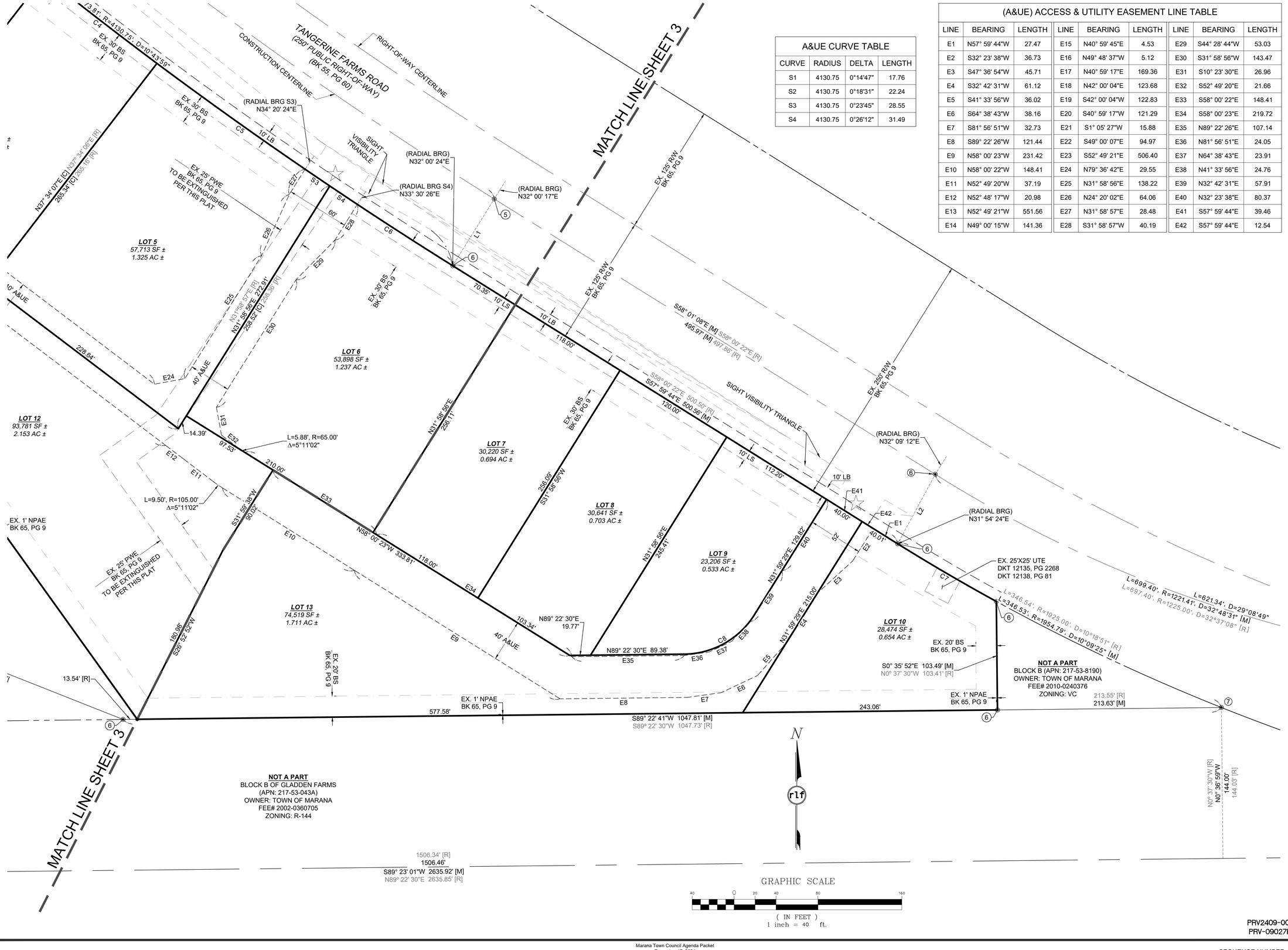
SCALE 1" = 40'

SHEET 3 OF 4

PRV2409-001
PRV-09027F

SEQUENCE NUMBER: _____

SEQUENCE NUMBER: _____



A&UE CURVE TABLE			
CURVE	RADIUS	DELTA	LENGTH
S1	4130.75	0°14'47"	17.76
S2	4130.75	0°18'31"	22.24
S3	4130.75	0°23'45"	28.55
S4	4130.75	0°26'12"	31.49

(A&UE) ACCESS & UTILITY EASEMENT LINE TABLE

LINE	BEARING	LENGTH	LINE	BEARING	LENGTH	LINE	BEARING	LENGTH
E1	N57° 59' 44"W	27.47	E15	N40° 59' 45"E	4.53	E29	S44° 28' 44"W	53.03
E2	S32° 23' 38"W	36.73	E16	N49° 48' 37"W	5.12	E30	S31° 58' 56"W	143.47
E3	S47° 36' 54"W	45.71	E17	N40° 59' 17"E	169.36	E31	S10° 23' 30"E	26.96
E4	S32° 42' 31"W	61.12	E18	N42° 00' 04"E	123.68	E32	S52° 49' 20"E	21.66
E5	S41° 33' 56"W	36.02	E19	S42° 00' 04"W	122.83	E33	S58° 00' 22"E	148.41
E6	S64° 38' 43"W	38.16	E20	S40° 59' 17"W	121.29	E34	S58° 00' 23"E	219.72
E7	S81° 56' 51"W	32.73	E21	S1° 05' 27"W	15.88	E35	N89° 22' 26"E	107.14
E8	S89° 22' 26"W	121.44	E22	S49° 00' 07"E	94.97	E36	N81° 56' 51"E	24.05
E9	N58° 00' 23"W	231.42	E23	S52° 49' 21"E	506.40	E37	N64° 38' 43"E	23.91
E10	N58° 00' 22"W	148.41	E24	N79° 36' 42"E	29.55	E38	N41° 33' 56"E	24.76
E11	N52° 49' 20"W	37.19	E25	N31° 58' 56"E	138.22	E39	N32° 42' 31"E	57.91
E12	N52° 48' 17"W	20.98	E26	N24° 20' 02"E	64.06	E40	N32° 23' 38"E	80.37
E13	N52° 49' 21"W	551.56	E27	N31° 58' 57"E	28.48	E41	S57° 59' 44"E	39.46
E14	N49° 00' 15"W	141.36	E28	S31° 58' 57"W	40.19	E42	S57° 59' 44"E	12.54

NO.	DATE	REVISION	BY
1	10/28	ADD SVT	SJ
2	11/21	REMOVE INTERNAL SVT	SJ

PURPOSE: RE-PLAT

DRAWN BY: SKJ
CHECKED BY: MEF

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
35113
MICHAEL E. FONDREN
ARIZONA U.S.A.
12/27/24

FINAL PLAT FOR HERITAGE PARK SHOPPES LOTS 2-13

BEING A RESUBDIVISION OF LOTS 2 THROUGH 10 OF "FINAL PLAT FOR THE HERITAGE PARK SHOPPES LOTS 1-10, BLOCKS A & B", AS RECORDED IN BOOK 65 OF MAPS AND PLATS, PAGE 9, PIMA COUNTY RECORDER'S OFFICE (P.C.R.), SITUATE IN A PORTION OF THE SOUTH HALF OF SECTION 34, TOWNSHIP 11 SOUTH, RANGE 11 EAST, OF THE GILA AND SALT RIVER MERIDIAN, TOWN OF MARANA, PIMA COUNTY, ARIZONA:

SECTION: 34
TWNSHP: 11 S.
RANGE: 11 E.

JOB NO.: 2400193

SCALE 1" = 40'

SHEET 4 OF 4

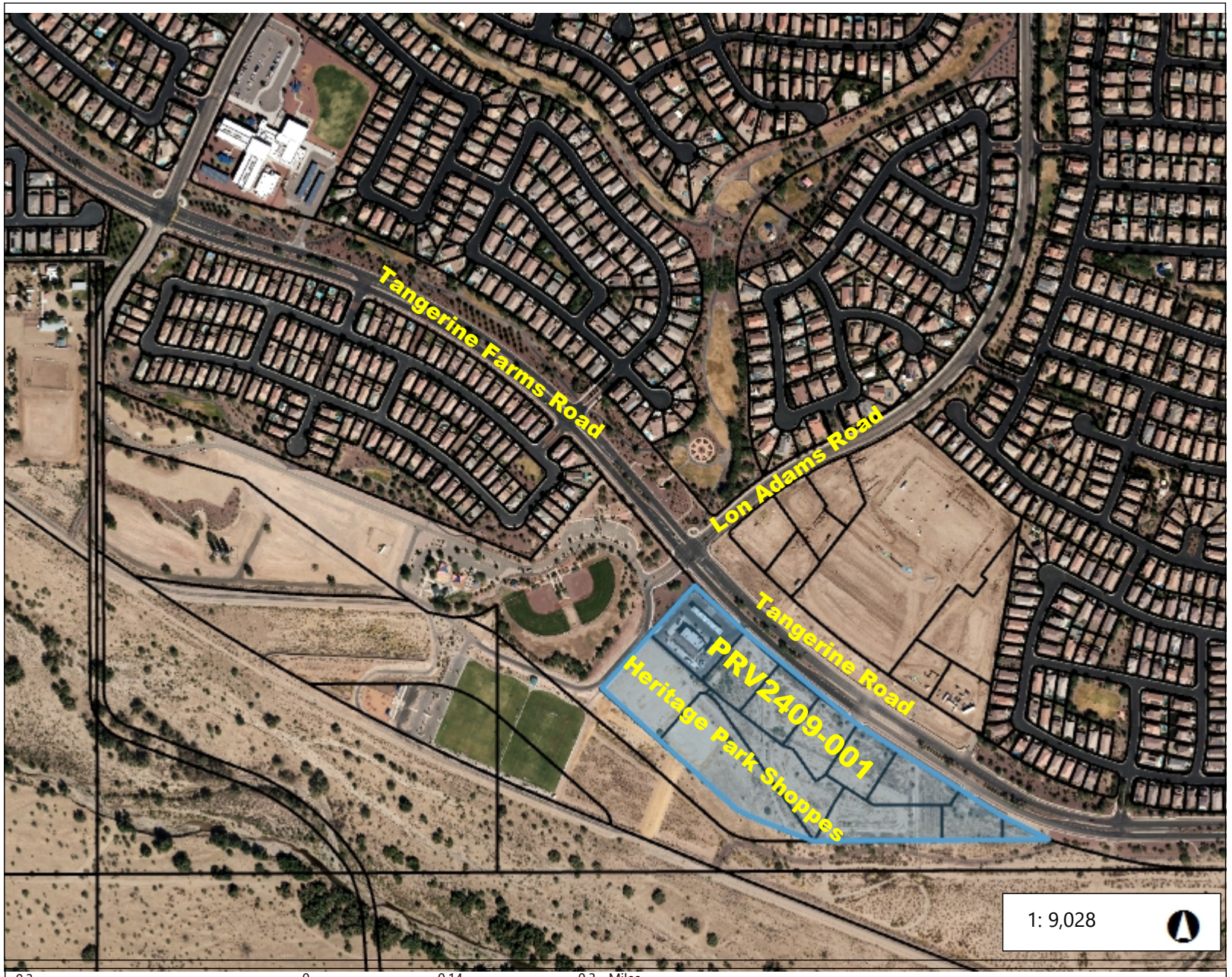
PRV2409-001
PRV-09027F

SEQUENCE NUMBER:

SEQUENCE NUMBER:

Town of Marana Planning

PRV2409-001: Final Plat for Heritage Park Shoppes, Lots 2-13





Legend

- Marana Town Limits
- Parcel Labels
- Parcels (Black)

Notes

WGS_1984_Web_Mercator_Auxiliary_Sphere

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This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

THIS MAP IS NOT TO BE USED FOR NAVIGATION

MARANA AZ

Development Services / maranaAZ.gov
11555 West Civic Center Drive / Marana, AZ 85653
Ph (520) 382-2600 / Fax (520) 382-2641

PROJECT APPLICATION

APPLICATION TYPE

❑ Annexation	❑ Development Plan	❑ Development Plan Package	❑ General Plan Amendment
❑ Rezone	❑ Minor Land Division	❑ Translational Rezone	❑ Conditional Use Permit
❑ Specific Plan	❑ Landscape Plan	❑ Native Plant Plan/Exception	❑ SWPP
❑ Variance	❑ Hydraulic Model	❑ Sewer Capacity Assurance	❑ Sign Program
☒ Plat	❑ Improvement Plan	❑ Report (Type): _____	❑ Other: _____

PROJECT INFORMATION

Project Name: Heritage Park Shoppes			
Description of Project: Final Plat of Heritage Park Shoppes			Number of Lots: 12
Parcel No.(s):			Gross Area (Acres): 14.032
Project Address: 11381 W Tangerine Rd, Marana, AZ 85653			
Ref. Project No.:			

CONTACT INFORMATION

Owner: Oracle Greenock LLC	Contact Name: Walter Hoge		
Address: 2440 S 34th Pl	City: Tucson	State: AZ	Zip: 85713
Email: WHoge@riowestinc.com	Phone No.: (520) 318-4233		
Applicant: DOWL	Contact Name: Britt Petersen		
Address: 4686 E Van Buren St, Ste 175	City: Phoenix	State: AZ	Zip: 85008
Email: BPetersen@dowl.com	Phone No.: (602) 732-7277		
Consultant/Engineer: DOWL/Britt Petersen	Contact Name: Britt Petersen		
Address: 4686 E Van Buren St, Ste 175	City: Phoenix	State: AZ	Zip: 85008
Email: BPetersen@dowl.com	Phone No.: (602) 732-7277		

APPLICANT AUTHORIZATION

By signing below, I hereby acknowledge that I have read the information provided online at maranaaz.gov/arsnotice and certify that the information set forth in this application are true and correct to the best of my knowledge. I am either the owner of the property or I have been **authorized in writing** by the owner to file this application. (If the applicant is not the owner, attach written authorization from the owner)

Britt Petersen	Britt Petersen	8/30/2024
Applicant Name (PRINT)	Signature	Date

FOR OFFICIAL USE ONLY
Revision Date 05/16/2023

Project No._____ **Date Received**_____

Council-Regular Meeting **C6**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Andrea De La Cruz, Assistant to the Town Manager

From: Andrea De La Cruz, Assistant to the Town Manager

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Resolution No. 2024-112: Relating to Intergovernmental Relations; adopting a 2025 Town of Marana Legislative Policy Priority Program and authorizing and directing those authorized to lobby on behalf of the Town of Marana to represent and pursue it (Andrea De La Cruz)

Discussion:

Each year, in preparation for the upcoming State Legislative Session, the Marana Town Council reviews and adopts a legislative priority program. This program outlines the key issues and policy areas of importance to the Town of Marana, such as state-shared revenues, protection of local control, and other matters specific to the Town's interests. By adopting this resolution, the Marana Town Council grants the necessary authority for Town staff and contracted lobbyists to advocate for these policies at the State Legislature. Town staff have conducted a thorough review of the program and have found no recommended changes. The priorities outlined in the program are aligned with anticipated legislative initiatives for the 2025 session, set to begin on January 13, 2025.

Staff will provide regular updates to the Marana Town Council throughout the session and seek additional direction as needed.

Staff Recommendation:

Staff recommends approval of the 2025 Town of Marana Legislative Policy Priority Program.

Suggested Motion:

I move to adopt Resolution No. 2024-112; adopting a 2025 Town of Marana Legislative Policy Priority Program and authorizing and directing those authorized to lobby on behalf of the Town of Marana to represent and pursue it.

Attachments

Resolution No. 2024-112

MARANA RESOLUTION NO. 2024-112

RELATING TO INTERGOVERNMENTAL RELATIONS; ADOPTING A 2025 TOWN OF MARANA LEGISLATIVE POLICY PRIORITY PROGRAM AND AUTHORIZING AND DIRECTING THOSE AUTHORIZED TO LOBBY ON BEHALF OF THE TOWN OF MARANA TO REPRESENT AND PURSUE IT

BE IT RESOLVED BY THE MAYOR AND TOWN COUNCIL OF THE TOWN OF MARANA, ARIZONA, AS FOLLOWS:

SECTION 1. Those persons authorized by the Town of Marana to lobby on its behalf and registered as such with the Secretary of the State of Arizona pursuant to Arizona Revised Statutes § 41-1231 et seq. (the "Town Lobbyists") are hereby authorized and directed, subject to the continuing supervision of the Town Manager and the Town Council, to represent and pursue the legislative, executive and intergovernmental interests of the Town of Marana by supporting legislation that embodies any of the following basic principles:

A. Protects state-shared revenues that fund essential services and strengthen local economies.
B. Maintains local control while seeking partnership between municipalities and the state.
C. Empowers the Town of Marana with sufficient flexibility to address an expanding and changing variety of local needs and conditions.
D. Establishes appropriate means to adequately compensate the Town for the costs of complying with state-mandated requirements.
E. Provides the Town with the means to cope with unfunded mandates, cost increases, population growth and escalating service requirements.
F. Enables the Town to provide public services in a more responsive, efficient, and cost effective manner.
G. Ensures that the Town has the ability to provide, manage, or operate critical infrastructure necessary to promote or maintain the health and safety of residents, preserve and direct land use, and ensure the future sustainability of the community.

SECTION 2. In addition to those basic principles set forth in Section 1 of this resolution, the Town Lobbyists are authorized and directed to pursue the following specific objectives:

A. Support the maintenance and/or restoration of existing sources of transportation funding for municipalities, including the Highway User

Revenue Fund (HURF) and Local Transportation Assistance Fund (LTAF) I and II.

B. Support sustainable policies and funding for education programs (such as preschool - 12, CTE, and post-secondary education programs) that result in a thriving and qualified Arizona workforce.
C. Support efforts to maintain, restore, and or/expand existing economic development programs and funding, as well as efforts to create new programs, tools, and funding sources that support state and local economic development initiatives centered around attraction, growth, and retention and expansion of businesses with high-wage jobs.
D. Support legislation that focuses on maintaining current or allocating additional funding for airport-related development efforts, including but not limited to economic development, capital improvements and maintenance, and funding of an air traffic control tower.
E. Support legislation to provide additional state resources to address the statewide housing shortage crisis through increased allocations to the State Housing Trust Fund and innovative public-private partnerships to create affordable workforce housing.
F. Support initiatives to enhance tourism in Southern Arizona, including efforts to attract film and various motion media productions.
G. Support initiatives that expand access to high-speed internet service digital literacy.
H. Support efforts to preserve access to water for municipal governments, including continuation of statutory responsibility to develop and manage water resources in order to provide existing and future residents with appropriate levels of service.
I. Support legislation that encourages provision of funding for high quality potable water resources and infrastructure for residents of local Arizona municipalities.
J. Support legislation that simplifies Arizona's tax codes while protecting the Town's state-shared revenue allocations, contracting sales tax, and other tax revenue sources.
K. Support efforts that develop mutually beneficial solutions to state land use issues, including expedited land acquisition processes and timely resolutions to issues regarding protected land.
L. Oppose legislation that would curtail the Town's current local zoning and permitting authority and support legislation to preserve the public's participation in the process.
M. Support legislation that encourages provision and allocation of funding for flood control, flooding mitigation, and flood control infrastructure maintenance and cleanup efforts for local municipalities.
N. Support initiatives to preserve and enhance the Town's ability to strategically plan for and respond to emergencies and properly support public safety personnel.

SECTION 3. Legislation that is inconsistent with any of the basic principles or objectives set forth in Sections 1 and 2 above should be opposed or appropriate amendments pursued.

SECTION 4. The Town Manager and staff are hereby directed and authorized to undertake all other and further tasks required or beneficial to carry out the terms, obligations and objectives of this resolution.

PASSED AND ADOPTED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, this 17th day of December, 2024.

_____
Vice Mayor Jon Post

ATTEST:

_____
David Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

Council-Regular Meeting **C7**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: George Cardieri, Real Property Manager

From: George Cardieri, Real Property Manager

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Resolution No. 2024-113: Relating to Real Estate; approving and authorizing the Town Engineer to execute a Private Drainage and Maintenance Easement Agreement in favor of D.R. Horton, Inc., granting a drainage easement and clarifying ownership and establishing maintenance obligations for the private drainage improvements to be placed on Town-owned property at Saguaro Bloom Community Park; waiving the Town's application fee for new easements (George Cardieri)

Discussion:

The Town of Marana owns and maintains the real property for the Saguaro Bloom Community Park, dedicated as Block A on the Final Block Plat for Saguaro Springs Blocks 1 thru 10 & A thru D, and Lots 1 thru 9 & A and B, as recorded in Book 58 of Maps and Plats, Page 23, in the Official Records of the Pima County Recorder's Office, Pima County, Arizona. D.R. Horton, Inc. ("DRH") is developing the Saguaro Bloom residential subdivision on the adjacent property and has submitted subdivision improvement plans to construct a private retention basin located in Common Area "A", Saguaro Bloom Blocks 5 & 6, Lots 1-146 and Common Area "A", as recorded at Sequence No. 20240330155, in the Official Records of the Pima County Recorder's Office, Pima County, Arizona. As designed, the private retention basin to be constructed by DRH will have private drainage improvements, namely drainage overflow pipes, conveying stormwater onto the Town's Saguaro Bloom Community Park property.

The proposed Private Drainage and Maintenance Easement Agreement grants DRH an easement on the Town's property for the purpose of constructing, reconstructing, operating, repairing, and maintaining drainage facilities; clarifies that DRH maintains private ownership of the drainage improvements; and establishes DRH's maintenance obligations for the private drainage improvements to be placed on the Town's property. If approved, the resolution will also waive the Town's easement application fee ($350), since DRH is agreeing to own and maintain the infrastructure, including any portion located on Town property.

Staff Recommendation:

Town staff recommends adoption of Resolution No. 2024-113, approving and authorizing the Town Engineer to execute the Private Drainage and Maintenance Easement Agreement in favor of D.R. Horton, Inc. over Saguaro Bloom Community Park property.

Suggested Motion:

I move to adopt Resolution No. 2024-113, approving and authorizing the Town Engineer to execute the Private Drainage and Maintenance Easement Agreement in favor of D.R. Horton, Inc. over Saguaro Bloom Community Park property.

Attachments

Resolution No. 2024-113

Exhibit A

MARANA RESOLUTION NO. 2024-113

RELATING TO REAL ESTATE; APPROVING AND AUTHORIZING THE TOWN ENGINEER TO EXECUTE A PRIVATE DRAINAGE AND MAINTENANCE EASEMENT AGREEMENT IN FAVOR OF D.R. HORTON, INC., GRANTING A DRAINAGE EASEMENT AND CLARIFYING OWNERSHIP AND ESTABLISHING MAINTENANCE OBLIGATIONS FOR THE PRIVATE DRAINAGE IMPROVEMENTS TO BE PLACED ON TOWN-OWNED PROPERTY AT SAGUARO BLOOM COMMUNITY PARK; WAIVING THE TOWN'S APPLICATION FEE FOR NEW EASEMENTS

WHEREAS the Town of Marana owns and maintains the real property for the Saguaro Bloom Community Park, dedicated as Block A on the Final Block Plat for Saguaro Springs Blocks 1 thru 10 & A thru D, and Lots 1 thru 9 & A and B, as recorded in Book 58 of Maps and Plats, Page 23, in the Official Records of the Pima County Recorder's Office, Pima County, Arizona; and

WHEREAS D.R. Horton, Inc. ("DRH") is developing the Saguaro Bloom residential subdivision on the adjacent property and has submitted subdivision improvement plans to construct a private retention basin located in Common Area "A", Saguaro Bloom Blocks 5 & 6, Lots 1-146 and Common Area "A", as recorded at Sequence No. 20240330155, in the Official Records of the Pima County Recorder's Office, Pima County, Arizona; and

WHEREAS the private retention basin to be constructed by DRH will have private drainage improvements, namely drainage overflow pipes, conveying stormwater onto the Town's Saguaro Bloom Community Park property; and

WHEREAS the Town and DRH desire to enter into a Private Drainage and Maintenance Easement Agreement granting DRH an easement on Town property; clarifying DRH's private ownership of the drainage improvements; and establishing maintenance obligations for the private drainage improvements; and

WHEREAS the Town Council is authorized by A.R.S. § 9-240(A) to control the finances of the town; and

WHEREAS the Town Council, via Ordinance No. 2021.008, adopted an amended comprehensive fee schedule on May 18, 2021, which was made a public record by and attached as Exhibit A to Resolution No. 2021-071; and

WHEREAS from time to time the Town Council has adopted amendments to the comprehensive fee schedule, most recently on May 21, 2024, via Ordinance 2024.013; and

WHEREAS the Town has agreed to waive the Town's customary easement application fee since DRH has agreed to own and maintain the infrastructure, including any portion located on Town property; and

WHEREAS the Mayor and Council of the Town of Marana find that the public interests are served by approving this resolution.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, AS FOLLOWS:

SECTION 1. The Private Drainage and Maintenance Easement Agreement in favor of DRH in substantially the form attached as Exhibit A and incorporated by this reference in this resolution, is hereby approved, and the Town Engineer is hereby authorized to sign the Private Drainage and Maintenance Easement Agreement and any associated documents for and on behalf of the Town of Marana.

SECTION 2. The application fee for new easements included in the Town's comprehensive fee schedule, as adopted by the Town Council and amended from time to time, is hereby waived for the easement addressed by the Private Drainage and Maintenance Easement Agreement.

SECTION 3. The Town's Manager and staff are hereby directed and authorized to undertake all other and further tasks required or beneficial to carry out the terms, obligations, and objectives of this resolution.

PASSED AND ADOPTED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, this 17th day of December 2024.

_____

Vice Mayor Jon Post

ATTEST:

_____

David Udall, Town Clerk

APPROVED AS TO FORM:

_____

Jane Fairall, Town Attorney

WHEN RECORDED, RETURN TO:

D. R. Horton, Inc.
7689 East Pinnacle Peak Road, Suite 100
Scottsdale, AZ 85255
Attn: Legal Department

PRIVATE DRAINAGE AND MAINTENANCE EASEMENT AGREEMENT

THIS PRIVATE DRAINAGE AND MAINTENANCE EASEMENT AGREEMENT (the "Easement Agreement") is dated this _____ day of _____, 2024, by and between **Town of Marana,** an Arizona municipal corporation ("Grantor") and **D.R. Horton, Inc.,** a Delaware corporation ("Grantee").

WHEREAS, Grantee desires to acquire an easement for the purpose of constructing and maintaining private drainage pipes and private drainage outfall improvements ("Drainage Facilities") on and through the property more particularly described and depicted in **Exhibit "A"** ("Easement Property"), attached hereto and incorporated herein by this reference. The Drainage Facilities and Easement Property shall be appurtenant to and for the beneficial use of the adjacent private retention basin located in Common Area "A", Saguaro Bloom Blocks 5 & 6, Lots 1-146 and Common Area "A", as recorded at Sequence No. 20240330155 in the Official Records of the Pima County Recorder's Office, Pima County, Arizona ("the Dominant Estate").

WHEREAS, Grantor is willing to grant an easement to Grantee for the aforesaid purposes on the terms and conditions set forth hereinbelow.

NOW, THEREFORE, for good and valuable consideration by Grantee to Grantor, the covenants of Grantee herein contained and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantor does hereby grant, and for and in consideration of the easement rights herein granted and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, Grantee does hereby covenant and agree as follows:

1. Grant of Easement. Grantor does hereby grant and convey unto Grantee, its successors, assigns, lessees, licensees, invitees, employees, and agents, an easement under, over, across, and through the Easement Property, for the purpose of constructing, reconstructing, operating, repairing, and maintaining Drainage Facilities.

Grantee and its successors, assigns, lessees, licensees, invitees, employees, and agents shall also have the specific rights of ingress and egress, consistent with this Easement Agreement, for the construction, reconstruction, operation, repair, and maintenance of the Drainage Facilities, consistent with the easement provided herein.

Grantee further agrees all construction, reconstruction, operation, repair, maintenance, removal and any other activities which disturb the Easement Property will be coordinated with Grantor to minimize any disruption to Grantor's property.

2. Title Encumbrances. Grantee acknowledges that the Easement Property granted herein is granted subject to the existing Right of Way and Easement recorded on September 28, 1933, in Book 50, Page 619 of Miscellaneous Records in the Official Records of Pima County, Arizona, and the amendments recorded by that certain Amendment to Right of Way and Easement recorded on August 16, 2006, in Docket 12869, Page 1523, Sequence No. 20061580380 in the Official Records of Pima County, Arizona, and by that certain Easement Amendment recorded on August 8, 2022, at Sequence No. 20222200357 in the Official Records of Pima County, Arizona.

3. Operation and Maintenance.

a. The operation and maintenance of the Drainage Facilities described herein and located within the Easement Property shall be the responsibility of the Grantee; provided, however, that Grantor shall have the right to maintain the Easement Property in the event Grantor, in its sole discretion, determines to enter the Easement Property for the operation and/or maintenance of the Easement Property as set forth in subsection b. hereinbelow.

b. If Grantee fails to adequately maintain the Drainage Facilities located within the Easement Property, and within thirty (30) days after the date of written notice from Grantor, fails to correct the maintenance problem, or fails to begin to clean, cure or correct such problem within thirty (30) days if such problem cannot be reasonably cleaned, cured or corrected within thirty (30) days, and fails to diligently prosecute such cleaning, cure or correction to completion, then Grantor may do so as provided herein. Notwithstanding the foregoing, Grantor may, in the event of an emergency, as determined by Grantor in its sole discretion, clean, cure or correct any damage caused by Grantee's failure to adequately maintain the Drainage Facilities located within the Easement Property. The Grantee shall reimburse the Grantor for the reasonable and documented cost of such maintenance within thirty (30) days after written request by Grantor.

4. Grantee Defined. The word "Grantee" as used herein, whenever the context requires or permits, shall include the owner, heirs, beneficiaries, successors, grantees and assigns of the Dominant Estate.

The burdens and benefits of this Easement Agreement shall be deemed covenants running with said lands. Notwithstanding any contrary provision in this Easement Agreement, however, any obligation under this Easement Agreement which is to be performed by the Grantee shall be enforceable only against the then owner of the Dominant Estate, and not against any such owner's predecessors in interest.

5. Covenants of Grantee. Grantee hereby represents, covenants and warrants in favor of Grantor, and its successors and assigns, as follows:

a. Grantee shall protect the Easement Property, and the adjacent lands of Grantor over which Grantee has rights of ingress and egress, from damage caused, in whole or in part, by acts or omissions of Grantee, its employees, agents, contractors, subcontractors, assigns, lessees, licensees and agents.

b. Grantee shall not cause or permit to be caused by any of its employees, agents, contractors, subcontractors, successors, assigns, lessees or licensees, any hazardous substances, as defined by the Comprehensive Environmental Response, Compensation and Liability Act of 1980 ("CERCLA"), pollutants or contaminants, as defined by CERCLA, or hazardous waste, as defined by the Resource, Conservation and Recovery Act ("RCRA"), including, but not limited to, asbestos and/or urea formaldehyde, or any pollutants or toxic pollutants as defined by the Clean Water Act, and any amendments thereto, to be dumped, spilled, released, permanently stored or deposited on, over or beneath the Easement Property or any other lands owned by Grantor.

6. Assignment of Grantee's Rights. When Grantee or its successor in interest has conveyed the Dominant Estate to the homeowner's association, this Easement Agreement, covenants, and all of Grantee's rights and obligations hereunder, shall automatically be deemed to have been assigned to and assumed by the homeowner's association without the need for the execution or recording of any additional instrument.

7. Retained Rights. Grantor shall have all rights to the Easement Property not granted hereby.

8. Miscellaneous.

a. Except as otherwise expressly provided herein, all provisions herein contained, including the benefits, burdens and covenants, are intended to run with the land and shall be binding upon and inure to the benefit of the respective successors and assigns of the parties hereto.

b. This Easement Agreement constitutes all of the agreements, understandings and promises between the parties hereto, with respect to the subject matter hereof.

c. This Easement Agreement shall be of no force and effect until this Easement Agreement is duly and validly executed by all parties hereto and has been filed in the Official Records of Pima County, Arizona.

d. No breach of any provision herein contained shall entitle the other party to cancel, rescind or otherwise terminate this Easement Agreement. Except as aforesaid, any alleged, actual or threatened breach of either party's obligations hereunder

shall entitle the other party to exercise any and all rights and remedies available to it at law or in equity; all such rights and remedies being intended to be cumulative, and non-exclusive and exercisable singularly, consecutively or concurrently with any others; provided, however, any claim for damages shall be limited to the non-defaulting party's actual damages and the non-defaulting party shall not seek, and hereby waives any right to receive, speculative, consequential, lost profits, punitive, exemplary or any similar damages due to the defaulting party's default hereunder.

e. If any provision of this Agreement shall be judicially determined to be invalid, illegal, or unenforceable in any respect, the remaining provisions hereof shall not be affected thereby and shall continue in full force and effect.

f. This Agreement shall be governed by, construed and enforced in accordance with, the laws of the State of Arizona applicable to agreements made and to be formed wholly therein.

[*SIGNATURE PAGE FOLLOWS*]

IN WITNESS WHEREOF, the parties hereto have executed this Easement Agreement as of the date and year first above written.

"Grantor"	"Grantee"
Town of Marana, an Arizona municipal corporation	D.R. Horton, Inc., a Delaware corporation
By:_____ Fausto Burruel, Town Engineer	By:_____ Blake Davis, Vice President
Approved as to Form:	Title Security Agency, LLC, a Delaware limited liability company, as Trustee under Trust No. 201434-T, and not in its corporate capacity and not otherwise
By:_____ Jane Fairall, Town Attorney	By:_____ Rhonda Tatro, Trust Officer

STATE OF ARIZONA)
ss
County of Pima)

The foregoing instrument was acknowledged before me on_____, 2024, by Blake Davis, the Vice President of D.R. HORTON, INC., a Delaware corporation, on behalf of the corporation.

(Seal)

_____
Notary Public

STATE OF ARIZONA)
ss
County of Pima)

The foregoing instrument was acknowledged before me on_____, 2024, by Ronda Tatro, the Trust Officer of TITLE SECURITY AGENCY, LLC, a Delaware limited liability company, as trustee under Trust No. 201434-T, and not in its corporate capacity.

(Seal)

_____
Notary Public

STATE OF ARIZONA)
SS
County of Pima)

The foregoing instrument was acknowledged before me on this the _____ day of _____, 2024, by Fausto Burruel, Town Engineer of the Town of Marana, an Arizona municipal corporation.

(Seal)

_____
Notary Public

Exhibit A

Legal Description of Exhibit "A"

A Private Drainage and Maintenance Easement located in a portion of Saguaro Bloom Block A, A.P.N No. 216-40-0280, as shown in Sequence 20040700643, situated in Section 18, Township 12 South, Range 12 East, Gila and Salt River Meridian, Pima County, Arizona, more particularly described as follows:

COMMENCING at a found 2 inch brass cap survey monument on the centerline of Saguaro Peaks Boulevard Bk. 58, Pg. 23, from which a found brass cap monument bears North 15° 13' 46" East, 1541.20 feet distant;

THENCE, departing of said point along the centerline of said Saguaro Peaks Boulevard, North 15° 13' 46", a distance of 439.97 feet;

THENCE, departing said road centerline of Saguaro Peaks Boulevard, North 38° 47' 18" West, a distance of 881.42 feet to the **POINT OF BEGINNING;**

THENCE, South 38° 04' 57" West, a distance of 73.00 feet;

THENCE, North 51° 55' 03" West, a distance of 30.00 feet;

THENCE, North 38° 04' 57" East, a distance of 80.00 feet;

THENCE, South 38° 47' 18" East, a distance of 30.81 feet to the **POINT OF BEGINNING** as shown of "Exhibit A" attached hereto and made a part hereof.

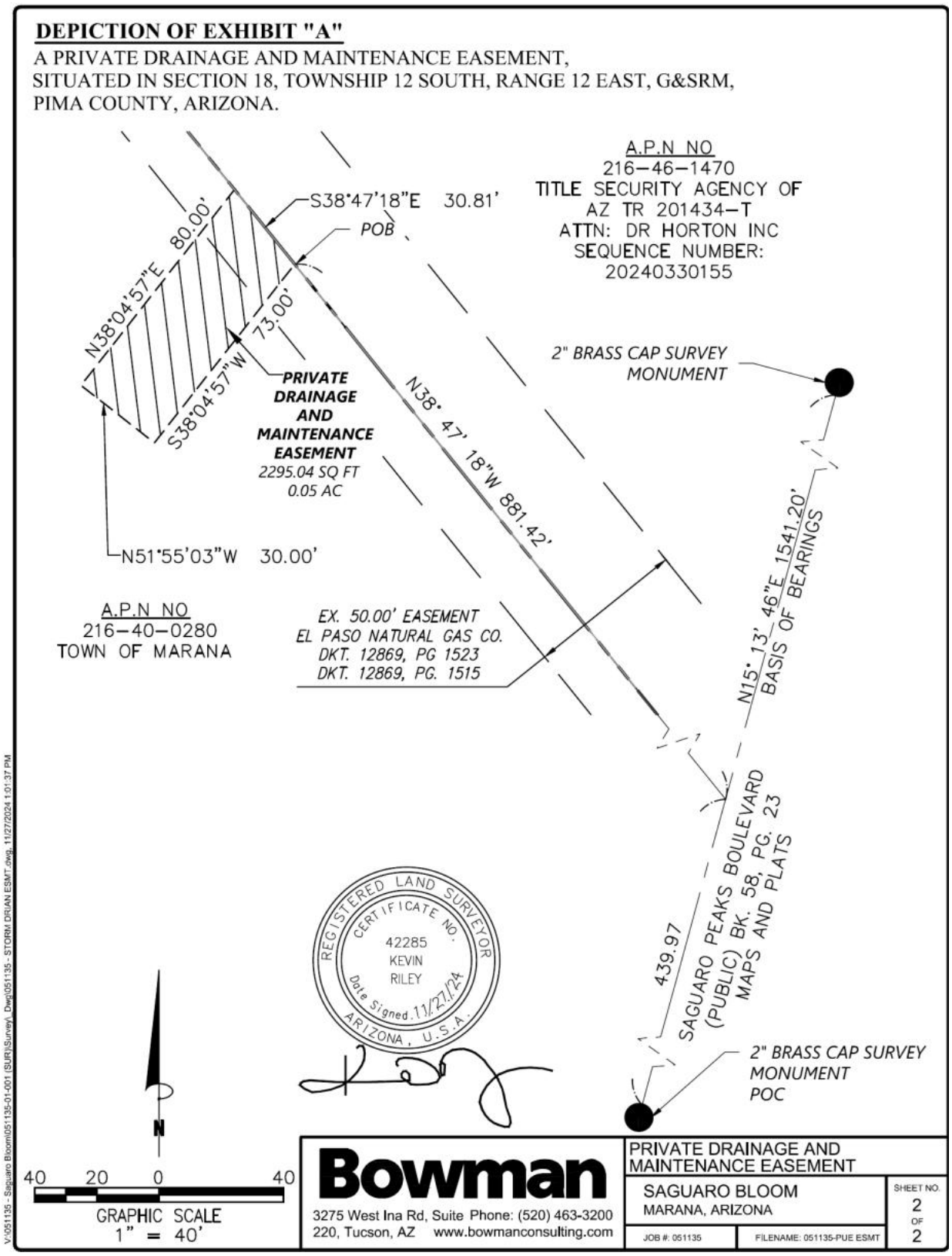
Said easement containing 2295.04 square feet, 0.05 ac.



3275 W Ina Rd, Suite 220, Tucson, Arizona 85741
520.463.3200
bowman.com

S18 / T12S / R12E	SAGUARO BLOOM BLOCKS 5 & 6
Parcel No. 216-40-0280	Private Drainage and Maintenance Easement Agreement

Exhibit "A" continued



S18 / T12S / R12E	SAGUARO BLOOM BLOCKS 5 & 6
Parcel No. 216-40-0280	Private Drainage and Maintenance Easement Agreement

Council-Regular Meeting **C8**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Stefanie Boe, Tourism and Marketing Manager

From: Stefanie Boe, Tourism and Marketing Manager

Date: December 17, 2024

Strategic Plan Focus Area:
Thriving Commerce

Subject: Resolution No. 2024-114: Relating to Tourism; approving and authorizing the Mayor to execute an agreement between the Town of Marana and Tucson Bicycle Classic regarding participation in and financial support of the time trial stage of the Tucson Bicycle Classic (Stefanie Boe)

Discussion:

As part of the Thriving Commerce focus area of the Strategic Plan, the Tourism and Marketing Manager has been identifying ways to promote the outdoor recreation opportunities in the town and gain national attention for the scenic open spaces that set Marana apart from other areas of the region.

Tucson Bicycle Classic is a nonprofit corporation responsible for the promotion and production of the Tucson Bicycle Classic event, a three-day bicycle stage race in the Tucson metro area consisting of a time trial stage ("Time Trial") on the first day in Marana, a road race stage on the second day in Sahuarita, and a circuit race stage on the third day in Oro Valley.

In 2024, the Time Trial event in Marana was very successful with more than 600 riders participating, representing 47 states and 6 nations, an increase over the 2023 race. 84% of riders surveyed indicated their desire to participate in the three-stage race in 2025, bringing revenue to the town through hotel stays, dining and shopping. Additionally, Discover Marana and the Town of Oro Valley were recognized for Best Regional Partnership by the Arizona Office of Tourism for this event and the Project

Echelon Fondo ride.

For 2025, Marana Parks and Recreation has partnered with the organizer to hold the event on the new section of the Chuck Huckelberry Loop, bringing a spotlight on the town's multi-year effort to connect Northern Marana to the shared use path around Pima County. This unique opportunity continues to showcase Marana, Oro Valley and all of Northern Pima County as a destination for riders.

As part of the agreement with the Tucson Bicycle Classic, the Town will contribute $10,000 towards the Time Trial, to be held Friday, February, 21, 2025. The Discover Marana brand will be marketed and promoted through social media, video and media coverage before, during and after the Time Trial to bring attention to the town with a global audience of potential visitors and community members alike.

Financial Impact:

Fiscal Year:	2025
Budgeted Y/N:	Y
Amount:	$10,000.00

The funding for this event is available from the Bed Tax fund.

Staff Recommendation:

Staff recommends approval of the agreement.

Suggested Motion:

I move to adopt Resolution No. 2024-114, approving and authorizing the Mayor to execute an agreement between the Town of Marana and Tucson Bicycle Classic regarding participation in and financial support of the time trial stage of the Tucson Bicycle Classic

---

Attachments

Resolution No. 2024-114

Exhibit

MARANA RESOLUTION NO. 2024-114

RELATING TO TOURISM; APPROVING AND AUTHORIZING THE MAYOR TO EXECUTE AN AGREEMENT BETWEEN THE TOWN OF MARANA AND TUCSON BICYCLE CLASSIC REGARDING PARTICIPATION IN AND FINANCIAL SUPPORT OF THE TIME TRIAL STAGE OF THE TUCSON BICYCLE CLASSIC

WHEREAS on September 6, 2022, the Marana Town Council adopted the Town of Marana Strategic Plan V, identifying "Thriving Commerce" as one of its five focus areas, with the goal to "Expand Marana's thriving tourism industry by promoting its heritage, cultural resources, scenic open spaces, and signature events"; and

WHEREAS Tucson Bicycle Classic ("TBC") is a nonprofit corporation responsible for the promotion and production of the Tucson Bicycle Classic event, a three-day bicycle stage race in the Tucson metro area consisting of a time trial stage on the first day ("Time Trial"), a road race stage on the second day, and a circuit race stage on the third day; and

WHEREAS the Town and TBC desire to enter into an agreement regarding the Town's participation in and financial support of the Time Trial stage of the Tucson Bicycle Classic; and

WHEREAS the Town Council finds that the agreement addressed by this resolution is in the best interests of the Town of Marana and its citizens.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, as follows:

SECTION 1. The agreement between the Town of Marana and TBC for the Time Trial stage of the Tucson Bicycle Classic, attached to and incorporated by this reference in this resolution as Exhibit A, is hereby approved and the Mayor is hereby authorized to execute it for and on behalf of the Town of Marana.

SECTION 2. The Town's Manager and staff are hereby directed and authorized to undertake all other and further tasks required or beneficial to carry out the terms, obligations, and objectives of this resolution.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this 17th day of December, 2024.

Vice Mayor Jon Post

ATTEST:

David L. Udall, Town Clerk

APPROVED AS TO FORM:

Jane Fairall, Town Attorney

2025 Tucson Bicycle Classic Race Agreement

Marana Time Trial

This Agreement (this "Agreement") is entered into by and between the Town of Marana, an Arizona municipal corporation (the "Town") and Tucson Bicycle Classic, an Arizona nonprofit corporation ("TBC"). The Town and TBC are sometimes collectively referred to in this Agreement as the "Parties," each of which is sometimes individually referred to as a "Party."

Recitals

A. On September 6, 2022, the Marana Town Council adopted the Town of Marana Strategic Plan V, identifying "Thriving Commerce" as one of its five focus areas, with the goal to "Expand Marana's thriving tourism industry by promoting its heritage, cultural resources, scenic open spaces, and signature events."

B. TBC is a nonprofit corporation responsible for the promotion and production of the annual Tucson Bicycle Classic, which is a three-day bicycle stage race in the Tucson metro area consisting of a time trial stage (the "Time Trial") on the first day, a road race stage on the second day and a circuit race stage on the third day (the "Circuit Race").

C. The Town and TBC desire to enter into an agreement regarding the Town's participation in and financial support of the Time Trial that will be held on Friday, February 21, 2025 involving the participation of racers and volunteers.

D. The Town finds that the benefits to the Town resulting from TBC's promotion and production of the Time Trial in Marana have a value at least equal to the fair market value of the financial support to be provided to TBC by the Town pursuant to this Agreement.

Agreement

Now, therefore, based on the foregoing recitals, which are incorporated here as the intent of the Parties in entering into this Agreement, and in consideration of the terms of this Agreement, the Parties hereby agree as follows:

1. *Financial support to be provided by the Town.* Pursuant to the terms and conditions of this Agreement, including without limitation paragraph 22 (*Termination*) below, the Town shall provide financial support of $10,000 to TBC for the Time Trial within 30 days of the Effective Date of this Agreement.

2. *Fee Waiver*. The Town will waive special event permit fees affiliated with the Time Trial.

3. *Event promotion by the Town*. In addition to the financial support provided pursuant to paragraph 1 above, the Town shall also promote the events through the Town's media/communication outlets.

4. *Benefits to be provided to the Town.* In exchange for the financial support described in paragraph 1 above, TBC shall provide to the Town the benefits and services described in Exhibit A.

5. *Co-marketing with the Town of Oro Valley*. The Circuit Race will be held in the Town of Oro Valley on Sunday, February 23, 2025. The Parties acknowledge and agree it is in their mutual interests that some of the marketing efforts contemplated in this Agreement will be done jointly with the Town of Oro Valley to promote both the Time Trial and the Circuit Race.

6. *Books; taxes.* TBC shall make available to the Town for inspection any books, ledgers or statements kept by TBC regarding activities conducted pursuant to this Agreement. TBC shall be liable for all taxes applicable to the proceeds received by TBC under this Agreement, if any.

7. *Effective date and duration.* This Agreement shall be effective as of the signature date of the last Party to sign this Agreement (the "Effective Date"), and shall remain in effect until April 1, 2025, unless sooner terminated pursuant to paragraph 22 below. Notwithstanding the foregoing, the indemnification provisions set forth in paragraph 11 below shall survive termination of this Agreement.

8. *Relationship of the Parties.* In the performance of the services contemplated by this Agreement, TBC shall act solely as an independent contractor, and nothing expressed or implied in this Agreement shall be construed to create the relationship of employer and employee, partnership, principal and agent, or to create a joint venture between the Town and TBC.

9. *Use of names, trademarks, logos and seal.* The Town grants TBC a limited license to use, at no cost, the Town's Discover Marana name and logo in TBC's performance of the services described in this Agreement. TBC shall not use the Town's Discover Marana name and logo for any other purpose or use. TBC shall not modify, revise or alter the Town's Discover Marana logo in any way. TBC grants the Town a limited license to use, at no cost, TBC's name, trademarks, and logos in the Town's performance of the services described in this agreement. The Town shall not use TBC's name, trademarks, and logos for any other purpose or use. The Town shall not modify, revise or alter TBC's trademarks and logos in any way.

10. *Insurance*. During the term of this Agreement, TBC shall maintain insurance from carriers acceptable to the Town with the following required minimum coverages and limits, and the Town shall be named as an additional insured on the commercial general liability insurance policy for the purposes of TBC's activities in relation to the events covered by this Agreement:

Commercial General Liability: U.S. $3,000,000 per occurrence
U.S. $3,000,000 aggregate
Business Auto Liability: U.S. $1,000,000 combined single limit

a. TBC shall deliver one or more certificates of insurance evidencing coverage as described in this paragraph to the Town by no later than January 15, 2025, and prior to commencing any activities pursuant to this Agreement. TBC shall also deliver new certificates of insurance each time the policy(s) is updated. All certificates shall be delivered to the Town's Legal Department.

b. As an additional insured on TBC's commercial general liability policy, the Town shall be provided coverage for any liability arising out of operations performed in whole or in part by or on behalf of TBC. TBC shall deliver additional insured endorsement(s) along with the certificate(s) of insurance required by subparagraph (a) above. The additional insured endorsement form identification number shall also be included within the description box on the certificate of insurance and the applicable policy number shall be included on the endorsement.

c. All policies required pursuant to this paragraph shall be endorsed to contain a waiver of transfer of rights of recovery (subrogation) against the Town, its agents, officers, officials, and employees for any claims arising out of TBC's work or service. Endorsements evidencing this waiver of subrogation shall be provided to the Town along with all other insurance documentation required by this paragraph.

d. The certificate(s) shall also stipulate that the insurance afforded the Town shall be primary insurance and that any insurance carried by the Town, its agents, officials or employees shall be excess and not contributory insurance to that provided by TBC. Coverage provided by TBC shall be primary insurance with respect to all other available sources.

e. The insurance requirements specified in this paragraph may not be changed or modified except by written agreement signed by both Parties.

f. During the term of this Agreement TBC shall give the Town at least 30 calendar days' written notice prior to a planned cancellation or reduction of any coverage required by this paragraph. TBC shall give the Town immediate notice of any other cancellation or reduction of any coverage required by this paragraph. Cancellation or reduction of any coverage required by this paragraph is grounds for termination of this Agreement by the Town.

11. *Indemnification.* TBC agrees to defend, save, hold harmless, and indemnify the Town, its officials, employees, agents, successors, and assigns from and against any and all manner of claims, suits, lawsuits, action or actions, causes or causes of action, liabilities, damages, and other claims and demands of whatsoever nature or kind, in law or in equity, in tort or in contract, or otherwise caused by or resulting from TBC's errors, omissions, or negligent acts in the performance of services pursuant to this Agreement, or the errors, omissions or negligent acts of any party TBC contracts with in the

performance of services pursuant to this Agreement, anyone directly or indirectly employed by TBC, or anyone for whose acts TBC may be liable.

12. *Notices.* All notices, requests, demands, and other communications under this Agreement shall be in writing and shall be deemed given if personally delivered or mailed, certified mail, return receipt requested, to the following addresses:

If to the Town, to:

TOWN OF MARANA
Attn: Stefanie Boe, Tourism and Marketing Manager
11555 W. Civic Center Drive – Bldg. A3
Marana, AZ 85653

With a copy to:

TOWN OF MARANA
Attn: Town Attorney
11555 W. Civic Center Drive – Bldg. A3
Marana, AZ 85653

If to TBC, to:

TUCSON BICYCLE CLASSIC
Attn: Marc Colbert, Executive Director
36971 S. Golf Course Dr.
Tucson, Arizona 85739
marccolbert@comcast.net

Either Party may from time to time designate any other address for this purpose by written notice to the other Party. All notices under this Agreement shall be deemed received upon actual receipt.

13. *Entire agreement.* This Agreement constitutes the entire agreement and understanding of the Parties pertaining to the subject matter of the Agreement and supersedes all offers, negotiations, and other agreements of any kind. All prior and contemporaneous agreements, representations and understandings of the Parties, oral or written, are superseded and merged in this Agreement.

14. *Authority to execute agreement*. The individuals executing this Agreement hereby represent that they have full right, power, and authority to execute this Agreement on behalf of their respective Parties.

15. *Force majeure.* Notwithstanding any other term, condition or provision of this Agreement to the contrary, if any Party to this Agreement is precluded from satisfying or fulfilling any duty or obligation imposed upon it due to labor strikes, material shortages, war, civil disturbances, weather conditions, natural disasters, acts of God, or other events beyond the control of such Party, the time period provided herein for the performance by such Party of such duty or obligation shall be extended for a period equal to the delay occasioned by such events.

16. *Immigration laws.* TBC warrants that it will at all times comply with all federal immigration laws and regulations that relate to its employees (if any) and with Arizona

Revised Statutes section (A.R.S. §) 23214 (A). TBC acknowledges that pursuant to A.R.S. § 414401 and effective September 30, 2008, a breach of this warranty is a material breach of this Agreement subject to penalties up to and including termination of this Agreement, and that the Town retains the legal right to inspect the papers of any employee (if any) who performs work or services pursuant to this Agreement to ensure compliance with this warranty.

17. *Israel Boycott Divestments*. TBC certifies that it is not currently engaged in and agrees for the duration of this Agreement to not engage in, a boycott of Israel as defined by A.R.S. §35-393.

18. Pursuant to and in compliance with A.R.S. § 35-394, the Contractor hereby agrees and certifies that it does not currently, and agrees for the duration of this Contract that the Contractor will not, use: (1) the forced labor of ethnic Uyghurs in the People's Republic of China; (2) any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China; or (3) any Contractors, subcontractors or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China. If the Contractor becomes aware during the term of the contract that the company is not in compliance with this written certification, the company shall notify the Town within five business days after becoming aware of the noncompliance. If the Contractor does not provide the Town with a written certification that the Contractor has remedied the noncompliance within 180 days after notifying the Town of the noncompliance, this Contract terminates, except that if the contract termination date occurs before the end of the remedy period the Contract terminates on the Contract termination date. The Contractor also hereby agrees to indemnify and hold harmless the Town, its officials, employees, and agents from any claims or causes of action relating to the Town's action based upon reliance upon this representation, including the payment of all costs and attorney fees incurred by the Town in defending such as action.

19. *Conflict of interest.* This Agreement is subject to the provisions of A.R.S. § 38511, which provides for termination in certain instances involving conflicts of interest.

20. *Attorneys' fees.* The prevailing Party in a civil action to enforce this Agreement shall be entitled to recover from the other Party, in addition to any relief to which such prevailing Party may be entitled, all costs, expenses and reasonable attorneys' fees incurred in connection with that civil action.

21. *Governing law.* This Agreement shall be construed in accordance with the laws of the State of Arizona.

22. *Termination.*

a. This Agreement shall be terminated without further action by the Parties if the Time Trial, as described in this Agreement, is cancelled for any reason. If the event is cancelled, TBC shall refund to the Town all financial support provided by the Town to TBC pursuant to paragraph 1 of this Agreement within 30 days of cancellation of the event.

b. This Agreement may be terminated without further liability on 30 days' prior written notice by either Party upon a default by the other Party of any covenant or term of this Agreement, which default is not cured within 30 days of receipt of written notice of default, except that this Agreement shall not be terminated if the default cannot reasonably be cured within such 30-day period and the defaulting party has started to cure the default within the 30-day period and diligently pursues the cure to completion; provided that the grace period for any monetary default is ten days from receipt of written notice.

c. This Agreement may be terminated by mutual written agreement of the Parties.

23. *Miscellaneous.*

a. This Agreement may not be modified except in a writing signed by both of the Parties.

b. The captions and section numbers appearing in this Agreement are inserted only as a matter of convenience, and do not define, limit, construe or describe the scope or intent of such sections or articles of this Agreement.

c. This Agreement may be executed in multiple counterparts, each of which shall, for all purposes, be deemed an original and all of which, taken together, shall constitute one and the same agreement.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the Parties have duly executed this instrument below.

The "Town":

TOWN OF MARANA, an Arizona municipal corporation

_____

Jon Post, Vice Mayor

Date:_____

ATTEST:

_____

Town Clerk Date

APPROVED AS TO FORM:

_____

Town Attorney Date

"TBC":

TUCSON BICYCLE CLASSIC, an Arizona nonprofit corporation

_____

Marc Colbert, Executive Director

Date_____

Federal I.D. # 87-2350662

STATE OF ARIZONA)
) ss.
County of Pima)

The foregoing instrument was acknowledged before me this _____ day of _____, 202__ by Marc Colbert, Executive Director of TUCSON BICYCLE CLASSIC, an Arizona nonprofit corporation, on behalf of the corporation.

(Seal)

_____

Notary Public

Exhibit A

Benefits and Services Provided by TBC to the Town

1.	Naming rights for Time Trial – "**Marana Time Trial**"	$4000 value
2.	Mayor or another dignitary has the first right of refusal to start the Time Trial	
3.	Town of Marana's Discover Marana name and logo on Time Trial map and on TBC website sponsor page	$500 value
4.	Link from TBC website to the Town of Marana's Discover Marana Website	$500 value
5.	Town of Marana's Discover Marana logo prominent on official TBC winner's jerseys, event t-shirts and similar items	$3500 value
6..	Joint press release with the Town of Oro Valley announcing the Time Trial and the Circuit Race	$1000 value
7.	If desired, joint press conference with the Town of Oro Valley announcing the Time Trial and the Circuit Race	$1000 value
8.	Town of Marana's Discover Marana name and logo displayed prominently on signage/scrim at the race venue	$500 value
9.	Up to four "eblast" call outs to TBC distribution list (over 5000)	$2000 value
10.	10 or more social media posts highlighting Discover Marana and the Time Trial	$1500 value
11.	School visit(s) in Marana by pro cyclists	
12.	One or more YouTube videos created by professional cyclist that highlight the Town of Marana and the Town of Oro Valley as desirable cycling destinations	$1000 value
13.	Post race week – participant survey to collect feedback from participants to improve future races and use in future marketing	$1000 value
14.	License to use professional event photographs of the Time Trial Stage or other stages	$1000 value

Council-Regular Meeting **C9**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Stefanie Boe, Tourism and Marketing Manager

From: Stefanie Boe, Tourism and Marketing Manager

Date: December 17, 2024

Strategic Plan Focus Area:
Thriving Commerce

Subject: Resolution No. 2024-115: Relating to Tourism; approving and authorizing the Mayor to execute an agreement between the Town of Marana and Project Echelon, Ltd. regarding participation in and financial support of the 2024 Project Echelon Training Weekend, including a Gran Fondo Ride for Veterans (Stefanie Boe)

Discussion:

As part of the Thriving Commerce focus area of the Strategic Plan, the Tourism and Marketing Manager has been identifying ways to promote the outdoor recreation opportunities in the town and gain national attention for the scenic open spaces that set Marana apart from other areas of the region.

Project Echelon is a UCI Continental Professional Cycling Team that educates, equips and empowers veterans and their communities through physical activity and self discovery. As an organization, Project Echelon removes the barriers to healing by fostering relationships between veterans, their communities, and professional athletes through mentorship, structure, and the promotion of long-term health and well-being through endurance sport. As a Purple Heart Town, this mission matches the vision of the Town of Marana to support its Veteran community.

Project Echelon held a Gran Fondo Ride (a non-competitive ride of either 75, 55, or 30 miles) to the Marana and Oro Valley area in 2024. After a successful partnership, bringing several hundred riders to the area, Project Echelon plans to hold a training weekend and Fondo ride again, bringing revenue to the town through hotel and

vacation rentals, dining, and shopping.

This unique opportunity will showcase Marana as a destination for riders, both pro and amateur. As part of the agreement with Project Echelon, the Town will contribute $6,000 towards the training weekend to be held April 2-7th, 2025. The Discover Marana brand will be marketed and promoted through social media, video and media coverage before, during and after the event to bring attention to the town with a global audience of potential visitors and community members alike.

Financial Impact:

Fiscal Year:	2025
Budgeted Y/N:	N
Amount:	$6,000

Staff identified savings in the FY2025 Tourism advertising budget to fund this agreement.

Staff Recommendation:

Staff recommends approval of the agreement.

Suggested Motion:

I move to adopt Resolution No. 2024-115, approving and authorizing the Mayor to execute an agreement between the Town of Marana and Project Echelon, Ltd. regarding participation in and financial support of the 2024 Project Echelon Training Weekend, including a Gran Fondo Ride for Veterans.

Attachments

Resolution No. 2024-115
Exhibit

MARANA RESOLUTION NO. 2024-115

RELATING TO TOURISM; APPROVING AND AUTHORIZING THE MAYOR TO EXECUTE AN AGREEMENT BETWEEN THE TOWN OF MARANA AND PROJECT ECHELON, LTD. REGARDING PARTICIPATION IN AND FINANCIAL SUPPORT OF THE 2024 PROJECT ECHELON TRAINING WEEKEND, INCLUDING A GRAN FONDO RIDE FOR VETERANS

WHEREAS on September 6, 2022, the Marana Town Council adopted the Town of Marana Strategic Plan V, identifying "Thriving Commerce" as one of its five focus areas, with the goal to "Expand Marana's thriving tourism industry by promoting its heritage, cultural resources, scenic open spaces, and signature events"; and

WHEREAS Project Echelon, Ltd. ("PE") is a nonprofit corporation responsible for the promotion and production of the Project Echelon Training Weekend, including a Gran Fondo Ride for Veterans occurring April 2-7, 2025; and

WHEREAS the Town and PE desire to enter into an agreement regarding the Town's participation in and financial support of the Fondo; and

WHEREAS the Town Council finds that the agreement addressed by this resolution is in the best interests of the Town of Marana and its citizens.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, as follows:

SECTION 1. The agreement between the Town of Marana and PE for the Fondo, attached to and incorporated by this reference in this resolution as Exhibit A, is hereby approved and the Mayor is hereby authorized to execute it for and on behalf of the Town of Marana.

SECTION 2. The Town's Manager and staff are hereby directed and authorized to undertake all other and further tasks required or beneficial to carry out the terms, obligations, and objectives of this resolution.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this 17th day of December, 2024.

Vice Mayor Jon Post

ATTEST:

David L. Udall, Town Clerk

APPROVED AS TO FORM:

Jane Fairall, Town Attorney

2025 Project Echelon Training Weekend Agreement

This Agreement (this "Agreement") is entered into by and between the Town of Marana, an Arizona municipal corporation (the "Town") and Project Echelon, LTD. a Wisconsin nonprofit corporation ("PE"). The Town and PE are sometimes collectively referred to in this Agreement as the "Parties," each of which is sometimes individually referred to as a "Party."

Recitals

A. On September 6, 2022, the Marana Town Council adopted the Town of Marana Strategic Plan V, identifying "Thriving Commerce" as one of its five focus areas, with the goal to "Expand Marana's thriving tourism industry by promoting its heritage, cultural resources, scenic open spaces, and signature events."

B. Project Echelon is a nonprofit corporation responsible for the promotion and production of a multi-day event from April 2, 2025 to April 7, 2025 called the Project Echelon Training Weekend (the "Training Weekend") which consists of training activities in support of veterans in the community and a Gran Fondo ride (the "Fondo Ride") which will take place on April 6, 2025 within Town limits involving the participation of riders and volunteers.

C. The Town and PE desire to enter into an agreement regarding the Town's participation in and financial support of the Training Weekend.

D. The Town finds that the benefits to the Town resulting from PE's promotion and production of the Training Weekend in Marana have a value at least equal to the fair market value of the financial support to be provided to PE by the Town pursuant to this Agreement.

Agreement

Now, therefore, based on the foregoing recitals, which are incorporated here as the intent of the Parties in entering into this Agreement, and in consideration of the terms of this Agreement, the Parties hereby agree as follows:

1. *Financial support to be provided by the Town.* Pursuant to the terms and conditions of this Agreement, including without limitation paragraph 22 (*Termination*) below, the Town shall provide financial support of $6,000 to PE for the Training Weekend 30 days prior to the start of the Training Weekend.

2. *Fee Waiver*. The Town will waive special event permit fees affiliated with the Training Weekend.

3. *Event promotion by the Town*. In addition to the financial support provided pursuant to paragraph 1 above, the Town shall also promote the events through the Town's media/communication outlets.

4. *Benefits to be provided to the Town.* In exchange for the financial support described in paragraph 1 above, PE shall provide to the Town the benefits and services described in Exhibit A.

5. *Co-marketing with the Town of Oro Valley*. The Training Weekend will also be held in the Town of Oro Valley from April 2, 2025 to April 7, 2025. The Parties acknowledge and agree it is in their mutual interests that some of the marketing efforts contemplated in this Agreement will be done jointly with the Town of Oro Valley to promote the Training Weekend.

6. *Books; taxes.* PE shall make available to the Town for inspection any books, ledgers or statements kept by PE regarding activities conducted pursuant to this Agreement. PE shall be liable for all taxes applicable to the proceeds received by PE under this Agreement, if any.

7. *Effective date and duration.* This Agreement shall be effective as of the signature date of the last Party to sign this Agreement (the "Effective Date"), and shall remain in effect until May 8, 2025, unless sooner terminated pursuant to paragraph 22 below. Notwithstanding the foregoing, the indemnification provisions set forth in paragraph 11 below shall survive termination of this Agreement.

8. *Relationship of the Parties.* In the performance of the services contemplated by this Agreement, PE shall act solely as an independent contractor, and nothing expressed or implied in this Agreement shall be construed to create the relationship of employer and employee, partnership, principal and agent, or to create a joint venture between the Town and PE.

9. *Use of names, trademarks, logos and seal.* The Town grants PE a limited license to use, at no cost, the Town's Discover Marana name and logo in PE's performance of the services described in this Agreement. PE shall not use the Town's Discover Marana name and logo for any other purpose or use. PE shall not modify, revise or alter the Town's Discover Marana logo in any way. PE grants the Town a limited license to use, at no cost, PE's name, trademarks, and logos in the Town's performance of the services described in this agreement. The Town shall not use PE's name, trademarks, and logos for any other purpose or use. The Town shall not modify, revise or alter PE's trademarks and logos in any way.

10. *Insurance*. During the term of this Agreement, PE shall maintain insurance from carriers acceptable to the Town with the following required minimum coverages and limits, and the Town shall be named as an additional insured on the commercial general liability insurance policy for the purposes of PE's activities in relation to the events covered by this Agreement:

Commercial General Liability: U.S. $3,000,000 per occurrence
U.S. $3,000,000 aggregate
Business Auto Liability: U.S. $1,000,000 combined single limit

a. PE shall deliver one or more certificates of insurance evidencing coverage as described in this paragraph to the Town by no later than February 28, 2025 and prior to commencing any activities pursuant to this Agreement. PE shall also deliver new certificates of insurance each time the policy(s) is updated. All certificates shall be delivered to the Town's Economic Development Department.

b. As an additional insured on PE's commercial general liability policy, the Town shall be provided coverage for any liability arising out of operations performed in whole or in part by or on behalf of PE. PE shall deliver additional insured endorsement(s) along with the certificate(s) of insurance required by subparagraph (a) above. The additional insured endorsement form identification number shall also be included within the description box on the certificate of insurance and the applicable policy number shall be included on the endorsement.

c. All policies required pursuant to this paragraph shall be endorsed to contain a waiver of transfer of rights of recovery (subrogation) against the Town, its agents, officers, officials, and employees for any claims arising out of PE's work or service. Endorsements evidencing this waiver of subrogation shall be provided to the Town along with all other insurance documentation required by this paragraph.

d. The certificate(s) shall also stipulate that the insurance afforded the Town shall be primary insurance and that any insurance carried by the Town, its agents, officials or employees shall be excess and not contributory insurance to that provided by PE. Coverage provided by PE shall be primary insurance with respect to all other available sources.

e. The insurance requirements specified in this paragraph may not be changed or modified except by written agreement signed by both Parties.

f. During the term of this Agreement PE shall give the Town at least 30 calendar days' written notice prior to a planned cancellation or reduction of any coverage required by this paragraph. PE shall give the Town immediate notice of any other cancellation or reduction of any coverage required by this paragraph. Cancellation or reduction of any coverage required by this paragraph is grounds for termination of this Agreement by the Town.

11. *Indemnification.* PE agrees to defend, save, hold harmless, and indemnify the Town, its officials, employees, agents, successors, and assigns from and against any and all manner of claims, suits, lawsuits, action or actions, causes or causes of action, liabilities, damages, and other claims and demands of whatsoever nature or kind, in law or in equity, in tort or in contract, or otherwise caused by or resulting from PE's errors, omissions, or negligent acts in the performance of services pursuant to this Agreement, or the errors, omissions or negligent acts of any party PE contracts with in the

performance of services pursuant to this Agreement, anyone directly or indirectly employed by PE, or anyone for whose acts PE may be liable.

12. *Notices.* All notices, requests, demands, and other communications under this Agreement shall be in writing and shall be deemed given if personally delivered or mailed, certified mail, return receipt requested, to the following addresses:

If to the Town, to:

TOWN OF MARANA
Attn: Stefanie Boe, Tourism and Marketing Manager
11555 W. Civic Center Drive – Bldg. A3
Marana, AZ 85653

With a copy to:

TOWN OF MARANA
Attn: Town Attorney
11555 W. Civic Center Drive – Bldg. A3
Marana, AZ 85653

If to PE, to:

PROJECT ECHELON, LTD
Attn: Eric Hill
N9W27151 Woodridge Ln.
Waukesha, WI 53188

Either Party may from time to time designate any other address for this purpose by written notice to the other Party. All notices under this Agreement shall be deemed received upon actual receipt.

13. *Entire agreement.* This Agreement constitutes the entire agreement and understanding of the Parties pertaining to the subject matter of the Agreement and supersedes all offers, negotiations, and other agreements of any kind. All prior and contemporaneous agreements, representations and understandings of the Parties, oral or written, are superseded and merged in this Agreement.

14. *Authority to execute agreement*. The individuals executing this Agreement hereby represent that they have full right, power, and authority to execute this Agreement on behalf of their respective Parties.

15. *Force majeure.* Notwithstanding any other term, condition or provision of this Agreement to the contrary, if any Party to this Agreement is precluded from satisfying or fulfilling any duty or obligation imposed upon it due to labor strikes, material shortages, war, civil disturbances, weather conditions, natural disasters, acts of God, or other events beyond the control of such Party, the time period provided herein for the performance by such Party of such duty or obligation shall be extended for a period equal to the delay occasioned by such events.

16. *Immigration laws.* PE warrants that it will at all times comply with all federal immigration laws and regulations that relate to its employees (if any) and with Arizona Revised Statutes section (A.R.S. §) 23-214 (A). PE acknowledges that pursuant to

A.R.S. § 41-4401 and effective September 30, 2008, a breach of this warranty is a material breach of this Agreement subject to penalties up to and including termination of this Agreement, and that the Town retains the legal right to inspect the papers of any employee (if any) who performs work or services pursuant to this Agreement to ensure compliance with this warranty.

17. *Israel Boycott Divestments*. PE certifies that it is not currently engaged in, and agrees for the duration of this Agreement to not engage in, a boycott of Israel as defined by A.R.S. §35-393.

18. Pursuant to and in compliance with A.R.S. § 35-394, the Contractor hereby agrees and certifies that it does not currently, and agrees for the duration of this Contract that the Contractor will not, use: (1) the forced labor of ethnic Uyghurs in the People's Republic of China; (2) any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China; or (3) any Contractors, subcontractors or suppliers that use the forced labor or any goods or services produced by the forced labor of ethnic Uyghurs in the People's Republic of China. If the Contractor becomes aware during the term of the contract that the company is not in compliance with this written certification, the company shall notify the Town within five business days after becoming aware of the noncompliance. If the Contractor does not provide the Town with a written certification that the Contractor has remedied the noncompliance within 180 days after notifying the Town of the noncompliance, this Contract terminates, except that if the contract termination date occurs before the end of the remedy period the Contract terminates on the Contract termination date. The Contractor also hereby agrees to indemnify and hold harmless the Town, its officials, employees, and agents from any claims or causes of action relating to the Town's action based upon reliance upon this representation, including the payment of all costs and attorney fees incurred by the Town in defending such as action.

19. *Conflict of interest.* This Agreement is subject to the provisions of A.R.S. § 38-511, which provides for termination in certain instances involving conflicts of interest.

20. *Attorneys' fees.* The prevailing Party in a civil action to enforce this Agreement shall be entitled to recover from the other Party, in addition to any relief to which such prevailing Party may be entitled, all costs, expenses and reasonable attorneys' fees incurred in connection with that civil action.

21. *Governing law.* This Agreement shall be construed in accordance with the laws of the State of Arizona.

22. *Termination.*

a. This Agreement shall be terminated without further action by the Parties if the Training Weekend, as described in this Agreement, is cancelled for any reason. If the event is cancelled, PE shall refund to the Town all financial support provided by the Town to PE pursuant to paragraph 1 of this Agreement within 30 days of cancellation of the event.

b. This Agreement may be terminated without further liability on 30 days' prior written notice by either Party upon a default by the other Party of any covenant or term of this Agreement, which default is not cured within 30 days of receipt of written notice of default, except that this Agreement shall not be terminated if the default cannot reasonably be cured within such 30-day period and the defaulting party has started to cure the default within the 30-day period and diligently pursues the cure to completion; provided that the grace period for any monetary default is ten days from receipt of written notice.

c. This Agreement may be terminated by mutual written agreement of the Parties.

23. *Miscellaneous.*

a. This Agreement may not be modified except in a writing signed by both of the Parties.

b. The captions and section numbers appearing in this Agreement are inserted only as a matter of convenience, and do not define, limit, construe or describe the scope or intent of such sections or articles of this Agreement.

c. This Agreement may be executed in multiple counterparts, each of which shall, for all purposes, be deemed an original and all of which, taken together, shall constitute one and the same agreement.

[SIGNATURE PAGE FOLLOWS]

IN WITNESS WHEREOF, the Parties have duly executed this instrument below.

APPROVED AS TO FORM:

The "Town":

_____

Jane Fairall, Town Attorney Date

TOWN OF MARANA, an Arizona municipal corporation

_____

Jon Post, Vice Mayor

Date:_____

ATTEST:

_____

David L. Udall, Town Clerk Date

"PE":

PROJECT ECHELON LTD, a Wisconsin
nonprofit corporation

_____
Eric Hill, President

Date_____

Federal I.D. # 81-2114278

STATE OF ARIZONA)
) ss.
County of Pima)

The foregoing instrument was acknowledged before me this _____ day of _____, 202__ by Erick Hill, President of Project Echelon, LTD., a Wisconsin nonprofit corporation, on behalf of the corporation.

(Seal)

_____
Notary Public

Exhibit A

1.	Oro Valley/Marana feature in Project Echelon Newsletter (Dec, Feb, April)	$500 value
2.	Coverage of the pro team training in Northern Pima County and the Fondo Ride in Velonews (35,000 subscribers, 750,000 online views per month)	$500 value
3.	Coverage of the pro team training in Northern Pima County in CyclingNews: Average 11.5 million monthly views in over 90 countries	$1000 value
4.	Professional Photography for commercial/town use from the entire training camp	$1000 value
5.	One Marana specific photoshoot for team content at requested locations	$500 value
6.	Social Media Manager to post stories throughout the team camp and ride featuring Marana (3 stories per day for 10 days) Use of the Discover Marana logo as well as a “presented by” caption	$500 value
7.	Press Conference/Press release coordinated by Pima County/Oro Valley/Marana along with earned media coverage in local market	$1000 value
8.	Project Echelon to attach flyers or other promotional materials to participant packets at events	$200 value
9.	Project Echelon to recognize Discover Marana as a sponsor at the start of the Fondo ride and training events.	$200 value
10.	Project Echelon riders and staff can attend local school events as requested by Discover Marana	
11.	Project Echelon riders and staff can meet with local veterans and active duty groups to discuss the non-profit organization and riding	
12.	Discover Marana can host a booth at the Fondo ride if requested	$200 value
13.	Project Echelon will work with Marana and Oro Valley to develop an Economic Impact survey and provide all date to the towns after the event	
14.	Brand the Echelon Racing League USA Cycling event series on Zwift with Discover Marana branding.	$1000 value
15.	Project Echelon to recognize Discover Marana as a presenting sponsor in both printed materials and verbal mentions, as well as being given the co-headline with the organizer	$3000 value
16.	Podcast features with the Sticky Bottle podcast and podcasts that are part of the Wide Angle Podcast group including Criterium Nation	$1000 value
17.	Daily ride recaps via go-pro with commentary from Project Echelon riders and staff in team follow vehicles highlighting the benefits of training in Northern Pima County	$1000 value
18.	Project Echelon will market Northern Pima County as an ideal destination for other cycling teams to host team camps/	$500 value

	events through various channels as well a network of "veteran preferred clubs"	
19.	Project Echelon will work with the town to develop an event specific jersey and t-shirt	
20.	Project Echelon will assist in the creation of a marketing campaign to attract additional race teams to the area	

Council-Regular Meeting **C10**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Fausto Burruel, Public Works Director

From: Dan Grossman, CIP Process Analyst

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Resolution No. 2024-116: Relating to Budget; approving the transfer of $315,000 in budgeted expenditure authority from the West Apron Reconstruction Ph-2 project (AP047) to the Taxiway C Reconstruction, Design project (AP035) for design of the reconstruction of Taxiway C in the fiscal year 2024-2025 budget (Fausto Burruel)

Discussion:
The budget for fiscal year 2024-2025 was adopted on June 18, 2024, which set the legal level of budgetary control at the department level for the General Fund and at the fund level for all other funds. Council approval is required for budgetary transfers between the General Fund departments, between funds, and for any transfer of contingency. The Council approved budget also includes funding for year one of the Town's five-year Capital Improvement Plan.

Taxiway C at the Marana Regional Airport serves existing airport businesses with additional businesses expected in the near future. This taxiway has reached a point of deterioration that a reconstruction of the taxiway is required. This project was originally programmed for FY2026. The Federal Aviation Administration (FAA) has agreed to begin funding the design of this project in FY2025 with a grant for $310,000.

The Town of Marana has received an estimate from Dibble & Associates to conduct the design of the project. The total cost of the design of the project is:

Dibble Design Proposal- $283,837

Lochner Independent Fee Estimate (IFE) Cost- $3,500
Dibble (Disadvantaged Business Enterprise (DBE) Cost Proposal- $25,225
Project Total Cost- $312,562

Financial Impact:

Fiscal Year: 2025
Budgeted Y/N: No
Amount: $315,000

This project will begin in the current year and be completed in fiscal year 2025-2026. The funding for this project will be transferred from the West Apron Reconstruction Ph-2 airport project (AP047), which has been postponed by the FAA. (Account string: 52592000-8015-AP047)

The majority of this project will be funded through other sources. Specifically, $296,934 will be funded by the grant, while the Town and the State of Arizona will fund an estimated $7,814 each.

Staff Recommendation:

Staff recommends approval of Resolution No. 2024-116.

Suggested Motion:

I move to approve Resolution No 2024-116, approving the transfer of $315,000 in budgeted expenditure authority from the West Apron Reconstruction Ph-2 project (AP047) to the Taxiway C Reconstruction, Design project (AP035) for design of the reconstruction of Taxiway C in the fiscal year 2024-2025 budget.

Attachments

Resolution No. 2024-116

MARANA RESOLUTION NO. 2024-116

RELATING TO BUDGET; APPROVING THE TRANSFER OF $315,000 IN BUDGETED EXPENDITURE AUTHORITY FROM THE WEST APRON RECONSTRUCTION PH-2 PROJECT (AP047) TO THE TAXIWAY C RECONSTRUCTION, DESIGN PROJECT (AP035) FOR DESIGN OF THE RECONSTRUCTION OF TAXIWAY C IN THE FISCAL YEAR 2024-2025 BUDGET

WHEREAS on June 18, 2024, the Town Council adopted the fiscal year 2024-2025 budgetary document and overall financial plan which set the legal level of budgetary control at the department level for the General Fund and at the fund level for all other funds; and

WHEREAS the fiscal year 2024-2025 budget includes $7,700,000 designated for the West Apron Reconstruction project (AP047); and

WHEREAS the West Apron Reconstruction project (AP047) has been postponed by the Federal Aviation Administration (FAA); and

WHEREAS Taxiway C at the Marana Regional Airport serves existing Airport businesses with additional traffic expected in the near future; and

WHEREAS Taxiway C has reached a point of deterioration in which a reconstruction of the taxiway is required; and

WHEREAS to facilitate the design of the reconstruction, the transfer of $315,000 of budget appropriation from the West Apron Reconstruction project (AP047) to the Taxiway C Reconstruction, Design project (AP035) is required; and

WHEREAS such reallocations of budgetary amounts are necessary from time to time; and

WHEREAS the Council finds that the reallocation addressed by this resolution is in the best interests of the Town of Marana and its citizens.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, that the transfer of $350,000 in budgeted expenditure authority from the West Apron Reconstruction project (AP047) to the Taxiway C Reconstruction, Design project (AP035) is hereby approved and the Town's Manager and staff are hereby directed and authorized to undertake all other and further tasks required or beneficial to carry out the terms, obligations, and objectives of this resolution.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this 17th day of December, 2024.

Vice Mayor Jon Post

ATTEST:

David L. Udall, Town Clerk

APPROVED AS TO FORM:

Jane Fairall, Town Attorney

Council-Regular Meeting **C11**

Meeting Date: 12/17/2024

To: Mayor and Council

From: David L. Udall, Town Clerk/Assistant Town Attorney

Date: December 17, 2024

Subject: Approval of Regular Council Meeting Summary Minutes of November 6, 2024, approval of Regular Council Meeting Summary Minutes of November 19, 2024, and approval of Regular Council Meeting Summary Minutes of December 3, 2024 (David L. Udall)

Attachments

Regular Council Meeting Summary Minutes, 11/06/2024
Regular Council Meeting Summary Minutes, 11/19/2024
Regular Council Meeting Summary Minutes, 12/03/2024

MARANA TOWN COUNCIL
REGULAR COUNCIL MEETING
11555 W. Civic Center Drive, Marana, Arizona 85653
Council Chambers, November 6, 2024, at or after 6:00 PM

Ed Honea, Mayor
Jon Post, Vice Mayor
Patti Comerford, Council Member
Patrick Cavanaugh, Council Member
Herb Kai, Council Member
John Officer, Council Member
Roxanne Ziegler, Council Member

SUMMARY MINUTES

CALL TO ORDER AND ROLL CALL

Mayor Honea called the meeting to order at 6:01 PM and directed the Town Clerk to call the roll. **Council Member Kai** was absent. All other Council Members were present, constituting a quorum.

PLEDGE OF ALLEGIANCE/INVOCATION/MOMENT OF SILENCE: Led by **Mayor Honea.**

APPROVAL OF AGENDA

Mayor Honea asked for a motion to approve the agenda.

Council Member Ziegler moved to approve the agenda. Council Member Officer seconded the motion. Motion passed, 6-0.

CALL TO THE PUBLIC

PROCLAMATIONS

DRAFT

MAYOR AND COUNCIL REPORTS: SUMMARY OF CURRENT EVENTS

Council Member Cavanaugh complemented the Loop extension recently completed in Marana along with all who participated to make it possible. He also complemented Parks and Recreation staff on their work at the El Rio Preserve.

Vice Mayor Post welcomed **Council Member Cavanaugh** to his first meeting on the Town Council. He said he was excited to work with him and expected the Council would continue to do good things.

Mayor Honea congratulated **Council Member Ziegler** and **Council Member Cavanaugh** on their recent election and welcomed **Council Member Cavanaugh** to the Town Council. He said he has worked with **Council Member Cavanaugh** and thinks he will do great on the Council.

MANAGER'S REPORT: SUMMARY OF CURRENT EVENTS

Town Manager Terry Rozema said there were 83 single-family residential permits issued for the month of October. He said 93 were issued last October. He said construction of phase one of the Saguaro Bloom park has begun and is going well and provided an update on the construction of the Marana Aquatics and Recreation Center (the MARC). He said the MARC still has an estimated completion date of May 2025. He said the Town's Christmas tree is currently being assembled in preparation for the Holiday Festival on December 7, 2024. He also reminded the Council that there were several upcoming RTA Next public outreach meetings.

Council Member Ziegler asked about what is on the agenda for the RTA Next meetings. **Mr. Rozema** explained that RTA staff will present and provide the public the opportunity to ask questions and fill out a survey. He said the purpose of the meetings is to receive public feedback on the projects currently contemplated. **Council Member Ziegler** asked if the City of Tucson was going to their voters on this. **Mr. Rozema** explained that separate from the RTA initiative, the City was going to its voters with a half-cent sales tax ballot initiative for various quality of life issues.

Mayor Honea highlighted that the purpose of the RTA next outreach meetings is to receive public input.

PRESENTATIONS

P1 Relating to Budget; presentation of first quarter results (July-September) for the Town's General Fund and other selected major funds for the 2024-2025 fiscal year (Yiannis Kalaitzidis)

Finance Director Yiannis Kalaitzidis presented on this item. A copy of the presentation slides is on file with the Town Clerk's Office. **Mr. Kalaitzidis** provided the Council with an overview of the Town's first quarter results for the Town's General Fund and other selected major funds for the 2024-2025 fiscal year. For detailed information, please see the presentation slides.

CONSENT AGENDA

The Consent Agenda contains items requiring action by the Council which are generally routine items not requiring Council discussion. A single motion and affirmative vote will approve all items on the Consent Agenda, including any resolutions or ordinances. Prior to a motion to approve the Consent Agenda, any Council member may remove any item from the Consent Agenda and that item will be discussed and voted upon separately.

C1 Ordinance No. 2024.023: Relating to Business Regulations; revising Marana Town Code Title 9 (Business Regulations), Chapter 9-14 (Short-Term and Vacation Rentals), Section 9-14-9 (Compliance with laws; prohibited uses) to provide that accessory dwelling units may only be used for short-term rentals if and while the owner resides on the property that contains the accessory dwelling unit; and designating an effective date (Jane Fairall)

C2 Resolution No. 2024-098: Relating to Budget; approving the addition of a new Capital Improvement Project known as the Network Redesign project in the fiscal year 2024-2025 budget (Ricardo Carlos)

C3 Resolution No. 2024-099: Relating to Development; approving the final plat for Mandarina - Parcel 1, Lots 1-122 & Tracts A-M generally located north of Tangerine Road and east of Interstate 10 within a portion of Section 31, Township 11 South and Range 12 East (Scott Radden)

C4 Resolution No. 2024-100: Relating to Development; approving the final plat for Mandarina- Parcel 2, Lots 123-182 & Tracts A-E generally located north of Tangerine Road and east of Interstate 10 within a portion of the east half of Section 36, Township 11 South, Range 11 East and a portion of the west half of Section 31, Township 11 South and Range 12 East (Scott Radden)

C5 Approval of Regular Meeting Summary Minutes of October 15, 2024 (David L. Udall)

Vice Mayor Post moved to approve the consent agenda. Council Member Officer seconded the motion. Motion passed, 6-0.

DRAFT

LIQUOR LICENSES

BOARDS, COMMISSIONS AND COMMITTEES

COUNCIL ACTION

ITEMS FOR DISCUSSION / POSSIBLE ACTION

D1 Relating to Development and Public Works; update, discussion, and possible direction regarding public and private projects and development applications on the Town's Marana Current and Proposed Projects internet site (Jason Angell)

Development Services Director Jason Angell provided an update and answered questions related to public and private projects and development applications in the Town, as currently listed on the following website:

https://maranaegov.com/portal/apps/experiencebuilder/experience/?draft=true&id=dae15ad306fb4a3fba65ee3babc21d54&page=Page&views=Water-Management%2CInspections

D2 Relating to Mayor and Council; selection of the Vice Mayor (David L. Udall)

Mayor Honea moved to select Jon Post as Vice Mayor for the Town of Marana. Council Member Comerford seconded the motion. Motion Passed, 5-1, with Council Member Ziegler voting Nay.

EXECUTIVE SESSIONS

Mayor Honea asked for a motion to go into Executive Session on items E2, E3, and E4.

Vice Mayor Post so moved. Motion passed, 6-0.

[An Executive Session was held on Items E2 through E4, beginning at 6:26 PM and concluding at 7:22 PM.]

Once back in open session, **Mayor Honea** asked for motions on Items E2, E3, and E4. The motions are reflected below.

Pursuant to A.R.S. § 38-431.03, the Town Council may vote to go into executive session, which will not be open to the public, to discuss certain matters.

DRAFT

E1 Executive Session pursuant to A.R.S. §38-431.03 (A), Council may ask for discussion or consideration, or consultation with designated Town representatives, or consultation for legal advice with the Town Attorney, concerning any matter listed on this agenda for any of the reasons listed in A.R.S. §38-431.03 (A).

E2 Executive Session pursuant to A.R.S. § 38-431.03(A)(7), discussion or consultation with the Town Manager, Finance Director, and Town Attorney in order to consider the Town's position and instruct its representatives regarding negotiations for the possible purchase of real property owned by Marana Health Center, Inc. located near the Marana Municipal Complex.

Vice Mayor Post moved to direct Town staff to proceed as discussed in Executive Session. Council Member Officer seconded the motion. Motion passed, 6-0.

E3 Executive Session pursuant to A.R.S. § 38-431.03(A)(7), discussion or consultation with the Town Manager, Finance Director, and Town Attorney in order to consider the Town's position and instruct its representatives regarding negotiations for the possible purchase of real property owned by Oracle Greenock, LLC located near Gladden Farms Community Park

Vice Mayor Post moved to direct Town staff to proceed as discussed in Executive Session. Council Member Comerford seconded the motion. Motion passed, 6-0.

E4 Executive session pursuant to A.R.S. §38-431.03 (A)(3) and (4) for discussion or consultation with the Town's attorneys and to instruct the Town's representatives concerning the litigation entitled *Southern Arizona Home Builders Association v. Town of Marana,* Pima County Superior Court Case No. C20184411.

Council Member Cavanaugh moved to direct Town staff to proceed as discussed in Executive Session. Vice Mayor Post seconded the motion. Motion passed, 6-0.

FUTURE AGENDA ITEMS

Notwithstanding the Mayor's discretion regarding the items to be placed on the agenda, if three or more Council members request that an item be placed on the agenda, it must be placed on the agenda for the second regular Town Council meeting after the date of the request, pursuant to Marana Town Code Section 2-4-2(B).

Mayor Honea asked for future agenda items.

Council Member Ziegler requested a status update on the Airport's Master Development Lease negotiations. She said it has been a while and felt that Pima Aviation

has not communicated with the Town. **Mr. Rozema** said Town staff could provide an update during a Council meeting or during upcoming two-on-two meetings**. Council Member Ziegler s**aid the Town needed to complete the contract by the end of the calendar year. **Mr. Rozema** said the Council authorized a six-month extension of the Lease and **Town Clerk / Assistant Town Attorney David Udall** said the Lease, as extended, would expire in March 2025. **Council Member Ziegler** asked if the Town had heard from Pima Aviation. **Mr. Udall** said Town staff has heard a little bit from them, but not much.

Council Member Ziegler said it was fine to receive an update in upcoming two-on-two meetings.

ADJOURNMENT

Mayor Honea asked for a motion to adjourn.

Vice Mayor Post moved to adjourn the meeting. Motion passed, 6-0. The meeting was adjourned at 7:25 PM.

CERTIFICATION

I hereby certify that the foregoing are the true and correct minutes of the regular Town Council meeting held on November 6, 2024. I further certify that a quorum was present.

_____

David L. Udall, Town Clerk

DRAFT

MARANA TOWN COUNCIL
REGULAR COUNCIL MEETING
11555 W. Civic Center Drive, Marana, Arizona 85653
Council Chambers, November 19, 2024, at or after 6:00 PM

Ed Honea, Mayor
Jon Post, Vice Mayor
Patrick Cavanaugh, Council Member
Patti Comerford, Council Member
Herb Kai, Council Member
John Officer, Council Member
Roxanne Ziegler, Council Member

SUMMARY MINUTES

CALL TO ORDER AND ROLL CALL

Mayor Honea called the meeting to order at 6:04 PM and directed the Town Clerk to call the roll. All Council Members were present, constituting a quorum.

PLEDGE OF ALLEGIANCE/INVOCATION/MOMENT OF SILENCE: Led by **Mayor Honea.**

APPROVAL OF AGENDA

Mayor Honea asked for a motion to approve the agenda.

Council Member Cavanaugh moved to approve the agenda. Council Member Comerford seconded the motion. Motion passed, 7-0.

CALL TO THE PUBLIC

Mr. Brendan Lyons with the **Southern Arizona Home Builders Association (SAHBA)** addressed the Council regarding the Town's proposed drainage manual (Item A2). He said SAHBA appreciated Town staff reaching out to allow them to provide input on the

proposed drainage manual. He said he would not take a position for or against the proposed manual, but said he looked forward to working with Town staff to determine how comments were or were not incorporated into the final document.

PROCLAMATIONS

MAYOR AND COUNCIL REPORTS: SUMMARY OF CURRENT EVENTS

Council Member Cavanaugh said that he and **Council Member Officer** recently attended the Amavida Apartments open house and said the owners of that project complemented how good it was to work with the Town. He said he complemented citizens who were picking up trash long Scenic Drive and said the citizens complained of excessive speeding in that area. **Council Member Cavanaugh** recommended more police presence there. He also said deer are in that area and recommended that a deer crossing sign be placed along Scenic Drive.

Council Member Ziegler said the Marana Veteran's Club donated 1,000 pounds of food along with money to the Food Bank. She said they also put flags at the Veteran's Memorial Cemetery for Veteran's Day. She said she and **Council Member Officer** attended a recent RTA Next outreach meeting. She urged residents to complete the RTA Next outreach survey online. She also reported that **State Senate Candidate John McLean**, who she has been friends with for 25 years, was recently killed by a drunk driver.

Council Member Kai reported that **Mr. Tom Clark Sr.** recently passed away and requested thoughts and prayers for his family during this time.

Mayor Honea reported that **Mr. Carl Winters** recently passed away as well. He praised both **Mr. Clark** and **Mr. Winters** for their contributions to the Town. He gave an update on the RTA Next negotiations and said it is not a done deal. He encouraged residents to provide their feedback on the RTA's online survey.

MANAGER'S REPORT: SUMMARY OF CURRENT EVENTS

Mr. Rozema said there were 27 single-family residential permits issued so far for the month of November. Last November, there was a total of 85 permits issued. He provided construction updates for the first phase of the Saguaro Bloom Community Park and the Marana Aquatics and Recreation Center (MARC). He said the Town hosted a Turkey Trot over the weekend and reminded the Council of the upcoming Holiday Festival and Christmas Tree Lighting event taking place on December 7, 2024. He also highlighted the Northwest Fire District's recent awards ceremony, in which Town staff received awards.

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Council Member Ziegler asked for an update on the Airport's Air Traffic Control Tower project. **Mr. Rozema** said a full update on that and other items at the Airport would be provided at the upcoming Council retreat.

Mayor Honea commented that he recently looked at the interior of the MARC, its exterior, and one of the pools and said it was very impressive and would be something the Town was proud of. He also asked where the Town stood regarding its estimated single-family residential permits for the fiscal year. He said the Town had been above average for the first half of the fiscal year but that the Town has not been doing too well in the second half. He asked if the Town would make its estimate at this point. **Mr. Rozema** said it was possible the Town would not make its estimate but said the volume of permits ebb and flow. He said there are two large developments that will be coming online soon, and that will increase the number of permits being pulled during the upcoming year. **Mayor Honea** commented that the Town handles much of its debt service based on permit revenue and said he would be concerned if it slowed down too much.

PRESENTATIONS

CONSENT AGENDA

C1 Resolution No. 2024-101: Relating to Development; approving a Final Plat for Saguaro Reserve III at Dove Mountain, Lots 1-236, and Common Areas "A" (Private Streets) and "B" (Open Space / Drainage) located north of Dove Mountain Boulevard and east of Dove Reserve Drive within Sections 16 and 21, Township 11 South and Range 12 East (Scott S. Radden)

C2 Resolution No. 2024-102: Relating to Utilities; approving and authorizing the Mayor to sign an amendment to the Intergovernmental Agreement, effective December 1, 2024, between the Town of Marana and Pima County for provision of water consumption data and sewer user account billing services (Kim Baker)

C3 Relating to Procurement; approving a change order to the contract with Dibble & Associates in the amount of $106,795.15 for the Airport Control Tower, EA (AP031); authorizing the transfer of appropriations if necessary for the change order; and authorizing the Town Manager or designee to execute the necessary documents to effectuate the change order (Fausto Burruel)

C4 Approval of Study Session Summary Minutes of October 29, 2024, and approval of Regular Council Meeting Summary Minutes of November 6, 2024 (David L. Udall)

Council Member Kai moved to approve the consent agenda. Council Member Ziegler seconded the motion. Motion passed, 7-0.

DRAFT

LIQUOR LICENSES

BOARDS, COMMISSIONS AND COMMITTEES

COUNCIL ACTION

A1 PUBLIC HEARING: Ordinance No. 2024.024: Relating to Development; approving a modification of a rezoning condition of Marana Ordinance No. 2021.016, which rezoned approximately 49 acres of land located approximately one-quarter mile south of Ina Road, west of Silverbell Road, to revise a provision of the ordinance that required all utilities outside of the Western Area Power Administration (WAPA) easement to be located underground (Austin J. Shreffler)

Mayor Honea opened the public hearing at 6:23 PM.

Senior Planner Austin Shreffler presented on this item. A copy of the presentation slides is on file with the Town Clerk's Office. **Mr. Shreffler** said the applicant was requesting to modify rezoning condition number 15 of Ordinance No. 2021.016 (Silverbell Ridge Subdivision) in order to exempt existing Tucson Electric Power (TEP) overhead electrical lines from the undergrounding requirement due to recent improvements by TEP as a response to monsoon damage and to avoid conflict with the Open Space Covenant, which was required as part of the original rezoning ordinance. New utilities servicing the rezoning area will be located underground. For more information regarding the presentation, including relevant maps, please see the presentation slides.

Mayor Honea closed the public hearing at 6:27 PM.

Vice Mayor Post moved to adopt Ordinance No. 2024.024. Council Member Comerford seconded the motion. Motion passed, 7-0.

A2 Ordinance No. 2024.025: Relating to Land Development, adopting the Town of Marana Drainage Manual (Jason Angell)

Resolution No. 2024-103: Relating to Land Development, declaring as a public record filed with the Town Clerk the Town of Marana Drainage Manual adopted by Ordinance No. 2024.025 (Jason Angell)

Development Engineering Division Manager Dustin Ward presented on this item. A copy of the presentation slides is on file with the Town Clerk's Office. **Mr. Ward** said Town staff has been working over the past two years on developing the Town's own drainage manual to replace the Town's reliance on other jurisdictions' drainage standards. He said Town staff worked with an outside consultant and determined which drainage standards best fit the needs for the Town. He explained the process involved in

developing the manual, including internal and external reviews. He said staff was not trying to reinvent the wheel and that the manual includes standards the Town has been utilizing for the last 15 years. He highlighted and addressed one significant comment regarding the regional vs. non-regional rainstorm standard, which can be viewed in detail in the presentation slides. He said the goals of the manual are to protect the Town's interest, to protect Town residents, and to foster development in the Town. For more information regarding the presentation generally, please see the slides.

Vice Mayor Post expressed concern that the Council may adopt something staff has been working on for two years, but that the Council has not seen or had the opportunity to weigh in on during its development. He asked where the manual and comments were and why the Council was not privy to them. **Mr. Ward** said the drainage manual was in the backup materials to the agenda, but the comments were not included. **Council Member Ziegler** commented that there was a drainage presentation at the last Council retreat. **Council Member Cavanaugh** said there was a robust review process involved and wanted to see the drainage manual. He asked how to access it and was informed how to access it in the backup materials to the agenda. **Mr. Rozema** recommended that the Council table this item so the Council had more time to review the drainage manual. **Council Member Ziegler** said she would like to make a decision on the manual at this meeting. She said that there had been lengthy discussions regarding it at the retreat and that the manual was in the agenda packet for review before this meeting.

Mayor Honea asked for a motion.

Council Member Kai moved to table Ordinance No. 2024.025 and Resolution No. 2024-103. Council Member Officer seconded the motion. Motion passed, 6-1, with Council Member Ziegler voting Nay.

ITEMS FOR DISCUSSION / POSSIBLE ACTION

D1 Resolution No. 2024-104: Relating to Development; adopting the amended Town of Marana Public Art Policy (Andrea De La Cruz)

Assistant to the Town Manager Andrea De La Cruz presented on this item. A copy of the presentation slides is on file with the Town Clerk's Office. **Ms. De La Cruz** said the recommended amendments involved:

1. (a) Adding the Deputy Parks and Recreation Director, Deputy Development Services Director, and the Deputy Public Works Director to the list of Town Representatives and replacing the Town Engineer with an appointee designated by the Town Manager; and (b) specifying that the two members of the local art community will each serve four-year terms.

2. Adding the following exception to the requirement that all Town Capital Improvement Projects with an estimated budget of $500,000.00 or more shall include 1% of the total project cost as a contribution to the Marana Public Art Fund:

    - Projects funded via a restricted funding source that does not permit expenditures for public art, such as impact fees, grants, and loans.

    The proposed change also would replace the Town Engineer with the Public Works Director or designee as the person who will ensure that the 1% cost is added to the project's total budget.

Ms. De La Cruz said the reasons for the first change were to: (a) allow flexibility for either deputy directors or directors (but not both) to serve in the respective positions and to prevent the Public Works Director from having two votes, since he has been designated as the Town Engineer; and (b) establish a term of service for members of the local art community. She said the reason for the second change above was to clarify that the Public Art Fund contribution requirement did not apply to restricted funding sources.

Council Member Cavanaugh asked if it was correct that there was an ordinance mandating that builders place artwork on the building site. **Ms. De La Cruz** said the ordinance does not require that artwork be onsite, but said that it does require private development to contribute to the Public Art Fund.

Council Member Kai moved to adopt Resolution No. 2024-104. Council Member Ziegler seconded the motion. Motion passed, 7-0.

D2 Relating to Economic Development; discussion and consideration of proposal from Marana Urban LLC in response to Town of Marana Request for Proposals (RFP) for Lease and Development of Town-Owned Property Located at Marana Main Street and Civic Center Drive and possible direction to staff to commence negotiations for a lease agreement (Terry S. Rozema)

Mr. Rozema presented on this item. A copy of the presentation slides is on file with the Town Clerk's Office. He said that the Council had the vision in the past to purchase acreage across from the Marana Municipal Complex to serve as a gathering place for Marana and to serve as Marana's Downtown. He said the Town has been working towards realizing that vision, and said the Town recently put out a request for proposals (RFP) for a lease and development of that acreage to create a destination-based downtown. One applicant responded to the RFP, and **Mr. Rozema** said the applicant was a good one. **Mr. Rozema** then provided an overview of the Downtown project goals, a conceptual site plan, Marana Urban LLC, the project vision, the lease proposal, and potential Town obligations as follows:

- Project Goals:

    - Spur development of Downtown Marana
    - Stimulate economic development and expand employment opportunities in the Town
    - Complement other nearby retail, academic, residential, and professional office development with a vibrant downtown area
    - Expand entertainment and dining options by providing more variety
    - Generate new tax revenues
- Conceptual Site Plan:
    - See the presentation slides
- Marana Urban LLC:
    - **Mr. Rozema** introduced the members of the Marana Urban LLC team: **Mr. Scott Stiteler, Mr. Duby Dabdoub, Mr. Regan Jasper, Mr. Cory Creath,** and **Mr. Ruairi O'Connell**. **Mr. Stiteler** and **Mr. Jasper** were present at the meeting. **Mr. Rozema** said **Mr. Stiteler** was the developer who helped revitalize Downtown Tucson.
- Project Vision:
    - See the presentation slides for images and renderings
- Lease Proposal:
    - Long-term lease of up to 50 years, with potential options for renewal
    - Developer of the property will be responsible for securing long-term tenants
    - Development of the property needs to be initiated and completed within a reasonable period of time (which will be determined during negotiations)
- Potential Town Obligations:
    - Infrastructure (potentially paid for through the Town's Tourism Fund and Downtown Reinvestment Fund rather than the General Fund):
        - Temprary parking lot (see presentation slides for conceptual depiction during the initial phases of the project)
        - Two illuminated arches
        - Brick-paved roadway (phase one of the project)
        - Upon-air beer garden (turf)
        - Utilities connection to the site
        - Landscaping/lighting
        - Monument sign along Interstate 10

Mr. Stiteler said this was a once in a lifetime opportunity, and he said he would give the project his best and his all. He said that initially, he feels a daunting feeling similar to when he started the Downtown Tucson project and explained how that project began to come to fruition over time. He again assured the Council that he and his team would give the project their all and would exceed expectations, and he said the measure of success would not only be a timeless, ground-up downtown that all will be proud of, but one in which the community comes first, not the developer. He said he was really excited about this project, and that he thinks about it all the time.

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Clarifying questions were asked and answered throughout the presentation. For more detailed information, including images and a conceptual site plan, please see the presentation slides. **Mr. Rozema** highlighted that an agreement was not being brought before the Council for approval at this meeting, but that staff was seeking the Council's approval to direct staff to commence agreement negotiations with the applicant.

Mayor Honea expressed concern with connecting the two properties outlined in the Conceptual Site Plan via Marana Main across Grier Road. He asked if there would be a signalized, lighted intersection. **Mr. Rozema** said a traffic study would need to be done as part of this effort, and he guessed a light at the intersection of Grier and Marana Main would be required. **Council Member Cavanaugh** recommended that a pedestrian bridge be installed at that connection.

Council Member Cavanaugh asked when the groundbreaking would be. **Mr. Rozema** said as soon as possible – that the Town was very excited about this and that the first step would be to negotiate an agreement with the developer. **Council Member Cavanaugh** asked if there would be enough electricity to power the development. **Mr. Rozema** said that there would be.

Council Member Cavanaugh asked **Mr. Stiteler** what gives him so much bullishness with this project. **Mr. Stiteler** said it is not him alone, but his team that will be taking on this project. He said he is also good at compartmentalizing and focusing on the success of phase one. He said if phase one is done right and is a success, it is very easy to be bullish after that because doors begin to open.

Mayor Honea said he was excited about the project. He asked if **Mr. Stiteler** had ever done a lease-build project like this one before. **Mr. Stiteler** said he had not. **Mayor Honea** said that transportation and parking could become an issue as Downtown builds out. He asked if that has been looked into. **Mr. Stiteler** said he wished he had the vision to see every detail that is part of a project as large as this. He agreed that transportation and parking are important for the project to be successful. He said that if the Council directs Town staff to negotiate an agreement, that will be a chance for the parties to dive deeper into these and other issues.

Council Member Ziegler complemented the work done on the Tucson Downtown revitalization project and said she wanted to make sure the Council selected the right person for Marana's Downtown. She said she wanted to ensure the developer of Marana's Downtown is well funded and will not go into bankruptcy prior to the completion of the project. She said it seems that, from what she has seen, **Mr. Stiteler's** projects have done well. She said she was not familiar with the lease-to-build concept as related to building a downtown and said she needed to learn a little more about that. Regarding the presentation, she said she liked what she saw but was a little nervous.

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Council Member Ziegler said she looked forward to the Marana Main connection and asked what the Town would do with traffic coming off the freeway. **Mr. Rozema** said in the beginning, traffic would come from the Marana Road exit. He reminded the Council that the Town is currently designing the Tangerine and Marana interchange interim improvements to increase their capacity and that there would be some time before downtown buildings would be constructed. **Mr. Rozema** said until Marana Main is extended, Sandario Road and Bill Gaudet Road would be the primary route to access Downtown Marana.

Mr. Rozema also said he understood the nervousness of the Council and said that this was a large endeavor. He assured the Council that the Town was in a good position to take this on because of the amount of success **Mr. Stiteler's** team has behind them. He highlighted that the prior City Manager of Tucson praised **Mr. Stiteler** and his team and said the Town could not have a better team for this project.

Council Member Ziegler said the Town has tried to start a Downtown project for a long time and that things have come together for it to start now. **Mr. Rozema** agreed that things have come together and that now was the time to begin.

Council Member Kai said this was a great project that **Mr. Stiteler** has brought to the Town and said it would require a lot of homework and due diligence on both sides. He said he supported a vote to move forward with negotiations.

Vice Mayor Post moved to direct staff to commence negotiations with Marana Urban LLC for a lease agreement. Council Member Cavanaugh seconded the motion. Motion passed, 7-0.

EXECUTIVE SESSIONS

Pursuant to A.R.S. § 38-431.03, the Town Council may vote to go into executive session, which will not be open to the public, to discuss certain matters.

E1 Executive Session pursuant to A.R.S. §38-431.03 (A), Council may ask for discussion or consideration, or consultation with designated Town representatives, or consultation for legal advice with the Town Attorney, concerning any matter listed on this agenda for any of the reasons listed in A.R.S. §38-431.03 (A).

FUTURE AGENDA ITEMS

Notwithstanding the Mayor's discretion regarding the items to be placed on the agenda, if three or more Council members request that an item be placed on the agenda, it must

be placed on the agenda for the second regular Town Council meeting after the date of the request, pursuant to Marana Town Code Section 2-4-2(B).

Mayor Honea asked for future agenda items. There were no future agenda items requested.

ADJOURNMENT

Mayor Honea asked for a motion to adjourn.

Vice Mayor Post moved to adjourn the meeting. Council Member Officer seconded the motion. Motion passed, 7-0. The meeting was adjourned at 7:26 PM.

CERTIFICATION

I hereby certify that the foregoing are the true and correct minutes of the regular Town Council meeting held on November 19, 2024. I further certify that a quorum was present.

_____

David L. Udall, Town Clerk

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MARANA TOWN COUNCIL
REGULAR COUNCIL MEETING
11555 W. Civic Center Drive, Marana, Arizona 85653
Council Chambers, December 3, 2024, at or after 6:00 PM

Jon Post, Vice Mayor
Patrick Cavanaugh, Council Member
Patti Comerford, Council Member
Herb Kai, Council Member
John Officer, Council Member
Roxanne Ziegler, Council Member

SUMMARY MINUTES

CALL TO ORDER AND ROLL CALL

Vice Mayor Post called the meeting to order at 6:01 PM. He said the Town had recently suffered the tragic loss of **Mayor Ed Honea** and that the agenda would primarily be focused on him. He directed the Town Clerk to call the roll. All Council Members were present, constituting a quorum.

PLEDGE OF ALLEGIANCE/INVOCATION/MOMENT OF SILENCE: Led by **Vice Mayor Post.**

APPROVAL OF AGENDA

Vice Mayor Post asked for a motion to approve the agenda with the following adjustments: (1) the Call to the Public being suspended except for those wishing to address the Council on Item D1 at the time that item is presented, and (2) the Council Reports being moved to be heard during Item D1.

Council Member Cavanaugh so moved. Council Member Officer seconded the motion. Motion passed, 6-0.

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CALL TO THE PUBLIC

PROCLAMATIONS

MAYOR AND COUNCIL REPORTS: SUMMARY OF CURRENT EVENTS

MANAGER'S REPORT: SUMMARY OF CURRENT EVENTS

PRESENTATIONS

CONSENT AGENDA

LIQUOR LICENSES

BOARDS, COMMISSIONS AND COMMITTEES

COUNCIL ACTION

Vice Mayor Post asked for a motion to continue Items A1 through A3 to the Town Council's regularly scheduled meeting on December 17, 2024. Ms. Fairall requested that emergency clauses be included on Items A1 and A2 for the next meeting so they will be effective prior to January 1, 2024.

Council Member Ziegler moved to: (1) continue Items A1 and A2 to the Town Council's next regularly scheduled meeting on December 17, 2024, and to add emergency clauses to the resolutions accompanying Items A1 and A2; and (2) to continue Item A3 to the Town Council's next regularly scheduled meeting on December 17, 2024. Council Member Officer seconded the motion. Motion passed, 6-0.

A1 Public Hearing: Ordinance No. 2024.027: Relating to Development; amending Marana Town Code Title 17 (Land Development), Chapter 17-3 (Administration and Enforcement), Section 17-3-1 (Amendment and rezoning) to add provisions establishing time frames for review of zoning applications; and establishing an effective date (Jane Fairall)

A2 Public Hearing: Ordinance No. 2024.028: Relating to Development; amending Marana Town Code Title 17 (Land Development), amending Chapter 17-6 (General and Miscellaneous Development Regulations) by adding new Section 17-6-14 entitled Accessory Dwelling Units; amending chapter 17-4 (Zoning) by making conforming amendments to sections 17-4-2 (Use matrix) and 17-4-3 (Use conditions matrix); approving the housing impact statement pertaining to this ordinance; and establishing an effective date (Jane Fairall)

A3 Public Hearing: Ordinance No. 2024.029: Relating to Land Development; adopting amendments to Marana Town Code Title 17 "Land Development"; revising Section 17-1-6 (Definitions), to add a definition for "data center"; revising Section 17-4-2 (Use matrix) Table 2 - Use matrix, to add the data center use and to provide that data centers are prohibited as a principal use in all standard Town zones and allowed as accessory uses in the Town's industrial zones LI and HI; revising sections 17-4-8 (Industrial zoning districts) and 17-4-16 (Legacy zones) to provide regulations for data centers operating as accessory uses; revising Chapter 17-6 "General and Miscellaneous Development Regulations" to add new section 17-6-13 (Data centers) establishing that data centers may only operate in the Town as a principal use if approved in a specific plan or specific plan amendment adopted through the normal rezoning process, and establishing development regulations for data centers; and designating an effective date (Jason Angell)

Resolution No. 2024-108: Relating to Land Development; declaring as a public record filed with the Town Clerk the amendments adopted by Ordinance No. 2024.029, revisions to Title 17 "Land Development" of the Marana Town Code, including revising Section 17-1-6 (Definitions), to add a definition for "data center"; revising Section 17-4-2 (Use matrix) Table 2 - Use matrix, to add the data center use and to provide that data centers are prohibited as a principal use in all standard Town zones and allowed as accessory uses in the Town's industrial zones LI and HI; revising sections 17-4-8 (Industrial zoning districts) and 17-4-16 (Legacy zones) to provide regulations for data centers operating as accessory uses; revising Chapter 17-6 "General and Miscellaneous Development Regulations" to add new section 17-6-13 (Data centers) establishing that data centers may only operate in the Town as a principal use if approved in a specific plan or specific plan amendment adopted through the normal rezoning process, and establishing development regulations for data centers (Jason Angell)

ITEMS FOR DISCUSSION / POSSIBLE ACTION

D1 *Resolution No. 2024-110: Relating to Facilities; naming the Marana Municipal Complex the "Ed Honea Marana Municipal Complex" (Terry Rozema)*

Vice Mayor Post moved to adopt Resolution No. 2024-110. Council Member Comerford seconded the motion.

Before calling the vote, **Vice Mayor Post** provided an opportunity for the Council and anyone in attendance to say a few words about **Mayor Ed Honea**. He then said the following, among other things, regarding **Mayor Honea**:

"…. The Tuesday night that I took him home… this particular Tuesday night, he wanted to talk, and for whatever reason I wanted to listen and talk, and we had a great conversation, and he actually was telling me that he was going to finish this four-year term and he was going to run for

another four years, and there wasn't one part of me that didn't absolutely believe that he was going to do that.... When I got the call on Friday, just days later, that he had passed away, I was in utter shock. I mean, the conversation that we had, the mood that he was in, the things that we talked about, and just to know that I won't be giving him a ride home tonight, hits pretty hard. Ed had a particular personality… that made him perfect for this job. I mean, he was so perfect to be the Mayor because he lived and breathed Marana…. He loved Marana, and he gave his life…, he literally gave his life to the Town.... He loved the residents of Marana…. You couldn't have picked somebody better than Ed Honea to be the Mayor of Marana and to get us to this point."

Vice Mayor Post's full tribute can be viewed here:
https://maranaaz.new.swagit.com/videos/321748.

Council Member Ziegler paid tribute to **Mayor Ed Honea**. Among other things, she said the following:

"…. Mayor, you left us too soon. We weren't ready, but not before you provided our Town with a very strong foundation in which to grow and prosper. After we say goodbye to you and assist and support your loved ones as best we can, our promise to you is to get back to work, hold you in our hearts and memories, and continue to build on the foundation you created for the Town of Marana. Rest in Peace, my friend."

Council Member Ziegler's full tribute can be viewed here:
https://maranaaz.new.swagit.com/videos/321748.

Council Member Kai paid tribute to **Mayor Ed Honea**. Among other things, he said the following:

"I think I've known Mayor Honea longer than anyone else here. Mayor Honea and I, we were grade schoolers together, and we used to play in the playground at Marana Elementary School, and we both graduated at the same time…. I'm sure going to miss him…. Ed was a leader, and he never gave up, and our Town would not be where it is today were it not for Ed…. I want to thank him for his service…."

Council Member Kai's full tribute can be viewed here:
https://maranaaz.new.swagit.com/videos/321748.

Council Member Comerford paid tribute to **Mayor Ed Honea**. Among other things, she said the following:

"We are going to miss Ed beyond now. We are going to miss him. There will never be another Ed Honea, and I am not saying that everybody isn't wonderful, I am saying that he had a way of making everybody wonderful. He was the one that encouraged me… to participate in [the] Town, and you just didn't say no to Ed…. I'm glad I said yes. Ed and I were buddies…. He was Marana's biggest cheerleader. He would not give up until he saw what he wanted to see through…. He just

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loved Marana with every ounce of his body…, he loved everybody, and everybody loved him…. I am going to miss him."

Council Member Comerford's full tribute can be viewed here: https://maranaaz.new.swagit.com/videos/321748.

Council Member Officer paid tribute to **Mayor Ed Honea**. Among other things, he said the following:

*"Ed was my neighbor before he was the Mayor to me.... He was a true neighbor…. [The] relationships that he built with people in the Town, in the County, in the State – with everybody – the relationships that he built with people, … it all came back to…: he was always for Marana…. He gathered the greatest there was in the area to do what we needed to get done. My hat's off right now to Town staff,… our police department, and… Northwest Fire [for] the respect and dignity, and just the love for who they responded to [when **Mayor Honea** passed away]…. Ed created a strong community, and he's going to be greatly missed; greatly missed."*

Council Member Officer's full tribute can be viewed here: https://maranaaz.new.swagit.com/videos/321748.

Council Member Cavanaugh paid tribute to **Mayor Ed Honea**. Among other things, he said the following:

"…. I guess I'm the youngest friend of Ed Honea. I've known him for about five years, and you can tell a lot from somebody after about two minutes of conversing with him, and my experience in talking to the Mayor, I knew the day I met him and came to a Council meeting [wanting] to shake his hand – he was genuine. I know he was authentic; he meant what he said; he was easy to smile.... I really respected him as our Mayor…. I knew that Mayor Honea loved the citizens of Marana – loved them!...."

Council Member Cavanaugh's full tribute can be viewed here: https://maranaaz.new.swagit.com/videos/321748.

On behalf of Town staff, **Town Manager Terry Rozema** thanked **Vice Mayor Post** and the Council for their tributes to **Mayor Honea**. He then paid tribute to **Mayor Ed Honea** and, among other things, said the following:

"…. Over the course of this past week-and-a-half now, the thing that I keep hearing from people is it feels so surreal – it just is absolutely surreal that the Mayor is not with us, and I think we all kind of expected that he was going to outlive all of us and be here long after we stepped away from our positions…. [M]ore than anything, the thing [Mayor Honea] was most proud of is the service that we provide to this community, and that meant a lot to him…. [T]hat spirit of sacrifice and that spirit of putting others ahead of self and that spirit of doing whatever it takes to get the job

done – that's what makes Marana unique and special. And that was Mayor Ed Honea…. He sacrificed for this community…. He was somebody who lived for this community and it was a passion for him…. I know I speak on behalf of all of the staff in this organization – we're all going to miss Mayor Ed Honea."

Mr. Rozema's full tribute can be viewed here:
https://maranaaz.new.swagit.com/videos/321748.

Vice Mayor Post called for a vote on the motion. Motion passed, 6-0.

EXECUTIVE SESSIONS

Pursuant to A.R.S. § 38-431.03, the Town Council may vote to go into executive session, which will not be open to the public, to discuss certain matters.

E1 Executive Session pursuant to A.R.S. §38-431.03 (A), Council may ask for discussion or consideration, or consultation with designated Town representatives, or consultation for legal advice with the Town Attorney, concerning any matter listed on this agenda for any of the reasons listed in A.R.S. §38-431.03 (A).

FUTURE AGENDA ITEMS

Notwithstanding the Mayor's discretion regarding the items to be placed on the agenda, if three or more Council members request that an item be placed on the agenda, it must be placed on the agenda for the second regular Town Council meeting after the date of the request, pursuant to Marana Town Code Section 2-4-2(B).

Vice Mayor Post asked for future agenda items. There were no future agenda items requested.

ADJOURNMENT

Vice Mayor Post asked for a motion to adjourn.

Council Member Ziegler and other Council Members moved to adjourn the meeting. Motion passed, 6-0. The meeting was adjourned at 6:32 PM.

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CERTIFICATION

I hereby certify that the foregoing are the true and correct minutes of the regular Town Council meeting held on December 3, 2024. I further certify that a quorum was present.

_____

David L. Udall, Town Clerk

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Council-Regular Meeting **L1**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: David L. Udall, Town Clerk/Assistant Town Attorney

From: Nolette Hernandez, Records Clerk

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Relating to Liquor Licenses; recommendation to the Arizona Department of Liquor Licenses and Control regarding an application for a new series #012 Restaurant liquor license submitted by Bruce Robert Barro on behalf of Barro's Pizza, located at 5825 West Arizona Pavilions Drive, Tucson, Arizona, 85743 (David L. Udall)

Discussion:

This application is for a new series #012 Restaurant liquor license at Barro's Pizza, located at 5825 West Arizona Pavilions Drive, Tucson, Arizona, 85743.

Pursuant to state law, the application was posted at the premises where the business is to be conducted. The posted notice provided that residents within a one-mile radius from the premises may file written arguments in favor of or opposed to the issuance of the license with the Town Clerk's Office within 20 days of the posting. Any written arguments received by the Clerk's Office for or against the proposed liquor license are attached to this item and will be submitted to the Department of Liquor Licenses and Control (DLLC).

Town staff has reviewed this application to determine whether the applicant is in compliance with zoning, building, and other legal requirements for the business. Additionally, the Marana Police Department has conducted a local background check. The DLLC required management training has been submitted to the DLLC.

The Town Council must enter an order recommending approval or disapproval of the

application within 60 days after filing the application. Pursuant to state statute, a license will only be issued after a satisfactory showing of the capability, qualifications, and reliability of the applicant and "in all proceedings before the town council, the applicant bears the burden of showing that the public convenience requires and that the best interests of the community will be substantially served by the issuance of a license."

If the Council's recommendation is for disapproval, the order must include an attachment stating the specific reasons for the recommendation of disapproval and include a summary of the testimony or other evidence supporting the recommendation.

If the Council enters an order recommending approval of the application, or makes no recommendation, then no hearing before the Arizona state liquor board will take place, unless the director of the DLLC, the Liquor Board or a resident within a one-mile radius from the premises requests a hearing. If the Council enters an order recommending disapproval of the application, or if the director, board or a resident within a one-mile radius from the premises requests a hearing, then the state board will hold a hearing regarding the application.

At the hearing, the state board will consider all evidence and testimony in favor of or opposed to the granting of the license. The decision of the board to either grant or deny an application will normally take place within 105 days after the application has been filed, unless the director of the DLLC deems it necessary to extend the time period.

Staff Recommendation:

The Town staff recommends that an order recommending approval be submitted to the DLLC for this liquor license application.

Suggested Motion:

OPTION 1: I move to approve and submit to the DLLC an order recommending approval of an application for a new series #012 Restaurant liquor license application submitted by Bruce Robert Barro on behalf of Barro's Pizza, located at 5825 West Arizona Pavilions Drive, Tucson, Arizona, 85743.

OPTION 2: I move to approve and submit to the DLLC an order recommending disapproval of an application for a new series #012 Restaurant liquor license application submitted by Bruce Robert Barro on behalf of Barro's Pizza, located at 5825 West Arizona Pavilions Drive, Tucson, Arizona, 85743.

Attachments

Redacted Application

Affidavit of Posting

Local Governing Body Recommendation

Description of Common Liquor Licenses

State of Arizona
Department of Liquor Licenses and Control

received
10/30/2024
10:48 AM
Email
NH

Created 10/30/2024 @ 10:01:39 AM

Local Governing Body Report

LICENSE

Number:		Type:	012 RESTAURANT
Name:	BARRO'S PIZZA		
State:	Pending		
Issue Date:		Expiration Date:	
Original Issue Date:			
Location:	5825 W ARIZONA PAVILIONS DRIVE MARANA, AZ 85653 USA		
Mailing Address:	633 E RAY ROAD #116 GILBERT, AZ 85296 USA		
Phone:	(520)682-3969		
Alt. Phone:	[redacted]		
Email:	BRUCE@BARROSPIZZA.COM		

AGENT

Name:	BRUCE ROBERT BARRO
Gender:	Male
Correspondence Address:	633 E RAY ROAD #116 GILBERT, AZ 85296 USA
Phone:	[redacted]
Alt. Phone:	
Email:	BRUCE@BARROSPIZZA.COM

OWNER

60th Day:
12/29/24
105th Day:
2/12/25

Name:	A & D PIZZA INC
Contact Name:	BRUCE ROBERT BARRO
Type:	CORPORATION
AZ CC File Number:	0141994-2
State of Incorporation:	AZ
Incorporation Date:	10/08/1981
Correspondence Address:	633 E RAY ROAD #116 GILBERT, AZ 85296 USA
Phone:	[redacted]
Alt. Phone:	
Email:	BRUCE@BARROSPIZZA.COM

Officers / Stockholders

Name:	Title:	% Interest:
BRUCE BARRO GST EXEMPT TRUST	Stockholder	70.45
BRUCE BARRO S-CORP NON-EXEMPT TRUST	Stockholder	29.55
KELLY ANN BARRO	Treas	
REGINA SUE BARRO	Secretary	
BRUCE ROBERT BARRO	President	

A & D PIZZA INC - Treas

Name:	KELLY ANN BARRO
Gender:	Female
Correspondence Address:	633 E RAY ROAD #116 GILBERT, AZ 85296 USA
Phone:	[redacted]
Alt. Phone:	
Email:	KELLY@BARROSPIZZA.COM

A & D PIZZA INC - Stockholder

Name:	BRUCE BARRO GST EXEMPT TRUST
Contact Name:	BRUCE BARRO
Type:	TRUST
AZ CC File Number:	
State of Incorporation:	
Incorporation Date:	
Correspondence Address:	633 E RAY ROAD #116 GILBERT, AZ 85296 USA
Phone:	[redacted]
Alt. Phone:	
Email:	BRUCE@BARROSPIZZA.COM

A & D PIZZA INC - Stockholder

Name: BRUCE BARRO S-CORP NON-EXEMPT TRUST
Contact Name: BRUCE BARRO
Type: TRUST
AZ CC File Number: State of Incorporation:
Incorporation Date:
Correspondence Address: 633 E RAY ROAD
#116
GILBERT, AZ 85296
USA
Phone: [redacted]
Alt. Phone:
Email: BRUCE@BARROSPIZZA.COM

BRUCE BARRO GST EXEMPT TRUST - Trustee
BRUCE BARRO S-CORP NON-EXEMPT TRUST - Trustee

Name: BRUCE ROBERT BARRO
Gender: Male
Correspondence Address: 633 E RAY ROAD
#116
GILBERT, AZ 85296
USA
Phone: [redacted]
Alt. Phone:
Email: BRUCE@BARROSPIZZA.COM

A & D PIZZA INC - President

Name: BRUCE ROBERT BARRO
Gender: Male
Correspondence Address: 633 E RAY ROAD
#116
GILBERT, AZ 85296
USA
Phone: [redacted]
Alt. Phone:
Email: BRUCE@BARROSPIZZA.COM

A & D PIZZA INC - Secretary

Name: REGINA SUE BARRO
Gender: Female
Correspondence Address: 633 E RAY ROAD
#116
GILBERT, AZ 85296
USA
Phone: [redacted]
Alt. Phone:
Email: GINA@BARROSPIZZA.COM

MANAGERS

Name: LANDON SCOT NABLO
Gender: Male
Correspondence Address: 633 E RAY ROAD
#116
GILBERT, AZ 85296
USA
Phone: (480)641-1237
Alt. Phone: [redacted]
Email:

****

Name: TERRY LEE EISENHAUER
Gender: Male
Correspondence Address: 633 E RAY ROAD
#116
GILBERT, AZ 85296
USA
Phone: [redacted]
Alt. Phone:
Email:

****

Name: ERIC THOMAS WINKELMANN
Gender: Male
Correspondence Address: 633 E RAY ROAD
#116
GILBERT, AZ 85296
USA
Phone: (480)917-0111
Alt. Phone: [redacted]
Email:

****

Name: TODD ROSS CONNER
Gender: Male
Correspondence Address: 633 E RAY ROAD
#116
GILBERT, AZ 85296
USA
Phone: [redacted]
Alt. Phone:
Email:

****

Name:	MICHAEL DAVID STEWART
Gender:	Male
Correspondence Address:	633 E RAY ROAD #116 GILBERT, AZ 85296 USA
Phone:	(480)831-7676
Alt. Phone:	[redacted]
Email:	

****

Name:	JEFFREY RYAN PHILLIPS
Gender:	Male
Correspondence Address:	633 E RAY ROAD #116 GILBERT, AZ 85296 USA
Phone:	[redacted]
Alt. Phone:	
Email:	JEFF@BARROSPIZZA.COM

APPLICATION INFORMATION

Application Number: 310579
Application Type: New Application
Created Date: 09/23/2024

QUESTIONS & ANSWERS

012 Restaurant

1) Are you applying for an Interim Permit (INP)?
   No
2) Are you one of the following? Please indicate below.
   Property Tenant
   Subtenant
   Property Owner
   Property Purchaser
   Property Management Company
   OWNER
3) Is there a penalty if lease is not fulfilled?
   No
4) Is the Business located within the incorporated limits of the city or town of which it is located?
   Yes NO, MARANA
5) What is the total money borrowed for the business not including the lease?
   Please list each amount owed to lenders/individuals.
   $0
6) Are there walk-up or drive-through windows on the premises?
   No
7) Does the establishment have a patio?
   Yes
   Is the patio contiguous or non-contiguous (within 30 feet)?
   CONTIGUOUS
8) Is your licensed premises now closed due to construction, renovation or redesign or rebuild?
   Yes
   If yes, what is your estimated completion date?
   01/01/2025
9) What type of business will this license be used for?
   FAMILY RESTAURANT

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A & D Pizza Inc.

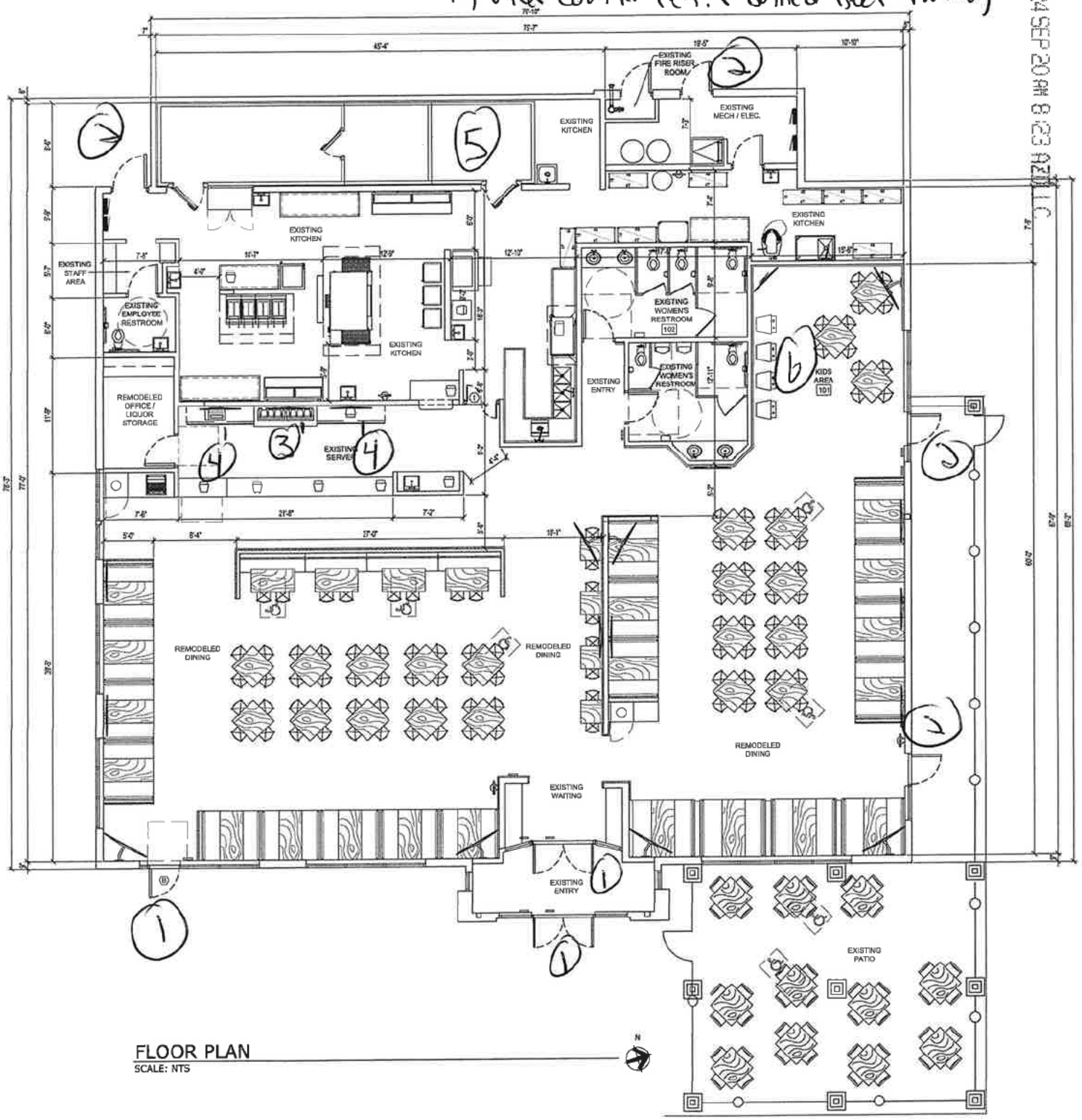
Directors: Bruce Robert Barro Pres.
Kelly Ann Barro Treas.
Regina Sue Barro Sec.

Bruce Barro GST Exempt Trust
70.45%
Bruce Barro Trustee

Bruce Barro S-Corp
Non Exempt Trust
29.55%
Bruce Barro Trustee

5850 Sq. ft

1.) Entrance
2.) Exit
3.) Beer taps
4.) under counter ref. (bottled Beer & wine)
5.) Walk in Keg storage
6.) Video games



FLOOR PLAN
SCALE: NTS

'24 SEP 20 AM 8:24 AZDLLC

RESTAURANT/HOTEL/MOTEL OPERATION PLAN

Arizona Dept. of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

Type or Print with Black Ink

1. Name of restaurant (Please print): Barro's Pizza

2. Must indicate the equipment below by Make, Model, and Capacity:

LIST ONLY THE FOLLOWING - NO ATTACHMENTS

Grill	N/A
Oven	(3) XLT Conveyor Gas
Freezer	Walk In
Refrigerator	(2) Walk ins, (1) 2 door refrigerator "True (2) 72" Makelines "True"
Sink	(6) hand sinks, (1) 3 comp sink, (1) 1 comp produce sink
Dish Washing Facilities	Commercial dishwasher "EnergyMizer"
Food Preparation Counter (Dimensions)	(5) 72"x30" SS work tables
Other	

3. Attach a copy of your FULL menu with pricing **INCLUDING NON-ALCOHOLIC BEVERAGES**

4. What percentage of your public premises is used primarily for restaurant dining?

(Do not include kitchen, bar, hi-top tables, or game area.) 65 %

5. Does your restaurant have a bar area that is distinct and separate from the dining area? ☐ YES ☑ No

(If yes, what percentage of the public floor space does this area cover?) _____ %

6. List the **seating capacity** for:

a) Restaurant dining area of your premises: [150]

(DO NOT INCLUDE PATIO SEATING)

b) Bar area [+ 0]

TOTAL [= 150]

'24 SEP 20 AM 8:24 AZDLLC

7. What type of dinnerware is primarily used in your restaurant? ☑ Reusable ☐ Disposable ☐ Both

8. Does your restaurant contain any **games, televisions**, or **any other entertainment?** ☑ YES ☐ No

If yes, specify what types and how many (examples: 4-TV's, 2-Pool Tables, 1-Video Game, etc.)

14 TV's

3 video games

9. Do you have live entertainment or dancing? ☐ YES ☑ No

If yes, what type and how often (example: DJ-2 x a week, Karaoke-2 x a month, Live Band-1 x a month, etc.)

10. List number of employees for each position:

Position	How many
Cooks	10
Bartenders	0
Hostesses	0
Managers	2
Servers	10
Other (dishwasher)	1
Other (delivery drivers)	10
Other ( )	

I, (Print Full Name) Bruce Robert Barro **hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.**

Applicant Signature: _____

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BARRO'S PIZZA

Est. AZ 1980 — A FAMILY TRADITION

Made-to-Order Pizzas

All pizzas are available with original or thin crust, traditional red or white sauce. White Sauce is an additional $2.

TOPPINGS Pepperoni, Ham, Salami, Onions, Anchovies, Olives, Fresh Garlic, Pineapple, Bacon, Italian Sausage, Tomato, Mushroom, Meatball, Green Pepper, Jalapeño, Ricotta Cheese, Feta Cheese, Spinach, Chicken (Add'l charge)

	SMALL	SMALL GLUTEN-FREE AVAILABLE for $3 more	MEDIUM	LARGE	X-LARGE
CHEESE	$6.50		$8.50	$10.75	$12.25
ADD'L TOPPINGS	$1.00		$1.25	$1.50	$1.75

Specialty Pizzas

SMALL	SMALL GLUTEN-FREE AVAILABLE for $3 more	LARGE	MEDIUM	X-LARGE
$10.50		$13.50	$16.75	$19.25

BARRO'S SPECIAL Pepperoni, Ham, Mushroom, Green Pepper & Onion

MEGA MEAT Pepperoni, Ham, Meatball, Bacon & Sausage

VEGETARIAN SPECIAL Mushroom, Onion, Green Pepper, Black Olive & Tomato

BBQ CHICKEN BBQ Sauce, Chicken, Mozzarella & Cheddar Cheese

CHICKEN SUPREME Chicken, Mushroom, Green Pepper, Onion, Mozzarella & Cheddar Cheese

SPICY SOUTHWESTERN Chicken, Spicy BBQ Sauce, Mozzarella & Cheddar Cheese

KOHA PIZZA Teriyaki Sauce, Chicken, Pineapple, Mozzarella & Cheddar Cheese

HOT WING Chicken, Hot Wing Sauce, Mozzarella & Cheddar Cheese

WHITE PIZZA Brushed with Oil, Fresh Garlic, Italian Seasoning, Parmesan, Mozzarella & Ricotta Cheese, & Tomato

Lunch Specials

Available 10:30am to 3pm daily

ONE SLICE $2.00

ONE SLICE & SMALL DRINK $2.75

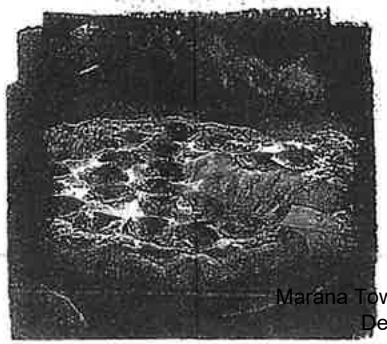
ONE SLICE, SALAD & SMALL DRINK $4.50

TWO SLICES & SMALL DRINK $4.25

SMALL SALAD & SMALL DRINK $3.75

THREE SLICES & SMALL DRINK $6.00

TWO SLICES, SALAD & SMALL DRINK $6.50



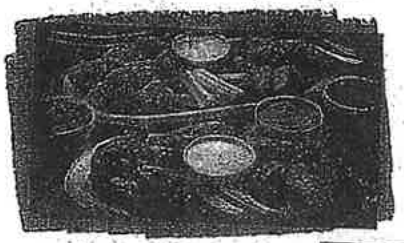
Wings

All of our signature wing flavors come with ranch or bleu cheese and celery sticks.

	BONELESS	TRADITIONAL
6 WINGS	$5.99	$6.49
12 WINGS	$10.49	$11.99
24 WINGS	$19.49	$22.49

WING SAUCES

Mild, Medium, Hot, Fire, BBQ, Honey Hot, Honey BBQ, Spicy BBQ, Teriyaki, Sweet Red Chili, Mango Habanero, Garlic Parmesan



Sandwiches

GLUTEN-FREE SUB ROLL AVAILABLE

All of our fresh deli-style sandwiches are available either hot or cold with a choice of white or wheat bread and are served with chips. Twelve-inch sub for $6.25.

TURKEY Mozzarella, Lettuce, Tomato, Mayo & Mustard

ROAST BEEF Mozzarella, Lettuce, Tomato, Mayo & Mustard

HAM & CHEESE American Cheese, Lettuce, Tomato, Mayo & Mustard

ITALIAN Pepperoni, Ham, Salami, Lettuce, Tomato, Mozzarella and Italian Dressing

MEATBALL Mozzarella & Marinara Sauce

CLUB Ham, Turkey, Roast Beef, Mozzarella, Lettuce, Tomato, Mustard & Mayo

Salads

Dressing options include Ranch, Italian, Vinaigrette, Bleu Cheese, Caesar, Honey Mustard, 1000 Island and Poppyseed.

GARDEN SALAD	Sm $3.49 Lg $5.49
NEW! APPLE CRANBERRY WALNUT SALAD	$7.49
NEW! SOUTHWEST BBQ CHICKEN SALAD	$7.49
ANTIPASTO SALAD	$7.49
CAESAR SALAD	$7.49
VEGGIE SALAD	$7.49
ADD GRILLED CHICKEN TO SALAD	$2.00

Pasta

All pasta dishes come with our flavorful marinara sauce and garlic bread.

SPAGHETTI	$6.49
PENNE	$6.49
FETTUCCINE ALFREDO	$6.49
ADD MEATBALLS	

Sides

Add an order of our freshly baked bread sticks or delicious mozzarella sticks to your meal.

MOZZARELLA STICKS	Sm $3.49 Lg $5.9
BREAD STICKS	$4.9
BREAD STICKS WITH CHEESE	$5.9
GARLIC BREAD	$1.4
GARLIC BREAD WITH CHEESE	$1.99
FRENCH BREAD PIZZA	$2.75
THREE MEATBALLS	$3.00
EXTRA RANCH	$.50
EXTRA MARINARA	$.50

Kids Menu

All Kid's Meals are served with a drink.

FRENCH BREAD PIZZA WITH CHIPS	$2.99
SPAGHETTI WITH GARLIC BREAD	$2.99
SPAGHETTI & MEATBALLS WITH GARLIC BREAD	$3.99
CHICKEN STRIPS WITH CHIPS	$3.99

Dessert

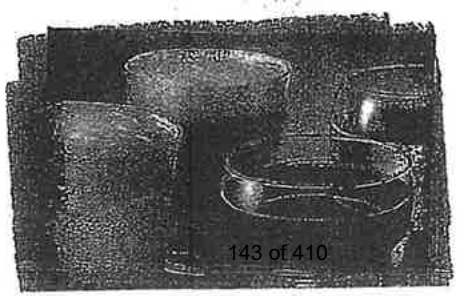
COOKIE SUNDAE

Chocolate chip cookie drizzled with Ghirardelli chocolate & vanilla ice cream $5.99

Drinks

We have a wide variety of cold beverages for you to enjoy with your meal including Pepsi & Dr Pepper products, Infusion Iced Tea, beer & wine.

KID'S DRINK	$1.25
FOUNTAIN DRINKS	Sm $1.89 Med $2.09
TO-GO/DELIVERY 2 LITER	$2.75
BOTTLE BEER	Domestic $3.50 Premium $4.00
DRAFT BEER PINT	Domestic $3.50 Premium $4.50
BREWSKI	Domestic $5.00 Premium $6.00
PITCHER OF BEER	Domestic $11.50 Premium $13.50
GLASS OF WINE	$4.00



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RECORDS REQUIRED FOR AUDIT
RESTAURANT/HOTEL/MOTEL

Arizona Dept. of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

Type or Print with Black Ink

In the event of an audit, you will be asked to provide to the Department any documents necessary to determine Compliance with A.R.S. §4-205.02(G). Such documents requested may include however, are not limited to:

1. Name of restaurant (Please print): Barro's Pizza
2. All invoices and receipts for the purchase of food and spirituous liquor for the licensed premises.
3. A list of ***all*** food and liquor vendors
4. The restaurant menu used during the audit period
5. A price list for alcoholic beverages during the audit period
6. Mark-up figures on food and alcoholic products during the audit period
7. A recent, ***accurate*** inventory of food and liquor (taken within two weeks of the Audit Interview Appointment)
8. Monthly Inventory Figures - beginning and ending figures for food and liquor
9. Chart of accounts (copy)
10. Financial Statements-Income Statements-Balance Sheets

11. **General Ledger**

   A. Sales Journals/Monthly Sales Schedules
      1) Daily sales Reports (to include the name of each waitress/waiter, bartender, etc. with sales for that day)
      2) Daily Cash Register Tapes - Journal Tapes and Z-tapes
      3) Dated Guest Checks
      4) Coupons/Specials/Discounts
      5) Any other evidence to support income from food and liquor sales
   B. Cash Receipts/Disbursement Journals
      1) Daily Bank Deposit Slips
      2) Bank Statements and canceled checks

12. **Tax Records**

   A. Transaction Privilege Sales, Use and Severance Tax Return (copies)
   B. Income Tax Return - city, state and federal (copies)
   C. Any supporting books, records, schedules or documents used in preparation of tax returns

13. **Payroll Records**

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A. Copies of all reports required by the State and Federal Government

B. Employee Log (A.R.S. §4-119)

C. Employee time cards (actual document used to sign in and out each work day)

D. Payroll records for all employees showing hours worked each week and hourly wages

14. **Off-site Catering Records** (must be complete and separate from restaurant records)

A. All documents which support the income derived from the sale of food off the license premises.

B. All documents which support purchases made for food to be sold off the licensed premises.

C. All coupons/specials/discounts

The sophistication of record keeping varies from establishment to establishment. Regardless of each licensee's accounting methods, the amount of gross revenue derived from the sale of food and liquor must be substantially documented.

REVOCATION OF YOUR LIQUOR LICENSE MAY OCCUR IF YOU FAIL TO COMPLY WITH A.R.S. §4-210(A)7 AND A.R.S. §4-205.02(G).

A.R.S. §4-210(A)7

The licensee fails to keep for two years and make available to the department upon reasonable request all invoices, records, bills or other papers and documents relating to the purchase, sale and delivery of spirituous liquors and, in the case of a restaurant or hotel-motel licensee, all invoices, records, bills or other papers and documents relating to the purchase, sale and delivery of food.

A.R.S. §4-205.02(G)

For the purpose of this section:

1. "Restaurant" means an establishment which derives **at least forty percent (40%)** of its gross revenue from the sale of food
2. "Gross revenue" means the revenue derived from all sales of food and spirituous liquor on the licensed premises regardless of whether the sales of spirituous liquor are made under a restaurant license issued pursuant to this section or under any under any other license that has been issued for the premises pursuant to this article.

I, (Print Full Name) Bruce Robert Barro **hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.**

Applicant Signature: _____

MAKE A COPY OF THIS DOCUMENT AND KEEP IT WITH RECORDS REQUIRED BY THE STATE

'24 SEP 20 AM 8:23 AZDLLC

Arizona Dept. of Liquor Licenses and Control
https://www.azliquor.gov
(602) 542-5141

DLLC USE ONLY
Fee:
Job #:
Date Accepted:
CSR:

805-560

Personal Information Questionnaire

ATTENTION APPLICANT: This is a legally binding document. An investigation of your background will be conducted. Incomplete applications will not be accepted. False or misleading answers may result in the denial or revocation of a license or permit and could result in criminal prosecution.

THE COMPLETED QUESTIONNAIRE NEEDS TO BE SUBMITTED TO THE DEPARTMENT ALONG WITH A $22. FEE, AND FD-258 FINGERPRINT CARD, THAT HAS BEEN SEALED IN AN ENVELOPE, AND SIGNED OR INITIALED BY THE FINGERPRINT TECHNICIAN, MUST INCLUDE THE FINGERPRINT VERIFICATION FORM. MUST BE COMPLETED BY A RECOGNIZED FINGERPRINT SERVICE OR LAW ENFORCEMENT AGENCY.

Agent: a person who is designated by an applicant or licensee to receive communications from the department and to file and sign documents submitted to the department on behalf of the applicant or licensee. An agent is not a manager.

A.R.S. §4-202(A).

Controlling Person: person directly or indirectly possessing control of an applicant or licensee.

A.R.S. §4-101(10).

Manager: An individual (not an entity) approved by the Department of Liquor who has the authority to organize, direct, carry out, control or to otherwise operate the day-to-day operations of a liquor-licensed business.

A.R.S. §4-101(22) and A.R.S. §4-202(C)

SECTION - 1 INDIVIDUAL INFORMATION

☑ AGENT ☑ CONTROLLING PERSON ☐ MANAGER

1. Name: Barro (Last) Bruce (First) Robert (Middle)
2. Social Security #: [redacted] (NOT a public record) Birth Date: [redacted] (NOT a public record)
3. Driver's License #: [redacted] (NOT a public record) State Issued: AZ
5. Are you a resident of Arizona? ☑ Yes ☐ No Date of residency: 01 / 15 / 1980
6. Email address: bruce@barrospizza.com
7. Home Address: [redacted]
8. Daytime phone #: [redacted] Alternative phone #: [redacted]

SECTION 2 – LICENSED BUSINESS INFORMATION

1. License Number:
2. Business Name (doing business as): Barro's Pizza
3. Business Address: 5825 W Arizona Pavilions Dr. Tucson AZ 85743

SECTION 3 – DAY TO DAY OPERATION OF BUSINESS

'24 SEP 20 AM 8:23 AZDLLC

Must attach copies of Basic and Management Title 4 training certificates for person managing the day to day operation of the licensed business.

Who is managing the day to day operations? ☐Agent ☐Controlling Person ☑Manager

Name of persons who will be handling the day to day operations: Jeffrey Ryan Phillips

SECTION 4 – BACKGROUND

If you answer "YES" to any Question 1 through 5 YOU MUST attach a signed statement. Give complete details including dates, agencies involved and dispositions. CHANGES TO QUESTIONS 1-5 MAY NOT BE ACCEPTED

1. Have you owned, or been a controlling person of any entities that held a liquor license in Arizona, or any jurisdiction, in the past 5 years? Yes ☑ No ☐

2. Have you been cited, arrested, indicted, convicted, or required to appear in court for violation of ANY criminal law or ordinance, regardless of the disposition, even if dismissed or expunged, within the past 5 years? Yes ☐ No ☑

3. Has an entity in which you are or have been a controlling person had an application or license rejected, denied, revoked, or suspended in or outside of Arizona within the last 5 years? *A.R.S.§4-202(D* Yes ☐ No ☑

4. Have you had ANY administrative law citations, compliance actions, or consents, in any jurisdiction in the past 5 years? (Do not include civil traffic tickets) Yes ☐ No ☑
   A.R.S.§4-202,4-210
   **Administrative Law Violations are any civil penalties, fines, suspension, or revocations of your liquor license.*

5. Has anyone EVER obtained a judgement against you the subject of which involved fraud or misrepresentation? Yes ☐ No ☑

I, (Print Full Name) Bruce Robert Barro hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.

Signature: _____ **Date:** 9/10/24

'24 10 28 Liqr. Dept AM 8:10

I Bruce Barro have owned and been a controlling person in the following liquor licenses:

License #
1207A365
1207A752
1207B188
012070011473
07295297
12079498
1207A023
012070011551
12074320
12078014
12079579
1207B188
10044593
12079340
012070009422
012070017836
012070016593
12104501
12113231
12113157
012110003369
012110022492

10/25/24

'24 10 28 Liqr. Dept AM11:22

#1

I, Bruce Barro have owned and been a controlling person in the following liquor licenses:

License #
1207A365
1207A752
1207B188
012070011473
07295297
12079498
1207A023
012070011551
12074320
12078014
12079579
1207B188
10044593
12079340
012070009422
012070017836
012070016593
12104501
12113231
12113157
012110003369
012110022492

10/25/24

'24 SEP 20 AM 8:24 AZDLLC

ALIEN STATUS

Arizona Dept. of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

Type or Print with Black Ink

Title IV of the federal Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (the "Act"), 8 U.S.C. § 1621, provides that, with certain exceptions, only United States citizens, United States non-citizen nationals, non-exempt "qualified aliens" (and sometimes only particular categories of qualified aliens), nonimmigrant, and certain aliens paroled into the United States are eligible to receive state, or local public benefits. With certain exceptions, a professional license and commercial license issued by a State agency is a State public benefit.

Arizona Revised Statutes § 41-1080 requires, in general, that a person applying for a license must submit documentation to the license agency that satisfactorily demonstrates the applicant's presence in the United States is authorized under federal law.

Directions: All applicants must complete Sections I, II, and IV. Applicants who are not U.S. citizens or nationals must also complete Section III.

Submit this completed form and a copy of one or more document(s) from the attached "Evidence of U.S. Citizenship, U.S. National Status, or Alien Status" with your application for license or renewal. If the document you submit does not contain a photograph, you must also provide a government issued document that contains your photograph. You must submit supporting legal documentation (i.e. marriage certificate) if the name on your evidence is not the same as your current legal name.

SECTION I – APPLICANT INFORMATION

APPLICANT NAME (Print or type) Bruce Robert Barro

SECTION II – CITIZENSHIP OR NATIONAL STATUS DECLARATION

Are you a citizen or national of the United States? ☑ Yes ☐ No - If **yes**, indicate place of birth:

City Lake Forest State IL **COUNTRY** USA

If you answered **Yes, 1)** Attach a legible copy of a document from the list below.

2) Name of document: AZ Drivers Lic.

If you answered **No**, you must complete Sections III.

EVIDENCE OF U.S. CITIZENSHIP, U.S. NATIONAL STATUS, OR ALIEN STATUS

'24 SEP 20 AM 8:24 AZDLLC

You must submit supporting legal documentation (i.e. marriage certificate) if the name on your evidence is not the same as your current legal name.

Evidence showing authorized presence in the United State includes the following:

1. An Arizona driver license issued after 1996 or an Arizona non-operating identification card.
2. A driver license issued by a state that verifies lawful presence in the United States.
3. A birth certificate or delayed birth certificate showing birth in one of the 50 states, the District of Columbia, Puerto Rico (on or after Jan. 13, 1941), Guam, the U.S. Virgin Islands (on or after January 17, 1917), American Samoa, or the Northern Mariana Islands (on or after November 4, 1986, Northern Mariana Islands local time)
4. A United States certificate of birth abroad.
5. A United States passport. ***Passport must be signed***
6. A foreign passport with a United States visa.
7. An I-94 form with a photograph.
8. A United States citizenship and immigration services employment authorization document or refugee travel document.
9. A United States certificate of naturalization.
10. A United States certificate of citizenship.
11. A tribal certificate of Indian blood.
12. A tribal or bureau of Indian affairs affidavit of birth.
13. Any other license that is issued by the federal government, any other state government, an agency of this state or a political subdivision of this state that requires proof of citizenship or lawful alien status before issuing the license.

'24 SEP 20 AM 8:24 AZDLLC

SECTION III – QUALIFIED ALIEN DECLARATION

Applicants who are not citizens or nationals of the United States. Please indicate alien status by checking the appropriate box. Attach a legible copy of a document from the attached list or other document as evidence of your status.

_____
Name of document provided

Qualified Alien Status (8 U.S.C.§§ 1621(a)(1),-1641(b) and (c))

☐ 1. An alien lawfully admitted for permanent residence under the Immigration and Nationality Act (INA)

☐ 2. An alien who is granted asylum under Section 208 of the INA.

☐ 3. A refugee admitted to the United States under Section 207 of the INA.

☐ 4 An alien paroled into the United States for at least one year under Section 212(d)(5) of the INA.

☐ 5. An alien whose deportation is being withheld under Section 243(h) of the INA.

☐ 6. An alien granted conditional entry under Section 203(a)(7) of the INA as in effect prior to April 1, 1980.

☐ . An alien who is a Cuban/Haitian entrant.

☐ 8. An alien who has, or whose child or child's parent is a "battered alien" or an alien subject to extreme cruelty in the United States

Nonimmigrant Status (8 U.S.C. § 1621(a)(2))

9. A nonimmigrant under the Immigration and Nationality Act [8 U.S.C § 1101 et seq.] Non-immigrants are persons who have temporary status for a specific purpose. See 8 U.S.C § 1101(a)(15).

Alien Paroled into the United States for Less Than One Year (8 U.S.C. § 1621(a)(3))

10. An alien paroled into the United States for less than one year under Section 212(d)(5) of the INA

Other Persons (8 U.S.C § 1621(c)(2)(A) and (C)

11. A nonimmigrant whose visa for entry is related to employment in the United States, or

12. A citizen of a freely associated state, if section 141 of the applicable compact of free association approved in Public Law 99-239 or 99-658 (or a successor provision) is in effect [Freely Associated States include the Republic of the Marshall Islands, Republic of Palau and the Federate States of Micronesia, 48 U.S.C. § 1901 *et seq.*];

13. A foreign national not physically present in the United States.

14. ***Otherwise Lawfully Present***

15. A person not described in categories 1-13 who is otherwise lawfully present in the United States.

PLEASE NOTE: The federal Personal Responsibility and Work Opportunity Reconciliation Act may make persons who fall into this category ineligible for licensure. See 8 U.S.C. §

Bruce Robert Barro		9/10/24
Print Name	**Signature**	**Date**

'24 SEP 20 AM 8:24 AZDLLC



'24 OCT 4 PM 1:06 AZDLLC

FINGERPRINT VERIFICATION FORM

Arizona Department of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

DLLC USE ONLY

Job#:	310579
Date Accepted:	10-4-24
CSR:	AP

ATTENTION FINGERPRINT TECHNICIAN:

Please follow the instructions below for fingerprinting this applicant.

1. Please fill out or ensure that the applicant has filled out all the required boxes on the fingerprint card prior to taking the fingerprints.
2. Request a valid, unexpired government-issued photo ID from the applicant and compare the physical descriptors on the applicant's photo ID to the applicant and to the information on the fingerprint card.
3. Fill out the information in the boxes below. **Please print clearly**.
4. Once the prints have been taken, place the fingerprint card and this form into the envelope and seal it. Please write your name or identification across the edge of the seal. Return the sealed envelope to the applicant.
   Do not give the applicant the fingerprint card without first sealing it inside the envelope.
5. **Write applicants name on front of sealed envelope.**

PRINT the following information:

Date	Name of Applicant:
9/30/24	BRULE BARRO
Name of Fingerprint Technician: MEGAN PICKELL 440	
Fingerprint technician's Signature: 440	
Fingerprint technician's Agency/company Name: CWSOA/ Fingerprint Tech 1757 E Baseline Rd, #104, Gilbert, AZ 85233	Phone Number: 480-892-4295
Type of Photo ID Provided (check one): ☒ Driver's License ☐ Passport ☐ Other (Please specify)	

Certificate # ON-LINE

☐ On-sale 24 SEP 20 AM 8:23 AZDLLC
☐ Off-sale
☒ On- and off-sale

Certificate of Completion
For
Title 4 **BASIC** Liquor Law Training

A Certificate of Completion must be on a form provided by the Arizona Department of Liquor. Certificates are completed by a state-approved training provider and, when issued, the Certificate is signed by the course participant.

The State requires BASIC Title 4 training only as a prerequisite for MANAGEMENT Title 4 training or as a result of a liquor law violation. Persons required to have BASIC Title 4 training are listed at the base of this Certificate. Licensees sometimes require BASIC Title 4 Training a condition of employment.

A replacement Certificate of Completion for Title 4 training must be available through the training provider for two years after the training completion date.

Student Information

Bruce Barro
Full Name (please print)

Signature

12/02/2022
Training Completion Date

12/02/2025
Certificate Expiration Date
(three years from completion date)

Training Provider Information

AATF – All-Star Alcohol Awareness
Company Name

P.O. Box 6252, Chandler, Arizona 85246
Mailing Address

(480) 664-0389
Daytime Contact Phone Number

I, Jared Repinski, certify that the above named individual did successfully complete
Instructor Name (please print)
Title 4 BASIC Training in accordance with A.R.S. §4-112(G)(2) and Arizona Administrative Code (A.A.C.)R19-1-103 using training course content and materials approved by the Arizona Department of Liquor Licenses and Control. I understand that misuse of this Certificate of Completion can result in the revocation of State-approval for the Title 4 Training Provider named in this section as provided by A.A.C. R19-1-103(E) and (F).

Instructor Signature

12 / 02 / 2022
Day Mo Year

Persons required to complete BASIC & MANAGEMENT Title 4 training: 1) owner(s) actively involved in the daily business operations of a liquor-licensed business of a series listed below
2) licensees, agents and managers actively involved in the daily business operations of a liquor-licensed business of a series listed below

In-state Microbrewery (series 3)	Government (series 5)	Bar (series 6)	Beer & Wine Bar (series 7)
Conveyance (series 8)	Liquor Store (series 9)	Private Club (series 14)	Hotel/Motel w/restaurant (series 11)
Restaurant (series 12)	In-state Farm Winery (series 13)		Beer & Wine Store (series 10)

Liquor license applications (initial and renewal) are not complete until valid Certificates of Completion for all required persons have been submitted to the Department of Liquor.

The questionnaire (which designates a manager to a location) and the agent change form (which assigns a new agent to active liquor licenses) are not complete until valid Certificates of Completion for all required persons have been submitted to the Department of Liquor.

July 11, 2013

'24 SEP 20 AM 8:23 AZDLLC

Certificate # ON-LINE

Certificate of Completion
For
Title 4 **MANAGEMENT** Liquor Law Training

A Certificate of Completion must be on a form provided by the Arizona Department of Liquor. Certificates are completed by a state-approved training provider and, when issued, the Certificate is signed by the course participant.

Basic Title 4 training is a prerequisite for MANAGEMENT Title 4 training. A valid Certificate of Completion for BASIC Title 4 training must be on file at the Department of Liquor and satisfactory completion of a State-approved BASIC Title 4 course must be verified by the training provider prior to issuing a Certificate of Completion for MANAGEMENT Title 4 training.

A replacement Certificate of Completion for Title 4 training must be available through the training provider for two years after the training completion date.

Student Information

Bruce Barro
Full Name (please print)

Signature

09/11/2024
Training Completion Date

09/11/2027
Certificate Expiration Date
(three years from completion date)

Training Provider Information

AATF – All-Star Alcohol Awareness
Company Name

P.O. Box 6252, Chandler, Arizona 85246
Mailing Address

(480) 664-0389
Daytime Contact Phone Number

I, Jared Repinski, certify that the above named individual did successfully complete
Instructor Name (please print)
Title 4 MANAGEMENT Training in accordance with A.R.S. §4-112(G)(2) and Arizona Administrative Code (A.A.C.)R19-1-103 using training course content and materials approved by the Arizona Department of Liquor Licenses and Control. I understand that misuse of this Certificate of Completion can result in the revocation of State-approval for the Title 4 Training Provider named in this section as provided by A.A.C. R19-1-103(E) and (F).

Instructor Signature

11 / 09 / 2024
Day Mo Year

Persons required to complete BASIC & MANAGEMENT Title 4 training: 1) owner(s) actively involved in the daily business operations of a liquor-licensed business of a series listed below
2) licensees, agents and managers actively involved in the daily business operations of a liquor-licensed business of a series listed below

In-state Microbrewery (series 3)	Government (series 5)	Bar (series 6)	Beer & Wine Bar (series 7)
Conveyance (series 8)	Liquor Store (series 9)	Private Club (series 14)	Hotel/Motel w/restaurant (series 11)
Restaurant (series 12)	In-state Farm Winery (series 13)		Beer & Wine Store (series 10)

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The questionnaire (which designates a manager to a location) and the agent change form (which assigns a new agent to active liquor licenses) are not complete until valid Certificates of Completion for all required persons have been submitted to the Department of Liquor.

July 11, 2013

'24 SEP 20 AM 8:23 AZDLLC

'24 SEP 20 AM 8:23 AZDLLC

Arizona Dept. of Liquor Licenses and Control
https://www.azliquor.gov
(602) 542-5141

DLLC USE ONLY	
Fee:	
Job #:	
Date Accepted:	
CSR:	

Personal Information Questionnaire

ATTENTION APPLICANT: This is a legally binding document. An investigation of your background will be conducted. Incomplete applications will not be accepted. False or misleading answers may result in the denial or revocation of a license or permit and could result in criminal prosecution.

THE COMPLETED QUESTIONNAIRE NEEDS TO BE SUBMITTED TO THE DEPARTMENT ALONG WITH A $22. FEE, AND FD-258 FINGERPRINT CARD, THAT HAS BEEN SEALED IN AN ENVELOPE, AND SIGNED OR INITIALED BY THE FINGERPRINT TECHNICIAN, MUST INCLUDE THE FINGERPRINT VERIFICATION FORM. MUST BE COMPLETED BY A RECOGNIZED FINGERPRINT SERVICE OR LAW ENFORCEMENT AGENCY.

Agent: a person who is designated by an applicant or licensee to receive communications from the department and to file and sign documents submitted to the department on behalf of the applicant or licensee. An agent is not a manager.

A.R.S. §4-202(A).

Controlling Person: person directly or indirectly possessing control of an applicant or licensee.

A.R.S. §4-101(10).

Manager: An individual (not an entity) approved by the Department of Liquor who has the authority to organize, direct, carry out, control or to otherwise operate the day-to-day operations of a liquor-licensed business.

A.R.S. §4-101(22) and A.R.S. §4-202(C)

SECTION - 1 INDIVIDUAL INFORMATION

☐ AGENT ☑ CONTROLLING PERSON ☐ MANAGER

1. Name: Barro (Last) Kelly (First) Ann (Middle)
2. Social Security #: [redacted] (NOT a public record) Birth Date: [redacted] (NOT a public record)
3. Driver's License #: [redacted] (NOT a public record) State Issued: AZ
5. Are you a resident of Arizona? ☑ Yes ☐ No Date of residency: 01 / 15 / 1980
6. Email address: kelly@barrospizza.com
7. Home Address: [redacted]
8. Daytime phone #: [redacted] Alternative phone #: [redacted]

SECTION 2 – LICENSED BUSINESS INFORMATION

1. License Number:
2. Business Name (doing business as): Barro's Pizza
3. Business Address: 5825 W. Arizona Pavilions Dr. Tucson AZ 85743

24 SEP 20 AM 8:24 AZDLLC

SECTION 3 – DAY TO DAY OPERATION OF BUSINESS

Must attach copies of Basic and Management Title 4 training certificates for person managing the day to day operation of the licensed business.

Who is managing the day to day operations? ☐Agent ☐Controlling Person ☑Manager

Name of persons who will be handling the day to day operations: Jeffrey Ryan Phillips

SECTION 4 – BACKGROUND

If you answer "YES" to any Question 1 through 5 YOU MUST attach a signed statement. Give complete details including dates, agencies involved and dispositions. CHANGES TO QUESTIONS 1-5 MAY NOT BE ACCEPTED

1. Have you owned, or been a controlling person of any entities that held a liquor license in Arizona, or any jurisdiction, in the past 5 years? Yes ☑ No ☐
2. Have you been cited, arrested, indicted, convicted, or required to appear in court for violation of ANY criminal law or ordinance, regardless of the disposition, even if dismissed or expunged, within the past 5 years? Yes ☐ No ☑
3. Has an entity in which you are or have been a controlling person had an application or license rejected, denied, revoked, or suspended in or outside of Arizona within the last 5 years? *A.R.S.§4-202(D* Yes ☐ No ☑
4. Have you had ANY administrative law citations, compliance actions, or consents, in any jurisdiction in the past 5 years? (Do not include civil traffic tickets) Yes ☐ No ☑
   A.R.S.§4-202,4-210
   **Administrative Law Violations are any civil penalties, fines, suspension, or revocations of your liquor license.*
5. Has anyone EVER obtained a judgement against you the subject of which involved fraud or misrepresentation? Yes ☐ No ☑

I, (Print Full Name) Kelly Ann Barro **hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.**

Signature: Kelly Ann Barro **Date:** 9/10/24

I, Kelly Barro have owned and been a controlling person in the following liquor licenses:

License #
1207A365
1207A752
1207B188
012070011473
07295297
12079498
1207A023
012070011551
12074320
12078014
12079579
1207B188
10044593
12079340
012070009422
012070017836
012070016593
12104501
12113231
12113157
012110003369
012110022492

Kelly Barro 10/25/24

'24 OCT 21 PM 3:19 AZDLLC

A&D Pizza, Dba Barro's Pizza
633E Ray Rd Suite 116
Gilbert, AZ 85296
4808970521 ext 10

I Kelly Barro have owned and been a controlling person in the following liquor licenses:

License #
1207A365
1207A752
1207B188
012070011473
07295297
12079498
1207A023
012070011551
12074320
12078014
12079579
1207B188
10044593
12079340
012070009422
012070017836
012070016593
12104501
12113231
12113157
012110003369
012110022492

Kelly Barro 10/17/24

'24 10 28 Liqr. Dept AM 8:10

Salt River Pima-Maricopa Indian Community Regulatory Agency-
Office of Alcohol Beverage Control

8840 E. Chaparral Road, Suite 165, Scottsdale, Arizona 85250
(480) 362-5450 FAX (480) 362-5488
www.srpmic-nsn.gov/government/cra/

AUTHORIZATION & REQUEST TO RELEASE INFORMATION

TO: The Salt River Pima Maricopa Indian Community—Community Regulatory Agency
Agency Conducting the Background Investigation

FROM: _____
Print Applicant's Name

A) I hereby authorize, consent and request all persons to whom this request is presented having information relating to or concerning me including, but not limited to criminal history record information, or other relevant government records to furnish such information to a duly appointed agent of the SRPMIC Community Regulatory Agency for purposes of determining whether or not I meet the statutory requirement to have a SRPMIC liquor license issued in my name.

B) I hereby authorize and request all persons to whom this request is presented having documents relating to or concerning me to permit a duly appointed agent of the SRPMIC Community Regulatory Agency to review and copy any such documents, whether or not such documents would otherwise be protected from disclosure by any constitutional, statutory, or common law privilege.

C) If the person to whom this request is presented is a brokerage firm, bank savings and loan, or other financial institution or an officer of same, I hereby authorize and request that a duly appointed agent of the SRPMIC Community Regulatory Agency, be permitted to review and obtain copies of any and all documents, records or correspondence pertaining to me, including but not limited to past loan information, notes co-signed by me, checking account records, saving deposit records, safe deposit box records, passbook records and general ledger folio sheets.

D) This authorization ends eighteen (18) months from the date of my signature below.

E) I have filed with the SRPMIC Community Regulatory Agency an "application" for a license. I understand that I am seeking the granting of a privilege and acknowledge that the burden of proving my qualifications for a favorable determination is at all times on me. I accept any risk of adverse public notice, embarrassment, criticism, or other action of financial loss which may result from action with respect to this application.

F) I agree to indemnify and hold harmless the person to whom this request is presented and his agents and employees from and against all claims, damages, losses, and expenses, including reasonable attorneys' fees arising out of or by reason of complying with this request.

G) A reproduction of this request by photocopy or similar process shall be for all intents and purposes as valid as the original.

Kelly Barro — Print Name

Kelly Barro — Signature

3/26/24 — Date

'24 SEP 20 AM 8:24 AZDLLC

DLLC USE ONLY

Fee:
Job #:
Date Accepted:
CSR:

Arizona Dept. of Liquor Licenses and Control
https://www.azliquor.gov
(602) 542-5141

Personal Information Questionnaire

ATTENTION APPLICANT: This is a legally binding document. An investigation of your background will be conducted. Incomplete applications will not be accepted. False or misleading answers may result in the denial or revocation of a license or permit and could result in criminal prosecution.

THE COMPLETED QUESTIONNAIRE NEEDS TO BE SUBMITTED TO THE DEPARTMENT ALONG WITH A $22. FEE, AND FD-258 FINGERPRINT CARD, THAT HAS BEEN SEALED IN AN ENVELOPE, AND SIGNED OR INITIALED BY THE FINGERPRINT TECHNICIAN, MUST INCLUDE THE FINGERPRINT VERIFICATION FORM. MUST BE COMPLETED BY A RECOGNIZED FINGERPRINT SERVICE OR LAW ENFORCEMENT AGENCY.

Agent: a person who is designated by an applicant or licensee to receive communications from the department and to file and sign documents submitted to the department on behalf of the applicant or licensee. An agent is not a manager.

A.R.S. §4-202(A).

Controlling Person: person directly or indirectly possessing control of an applicant or licensee.

A.R.S. §4-101(10).

Manager: An individual (not an entity) approved by the Department of Liquor who has the authority to organize, direct, carry out, control or to otherwise operate the day-to-day operations of a liquor-licensed business.

A.R.S. §4-101(22) and A.R.S. §4-202(C)

SECTION - 1 INDIVIDUAL INFORMATION

☐ AGENT ☐ CONTROLLING PERSON ☑ MANAGER

1. Name: Phillips (Last) Jeffrey (First) Ryan (Middle)
2. Social Security #: [redacted] (NOT a public record) Birth Date: [redacted] (NOT a public record)
3. Driver's License #: [redacted] (NOT a public record) State Issued: AZ
5. Are you a resident of Arizona? ☑ Yes ☐ No Date of residency: 07/12/86
6. Email address: jeff@barrospizza.com
7. Home Address: [redacted]
8. Daytime phone #: [redacted] Alternative phone #: [redacted]

SECTION 2 – LICENSED BUSINESS INFORMATION

1. License Number:
2. Business Name (doing business as): Barro's Pizza
3. Business Address: 5825 W Arizona Pavilions Dr. Tucson AZ85743

'24 SEP 20 AM 8:24 AZDLLC

SECTION 3 – DAY TO DAY OPERATION OF BUSINESS

Must attach copies of Basic and Management Title 4 training certificates for person managing the day to day operation of the licensed business.

Who is managing the day to day operations? ☐Agent ☐Controlling Person ☑Manager

Name of persons who will be handling the day to day operations: Jeffrey Ryan Phillips

SECTION 4 – BACKGROUND

If you answer "YES" to any Question 1 through 5 YOU MUST attach a signed statement. Give complete details including dates, agencies involved and dispositions. CHANGES TO QUESTIONS 1-5 MAY NOT BE ACCEPTED

1. Have you owned, or been a controlling person of any entities that held a liquor license in Arizona, or any jurisdiction, in the past 5 years? Yes ☐ No ☑
2. Have you been cited, arrested, indicted, convicted, or required to appear in court for violation of ANY criminal law or ordinance, regardless of the disposition, even if dismissed or expunged, within the past 5 years? Yes ☐ No ☑
3. Has an entity in which you are or have been a controlling person had an application or license rejected, denied, revoked, or suspended in or outside of Arizona within the last 5 years? *A.R.S.§4-202(D* Yes ☐ No ☑
4. Have you had ANY administrative law citations, compliance actions, or consents, in any jurisdiction in the past 5 years? (Do not include civil traffic tickets) Yes ☐ No ☑
   A.R.S.§4-202,4-210
   **Administrative Law Violations are any civil penalties, fines, suspension, or revocations of your liquor license.*
5. Has anyone EVER obtained a judgement against you the subject of which involved fraud or misrepresentation? Yes ☐ No ☑

I, (Print Full Name) Jeffrey Ryan Phillips **hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.**

Signature: _____ **Date:** 9/11/2024

Certificate # ONLINE

'24 SEP 20 AM 8:24 AZDLLC

- ☐ On-sale
- ☐ Off-sale
- ☒ On- and off-sale

Certificate of Completion
For
Title 4 BASIC Liquor Law Training

A Certificate of Completion must be on a form provided by the Arizona Department of Liquor. Certificates are completed by a state-approved training provider and, when issued, the Certificate is signed by the course participant.

The State requires BASIC Title 4 training only as a prerequisite for MANAGEMENT Title 4 training or as a result of a liquor law violation. Persons required to have BASIC Title 4 training are listed at the base of this Certificate. Licensees sometimes require BASIC Title 4 Training a condition of employment.

A replacement Certificate of Completion for Title 4 training must be available through the training provider for two years after the training completion date.

Student Information

Jeff Phillips
Full Name (please print)

Jeff Phillips
Signature

12/01/2022
Training Completion Date

12/01/2025
Certificate Expiration Date
(three years from completion date)

Training Provider Information

US Liquor Laws
Company Name

P.O. Box 6965, Chandler, Arizona 85246
Mailing Address

(480) 709-8900
Daytime Contact Phone Number

I, Jared Repinski, certify that the above named individual did successfully complete
Instructor Name (please print)
Title 4 BASIC Training in accordance with A.R.S. §4-112(G)(2) and Arizona Administrative Code (A.A.C.)R19-1-103 using training course content and materials approved by the Arizona Department of Liquor Licenses and Control. I understand that misuse of this Certificate of Completion can result in the revocation of State-approval for the Title 4 Training Provider named in this section as provided by A.A.C. R19-1-103(E) and (F).

Instructor Signature

12 / 01 / 2022
Mo Date Year

Persons required to complete BASIC & MANAGEMENT Title 4 training: 1) owner(s) actively involved in the daily business operations of a liquor-licensed business of a series listed below
2) licensees, agents and managers actively involved in the daily business operations of a liquor-licensed business of a series listed below

In-state Microbrewery (series 3)
Conveyance (series 8)
Restaurant (series 12)
Government (series 5)
Liquor Store (series 9)
In-state Farm Winery (series 13)
Bar (series 6)
Private Club (series 14)
Beer & Wine Bar (series 7)
Hotel/Motel w/restaurant (series 11)
Beer & Wine Store (series 10)

Liquor license applications (initial and renewal) are not complete until valid Certificates of Completion for all required persons have been submitted to the Department of Liquor.

The questionnaire (which designates a manager to a location) and the agent change form (which assigns a new agent to active liquor licenses) are not complete until valid Certificates of Completion for all required persons have been submitted to the Department of Liquor.

July 11, 2013

Certificate # ON-LINE

'24 SEP 20 AM 8:24 AZDLLC

Certificate of Completion
For
Title 4 MANAGEMENT Liquor Law Training

A Certificate of Completion must be on a form provided by the Arizona Department of Liquor. Certificates are completed by a state-approved training provider and, when issued, the Certificate is signed by the course participant.

Basic Title 4 training is a prerequisite for MANAGEMENT Title 4 training. A valid Certificate of Completion for BASIC Title 4 training must be on file at the Department of Liquor and satisfactory completion of a State-approved BASIC Title 4 course must be verified by the training provider prior to issuing a Certificate of Completion for MANAGEMENT Title 4 training.

A replacement Certificate of Completion for Title 4 training must be available through the training provider for two years after the training completion date.

Student Information

Jeff Phillips
Full Name (please print)

Jeff Phillips
Signature

12/03/2022
Training Completion Date

12/03/2025
Certificate Expiration Date
(three years from completion date)

Training Provider Information

US Liquor Laws
Company Name

P.O. Box 6965 Chandler, Arizona 85246
Mailing Address

(480) 709-8900
Daytime Contact Phone Number

I, Jared Repinski, certify that the above named individual did successfully complete
Instructor Name (please print)
Title 4 MANAGEMENT Training in accordance with A.R.S. §4-112(G)(2) and Arizona Administrative Code (A.A.C.)R19-1-103 using training course content and materials approved by the Arizona Department of Liquor Licenses and Control. I understand that misuse of this Certificate of Completion can result in the revocation of State-approval for the Title 4 Training Provider named in this section as provided by A.A.C. R19-1-103(E) and (F).

Instructor Signature

12 / 03 / 2022
Mo Date Year

Persons required to complete BASIC & MANAGEMENT Title 4 training: 1) owner(s) actively involved in the daily business operations of a liquor-licensed business of a series listed below
2) licensees, agents and managers actively involved in the daily business operations of a liquor-licensed business of a series listed below

In-state Microbrewery (series 3)	Government (series 5)	Bar (series 6)	Beer & Wine Bar (series 7)
Conveyance (series 8)	Liquor Store (series 9)	Private Club (series 14)	Hotel/Motel w/restaurant (series 11)
Restaurant (series 12)	In-state Farm Winery (series 13)		Beer & Wine Store (series 10)

Liquor license applications (initial and renewal) are not complete until valid Certificates of Completion for all required persons have been submitted to the Department of Liquor.

The questionnaire (which designates a manager to a location) and the agent change form (which assigns a new agent to active liquor licenses) are not complete until valid Certificates of Completion for all required persons have been submitted to the Department of Liquor.

July 11, 2013

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Arizona Dept. of Liquor Licenses and Control
https://www.azliquor.gov
(602) 542-5141

Personal Information Questionnaire

DLLC USE ONLY
Fee:
Job #:
Date Accepted:
CSR:

805-560

ATTENTION APPLICANT: This is a legally binding document. An investigation of your background will be conducted. Incomplete applications will not be accepted. False or misleading answers may result in the denial or revocation of a license or permit and could result in criminal prosecution.

THE COMPLETED QUESTIONNAIRE NEEDS TO BE SUBMITTED TO THE DEPARTMENT ALONG WITH A $22. FEE, AND FD-258 FINGERPRINT CARD, THAT HAS BEEN SEALED IN AN ENVELOPE, AND SIGNED OR INITIALED BY THE FINGERPRINT TECHNICIAN, MUST INCLUDE THE FINGERPRINT VERIFICATION FORM. MUST BE COMPLETED BY A RECOGNIZED FINGERPRINT SERVICE OR LAW ENFORCEMENT AGENCY.

Agent: a person who is designated by an applicant or licensee to receive communications from the department and to file and sign documents submitted to the department on behalf of the applicant or licensee. An agent is not a manager.

A.R.S. §4-202(A).

Controlling Person: person directly or indirectly possessing control of an applicant or licensee.

A.R.S. §4-101(10).

Manager: An individual (not an entity) approved by the Department of Liquor who has the authority to organize, direct, carry out, control or to otherwise operate the day-to-day operations of a liquor-licensed business.

A.R.S. §4-101(22) and A.R.S. §4-202(C)

SECTION - 1 INDIVIDUAL INFORMATION

☐ AGENT ☒ CONTROLLING PERSON ☐ MANAGER

1. Name: Barro (Last) Regina (First) Sue (Middle)
2. Social Security #: [redacted] (NOT a public record) Birth Date: [redacted] (NOT a public record)
3. Driver's License #: [redacted] (NOT a public record) State Issued: Az
5. Are you a resident of Arizona? ☒ Yes ☐ No Date of residency: 06/01/1979
6. Email address: gina@barrospizza.com
7. Home Address: [redacted]
8. Daytime phone #: [redacted] Alternative phone #: _____

SECTION 2 – LICENSED BUSINESS INFORMATION

1. Liquor License #: _____
2. Business Name (doing business as): Barro's Pizza
3. Business Address: 5025 W Arizona Pavillions Dr., Tucson, AZ 85743

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SECTION 3 – DAY TO DAY OPERATION OF BUSINESS

Must attach copies of Basic and Management Title 4 training certificates for person managing the day to day operation of the licensed business.

Who is managing the day to day operations? ☐Agent ☐Controlling Person ☒Manager

Name of persons who will be handling the day to day operations: Jeffrey Ryan Phillips

SECTION 4 – BACKGROUND

If you answer "YES" to any Question 1 through 5 YOU MUST attach a signed statement. Give complete details including dates, agencies involved and dispositions. CHANGES TO QUESTIONS 1-5 MAY NOT BE ACCEPTED

1. Have you owned, or been a controlling person of any entities that held a liquor license in Arizona, or any jurisdiction, in the past 5 years? Yes ☒ No ☐
2. Have you been cited, arrested, indicted, convicted, or required to appear in court for violation of ANY criminal law or ordinance, regardless of the disposition, even if dismissed or expunged, within the past 5 years? Yes ☐ No ☒
3. Has an entity in which you are or have been a controlling person had an application or license rejected, denied, revoked, or suspended in or outside of Arizona within the last 5 years? *A.R.S.§4-202(D* Yes ☐ No ☒
4. Have you had ANY administrative law citations, compliance actions, or consents, in any jurisdiction in the past 5 years? (Do not include civil traffic tickets) Yes ☐ No ☒
   A.R.S.§4-202,4-210
   **Administrative Law Violations are any civil penalties, fines, suspension, or revocations of your liquor license.*
5. Has anyone EVER obtained a judgement against you the subject of which involved fraud or misrepresentation? Yes ☐ No ☒

I, (Print Full Name) Regina Sue Barro **hereby swear under penalty of perjury and in compliance with A.R.S. § 4-210(A)(2) and (3) that I have read and understand the foregoing and verify that the information and statements that I have made herein are true and correct to the best of my knowledge.**

Signature: Regina Sue Barro **Date:** 10/17/2024

'24 10 28 Liqr. Dept AM11:22

#1

I, Gina Barro have owned and been a controlling person in the following liquor licenses:

License #
1207A365
1207A752
1207B188
012070011473
07295297
12079498
1207A023
012070011551
12074320
12078014
12079579
1207B188
10044593
12079340
012070009422
012070017836
012070016593
12104501
12113231
12113157
012110003369
012110022492

Regina L Barro 10/28/24

'24 OCT 21 PM 3:19 AZDLLC

FINGERPRINT VERIFICATION FORM

DLLC USE ONLY

Job #:
Date Accepted:
CSR:

Arizona Department of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

ATTENTION FINGERPRINT TECHNICIAN:

Please follow the instructions below for fingerprinting this applicant.

1. Please fill out or ensure that the applicant has filled out all the required boxes on the fingerprint card prior to taking the fingerprints.
2. Request a valid, unexpired government-issued photo ID from the applicant and compare the physical descriptors on the applicant's photo ID to the applicant and to the information on the fingerprint card.
3. Fill out the information in the boxes below. **Please print clearly**.
4. Once the prints have been taken, place the fingerprint card and this form into the envelope and seal it. Please write your name or identification across the edge of the seal. Return the sealed envelope to the applicant.
   Do not give the applicant the fingerprint card without first sealing it inside the envelope.
5. **Write applicants name on front of sealed envelope.**

PRINT the following information:

Date 10/17/2024	**Name of Applicant:** Regina Sue Barro
Name of Fingerprint Technician: Susan Mack	
Fingerprint technician's Signature: Susan Mack	
Fingerprint technician's Agency/company Name: Sign with Susan LLC	**Phone Number:** 602-672-2834
Type of Photo ID Provided (check one): ☒ Driver's License ☐ Passport ☐ Other (Please specify)	

POSTING

Job# _____
DLLC use only

Arizona Dept. of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

Type or Print with Black Ink

Date of Posting: 11 / 01 / 24 Date of Posting Removal: 11 / 21 / 24

Applicant's Name: Barro (Last) Bruce (First) Robert (Middle)

Business Address: 5825 W Arizona Pavilions Dr (Street) Tucson (City) 85743 (Zip)

I hereby certify that pursuant to A.R.S. 4-201, I posted notice in a conspicuous place on the premises proposed to be licensed by the above applicant and said notice was posted for at least twenty (20) days.

JR Burns	Housing Rehabilitation Specialist	(520) 990-2496
Print Name of City/County Official	Title	Phone Number

Signature _____ Date Signed 11/1/24

Return this affidavit with your recommendations or any other related documents.
If you have any questions please call (602) 542-5141 and ask for the Licensing Division.

7/21/2022

Local Governing Body Recommendation

A.R.S. § 4-201(C)

Arizona Dept. of Liquor Licenses and Control
800 W. Washington St. 5th Floor Phoenix, AZ 85007
(602) 542-5141

Type or Print with Black Ink

City or Town of: Town of Marana (Circle one) Liquor License/Application #: 310579 (Arizona license/application #)

County of: Pima County City/Town/County #: LL2024-10

Licensed establishment that will be operating within an **"entertainment district"** as described in A.R.S. §4-207(D)(2),

_____ (Name of entertainment district) _____ (Date of resolution to create the entertainment district)

A boundary map of entertainment district must be attached.

The Marana Town Council (Governing body) at a Regular (Regular or special) meeting held on the 17 (Day) of December (Month), 2024 (Year) considered the application of Bruce Robert Barro (Name of applicant)

for a license to sell spirituous liquor at the premises described in the application as provided by A.R.S §4-201.

ORDER OF APPROVAL/DISAPPROVAL

IT IS THEREFORE ORDERED that the license APPLICATION OF Bruce Robert Barro (Name of applicant)

to sell spirituous liquor of the class and in the manner designated in the application, is hereby recommended

for _____ (Approval, disapproval, or no recommendation).

TRANSMISSION OF ORDER TO STATE

IT IS FURTHER ORDERED that a certified copy of this order be immediately transmitted to the State Department of Liquor, License Division, 800 W Washington, 5th Floor, Phoenix, Arizona 85007.

Dated at _____ (Location) on _____ (Day), _____ (Month), _____ (Year).

_____ (Printed name of city, town or county clerk) _____ (Signature of city, town or county clerk)

Series 6 Bar

The bar (series 6) liquor license is a "quota" license available only through the Liquor License Lottery or for purchase on the open market. Once issued, this liquor license is transferable from person to person and/or location to location within the same county and allows the holder both on- & off-sale retail privileges. This license allows a bar retailer to sell and serve all types of spirituous liquors, primarily by individual portions, to be consumed on the premises and in the original container for consumption on or off the premises. A retailer with off-sale ("To Go") privileges may deliver spirituous liquor off of the licensed premises in connection with a retail sale. A.R.S. § 4-206.01.F. states that after January 1, 2011, the off-sale privileges associated with a bar license shall be limited to no more than 30% of the total annual sales receipts of liquor by the licensee at that location. Payment must be made no later than the time of delivery. Off-sale ("To Go") package sales of spirituous liquor can be made on the bar premises as long as the area of off-sale operation does not utilize a separate entrance and exit from the ones provided for the bar. A hotel or motel with a Series 6 license may sell spirituous liquor in sealed containers in individual portions to its registered guests at any time by means of a minibar located in the guest rooms of registered guests. The registered guest must be at least twenty-one (21) years of age. Access to the minibar is by a key or magnetic card device and not furnished to a guest between the hours of 2:00 a.m. and 6:00 a.m.

Series 7 Beer and Wine Bar

The beer and wine bar (series 7) liquor license is a "quota" license available only through the Liquor License Lottery or for purchase on the open market. Once issued, this liquor license is transferable from person to person and/or location to location within the same county and allows the holder both on- & off-sale retail privileges. This license allows a beer and wine bar retailer to sell and serve beer and wine (no other spirituous liquors), primarily by individual portions, to be consumed on the premises and in the original container for consumption on or off the premises. A retailer with off-sale ("To Go") privileges may deliver spirituous liquor off of the licensed premises in connection with a retail sale. A.R.S. § 4-206.01.F. states that after January 1, 2011, the off-sale privileges associated with a bar license shall be limited to no more than 30% of the total annual sales receipts of liquor by the licensee at that location. Off-sale ("To Go") package sales can be made on the bar premises as long as the area of off-sale operation does not utilize a separate entrance and exit from the one provided for the bar. Payment must be made no later than the time of delivery.

Series 9 Liquor Store

SAMPLE

The liquor store (series 9) license is a "quota" license available only through the Liquor License Lottery or for purchase on the open market. Once issued, this liquor license is transferable from person to person and/or location to location within the same county and allows a spirituous liquor store retailer to sell all types of spirituous liquors, only in the original unbroken package, to be taken away from the premises of the retailer and consumed off the premises. A retailer with off-sale privileges may deliver spirituous liquor off of the licensed premises in connection with a retail sale. Payment must be made no later than the time of delivery. Series 9 (liquor store) licensees and applicants may apply for unlimited sampling privileges by completing the Sampling Privileges form.

Series 10 Beer and Wine Store

This non-transferable, off-sale retail privileges liquor license allows a retail store to sell beer and wine (no other spirituous liquors), only in the original unbroken package, to be taken away from the premises of the retailer and consumed off the premises. A retailer with off-sale privileges may deliver spirituous liquor off of the licensed premises in connection with a retail sale. Payment must be made no later than the time of delivery. Series 10 (beer and wine store) licensees and applicants may apply for unlimited sampling privileges by completing the Sampling Privileges form.

Series 11 Hotel/Motel

This non-transferable, on-sale retail privileges liquor license allows the holder of a hotel/motel license to sell and serve all types of spirituous liquor solely for consumption on the premises of a hotel or motel that has a restaurant where food is served on the premises. The restaurant on the licensed premises must derive at least forty percent (40%) of its gross revenue from the sale of food. The holder of this license may sell spirituous liquor in sealed containers in individual portions to its registered guests at any time by means of a minibar located in the guest rooms of registered guests. The registered guest must be at least twenty-one (21) years of age. Access to the minibar is provided by a key or magnetic card device and may not be furnished to a guest between the hours of 2:00 a.m. and 6:00 a.m.

Series 12 Restaurant

This non-transferable, on-sale retail privileges liquor license allows the holder of a restaurant license to sell and serve all types of spirituous liquor solely for consumption on the premises of an establishment which derives at least forty percent (40%) of its gross revenue from the sale of food. Failure to meet the 40% food requirement may result in revocation of the license.

Council-Regular Meeting **A1**

Meeting Date: 12/17/2024

To: Mayor and Council

From: Jane Fairall, Town Attorney

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Public Hearing: Ordinance No. 2024.027: Relating to Development; amending Marana Town Code Title 17 (Land Development), Chapter 17-3 (Administration and Enforcement), Section 17-3-1 (Amendment and rezoning) to add provisions establishing time frames for review of zoning applications; and declaring an emergency (Jane Fairall)

Discussion:

Request
Town staff proposes to revise the Land Development Code text to provide specified time frames for review of zoning applications.

Background
The Arizona Legislature adopted Laws 2024, Chapter 141 (Senate Bill (SB)1162), signed by Governor Katie Hobbs on April 23, 2024, and effective on September 14, 2024, requiring all Arizona municipalities to adopt an amendment to the municipality's zoning ordinance on or before January 1, 2025 establishing specified time frames for review of zoning applications. Senate Bill 1162 is now codified in the Arizona Revised Statutes at A.R.S. § 9-462.11. A copy of SB 1162 is included in the agenda materials for reference.

Proposed Amendments
The proposed ordinance will bring the Marana Town Code (MTC) into compliance with the new law, by adding the specified zoning application review time frames to MTC Section 17-3-1, which sets forth the Town's procedures for zoning applications. Specifically, the proposed ordinance will implement the following review time frames:

- The Town shall determine whether a zoning application is administratively complete within 30 days after receiving the application.
- If the Town determines that a zoning application is not administratively complete, the Town will provide the applicant with a written notice that includes a comprehensive list of the specific deficiencies. Upon issuance of the written notice, the administrative completeness review time frame and overall time frame contained in this section are suspended until the Town receives the resubmitted application.
- The Town shall determine whether a resubmitted application is administratively complete within 15 days after receiving the resubmitted application.
- After determining that a zoning application is administratively complete, the Town Council shall approve or deny the application within 180 days. The owner may extend the time frame to approve or deny a zoning application beyond 180 days for either of the following reasons:
- Town staff may grant a one-time extension of not more than 30 days for extenuating circumstances; or
- Town staff may grant extensions in 30-day increments at the request of the applicant.

The review time frames do not apply to zoning applications for land that is designated as a district of historical significance pursuant to A.R.S. § 9-462.01(a); an area that is designated as historic on the national register of historic places; or land that is already zoned as a specific plan.

Public Notification
Notice of this public hearing was published in The Daily Territorial as required by law. The notice indicated a public hearing date of December 3, 2024. At the December 3, 2024 Council meeting, a motion to continue the public hearing until December 17, 2024 was approved. The motion to continue included a condition that when the ordinance is brought forward on December 17, 2024, it would include an emergency clause, making it effectively immediately, so that it would be in place by January 1, 2025, as required. Notices were also posted in various locations in the town.

Staff Recommendation:
Staff recommends approval of the proposed ordinance.

Suggested Motion:
I move to adopt Ordinance No. 2024.027, amending Marana Town Code Title 17 (Land Development), Chapter 17-3 (Administration and Enforcement), Section 17-3-1 (Amendment and rezoning) to add provisions establishing time frames for review of zoning applications; and declaring an emergency.

Attachments

Ordinance
Senate Bill 1162

MARANA ORDINANCE NO. 2024.027

RELATING TO DEVELOPMENT; AMENDING MARANA TOWN CODE TITLE 17 (LAND DEVELOPMENT), CHAPTER 173 (ADMINISTRATION AND ENFORCEMENT), SECTION 17-3-1 (AMENDMENT AND REZONING) TO ADD PROVISIONS ESTABLISHING TIME FRAMES FOR REVIEW OF ZONING APPLICATIONS; AND DECLARING AN EMERGENCY

WHEREAS the Arizona Legislature adopted Laws 2024, Chapter 141 (Senate Bill 1162), signed by Governor Katie Hobbs on April 23, 2024, and effective on September 14, 2024, requiring all Arizona municipalities to adopt an amendment to the municipality's zoning ordinance on or before January 1, 2025 establishing specified time frames for review of zoning applications; and

WHEREAS Senate Bill 1162 is now codified in the Arizona Revised Statutes at A.R.S. § 9462.11; and

WHEREAS the Town Council finds this ordinance to be in the best interests of the Town and its citizens.

NOW, THEREFORE, BE IT ORDAINED by the Mayor and Council of the Town of Marana, Arizona, as follows:

SECTION 1. Marana Town Code Title 17 (Land Development), Chapter 173 (Administration and Enforcement), Section 17-3-1 (Amendment and rezoning), is hereby amended as follows (with additions shown with double underlining):

1731 Amendment and rezoning

[No revisions to paragraphs A through E]

F. Review time frames. The town shall review all zoning applications pursuant to the following time frames.

1. The town shall determine whether a zoning application is administratively complete within 30 days after receiving the application.

2. If the town determines that a zoning application is not administratively complete, the town will provide the applicant with a written notice that includes a comprehensive list of the specific deficiencies. Upon issuance of the written notice, the administrative

completeness review time frame and overall time frame contained in this section are suspended until the town receives the resubmitted application.

3. The town shall determine whether a resubmitted application is administratively complete within 15 days after receiving the resubmitted application. If the town determines that a resubmitted application is not administratively complete, the process set forth in subparagraph F.2 above shall repeat until the application is administratively complete.

4. After determining that a zoning application is administratively complete, the town council shall approve or deny the application within 180 days. The town may extend the time frame to approve or deny a zoning application beyond 180 days for either of the following reasons:

a. Town staff may grant a one-time extension of not more than 30 days for extenuating circumstances; or

b. Town staff may grant extensions in 30-day increments at the request of the applicant.

5. This section does not apply to zoning applications for any of the following:

a. Land that is designated as a district of historical significance pursuant to A.R.S. § 9-462.01(a).

b. An area that is designated as historic on the national register of historic places.

c. Land that is already zoned as a specific plan.

SECTION 2. The various town officers and employees are authorized and directed to perform all acts necessary or desirable to give effect to this ordinance.

SECTION 3. All ordinances, resolutions, or motions and parts of ordinances, resolutions, or motions of the Council in conflict with the provisions of this ordinance are hereby repealed, effective as of the effective date of this ordinance.

SECTION 4. If any section, subsection, sentence, clause, phrase or portion of this ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, the decision shall not affect the validity of the remaining portions of this ordinance.

SECTION 5. Since it is necessary for the preservation of the peace, health and safety of the Town of Marana that this ordinance become immediately effective, an emergency is hereby declared to exist, and this ordinance shall be effective immediately upon its passage and adoption.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this 17th day of December, 2024.

_____
Vice Mayor Jon Post

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

~~telecommunications fund; report; posting~~
(now: residential zoning; housing; assessment; hearings)

State of Arizona
Senate
Fifty-sixth Legislature
Second Regular Session
2024

CHAPTER 172

SENATE BILL 1162

AN ACT

AMENDING SECTION 9-462.04, ARIZONA REVISED STATUTES; AMENDING TITLE 9, CHAPTER 4, ARTICLE 6.1, ARIZONA REVISED STATUTES, BY ADDING SECTION 9-462.10; AMENDING TITLE 9, CHAPTER 4, ARTICLE 6.4, ARIZONA REVISED STATUTES, BY ADDING SECTION 9-469; RELATING TO MUNICIPALITIES.

(TEXT OF BILL BEGINS ON NEXT PAGE)

Be it enacted by the Legislature of the State of Arizona:

Section 1. Section 9-462.04, Arizona Revised Statutes, is amended to read:

9-462.04. Public hearing required; definition

A. If the municipality has a planning commission or a hearing officer, the planning commission or hearing officer shall hold a public hearing on any zoning ordinance. Notice of the time and place of the hearing including a general explanation of the matter to be considered and including a general description of the area affected shall be given at least fifteen days before the hearing in the following manner:

1. The notice shall be published at least once in a newspaper of general circulation published or circulated in the municipality, or if there is none, it shall be posted on the affected property in such a manner as to be legible from the public right-of-way and in at least ten public places in the municipality. A posted notice shall be printed so that the following are visible from a distance of one hundred feet: the word "zoning", the present zoning district classification, the proposed zoning district classification and the date and time of the hearing.

2. In proceedings involving rezoning of land that abuts other municipalities or unincorporated areas of the county or a combination of a municipality and an unincorporated area, copies of the notice of public hearing shall be transmitted to the planning agency of the governmental unit abutting such land. In proceedings involving rezoning of land that is located within the territory in the vicinity of a military airport or ancillary military facility as defined in section 28-8461, the municipality shall send copies of the notice of public hearing by first class mail to the military airport. In addition to notice by publication, a municipality may give notice of the hearing in any other manner that the municipality deems necessary or desirable.

3. In proceedings that are not initiated by the property owner involving rezoning of land that may change the zoning classification, notice by first class mail shall be sent to each real property owner, as shown on the last assessment of the property, of the area to be rezoned and all property owners, as shown on the last assessment of the property, within three hundred feet of the property to be rezoned.

4. In proceedings involving one or more of the following proposed changes or related series of changes in the standards governing land uses, notice shall be provided in the manner prescribed by paragraph 5 of this subsection:

(a) A ten percent or more increase or decrease in the number of square feet or units that may be developed.

(b) A ten percent or more increase or reduction in the allowable height of buildings.

(c) An increase or reduction in the allowable number of stories of buildings.

(d) A ten percent or more increase or decrease in setback or open space requirements.

(e) An increase or reduction in permitted uses.

5. In proceedings governed by paragraph 4 of this subsection, the municipality shall provide notice to real property owners pursuant to at least one of the following notification procedures:

(a) Notice shall be sent by first class mail to each real property owner, as shown on the last assessment, whose real property is directly governed by the changes.

(b) If the municipality issues utility bills or other mass mailings that periodically include notices or other informational or advertising materials, the municipality shall include notice of the changes with such utility bills or other mailings.

(c) The municipality shall publish the changes before the first hearing on such changes in a newspaper of general circulation in the municipality. The changes shall be published in a "display ad" covering not less than one-eighth of a full page.

6. If notice is provided pursuant to paragraph 5, subdivision (b) or (c) of this subsection, the municipality shall also send notice by first class mail to persons who register their names and addresses with the municipality as being interested in receiving such notice. The municipality may charge a fee not to exceed $5 per year for providing this service and may adopt procedures to implement this paragraph.

7. Notwithstanding the notice requirements in paragraph 4 of this subsection, the failure of any person or entity to receive notice does not constitute grounds for any court to invalidate the actions of a municipality for which the notice was given.

B. If the matter to be considered applies to territory in a high noise or accident potential zone as defined in section 28-8461, the notice prescribed in subsection A of this section shall include a general statement that the matter applies to property located in the high noise or accident potential zone.

C. After the hearing, the planning commission or hearing officer shall render a decision in the form of a written recommendation to the governing body. The recommendation shall include the reasons for the recommendation and be transmitted to the governing body in the form and manner prescribed by the governing body.

D. If the planning commission or hearing officer has held a public hearing, the governing body may adopt the recommendations of the planning commission or hearing officer without holding a second public hearing if there is no objection, request for public hearing or other protest. The governing body shall hold a public hearing if requested by the party aggrieved or any member of the public or of the governing body, or, in any

case, if a public hearing has not been held by the planning commission or hearing officer. The governing body may consider the testimony of any party aggrieved when making its decision. In municipalities with territory in the vicinity of a military airport or ancillary military facility as defined in section 28-8461, the governing body shall hold a public hearing if, after notice is transmitted to the military airport pursuant to subsection A of this section and before the public hearing, the military airport provides comments or analysis concerning the compatibility of the proposed rezoning with the high noise or accident potential generated by military airport or ancillary military facility operations that may have an adverse impact on public health and safety, and the governing body shall consider and analyze the comments or analysis before making a final determination. Notice of the time and place of the hearing shall be given in the time and manner provided for the giving of notice of the hearing by the planning commission as specified in subsection A of this section. A municipality may give additional notice of the hearing in any other manner as the municipality deems necessary or desirable. For the purposes of this subsection, "party aggrieved" means any property owner within the notification area prescribed by subsection A, paragraph 3 of this section.

E. A municipality may enact an ordinance authorizing county zoning to continue in effect until municipal zoning is applied to land previously zoned by the county and annexed by the municipality, but not longer than six months after the annexation.

F. A municipality is not required to adopt a general plan before the adoption of a zoning ordinance.

G. If there is no planning commission or hearing officer, the governing body of the municipality shall perform the functions assigned to the planning commission or hearing officer.

H. If the owners of twenty percent or more of the property by area and number of lots, tracts and condominium units within the zoning area of the affected property, EXCLUDING GOVERNMENT OWNED PROPERTY, file a protest in writing against a proposed amendment, the change shall not become effective except by the favorable vote of three-fourths of all members of the governing body of the municipality. If any members of the governing body are unable to vote on such a question because of a conflict of interest, then the required number of votes for passage of the question shall be three-fourths of the remaining membership of the governing body, provided that such required number of votes shall not be less than a majority of the full membership of the legally established governing body. For the purposes of this subsection, the vote shall be rounded to the nearest whole number. A protest filed pursuant to this subsection shall be signed by the property owners, EXCLUDING GOVERNMENT OWNED PROPERTY, opposing the proposed amendment and filed in the office of the clerk of the municipality not later than 12:00 noon one business day before the

date on which the governing body will vote on the proposed amendment or on an earlier time and date established by the governing body.

I. In applying an open space element or a growth element of a general plan, a parcel of land shall not be rezoned for open space, recreation, conservation or agriculture unless the owner of the land consents to the rezoning in writing.

J. Notwithstanding section 19-142, subsection B, a decision by the governing body involving rezoning of land that is not owned by the municipality and that changes the zoning classification of such land may not be enacted as an emergency measure and the change shall not be effective for at least thirty days after final approval of the change in classification by the governing body.

K. For the purposes of this section, "zoning area" means both of the following:

1. The area within one hundred fifty feet, including all rights-of-way, of the affected property subject to the proposed amendment or change.

2. The area of the proposed amendment or change.

Sec. 2. Title 9, chapter 4, article 6.1, Arizona Revised Statutes, is amended by adding section 9-462.10, to read:

9-462.10. Residential zoning; amendment; applications; deadline; extensions; applicability

A. ON OR BEFORE JANUARY 1, 2025, A MUNICIPALITY SHALL ADOPT AN AMENDMENT TO THE MUNICIPALITY'S ZONING ORDINANCE THAT REQUIRES THE MUNICIPALITY TO DETERMINE WHETHER A ZONING APPLICATION IS ADMINISTRATIVELY COMPLETE WITHIN THIRTY DAYS AFTER RECEIVING THE APPLICATION. IF THE MUNICIPALITY DETERMINES THAT THE APPLICATION IS NOT ADMINISTRATIVELY COMPLETE, THE MUNICIPALITY SHALL FOLLOW THE PROCEDURES PRESCRIBED IN SECTION 9-835, SUBSECTION E UNTIL THE APPLICATION IS ADMINISTRATIVELY COMPLETE. THE MUNICIPALITY SHALL DETERMINE WHETHER A RESUBMITTED APPLICATION IS ADMINISTRATIVELY COMPLETE WITHIN FIFTEEN DAYS AFTER RECEIVING THE RESUBMITTED APPLICATION. AFTER DETERMINING THAT THE APPLICATION IS ADMINISTRATIVELY COMPLETE, THE MUNICIPALITY SHALL APPROVE OR DENY THE APPLICATION WITHIN ONE HUNDRED EIGHTY DAYS.

B. NOTWITHSTANDING SUBSECTION A OF THIS SECTION, THE MUNICIPALITY MAY EXTEND THE TIME FRAME TO APPROVE OR DENY THE REQUEST BEYOND ONE HUNDRED EIGHTY DAYS FOR EITHER OF THE FOLLOWING REASONS:

1. FOR EXTENUATING CIRCUMSTANCES, THE MUNICIPALITY MAY GRANT A ONETIME EXTENSION OF NOT MORE THAN THIRTY DAYS.

2. IF AN APPLICANT REQUESTS AN EXTENSION, THE MUNICIPALITY MAY GRANT EXTENSIONS OF THIRTY DAYS FOR EACH EXTENSION GRANTED.

C. THIS SECTION DOES NOT APPLY TO LAND THAT IS DESIGNATED AS A DISTRICT OF HISTORICAL SIGNIFICANCE PURSUANT TO SECTION 9-462.01, SUBSECTION A, PARAGRAPH 10 OR AN AREA THAT IS DESIGNATED AS HISTORIC ON THE NATIONAL REGISTER OF HISTORIC PLACES OR PLANNED AREA DEVELOPMENTS.

Sec. 3. Title 9, chapter 4, article 6.4, Arizona Revised Statutes, is amended by adding section 9-469, to read:

9-469. Municipal housing needs assessment; annual report; applicability

A. BEGINNING JANUARY 1, 2025 AND EVERY FIVE YEARS THEREAFTER, A MUNICIPALITY SHALL PUBLISH A HOUSING NEEDS ASSESSMENT THAT INCLUDES THE FOLLOWING:

1. THE TOTAL POPULATION GROWTH PROJECTED FOR THE SUBSEQUENT FIVE-YEAR PERIOD.

2. THE TOTAL JOB GROWTH PROJECTED FOR THE SUBSEQUENT FIVE-YEAR PERIOD.

3. THE TOTAL AMOUNT OF RESIDENTIALLY ZONED LAND WITH DETAIL ON LAND ZONED AS SINGLE-FAMILY AND MULTIFAMILY.

4. THE TOTAL NEED FOR ADDITIONAL RESIDENTIAL HOUSING UNITS FOR RENT AND FOR SALE IN THE MUNICIPALITY TO MEET:

(a) ANY DEFICIENCIES IN HOUSING THE EXISTING POPULATION.

(b) ANY DEFICIENCIES IN HOUSING THE EXISTING WORKFORCE.

(c) POPULATION GROWTH PROJECTIONS.

(d) JOB GROWTH PROJECTIONS.

(e) HOUSING NEEDS ACROSS ALL VARIOUS INCOME LEVELS.

B. BEGINNING JANUARY 1, 2025 AND EVERY YEAR THEREAFTER, EACH MUNICIPALITY SHALL SUBMIT AN ANNUAL REPORT TO THE ARIZONA DEPARTMENT OF HOUSING ACCOUNTING FOR THE TOTAL NUMBER OF PROPOSED RESIDENTIAL HOUSING UNITS SUBMITTED TO THE MUNICIPALITY, THE TOTAL NUMBER OF NET NEW RESIDENTIAL HOUSING UNITS SUBMITTED TO THE MUNICIPALITY AND THE TOTAL NUMBER OF NEW RESIDENTIAL HOUSING UNITS THAT ARE ENTITLED, HAVE BEEN PLATTED, HAVE BEEN ISSUED A BUILDING PERMIT AND HAVE RECEIVED A CERTIFICATE OF OCCUPANCY BY THE MUNICIPALITY. THE ANNUAL REPORT SHALL INCLUDE ALL OF THE FOLLOWING:

1. THE NUMBER OF HOUSING DEVELOPMENT APPLICATIONS RECEIVED IN THE PRIOR YEAR.

2. THE NUMBER OF LOTS AND MULTIFAMILY UNITS INCLUDED IN ALL DEVELOPMENT APPLICATIONS IN THE PRIOR YEAR.

3. THE NUMBER OF LOTS AND MULTIFAMILY UNITS APPROVED AND DISAPPROVED OR OTHERWISE NOT APPROVED IN THE PRIOR YEAR.

4. A THRESHOLD PERCENTAGE REQUIREMENT OF MULTIFAMILY ZONED LAND VERSUS SINGLE-FAMILY ZONED LAND NEEDED TO MEET POPULATION DEMAND IN EACH MUNICIPALITY.

5. THE STATUS AND PROGRESS IN MEETING THE MUNICIPALITY'S HOUSING NEEDS.

6. A PLAN THAT SPECIFIES HOW THE MUNICIPALITY INTENDS TO SATISFY THE IDENTIFIED NEED FOR ADDITIONAL HOUSING UNITS WITHIN THE MUNICIPALITY.

C. A MUNICIPALITY THAT HAS CONDUCTED A HOUSING NEEDS ASSESSMENT REPORT AS OF JANUARY 1, 2021 SHALL AMEND ALL EXISTING REPORTS TO INCLUDE THE INFORMATION REQUIRED IN SUBSECTION A OF THIS SECTION.

D. THE ARIZONA DEPARTMENT OF HOUSING SHALL COMPILE THE REPORTS RECEIVED PURSUANT TO SUBSECTION B OF THIS SECTION AND SUBMIT THE REPORTS TO THE GOVERNOR, THE PRESIDENT OF THE SENATE AND THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

E. THIS SECTION DOES NOT REQUIRE A MUNICIPALITY TO FULFILL THE PROJECTIONS IN THE HOUSING NEEDS ASSESSMENT REQUIRED BY SUBSECTION A OF THIS SECTION.

F. THIS SECTION DOES NOT APPLY TO A MUNICIPALITY THAT IS LOCATED ON TRIBAL LAND OR A MUNICIPALITY WITH A POPULATION OF LESS THAN THIRTY THOUSAND PERSONS.

APPROVED BY THE GOVERNOR APRIL 23, 2024.

FILED IN THE OFFICE OF THE SECRETARY OF STATE APRIL 23, 2024.

Council-Regular Meeting **A2**

Meeting Date: 12/17/2024

To: Mayor and Council

From: Jane Fairall, Town Attorney

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Public Hearing: Ordinance No. 2024.028: Relating to Development; amending Marana Town Code Title 17 (Land Development), amending Chapter 17-6 (General and Miscellaneous Development Regulations) by adding new Section 17-6-14 entitled Accessory Dwelling Units; amending chapter 17-4 (Zoning) by making conforming amendments to sections 17-4-2 (Use matrix) and 17-4-3 (Use conditions matrix); approving the housing impact statement pertaining to this ordinance; and declaring an emergency (Jane Fairall)

Discussion:

Request
Town staff proposes to revise the Land Development Code text, to be automatically effective when the Town's population reaches 75,000 persons, to allow accessory dwelling units (ADUs).

Background
The Arizona Legislature adopted Laws 2024, Chapter 196 (House Bill (HB) 2720), signed by Governor Katie Hobbs on May 21, 2024, and effective on September 14, 2024, requiring all Arizona municipalities with a population of more than 75,000 persons to adopt regulations allowing ADUs on any lot or parcel where a single-family dwelling is allowed. A copy of HB 2720 is included in the agenda packet for reference. House Bill 2720 is now codified in the Arizona Revised Statutes at A.R.S. § 9-461.18. Paragraph F of A.R.S. § 9-461.18 provides:"If a municipality fails to adopt development regulations as required by this section on or before January 1, 2025, accessory dwelling units shall be allowed on all lots or parcels zoned for residential use in the municipality without limits."

Analysis
The population of the Town of Marana is less than 75,000, but is expected to reach 75,000 within the next few years. To avoid having no limits on ADUs when the Town's population hits 75,000, and because of the language in paragraph F requiring adoption before January 1, 2025, Town staff is proposing for the Town to adopt regulations on ADUs conforming to A.R.S. § 9-461.18 that will automatically become effective when the population of the Town of Marana reaches 75,000.

Proposed Amendments
The proposed text amendment inserts a new section 17-6-14, entitled "accessory dwelling units," containing all the elements required by state law for cities and towns over 75,000. Specifically, the proposed text amendment:

- Allows one attached and one detached ADU as a permitted use on any single-family lot or parcel that contains a primary dwelling
- Allows one additional ADU on lots one acre or larger as long as one of the ADUs on the lot is "restricted-affordable" (that is, rented to households earning up to 80% of area median income)
- Limits the size of ADUs to the lesser of 75% of the gross floor area of the existing single-family dwelling on the same parcel or 1,000 square feet
- Requires ADUs to meet the setbacks for accessory buildings in the applicable zoning district, except that the rear and side setbacks for an ADU shall be a minimum of five feet
- Requires ADUs to meet the height limit for a single-family dwelling within the applicable zoning district
- Requires lots with one or more ADUs to meet the lot coverage requirements of the applicable zoning district
- Allows an ADU to be used for short-term rental only if and while the owner resides on the property that contains the ADU
- Prohibits an ADU from being built on a current or planned public utility easement unless the property owner receives written consent from any utility that is currently using the public utility easement or that may use the public utility easement in the future
- Only applies to lots and parcels where the town determines that adequate public utility services are available and the application complies with the Land Development Code and the town's building codes, fire codes, and public health and safety regulations
- Does not apply to any single-family lot or parcel located on:
    - Tribal land
    - Land in the vicinity of a military airport or ancillary military facility
    - Land in the vicinity of an FAA commercially licensed airport
    - Land in the vicinity of a general aviation airport
    - Land in the vicinity of a public airport
- Uses the same definitions as in the statute

The proposed text amendment also amends the use matrix found in Town Code section 17-4-2 and the conditions per use matrix found in section 17-4-3 to include ADUs, to conform to new section 17-6-14.

The proposed text amendment does not include limitations on the Town's authority as found in A.R.S. § 9-461.18. Those limitations include that the town may not:

- Prohibit the use or advertisement of either the single-family dwelling or any ADU located on the same lot or parcel as separately leased long-term rental housing
- Require a familial, marital, employment or other preexisting relationship between the owner or occupant of a single-family dwelling and the occupant of an ADU located on the same lot or parcel
- Require that a lot or parcel have additional parking to accommodate an ADU or require payment of fees instead of additional parking
- Require that an ADU match the exterior design, roof pitch or finishing materials of the single-family dwelling that is located on the same lot as the ADU
- Set restrictions for ADUs that are more restrictive than those for single-family dwellings within the same zoning area with regard to height, setbacks, lot size, coverage, or building frontage
- Set rear or side setbacks for ADUs that are more than five feet from the property line
- Require improvements to public streets as a condition of allowing an ADU, except as necessary to reconstruct or repair a public street that is disturbed as a result of the construction of the ADU
- Require a restrictive covenant concerning an ADU on a lot or parcel zoned for residential use by a single-family dwelling

Public Notification

Notice of this public hearing was published in The Daily Territorial as required by law. The notice indicated a public hearing date of December 3, 2024. At the December 3, 2024 Council meeting, a motion to continue the public hearing until December 17, 2024 was approved. The motion to continue included a condition that when the ordinance is brought forward on December 17, 2024, it would include an emergency clause, making it effectively immediately, so that it would be in place by January 1, 2025, as required. Notices were also posted in various locations in the town.

Housing Impact Statement

A.R.S. § 9-462.01 paragraph J requires the Town to consider a housing impact statement regarding the impact of any zoning ordinance or zoning ordinance text amendment. The housing impact statement for this proposed ordinance is included in the agenda materials accompanying this proposed ordinance.

Staff Recommendation:

Staff recommends that the proposed ordinance be approved.

Suggested Motion:

I move to adopt Ordinance No. 2024.028, amending Marana Town Code Title 17 (Land Development), amending Chapter 17-6 (General and Miscellaneous Development Regulations) by adding new Section 17-6-14 entitled Accessory Dwelling Units; amending chapter 17-4 (Zoning) by making conforming amendments to sections 17-4-2 (Use matrix) and 17-4-3 (Use conditions matrix); approving the housing impact

statement pertaining to this ordinance; and declaring an emergency.

Attachments

Ordinance
Housing Impact Statement
House Bill 2720
Presentation

MARANA ORDINANCE NO. 2024.028

RELATING TO DEVELOPMENT; AMENDING MARANA TOWN CODE TITLE 17 (LAND DEVELOPMENT), AMENDING CHAPTER 17-6 (GENERAL AND MISCELLANEOUS DEVELOPMENT REGULATIONS) BY ADDING NEW SECTION 17-6-14 ENTITLED ACCESSORY DWELLING UNITS; AMENDING CHAPTER 17-4 (ZONING) BY MAKING CONFORMING AMENDMENTS TO SECTIONS 17-4-2 (USE MATRIX) AND 17-4-3 (USE CONDITIONS MATRIX); APPROVING THE HOUSING IMPACT STATEMENT PERTAINING TO THIS ORDINANCE; AND DECLARING AN EMERGENCY

WHEREAS the Arizona Legislature adopted Laws 2024, Chapter 196 (House Bill 2720), signed by Governor Katie Hobbs on May 21, 2024, and effective on September 14, 2024, requiring all Arizona municipalities with a population of more than 75,000 persons to adopt regulations allowing accessory dwelling units on any lot or parcel where a single-family dwelling is allowed; and

WHEREAS House Bill 2720 is now codified in the Arizona Revised Statutes at A.R.S. § 9-461.18; and

WHEREAS A.R.S. § 9-461.18 paragraph F provides: "If a municipality fails to adopt development regulations as required by this section on or before January 1, 2025, accessory dwelling units shall be allowed on all lots or parcels zoned for residential use in the municipality without limits;" and

WHEREAS the population of the Town of Marana is less than 75,000 persons, but the Town desires to adopt accessory dwelling unit regulations conforming to A.R.S. § 9-461.18 that will automatically become effective when the population of the Town of Marana reaches 75,000 persons; and

WHEREAS A.R.S. § 9-462.01 paragraph J requires the Town to consider a housing impact statement regarding the impact of the zoning ordinance or zoning ordinance text amendment; and

WHEREAS the housing impact statement for this ordinance is on file with the Marana Town Clerk and in the Council's agenda backup materials accompanying this ordinance, and has been considered as part of the record of this ordinance; and

WHEREAS the Town Council finds this ordinance to be in the best interests of the Town and its citizens.

NOW, THEREFORE, BE IT ORDAINED by the Mayor and Council of the Town of Marana, Arizona, as follows:

SECTION 1. Marana Town Code Title 17 (Land Development), Chapter 17-6 (General and Miscellaneous Development Regulations), is hereby amended by adding new Section 17-6-14, accessory dwelling units, as follows:

17-6-14 Accessory dwelling units

A. Purpose. This section is adopted to comply with state law requiring municipalities with a population over 75,000 to allow accessory dwelling units on a lot or parcel with zoning that allows a single-family dwelling.

1. These regulations are in addition to the town's residential building codes, fire codes, public health and safety regulations, and other regulations of general applicability.

2. To the extent any provision in this section conflicts with state law, state law shall control.

B. Definitions. The following definitions apply to this section:

1. "Accessory dwelling unit" means a self-contained living unit that is on the same lot or parcel as a single-family dwelling of greater square footage than the accessory dwelling unit, that includes its own sleeping and sanitation facilities, and that may include its own kitchen facilities.

2. "Gross floor area" means the interior habitable area of a single-family dwelling or an accessory dwelling unit.

3. "Permitted use" means approved without requiring a public hearing, variance, conditional use permit, special permit, or special exception, other than a determination that a site plan conforms with applicable zoning regulations.

4. "Restricted-affordable dwelling unit" means a dwelling unit that, either through a deed restriction or a development agreement with the town, shall be rented to households earning up to 80% of area median income.

5. "Short-term rental" means rental use in which the tenant holds a lease of less than ninety days or that meets the definition of "vacation rental" or "short-term-rental" in A.R.S. § 9-500.39.

C. Accessory dwelling unit as a permitted use. If the town determines that adequate public utility services are available and the application complies with this title and the town's building codes, fire codes, and public health and safety regulations, the following are permitted uses on any single-family lot or parcel that contains a primary dwelling:

1. One attached accessory dwelling unit and one detached accessory dwelling unit.

2. One additional detached accessory dwelling unit on a lot or parcel that is one acre or more in size if at least one accessory dwelling unit on the lot or parcel is a restricted-affordable dwelling unit.

D. Development standards and requirements.

1. Size. An accessory dwelling unit shall not exceed the lesser of 75% of the gross floor area of the existing single-family dwelling on the same parcel or 1,000 square feet.

2. Setbacks. An accessory dwelling unit shall meet the setbacks for accessory buildings in the applicable zoning district, except that the rear and side setbacks for an accessory dwelling unit shall be a minimum of five feet.

3. Heights. An accessory dwelling unit shall meet the height limit for a single-family dwelling within the applicable zoning district.

4. Lot coverage. Lots with one or more accessory dwelling units must meet the lot coverage requirements of the applicable zoning district.

5. Short-term rental. An accessory dwelling unit may be used for short-term rental only if and while the owner resides on the property that contains the accessory dwelling unit.

6. Easements. An accessory dwelling unit may not be built on a current or planned public utility easement unless the property owner receives written consent from any utility that is currently using the public utility easement or that may use the public utility easement in the future.

E. Exceptions. The provisions of this section do not apply to any single-family lot or parcel located on any of the following:

1. Tribal land.

2. Land in the vicinity of a military airport or ancillary military facility as defined in A.R.S. § 28-8461.

3. Land in the vicinity of a federal aviation administration commercially licensed airport.

4. Land in the vicinity of a general aviation airport.

5. Land in the vicinity of a public airport as defined in A.R.S. § 28-8486.

F. Appeals. If an application for a proposed accessory dwelling unit is denied or deemed not to be a permitted use, the applicant may appeal the town's decision to the board of adjustment.

G. Effective date. This section becomes effective when the town's population reaches 75,000 persons as determined by the United States census bureau or by official acknowledgment by the town council or any other governmental body with jurisdiction to determine the town's population.

SECTION 2. Marana Town Code Title 17 (Land Development), Chapter 17-4 (Zoning), section 17-4-2 (Use matrix), Table 2 (Use matrix) is hereby amended by adding a new table row and footnote as follows, with all other existing table rows remaining unchanged (added language is double underlined):

Table 2. Use matrix											
Uses	**AG**	**RA**	**ER**	**NR**	**GR**	**MR**	**RR**	**NC**	**VC**	**LI**	**HI**
Residential											
Accessory dwelling unit*	U	U	U	U	U	U	U	U	U	X	X

* Accessory dwelling units are allowed upon meeting the conditions set forth in table 3 below only upon the effective date of section 17-6-14 as set forth in section 17-6-14(G).

SECTION 3. Marana Town Code Title 17 (Land Development), Chapter 17-4 (Zoning), section 17-4-3 (Use conditions matrix), Table 3 (Conditions per use) is hereby amended by adding a new table row as follows, with all other existing table rows remaining unchanged (added language is double underlined):

Table 3. Conditions per use		
USE	**ZONE(S)**	**CONDITION(S)**
Residential		
Accessory dwelling unit	AG, RA, ER, NR, GR, MR, RR, NC, VC	Must comply with all development standards for accessory dwelling units, as set forth in section 17-6-14

SECTION 4. Since it is necessary for the preservation of the peace, health and safety of the Town of Marana that this ordinance become immediately effective, an emergency is hereby declared to exist, and this ordinance shall be effective immediately upon its passage and adoption, but the rights associated with new Section 17-6-14 become

effective when the population of the Town of Marana reaches 75,000 persons as determined by the official United States Census Bureau or by official acknowledgment by the Town Council of the Town of Marana or any other governmental body with jurisdiction to determine the Town's population.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this 17th day of December, 2024.

_____
Vice Mayor Jon Post

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

Frank Cassidy, P.C.
5190 West Paseo del Campo
Tucson, Arizona 85745
(520) 260-7908
Frank Cassidy, Attorney at Law
Frank@CassidyAzLaw.com

To: Town of Marana, Arizona, Mayor and Council
Through: Jane Fairall, Town Attorney
From: Frank Cassidy, Frank Cassidy, P.C.
Date: October 22, 2024
Subject: Housing Impact Statement for Proposed ADU Ordinance

This is the housing impact statement for the proposed Town of Marana zoning ordinance text amendment to accommodate accessory dwelling units (ADUs) as mandated by Laws 2024, Chapter 196 (House Bill 2720), now codified in the Arizona Revised Statutes at A.R.S. § 9-461.18.

Effective October 30, 2023, A.R.S. § 9-462.01 paragraph J as amended by Laws 2023 Chapter 85 includes the following housing impact statement requirement:

> J. Before adopting any zoning ordinance or zoning ordinance text amendment of general applicability, the legislative body of a municipality shall consider a housing impact statement regarding the impact of the zoning ordinance or zoning ordinance text amendment that shall include:
>
> 1. A general estimate of the probable impact on the average cost to construct housing for sale or rent within the zoning districts to which the zoning ordinance or text amendment applies.
>
> 2. A description of any data or reference material on which the proposed zoning ordinance or text amendment is based.
>
> 3. A description of any less costly or less restrictive alternative methods of achieving the purpose of the proposed zoning ordinance or text amendment.

As of the date of this housing impact statement, the Town of Marana allows guest quarters for use by family members of the primary residence in residential zones subject to restrictions, and allows "accessory dwellings" in mixed-use zones subject to restrictions, but does not allow ADUs as defined in and to the extent permitted by A.R.S. § 9-461.18.

The proposed Marana ADU ordinance is not anticipated to have any impact on the average cost to construct housing for sale or rent in the Town of Marana, except to the possible extent that the construction of ADUs might increase the

demand for construction services in the Town, in which case construction costs could be anticipated to rise slightly.

The proposed Marana ADU ordinance is based on the requirements of Laws 2024, Chapter 196 (House Bill 2720), now codified in the Arizona Revised Statutes at A.R.S. § 9-461.18. In the preparation of this proposed ordinance, we also consulted and reviewed the "ACAA Attorney Working Group Draft Model Ordinance on the Adoption of Accessory Dwelling Unit to Conform to H.B. 2720 (2024)" distributed by the General Counsel of the League of Arizona Cities and Towns dated August 13, 2024.

Because the proposed accessory dwelling unit text amendment, when it becomes effective, will allow accessory dwelling units where they were previously prohibited or allowed subject to greater restrictions, it will have the effect of making housing more attainable in the Town of Marana. A less restrictive alternative would be to make the text amendment effective before the Town's population reaches 75,000.

State of Arizona
House of Representatives
Fifty-sixth Legislature
Second Regular Session
2024

CHAPTER 196

HOUSE BILL 2720

AN ACT

AMENDING TITLE 9, CHAPTER 4, ARTICLE 6, ARIZONA REVISED STATUTES, BY ADDING SECTION 9-461.18; AMENDING SECTION 9-500.39, ARIZONA REVISED STATUTES; RELATING TO MUNICIPAL PLANNING.

(TEXT OF BILL BEGINS ON NEXT PAGE)

Be it enacted by the Legislature of the State of Arizona:

Section 1. Title 9, chapter 4, article 6, Arizona Revised Statutes, is amended by adding section 9-461.18, to read:

9-461.18. Accessory dwelling units; regulation; applicability; definitions

A. A MUNICIPALITY WITH A POPULATION OF MORE THAN SEVENTY-FIVE THOUSAND PERSONS SHALL ADOPT REGULATIONS THAT ALLOW ON ANY LOT OR PARCEL WHERE A SINGLE-FAMILY DWELLING IS ALLOWED ALL OF THE FOLLOWING:

1. AT LEAST ONE ATTACHED AND ONE DETACHED ACCESSORY DWELLING UNIT AS A PERMITTED USE.

2. A MINIMUM OF ONE ADDITIONAL DETACHED ACCESSORY DWELLING UNIT AS A PERMITTED USE ON A LOT OR PARCEL THAT IS ONE ACRE OR MORE IN SIZE IF AT LEAST ONE ACCESSORY DWELLING UNIT ON THE LOT OR PARCEL IS A RESTRICTED-AFFORDABLE DWELLING UNIT.

3. AN ACCESSORY DWELLING UNIT THAT IS SEVENTY-FIVE PERCENT OF THE GROSS FLOOR AREA OF THE SINGLE-FAMILY DWELLING ON THE SAME LOT OR PARCEL OR ONE THOUSAND SQUARE FEET, WHICHEVER IS LESS.

B. A MUNICIPALITY MAY NOT DO ANY OF THE FOLLOWING:

1. PROHIBIT THE USE OR ADVERTISEMENT OF EITHER THE SINGLE-FAMILY DWELLING OR ANY ACCESSORY DWELLING UNIT LOCATED ON THE SAME LOT OR PARCEL AS SEPARATELY LEASED LONG-TERM RENTAL HOUSING.

2. REQUIRE A FAMILIAL, MARITAL, EMPLOYMENT OR OTHER PREEXISTING RELATIONSHIP BETWEEN THE OWNER OR OCCUPANT OF A SINGLE-FAMILY DWELLING AND THE OCCUPANT OF AN ACCESSORY DWELLING UNIT LOCATED ON THE SAME LOT OR PARCEL.

3. REQUIRE THAT A LOT OR PARCEL HAVE ADDITIONAL PARKING TO ACCOMMODATE AN ACCESSORY DWELLING UNIT OR REQUIRE PAYMENT OF FEES INSTEAD OF ADDITIONAL PARKING.

4. REQUIRE THAT AN ACCESSORY DWELLING UNIT MATCH THE EXTERIOR DESIGN, ROOF PITCH OR FINISHING MATERIALS OF THE SINGLE-FAMILY DWELLING THAT IS LOCATED ON THE SAME LOT AS THE ACCESSORY DWELLING UNIT.

5. SET RESTRICTIONS FOR ACCESSORY DWELLING UNITS THAT ARE MORE RESTRICTIVE THAN THOSE FOR SINGLE-FAMILY DWELLINGS WITHIN THE SAME ZONING AREA WITH REGARD TO HEIGHT, SETBACKS, LOT SIZE OR COVERAGE OR BUILDING FRONTAGE.

6. SET REAR OR SIDE SETBACKS FOR ACCESSORY DWELLING UNITS THAT ARE MORE THAN FIVE FEET FROM THE PROPERTY LINE.

7. REQUIRE IMPROVEMENTS TO PUBLIC STREETS AS A CONDITION OF ALLOWING AN ACCESSORY DWELLING UNIT, EXCEPT AS NECESSARY TO RECONSTRUCT OR REPAIR A PUBLIC STREET THAT IS DISTURBED AS A RESULT OF THE CONSTRUCTION OF THE ACCESSORY DWELLING UNIT.

8. REQUIRE A RESTRICTIVE COVENANT CONCERNING AN ACCESSORY DWELLING UNIT ON A LOT OR PARCEL ZONED FOR RESIDENTIAL USE BY A SINGLE-FAMILY DWELLING.

C. THIS SECTION DOES NOT PROHIBIT RESTRICTIVE COVENANTS CONCERNING ACCESSORY DWELLING UNITS ENTERED INTO BETWEEN PRIVATE PARTIES. THE MUNICIPALITY MAY NOT CONDITION A PERMIT, LICENSE OR USE OF AN ACCESSORY DWELLING UNIT ON ADOPTING OR IMPLEMENTING A RESTRICTIVE COVENANT BETWEEN PRIVATE PARTIES.

D. THIS SECTION DOES NOT SUPERSEDE APPLICABLE BUILDING CODES, FIRE CODES OR PUBLIC HEALTH AND SAFETY REGULATIONS, EXCEPT THAT A MUNICIPALITY MAY NOT REQUIRE AN ACCESSORY DWELLING UNIT TO COMPLY WITH A COMMERCIAL BUILDING CODE OR CONTAIN A FIRE SPRINKLER.

E. AN ACCESSORY DWELLING UNIT MAY NOT BE BUILT ON TOP OF A CURRENT OR PLANNED PUBLIC UTILITY EASEMENT UNLESS THE PROPERTY OWNER RECEIVES WRITTEN CONSENT FROM ANY UTILITY THAT IS CURRENTLY USING THE PUBLIC UTILITY EASEMENT OR THAT MAY USE THE PUBLIC UTILITY EASEMENT IN THE FUTURE.

F. IF A MUNICIPALITY FAILS TO ADOPT DEVELOPMENT REGULATIONS AS REQUIRED BY THIS SECTION ON OR BEFORE JANUARY 1, 2025, ACCESSORY DWELLING UNITS SHALL BE ALLOWED ON ALL LOTS OR PARCELS ZONED FOR RESIDENTIAL USE IN THE MUNICIPALITY WITHOUT LIMITS.

G. THIS SECTION DOES NOT APPLY TO LOTS OR PARCELS THAT ARE LOCATED ON TRIBAL LAND, ON LAND IN THE TERRITORY IN THE VICINITY OF A MILITARY AIRPORT OR ANCILLARY MILITARY FACILITY AS DEFINED IN SECTION 28-8461, ON LAND IN THE TERRITORY IN THE VICINITY OF A FEDERAL AVIATION ADMINISTRATION COMMERCIALLY LICENSED AIRPORT OR A GENERAL AVIATION AIRPORT OR ON LAND IN THE TERRITORY IN THE VICINITY OF A PUBLIC AIRPORT AS DEFINED IN SECTION 28-8486.

H. FOR THE PURPOSES OF THIS SECTION:

1. "ACCESSORY DWELLING UNIT" MEANS A SELF-CONTAINED LIVING UNIT THAT IS ON THE SAME LOT OR PARCEL AS A SINGLE-FAMILY DWELLING OF GREATER SQUARE FOOTAGE THAN THE ACCESSORY DWELLING UNIT, THAT INCLUDES ITS OWN SLEEPING AND SANITATION FACILITIES AND THAT MAY INCLUDE ITS OWN KITCHEN FACILITIES.

2. "GROSS FLOOR AREA" MEANS THE INTERIOR HABITABLE AREA OF A SINGLE-FAMILY DWELLING OR AN ACCESSORY DWELLING UNIT.

3. "LONG-TERM RENTAL" MEANS RENTAL USE IN WHICH THE TENANT HOLDS A LEASE OF NINETY DAYS OR LONGER OR ON A MONTH-BY-MONTH BASIS.

4. "MUNICIPALITY" MEANS A CITY OR TOWN THAT EXERCISES ZONING POWERS UNDER THIS TITLE.

5. "PERMITTED USE" MEANS THE ABILITY FOR A DEVELOPMENT TO BE APPROVED WITHOUT REQUIRING A PUBLIC HEARING, VARIANCE, CONDITIONAL USE PERMIT, SPECIAL PERMIT OR SPECIAL EXCEPTION, OTHER THAN A DISCRETIONARY ZONING ACTION TO DETERMINATION THAT A SITE PLAN CONFORMS WITH APPLICABLE ZONING REGULATIONS.

6. "RESTRICTED-AFFORDABLE DWELLING UNIT" MEANS A DWELLING UNIT THAT, EITHER THROUGH A DEED RESTRICTION OR A DEVELOPMENT AGREEMENT WITH THE MUNICIPALITY, SHALL BE RENTED TO HOUSEHOLDS EARNING UP TO EIGHTY PERCENT OF AREA MEDIAN INCOME.

Sec. 2. Section 9-500.39, Arizona Revised Statutes, is amended to read:

9-500.39. Limits on regulation of vacation rentals and short-term rentals; state preemption; civil penalties; transaction privilege tax license suspension; definitions

A. A city or town may not prohibit vacation rentals or short-term rentals.

B. A city or town may not restrict the use of or regulate vacation rentals or short-term rentals based on their classification, use or occupancy except as provided in this section. A city or town may regulate vacation rentals or short-term rentals as follows:

1. To protect the public's health and safety, including rules and regulations related to fire and building codes, health and sanitation, transportation or traffic control and solid or hazardous waste and pollution control, if the city or town demonstrates that the rule or regulation is for the primary purpose of protecting the public's health and safety.

2. To adopt and enforce use and zoning ordinances, including ordinances related to noise, protection of welfare, property maintenance and other nuisance issues, if the ordinance is applied in the same manner as other property classified under sections 42-12003 and 42-12004.

3. To limit or prohibit the use of a vacation rental or short-term rental for the purposes of housing sex offenders, operating or maintaining a sober living home, selling illegal drugs, liquor control or pornography, obscenity, nude or topless dancing and other adult-oriented businesses.

4. To require the owner of a vacation rental or short-term rental to provide the city or town ~~an~~ WITH emergency ~~point of~~ contact information for the owner or the owner's designee who is responsible for responding to complaints or emergencies in a timely manner in person if required by public safety personnel, over the phone or by email at any time of day before offering for rent or renting the vacation rental or short-term rental. In addition to any other penalty IMPOSED pursuant to this section, the city or town may impose a civil penalty of up to $1,000 against the owner for every thirty days the owner fails to provide contact information as prescribed by this paragraph. The city or town shall provide thirty days' notice to the owner before imposing the initial civil penalty.

5. To require ~~an~~ THE owner of a vacation rental or short-term rental to obtain and maintain a local regulatory permit or license ~~pursuant to title 9, chapter 7, article 4~~. As a condition of issuance of

a permit or license, the application for the permit or license may require an applicant to provide only the following:

(a) THE name, address, ~~phone~~ TELEPHONE number and email address for the owner or owner's agent.

(b) THE address of the vacation rental or short-term rental.

(c) Proof of compliance with section 42-5005.

(d) Contact information required pursuant to paragraph 4 of this subsection.

(e) Acknowledgment of an agreement to comply with all applicable laws, regulations and ordinances.

(f) A fee not to exceed the actual cost of issuing the permit or license or $250, whichever is less.

6. To require, before offering a vacation rental or short-term rental for rent for the first time, the owner or the owner's designee of a vacation rental or short-term rental to notify all single-family residential properties adjacent to~~,~~ AND directly and diagonally across the street from the vacation rental or short-term rental. Notice shall be deemed sufficient in a multifamily residential building if given to residents on the same building floor. A city or town may require additional notification pursuant to this paragraph if the contact information previously provided changes. Notification provided in compliance with this paragraph shall include the permit or license number if required by the city or town, the address~~,~~ OF THE VACATION RENTAL OR SHORT-TERM RENTAL and the information required pursuant to paragraph 4 of this subsection. The owner or the owner's designee shall demonstrate compliance with this paragraph by providing the city or town with an attestation of notification compliance that consists of the following information:

(a) The permit or license number of the vacation rental or short-term rental, if required by the city or town.

(b) The address of each property notified.

(c) A description of the manner in which the owner or owner's designee chose to provide notification to each property subject to notification.

(d) The name and contact information of the person attesting to compliance with this paragraph.

7. To require the owner or owner's designee of a vacation rental or short-term rental to display the local regulatory permit number or license number, if any, on each advertisement for a vacation rental or short-term rental that the owner or owner's designee maintains. A city or town that does not require a local regulatory permit or license may require the owner or owner's designee of a vacation rental or short-term rental to display the transaction privilege tax license NUMBER required by section 42-5042 on each advertisement for a vacation rental or short-term rental that the owner or owner's designee maintains.

8. To require the vacation rental or short-term rental to maintain liability insurance appropriate to cover the vacation rental or short-term rental in the aggregate of at least $500,000 or to advertise and offer each vacation rental or short-term rental through an online lodging marketplace that provides equal or greater coverage.

9. TO REQUIRE THE OWNER OF A VACATION RENTAL OR SHORT-TERM RENTAL TO RESIDE ON THE PROPERTY IF THE PROPERTY CONTAINS AN ACCESSORY DWELLING UNIT THAT WAS CONSTRUCTED ON OR AFTER THE EFFECTIVE DATE OF THIS AMENDMENT TO THIS SECTION AND THAT IS BEING USED AS A VACATION RENTAL OR SHORT-TERM RENTAL. UNLESS THE TIME PERIOD SPECIFIED IN SECTION 12-1134, SUBSECTION G HAS EXPIRED, THIS PARAGRAPH DOES NOT APPLY TO A PROPERTY OWNER WHO HAS THE RIGHT TO BUILD AN ACCESSORY DWELLING UNIT ON THE PROPERTY OWNER'S PROPERTY BEFORE THE EFFECTIVE DATE OF THIS AMENDMENT TO THIS SECTION WHETHER OR NOT THE ACCESSORY DWELLING UNIT HAS BEEN BUILT.

C. A city or town that requires a local regulatory permit or license pursuant to this section shall issue or deny the permit or license within seven business days of receipt of the information required by subsection B, paragraph 5 of this section and otherwise in accordance with section 9-835, except that a city or town may deny issuance of a permit or license only for any of the following:

1. Failure to provide the information required by subsection B, paragraph 5, subdivisions (a) through (e) of this section.

2. Failure to pay the required permit or license fee.

3. At the time of application the owner has a suspended permit or license for the same vacation rental or short-term rental.

4. The applicant provides false information.

5. The owner or owner's designee of a vacation rental or short-term rental is a registered sex offender or has been convicted of any felony ~~act~~ OFFENSE that resulted in death or serious physical injury or any felony use of a deadly weapon within the past five years.

D. A city or town that requires a local regulatory permit or license pursuant to this section shall adopt an ordinance to allow the city or town to initiate an administrative process to suspend a local regulatory permit or license for a period of up to twelve months for the following verified violations associated with a property:

1. Three verified violations within a twelve-month period, not including any verified violation based on an aesthetic, solid waste disposal or vehicle parking violation that is not also a serious threat to public health and safety.

2. One verified violation that results in or constitutes any of the following:

(a) A felony offense committed at or in the vicinity of a vacation rental or short-term rental by the vacation rental or short-term rental owner or owner's designee.

(b) A serious physical injury or wrongful death at or related to a vacation rental or short-term rental resulting from the knowing, intentional or reckless conduct of the vacation rental or short-term rental owner or owner's designee.

(c) An owner or owner's designee knowingly or intentionally housing a sex offender, allowing offenses related to adult-oriented businesses, sexual offenses or prostitution, or operating or maintaining a sober living home, in violation of a regulation or ordinance adopted pursuant to subsection B, paragraph 3 of this section.

(d) An owner or owner's designee knowingly or intentionally allowing the use of a vacation rental or short-term rental for a special event that would otherwise require a permit or license pursuant to a city or town ordinance or a state law or rule or for a retail, restaurant, banquet space or other similar use.

3. Notwithstanding paragraphs 1 and 2 of this subsection, any attempted or completed felony ~~act~~ OFFENSE, arising from the occupancy or use of a vacation rental or short-term rental, that results in a death, or actual or attempted serious physical injury, shall be grounds for judicial relief in the form of a suspension of the property's use as a vacation rental or short-term rental for a period of time that shall not exceed twelve months.

E. A city or town that requires sex offender background checks on a vacation rental or short-term rental guest shall waive the requirement if an online lodging marketplace performs a sex offender background check of the booking guest.

F. Notwithstanding any other law, a city or town may impose a civil penalty of the following amounts against an owner of a vacation rental or short-term rental if the owner receives one or more verified violations related to the same vacation rental or short-term rental property within the same twelve-month period:

1. Up to $500 or up to an amount equal to one night's rent for the vacation rental or short-term rental as advertised, whichever is greater, for the first verified violation.

2. Up to $1,000 or up to an amount equal to two nights' rent for the vacation rental or short-term rental as advertised, whichever is greater, for the second verified violation.

3. Up to $3,500 or up to an amount equal to three nights' rent for the vacation rental or short-term rental as advertised, whichever is greater, for a third and any subsequent verified violation.

G. A vacation rental or short-term rental that fails to apply for a local regulatory permit or license in accordance with subsection B, paragraph 5 of this section, within thirty days of the local regulatory permit or license application process being made available by the city or town issuing such permits or licenses, must cease operations. In addition to any ~~fines~~ CIVIL PENALTIES imposed pursuant to subsection F of this

section, a city or town may impose a civil penalty of up to $1,000 per month against the owner if the owner or owner's designee fails to apply for a regulatory permit or license within thirty days after receiving written notice of the failure to comply with subsection B, paragraph 5 of this section.

H. If multiple verified violations arise out of the same response to an incident at a vacation rental or short-term rental, those verified violations are considered one verified violation for the purpose of assessing civil penalties or suspending the regulatory permit or license of the owner ~~or owner's designee~~ pursuant to this section.

I. If the owner of a vacation rental or short-term rental has provided contact information to a city or town pursuant to subsection B, paragraph 4 of this section and if the city or town issues a citation for a violation of the city's or town's applicable laws, regulations or ordinances or a state law that occurred on the owner's vacation rental or short-term rental property, the city or town shall make a reasonable attempt to notify the owner or the owner's designee of the citation within seven business days after the citation is issued using the contact information provided pursuant to subsection B, paragraph 4 of this section. If the owner of a vacation rental or short-term rental has not provided contact information pursuant to subsection B, paragraph 4 of this section, the city or town is not required to provide such notice.

J. This section does not exempt an owner of a residential rental property, as defined in section 33-1901, from maintaining with the assessor of the county in which the property is located information required under title 33, chapter 17, article 1.

K. A vacation rental or short-term rental may not be used for nonresidential uses, including for a special event that would otherwise require a permit or license pursuant to a city or town ordinance or a state law or rule or for a retail, restaurant, banquet space or other similar use.

L. For the purposes of this section:

1. "ACCESSORY DWELLING UNIT" HAS THE SAME MEANING PRESCRIBED IN SECTION 9-461.18.

~~1.~~ 2. "Online lodging marketplace" has the same meaning prescribed in section 42-5076.

~~2.~~ 3. "Transient" has the same meaning prescribed in section 42-5070.

~~3.~~ 4. "Vacation rental" or "short-term rental":

(a) Means any individually or collectively owned single-family or one-to-four-family house or dwelling unit or any unit or group of units in a condominium or cooperative that is also a transient public lodging establishment or owner-occupied residential home offered for transient use if the accommodations are not classified for property taxation under section 42-12001.

(b) Does not include a unit that is used for any nonresidential use, including retail, restaurant, banquet space, event center or another similar use.

~~4.~~ 5. "Verified violation" means a finding of guilt or civil responsibility for violating any state law or local ordinance relating to a purpose prescribed in subsection B, D, F or K of this section that has been finally adjudicated.

APPROVED BY THE GOVERNOR MAY 21, 2024.

FILED IN THE OFFICE OF THE SECRETARY OF STATE MAY 21, 2024.

MARANA AZ

Amending Title 17 – Accessory Dwelling Unit (ADU) Regulations

Jane Fairall, Town Attorney

12/3/2024

Background

- House Bill 2720 - effective September 14, 2024, requires all Arizona municipalities with a population of more than 75,000 to adopt regulations allowing ADUs on any lot or parcel where a single-family dwelling is allowed
- House Bill 2720 is now codified in the Arizona Revised Statutes at A.R.S. § 9-461.18.
- Paragraph F of A.R.S. § 9-461.18 provides:
  "If a municipality fails to adopt development regulations as required by this section on or before January 1, 2025, accessory dwelling units shall be allowed on all lots or parcels zoned for residential use in the municipality without limits."
- Marana's population is less than 75,000, but is expected to reach 75,000 within the next few years. To avoid having no limits on ADUs when the Town's population hits 75,000, and because of the language in paragraph F requiring adoption before January 1, 2025, Town staff is proposing for the Town to adopt regulations on ADUs conforming to A.R.S. § 9-461.18 that will automatically become effective when the population of the Town of Marana reaches 75,000

New Section 17-6-14

- New Marana Town Code section 17-6-14, entitled “Accessory dwelling units,” includes all elements required by HB 2720 for cities and towns over 75,000
- Uses the same definitions as HB 2720, including:
  - “Accessory dwelling unit” means a self-contained living unit that is on the same lot or parcel as a single-family dwelling of greater square footage than the accessory dwelling unit, that includes its own sleeping and sanitation facilities, and that may include its own kitchen facilities
  - “Permitted use” means approved without requiring a public hearing, variance, conditional use permit, special permit, or special exception, other than a determination that a site plan conforms with applicable zoning regulations
  - “Restricted-affordable dwelling unit” means a dwelling unit that, either through a deed restriction or a development agreement with the town, shall be rented to households earning up to 80% of area median income

New Section 17-6-14

- Allows one attached and one detached ADU as a permitted use on any single-family lot or parcel that contains a primary dwelling
- Allows one additional ADU on lots one acre or larger as long as one of the ADUs on the lot is “restricted-affordable” (that is, rented to households earning up to 80% of area median income)
- Limits the size of ADUs to the lesser of 75% of the gross floor area of the existing single-family dwelling on the same parcel or 1,000 square feet
- Requires ADUs to meet the setbacks for accessory buildings in the applicable zoning district, except that the rear and side setbacks for an ADU shall be a minimum of 5 feet

New Section 17-6-14

- Requires ADUs to meet the height limit for a single-family dwelling within the applicable zoning district
- Requires lots with one or more ADUs to meet the lot coverage requirements of the applicable zoning district
- Allows an ADU to be used for short-term rental only if and while the owner resides on the property that contains the ADU
- Prohibits an ADU from being built on a current or planned public utility easement unless the property owner receives written consent from any utility that is currently using the public utility easement or that may use the public utility easement in the future
- Only applies to lots and parcels where the town determines that adequate public utility services are available and the application complies with the Land Development Code and the town's building codes, fire codes, and public health and safety regulations

New Section 17-6-14

Does not apply to any single-family lot or parcel located on:

- Tribal land
- Land in the vicinity of a military airport or ancillary military facility
- Land in the vicinity of an FAA commercially licensed airport
- Land in the vicinity of a general aviation airport
- Land in the vicinity of a public airport

17-4-2 Use Matrix & 17-4-3 Conditions Per Use

Table 2. Use matrix											
Uses	**AG**	**RA**	**ER**	**NR**	**GR**	**MR**	**RR**	**NC**	**VC**	**LI**	**HI**
Residential											
Accessory dwelling unit*	U	U	U	U	U	U	U	U	U	X	X

*Accessory dwelling units are allowed upon meeting the conditions set forth in table 3 below only upon the effective date of section 17-6-14 as set forth in section 17-6-14(G).

Table 3. Conditions per use		
USE	**ZONE(S)**	**CONDITION(S)**
Residential		
Accessory dwelling unit	AG, RA, ER, NR, GR, MR, RR, NC, VC	Must comply with all development standards for accessory dwelling units, as set forth in section 17-6-14

Other Prohibitions in HB 2720

The proposed text amendment does not include limitations on the Town's authority as found in A.R.S. § 9-461.18. Those limitations include that the town may not:

- Prohibit the use or advertisement of either the single-family dwelling or any ADU located on the same lot or parcel as separately leased long-term rental housing
- Require a familial, marital, employment or other preexisting relationship between the owner or occupant of a single-family dwelling and the occupant of an ADU located on the same lot or parcel
- Require that a lot or parcel have additional parking to accommodate an ADU or require payment of fees instead of additional parking
- Require that an ADU match the exterior design, roof pitch or finishing materials of the single-family dwelling that is located on the same lot as the ADU

Other Prohibitions in HB 2720

The proposed text amendment does not include limitations on the Town's authority as found in A.R.S. § 9-461.18. Those limitations include that the town may not:

- Set restrictions for ADUs that are more restrictive than those for single-family dwellings within the same zoning area with regard to height, setbacks, lot size, coverage, or building frontage
- Set rear or side setbacks for ADUs that are more than five feet from the property line
- Require improvements to public streets as a condition of allowing an ADU, except as necessary to reconstruct or repair a public street that is disturbed as a result of the construction of the ADU
- Require a restrictive covenant concerning an ADU on a lot or parcel zoned for residential use by a single-family dwelling

Housing Impact Statement

A.R.S. § 9-462.01 paragraph J requires the Town to consider a housing impact statement regarding the impact of any zoning ordinance text amendment of general applicability

- The proposed ADU ordinance is not anticipated to have any impact on the average cost to construct housing for sale or rent in Marana, except to the possible extent that the construction of ADUs might increase the demand for construction services in the Town, in which case construction costs could be anticipated to rise slightly.
- Because the proposed ADU text amendment will allow ADUs where they were previously prohibited or allowed subject to greater restrictions, it will have the effect of making housing more attainable in Marana.

Staff Recommendation

Staff recommends approval of the Ordinance adopting ADU regulations

Council-Regular Meeting **A3**

Meeting Date: 12/17/2024

To: Mayor and Council

From: Jason Angell, Development Services Director

Date: December 17, 2024

Strategic Plan Focus Area:
Thriving Commerce, Vibrant Community, Proactive Public Services

Subject: Public Hearing: Ordinance No. 2024.029: Relating to Land Development; adopting amendments to Marana Town Code Title 17 "Land Development"; revising Section 17-1-6 (Definitions), to add a definition for "data center"; revising Section 17-4-2 (Use matrix) Table 2 - Use matrix, to add the data center use and to provide that data centers are prohibited as a principal use in all standard Town zones and allowed as accessory uses in the Town's industrial zones LI and HI; revising sections 17-4-8 (Industrial zoning districts) and 17-4-16 (Legacy zones) to provide regulations for data centers operating as accessory uses; revising Chapter 17-6 "General and Miscellaneous Development Regulations" to add new section 17-6-13 (Data centers) establishing that data centers may only operate in the Town as a principal use if approved in a specific plan or specific plan amendment adopted through the normal rezoning process, and establishing development regulations for data centers; and designating an effective date (Jason Angell)

Resolution No. 2024-108: Relating to Land Development; declaring as a public record filed with the Town Clerk the amendments adopted by Ordinance No. 2024.029, revisions to Title 17 "Land Development" of the Marana Town Code, including revising Section 17-1-6 (Definitions), to add a definition for "data center"; revising Section 17-4-2 (Use matrix) Table 2 - Use matrix, to add the data center use and to provide that data centers are prohibited as a principal use in all standard Town zones and allowed as accessory uses in the Town's industrial zones LI and HI; revising sections 17-4-8 (Industrial zoning districts) and 17-4-16 (Legacy zones) to provide regulations for data centers operating as accessory uses; revising Chapter 17-6 "General and Miscellaneous Development Regulations" to add new section 17-6-13 (Data

centers) establishing that data centers may only operate in the Town as a principal use if approved in a specific plan or specific plan amendment adopted through the normal rezoning process, and establishing development regulations for data centers (Jason Angell)

Discussion:

A data center is a facility that houses computer servers and their network connections. The growth of digital data has expanded exponentially in recent years, resulting in a rapid increase in data center facilities that is anticipated to continue. This growth is needed to support the increased online population as well as business applications in all sectors, including finance, entertainment, healthcare, and education. Data centers can bring positive tax revenues, with few impacts to transportation systems or schools. However, data centers are industrial uses that may affect surrounding uses (through noise and visual impacts), or affect energy demand and water supplies. (Source: County of Fairfax, Virginia, January 9, 2024, Data Centers Report and Recommendations)

The Marana Town Code does not currently include provisions that address the development of data centers. Based on feedback and direction from Council at the February 2024 Council Retreat and May 2024 Council Study Session, Town staff has conducted research regarding data center regulations, including best practices and lessons learned in other communities. The attached proposed amendments to the Marana Town Code establishing development regulations for data centers are presented to the Planning Commission, Town Council, and the community as a result of this research.

The proposed amendments to Town Code address all of the following issues related to data centers:

- An appropriate and comprehensive definition of data centers
- Zoning
  - Data centers allowed as a principal use only when approved by Council in a specific plan or specific plan amendment explicitly created for the purpose of data center development and adopted through the rezoning process.
  - Principal use data centers not permitted "by right" in any Town zoning districts.
  - Accessory use data centers permitted only in industrial and legacy zoning districts, with limitations on the size and operation of the accessory use.
- Supplemental specific plan application requirements specific to data centers, including requirements to address electric, water, and other energy needs for the site.
- Noise attenuation, including requirements for pre- and post-construction noise studies to ensure noise levels generated by the data center are within defined limits.
- Site design standards addressing:
  - Building placement and orientation
  - Setbacks
  - Screening of mechanical equipment and substations

    - Landscape buffers
    - And other design standards
- Building design standards addressing:
    - Massing and scale
    - Building height
    - Principal facades
    - Fenestration
    - Main building entryways
    - Exterior colors and materials

Staff Recommendation:

The Planning Commission considered this item at its October 30, 2024 regular meeting and voted 7-0 to recommend approval of the amendments to Title 17 of the Marana Town Code establishing development regulations for data centers as presented.

Suggested Motion:

I move to approve Ordinance No. 2024.029 and Resolution No. 2024-108, amending Title 17 of the Marana Town Code to establish development regulations for data centers.

Attachments

Ordinance No. 2024.029

Resolution No. 2024-108

Exhibit A to Resolution

MARANA ORDINANCE NO. 2024.029

RELATING TO LAND DEVELOPMENT; ADOPTING AMENDMENTS TO MARANA TOWN CODE TITLE 17 "LAND DEVELOPMENT"; REVISING SECTION 17-1-6 (DEFINITIONS), TO ADD A DEFINITION FOR "DATA CENTER"; REVISING SECTION 17-4-2 (USE MATRIX) TABLE 2 - USE MATRIX, TO ADD THE DATA CENTER USE AND TO PROVIDE THAT DATA CENTERS ARE PROHIBITED AS A PRINCIPAL USE IN ALL STANDARD TOWN ZONES AND ALLOWED AS ACCESSORY USES IN THE TOWN'S INDUSTRIAL ZONES LI AND HI; REVISING SECTIONS 17-4-8 (INDUSTRIAL ZONING DISTRICTS) AND 17-4-16 (LEGACY ZONES) TO PROVIDE REGULATIONS FOR DATA CENTERS OPERATING AS ACCESSORY USES; REVISING CHAPTER 17-6 "GENERAL AND MISCELLANEOUS DEVELOPMENT REGULATIONS" TO ADD NEW SECTION 17-6-13 (DATA CENTERS) ESTABLISHING THAT DATA CENTERS MAY ONLY OPERATE IN THE TOWN AS A PRINCIPAL USE IF APPROVED IN A SPECIFIC PLAN OR SPECIFIC PLAN AMENDMENT ADOPTED THROUGH THE NORMAL REZONING PROCESS, AND ESTABLISHING DEVELOPMENT REGULATIONS FOR DATA CENTERS; AND DESIGNATING AN EFFECTIVE DATE

BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, as follows:

SECTION 1. The revisions to Title 17 "Land Development" of the Marana Town Code, revising Section 17-1-6 (Definitions), to add a definition for "Data center"; revising Section 17-4-2 (Use matrix) Table 2 - Use matrix, to add the data center use and to provide that data centers are prohibited as a principal use in all standard Town zones and allowed as accessory uses in the Town's industrial zones LI and HI; revising sections 17-4-8 (Industrial zoning districts) and 17-4-16 (Legacy zones) to provide regulations for data centers operating as accessory uses; revising Chapter 17-6 "General and Miscellaneous Development Regulations" to add new section 17-6-13 (Data centers) establishing that data centers may only operate in the Town as a principal use if approved in a specific plan or specific plan amendment adopted through the normal rezoning process, and establishing development regulations for data centers, one paper copy and one electronic copy of which are on file in the office of the Town Clerk, which were made a public record by and attached as Exhibit A to Resolution No. 2024-108 of the Town of Marana, Arizona, are hereby referred to, adopted and made a part of this ordinance as if fully set out here.

SECTION 2. The various town officers and employees are authorized and directed to perform all acts necessary or desirable to give effect to this ordinance.

SECTION 3. All ordinances, resolutions, or motions and parts of ordinances, resolutions, or motions of the Council in conflict with the provisions of this ordinance are hereby repealed, effective as of the effective date of this ordinance.

SECTION 4. If any section, subsection, sentence, clause, phrase or portion of this ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, the decision shall not affect the validity of the remaining portions of this ordinance.

SECTION 5. This ordinance is effective on the 31st day after its adoption.

PASSED AND ADOPTED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, this ___ day of December, 2024.

_____
Jon Post, Vice Mayor

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

MARANA RESOLUTION NO. 2024-108

RELATING TO LAND DEVELOPMENT; DECLARING AS A PUBLIC RECORD FILED WITH THE TOWN CLERK THE AMENDMENTS ADOPTED BY ORDINANCE NO. 2024.029, REVISIONS TO TITLE 17 "LAND DEVELOPMENT" OF THE MARANA TOWN CODE, INCLUDING REVISING SECTION 17-1-6 (DEFINITIONS), TO ADD A DEFINITION FOR "DATA CENTER"; REVISING SECTION 17-4-2 (USE MATRIX) TABLE 2 - USE MATRIX, TO ADD THE DATA CENTER USE AND TO PROVIDE THAT DATA CENTERS ARE PROHIBITED AS A PRINCIPAL USE IN ALL STANDARD TOWN ZONES AND ALLOWED AS ACCESSORY USES IN THE TOWN'S INDUSTRIAL ZONES LI AND HI; REVISING SECTIONS 17-4-8 (INDUSTRIAL ZONING DISTRICTS) AND 17-4-16 (LEGACY ZONES) TO PROVIDE REGULATIONS FOR DATA CENTERS OPERATING AS ACCESSORY USES; REVISING CHAPTER 17-6 "GENERAL AND MISCELLANEOUS DEVELOPMENT REGULATIONS" TO ADD NEW SECTION 17-6-13 (DATA CENTERS) ESTABLISHING THAT DATA CENTERS MAY ONLY OPERATE IN THE TOWN AS A PRINCIPAL USE IF APPROVED IN A SPECIFIC PLAN OR SPECIFIC PLAN AMENDMENT ADOPTED THROUGH THE NORMAL REZONING PROCESS, AND ESTABLISHING DEVELOPMENT REGULATIONS FOR DATA CENTERS

BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, that the revisions to Title 17 "Land Development" of the Marana Town Code adopted by Marana Ordinance No. 2024.029, a copy of which is attached to and incorporated in this resolution as Exhibit A and one paper copy and one electronic copy of which are on file in the office of the Town Clerk, are hereby declared to be a public record and ordered to remain on file with the Town Clerk.

PASSED AND ADOPTED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, this ___ day of December, 2024.

Jon Post, Vice Mayor

ATTEST:

David L. Udall, Town Clerk

APPROVED AS TO FORM:

Jane Fairall, Town Attorney

SECTION 1. Section 17-1-6 (Definitions) of the Marana Town Code is hereby revised as follows (with additions shown with double underlining):

17-1-6 Definitions

A. The following definitions are used in this title, unless a different meaning is clearly indicated by the context or by a more specific definition:

[No revisions to subparagraphs 1 through 54]

55. Data center: A facility used primarily for the storage, management, processing, and transmission of digital data, which houses computer or network equipment, systems, servers, appliances and other associated components related to digital data operations. Examples of such digital data include, but are not limited to, computationally-intensive applications such as blockchain technology, cryptocurrency mining, weather modeling, and genome sequencing. The facility may also include air handlers, power generators, water cooling and storage facilities, utility substations, and other associated utility infrastructure to support sustained operations at the data center.

[No revisions to existing subparagraphs 55 through 222 which are hereby renumbered as subparagraphs 56 through 223 to conform]

[No revisions to paragraphs B and C]

SECTION 2. Chapter 17-4 "Zoning" of the Marana Town Code is hereby revised as follows (with additions shown with double underlining):

[No revisions to section 17-4-1]

17-4-2 Use matrix

A. Table 2 (use matrix) identifies the permissiveness of uses in all residential zoning groups and zoning districts other than the mixed-use districts and the SP zone. (Uses for the mixed-use districts are set forth in the mixed-use zoning district use matrix found at table 8.)

B. The notations in table 2 have the following meanings:

1. "P" means the use is permitted subject to design standards.
2. "A" means the use is permitted as an accessory use located on the same lot with a permitted use.
3. "C" means the use is allowed upon approval of a conditional use permit (see section 17-3-2).
4. "U" means the use is allowed upon meeting the conditions set forth in table 3 below.
5. "T" means the use is allowed upon approval of a temporary use permit (see section 17-3-3).
6. "X" means the use is prohibited.

[No revisions to paragraph C]

Table 2. Use matrix (only amendments to Table 2 are shown; the remainder of Table 2 is unchanged)

Uses	AG	RA	ER	NR	GR	MR	RR	NC	VC	LI	HI
Industrial											
Data center	X	X	X	X	X	X	X	X	X	A	A

[No revisions to sections 17-4-3 through 17-4-7]

17-4-8 Industrial zoning districts

[No revisions to paragraphs A through D]

E. Data centers. As provided in section 17-6-13, data centers are not permitted to operate in the town as a principal use unless approved in a specific plan or specific plan amendment explicitly created or amended for the purpose of data center development and adopted through the rezoning process set forth in section 17-3-1 and as described in section 17-4-15 (Specific plan (SP)). Data centers are permitted as an accessory use in the LI and HI zoning districts when all of the following are true:

1. The data center occupies no more than 15% of the site.

2. The data center is used to serve the enterprise functions of the on-site property owner and is not used to lease data storage and processing services to third parties. For purposes of this subparagraph "on-site property owner" includes an owner that owns the property and is the parent company of the company or companies on-site.

3. The data center complies with any applicable development standards for accessory use data centers, as set forth in section 17-6-13.

[No revisions to existing paragraph E which is hereby re-lettered to paragraph F to conform]

[No revisions to sections 17-4-9 through 17-4-15]

17-4-16 Legacy zones

A. The zoning districts set forth in sections 17-4-17 through 17-4-26 below are legacy zones. The legacy zones consist of zoning districts that currently exist within the town limits, but that are intended to be phased out over time. Each of these zoning designations is intended to be deleted when no land in the town has that zoning designation. The town will not rezone land to any of these legacy zone districts.

B. Notwithstanding any language in sections 17-4-17 through 17-4-26 permitting commercial and industrial uses in the legacy zones, as provided in section 17-6-13, data centers are not permitted to operate in the town as a principal use unless approved in a specific plan or specific plan amendment explicitly created or amended for the purpose of data center

development and adopted through the rezoning process set forth in section 17-3-1 and as described in section 17-4-15 (Specific plan (SP)).

C. Data centers are permitted as an accessory use in the legacy zoning districts when all of the following are true:

1. The data center occupies no more than 15% of the site.

2. The data center is used to serve the enterprise functions of the on-site property owner and is not used to lease data storage and processing services to third parties. For purposes of this subparagraph "on-site property owner" includes an owner that owns the property and is the parent company of the company or companies on-site.

3. The data center complies with any applicable development standards for accessory use data centers, as set forth in section 17-6-13.

[No revisions to sections 17-4-17 through 17-4-26]

SECTION 3. Chapter 17-6 "General and Miscellaneous Development Regulations" of the Marana Town Code is hereby revised by adding new section 17-6-13 (Data centers) as follows:

17-6-13 Data centers

A. Data centers are not permitted to operate in the town as a principal use unless approved in a specific plan or specific plan amendment explicitly created or amended for the purpose of data center development and adopted through the rezoning process set forth in section 17-3-1 and as described in section 17-4-15 (Specific plan (SP)). Subject to the requirements of this section 17-6-13, a specific plan may authorize data center development in a specific geographic area or region of a larger specific plan area.

B. In addition to the requirements of section 17-4-15(C), an application for a specific plan or a specific plan amendment for the purpose of data center development shall include the following information:

1. The baseline noise study and noise contour exhibit required by paragraph G below.
2. The intended source of electric power for the development and documentation from the electric utility provider affirming sufficient power exists to serve the site.
3. An assessment of future energy needs for the site.
4. An estimate of annual water consumption for the site.
5. The intended source of water for the development, and documentation from the water provider affirming sufficient water resources exist to serve the site.
6. An explanation regarding how the development complies with each of the requirements of this section 17-6-13; or, if the applicant requests that the council waive a requirement or requirements, an explanation as to why compliance with the requirement(s) is not feasible.

C. The minimum requirements of this section 17-6-13 shall apply to any data center operated as a principal use unless the council waives a requirement or requirements during the specific

plan rezoning process. In addition to these minimum requirements, the town may impose additional or more stringent site-specific requirements or regulations during the specific plan rezoning process, provided that the site-specific requirements or regulations are reasonably related to the impact of the development.

D. The minimum requirements of this section shall apply to any data center operated as an accessory use only where indicated.

E. The minimum requirements of this section that are based on the planned or zoned property uses of adjacent properties shall be established based on the planned or zoned uses at the time of the specific plan rezoning process.

F. The provisions of this section are intended to supplement the requirements of this code. If any provision of this section is found to be in conflict with any other provision of this code, the provision that establishes the higher or more restrictive standard shall prevail.

G. Noise Attenuation. The developer of a data center to be operated as either a principal or an accessory use must conduct a noise study performed by a qualified third-party acoustic engineer to document baseline sound levels in the area of the proposed data center and to produce a noise contour exhibit depicting the anticipated noise levels to be generated by the data center.

1. For purposes of this section 17-6-13:

   a. "dBA" means the sound pressure level in decibels as measured on a sound level meter using the A weighted filter network. The A weighted filter network is designed to simulate the response of the human ear. The A weighted sound level is expressed by the symbol "dBA."

   b. "Daytime" means 7:00 a.m. to 7:00 p.m. on weekdays, and 9:00 a.m. to 8:00 p.m. on Saturdays, Sundays, and legal holidays observed by the town.

   c. "Nighttime" means 7:00 p.m. to 7:00 a.m. on weekdays, and 8:00 p.m. to 9:00 a.m. on Saturdays, Sundays, and legal holidays observed by the town

2. Any noise which emanates from any operation, activity, or source on a data center site, including, but not limited to, heating and cooling system(s), shall not exceed the maximum permissible sound levels set forth in Table 2 (Maximum sound levels for data center operation) measured at the property line of the property affected by the noise.

Table 2. Maximum sound levels for data center operation	
Planned or zoned use of affected property	**Maximum dBA Daytime/Nighttime**
Residential and mixed-use	55/55
Agricultural	60/55
Commercial	65/60
Industrial	72/65

3. Notwithstanding the provisions of Table 2 above, any person performing site construction work in compliance with section 11-5-4 (Construction noise; extended work permits) shall not be subject to the maximum sound levels set forth in Table 2 above.
4. The data center must be designed and built to incorporate sound mitigation methods sufficient to prevent the sound levels emanating from the data center, as determined by a qualified third-party acoustic engineer, from exceeding the maximum sound levels set forth in Table 2. Design specifications for the required sound mitigation must be provided to the town before building permit approval.
5. Before issuance of a certificate of occupancy or certificate of completion, whichever occurs first, the data center operator must conduct a post-construction noise study performed by a qualified third-party acoustic engineer to document sound levels emanating from the data center measured at the property line of the nearest property to the data center property that is planned or zoned for residential land uses, or other noise sensitive use as reasonably determined by the zoning administrator, during peak operation of the data center mechanical equipment. The post-construction noise study must demonstrate that sound levels do not exceed the maximum sound levels set forth in Table 2. If sound levels exceed the maximum sound levels set forth in Table 2, the town will issue a temporary certificate of occupancy until the data center operator demonstrates that the required sound mitigation is achieved. If the data center operator is unable to demonstrate compliance with the sound levels set forth in Table 2 before expiration of the temporary certificate of occupancy, the town will not issue a permanent certificate of occupancy.
6. The data center operator must also conduct an additional noise study, as measured at the property line of the nearest property to the data center property that is planned or zoned for residential land uses, or other noise sensitive use as reasonably determined by the zoning administrator, annually during peak operation of the data center mechanical equipment for five years after completion of the initial post-construction noise study and when requested by the town thereafter. The data center operator must provide the results of the noise study to the town within 30 days of the anniversary of the date on which the certificate of occupancy or certificate of completion was issued by the town. If sound levels exceed the maximum sound levels set forth in Table 2, the data center operator shall take appropriate steps to achieve the required sound mitigation.

H. Water. The Marana water department will not provide potable water to a data center (principal or accessory use) for its cooling system, humidity control, and other similar operations. The developer must demonstrate an alternate source of water for these operations.

I. Site Design Standards. The site design standards in Table 3 (Site design standards for data center development) apply to the development of land that will accommodate data centers, as well as the placement of buildings on a given site. The standards are intended to help minimize the physical, environmental, and visual impacts of data centers on adjacent development.

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Table 3. Site design standards for data center development

Site design standard	Requirements
Building placement and orientation	Buildings shall orient principal façades, including visitor, staff and administrative entrances, to primary adjacent roads. Loading docks and service entries of buildings shall not face or be visible from public rights-of-way. When possible, existing buildings may be used to screen loading docks. Where building locations do not offer screening, and in the case of phased development plans, screening of loading docks and service entries shall be accomplished by existing or proposed landscaping, fencing, walls, or similarly effective methods.Δ Loading docks are permitted on only one side of the building. Δ Refuse collection areas must be fully screened on all four sides.Δ
Lighting Δ	Must comply with the town of Marana lighting code.
Lot coverage	No maximum
Setbacks	Any data center building, equipment for cooling, ventilating, or otherwise operating the facility, power generator, or other power supply equipment must be located: • At least 400 feet from the property line of any adjacent property that is planned or zoned for residential land uses, or other noise sensitive use as reasonably determined by the zoning administrator Δ • At least 100 feet from the property line of any adjacent property that is planned or zoned for any use other than residential or industrial uses
Generators Δ	Generators and generator use must be in compliance with all applicable state and federal regulations. If a data center uses diesel generators, only tier IV or newer

Table 3. Site design standards for data center development	
Site design standard	**Requirements**
	generators are permitted. Except for generator testing or commissioning activities, generator use is limited to backup/emergency use only. Generator testing shall be limited to weekdays between 8:00 a.m. and 5:00 p.m., except in emergencies
Screening of mechanical equipment and substations[Δ]	Substations and mechanical equipment shall be screened from public and private rights-of-way (except for private rights-of-way that are within the data center site) and from any adjacent property that is planned or zoned with any use other than industrial uses using one or multiple of the following methods of screening: • Existing vegetation that will remain on the property • Landscaping improvements constructed on the property • A visually solid fence, screen wall or panel, parapet wall, or other visually solid screen that shall be constructed of materials compatible with those used in the exterior construction of the principal building; these features shall be at least ten feet in height; chain link fencing with slats is not permitted to satisfy this requirement Ground mounted mechanical equipment is prohibited in front yards. Solid screening walls must be constructed with a design, materials, details, and treatment compatible with those used on the nearest principal façade of a building, but may include perforated surfaces as needed for ventilation of mechanical equipment. Mechanical equipment shall be located and screened with materials that provide appropriate levels of noise attenuation to reduce sound impacts on surrounding properties. On properties adjacent to residentially zoned/planned properties, mechanical equipment must be screened on all four sides by an acoustical barrier. For purposes of this section, "acoustical barrier" is defined as an exterior solid or louvred wall containing sound-proofing materials designed to absorb noise and protect neighboring properties from noise pollution, or another effective mitigation measure specified by a qualified third-party acoustic engineer when found by the zoning

Table 3. Site design standards for data center development	
Site design standard	**Requirements**
	administrator to provide appropriate levels of noise attenuation. Electric power lines, except electrical transmission lines carrying 48 kV or more, shall be located underground.
Landscape buffers	In lieu of the landscape buffer requirements in section 17-11-7(F) (Landscape buffer standards), any side or rear yard of a data center site abutting property that is planned or zoned for any use other than industrial uses shall include one of the following: • Agricultural and commercial zoned/planned properties: A minimum 50-foot buffer. This may be achieved through existing mature landscaping or a landscaped earthen berm that screens the site. Berms shall have a slope no steeper than 2:1 with a minimum height of four feet and planted with a minimum of 320 plant units* per 100 feet of right-of-way or property line. • Residential or mixed-use zoned/planned properties: A minimum 100-foot buffer. This may be achieved through existing mature landscaping or a landscaped earthen berm that screens the site. Berms shall have a slope no steeper than 2:1 with a minimum height of six feet and planted and planted with a minimum of 320 plant units* per 100 feet of right-of-way or property line. Notwithstanding the requirements of this section, use of natural topography and preservation of existing vegetation, supplemented by new vegetation, if needed, or on the outside of a six-foot-tall solid fence, may be substituted for the above requirements when found by the zoning administrator to provide visual screening from adjacent land uses at the density, depth, and height equivalent to the landscape buffer with earthen berm. To protect the landscaping and the preservation of open space, linear co-location of utilities shall not be located within the buffer.
Fencing $^{\Delta}$	Fencing of the property is permitted; however chain-link fencing, with or without slated inserts, and barbed wire fencing are prohibited along public or private street frontages.

* See Table 4 (Plant unit equivalents)

[Δ] Requirement applies to data centers operated as accessory uses

Table 4. Plant unit equivalents	
Plant type	**Plant unit(s)**
1 large deciduous or evergreen tree	10
1 medium, small, or compact deciduous or evergreen tree	5
1 shrub	2
1 ornamental grass	1
1 perennial	0.25

J. Building Design Standards. The building design standards in Table 5 (Building design standards for data centers) are intended to guide the development of data center buildings and associated equipment. The goal of the standards is to ensure more visually appealing and welcoming data center developments that also minimize negative impacts in the built environment.

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Table 5. Building design standards for data centers	
Building design standard	**Requirements**
Massing and scale	Buildings shall use broad, large-scale architectural gestures to provide variety and modulation in façade and massing as seen from public rights-of-way. Variation at the ground plane shall be provided to create transitions in scale and mass as viewed from public rights-of-way. Additive and subtractive shifts in the building footprint shall be provided to reduce mass and scale and to provide outdoor amenity spaces for employees and visitors.
Building height	A maximum building height of 55 feet is allowed, with an additional 10 feet permitted for rooftop mounting of screened mechanical equipment. This building height limitation does not apply to utility substations, associated utility infrastructure such as utility poles, or accessory communication towers, but a height limitation for this infrastructure must be specified in the specific plan application.
Principal façade	

Table 5. Building design standards for data centers	
Building design standard	**Requirements**

	Principal façade requirements apply to all building façades that face adjacent existing or planned public roads or that face property that is planned or zoned for any use other than industrial uses.
	
	Principal façades must incorporate differentiated surfaces at horizontal linear intervals that may vary in frequency, including:
	
	• Fenestration; and
	• A change in one of the following design elements:
	  ○ Building material;
	  ○ Pattern;
	  ○ Texture;
	  ○ Color; or
	  ○ Accent materials.
	
	Principal façades must include building step-backs or recesses, which shall be a minimum of two feet in depth.
	
	When a building has more than one principal façade, the principal façades must be consistent in terms of design, materials, details, and treatment.

Fenestration	Each principal façade must include fenestration comprising at least 20% of the total surface coverage area of the principal façade. The fenestration must be compatible with the other design, materials, details, and treatment used on the same principal façade.
Main building entryways	A data center building must include a main entrance feature that is differentiated from the remainder of the building façade by a change in building material, pattern, texture, color, or accent material. The entrance feature must also either project or recess from the adjoining building plane.
Exterior colors and materials	Primary building facades shall use a neutral color palette and avoid high-contrast colors. Δ Accent colors shall be selected to complement the dominant building color, and any color change shall occur where changes in the building plane or recesses are provided. Δ Colors shall not act as advertisements or billboards. Δ

Table 5. Building design standards for data centers	
Building design standard	**Requirements**
	Building exteriors shall use materials with texture and character. [Δ] Changes in materials shall be reflected in massing or offsets. The number of disparate materials shall be limited to a maximum of three primary materials to avoid a busy appearance. [Δ] Design elements shall be used to enhance the overall expression of data center buildings, with an emphasis on the pedestrian experience, particularly at entryways. All buildings shall include at least five of the following architectural features: • Overhang • Canopy or portico • Recesses or projections • Arcade • Raised corniced parapets over the entrance • Tower elements • Variation in the roof line

[Δ] Requirement applies to data centers operated as accessory uses

Council-Regular Meeting **A4**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Curt Woody, Director of Economic Development and Tourism

From: Jane Fairall, Town Attorney

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Resolution No. 2024-109: Relating to Economic Development; amending the Marana Job Creation Incentive Program (MJCIP) to exclude data centers from the definition of "Targeted Employer" for purposes of the MJCIP (Curt Woody)

Discussion:

The Mayor and Council originally adopted the Marana Job Creation Incentive Program (MJCIP) on May 4, 2010 by the adoption of Resolution No. 2010-044. The Mayor and Council have expanded and extended the MJCIP multiple times through the years, most recently extending the term of the MJCIP for a period of ten years through April 4, 2032, on June 7, 2022 by the adoption of Resolution No. 2022-055.

The purpose of the Marana Job Creation Incentive Program is to make the Town of Marana more competitive in the attraction, retention, and expansion of job-creating businesses and industries. The MJCIP aims to accomplish this purpose by reallocating construction sales tax revenues received from a new construction or expansion project and making them available for reimbursement to a qualifying "Targeted Employer" for certain expenditures, including:

- Employee Relocation Expense Allowance
- Interstate 10 Corridor Beautification Reimbursement
- Student Internship and Training Opportunities Costs
- Job Training
- Sustainable Development
- Public Infrastructure Costs

To qualify for the MJCIP as a "Targeted Employer" an employer must:

1. Generate a minimum of $24,000 in construction sales tax revenues (approximately equal to a $1 million construction cost investment) in Marana;
2. Create at least 10 new, permanent, non-construction jobs in Marana which pay at least $40,000 annually; and
3. Be a non-retail enterprise with some exceptions, most notably automobile and RV dealerships.

On tonight's agenda, Town staff proposes the adoption of comprehensive zoning and development regulations for data centers. Data centers are facilities used primarily for the storage, management, processing, and transmission of digital data, and housing computer or network equipment, systems, servers, appliances and other associated components related to digital data operations. Data centers are typically highly automated, allowing a small number of workers to operate a large facility. As such, data centers are not the type of job-creating businesses or industries that the MJCIP is designed to attract or retain.

The proposed resolution associated with this agenda item would revise the MJCIP to exclude data centers from the definition of "Targeted Employer" for purposes of the program. The resolution also consolidates all of the various provisions of the MJCIP, as it has been expanded and extended over the years by various resolutions, into one policy document, attached as Exhibit A to the resolution. Other than the exclusion of data centers from the "Targeted Employer" definition, there are no other substantive changes to the MJCIP included within the policy document attached as Exhibit A to the resolution.

Financial Impact:

The construction of data centers, if it occurs within the Town, would generate significant one-time construction sales tax revenues, while at the same time, creating relatively few jobs. In order for data center development to be of financial benefit to the Town and its citizens, it is crucial that the Town maintain all construction sales tax revenues created by the industry.

Staff Recommendation:

Staff recommends approval of the proposed resolution.

Suggested Motion:

I move to adopt Resolution No. 2024-109; amending the Marana Job Creation Incentive Program (MJCIP) to provide that data centers are not “targeted employers” for purposes of the program.

Attachments

Resolution No. 2024-109

MARANA RESOLUTION NO. 2024-109

RELATING TO ECONOMIC DEVELOPMENT; AMENDING THE MARANA JOB CREATION INCENTIVE PROGRAM (MJCIP) TO EXCLUDE DATA CENTERS FROM THE DEFINITION OF "TARGETED EMPLOYER" FOR PURPOSES OF THE MJCIP

WHEREAS A.R.S. § 9500.11 authorizes the Town to make expenditures in support of economic development; and

WHEREAS the Mayor and Council originally adopted the Marana Job Creation Incentive Program (MJCIP) on May 4, 2010 by the adoption of Resolution No. 2010044; and

WHEREAS the Mayor and Council expanded and extended the MJCIP on November 7, 2012 by the adoption of Resolution No. 2012-087; and

WHEREAS the Mayor and Council further expanded and extended the MJCIP on April 4, 2017 by the adoption of Resolution No. 2017-029; and

WHEREAS the Mayor and Council further expanded the MJCIP on April 20, 2021 by the adoption of Resolution No. 2021-052; and

WHEREAS the Mayor and Council further extended the term of the MJCIP for a period of ten years through April 4, 2032, on June 7, 2022 by the adoption of Resolution No. 2022-055; and

WHEREAS the purpose of the MJCIP is to make the Town of Marana more competitive in the attraction, retention, and expansion of job-creating businesses and industries; and

WHEREAS data centers, which are facilities used primarily for the storage, management, processing, and transmission of digital data, and housing computer or network equipment, systems, servers, appliances and other associated components related to digital data operations, are typically highly automated, allowing a small number of workers to operate a large facility; and

WHEREAS the Mayor and Council find that data centers are not the type of job-creating businesses or industries that the MJCIP is designed to attract or retain; and

WHEREAS the Mayor and Council find that amending the Marana Job Creation Incentive Program to provide that data centers are not considered "Targeted Employers" for purposes of the MJCIP is in the best interests of the Town and its citizens.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, AS FOLLOWS:

SECTION l. The Marana Job Creation Incentive Program is hereby amended to exclude data centers, as defined in the Marana Town Code, from the definition of "Targeted Employer" for purposes of the MJCIP; and Exhibit A, which describes the amended MJCIP as adopted by Marana Resolution No. 2012-087 and modified by this resolution and Resolution Nos. 2017-029, 2021-052, and 2022-055, attached to this resolution and incorporated herein by this reference, is hereby adopted.

SECTION 2. The Town's Manager and staff are hereby directed and authorized to undertake all other and further tasks required or beneficial to carry out the terms, obligations, and objectives of the MJCIP.

PASSED AND ADOPTED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, this ___ day of December 2024.

_____
Jon Post, Vice Mayor

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

Title:	Marana Job Creation Incentive Program (MJCIP)
Effective Date:	January 1, 2013
Type of Action:	Approved by Marana Resolution No. 2012-087
Revision History:	Marana Resolution Nos. 2017-029, 2021-052, 2022-055, 2024-109

Purpose

The purpose of the Marana Job Creation Incentive Program (MJCIP) is to make the Town of Marana more competitive in the attraction, retention, and expansion of job-creating businesses and industries.

Definitions

1. **Targeted Employer:** A non-retail business or industry, except for those retail businesses or industries described in paragraph c, below, that meets all of the following qualifications:
    a. Relocates or expands into buildings and other improvements for which at least $24,000 in Marana construction sales tax has been generated since January 1, 2013. The qualification set forth in this paragraph is referred to in the MJCIP as the "Minimum Construction Requirement." The Targeted Employer is responsible to track and provide supporting documentation for Marana construction sales tax actually paid in connection with the construction of Targeted Employer's facility. Any contractor who does other taxable construction work in the town limits of Marana while working on Targeted Employer's facility must provide Marana with a separate accounting of Marana construction sales tax paid in connection with the construction of Targeted Employer's facility.
    b. Since January 1, 2013, has created at least ten new jobs in Marana with wages that equal or exceed $40,000.
    c. Notwithstanding the general exclusion of retail businesses and industries, automobile and recreational vehicle dealerships may qualify as Targeted Employers if they meet all of the qualifications outlined in paragraphs a and b, above. In addition, other retail businesses and industries similar to those enumerated in this paragraph c may qualify as Targeted Employers for purposes of this resolution, if approved by the Town Manager and if the

Town Attorney determines that including them is within the Town's legal authority.

d. Notwithstanding the provisions of paragraphs a and b above, data centers, as defined in the Marana Town Code, are excluded from the definition of Targeted Employer for purposes of the MJCIP.

2. **Marana construction sales tax:** Marana transaction privilege taxes (currently 4%) generated pursuant to Section 8-415 and 8-416 of the Marana Tax Code from construction contracting and speculative builder activities.

Economic Incentives

The Town Manager is authorized to implement the economic incentives set forth below at a cost, for each Targeted Employer, not to exceed the Marana construction sales tax revenues received by the Town for the construction of that Targeted Employer's facility.

A. Employee Relocation Expense Allowance. An allowance of $3,000 to cover moving, transportation, title, recording, and other costs associated with relocating an eligible employee, through an employer-assisted housing program, to an employee-purchased residence within the town limits of Marana. Only one $3,000 allowance shall be permitted for each employee-purchased residence. To be eligible, an employee shall have moved from outside of the Marana town limits into an employee-purchased residence within the town limits of Marana and must be an employee of the Targeted Employer who works in Marana.

B. Interstate 10 Corridor Beautification Reimbursement. Actual costs for beautification of Targeted Employer's facilities and adjacent public right-of-way located in the town limits of Marana along the Interstate 10 corridor, including installation of landscaping and attractive signage for new and existing Targeted Employer facilities and improvement of existing Targeted Employer facility façades to more closely conform to the adopted Marana commercial design standards.

C. Student Internship and Training Opportunities Costs. Actual costs of internship and training programs that educate high school and college students who are Marana residents in the Targeted Employer's primary field of business or industry.

D. Job Training. Actual costs of training programs for new or existing employees, including but not limited to the cost of course design and development, instruction costs for job-specific training, training materials and supplies, and training facility rental.

E. Sustainable Development. Actual costs associated with solar and/or wind energy improvements, low environmental impact development, and other green industry best practices.

F. Public Infrastructure Costs. Actual costs of constructing public infrastructure needed to serve the Targeted Employer's facilities, including without limitation the cost of any Town of Marana-adopted development impact fees paid by or on behalf of the Targeted Employer toward public infrastructure.

G. Other Similar Incentives. Actual costs of any other economic incentive similar to those enumerated in this resolution that the Town Manager approves and the Town Attorney determines is within the Town's legal authority.

For each Targeted Employer, the economic incentives authorized by this Marana Job Creation Incentive Program are available for a period of three years, beginning on the date the Town issues a certificate of occupancy for the Minimum Construction Requirement, and ending on the third anniversary of that date.

While the MJCIP is in effect and during the three-year period described above, the use of those Marana construction sales tax revenues addressed by the MJCIP shall control over any other conflicting or different use of Marana construction sales tax revenues as directed in previously-adopted Marana resolutions.

Responsibilities

The Town Manager is authorized to administer and interpret the Marana Job Creation Incentive Program, and the various Town officers and employees are authorized and directed to perform all acts necessary or desirable to give effect to the MJCIP.

MJCIP Term

Pursuant to Marana Resolution No. 2022-055, the Marana Job Creation Incentive Program sunsets on April 4, 2032.

Council-Regular Meeting **A5**

Meeting Date: 12/17/2024

To: Mayor and Council

Submitted For: Jason Angell, Development Services Director

From: Dustin Ward, Development Engineering Division Manager

Date: December 17, 2024

Strategic Plan Focus Area:
Not Applicable

Subject: Ordinance No. 2024.025: Relating to Land Development, adopting the Town of Marana Drainage Manual (Jason Angell)

Resolution No. 2024-103: Relating to Land Development, declaring as a public record filed with the Town Clerk the Town of Marana Drainage Manual adopted by Ordinance No. 2024.025 (Jason Angell)

Discussion:

The Town of Marana (Town) has prepared this Drainage Manual for the civil engineering and floodplain management community designing improvements within the Town limits. Historically, the Town has relied on regional standards and methods in the hydrology/hydraulic discipline that mainly originated in the City of Tucson and Pima County. The core purpose of this manual is to compile the Town's policies by taking into consideration the historically used regional standards and methods, but modifying standards to be more reflective of Marana's topography and culture.

With the Town's growth over the last several years, staff have observed that there is a need to position the Town so that we are not reliant on other jurisdictions for drainage standards. Creating the Town of Marana Drainage Manual will allow the Town to decide how we will require drainage to be designed. This will also position us to guide development in a direction that allows us to protect our residents, foster town growth, provide consistency within the developments, and maintain our relationships with the development community.

The current drainage design practices across the Town have been inconsistent in terms of the methods used while constant in their approach to design. The Drainage Manual will set the standards, making the designs consistent with the developments. It will also provide guidance to new developers who are developing within the Town. The manual, as developed, has pulled together the relevant design standards from jurisdictions within the region that staff have determined to align with the Town's master plan. As part of the development of the Drainage Manual, Town staff worked with SAHBA and the engineers within the development community to get feedback on the manual. We evaluated all the feedback received for the impact on the residents, staff, and the community; we incorporated the suggestions that were in the Town's best interest.

Staff Recommendation:

Staff recommends adopting the Town of Marana Drainage Manual as the Town standard for drainage development.

Suggested Motion:

I move to adopt Ordinance No. 2024.025, adopting the Town of Marana Drainage Manual, and Resolution No. 2024-103, declaring the Drainage Manual as a public record filed with the Town Clerk.

Attachments

Ordinance No. 2024.025
Resolution No. 2024-103
Exhibit A - Drainage Manual

MARANA ORDINANCE NO. 2024.025

RELATING TO LAND DEVELOPMENT; ADOPTING THE TOWN OF MARANA DRAINAGE MANUAL

WHEREAS A.R.S. §48-3610 authorizes an incorporated city or town to assume floodplain management powers and duties within its area of jurisdiction; and

WHEREAS the Town of Marana has assumed floodplain management powers and duties within its area of jurisdiction via the adoption of Marana Town Code Chapter 17-15 "Floodplain and Erosion Hazard Management Code" to promote the public health, safety and general welfare of its citizens; and

WHEREAS Town staff has promulgated the Town of Marana Drainage Manual, providing general commercial and residential development regulations for developing properties within the Town of Marana; and

WHEREAS the Mayor and Council find that the approval of the proposed Town of Marana Drainage Manual is in the best interest of the residents and businesses of the Town of Marana.

NOW, THEREFORE, BE IT ORDAINED by the Mayor and Council of the Town of Marana as follows:

SECTION 1**.** The Town of Marana Drainage Manual, one paper copy and one electronic copy of which are on file in the office of the Town Clerk, which was made a public record by and attached as Exhibit A to Resolution No. 2024103 of the Town of Marana, Arizona, is hereby referred to, adopted and made a part of this ordinance as if fully set out here.

SECTION 2. Violation of the Town of Marana Drainage Manual shall be treated in the same manner as a violation of the Town of Marana Land Development Code, as set forth in Marana Town Code Chapter 17-3 "Administration and Enforcement."

SECTION 3. The Marana Town Council hereby authorizes the Town Engineer to administratively update and revise the Town of Marana Drainage Manual from time to time as needed due to changes to the Marana Town Code and other Town standards or regulations, or when necessary based on sound engineering judgment consistent with accepted practices, as long as the administrative changes do not alter the general purpose or intent of the Drainage Manual.

SECTION 4. The various town officers and employees are authorized and directed to perform all acts necessary or desirable to give effect to this ordinance.

SECTION 5. All ordinances, resolutions, or motions and parts of ordinances, resolutions, or motions of the Council in conflict with the provisions of this ordinance are hereby repealed, effective as of the effective date of this ordinance.

SECTION 6. If any section, subsection, sentence, clause, phrase or portion of this ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, the decision shall not affect the validity of the remaining portions of this ordinance.

SECTION 7. This ordinance is effective on the 31st day after its adoption.

PASSED AND ADOPTED by the Mayor and Council of the Town of Marana, Arizona, this ____ day of December, 2024.

_____
Jon Post, Vice Mayor

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

MARANA RESOLUTION NO. 2024-103

RELATING TO LAND DEVELOPMENT; DECLARING AS A PUBLIC RECORD FILED WITH THE TOWN CLERK THE TOWN OF MARANA DRAINAGE MANUAL ADOPTED BY ORDINANCE NO. 2024.025

BE IT RESOLVED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, that the Town of Marana Drainage Manual adopted by Marana Ordinance No. 2024.025, a copy of which is attached to and incorporated in this resolution as Exhibit A and one paper copy and one electronic copy of which are on file in the office of the Town Clerk, are hereby declared to be a public record and ordered to remain on file with the Town Clerk.

PASSED AND ADOPTED BY THE MAYOR AND COUNCIL OF THE TOWN OF MARANA, ARIZONA, this ___ day of December, 2024.

_____
Jon Post, Vice Mayor

ATTEST:

_____
David L. Udall, Town Clerk

APPROVED AS TO FORM:

_____
Jane Fairall, Town Attorney

Exhibit A to Resolution No. 2024-103

MARANA AZ



TOWN OF MARANA
DRAINAGE MANUAL

SEPTEMBER 2024

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1. Introduction and Purpose

1.1 Introduction

The Town of Marana (Town) has prepared this manual for the civil engineering and floodplain management community that is designing improvements within the Town limits. This shall apply to public and private improvements. Historically, the Town has relied on regional standards and methods in the hydrology/hydraulic discipline that mainly originated in the City of Tucson and Pima County. The Town prepared its own Subdivision Street Standards Manual for the first time in 2004 and has since updated that manual a total of two (2) times. This experience of having standards specific to the Town, compiled and referenced all in one location, has been very helpful to not only Town Staff but to the end users of the manuals: planners and engineers.

The purpose of this manual is to compile the Town's policy by consolidating the historically used regional standards and methods but modifying standards to be more reflective of Marana's topography and culture. New methods and requirements for specific situations that are applicable within the Town Limits are also included. The standards in this manual are guidelines, which will be criteria for approval of submittals. However, it is recognized that there are situations for which these standards may not be applicable. In these cases, and in cases of conflict or contradiction, sound engineering judgment consistent with accepted practice shall be used and in some cases approval in writing by the Town Engineer will be necessary.

Those portions of these standards prepared by the Pima County Regional Flood Control District (District) or the City of Tucson have been included herein as public domain information. It should be noted that this manual is adopting those standards from other agencies as they were at the time of publishing of this manual. Future changes to policy and methodology are not automatically incorporated into this manual.

1.2 Purpose

The Town has grown substantially in area and population since first incorporating in 1977 and the growth has been subject to standards and policies through development processes that have been implemented and adapted as the town has grown. The Town is developing this drainage manual to manage the future growth of the Town with a single point of reference for drainage policy. This manual seeks to accomplish the following:

- Compile drainage policies that currently exist in multiple references.
- Establish policies that are appropriate to the Town's topography and culture.
- Provide consistency for the development community, the public, and the Town.
- Provide clarity to the development and engineering community of what to expect during the review and approval process.
- A more consistent/efficient review and approval process.
- A better final design that aims to keep the public safe from flooding for an established set of criteria that is achievable and cost-effective.
- A design that acknowledges the maintenance costs of improvements and attempts to minimize undue maintenance for both publicly and privately owned infrastructure.

1.3 Applicability

These standards should be applied to development, both commercial and residential, and public works improvements when no such overriding standards, agreements and conditions apply. In the future, there could be overlapping of these standards with the Marana Town Code, Chapter 17-15 Floodplain and Erosion Hazard Management Code (Ordinance) and in those cases, the more restrictive of the two will take priority.

2. Documentation Requirements

Drainage submittals supporting improvements and developments will need to meet minimum content standards in accordance with the size and complexity of the project. The types of drainage support documents and specific requirements are detailed in this section.

2.1 Drainage Statement

A drainage statement is an appropriate supporting document when the project is five (5) acres or less and meets all of the following conditions:

- Detention/Retention is not required.
- No hydrologic or hydraulic modeling is required.

Prior to pursuing or scoping a Drainage Statement as the supporting documentation for a project, consult with the Town to determine if this is acceptable. A Drainage Statement may be appropriate for developments covered by an approved Master Drainage Report under the condition that Detention/Retention was handled regionally and within the spine infrastructure of the development. There are other scenarios where a drainage statement may be appropriate when the density of development and subsequent drainage complexity does not require a report. See Appendix A for Drainage Statement Format.

2.2 Drainage Report

A drainage report is an appropriate supporting document for public infrastructure projects that may affect drainage and those private development projects that exceed the thresholds for a drainage statement. Drainage reports are appropriate for the following:

- Subdivisions with single family residential land-use.
- Commercial, Industrial and Institutional Developments that are single owner – non-phased improvements.
- Public infrastructure projects.
- Private utility projects.

See Appendix A for Drainage Report Format.

2.3 Master Drainage Report

A master drainage report (MDR) is an appropriate supporting document for master planned developments, phased developments, and any platted subdivisions (residential or commercial) with Blocks that are created for future development. The MDR is approved in perpetuity by virtue of the development review process. MDRs may become obsolete, non-conforming, or not in-step with the owner's/Town's vision for the area. At such time the MDR must be revised and entitled the "Revised" MDR and make reference to former MDR approval. Reasons for revising the MDR include, but are not limited to the following:

- Change in federal flood hazard zone designation
- Change in land-use of the property

- Change in hydrology methodology (runoff method, rainfall, etc.)
- Change in drainage concept

2.3.1 Master Drainage Concept

The master drainage concept (MDC) must address the spine infrastructure drainage, regional detention, and block to block drainage concept. This drainage concept addresses the potential runoff of the entire block and its ultimate destination in the MDC. Blocks that do not drain into spine infrastructure must establish flow types, amounts across block boundaries. Flow types across block boundaries can be divided into three (3) categories:

- Sheet flow – downstream block must account for future sheet flow from upstream developed block
- Dispersed flow – downstream block must account for at least 2 or more locations of flow from the upstream block
- Concentrated flow – downstream block need only account for one concentrated inflow from the upstream block

Blocks that develop first shall establish the location of flow acceptance and discharge and post-developed blocks shall adhere and accept those locations. The concept of individual block detention/retention over regional detention must be approved in writing by the Town Engineer.

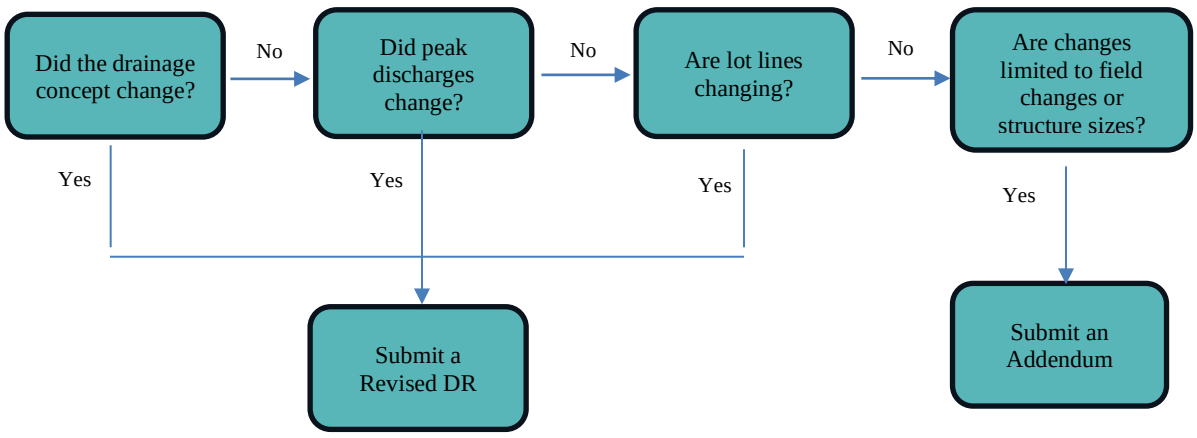
See Appendix A for Master Drainage Report Format

2.4 Technical Data Support Notebook

The Technical Data Support Notebook (SDTSDN) is a nationally accepted report format for documenting large scale hydrologic and hydraulic analyses with the intent to establish flood risk inundation. This format is required for supporting a Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR). A regionally accepted format for the DDTSDN has been published by Arizona Department of Water Resources as State Standard SS1. Attention should be given to projects that overlap municipal boundaries that multiple community concurrence forms may be required. See MT-2 form instructions.

2.5 Revisions

Revisions are for the purpose of revising or adding to approved reports. A report that is not yet approved by the town cannot have a revision or addendum to it. Revisions or refinements to a drainage concept may need to be documented in a re-submittal during the development review process. The decision matrix for submitting a revision (Revised Drainage Report) versus an addendum is laid out in the flow chart below:



3. Regulatory Requirements

3.1 Floodplain and Erosion Hazard Management Code

Chapter 17-15 of Marana Town Code is entitled Floodplain and Erosion Hazard Management Code and was approved by Ordinance 2015.021. This section of the Town Code shall hereafter in this document be referred to as the "Ordinance." In the future, there could be overlapping of these standards with the Ordinance and in those cases, the more restrictive of the two will take priority.

3.2 Northwest Policy

The Northwest Policy is hereby incorporated into the Drainage Manual and will now be the home for future modifications and updates. The Northwest Policy was first introduced in December of 2000 for the purpose of addressing the development of the area of the Town Limits which are largely devoid of drainage conveyance mechanisms either natural or improved. The boundary in which the Northwest Policy shall be administered is shown on Figure 1, NW Policy Area Map. Accordingly, the Town adopted the following requirements for this region:

3.2.1 Sheet Flow

Any offsite sheet flow intercepted by a project shall be passed through the project, onsite, or shall be accommodated via an approved alternative facility. Simply elevating a project out of a sheet-flow area without regard to the displaced floodwaters will not suffice. The Town may require flow corridors to be dedicated to provide conveyance of offsite flow in sheet flow areas.

3.2.2 Insufficient Receiving Waters

Projects lacking sufficient improved or natural receiving waters into which stormwater runoff may be discharged shall be required to retain 100% of all on-site runoff volume generated during the design storm. The design storm shall be a 100-year, 1-hr storm, followed by a 10-year, 1-hr storm. These storms shall be applied assuming a lag of 24 hours between (This is important for calculating drain time). Drain time must be 36 hours or less and the clock begins at the end of the 10-year storm. The volume of runoff to be retained shall be computed using the applicable equation excerpted below. An emergency overflow weir, which may discharge to an existing public street, shall be provided as an element of any onsite retention facility.

Equation 3.1 $$V_{post-rp} = \frac{C_{w-rp}\, P_{1-rp}\, A}{12}$$

Where:

A	=	Watershed area
C_{w-rp}	=	Weighted runoff coefficient for the return period, dimensionless
P_{1-rp}	=	1-hour rainfall depth for the return period, inches
$V_{post-rp}$	=	Runoff volume for the return period, acre feet

3.2.3 Ponding Restrictions

Ponded water in basins shall be in conformance with Section 6.3 of this manual, “Basin Depth and Perimeter Safety Requirements.”

Drywells are the most common disposal method used to meet drain time requirements. Drywell and Infiltration Trench requirements are discussed in Sections 6.1.1 and 6.1.2 respectively.

3.3 Excavations next to Flood Control Infrastructure

Recognizing the inherent hazard of potentially unstable slopes from deep excavations upon public infrastructure due to failure mechanisms such as seepage, rilling, and headcutting, the Town has generated a standard for safe setback to public infrastructure and neighboring property for all new sand and gravel operations that are permitted within the town limits.
Without additional geotechnical analysis supporting stability of excavations, the following setbacks from property lines shall be adhered to under the following conditions:

3.31 Upstream of Avra Valley Road

1. Maximum excavation slope shall be 1:1
2. Top of slope (as first permitted) shall be setback:
    a. No closer than 100 feet for 25-50-foot depth excavation
    b. No closer than 200 feet for 50-100-foot depth excavation
3. Excavations deeper than 75 feet shall first install piezometers in the area between effluent flow and excavation to evaluate presence of lateral groundwater flow. A slope failure analysis due to saturation will be required at time of submittal.
4. Final reclaimed slopes shall be no steeper than 3:1

3.32 Downstream of Avra Valley Road

1. Maximum excavation slope shall be 1:1
2. Top of slope (as first permitted) shall be setback:
    a. No closer than 150 feet for 25-75-foot depth excavation
    b. No closer than 300 feet for 75-150-foot depth excavation
3. Excavations deeper than 125 feet shall first install piezometers in the area between effluent flow and excavation to evaluate presence of lateral groundwater flow. A slope failure analysis due to saturation will be required at time of submittal.
4. Final reclaimed slopes shall be no steeper than 3:1

3.33 Additional Geotechnical Analysis

Minimum setback to property line/public infrastructure shall be 100-feet when supported by additional geotechnical analysis, including:

- Appropriate characterization of soils on slope and in between property line/public infrastructure to a depth greater than ultimate excavation depth
- When setbacks are proposed which do not provide for sufficient distance to achieve a reclaimed 3:1 slope, a statement that slopes are stable and will not create a hazard to adjacent personal property or public infrastructure must be made under the seal of a registered professional engineer in the State of Arizona.
- A slope failure analysis will be required for any setbacks proposed that are less than standard minimums published above.

Additional restrictions on excavations outlined in the Ordinance shall remain and be full in force.

4. Hydrology

The Town uses a combination of rainfall runoff methodology to quantify peak discharges within the town limits that depends on purpose of the discharge quantity, the location of the project and the size of the watershed. One distinction in terms of location within Town Limits is the Tortolita Fan which comprises a good portion of the Marana Town Limits. Because the Tortolita Fan area is unique geomorphologically and is subject to unconsolidated sheet flow, distributary flow, and active alluvial channel formation, the method for rainfall runoff requires a rain on grid analysis using finite difference methodology. The remainder of the Town Limits should utilize the Pima County Hydrology Methodology. Both methodologies are discussed in detail below.

4.1 Tortolita Alluvial Fan Study (TAFS) Area

Figure 2, TAFS Area is provided to show the region that is covered by the Town's TAFS model. The TAFS model uses two software programs: HEC-1 and FLO-2D. This modeling effort was approved by FEMA for flood hazard mapping use. The study area has two model scenarios to address rainfall aerial reduction: Regional and Non-regional. Refer to References to download the models.

Regional: Rainfall aerial reduction factor was based on the watershed size of the entire TAFS area (±165 square miles). The regional model was approved by FEMA for floodplain mapping in the TAFS area. Non-regional: Rainfall aerial reduction factors were based on the watershed size of each major watershed (total 10 major watersheds, with varying watershed size in the range of 7.8 ~ 24.8 square miles (measured by extending major watersheds to Interstate 10). The non-regional model is intended to be used by the Town for development projects

The size of the TAFS area necessitates aerial reduction for accurate flood risk; without aerial reduction the regional discharges would be exaggerated. However, a scenario was executed and entitled "non-regional" which applies aerial reduction at the sub-basin level instead of at the watershed scale. This non-regional scenario was approved for determining design discharges for areas within the fan.

When preparing a Letter of Map Change (LOMC) through FEMA to address changes to flood boundaries within the TAFS area, the revision should utilize hydrology from the regional model. When preparing a development submittal (commercial or residential) and the purpose is to support the plats, development plans and improvement plans for drainage design and accommodation of offsite flows, the Drainage Report should utilize non-regional hydrologic results for offsite hydrology. Non-regional results can come from a non-regional FLO-2D run. The consultant needs to use sound engineering judgement in selecting the offsite hydrology method. Pima County methodology, specifically use of PC-Hydro software, is very conservative and is an accepted method for design hydrology on the fan (See Section 4.2).

Exceptions within the TAFS Area:

- Onsite hydrology within TAFS shall be prepared using PC-Hydro software and methodology.
- Regional FLO-2D model results are not permitted for design discharges.
- Locations on the fan where the FLO-2D does not show flow accumulation and clearly has contributing watershed upstream of planned development must be accounted for with a PC-Hydro runoff calculation.

Regional FLO-2D model results shall only be used for FEMA purposes. Design discharges shall be either the Non-regional FLO-2D model value or other design discharge specified by the Town. Both regional and non-regional FLO-2D models will be provided by the Town with a public information request.

4.2 Areas outside of TAFS

Projects located outside of the TAFS boundary should use Pima County Hydrology Methodology as published in TECH-015. One exception to TECH-015 is that Marana will accept use of PC-Hydro on watersheds up to 10 square miles or times of concentration up to 180 minutes for design purposes only. Rainfall shall use NOAA Atlas 14 (or latest published Atlas) mean point precipitation frequency estimates. If PC-Hydro is used it defaults to Upper 90% point precipitation estimates. The Town will accept manual input of the mean rainfall estimate into the PC-Hydro web application under the following conditions:

- The report shall clearly state that the decision was made to use mean rainfall values.
- The plotted PC-Hydro results sheets shall be clearly marked that they were conducted with mean rainfall data and not Upper 90%.
- A plot of NOAA Atlas 14 rainfall depths showing mean rainfall depths shall be provided.

FEMA remapping projects outside of TAFS should use a rainfall runoff method acceptable to FEMA that is as accurate as possible and verified to published frequency estimates and/or within the confidence intervals of regional regression estimates.

4.3 Regulatory Discharges

The Town has published regulatory and design discharges for certain watercourses. The discharges can be found in the Ordinance Section 17-15-11 Appendix 1.

4.4 Previously Approved Discharges

In addition to Section 4.3 published discharges, the town has authority to direct the use of other design discharges that may have been approved with other projects. Consult with the Town about other discharges that may be affecting the project in question.

4.5 Accepted Software Programs

The Town will accept the following software programs for hydrology in accordance with Section 4.2:

- FLO-2D Pro versions. In the TAFS area, only FLO-2D Pro [Build No. 17.08.17] will be allowed due to other FLO-2D Pro versions having issues with the combined Green-Ampt and SCS curve number method, which was utilized in the TAFS models.
- PC-Hydro 7.4
- HEC-1 allowed for generational projects that have been prepared using HEC-1.
- HEC-HMS for new projects

4.6 Hydrologic Parameters

For projects that use Pima County Hydrology Methodology, parameter selection is defined in the PC-Hydro 7.4 Users Manual embedded in the web application. Soils are not populated automatically, so when choosing soil coverage use PimaMaps-SDCP. Toggle on the Geology Layer and then the Hydrologic Soils Group – NRCS layer.

For projects that use FLO-2D user shall utilize:

- TAFS modeling parameters for projects located in the TAFS area.
- Outside the TAFS area, Pima County's Criteria for Two-Dimensional Modeling Technical Policy (TECH-033) shall be used.

5. Hydraulics

Hydraulic methodology originates from multiple sources that have been accepted by the Town. The most robust source on hydraulics is the Standards Manual for Drainage Design and Floodplain Management in Tucson, Arizona (City Manual) (1998) prepared by Simon, Li and Associates, Inc. for the City of Tucson. The City Manual is widely accepted in Southern Arizona and adjacent jurisdictions for drainage design methodology. The following sections make any clarifications or specific departures from the City Manual standards.

5.1 Open Channel Design

It is the preference of the Town to preserve existing natural channels with a natural bottom. If the channel bottom cannot be maintained as natural, then a justification must be provided within the report. Open Channel design methodology is discussed in Chapter 8 of the City Manual (See Appendix B). What follows are some clarifications and/or supplemental information to those standards:

- Sheet flow areas, specifically in the Northwest Area, may require some corridors for offsite generated drainage conveyance. Do not assume that upstream development will retain pass-through flow.
- Sheet flow in areas upstream of residential developments or habitable structures shall be collected following the Collector Channels standards in Chapter 8 of the City Manual. Sheet flow in areas upstream of other projects such as linear roadways may be collected in collector channels designed per alternative capacity and freeboard criteria as approved on a project-specific basis by the Town Engineer. Collector channels should be fully-lined with a material that is resistant to erosion and provides a means to remove sediment to restore constructed grades.
- Constructed channel slopes in the Northwest Marana area (only) may be as flat as 0.0015 ft/ft
- When a project runs adjacent to one of the future Marana Drainage Master Plan channel alignments on Barnett Rd, Marana Rd, or CMID 10.5 canal the Town may require construction or dedication of right-of-way for the future channel.
- CMID Canals shall not be considered as providing flood conveyance capacity.
- Open Channels shall be designed with non-regional discharges.

Acceptable methods for calculating water surface elevations/capacity of channels includes normal depth calculations for those channels/watercourses that do not have the presence of structures/ineffective flow areas that would create backwater. If the watercourse is regulatory (>50 cfs) and has culvert crossings, then it needs to be evaluated with a steady flow direct step backwater model that also has internal drainage structure calculations rather than simple normal depth calculations.

Acceptable software includes Federal Highway's Hydraulic Toolbox and other proprietary software for calculating normal depth. For backwater applications, it is recommended to use the latest available version of HEC-RAS.

5.2 Cross-Drainage

The goal of cross-drainage design will be to achieve all-weather access. On-site roadways shall be designed to convey the 100-year discharge under the roadway. Off-site public roadways will continue to be a challenge until the Town's Master Drainage Plan is implemented. Because of sheet-flow from the TAFS area and large expanses of the Town limits inundated by the Santa Cruz River, there will need to be exceptions until regional flood control improvements go in. As a matter of interpretation and consistency with other adjacent jurisdictions, a development provides all-weather access when it connects to an

existing public collector or arterial roadway despite whether the Town or County maintained collector roadway provides all-weather access along its entire length. An on-site all-weather at-grade crossing may be considered if it can be demonstrated that a dry-crossing is not feasible, that it conforms to Section 9.3 of the *Marana Streets and Subdivision Standards* and that is has attained prior approval by the Town before it is included in a development package.

5.2.1 Culverts

Culvert analysis shall follow FHWA's *Hydraulic Design Series (HDS) No. 5 (2012)*. Software based on HDS No. 5 methodology is acceptable for calculating hydraulic results.

Culvert headwater shall be designed to be a minimum of six inches below the hinge point of roadway for newly designed on-site roadways.

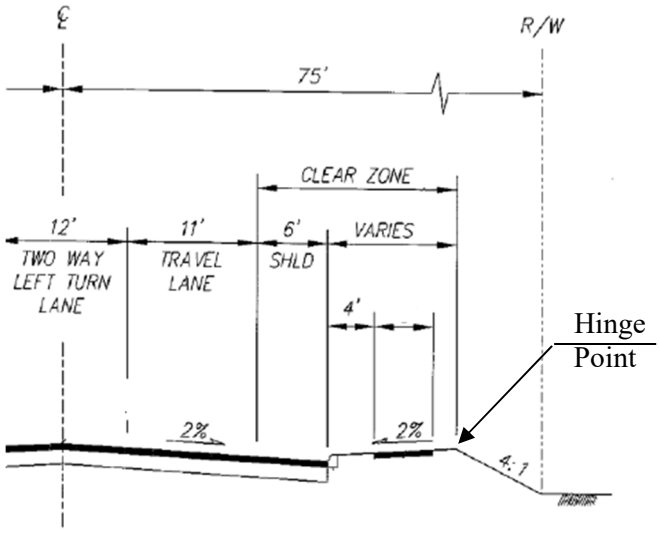


Figure 1 - Partial Roadway Cross Section

Off-site public roadway improvements cross-drainage design criteria shall be determined by the Town on a case-by-case basis.

Inlet and outlet treatment for culverts shall be required and be appropriate for the design of the road. Pipe ends projecting from slope are acceptable in local rural road applications only. Mitered culvert ends are acceptable only on slopes 2:1 and steeper; surrounding slopes must be armored with erosion protection.

Additional provisions for inlet and outlet treatment may be required based on *Roadside Design Guide* (AASHTO). Barricade railing shall be provided at the top of culvert headwalls when distance between established walkway and back of headwall is less than 5-feet.

Drop inlets used to accommodate cover over a cross-culvert must be evaluated in both inlet control and weir control and use the highest calculated headwater. Drop inlets must also provide a minimum of 7-feet from the face of the culvert to the toe of the drop slope to accommodate maintenance equipment. One side of the drop inlet shall be traversable to a piece of tracked equipment. Traversable is defined as a 3:1 slope that can support the weight of a 950G loader or equivalent.

5.2.2 Bridges

Bridges shall be analyzed using a direct step backwater model in a sub-critical regime with the goal to get the most conservative water surface elevation (WSEL) on the upstream side of the bridge face in a 1-dimensional environment. Refer to HEC-RAS *Hydraulic Reference Manual* Section 7.1 for bridge modeling considerations.

Freeboard at bridges shall conform to the guidance in *Guidelines for Establishing Scour and Freeboard for Bridges in Pima County (2012)*. Bridge Scour is addressed in Section 5.5. If the bridge falls in a 2-Dimensional flow environment, it is recommended to schedule a meeting with the Town to discuss the design approach. There could be occasions where a low-flow bridge is acceptable, and those occasions will be reviewed on a case-by-case basis.

5.3 Storm Drain Design

This section is included for describing policy and methodology of hydraulics in storm drain trunklines and laterals. Inlet design capacity will be discussed in Section 5.4, Pavement Drainage. Hydraulic grade line (HGL) calculations should be performed on the trunkline and associated junctions and manholes along the trunkline beginning at the downstream terminus and calculating in the upstream direction. See City Manual Section 10.8 for instructions on HGL calculations. StormCAD and other proprietary software may be appropriate for performing these calculations.

5.3.1 Trunklines

5.3.1.1 Private Systems

Storm drain systems on developed sites that are not in public right-of-way will be maintained by the owner or property owners association. Sites that have a sediment yield shall follow design criteria for public systems. Sites that are determined to be clear-water conditions may follow the guidelines below:

- Minimum trunkline slope may be 0.1% for smooth interior pipes.
- Pipe materials other than reinforced concrete pipe may be used provided the manufacturers recommendations for cover are followed and documented in the drainage report.
- Pipe segments may match at the invert although preference would be to match soffits.
- Pipe diameter or aggregate cross-sectional flow area must increase in the downstream direction.
- Design event can be less than 100-year event if it is demonstrated that the combination of surface and sub-surface flow for the 100-year event is conveyed safely to downstream destination and adjacent habitable structures are elevated appropriately.
- If pipe system is used for supplemental storage volume, then pipes must be designed to be water tight. Furthermore, pipes must also meet basin drain time requirements.

5.3.1.2 Public Systems

Storm drain systems within public right-of-way are maintained by the Town and therefore must meet the following requirements:

- Pipe material shall be rubber gasket reinforced concrete pipe (RGRCP).
- Minimum trunkline slope may be 0.25% if velocity conditions are met.
- Velocity in pipe shall not be less than 3 fps.
- Velocity in trunkline must be maintained or increased in the downstream direction. Decreased velocity will subject the pipe to deposition of sediment.
- Minimum pipe diameter is 24-inches for smooth interior pipes.
- Pipes segments shall match at the inside top of pipe in the downstream direction.
- HGL shall be designed to stay below finished grade and 6-inches below inlets and manholes.

The Town Engineer may allow manhole rims to be bolted down in rare cases when the 6-inch separation cannot be achieved.

- Trunklines shall be designed for the 100-year event.

5.3.2 Laterals

The following requirements shall apply to laterals of both public and private systems:

- Laterals slope may not exceed 10% and should not be less than 0.5%
- Laterals shall connect to trunkline at no greater than 90-degrees.
- Laterals on public systems shall not be smaller than 18-inches.
- HGL at upstream terminus of lateral shall be at least 6-inches below gutter grade or grate elevation for the 100-year event.
- Cover over pipe shall be in accordance with manufacturer's recommendations.

5.4 Pavement Drainage

Subdivision and Commercial Developments shall follow the guidelines in Section 9.0 of the Subdivision Streets Standards. Additional stipulations have been added below:

- Parking may be proposed with ponding areas (including within flood hazard zones) provided that the flooding depth does not exceed 1-foot during the 100-year event.
- Parking areas subject to flooding from a regulatory watercourse must be signed to warn vehicle owners of such risk.
- Arterial Streets and multi-laned curbed roadways shall provide at least one dry lane (10-feet) in each direction during a 10-year storm event.
- Cross-slopes may flatten to zero on local roads to accommodate transverse grates which extend from curb to curb. Cross-slopes must immediately transition back to the design cross-slope(s) in accordance with AASHTO guidance on transition lengths on either side of the transverse grate.
- Curbs may transition from 4-inch roll/5-inch wedge curb to 6-inch vertical for curb inlets and scuppers. Transition must happen abruptly and not impact driveway access.
- Maximum depth in roadway shall be 1-foot at any point, provided it is contained in the right-of-way or is discharged through a controlled structure into a facility with capacity to receive the peak flow. Depth shall be measured at the gutter/base of curb going upward irrespective of inlet depression.
- Inlet capacity calculations should follow procedures in the City Manual Section 10.6.
- Inlet clogging factors can be found in the City Manual Section 10.6.9.
- When sidewalk is present, a curb inlet shall be provided to take the 10-year flow under the sidewalk.
- Overtopping of sidewalks during the 100-year may be allowed provided that the entire length of susceptible overtopping area is protected from erosion.
- Depressed curb, where no sidewalk is provided, may be longer than 10-feet provided post barricades are provided at 5-foot (center to center) but in no case shall be longer than 20-feet.

With the prevalence of transverse grate inlets that extend across the entire road, the City Manual may be appropriate for inlet capacity calculations; however, when curved vane grates are utilized it is recommended to use the capacity calculations within the FHWA's Hydraulic Toolbox, which is a publicly available software. Other proprietary inlet performance charts may be accepted on a case-by-case basis by the Town.

Offsite public roadways pavement drainage design shall follow guidelines in the 4th Edition of the *Pima County Roadway Design Manual (2013)*.

It is the position of the Town that discharge from the street via scuppers to the surface is more desirable than the addition of storm-drain to the Town's infrastructure inventory. Use of public storm drain must be accompanied with a demonstration that it is the best alternative for conveyance of stormwater.

5.5 Scour

There are three scenarios that need scour analysis: 1) Bridge Design; 2) Outfall Scour; and 3) Riverine Scour. Bridge design shall follow the *Guidelines for Establishing Scour and Freeboard for Bridges in Pima County (2012)*.

The latter two scenarios should follow methodology in the City Manual, Chapter 6. When determining a design scour depth on the Santa Cruz River an additional 5-feet shall be added to the design toe-down to account for continuous presence of effluent and the entrenching created by the long-term presence of clear water.

A headcut on the Santa Cruz River continues to migrate towards Marana from Pinal County. For future regional flood control improvements or new bridges over the Santa Cruz River, the propagation of the headcut upstream should be considered in design of features with design life greater than 25-years.

5.6 Erosion Mitigation

For practical purposes most natural undisturbed washes can be considered to be at equilibrium. Once washes are modified or graded, they are susceptible to changes in equilibrium and must be treated as unstable. Grade control shall be provided on earthen channels/bottoms that have design slopes steeper than the equilibrium slope. See Section 6.9 of the City Manual for the procedure on channel grade control.

Erosion potential is also required to be evaluated and mitigated at outlets of drainage structures. There is guidance in Section VI, *Drainage and Channel Design Standards for Local Drainage (1984)* for scour protection at culvert outlets.

Sheet flow areas are not typically environments for erosion; however, newly placed fill and earthen embankment are usually susceptible to erosion even during sheet flooding. To mitigate erosion of fill pads, follow the guidance in *Pima County Technical Policy, TECH-006 Erosion Protection of Fill Pads in Regulatory Floodplains*.

The test for susceptibility to erosion on a fluvial watercourse is to determine what the lateral migration limits are. Erosion Hazard Setbacks (EHS) are calculated for potential migration areas and any improvements within those limits are susceptible. The Ordinance restricts uses within the EHS and if a project needs to mitigate the erosion hazard to reclaim the use of that property, erosion mitigation in the form of bank protection should be installed to eliminate the potential of lateral migration. Bank protection design should follow the guidance in Section 8.5 of the City Manual.

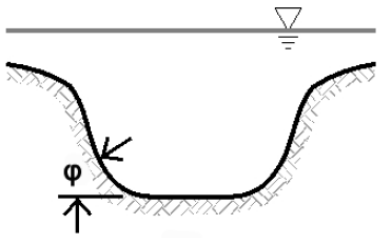
Rock rip-rap is one alternative for bank protection. The effectiveness of dumped rock rip-rap is dependent upon a satisfactory gradation that allows the rock to be laid without significant voids. Voids in rip-rap layers due to homogenous sized rock can induce undermining, sloughing and failure as fine sediments are washed out from behind the layer because of too much porosity. There are two steps to appropriately size rip-rap for use as bank protection: 1) Calculate the D_{50} (the rock diameter that at which 50% passes in a sieve analysis); 2) Calculate the gradation of rip-rap.

5.6.1 Calculating Rip-rap D_{50}

The rip-rap d_{50} can be calculated using the Isbash equation for a straight reach of channel.

The equation (as adapted from Maricopa County) is as follows:

$$d_{50} = \frac{0.0191 V_a^2}{\cos\varphi}\left(\frac{\gamma_w}{\gamma_s - \gamma_w}\right)$$



With:

d_{50} = the median diameter (ft),
V_a = average velocity (ft/s)
γ_s = specific weight of stone (lb/ft3) = assumed 165 lb/ft^3
γ_w = specific weight of water (lb/ft3) = 62.4 lb/ft^3
φ = bank angle (degrees), see figure above

Minimum D_{50} in all applications is 6-inches. Rip-rap sizing methodology other than the Ishbash equation may be proposed within the drainage report. Refer to the Maricopa County manual for rip-rap sizing guidance in situations where curved reaches are present.

5.6.2 Calculating the Rip-rap Gradation

Rip-rap gradation limits should be specified in drainage reports and on construction documents where rip-rap is to be installed. Limits are meant to be for visual inspection of a mock-up prior to installation of rip-rap. The three-point gradation (adapted from HEC-11) below should be satisfactory in most applications for bank protection:

Stone Size Range (ft)	Stone Weight Range (lb)	Percent of Gradation Smaller Than
1.5 D_{50} to 1.7 D_{50}	3.0 W_{50} to 5.0 W_{50}	100
1.0 D_{50} to 1.15 D_{50}	1.0 W_{50} to 1.5 W_{50}	50
0.4 D_{50} to 0.6 D_{50}	0.1 W_{50} to 0.2 W_{50}	15

5.7 Sedimentation

The Town's concern with sedimentation exists where infrastructure can get plugged with sediment due to abrupt changes in sediment carrying capacity. The areas where this is most likely to happen is at cross-drainage structures of public roadways and storm drain systems. To prevent this, cross-drainage culverts should be designed to transport the sediment delivered to them. The City Manual Section 11.5 has a metric which gives indication of a sedimentation problem, referred to as the Sediment-transport ratio. The ratio compares sediment transport in the approach channel to the sediment transport capacity of the culvert.

It is not desirable to collect off-site, sediment laden flow into a closed storm-drain system. Storm drain systems should be limited to collect clear water from developed areas that do not have a sediment yield. In the event a closed system must convey flow from a watershed with sediment yield, a sediment trap should be sized and installed at the inlet.

Section 5.3.1.2 of this manual provides criteria for storm-drains to ensure they don't create an environment for deposition.

6. Detention/Retention

6.1 Design Standards for Stormwater Detention and Retention (2015)

The Town has adopted the *Design Standards for Stormwater Detention and Retention (2015)* (DSSDR). The standards and procedures within shall apply to those areas outside of the Northwest Policy Area. See Figure 1. Areas within the Northwest Policy Area should reference Section 3.2 of this manual.

6.1.1 Dry Well Design Requirements and Procedures

The Northwest Drainage policy requires the total retention of the 100 year, 1-hour storm followed by a 10 year, 1-hour storm. Although the policy does not specify, there is an expected lag of 24 hours between the storms. The retention basins associated with this storage are required to drain within 36 hours after the end of the 10-year storm. Drywells are the most common method of draining these basins. The calculations of basin size needs and well-injection rates must conform to these requirements. More conservative designs are encouraged. These requirements are based upon the DSSDR, the Northwest Policy, Arizona Department of Environmental Quality Drywell Guidance Manual (ADEQ), and empirical experience from existing projects in Northwest Marana:

1. The maximum drywell well-injection rate to be used for design is nominally 0.5 cubic feet per second (cfs). With specific geotechnical recommendations, the well-injection rate may be increased up to 0.6 cfs. The well-injection rate must be multiplied by a 0.5 de-rating factor for determining the number of drywells needed.
2. The basin must at a minimum totally contain the 100-year, 1 hour storm. Since these basins rely on infiltration as their means of draining, no outflow rate may be considered during the volume design of the basin.
3. Prior to introduction of the 10-year, 1 hour storm, the Town of Marana allows a credit to reduce the amount of stored volume in the basin from the original 100-year storm. This credit is half the aged drywell drain rate over the 24-hour lag period.

   Ex: 0.25 cfs/well * 0.5 * 3600 sec/hr* 24 hours/ 43560 = 0.25 acre-ft/well

4. After drywell credit is applied, the 10-year, 1 hour storm volume is added to the basin. The basin must contain this new volume plus the prior volume less the credit. This final basin volume cannot be lower than the volume calculated in number 2 above (total containment of the 100-year, 1 hour storm).

$$100\,\text{yr} - \text{credit} + 10\ \text{year} \geq 100\ \text{year for volume requirement}$$

5. The de-rated well-injection rate, while not allowed to be considered for volume requirements, can be used immediately in the calculations for determining if the basin will drain in 36 hours after the final ten-year storm.

6. Other key factors to be considered for basin design:
    a. Ponding depth maximum is 3.0 feet (Section 6.3)
    b. Backwater is allowed into drainage channels and parking areas but not onto streets.
    c. Basin floors may not be designed totally flat. They must be designed with positive drainage to the drywells – 0.5% minimum.
    d. Multiple Drywells should be spaced a minimum of 100 feet apart from center to center. (ADEQ)
    e. Drywell grates should be 24-inch cast iron with raised letters "STORMWATER ONLY". (ADEQ)
    f. Drywell grates should be a minimum of 6 inches above the bottom of landscaped retention basins (ADEQ).
7. During construction, a minimum of 1 well per basin must be tested for verification of flow rate at or above the original design. If the wells do not flow as designed, redesign is necessary, and more wells may be needed.
8. Drywells must be protected from silt infiltration during construction. Any and every drywell known to have been compromised during construction will have to be cleaned and tested prior to closeout of permitting.
9. Drywells must be registered with ADEQ prior to closeout of permitting.

6.1.2 Infiltration Trenches

Alternative methods for disposing of stormwater into the subsurface will be evaluated on a case-by-case basis. Drain time requirements will continue to drive the viability of subsurface disposal and a separate study prepared by a registered geotechnical engineer or hydrogeologist must accompany the construction plans and include at a minimum:

- Design percolation rate of stormwater into subsurface
- Native percolation rates of soils beneath the alternative structure
- Potential for fine sediments to clog the porous material.
- Annual inspection checklist
- Means to maintain the alternative structure.
- Certified statement by a registered professional engineer in the State of Arizona that the structure complies with ADEQ regulations.

6.2 Town of Marana Exceptions to the DSSDR

- Redevelopment of a property shall assume an existing impervious percentage equivalent to its last use prior to demolition of the site.
- First Flush Retention is not required in the Northwest Policy Area.
- The Town has issued its own Balanced and Critical Basin Map (Section 6.4) and will update that from time to time. All updates to that map will be automatically incorporated into the drainage manual.
- The minimum freeboard on detention basins (between maximum water surface and top of impoundment) in all cases will be 6-inches. This freeboard shall apply to Northwest Policy area as well.

6.3 Basin Depth and Perimeter Safety Requirements

Recognizing that ponded water under the right conditions can be a hazard and an environment for insect breeding, to deter the public and protect the pedestrian from potential hazards associated with ponded water, precautions should be taken when certain physical criteria are met.
Specific safety requirements are dependent upon land use and the size of development as follows:

6.3.1 Single Subdivision

1. Maximum ponding depth of 3 feet.
2. Barricade railing must be provided when both of the following occur:
    a. Ponding depth exceeds 2 feet
    b. Side slope is steeper than 4:1 (H:V)
3. If a minimum of 5 feet of refuge does not exist between the top of slope and back of pedestrian way and condition 2(b) is exceeded, then barricade railing must be provided.
4. Railing, at least 42 inches high, must extend along all portions of the basin accessible to pedestrians via a constructed walkway, the railing should terminate in a manner that protects the public from the hazard.

6.3.2 Master-Planned Subdivisions (with regional detention/retention) and Commercial Developments

1. In no case will ponding exceed 6 feet, unless approved by the Town Engineer (3 feet when a full retention system is employed).
2. Barricade railing must be provided when both of the following occur:
    a. Ponding depth exceeds 2 feet
    b. Side slope is steeper than 4:1 (H:V)
3. If a minimum of 5 feet of refuge does not exist between top of slope and back of pedestrian way, then barricade railing must be provided.
4. Railing, at least 42 inches high, must extend along all portions of the basin accessible to pedestrians via a constructed walkway, the railing should terminate in a manner that protects the public from the hazard.
    a. For commercial applications the railing should be provided along the basin edges that have the potential for employee foot traffic if the 5 feet refuge is not provided.
5. When ponding depth exceeds 3 feet and the side slope is steeper than 4:1, the entire basin perimeter must be secured with non-penetrable fencing.

This standard applies to all areas of the Town of Marana. Master-planned subdivisions that do not provide regional detention must follow the Single Subdivision requirements**.**

6.4 Critical Basin Map

All watersheds within the Town Boundary are designated Balanced Basins unless it has been determined to be a Critical Basin. See Figure 3, Balanced and Critical Basins Map. Future revisions to the Balanced and Critical Basins Map will be automatically incorporated into the Drainage Manual.

6.5 In-lieu Fee Process

Any request to waive the detention requirements shall come in writing in the form of a waiver request letter to the Town Engineer. The process for requesting a waiver should follow the guidance in Section 9 of the DSSDR.

Upon approval of the waiver request, an in-lieu fee calculation sheet will be provided to the applicant. The in-lieu fee calculation will require the following:

- Total required peak detention volume to meet the appropriate balanced or critical designation.
- Total required first flush retention volume.
- The area of land required with volume distributed over 3-feet in depth.
- A sample In-lieu calculation can be downloaded here.

7. Dedication of Drainage Right of Way

Constructed channels that are dedicated to the public must be labeled as public drainageway on a subdivision plat or via separate instrument. Minimum 16-foot maintenance access shall be provided on each side of the channel. Projects adjacent to regional watercourses shall dedicate 50-feet measured from the front of bank protection. Consult the Town prior to proposing dedication to the public.

8. Maintenance

Improved Channels with side slopes steeper than 6:1 must be equipped with maintenance ramps for both private common areas and public rights of way. Access for maintenance on fully lined channels shall be designed to support the loads of the following equipment:

- 10 CY dump truck
- 950G Loader or equivalent

Ramps shall be a minimum of 10 feet wide and fall in the downstream direction. Ramps shall be cut-out of the bank to prevent loss of conveyance. When roadways bisect the channels and the culverts structures are not big enough for access, ramps shall be designed on the downstream side of each crossing.

Detention Basins must be inspected on an annual basis. A maintenance checklist shall be submitted within the Drainage Report. A sample channel/basin maintenance plan is provided in Appendix A

9. Storm Water Requirements

Storm water regulations exist for the purpose of monitoring water quality and are governed by the Arizona Department of Water Quality under the Arizona Pollution Discharge Elimination System (AZPDES) program. Marana is a Small MS4 General Permit area and must comply with requirements of the AZPDES program. Requirements to comply with the Town of Marana Stormwater division are separate and unique and can be found in the Marana Town Code Chapter 17-16, Stormwater Management.

10. References

TAFS model (Click to access Models)

Town of Marana. *Subdivision Street Standards Manual*. 2020

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Federal Highway Administration. *Design of Riprap Revetment* (Hydraulic Engineering Circular No. 11). 1989

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11. Glossary

AASHTO: Abbreviation for the American Association of State Highway and Transportation Officials.

AERIAL REDUCTION FACTOR: The ratio of mean precipitation depth over a watershed resulting from a storm to the maximum point depth of the storm.

ALL WEATHER ACCESS: Access considered traversable by normal passenger vehicles, defined as a permanent, durable material with adequate protection against scour and erosion and having a depth of water no more than 12 inches above the roadway surface during a Base Flood. Asphalt, Concrete, and traffic rated pavers are considered durable surfaces. All other surfaces must be approved by the Town Engineer. See also the Floodplain and Erosion Hazard Management Code, Chapter 17-15 of the Town Code.

ALLUVIAL CHANNEL: Water channels made up of loose sediments. The loose sedimentary materials are known as alluvium. The banks of the channel are subjected to erosion, or wearing away, by fast running water.

ADEQ: Abbreviation for Arizona Department of Environmental Quality.

ADWR: Abbreviation for Arizona Department of Water Resources

AZPDES: Abbreviation for Arizona Pollution Discharge Elimination System

AT-GRADE CROSSING: A depression or vertical sag in the roadway designed to allow drainage to cross “at-grade” without using culverts.

BACKWATER: The effect tailwater has upon upstream flow. Backwater can also refer to the calculations that are performed to compute water-surface profiles in an open channel.

CMID CANALS: Cortaro- Marana Irrigation District Canals that provide irrigation water to more than 10,000 acres of farmland.

CONDITIONAL LETTER OF MAP REVISION (CLOMR): Federal Emergency Management Agency’s (FEMA’s) comment on a proposed project that would affect the hydrologic or hydraulic characteristics of a flooding source. A CLOMR does not revise the current National Flood Hazard Layer (NFHL).

CURB INLET: An inlet which captures street drainage and discharges through the curb. This can consist of a sidewalk scupper or catch basin.

DEPRESSED CURB: This drainage mechanism occurs when the curb is transitioned from full height curb to flowline of the road or parking area and can also be referred to as a curb cut for the purpose of taking flow off pavement without the use of a curb inlet.

DRY WELL: An engineered hole with a grated inlet designed to dispose of floodwaters through a process of passive infiltration of floodwaters into the vadose zone (ie., the unsaturated sediments commonly found above the water table).

DSSRR: Abbreviation for Design Standards for Stormwater Detention and Retention (2015)

EROSION HAZARD SETBACK (EHS): The minimum horizontal distance from the top of bank or the floodplain limit, whichever is closest to the centerline of the primary channel or outside channels in a multiple channel watercourse.

FEDERAL HIGHWAY ASSOCIATION (FHWA) HYDRAULIC TOOLBOX: A stand-alone suite of calculators that perform routine hydrologic and hydraulic analysis and design computations.

FEMA: Abbreviation for Federal Emergency Management Agency

FLO-2D: A two-dimensional flood routing model that can simulate rainfall-runoff.

HEC-1: A watershed computer program designed to simulate the surface runoff response of a river basin to precipitation by representing the basin as an interconnected system of hydrologic and hydraulic components.

HEC-HMS: Hydrologic modeling system designed to simulate the complete hydrologic processes of dendritic watershed systems.

HEC-RAS: One- and two-dimensional simulation software used in computation fluid dynamics to model the hydraulics of water flow through natural rivers and other channels.

HYDRAULIC DESIGN SERIES (HDS) NO. 5 (2012): Combines culvert design information previously contained in Hydraulic Engineering Circulars (HEC) No. 5, No. 10, and No. 13 with hydrologic, storage routing, and special culvert design information.

HYDRAULIC GRADE LINE (HGL): A line which represents the static head plus pressure head of flowing water.

INFILTRATION TRENCH: Rock-filled trench designed for the purpose of temporarily storing runoff, and then subsequently disposing of runoff within the sub-surface through the process of infiltration.

LETTER OF MAP CHANGE (LOMC): A general term used to refer to the several types of revisions and amendments to FEMA maps that can be accomplished by letter.

LETTER OF MAP REVISION (LOMR): FEMA's official modification to an effective Flood Insurance Rate Map (FIRM). LOMRs can result in a physical change to the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the Special Flood Hazard Area (SFHA).

LOW FLOW BRIDGE: a bridge which does not convey the standard 1% chance flow event with freeboard and typically has overtopping during the less frequent events. Low Flow Bridges may not meet the all-weather access requirement.

MS4 GENERAL PERMIT: Authorizes the discharge of storm water from small Municipal

Separate Storm Sewer Systems provided that the permittee complies with the requirements set forth in the permit.

NATURAL: Undeveloped; existed, undisturbed, prior to development of the site.

NORTHWEST POLICY: Town policy that describes the requirements for total site retention and allowances for drywells within the Northwest Policy area shown on Figure 1.

PC-HYDRO: The official modeling method for hydrology to be submitted to Pima County Regional Flood Control District and accepted by the Town of Marana.

RECLAIMED SLOPE: Restored slope after excavation.

RETENTION BASIN: A facility which stores surface runoff but is not provided with a positive outlet. No flow is discharged directly into a downstream watercourse from a retention basin but may be drained into the subsurface by infiltration.

RILLING: A pattern of narrow, vertical troughs formed in relatively steep earthen embankments by floodwaters cascading down the embankment.

SETBACK: The minimum horizontal distance between a structure and a channel, stream, wash, watercourse, or detention basin. A channel setback is measured from the top edge of the highest channel bank or from the edge of the 100-year water-surface elevation, whichever is closer to the channel centerline.

SINGLE SUBDIVISION: A subdivision which is comprised of lots that is platted without a master plan and can be built without regional/spine infrastructure.

TAFS: Abbreviation for the Tortolita Alluvial Fan Study

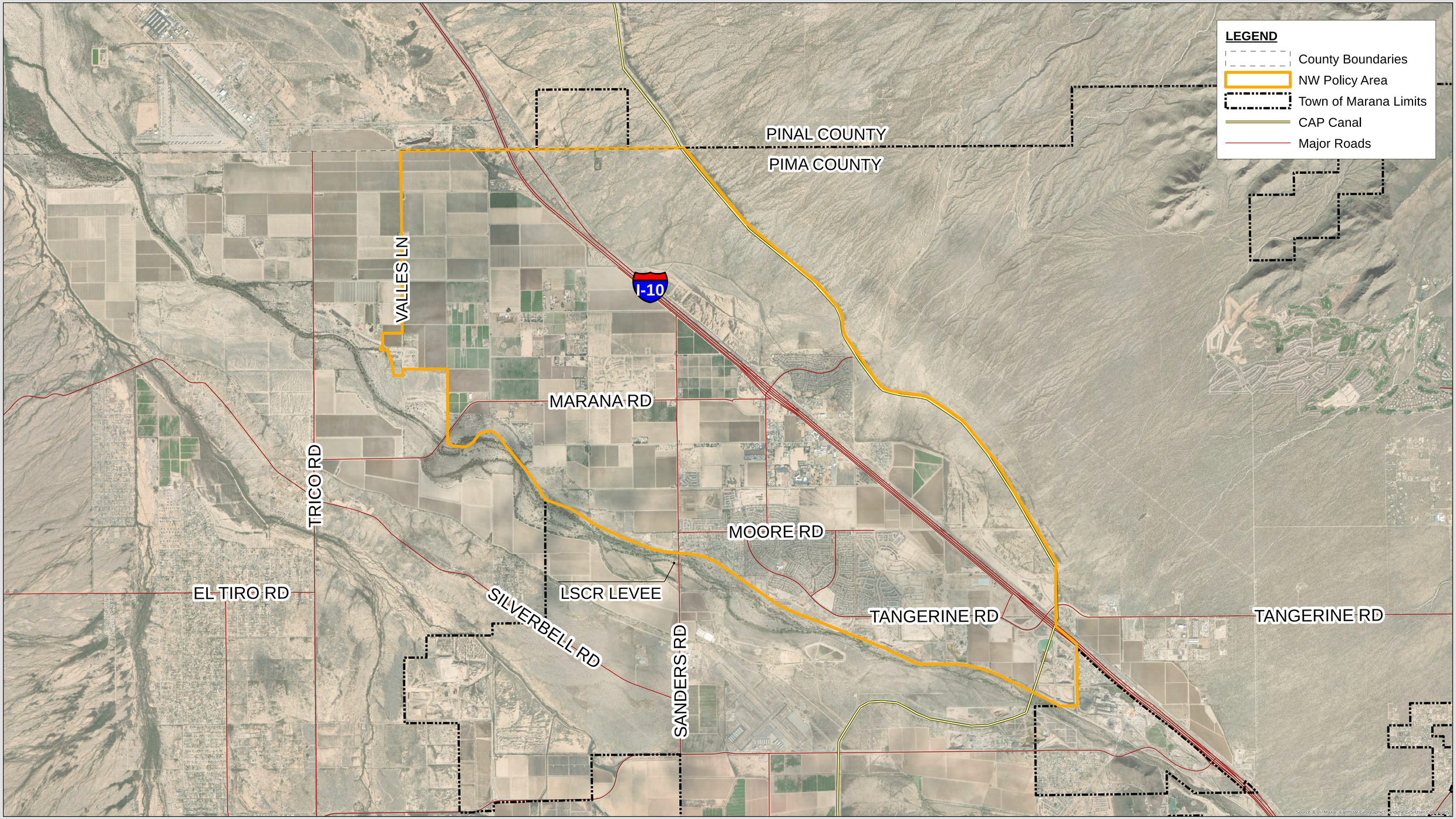
TECH-015: Pima County Regional Flood Control District Technical Policy describing acceptable methods for determining peak discharges.

TECH-033: Pima County Regional Flood Control District Technical Policy describing the criteria for two-dimensional modeling.

TOWN: Town of Marana, a political subdivision of the State of Arizona.

UNCONSOLIDATED SHEET FLOW: Shallow, unconcentrated and irregular flow along a plane.

FIGURES



MARANA AZ

Town of Marana
11555 West Civic Center Drive
Marana, Arizona 85653
(520) 382-1999

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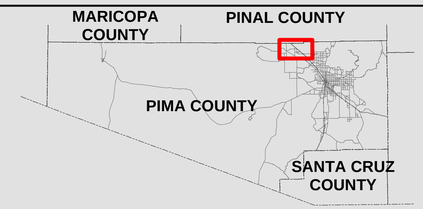
AUGUST 2024

FIGURE 1, NW POLICY AREA MAP

TOWN OF MARANA DRAINAGE MANUAL

0 0.5 1 2 3 Miles

1 Inch = 0.5 Mile



LEGEND

- TAFS FLO-2D Boundary
- Marana Planning Boundary
- **TAFS HEC-1 Boundary**
- Town of Marana Limits
- County Boundaries
- Major Roads

DERRIO CANYON
GUILD CANYON
COTTONWOOD CANYON
COCHIE CANYON
WILD BURRO CANYON
RUELAS CANYON
PROSPECT CANYON
CANADA AGUA EAST
CANADA AGUA WEST
NORTH RANCH
PINAL COUNTY
PIMA COUNTY
I-10
MARANA RD
MOORE RD
TANGERINE RD
EL TIRO RD
SILVERBELL RD
TRICO RD
PUMP STATION RD
SANDERS RD
SANDARIO RD
TWIN PEAKS RD
AVRA VALLEY RD
ANWAY RD
PICTURE ROCKS RD
WADE RD
CAMINO DE OESTE
THORNYDALE RD
SHANNON RD
LA CHOLLA BL
LA CANADA DR
1ST AVE
ORACLE RD
NARANJA DR
LAMBERT LN
HARDY RD
CORTARO FARMS RD
MAGEE RD
INA RD
ORANGE GROVE RD
WILDS RD
LAGO DEL ORO PW

Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

MARANA AZ

Town of Marana
11555 West Civic Center Drive
Marana, Arizona 85653
(520) 382-1999

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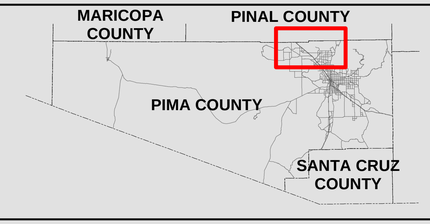
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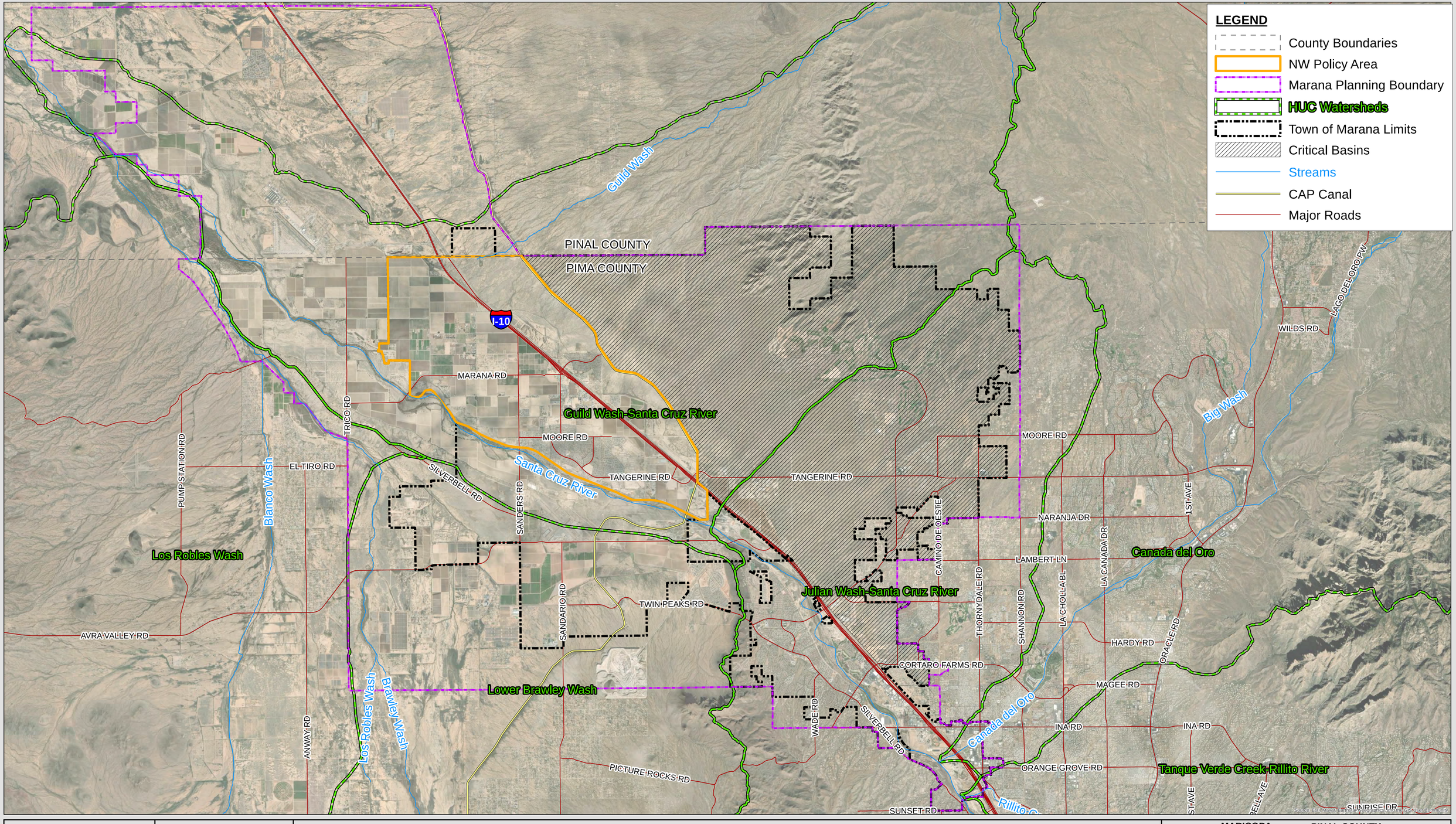
FIGURE 2, TAFS AREA

TOWN OF MARANA DRAINAGE MANUAL

0 1 2 4 6 Miles

1 Inch = 1 Mile





MARANA AZ

Town of Marana
11555 West Civic Center Drive
Marana, Arizona 85653
(520) 382-1999

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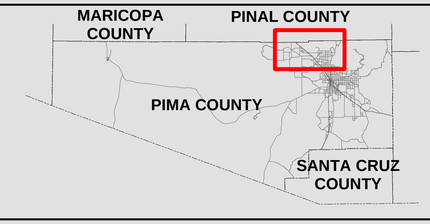
August 2024

FIGURE 3, BALANCED & CRITICAL BASINS MAP

TOWN OF MARANA DRAINAGE MANUAL

0 1 2 4 6 Miles

1 Inch = 1 Mile



APPENDIX A

Report Formats/Maintenance Checklist

Drainage Statement Outline

- Project Description
- Project Location
- Prior Studies
- Floodplain Status
    - Local Regulatory
    - Federal
- Methodology/Parameter Selection
- Hydrology & Hydraulics
    - Offsite Drainage
    - Onsite Existing Conditions
    - Onsite Proposed Conditions
- Erosion Mitigation
- Sediment Deposition Mitigation
- Clean Water Act Compliance
- Conclusion

Drainage Report Outline

- Cover
- Table of Contents
- Project Description
- Project Location
- Prior Studies
- Floodplain Status
    - Local Regulatory
    - Federal
- Methodology/Parameter Selection
- Hydrology & Hydraulics
    - Offsite Drainage
    - Onsite Existing Conditions
    - Onsite Proposed Conditions
- Detention/Retention
- Erosion Mitigation
- Sediment Deposition Mitigation
- Clean Water Act Compliance
- Conclusion

Master Drainage Report Outline

- Cover
- Table of Contents
- Master Plan Description
- Master Plan Location
- Prior Studies
- Floodplain Status
    - Local Regulatory
    - Federal
- Methodology/Parameter Selection
- Hydrology & Hydraulics
    - Offsite Drainage
    - Onsite Existing Conditions
- Master Drainage Concept
    - Block Drainage Plan
    - Regional Detention/Retention
    - Spine Drainage Infrastructure
    - Erosion Mitigation
    - Sediment Deposition Mitigation
- Phasing/Interim Drainage Requirements
- Clean Water Act Compliance
- Conclusion

Private Drainage Improvement Inspection and Maintenance Checklist

Date:		Project Name/Location:
Inspector:	Title:	Affiliation:
Type of Inspection: ☐ Annual ☐ After a Significant Storm Event		

General Requirements

- Improvements shall be maintained to perform as designed for the life of the project and shall not be converted to a different use without a Floodplain Use Permit. A Floodplain Use Permit is not required for maintenance activities.
- Improvements shall be inspected annually and after significant storm events.
- The purpose of the inspection is to evaluate whether as-built characteristics are maintained.

Component	Inspection Item	Requires Maintenance	If maintenance is required, describe corrective action
Inlet	As-built grades and elevations	☐	
	Presence of obstructions	☐	
	Evidence of material damage	☐	
Outlet	As-built grades and elevations	☐	
	Presence of obstructions	☐	
	Evidence of material damage	☐	
Earthen Slopes	As-built grades and elevations	☐	
	Invasive non-native plants	☐	
	Slope treatment	☐	
Retaining walls	As-built grades and elevations	☐	
	Presence of damage or instability	☐	
	Drainage function	☐	
Depth	As-built grades and elevations	☐	
	Sediment accumulation >10% of design volume	☐	
Basin/Channel Floor	As-built grades and elevations	☐	
	Presence of ponding	☐	
	Evidence of oil, grease, chemicals or trash	☐	
	Presence of invasive non-native plants	☐	

Private Drainage Improvement Inspection and Maintenance Checklist (Continued)

Date:	Project Name/Location:

Component	Inspection Item	Requires Maintenance	If maintenance is required, describe corrective action
Perimeter Wall	As-built grades and elevations	☐	
	Presence of damage or instability	☐	
	Drainage function	☐	
Security Barrier	Presence of damage or instability	☐	
Access	Presence of obstruction	☐	
Landscaping	Presence of overgrown vegetation	☐	
	Presence of invasive non-native plants	☐	
	Damage to basin due to landscape elements	☐	
Pump	Alarm System	☐	
	Presence of obstruction	☐	
	As-built specifications	☐	
Dry/Rock Well	Presence of sediment and/or standing water for more than 36-hours	☐	
Armored Slopes	Cracking	☐	
	Sloughing	☐	
	As-built grades and elevations	☐	
Toe Down	Exposed	☐	
	Buried/not visible	☐	
Sediment Deposition	As-built grades and elevations	☐	
	Aggradation ongoing	☐	
	Only at specific locations	☐	

APPENDIX B

Excerpts from Other Manuals

On watersheds larger than one square mile, the guidelines cited above may result in overdesign. The design of sediment basins on these watersheds is a more complicated procedure, involving total watershed sediment yield and channel sediment-transport capacity over a range of discharges. Total watershed sediment yield can be estimated by such methods as the Modified Universal Soil Loss Equation (Williams, 1975; and Williams and Berndt, 1977), the Pacific Southwest Inter-Agency Committee (PSIAC) Method (Pacific Southwest Inter-Agency Committee, 1968), the Flaxman Method (Flaxman, 1972), the SCS Method (U.S. Soil Conservation Service, 1971), the Dendy/ Bolton Method (Dendy and Bolton, 1976), and the Renard Method (Renard, 1972). A publication by Renard and Stone (1981) contains a detailed discussion and comparison of some of these methods.

The equations for watershed sediment yield which are listed above do not readily distinguish between sediment production that would be classified as wash load and sediment production that would be classified as bed load. Wash load particles are so small that they would generally remain in suspension as the water passes through the detention basin. Therefore, the wash load is not generally to be considered in sediment basin design. An estimate of wash load, as compared to bed load estimated from equations for total watershed sediment yield, can be made by taking samples of the topsoil throughout the watershed.

Total watershed sediment production may not be an entirely accurate estimate of the amount of sediment that would be delivered to a certain point, because there is sediment storage within the watershed system. Sediment-volume estimates must therefore also consider the sediment-transport capacity of the channel. A detailed discussion of this type of analysis will not be presented here. However, the reader is referred to publications by the U.S. Army Corps of Engineers (1977), Simons, Li & Associates (1982, 1985), the American Society of Civil Engineers (1977), Simons and Senturk (1977), and Zeller and Fullerton (1983) for more detailed information about performing such analyses.

6.9 Equilibrium Slopes within Constructed Channels

Given a fixed size distribution of sediments, the sediment-transport capacity of a stream is dependent primarily upon flow velocity and depth. Within the City of Tucson, transport of all particle sizes of bed material increases, as flow velocity increases, at a rate proportional to approximately the third to fifth power of the velocity. Correspondingly, transport of sediment particles composed of bed material generally decreases as depth increases, while transport increases with decreased depth. However, flow velocity is by far the more important variable.

For purposes of analysis and design, most natural, undisturbed channels in the Tucson area can be assumed to be at or near a state of dynamic equilibrium with regard to sediment transport. This means that, for a given reach of the channel, the sediment-transport capacity of the channel, over the long term, is more or less equal to the sediment supply. The channel bed slope is therefore "stable."

When channelization occurs, the channel top width is often narrowed, and channel roughness is normally decreased. The result is an increase in velocity and depth, with

a corresponding increase in sediment-transport capacity. Sediment-transport capacity then exceeds the sediment supply; and, if the bed is composed of sediment that can be transported, the deficiency will be made up from bed material--causing the channel to degrade. Another factor that contributes to this degradation is upstream urbanization. Urbanization increases flood peaks, which also lead to higher flow velocities and depths. Urbanization also reduces the watershed sediment supply, and increases the frequency of runoff. The result of all these occurrences is that channel bed degradation will occur until the channel slope is flat enough to cause the sediment-transport rate to be equal to the incoming sediment supply. This slope then becomes the new, "stable," equilibrium slope. Streambed degradation can threaten underground improvements, bank-protection toe-downs, culverts, and other hydraulic structures that are within and/or that cross the channel. Grade-control structures, or lining of the channel bed, are usually required in order to prevent damage caused by streambed degradation.

The equilibrium slope for a channel which has an upstream sediment supply that is considered to be essentially zero (e.g., a channel located within a highly urbanized watershed) can be computed from:

$$S_{eq} = \left(\frac{1.45n}{q^{0.11}} \right)^2 \qquad \textbf{(6.25)}$$

Where:

S_{eq} = Equilibrium slope after urbanization, in feet per foot;
n = Manning's roughness coefficient; and,
q = Channel unit discharge, in cubic feet per second per foot.

For use with Equation 6.25, channel unit discharge is defined as the channel discharge divided by the channel bottom width. Use of this equation will produce the flattest slope that can be reasonably expected to transport sediment within channels located in the Tucson area. The discharge associated with a 10-year flood is normally chosen when computing the unit discharge for use in Equation 6.25.

For lesser degrees of urbanization, the equilibrium slope is computed from Equation 6.26, which is a generalization of the theoretically derived sediment-transport relationships for sandbed channels developed by Zeller and Fullerton (1983):

$$S_{eq} = \left(\left[\frac{n_u}{n_n} \right]^2 \left[\frac{Q_{u,10}}{Q_{n,10}} \right]^{-1.1} \left[\frac{b_u}{b_n} \right]^{0.4} (1-R_s)^{0.7} \right) S_n \qquad \textbf{(6.26)}$$

Where:

n_u = Manning's roughness coefficient for an urban channel;
n_n = Manning's roughness coefficient for a natural or existing channel;
$Q_{u,10}$ = Ten-year discharge, under urbanized conditions, in cubic feet per second;
$Q_{n,10}$ = Ten-year or bank-full discharge (whichever is less), under natural conditions, in cubic feet per second;
b_u = Bottom width of channel, under urbanized conditions, in feet;
b_n = Bottom width of channel, under natural conditions, in feet;
R_s = Reduction factor for sediment supply. This factor is usually assumed to be equal to the ratio of the impervious area to the total area of the upstream watershed (i.e., $0.0 \leq R_s \leq 1.0$); and,
S_n = Natural or existing channel slope, in feet per foot.

The roughness coefficients for natural and urbanized channel beds are often very nearly the same, so the term in which these coefficients appear in Equation 6.26 can usually be assumed equal to the value 1.0. However, from time to time exceptions to this assumption may occur. For instance, when the existing channel is a wide, flat, sheetflow watercourse; and the proposed channel is a narrow, sand-bed channel, n_u will ordinarily not be equal to n_n.

For moderately urbanized to highly urbanized watersheds, the equilibrium slope should be computed by using both Equation 6.25 and Equation 6.26. The steeper of the two computed slopes should then be used for design. The reason for this is that Equation 6.26 can sometimes produce slope values that are too flat to generate reasonable sediment-transport rates for maintenance of channel stability, when impervious cover within a watershed is very high.

Equation 6.26 should be used with caution within the City of Tucson. An underlying assumption of this equation is that the existing or natural channel is itself in equilibrium. This is not always true in the City, because most channels have undergone alteration. If there is any question as to whether or not the existing channel is in equilibrium, it is best to try and determine through old (pre-development) aerial photographs and topography what the channel characteristics were in its original, undisturbed (i.e., natural) state. In the absence of historical information about the original channel, an examination may be made of existing stable channels in the area to help estimate what the channel in question may have looked like before urbanization.

Equation 6.26 can be used for more than merely the quantification of streambed degradation. It can also be used to determine whether aggradation will occur when a channel is widened beyond existing or natural conditions. Another application would be to use it to design a stable channel cross-section in lieu of installing grade-control structures to otherwise control degradation of the channel bed.

6.10 Spacing and Depth of Grade-Control Structures

If the equilibrium slope of a channel, as determined by use of either Equation 6.25 or Equation 6.26, is flatter than the design slope, grade-control structures may be needed to limit degradation from exceeding a certain depth at any point along the channel. Grade-control structures, sometimes called "cut-off walls" or "check dams," are non-erodible vertical barriers in the channel that prevent the channel bed from degrading at a point located immediately upstream of where they are located. After the channel bed has reached equilibrium, the bed elevation immediately upstream of the grade-control structure is at the design elevation. Downstream of the grade-control structure, the bed is at an "equilibrium" elevation that is lower than the design elevation. For most channels, the design of grade-control structures is an iterative process, involving drop height, reach length, and depth of scour downstream of the drop.

Once a drop height is chosen, the reach length, or spacing, between adjacent structures can be computed from:

$$L_r = \frac{h}{S_{ib} - S_{eq}} \qquad (6.27)$$

Where:

L_r = Reach length, or spacing, between adjacent grade-control structures, in feet;
h = Drop height downstream of the grade-control structure, in feet;
S_{ib} = Initial channel bed slope, in feet per foot; and,
S_{eq} = Channelized equilibrium bed slope, in feet per foot.

If the initial and final bed slopes are approximately the same, the distance between grade-control structures will be very large. Under these circumstances, such structures may not be required.

Normally, the drop height downstream of a grade-control structure which consists of poured concrete without reinforcements shall not exceed two feet; and preferably should be only one foot, where feasible. For economical and technical reasons, grade-control structures should be spaced no closer together than twelve times the local scour depth below the grade-control structures, as computed by the use of either Equation 6.13 or Equation 6.14.

The total height of a cut-off wall or a grade-control structure (D_{cw}), from top to toe, shall not be less than the drop height plus the computed depth of scour below the wall or structure (see Figure 6.6). The depth of scour below grade-control structures should be computed according to the guidelines presented in Section 6.6.6 of this Manual. For a one-foot-wide, unreinforced concrete cut-off wall, if structural calculations support same, the maximum allowable height of a cut-off wall, from top to toe, can be six feet. If the depth of scour plus the drop height is greater than six feet, the drop shall be considered to be too great for unreinforced concrete cut-off walls, unless a structural analysis can demonstrate otherwise, and the spacing between

the cut-off walls must be reduced. The example which follows (i.e., Example 6.1), illustrates the recommended procedure for cut-off wall design.

There will be many design situations, especially when unit discharges are high, where a cut-off wall with a hegith of six feet, from top to toe, is not sufficient. In such cases, a reinforced concrete cut-off wall that has a height greater than six feet, from top to toe, may be used, provided that a structural analysis is submitted showing that the proposed cut-off wall will be structurally stable. If a structural analysis is submitted and approved, the maximum drop height of two feet will no longer apply.

Grade-control structures for large discharges need not necessarily be vertical on the downstream side. For structural stability, a triangular or wedge-shaped soil-cement grade-control structure is recommended for use on regional watercourses. However, for hydraulic reasons, the use of any grade-control structure with a face flatter than I:1 on the downstream side shall not be permitted without prior written approval from the City Engineer.

EXAMPLE 6.1: SPACING AND DEPTH OF GRADE-CONTROL STRUCTURES

A channel in a highly urbanized watershed is to be built to contain the 100-year-flood discharge. The sides of the channel are to be of shotcrete, the bottom of earth.

Channel characteristics are as follows:

Bottom Width	= 20 feet
Design Slope	= 0.006 feet/foot
Side Slopes	= 1:1
Manning's "n"	= 0.022

Hydraulic characteristics are as follows:

Q_{100} = 700 cfs	Q_{10} = 350 cfs
Y_{100} = 3.1 feet	Y_{10} = 2.1 feet
V_{100} = 9.7 fps	V_{10} = 7.7 fps
q_{100} = 35.0 cfs/foot	q_{10} = 17.5 cfs/foot

Because the watershed is highly urbanized, Equation 6.25 will be used to compute the equilibrium slope. Therefore:

$$S_{eq} = \left[\frac{1.45\ (0.022)}{(17.5)^{0.11}} \right]^2 = 0.0005 \text{ feet/foot.}$$

Assume a two-foot drop height. From Equation 6.27, the spacing between grade-control structures should be:

$$L_r = \frac{2.0}{(0.006)-(0.0005)} = 364 \text{ feet.}$$

The grade-control structure will be submerged. Using Equation 6.14 yields:

$$Z_{lss} = 0.581(q_{100})^{0.667}(h/Y_{100})^{0.411}[1-(h/Y_{100})]^{-0.118};$$

$$q_{100} = 35.0 \text{ cfs;}$$

$$Z_{lss} = 0.581\ (35.0)^{0.667}\ (0.645)^{0.411}\ (0.355)^{-0.118}; \text{ so,}$$

$$Z_{lss} = 5.9 \text{ feet.}$$

Therefore, the total height of the grade-control structure, from top to toe, should be 5.9 feet *plus* the two-foot drop height; or, 7.9 feet (round to 8.0 feet).

However, it is desirable to keep the total vertical dimension of the grade-control structure, from top to toe, equal to or less than six feet. Therefore, a smaller drop height should be used.

Using a drop height of one foot yields:

$$L_r = \frac{1.0}{(0.006)-(0.0005)} = 182 \text{ feet.}$$

$$Z_{lss} = 0.581\ (35.0)^{0.667}\ (0.323)^{0.411}(0.677)^{-0.118}; \text{ so,}$$

$$Z_{lss} = 4.10 \text{ feet (round to 4.0 ft).}$$

Since, in this example, the ultimate drop height at the downstream side of a grade-control structure will be set at one foot, cut-off walls with a height of five feet, from top to toe, could be placed at approximately 180-foot intervals along the bottom of the channel to serve as grade-control structures in order to limit long-term bed degradation to a maximum of one foot anywhere along the subject channel.

CHAPTER VI: EROSION AND SEDIMENTATION

6.1 Introduction

The hydrology and hydraulics of floodwaters are not the only concern of floodplain-management administrators and/or drainage design engineers who work in arid or semi-arid environments which contain alluvial rivers such as those that exist both within and around the City of Tucson, Arizona. The transport of sediment by floodwaters is also a major concern because of the potential for rapid bank erosion and changes in channel bed elevations. Bank erosion can often be so severe that it causes much more damage than inundation by floodwaters. Aggradation or degradation of the channel bed can rapidly change flood limits, or cause bank protection and other channel improvements to fail over a very short period of time.

The study of fluvial geomorphology and the analysis of sediment transport are usually undertaken in an attempt to quantify the broad effects of erosion and sedimentation and the impacts of sediment-transport capacity upon channel morphology. Sediment-transport analysis is a relatively specialized field of study. Predictions based upon its application are often expensive to produce, and can be highly variable in nature. Therefore, as an aid to the user, this chapter of the Manual presents some design and predictive guidelines that can be used within the City of Tucson in the absence of a more detailed sediment-transport analysis.

6.2 Purpose

The purpose of this chapter is to provide guidelines for the estimation of erosion, sedimentation, and channel bed scour when designing drainage channels and hydraulic structures which are to be located within the City of Tucson. These design guidelines and procedures are to be used when normal design situations are encountered. Deviations from these guidelines may occur, provided that the user has experience in sediment-transport technology; and provided that the deviation is technically justified, through detailed sediment-transport analysis, to the satisfaction of the City Engineer.

6.3 Fluvial Geomorphology

The study of fluvial geomorphology normally involves analyses which encompass entire drainage systems. This is so because the response of an individual channel to change within a watershed can often have an effect upon the entire drainage system. Conversely, the fluvial system, as a whole, will ultimately dictate the response of an individual channel to overall change within a watershed. Rarely is it possible to understand the fluvial processes which occur within even a short reach of an alluvial channel in isolation from its upstream and downstream system controls.

The fluvial system is generally divided into three zones (Schumm, 1977). Zone 1 is characterized as the drainage basin, watershed, or source area for sediment. This is the area from which water and sediment are derived. Storage of sediment is not significant in this zone. Zone 2 is characterized as the transport zone; where, for a stable channel, sediment input can equal sediment output. For those reaches where the sediment-transport capacity exceeds the upstream supply, it can be assumed that the sediment deficit will be made up out of the channel bed or banks. Channel bed

degradation or erosion of channel banks will be the result. Zone 3 is characterized as the sediment sink or area of deposition.

Obviously, the division between these three zones is indiscrete. Each zone has characteristics of the other two, which are subordinate to the primary characteristic of the zone. Zone 2 is of major concern to the hydraulic and river-control engineer, and to geomorphologists concerned primarily with river-channel morphology. It is this zone with which this chapter deals.

6.3.1 Channel Morphology

Sediment and water moving through alluvial channels are the independent variables that determine the size, shape, and pattern of the channel. Numerous empirical relations have been developed that relate channel morphology to water and sediment discharge.

6.3.1.1 Hydraulic Geometry of Alluvial Channels

As a general rule, the greater the quantity of water that moves through a channel, the larger is the cross-sectional area of that channel. Preceded by numerous studies of canal morphology and stability, Leliavsky (1955) and Leopold and Maddock (1953) demonstrated that, for most rivers, the water surface width, T, and depth, Y, increase with mean-annual discharge, Q_a, in a downstream direction such that:

$$T = k_1 Q_a^b \tag{6.1}$$

and,

$$Y = k_2 Q_a^c \tag{6.2}$$

Both the coefficients and exponents of Equations 6.1 and 6.2 (i.e., the "k_1," "k_2," "b," and "c" values) are different for each river and, when data from a number of rivers are plotted against discharge, the scatter covers an entire log cycle. For a given discharge, there is an order of magnitude range of width and depth. Therefore, other variables apparently influence the hydraulic geometry of channels as well.

6.3.1.2 Influence of Sediment Load

A primary variable which significantly controls river morphology is sediment load. Bed-material load is defined as that part of the stream's sediment load that consists of sediment sizes comprising a significant part of the streambed. The other component of total sediment load is wash load, which is part of the total load not significantly represented in the bed. In and around the Tucson area, wash load is generally composed of sediments smaller than sand (i.e., smaller than about 0.06 mm to 0.07 mm). Wash load is held in suspension by the turbulence of the flowing water, and therefore is transported at the same velocity as the water. Bed-material load is composed of sands and larger sediments, and therefore is generally transported at an average velocity less than the velocity of flowing water.

From an analysis of data from regime canals, Lacey (1930) concluded that the wetted perimeter of a channel is directly dependent upon discharge; but that channel shape reflects sediment size. It is also generally recognized that coarse sediment produces channels with high width/depth ratios, while fine sediment produces channels with narrow and deep cross sections.

In addition to the size of the transported sediment, relative amounts of bed-material load and wash load significantly influence the morphology of sand-bed streams. Large bed-material loads are associated with wide channels, and large wash loads are associated with narrow widths.

The type of sediment load is considered to be a more important control on stable channel shape than the total quantity of sediment transported through a channel. For example, in one channel a certain quantity of bed-material load may exert the dominant control if it is the total load, whereas in another channel the same amount of bed-material load may exert much less influence on channel shape because it is only a small part of the total sediment load (i.e., wash load and bed-material load). Therefore, when load and discharge are constant, an increase in the quantity of bed-material load will cause an increase in channel width, and a corresponding increase in the width/depth ratio. This phenomenon is probably related to the high gradient and velocity of flow generally associated with large bed-material loads.

In summary, for alluvial channels which occur in the Tucson area, the type and amount of sediment load exerts a major control on their shape. Therefore, for a single channel under the ideal assumption of a constant discharge and a fixed amount of wash load, a change in bed-material load would be reflected by a change in both the shape and gradient of the channel.

6.4 Sediment-Transport Theory

Sediment particles are transported by flowing water in one or more of the following ways: (1) surface creep, (2) saltation, and (3) suspension. Surface creep is the rolling or sliding of particles along the bed. Saltation (jumping) is the cycle of motion above the bed, with resting periods on the bed. Suspension involves the sediment particle being supported by the water during its entire motion. Sediments transported by surface creep, sliding, rolling, and saltation are referred to as bed load, and those transported by suspension are called suspended load. The suspended load consists of sands, silts, and clays. Total sediment load is defined as the sum of the bed load and suspended load. Generally, the amount of bed load transported by a large river is on the order of five to twenty-five percent of the suspended load. Although the amount of bed load may be relatively small compared with total sediment load, it is important because it shapes the bed, influences channel stability, determines the form of bed roughness, and affects various other hydraulic factors as well.

As presented earlier, the total sediment load in a channel can be more simply defined as the sum of bed-material load and wash load; where the bed-material load is the sum of bed load and suspended bed-material load, representing that part of the total sediment discharge which is composed of grain sizes found in the bed; and the wash load is that part of the sediment discharge which is composed of particle sizes

finer than those found in appreciable quantities in the bed (Simons and Senturk, 1977). The presence of wash load can increase bank stability, reduce seepage, and increase bed-material transport. Wash load can be easily transported in large quantities by the stream, but is usually limited by availability from the watershed. The bed-material load is more difficult for the stream to move, and is normally limited in quantity by the transport capacity of the channel. Figure 6.1 summarizes the various definitions of the components of sediment load, and their contribution to total sediment load.

There is no clear size distinction between wash load and bed-material load. As a rule of thumb for the Tucson area, it should be assumed that the size of bed-material particles is equal to or larger than 0.0625 mm, which is the division point between sand and silt. The sediment load consisting of grains smaller than this size is then considered as wash load. It is generally assumed that most of the wash load is transported through the system by stream flow, and that little wash load is deposited on or in the stream bed. Wash load deposited with coarse material is usually only a very small fraction of the total bed material within the channel.

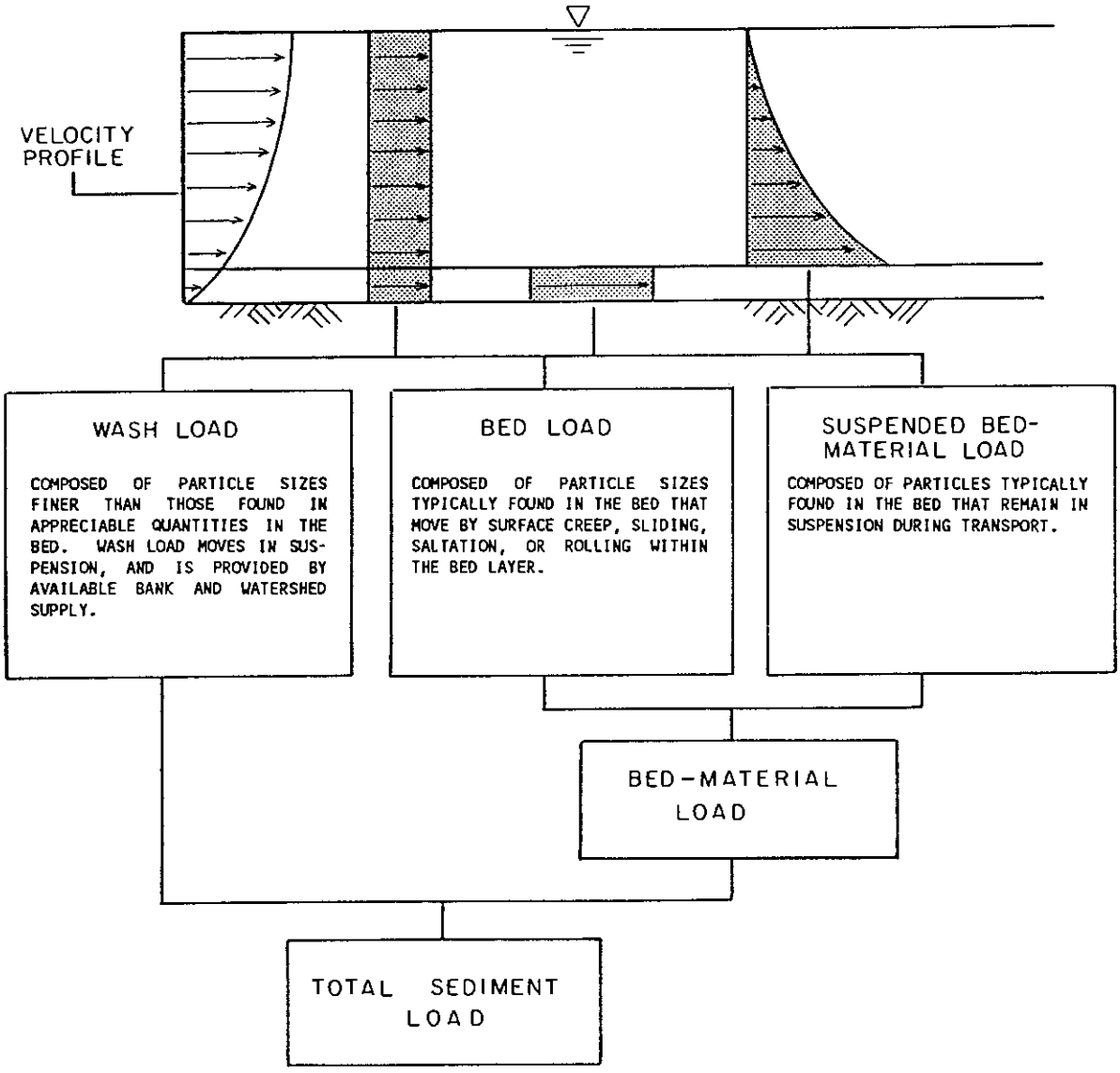
The amount of material transported, eroded, or deposited in an alluvial channel is a function of both the sediment supply and the sediment-transport capacity of the channel. Sediment supply includes the quality and quantity of sediment brought to a given reach. Sediment-transport capacity is a function of the size of bed material, flow rate, and geometric and hydraulic properties of the channel. Generally, the single most important factor determining sediment-transport capacity is flow velocity. Additionally, since sediment-transport capacity is generally proportional to the third to fifth power of the velocity, small changes in velocity can cause large changes in sediment-transport capacity (Simons, Li & Associates, 1982, 1985). Either the sediment supply or sediment-transport capacity may limit the actual sediment-transport rate in a given reach.

6.5 Sediment Routing

Supported by qualitative and quantitative analysis, a detailed evaluation of the fluvial-system response can be made based upon mathematical-modeling concepts. A mathematical model is simply a quantitative expression of the physical processes. The mathematical processes governing watershed and river responses are complicated. Computer programs can provide a means of assessing the many parameters of these complex processes within a fluvial system. There are several computer models available which are applicable to this region. For information on where to obtain these models, the user should contact the City Engineer.

6.5.1 Simplified Sediment Modeling

After evaluating the hydraulic conditions of the river by water-routing programs such as the U.S. Army Corps of Engineers HEC-2 program, the sediment-transporting capacity can be established. Sediment-transport equations are used to determine the sediment-transport capacity for a specific set of flow conditions. Different transport capacities can be expected for different sediment sizes. For each sediment size, the transport rate includes the transport rate of the bed load and the transport rate of the suspended bed-material load.



NOTE:

THE TERM "SUSPENDED LOAD" IS USED WHEN REFERRING TO THE SUM OF THE "WASH LOAD" AND "SUSPENDED BED-MATERIAL LOAD" COMPONENTS. THEREFORE, AN ALTERNATE DEFINITION OF TOTAL SEDIMENT LOAD IS THE SUM OF THE SUSPENDED LOAD AND BED LOAD.

FIGURE 6.1
DEFINITION OF SEDIMENT-LOAD COMPONENTS

One modeling method uses hydraulic conditions from a rigid-boundary model such as HEC-2, or an equivalent program, and computes sediment transport based upon the Meyer-Peter, Muller bed-load equation and the Einstein suspended-load procedure for each sediment size found in the bed. The data required are the same as for HEC-2 (channel geometry, resistance, bridge constriction, etc.). Also needed are the size distribution of the bed-material and the upstream sediment supply. Using the generated hydraulic conditions, the transport capacity for each sediment size at each cross section is then determined.

Actual transport rates depend upon transport capacities as well as supply rates. The change in transport capacity between two cross sections can be used to estimate aggradation or degradation, based upon availability. For example, if sediment is in ample supply to meet the transport capacity at an upstream cross section but at the next cross section downstream the transport capacity is only one-half as much, then the other one-half of the sediment passing the upstream cross section must be deposited between the upper and lower cross sections. This comparison of transport capacities continues reach by reach and size fraction by size fraction through the entire stream segment. The drawback to this simplified approach is that the hydraulic conditions are not readjusted, due to aggradation or degradation, at frequent time increments during the passage of the flood hydrograph. However, this technique does provide "trends" in bed-elevation changes without using more complex techniques.

6.5.2 Quasi-Dynamic Sediment Modeling

The sediment-routing model previously discussed is based upon a gradually-varied-flow backwater program which assumes a rigid-boundary system. This methodology can be extended to account for unsteady flow and alluvial-channel boundaries without going to a fully unsteady water and sediment-routing model.

The quasi-dynamic sediment model uses the same gradually-varied-flow backwater program for hydraulic computations. However, the flow is assumed constant for a given time increment Δt. A flow event, either short-term or long-term, can be broken into a number of time increments, each with a different flow rate, but during each increment the flow is considered steady.

To account for a non-rigid or alluvial boundary, when a predetermined volume of sediment is either deposited on or eroded from the streambed, the cross section is recomputed in the following manner.

Sediment aggradation or degradation within a reach for a given time period is ΔV_s = (sediment supply - sediment transport) x BF, where ΔV_s is the change in sediment volume in the reach and BF is a bulking factor. The change in sediment volume is assumed to be uniformly distributed throughout the reach. Change in area for each cross section is determined by a weighting factor based upon the conveyance in adjacent segments of the cross sections. The changes in elevation are used to generate a new HEC-2 data file for the next time period. Therefore, during any given time period the channel boundary is assumed to be rigid and the HEC-2 analysis is assumed to be valid. After evaluating the hydraulic conditions and the sediment-transport capacity, the channel boundary is modified to reflect the aggradation/

degradation changes occurring throughout the river, and to establish the new channel configuration for the next time step.

This methodology has been successfully applied to a number of practical engineering problems. It provides a feasible and relatively cost-effective approach to design problems in alluvial rivers.

6.5.3 Dynamic Mathematical Modeling

Dynamic mathematical modeling of water and sediment routing is the next level of sophistication and complexity in determining alluvial-channel changes. It involves unsteady, non-uniform flow routing for determining the hydraulic conditions to be used to calculate sediment transport, aggradation, and degradation.

Unsteady, non-uniform flow routing solves equations governing the motion of water in open channels. These equations are mathematical descriptions of the physical phenomena. The two basic principles for water routing are continuity and momentum. Continuity states that water coming into a reach is either stored in the reach or passes downstream without gaining or losing water.

The momentum principle balances the forces and accelerations acting on flowing water. Generally, the continuity and momentum equations, along with a resistance to flow equation involving Manning's n or Chezy's C, are solved numerically in finite-difference form. The results are the hydraulic variables of velocity, depth, and width for unsteady, non-uniform flow. These are then used to route sediment. Sediment movement is controlled by the shear forces acting on the bed, transport capacity of the flow, and both availability and supply. Equations used in these calculations are described in most sedimentation textbooks. To compute aggradation and degradation, the sediment-continuity equation is used.

While dynamic mathematical modeling can give excellent results, it is very complex. Fortunately, it is not often required to solve many of the more straightforward, practical problems that designers will usually encounter within the Tucson area. In fact, most aggradation and degradation problems can be solved to an acceptable degree of accuracy by the several methods previously described within this chapter of the Manual.

6.6 Depth of Scour

Scour, or lowering of a channel bed (excluding long-term aggradation/degradation), can be caused by discontinuity in the sediment-transport capacity of the flow during a runoff event (general scour); the formation of anti-dunes in the channel bed during a runoff event; transverse currents within the flow through a bend (bend scour) during a runoff event; local disturbances, such as abutments or bridge piers, during a runoff event; and the formation of a low-flow channel thalweg. The design depth of scour (*excluding* long-term aggradation/degradation, which must be added for toe-down design) is the sum of all these individual scour components, and can be expressed by:

$$Z_t = 1.3\ (Z_{gs} + 1/2Z_a + Z_{ls} + Z_{bs} + Z_{lft}) \qquad (6.3)$$

Where:

Z_t	=	Design scour depth, *excluding* long-term aggradation/degradation, in feet;
Z_{gs}	=	General scour depth, in feet;
Z_a	=	Anti-dune trough depth, in feet;
Z_{ls}	=	Local scour depth, in feet;
Z_{bs}	=	Bend scour depth, in feet;
Z_{lft}	=	Low-flow thalweg depth, in feet; and,
1.3	=	Factor of safety to account for nonuniform flow distribution.

The various equations for depth of scour which are to follow were developed strictly for use in conjunction with sand-bed channels in which the bed material is erodible to the depth specified by the applicable equations. However, this situation does not always exist in channels located within the City of Tucson. In some areas of the city, the channel has degraded to a point where the exposed bed is no longer composed of strictly unconsolidated alluvial material, but rather of consolidated hard-pan or caliche. Channel beds composed of this type of material are not freely erodible, and thus the scour equations which follow may not strictly apply. Should such conditions be encountered, a geotechnical investigation should be submitted by an Arizona Registered Professional Civil Engineer to justify the use of a lesser scour depth than would be determined from the use of Equation 6.3.

6.6.1 General Scour

As previously discussed in Section 6.5 of this Manual, the depth of general scour is best estimated by performing a detailed sediment-transport analysis using the bed grain-size distribution, hydraulic conditions, sediment-transport capacity at different stages throughout the flow event, changes in bed levels throughout the event, and the sediment supply into the reach being studied. An analysis to this level of detail is beyond the scope of this Manual. However, there are several computer models commercially available to aid in making an estimate of general scour. Unfortunately, these models are very sensitive to input, and the results are best interpreted by someone with extensive experience in the field of sediment transport. A detailed discussion of sediment-transport analysis for computing general scour can be found in "Engineering Analysis of Fluvial Systems" (Simons, Li & Associates, 1982), and "Arizona Department of Water Resources Design Manual for Engineering Analysis of Fluvial Systems" (Simons, Li & Associates, 1985).

General scour on regional watercourses should be estimated by undertaking a detailed sediment-transport study, as described above, when and where it is feasible to do so. However, such a study is not usually practical on smaller watercourses. Therefore, as an alternative to the above, on watercourses other than regional watercourses, the following equation (Zeller, 1981) should be used to predict general scour:

$$Z_{gs} = Y_{max}\left(\frac{0.0685V_m^{0.8}}{Y_h^{0.4}S_e^{0.3}} - 1\right) \quad (6.4)$$

Where:

Z_{gs} = General scour depth, in feet;
V_m = Average velocity of flow, in feet per second;
Y_{max} = Maximum depth of flow, in feet;
Y_h = Hydraulic depth of flow, in feet; and,
S_e = Energy slope (or bed slope for uniform-flow conditions), in feet per foot.

NOTE: Should Z_{gs} become negative, assume that the general-scour component is equal to zero (i.e., $Z_{gs} = 0$).

6.6.2 Anti-Dune Trough Depth

Anti-dunes are bed forms, in the shape of dunes, which move in an upstream rather than a downstream direction within the channel; hence the term "anti-dunes." They form as trains of waves that build up from a plane bed and a plane water surface. Anti-dunes can form either during transitional flow, between subcritical and supercritical flow, or during supercritical flow. The wave length is proportional to the velocity of flow. The corresponding surface waves, which are in phase with the anti-dunes, tend to break like surf when the waves reach a height approximately equal to 0.14 times the wave length. A relationship between average channel velocity, V_m, and anti-dune trough depth, Z_a, can therefore be developed (Simons, Li & Associates, 1982). This relationship is:

$$Z_a = \frac{1}{2}(0.14)\frac{2\pi V_m^2}{g} = 0.0137V_m^2 \quad (6.5)$$

A restriction on the above equation is that the anti-dune trough depth can never exceed one-half the depth of flow. Therefore, if the computed depth of Z_a obtained by using Equation 6.5 exceeds one-half of the depth of flow, the anti-dune trough depth should then be taken as equal to one-half the depth of flow. Figure 6.2 shows a definition sketch for anti-dune trough depth.

6.6.3 Low-Flow Thalweg

A low-flow thalweg is a small channel which forms within the bed of the main channel, and in which low discharges are carried. Low-flow thalwegs form when the width/depth ratio of the main channel is large. Rather than flow in a very wide, shallow state, low flows will develop a low-flow channel thalweg below the average channel bed elevation in order to provide more efficient conveyance of these discharges.

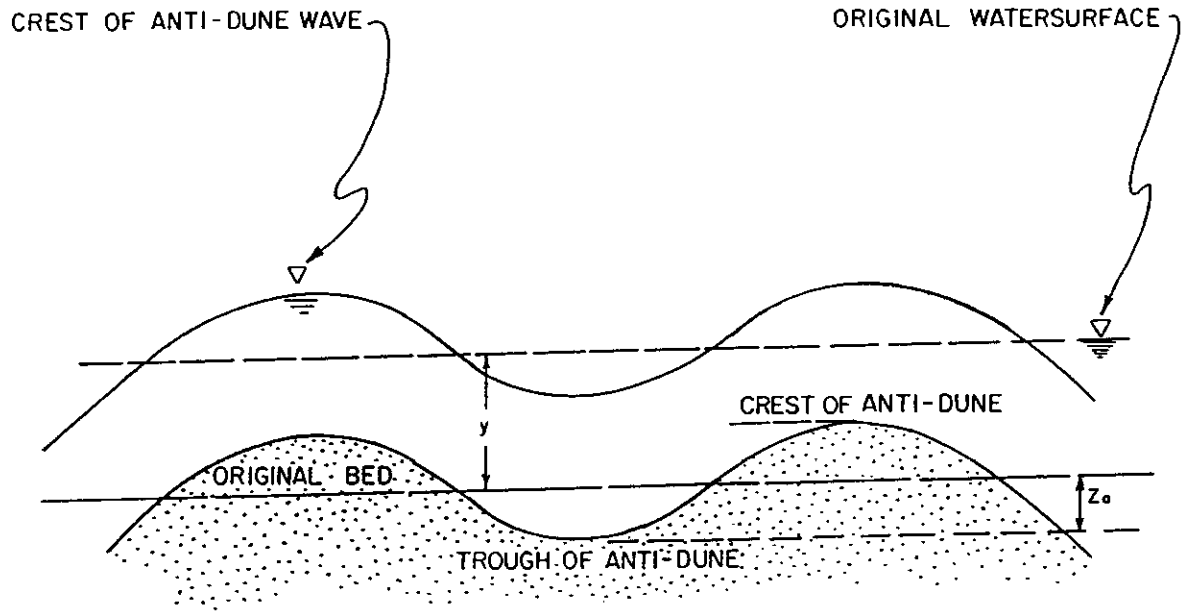


FIGURE 6.2
DEFINITION SKETCH FOR ANTI-DUNE TROUGH DEPTH

When the ratio of the flow width to the flow depth of a channel is greater than 1.15 times the average velocity of flow for the 100-year discharge, a low-flow thalweg must be included in all scour calculations. When the flow width or flow depth exceeds the top width and bank heights of the channel, use the top width and flow depth at bank-full conditions, instead of the actual flow width and flow depth. Presently, there is no known methodology for predicting low-flow thalweg depth. However, observation of channels in the Tucson area has revealed that low-flow thalwegs are normally one to two feet deep. Therefore, if a low-flow thalweg is predicted to be present, it should be assumed to be at least two feet deep within regional watercourses, and at least one foot deep within all other watercourses, unless field observations dictate otherwise.

6.6.4 Bend Scour

Bend scour normally occurs along the outside of bends, and is caused by spiral, transverse currents which form within the flow as the water moves around the bend. Presently, there is no single procedure which will consistently and accurately predict bend scour over a wide range of hydraulic conditions. However, the following relationship has been developed by Zeller (1981) for estimating bend scour in sand-bed channels based upon the assumption of the maintenance of constant stream power within the channel bend:

$$Z_{bs} = \frac{0.0685 Y_{max} V_m^{0.8}}{Y_h^{0.4} S_e^{0.3}} \left(2.1 \left[\frac{\sin^2(\alpha/2)}{\cos \alpha} \right]^{0.2} - 1 \right) \qquad (6.6)$$

Where:

Z_{bs} = Bend-scour component of total scour depth, in feet;
= 0 when $r_c/T \geq 10.0$, or $\alpha \leq 17.8°$
= computed value when $0.5 < r_c/T < 10.0$, or $17.8° < \alpha < 60°$
= computed value at $\alpha = 60°$ when $r_c/T \leq 0.5$, or $\alpha \geq 60°$

V_m = Average velocity of flow immediately upstream of bend, in feet per second;

Y_{max} = *Maximum* depth of flow immediately upstream of bend, in feet;

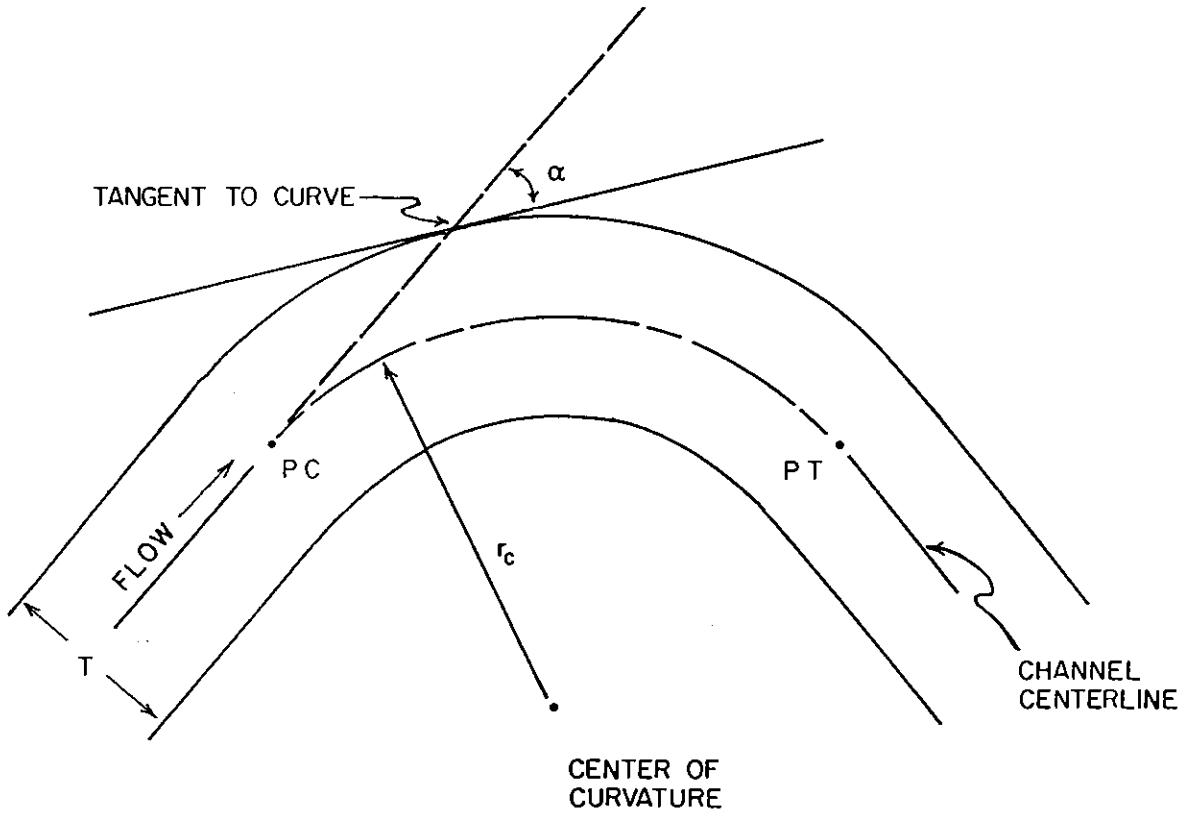
Y_h = Hydraulic depth of flow immediately upstream of bend, in feet;

S_e = Energy slope immediately upstream of bend (or bed slope for uniform-flow conditions), in feet per foot; and,

α = Angle formed by the projection of the channel centerline from the point of curvature to a point which meets a line tangent to the outer bank of the channel, in degrees (see Figure 6.3).

NOTE: Mathematically, it can be shown that, for a simple circular curve, the following relationship exists between α and the ratio of the centerline radius of curvature, r_c, to channel top width, T.

$$\frac{r_c}{T} = \frac{\cos \alpha}{4 \sin^2(\alpha/2)} \qquad (6.7)$$



PT = Downstream point of tangency to the centerline radius of curvature.
PC = Upstream point of curvature at the centerline radius of curvature.

FIGURE 6.3
ILLUSTRATION OF TERMINOLOGY FOR BEND-SCOUR CALCULATIONS

Where:

r_c = Radius of curvature along centerline of channel, in feet; and,
T = Channel top width, in feet.

If the bend deviates significantly from a simple circular curve, the curve should be divided into a series of circular curves, and the bend scour computed for each segment should be based upon the angle α applicable to that segment.

Equation 6.6 can be applied to obtain an approximation of the scour depth that can be expected in a bend during a specific water discharge. The impact that other simultaneously occurring phenomena such as sand waves, local scour, long-term degradation, etc., might have upon bend scour is not known for certain, given the present state of the art. Therefore, in order that the maximum scour in a bend not be underestimated, it is recommended that bend scour be considered as an independent channel adjustment that should be added to those adjustments computed for long-term degradation, general scour, and sand-wave troughs.

The longitudinal extent of the bend-scour component is as difficult to quantify as the vertical extent. Rozovskii (1961) developed an expression for predicting the distance from the end of a bend at which the secondary currents will have decayed to a negligible magnitude. This relationship, in a simplified form, can be expressed as:

$$x = \frac{0.6}{n} Y^{1.17} \qquad \textbf{(6.8)}$$

Where:

x = Distance from the end of channel curvature (point of tangency, PT) to the downstream point at which secondary currents have dissipated, in feet;
n = Manning's roughness coefficient;
g = Acceleration due to gravity, 32.2 ft/sec^2; and,
Y = Depth of flow (to be conservative, use maximum depth of flow, exclusive of scour, within the bend), in feet.

Equation 6.8 should be used for determining the distance downstream of a curve that secondary currents will continue to be effective in producing bend scour. As a conservative estimate of the longitudinal extent of bend scour, both through and downstream of the curve, it would be advisable to consider bend scour as commencing at the upstream point of curvature (PC), and extending a distance x (computed with Equation 6.8) beyond the downstream point of tangency (PT).

6.6.5 Local Scour

Local scour occurs whenever there is an abrupt change in the direction of flow. Abrupt changes in flow direction can be caused by obstructions to flow, such as bridge piers or abrupt contractions at bridge abutments.

VI. EROSION AND SEDIMENTATION

The depth of scour at bridge piers is highly dependent upon the shape of the pier. Figure 6.4 gives several common pier shapes. A square-nosed pier causes the deepest scour. The depth of scour caused by a square-nosed pier is computed from (Richardson et al., 1975):

$$Z_{lsp} = 2.2\, Y \left(\frac{b_p}{Y} \right)^{0.65} F_u^{0.43} \qquad (6.9)$$

Where:

Z_{lsp} = Local scour depth due to pier, in feet;
Y = Flow depth, in feet;
b_p = Pier width normal to the flow direction, in feet; and,
F_u = Upstream Froude number.

Table 6.1 can be used for computing the reduction in the depth of pier scour for the various types of piers shown in Figure 6.4.

TABLE 6.1: REDUCTION FACTORS TO BE USED WHEN APPLYING SCOUR FORMULAS FOR SQUARE-NOSED PIERS TO OTHER SHAPES

(assuming equally projected widths of piers)

Type of Pier	Reduction Factor
Square Nose	1.0
Cylinder	0.9
Round Nose	0.9
Sharp Nose	0.8
Group of Cylinders	0.9

Scour is reduced if the pier is streamlined in the direction of flow. However, many watercourses transport significant amounts of debris during large floods. Such debris can become impaled upon bridge piers, leading to an increase in the pier-width component, b_p, found in Equation 6.9. Therefore, in instances where significant debris

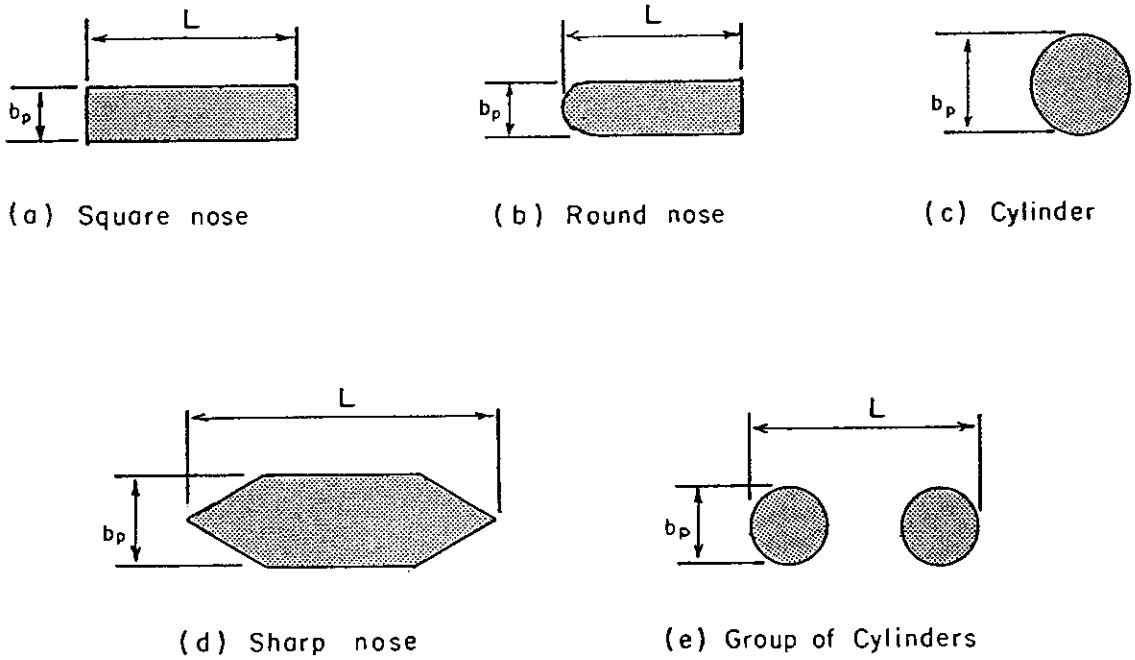


FIGURE 6.4
COMMON PIER SHAPES

transport is anticipated (e.g., within regional watercourses), b_p should be assumed equal to a width of five feet or 1.5 b_p, whichever value is greater. Additionally, pier scour will increase significantly as the direction of flow at the pier becomes more and more skewed in relationship to the pier wall. In such instances, an effective pier width, b_{pe}, can be calculated from the following equation and substituted into Equation 6.9 in lieu of b_p.

$$b_{pe} = L\sin\phi_p + b_p\cos\phi_p \quad \textbf{(6.10)}$$

Where:

b_{pe} = Effective pier width, in feet;
L = Length of pier wall, in feet;
ϕ_p = Angle of approach flow in relationship to pier wall, in degrees (ϕ_p = 0° for cylindrical piers); and,
b_p = As defined in Equation 6.9.

In Equation 6.10, b_p should incorporate any width increase due to debris, where applicable.

Local scour caused by embankments projecting into the flow, such as at bridge abutments, fill projections, and overbank levees, can be computed from the following equation:

$$Z_{lse} = 2.15\ \sin(\theta_a)\ Y \left(\frac{a_e}{Y}\right)^{0.4} F_u^{0.33} \quad \textbf{(6.11)}$$

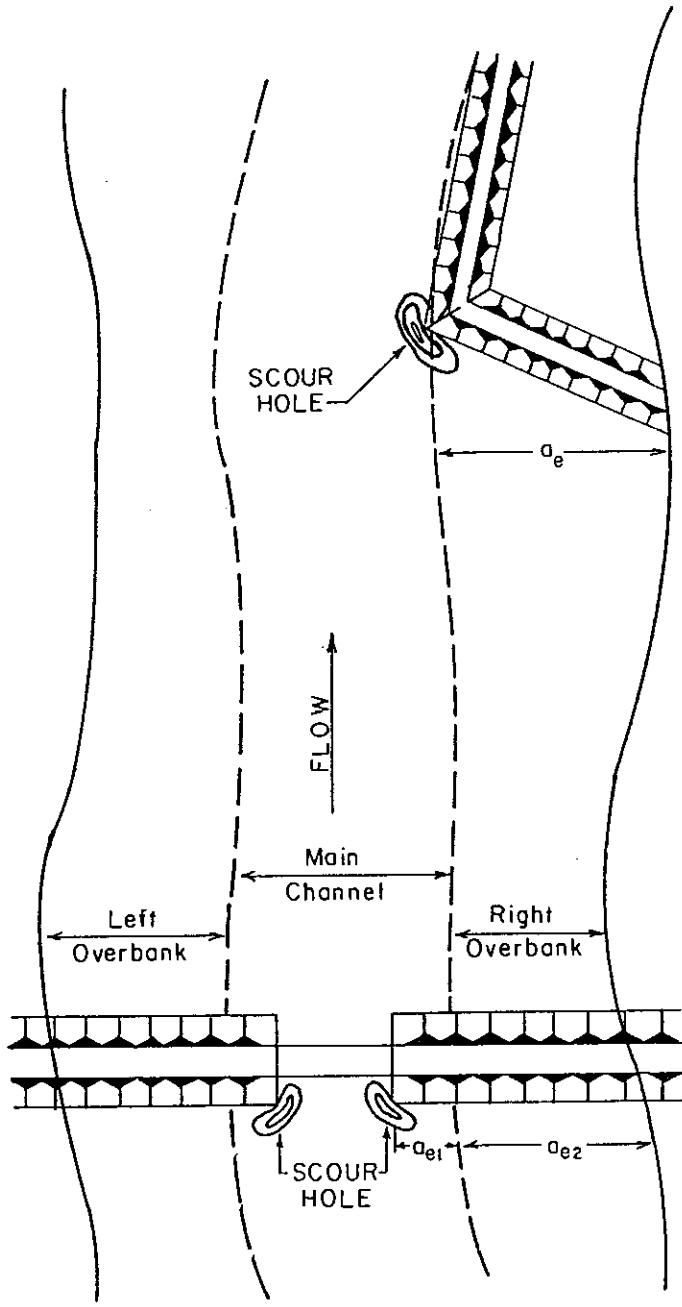
Where:

Z_{lse} = Local scour depth due to embankment, in feet;
θ_a = Slope angle of abutment face, measured from the horizontal, in degrees;
Y = Upstream normal flow depth, in feet;
a_e = Embankment or encroachment length, measured normal to the edge of the floodplain or channel bank, in feet (see Figure 6.5); and,
F_u = Upstream Froude number.

For embankments where the quantity a_e/Y is exceedingly large, such that $Z_{lse}/YF_u^{0.33} \geq 4.0$, the following equation (Richardson et al., 1975) should be used in lieu of Equation 6.11:

$$Z_{lse} = 4YF_u^{0.33} \quad \textbf{(6.12)}$$

Equations 6.11 and 6.12 are based upon relationships developed from both empirical observations and experiments in laboratory flumes. As can be seen from the formulas, the scour depth can be significantly affected by embankment length. In



CASE 1
Overbank Levee

Upstream depth of flow, Y, and Froude number should be based on hydraulic conditions for right overbank flow.

CASE 2
Bridge Embankment

Upstream depth of flow, Y, and Froude number should be based on hydraulic conditions for main channel flow when using a_{e1} and overbank flow when using a_{e2}. A comparison of scour calculations using these two definitions of embankment length is recommended.

FIGURE 6.5

DEFINITION SKETCH OF EMBANKMENT LENGTH "a_e"

practical situations, the embankment may span a wide floodplain overbank and extend partially into the main channel itself. Due to the normally large differences which exist between channel and overbank hydraulics, caution must be exercised in defining the embankment length. Figure 6.5 shows a recommended embankment length definition for different cases that might be encountered. In the situation where the embankment crosses the entire overbank and extends into the main channel, it is recommended that the scour be computed by utilizing the overbank hydraulics in combination with the embankment length a_{e2}, and that this depth of scour then be compared to the scour depth computed by utilizing the main-channel hydraulics in combination with the embankment length a_{e1}. The larger of the two values should then be used for design purposes.

6.6.6 Scour Below Channel Drops

Scour below channel drops, such as grade-control structures, is a special case of local scour. Where the drop consists of a free, unsubmerged overfall, the depth of scour below the drop (U.S. Bureau of Reclamation, 1977) shall be computed from:

$$Z_{lsf} = 1.32\, q^{0.54} H_t^{0.225} - TW \qquad (6.13)$$

Where:

Z_{lsf} = Depth of local scour due to a free-overfall drop, in feet, measured below the streambed surface downstream of the drop;
q = Discharge per unit width of the channel bottom, in cubic feet per second per foot;
H_t = Total drop in head, measured from the upstream energy grade line to the downstream energy grade line, in feet; and
TW = Tailwater elevation (downstream water-surface elevation), in feet.

Figure 6.6 shows the relationship of the parameters in Equation 6.13.

Where the drop is submerged, as will be the case for most instances involving grade-control structures placed along watercourses located within the City of Tucson, the depth of scour below the drop (Simons, Li & Associates, 1986) shall be computed from:

$$Z_{lss} = 0.581 q^{0.667} (h/Y)^{0.411} [1-(h/Y)]^{-0.118} \qquad (6.14)$$

Where:

$h/Y \leq$ 0.99; and,
Z_{lss} = Depth of local scour due to a submerged drop, in feet, measured below the streambed surface downstream of the drop;
q = Discharge per unit width of the channel bottom, in cubic feet per second per foot;
h = Drop height, in feet; and,
Y = Downstream depth of flow, in feet.

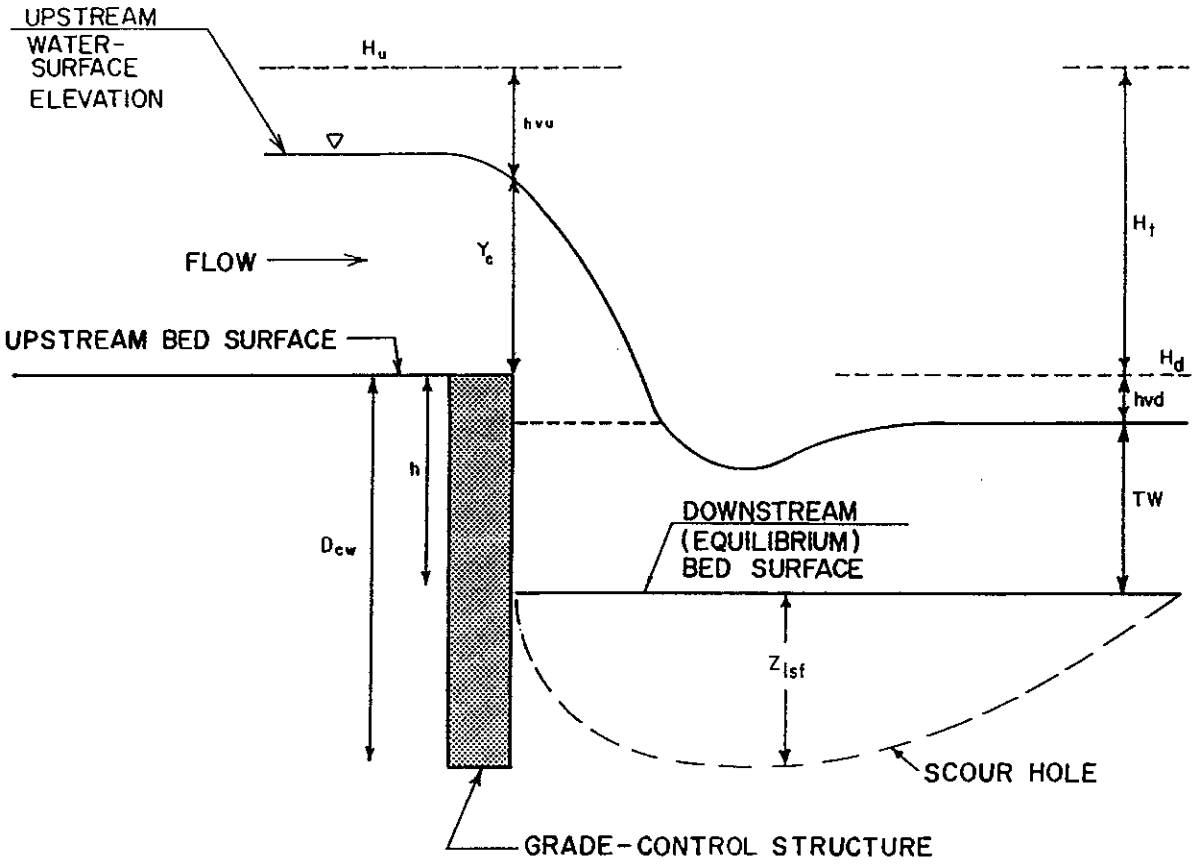


FIGURE 6.6
DEPTH OF SCOUR BELOW A FREE OVERFALL

NOTE: If $h/Y > 0.85$, the predicted scour below a channel drop should also be computed using Equation 6.13. The smaller of the two values thus computed should then be used for design purposes.

Figure 6.7 gives the relationship of the parameters in Equation 6.14.

The longitudinal extent of a scour hole created by either a free or submerged overfall is represented by the distances x_{sce} and L_s, as depicted in Figure 6.7. These dimensions are given by the equations:

$$x_{sce} = 6.0\ Z_{lsf}, \text{ or } 6.0\ Z_{lss} \quad \textbf{(6.15)}$$

$$L_s = 12.0\ Z_{lsf}, \text{ or } 12.0\ Z_{lss} \quad \textbf{(6.16)}$$

Bank protection toe-downs downstream of a grade-control structure shall extend to the computed depth of scour for a distance equal to x_{sce} beyond of the grade-control structure, as computed by Equation 6.15. They shall then taper back to the normal toe-down depth within a total distance downstream of the grade-control structure equal to L_s, as computed by Equation 6.16. Note that L_s includes x_{sce}.

In the absence of bridge piers and/or abutments, the depth of scour below grade-control structures is not added to the other scour components. Rather, the depth of scour caused by the grade-control structure is compared to the depth of scour computed by Equation 6.3, and the larger of the two values is then used for toe-down design.

6.7 Scour-Hole Geometry at Culvert Outlets

Culverts normally have less cross-sectional area available for the conveyance of flow than do the natural channels they replace. Consequently, flow velocities are increased and a potential for erosion is created at the culvert outlet. Often there is a drop at the culvert outlet, either under design conditions or as a result of outlet scour, and this further increases the possibility of outlet scour. The scour hole created at the outlet of a culvert can become large enough to threaten the culvert, the roadway, adjacent property, or other nearby improvements.

For non-cohesive soils, the dimensions of a scour hole downstream of a culvert outlet *where no drop exists* can be computed by:

$$DSG = \alpha \left[\frac{Q_r}{g^{1/2}\, D^{5/2}} \right]^{\beta} (0.09)^{\theta} \quad \textbf{(6.17)}$$

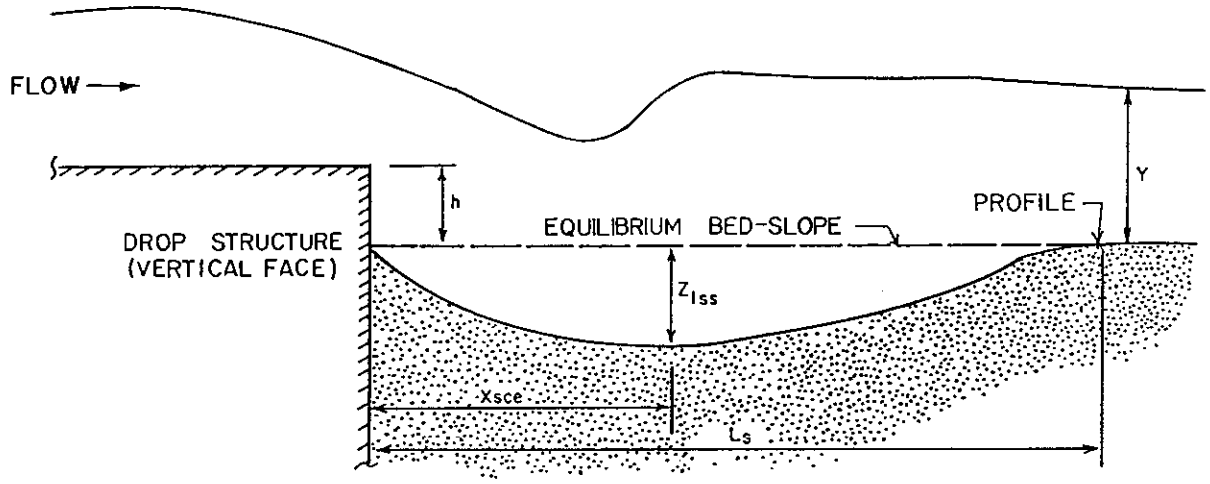


FIGURE 6.7

RELATIONSHIP OF VARIABLES IN EQUATION FOR SCOUR BELOW A SUBMERGED GRADE-CONTROL STRUCTURE

Where:

DSG = Dimensionless scour geometry = $\frac{Z_{lsc}}{D}$, $\frac{W_{sc}}{D}$, $\frac{L_{sc}}{D}$ or $\frac{V_{sc}}{D}$; and,

Z_{lsc} = Depth of scour hole below culvert, in feet;
W_{sc} = Width of scour hole below culvert, in feet;
L_{sc} = Length of scour hole below culvert, in feet;
V_{sc} = Volume of scour hole below culvert, in cubic feet;
D = Culvert diameter, in feet;
Q_r = Representative discharge, in cubic feet per second;
g = Acceleration due to gravity (32.2 ft/sec^2); and,
$\alpha,\alpha_e,\beta,\theta$ = Empirically derived coefficients (see Table 6.2).

The representative discharge is the average maximum discharge that can be expected to occur within a thirty-minute time period during the storm runoff event which is selected for design. In the City of Tucson, the design discharge is the 100-year flood. The representative discharge is calculated by:

$$Q_r = \frac{Q_{100}}{2}\left[1 + \frac{T_r - 10}{T_r}\right] \qquad (6.18)$$

Where:
Q_r = Representative discharge, in cubic feet per second;
Q_{100} = 100-year peak discharge, in cubic feet per second; and,
T_r = Hydrograph rise time, in minutes (see Chapter IV, Section 4.5, of this Manual).

For either non-circular or partially-full culverts, the culvert diameter, D, should be replaced in Equation 6.17 by an equivalent depth, Y_e, where Y_e is defined as:

$$Y_e = \left[\frac{A}{2}\right]^{0.5} \qquad (6.19)$$

Where:
A = Cross-sectional area of flow, in square feet.

Equation 6.18 is then modified to the following form:

TABLE 6.2A: EXPERIMENTAL COEFFICIENTS FOR SCOUR DEPTH, Z_{lsc}, AT CULVERT OUTLETS

MATERIAL	NOMINAL GRAIN SIZE D_{50} (mm)	SCOUR EQUATION	COEFFICIENTS			
			α	β	θ	α_e
Uniform Sand	0.20	6.17 or 6.20	2.72	0.375	0.10	2.79
Uniform Sand	2.0	6.17 or 6.20	1.86	0.45	0.09	1.76
Graded Sand	2.0	6.17 or 6.20	1.22	0.85	0.07	0.75
Uniform Gravel	8.0	6.17 or 6.20	1.78	0.45	0.04	1.68
Graded Gravel	8.0	6.17 or 6.20	1.49	0.50	0.03	1.33
Cohesive Sandy Clay:						
60% Sand, PI 15	0.15	6.17 or 6.20	1.86	0.57	0.10	1.53
Clay, PI 5-16	Varies	6.22 or 6.23	0.86	0.18	0.10	1.37

TABLE 6.2B: EXPERIMENTAL COEFFICIENTS FOR SCOUR WIDTH, W_{sc}, AT CULVERT OUTLETS

MATERIAL	NOMINAL GRAIN SIZE D_{50} (mm)	SCOUR EQUATION	COEFFICIENTS			
			α	β	θ	α_e
Uniform Sand	0.20	6.17 or 6.20	11.73	0.92	0.15	6.44
Uniform Sand	2.0	6.17 or 6.20	8.44	0.57	0.06	6.94
Graded Sand	2.0	6.17 or 6.20	7.25	0.76	0.06	4.78
Uniform Gravel	8.0	6.17 or 6.20	9.13	0.62	0.08	7.08
Graded Gravel	8.0	6.17 or 6.20	8.76	0.89	0.10	4.97
Cohesive Sandy Clay:						
60% Sand, PI 15	0.15	6.17 or 6.20	8.63	0.35	0.07	9.14
Clay, PI 5-16	Varies	6.22 or 6.23	3.55	0.17	0.07	5.63

TABLE 6.2C: EXPERIMENTAL COEFFICIENTS FOR SCOUR LENGTH, L_{sc}, AT CULVERT OUTLETS

MATERIAL	NOMINAL GRAIN SIZE D_{50} (mm)	SCOUR EQUATION	COEFFICIENTS			
			α	β	θ	α_e
Uniform Sand	0.20	6.17 or 6.20	16.82	0.71	0.125	11.75
Uniform Sand	2.0	6.17 or 6.20	18.28	0.51	0.17	16.10
Graded Sand	2.0	6.17 or 6.20	12.77	0.41	0.04	12.62
Uniform Gravel	8.0	6.17 or 6.20	14.36	0.95	0.12	7.61
Graded Gravel	8.0	6.17 or 6.20	13.09	0.62	0.07	10.15
Cohesive Sandy Clay:						
60% Sand, PI 15	0.15	6.17 or 6.20	15.30	0.43	0.09	14.78
Clay, PI 5-16	Varies	6.22 or 6.23	2.82	0.33	0.09	4.48

TABLE 6.2D: EXPERIMENTAL COEFFICIENTS FOR SCOUR VOLUME, V_{sc}, AT CULVERT OUTLETS

MATERIAL	NOMINAL GRAIN SIZE D_{50} (mm)	SCOUR EQUATION	COEFFICIENTS			
			α	β	θ	α_e
Uniform Sand	0.20	6.17 or 6.20	203.36	2.0	0.375	80.71
Uniform Sand	2.0	6.17 or 6.20	101.48	1.41	0.34	79.62
Graded Sand	2.0	6.17 or 6.20	36.17	2.09	0.19	12.94
Uniform Gravel	8.0	6.17 or 6.20	65.91	1.86	0.19	12.15
Graded Gravel	8.0	6.17 or 6.20	42.31	2.28	0.17	32.82
Cohesive Sandy Clay:						
60% Sand, PI 15	0.15	6.17 or 6.20	79.73	1.42	0.23	61.84
Clay, PI 5-16	Varies	6.22 or 6.23	0.62	0.93	0.23	2.48

$$DSG = \alpha_e \left(\frac{Q_r}{g^{1/2} Y_e^{5/2}} \right)^{\beta} (0.09)^{\theta} \qquad (6.20)$$

The coefficient α_e can also be found in Table 6.2.

Bed materials are classified in Table 6.2 as being either uniform or graded. Uniform materials are classified as those for which the standard deviation (σ) of the grain-size distribution is less than or equal to 1.5. The material is classified as graded if the standard deviation of the grain-size distribution is greater than 1.5. A simple formula often used for computing the standard deviation is:

$$\sigma = \left(\frac{D_{84}}{D_{16}} \right)^{0.5} \qquad (6.21)$$

Where:

D_{84} = The grain-size diameter for which 84% of the bed material consists of smaller particles; and

D_{16} = The grain-size diameter for which 16% of the bed material consists of smaller particles.

The grain-size distribution can be determined by a sieve analysis of the bed material. For planning purposes, or in the absence of a sieve analysis, bed material in the City of Tucson should be classified as graded sand, with a median diameter, D_{50}, equal to one millimeter and $\sigma = 4.0$.

If the soil at the culvert outlet is a sandy clay with a mean grain size in the range of 0.10 to 0.20 mm and a plasticity index, *PI*, of approximately 15, either Equation 6.17 or 6.20 may be used; where the coefficients for such a soil type are also given in Table 6.2.

Equations 6.17 and 6.20 are not applicable to cohesive soils, which have very different properties than the soil types described above. The potential for scour in cohesive soils is related to the critical shear stress of the soils, and is reflected by Equations 6.22 and 6.23. These equations have a wider range of applicability than do the above expressions. These equations are:

$$DSG = \alpha \left(\frac{\rho V^2}{\tau_c} \right)^{\beta} (0.09)^{\theta} \qquad (6.22)$$

For circular culverts, and

$$DSG = \alpha_e \left(\frac{\rho V^2}{\tau_c} \right)^{\beta} (0.09)^{\theta} \quad (6.23)$$

For culverts with other shapes.

Where:

$\frac{\rho V^2}{\tau_c}$ = Modified shear number;

V = Average velocity at outlet, in feet per second;
τ_c = Critical tractive shear stress, in pounds per square foot; and,
ρ = Fluid density, in slugs per cubic foot.

All other terms are as previously defined.

The critical tractive shear stress is defined as:

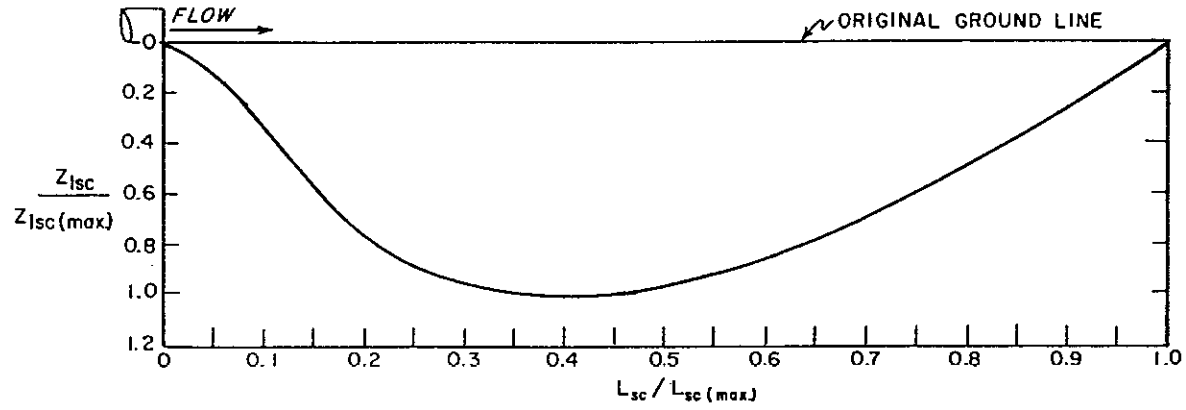
$$\tau_c = 0.0001 (S_v + 180) \tan (30 + 1.73 PI) \quad (6.24)$$

Where:
S_v = Saturated shear strength, in pounds per square inch; and,
PI = The plasticity index (limits 5-16).

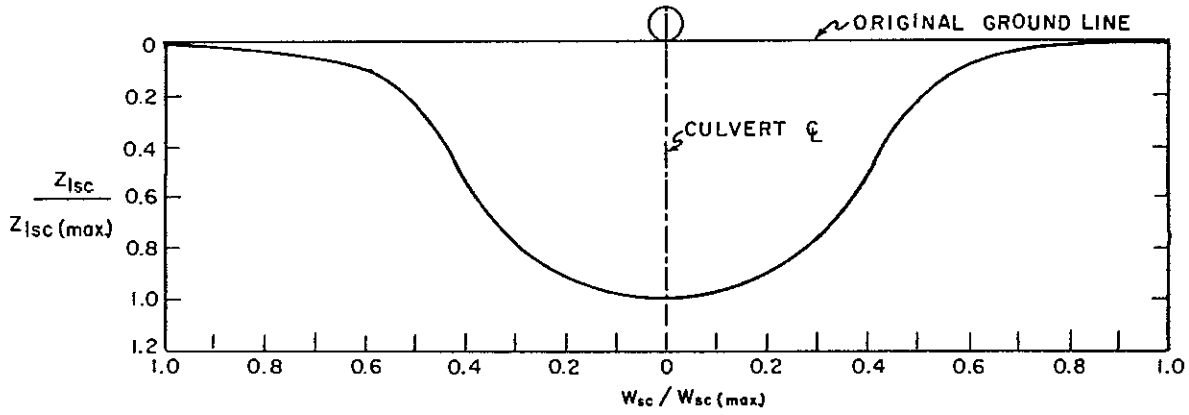
Equations 6.17 to 6.24 can therefore be used to estimate the dimensions of the scour hole that would form at the outlet of a culvert for varying types of soils. Figures 6.8 and 6.9 should be used to determine the shape of the scour hole. If the scour hole is large enough to threaten nearby improvements, adjacent property, or the culvert itself, outlet protection will be required to contain and/or prevent erosion. The user is referred to a publication by the Federal Highway Administration (1983) for further information regarding the design of culvert outlet protection.

6.8 Design of Sediment Basins

On watercourses with a potential for high sediment discharge, sediment basins may be necessary to protect detention basins, culverts, or storm drains from being filled with sediment. If it is felt that sedimentation could pose a problem for a proposed structure, basins should be built to collect and hold sediment for later removal by maintenance personnel. The design of these basins on watercourses where the upstream watershed area is one square mile, or less, shall be in accordance with the guidelines as presented within Section 3.4 of the Pima County and City of Tucson Stormwater Detention/Retention Manual (1987).



DIMENSIONLESS CENTER-LINE PROFILE



DIMENSIONLESS CROSS SECTION AT 0.4 $L_{sc(max.)}$

FIGURE 6.8
DIMENSIONLESS SCOUR-HOLE GEOMETRY
FOR MAXIMUM TAILWATER

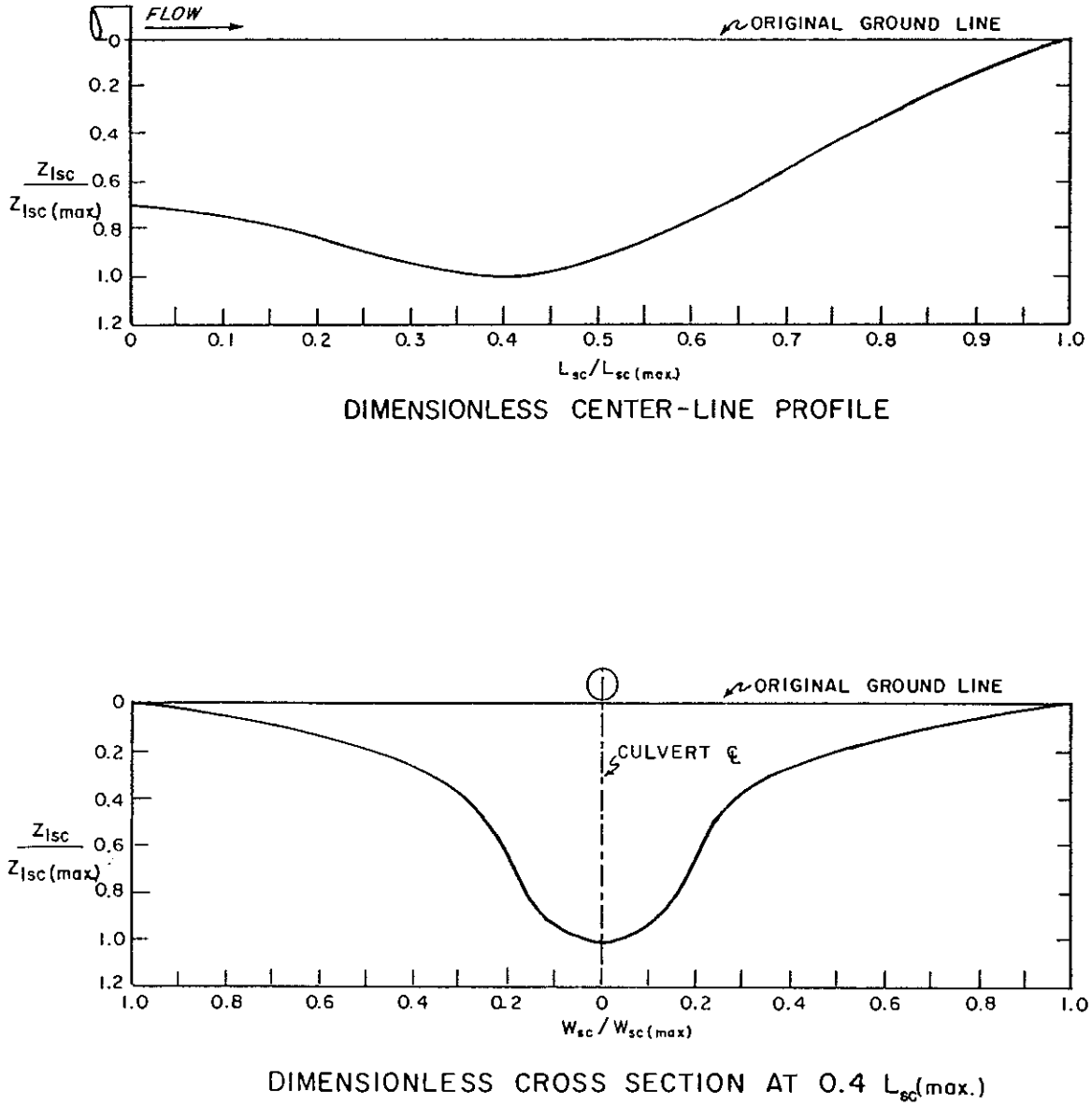


FIGURE 6.9
DIMENSIONLESS SCOUR-HOLE GEOMETRY
FOR MINIMUM TAILWATER

On watersheds larger than one square mile, the guidelines cited above may result in overdesign. The design of sediment basins on these watersheds is a more complicated procedure, involving total watershed sediment yield and channel sediment-transport capacity over a range of discharges. Total watershed sediment yield can be estimated by such methods as the Modified Universal Soil Loss Equation (Williams, 1975; and Williams and Berndt, 1977), the Pacific Southwest Inter-Agency Committee (PSIAC) Method (Pacific Southwest Inter-Agency Committee, 1968), the Flaxman Method (Flaxman, 1972), the SCS Method (U.S. Soil Conservation Service, 1971), the Dendy/ Bolton Method (Dendy and Bolton, 1976), and the Renard Method (Renard, 1972). A publication by Renard and Stone (1981) contains a detailed discussion and comparison of some of these methods.

The equations for watershed sediment yield which are listed above do not readily distinguish between sediment production that would be classified as wash load and sediment production that would be classified as bed load. Wash load particles are so small that they would generally remain in suspension as the water passes through the detention basin. Therefore, the wash load is not generally to be considered in sediment basin design. An estimate of wash load, as compared to bed load estimated from equations for total watershed sediment yield, can be made by taking samples of the topsoil throughout the watershed.

Total watershed sediment production may not be an entirely accurate estimate of the amount of sediment that would be delivered to a certain point, because there is sediment storage within the watershed system. Sediment-volume estimates must therefore also consider the sediment-transport capacity of the channel. A detailed discussion of this type of analysis will not be presented here. However, the reader is referred to publications by the U.S. Army Corps of Engineers (1977), Simons, Li & Associates (1982, 1985), the American Society of Civil Engineers (1977), Simons and Senturk (1977), and Zeller and Fullerton (1983) for more detailed information about performing such analyses.

6.9 Equilibrium Slopes within Constructed Channels

Given a fixed size distribution of sediments, the sediment-transport capacity of a stream is dependent primarily upon flow velocity and depth. Within the City of Tucson, transport of all particle sizes of bed material increases, as flow velocity increases, at a rate proportional to approximately the third to fifth power of the velocity. Correspondingly, transport of sediment particles composed of bed material generally decreases as depth increases, while transport increases with decreased depth. However, flow velocity is by far the more important variable.

For purposes of analysis and design, most natural, undisturbed channels in the Tucson area can be assumed to be at or near a state of dynamic equilibrium with regard to sediment transport. This means that, for a given reach of the channel, the sediment-transport capacity of the channel, over the long term, is more or less equal to the sediment supply. The channel bed slope is therefore "stable."

When channelization occurs, the channel top width is often narrowed, and channel roughness is normally decreased. The result is an increase in velocity and depth, with

a corresponding increase in sediment-transport capacity. Sediment-transport capacity then exceeds the sediment supply; and, if the bed is composed of sediment that can be transported, the deficiency will be made up from bed material--causing the channel to degrade. Another factor that contributes to this degradation is upstream urbanization. Urbanization increases flood peaks, which also lead to higher flow velocities and depths. Urbanization also reduces the watershed sediment supply, and increases the frequency of runoff. The result of all these occurrences is that channel bed degradation will occur until the channel slope is flat enough to cause the sediment-transport rate to be equal to the incoming sediment supply. This slope then becomes the new, "stable," equilibrium slope. Streambed degradation can threaten underground improvements, bank-protection toe-downs, culverts, and other hydraulic structures that are within and/or that cross the channel. Grade-control structures, or lining of the channel bed, are usually required in order to prevent damage caused by streambed degradation.

The equilibrium slope for a channel which has an upstream sediment supply that is considered to be essentially zero (e.g., a channel located within a highly urbanized watershed) can be computed from:

$$S_{eq} = \left(\frac{1.45n}{q^{0.11}} \right)^2 \qquad (6.25)$$

Where:

S_{eq} = Equilibrium slope after urbanization, in feet per foot;
n = Manning's roughness coefficient; and,
q = Channel unit discharge, in cubic feet per second per foot.

For use with Equation 6.25, channel unit discharge is defined as the channel discharge divided by the channel bottom width. Use of this equation will produce the flattest slope that can be reasonably expected to transport sediment within channels located in the Tucson area. The discharge associated with a 10-year flood is normally chosen when computing the unit discharge for use in Equation 6.25.

For lesser degrees of urbanization, the equilibrium slope is computed from Equation 6.26, which is a generalization of the theoretically derived sediment-transport relationships for sandbed channels developed by Zeller and Fullerton (1983):

$$S_{eq} = \left(\left[\frac{n_u}{n_n} \right]^2 \left[\frac{Q_{u,10}}{Q_{n,10}} \right]^{-1.1} \left[\frac{b_u}{b_n} \right]^{0.4} (1-R_s)^{0.7} \right) S_n \qquad (6.26)$$

Where:

n_u = Manning's roughness coefficient for an urban channel;
n_n = Manning's roughness coefficient for a natural or existing channel;
$Q_{u,10}$ = Ten-year discharge, under urbanized conditions, in cubic feet per second;
$Q_{n,10}$ = Ten-year or bank-full discharge (whichever is less), under natural conditions, in cubic feet per second;
b_u = Bottom width of channel, under urbanized conditions, in feet;
b_n = Bottom width of channel, under natural conditions, in feet;
R_s = Reduction factor for sediment supply. This factor is usually assumed to be equal to the ratio of the impervious area to the total area of the upstream watershed (i.e., $0.0 \leq R_s \leq 1.0$); and,
S_n = Natural or existing channel slope, in feet per foot.

The roughness coefficients for natural and urbanized channel beds are often very nearly the same, so the term in which these coefficients appear in Equation 6.26 can usually be assumed equal to the value 1.0. However, from time to time exceptions to this assumption may occur. For instance, when the existing channel is a wide, flat, sheetflow watercourse; and the proposed channel is a narrow, sand-bed channel, n_u will ordinarily not be equal to n_n.

For moderately urbanized to highly urbanized watersheds, the equilibrium slope should be computed by using both Equation 6.25 and Equation 6.26. The steeper of the two computed slopes should then be used for design. The reason for this is that Equation 6.26 can sometimes produce slope values that are too flat to generate reasonable sediment-transport rates for maintenance of channel stability, when impervious cover within a watershed is very high.

Equation 6.26 should be used with caution within the City of Tucson. An underlying assumption of this equation is that the existing or natural channel is itself in equilibrium. This is not always true in the City, because most channels have undergone alteration. If there is any question as to whether or not the existing channel is in equilibrium, it is best to try and determine through old (pre-development) aerial photographs and topography what the channel characteristics were in its original, undisturbed (i.e., natural) state. In the absence of historical information about the original channel, an examination may be made of existing stable channels in the area to help estimate what the channel in question may have looked like before urbanization.

Equation 6.26 can be used for more than merely the quantification of streambed degradation. It can also be used to determine whether aggradation will occur when a channel is widened beyond existing or natural conditions. Another application would be to use it to design a stable channel cross-section in lieu of installing grade-control structures to otherwise control degradation of the channel bed.

6.10 Spacing and Depth of Grade-Control Structures

If the equilibrium slope of a channel, as determined by use of either Equation 6.25 or Equation 6.26, is flatter than the design slope, grade-control structures may be needed to limit degradation from exceeding a certain depth at any point along the channel. Grade-control structures, sometimes called "cut-off walls" or "check dams," are non-erodible vertical barriers in the channel that prevent the channel bed from degrading at a point located immediately upstream of where they are located. After the channel bed has reached equilibrium, the bed elevation immediately upstream of the grade-control structure is at the design elevation. Downstream of the grade-control structure, the bed is at an "equilibrium" elevation that is lower than the design elevation. For most channels, the design of grade-control structures is an iterative process, involving drop height, reach length, and depth of scour downstream of the drop.

Once a drop height is chosen, the reach length, or spacing, between adjacent structures can be computed from:

$$L_r = \frac{h}{S_{ib} - S_{eq}} \qquad (6.27)$$

Where:

L_r = Reach length, or spacing, between adjacent grade-control structures, in feet;
h = Drop height downstream of the grade-control structure, in feet;
S_{ib} = Initial channel bed slope, in feet per foot; and,
S_{eq} = Channelized equilibrium bed slope, in feet per foot.

If the initial and final bed slopes are approximately the same, the distance between grade-control structures will be very large. Under these circumstances, such structures may not be required.

Normally, the drop height downstream of a grade-control structure which consists of poured concrete without reinforcements shall not exceed two feet; and preferably should be only one foot, where feasible. For economical and technical reasons, grade-control structures should be spaced no closer together than twelve times the local scour depth below the grade-control structures, as computed by the use of either Equation 6.13 or Equation 6.14.

The total height of a cut-off wall or a grade-control structure (D_{cw}), from top to toe, shall not be less than the drop height plus the computed depth of scour below the wall or structure (see Figure 6.6). The depth of scour below grade-control structures should be computed according to the guidelines presented in Section 6.6.6 of this Manual. For a one-foot-wide, unreinforced concrete cut-off wall, if structural calculations support same, the maximum allowable height of a cut-off wall, from top to toe, can be six feet. If the depth of scour plus the drop height is greater than six feet, the drop shall be considered to be too great for unreinforced concrete cut-off walls, unless a structural analysis can demonstrate otherwise, and the spacing between

the cut-off walls must be reduced. The example which follows (i.e., Example 6.1), illustrates the recommended procedure for cut-off wall design.

There will be many design situations, especially when unit discharges are high, where a cut-off wall with a hegith of six feet, from top to toe, is not sufficient. In such cases, a reinforced concrete cut-off wall that has a height greater than six feet, from top to toe, may be used, provided that a structural analysis is submitted showing that the proposed cut-off wall will be structurally stable. If a structural analysis is submitted and approved, the maximum drop height of two feet will no longer apply.

Grade-control structures for large discharges need not necessarily be vertical on the downstream side. For structural stability, a triangular or wedge-shaped soil-cement grade-control structure is recommended for use on regional watercourses. However, for hydraulic reasons, the use of any grade-control structure with a face flatter than I:1 on the downstream side shall not be permitted without prior written approval from the City Engineer.

EXAMPLE 6.1: SPACING AND DEPTH OF GRADE-CONTROL STRUCTURES

A channel in a highly urbanized watershed is to be built to contain the 100-year-flood discharge. The sides of the channel are to be of shotcrete, the bottom of earth.

Channel characteristics are as follows:

Bottom Width	= 20 feet
Design Slope	= 0.006 feet/foot
Side Slopes	= 1:1
Manning's "n"	= 0.022

Hydraulic characteristics are as follows:

Q_{100} = 700 cfs	Q_{10} = 350 cfs
Y_{100} = 3.1 feet	Y_{10} = 2.1 feet
V_{100} = 9.7 fps	V_{10} = 7.7 fps
q_{100} = 35.0 cfs/foot	q_{10} = 17.5 cfs/foot

Because the watershed is highly urbanized, Equation 6.25 will be used to compute the equilibrium slope. Therefore:

$$S_{eq} = \left[\frac{1.45\ (0.022)}{(17.5)^{0.11}} \right]^2 = 0.0005 \text{ feet/foot.}$$

Assume a two-foot drop height. From Equation 6.27, the spacing between grade-control structures should be:

$$L_r = \frac{2.0}{(0.006)-(0.0005)} = 364 \text{ feet.}$$

The grade-control structure will be submerged. Using Equation 6.14 yields:

$$Z_{lss} = 0.581(q_{100})^{0.667}(h/Y_{100})^{0.411}[1-(h/Y_{100})]^{-0.118};$$

$$q_{100} = 35.0 \text{ cfs;}$$

$$Z_{lss} = 0.581\ (35.0)^{0.667}\ (0.645)^{0.411}\ (0.355)^{-0.118}; \text{ so,}$$

$$Z_{lss} = 5.9 \text{ feet.}$$

Therefore, the total height of the grade-control structure, from top to toe, should be 5.9 feet *plus* the two-foot drop height; or, 7.9 feet (round to 8.0 feet).

However, it is desirable to keep the total vertical dimension of the grade-control structure, from top to toe, equal to or less than six feet. Therefore, a smaller drop height should be used.

Using a drop height of one foot yields:

$$L_r = \frac{1.0}{(0.006)-(0.0005)} = 182 \text{ feet.}$$

$$Z_{lss} = 0.581\ (35.0)^{0.667}\ (0.323)^{0.411}(0.677)^{-0.118}; \text{ so,}$$

$$Z_{lss} = 4.10 \text{ feet (round to 4.0 ft).}$$

Since, in this example, the ultimate drop height at the downstream side of a grade-control structure will be set at one foot, cut-off walls with a height of five feet, from top to toe, could be placed at approximately 180-foot intervals along the bottom of the channel to serve as grade-control structures in order to limit long-term bed degradation to a maximum of one foot anywhere along the subject channel.

CHAPTER VIII: OPEN-CHANNEL DESIGN

8.1 Purpose

The purpose of this chapter is to (1) provide the minimum requirements for the hydraulic design of all open channels which fall within the jurisdiction of the City of Tucson (both public and private); (2) provide the additional requirements which must be met before the city will accept a channel for maintenance (public channels); and, (3) provide the design requirements for those new channels which will either be constructed near or discharge directly into natural channels. Because erosion, sedimentation, and channel-stabilization components are also an integral part of any channel design, these topics are discussed in much greater detail in Chapters VI, VII, and IX, of this Manual, respectively.

8.2 Introduction

The hydraulic design of drainage channels is not a simple procedure. For a relatively long, straight, and uniform channel, normal-depth (i.e., uniform-flow) calculations can be used to determine the discharge capacity at varying depths for a constant cross-sectional area. However, practicing engineers working in an urban environment will rarely encounter either existing conditions or design conditions where uniform-flow calculations are adequate to totally define the flow conditions associated with a given discharge. Transition sections, channel junctions or confluences, channel bends, and hydraulic structures (e.g., culverts and bridges) can create deviations from uniform-flow conditions. Therefore, the engineer must consider these deviations when designing or analyzing drainage channels.

The procedures outlined in this chapter, although not exhaustive, are sufficient for most situations that will be encountered by design engineers. The basic principles behind these design procedures are found in standard textbooks and manuals which deal exclusively with open-channel hydraulics. The design engineer is encouraged to consult the references for this chapter cited at the end of this Manual for a more complete understanding of these principles. Many of the procedures presented herein are particularly similar to those included within the referenced documents prepared by the Los Angeles Flood Control District (1973) and the U.S. Army Corps of Engineers (1970). However, where appropriate, they have been modified to account for local requirements and regulations. As with the other chapters in this Manual, the procedures outlined herein shall be adhered to unless otherwise stated in the Manual, or unless prior approval to deviate from same is obtained, in writing, from the office of the City Engineer.

8.3 Requirements for Natural Channels

Washes which traverse land designated for a proposed development may be left in their natural state provided that doing so would not be in conflict with an approved master drainage plan for the area, if one exists; and provided that the development is adequately protected from flooding and erosion. One method of developing in the vicinity of a natural wash is to keep all structures out of its 100-year floodplain, as well as its attendant erosion-hazard areas. Floodplain delineations and erosion-setback distances are discussed in Chapters V and VII of this Manual. Another

possible method of developing in the vicinity of natural washes is to utilize part of the floodplain for development, while leaving the channel in its natural state. However, this approach would involve demonstrating that (1) the encroachment would not adversely affect adjacent properties; that (2) the development would be located outside of any erosion-hazard areas which border the natural wash; and that (3) in certain key areas, as identified by the City and through the 404-permit process, the disturbance to existing riparian vegetation and habitat is minimized.

8.4 Floodplain Encroachments

Encroachments into the floodplain of a natural wash are to be analyzed according to the procedures outlined in Chapter V. The City of Tucson "Floodplain Regulations" state that the maximum allowable rise in water-surface elevation for the 100-year discharge shall be one-tenth of a foot. However, if the natural wash is small enough that the entire width of the floodplain is owned or controlled by a single entity or corporation, and there are no existing structures in the floodplain, it is possible that an exception to this rule might be granted by the City. Under these circumstances, the maximum rise in the water-surface elevation would be limited to one foot, as per Federal Emergency Management Agency guidelines. However, as with all floodplain encroachments, the development must be adequately protected from flooding and erosion, and must not violate restrictions imposed by area plans, basin-management plans, or Mayor and Council policies. At no time may an encroachment adversely affect the river's stability or adversely alter flooding conditions on other properties. Although the limit of encroachment under these circumstances is more flexible, it is still subject to review and approval by the City Floodplain Engineer. When encroachment is proposed within the floodplain of a watercourse, the City Floodplain Engineer may, at his discretion, request that a detailed study be performed to determine if a reduction in overbank flood storage will significantly affect downstream flood peaks.

When fill material is placed in an encroachment area for the purpose of creating a building pad or pads, each pad must be adequately protected against erosion. In cases where these building pads will be placed outside the limits of an erosion-hazard area, as defined in Chapter VII of this Manual, erosion protection shall be designed using the hydraulic parameters associated with the overbank flow. If the building pads will be located inside an erosion-hazard area, erosion protection shall be designed to reduce the erosion-hazard area by using the hydraulic parameters associated with the main channel. See Section 8.5.5 and Chapter VI of this Manual for information on bank-protection toe-down design.

In some cases, the City will require that the existing riparian vegetation be preserved or enhanced. Therefore, it may not be possible to alter a wash or to provide certain types of bank protection, because doing so would result in the loss of significant riparian vegetation. However if, as with most small washes, the riparian vegetation exists only along the banks of the wash, it may be possible to construct erosion protection of some type outside of this vegetation zone. The width of this zone shall be determined on a case-by-case basis, as reviewed and approved by the City Engineer.

Individual building sites may encroach into a floodplain under circumstances where the sites would be completely surrounded by floodwaters during a regulatory flood provided that (1) the general requirements of the floodplain ordinance are met; (2) the fill slopes for any building pad or pads are protected from erosion; and (3) all-weather access is provided to all building sites.

Erosion protection for the building pads shall be designed using the post-development hydraulic conditions of the overbank floodwaters in the immediate vicinity of the building site. No building shall be built within the erosion-hazard setback limit associated with the main channel, unless adequate bank protection (running the entire length of the development) is first installed to prevent lateral migration of the main channel in the direction of the development. Fill material used to elevate individual building sites must extend at least twenty-five feet away from the building in all directions, unless a study or analysis prepared by an Arizona Registered Professional Civil Engineer demonstrates that a lesser distance is acceptable or that the fill is protected from erosion. In addition, the elevation of the building pad must not be lower than the 100-year water-surface elevation. In all cases, the pad or structure must not worsen flooding on other property.

All-weather access in wide floodplains must be along an obvious, commonly used route that can be easily found by drivers of emergency vehicles who may be unfamiliar with the area. Thus, all-weather-access criteria shall apply to the entire all-weather-access route.

8.5 Constructed Channels

In many cases, the proposed density of a development will require the use of constructed channels. When such a use is permitted, constructed channels can minimize floodplain widths, thereby maximizing the developable area. However, the increased flow velocities generally associated with constructed channels often mandate that constructed channels be stabilized in order to prevent bed and/or bank erosion. Channelization and lining allows the channel alignment to be modified, to a certain degree, in order to accommodate urban development. Therefore, in most cases in the past, engineers and planners have found it easier, and more economical, to restructure a given parcel using constructed channels than to plan the development around natural channels. However, this policy of channelization has resulted in a significant reduction of riparian vegetation and habitat, as well as other adverse effects such as increased downstream flood peaks and channel erosion.

The following discussion provides the basic design criteria for the design of constructed channels. More specific and detailed information can be obtained in the published material cited in the "References and Selected Bibliographies" section found at the end of this Manual.

8.5.1 Channel Geometry

Open drainage channels shall be designed using either trapezoidal, rectangular, or compound cross sections, unless the prior approval of an alternate design is granted, in writing, by the City of Tucson Floodplain Engineer.

8.5.1.1 Side-Slopes

Side-slopes for constructed earthen or riprap channels shall be no steeper than 3:1, unless an approved soils analysis demonstrates that steeper side-slopes are stable. Side-slopes for lined channels may be steeper, depending upon the structural stability of the lining. Reinforced concrete lining may have vertical side-slopes, provided that the design is adequate to prevent failure from hydrostatic or earth pressures. Shotcrete may be placed on side-slopes as steep as 1:1, if these side-slopes are not significantly steeper than the natural angle of repose of the soil. A soil-cement lining may be placed on 1:1 side-slopes, provided it is of sufficient thickness to be structurally stable. The minimum thickness of soil cement on a 1:1 side-slope should be four feet, measured normal to its face. Where soil cement is used as slope paving, with a thickness no greater than one foot, the maximum allowable side-slope should be 4:1. Actually, for ease of construction, even flatter side-slopes (e.g., 6:1) are desirable under such circumstances.

8.5.1.2 Width

Ordinarily, the minimum bottom width of a channel must be ten feet before it will be accepted for maintenance by the City of Tucson. Occasionally, bottom widths as narrow as eight feet may be allowable in certain cases, with prior approval from the City of Tucson Floodplain Engineer. Privately maintained channels have no mandatory, minimum bottom width, except as dictated by hydraulic and/or sediment-transport considerations, as described in subsequent sections of this chapter.

The bottom width of constructed channels which lack bed and/or bank protection should not vary by more than fifteen percent between control points, such as at culverts, junctions, changes in slope, or abrupt contractions or expansions, except at the confluence of a major tributary. The purpose of this constraint is to prevent severe aggradation, degradation, or bank erosion from occurring due to sudden changes in sediment-transport rates. In addition, when channelizing a natural wash, the bottom width should be constructed so that the discharge per unit width within the engineered channel is approximately equal to the discharge per unit width of the natural channel of the wash. Typical ways to mitigate this latter constraint are (1) to line both the bottom and sides of the engineered channel, or (2) to line just the channel sides and install grade-control structures.

The bottom widths of constructed channels which have earthen bottoms should be designed to prevent the formation of an incised, meandering, low-flow channel. Theoretically, a relatively wide channel, designed to convey the 100-year discharge, would convey the more-frequent, low-flow discharges at very shallow depths, were there an equal flow distribution across the entire flow cross section. However, by the laws of nature, such an occurrence is not the case within an alluvial channel. Under such circumstances, the channel will develop a narrow, incised, low-flow channel for more efficient conveyance of these flows. This low-flow channel will often meander within the main channel, and is capable of eroding earthen banks and/or undermining bank protection along engineered channels. In order to avoid this occurrence, the channel either should be stabilized, in order to prevent the formation of an incised low-flow channel, or should be designed so that the following equation is satisfied:

$$\frac{b}{V_{p100}Y_{p100}} \leq 1.15 \qquad (8.1)$$

Where:

b = Channel bottom width, in feet;
V_{p100} = Average velocity of flow at the peak of a 100-year flood, in feet per second; and,
Y_{p100} = Maximum depth of flow at the peak of a 100-year flood, in feet.

8.5.1.3 Depth

The depth of flow in channels, where relatively steady, uniform-flow conditions exist, can be computed by an iterative solution of Manning's equation:

$$Q = \frac{1.486}{n} R^{2/3} S_f^{1/2} A \qquad (8.2)$$

Where:

Q = Discharge, in cubic feet per second;
n = Manning's roughness coefficient (see Table 8.1);
R = Hydraulic radius of flow (= A/P), in feet;
A = Cross-sectional area of flow, in square feet;
P = Wetted perimeter of flow, in feet; and,
S_f = Friction slope, in feet per foot.

The depth of flow in Equation 8.2 is implicit within the terms A and R. To solve for the depth of flow, given a known discharge, the normal procedure is to make an estimate of the depth of flow; compute A, P, and R from the channel cross-section characteristics; then solve for Q using Manning's equation. If the computed discharge is not equal to the known discharge, the depth of flow is adjusted accordingly, and the process is repeated until the computed and known discharges are sufficiently close.

Under steady, uniform-flow conditions, the friction slope is assumed equal to the channel slope. Therefore, channel slope can be used for the friction slope, when channels are designed utilizing Manning's Equation.

Uniform flow does *not* exist under most design conditions, due to disturbances caused by changes in the channel width, discharge, or slope. In addition, the presence of channel bends, transitions, junctions, or obstructions such as culverts can create conditions which lead to non-uniform flow. The effect of such disturbances can propagate far upstream, or downstream, depending upon whether or not the flow is subcritical or supercritical. Whenever there is any reason to suspect that uniform-flow conditions do not exist, the depth of flow shall be determined from backwater computations.

TABLE 8.1: MANNING'S ROUGHNESS COEFFICIENTS*

CHANNEL MATERIAL	ROUGHNESS COEFFICIENT (n)		
	Minimum	Normal	Maximum
Corrugated metal	0.021	0.025	0.030
Concrete			
1) Trowel finish	0.011	0.013	0.015
2) Float finish	0.013	0.015	0.016
3) Unfinished	0.014	0.017	0.020
4) Shotcrete, good section	0.016	0.019	0.023
5) Shotcrete, wavy section	0.018	0.022	0.025
Asphalt (use maximum value when cars are present)	0.013	0.016	0.020
Soil Cement	0.018	0.020	0.025
Riprap (bottom and sides)	--	** $n = 0.04 D_{50}^{0.167}$	--
Constructed channels with earth or sand bottom, sides of			
1) Clean earth; straight	0.018	0.022	0.025
2) Earth with grass and weeds	0.020	0.025	0.030
3) Earth with trees and shrubs	0.024	0.032	0.040
4) Shotcrete	0.018	0.022	0.025
5) Soil cement	0.022	0.025	0.028
6) Concrete	0.017	0.020	0.024
7) Dry rubble or riprap	0.023	0.033	0.036
Natural channels with sand bottom, sides of			
1) Trees and shrubs	0.025	0.035	0.045
2) Rock	0.024	0.032	0.040
Natural channel with rock bottom	0.040	0.060	0.090
Overbank Floodplains			
1) Desert brush, normal density	0.040	0.060	0.080
2) Dense vegetation	0.070	0.100	0.160

*Adapted from Chow (1959) and Aldridge and Garrett (1973).
**D_{50} in feet.

Backwater computations proceed upstream for subcritical flow and downstream for supercritical flow. A control section must be established for computations to begin. A control section is a section at a place of known water-surface elevation. Control sections can be at such places as channel confluences, culvert inlets, or at where the flow goes through critical depth. Critical depth occurs when the Froude number (F) is equal to one.

The Froude number is calculated from:

$$F = \frac{V}{(gY_h)^{1/2}} \qquad (8.3)$$

Where:

V = Average velocity of flow, in feet per second;
Y_h = Hydraulic depth of flow (area/top width), in feet; and,
g = Acceleration due to gravity = 32.2 ft/sec^2.

Equation 8.3 should be used with care whenever there is overbank flooding or variations across the cross section which cause the flow velocity to vary within the cross section. In such cases, critical depth should be estimated by the graphical method described in Section 4-4 of Chow (1959).

The hydraulic flow depth, Y_h, used in the Froude-number calculation represents the actual flow depth for a rectangular section, but represents the cross-sectional area of flow divided by the top width of flow for either trapezoidal sections or natural channel sections.

Critical depth can occur at locations where a subcritical channel slope changes to a supercritical slope, and at locations where there is an abrupt drop in the elevation of the channel bed, when subcritical flow exists upstream. Backwater calculations should proceed both upstream and downstream from critical depth at locations where a subcritical slope changes to a supercritical slope.

Backwater calculations in trapezoidal channels of uniform cross section are generally performed by the Direct Step Method. This method is easily adaptable to the computer or hand-held calculator. For those who are interested in doing these calculations manually, a very good discussion and description of the Direct Step Method can be found on page 262 of Chow (1959).

8.5.1.4 Freeboard

Freeboard is the additional depth required in a channel beyond the depth which is calculated for conveyance of the design discharge. The purpose of freeboard is to protect against hydraulic disturbances such as waves, unforseen obstructions of flow, debris, or sediment accumulation. In addition, freeboard provides a margin of safety against (1) the uncertainties which exist in the methods used to predict design discharges; and (2) floods that are larger than the design flood. The amount of

freeboard required depends upon whether the flow is supercritical or subcritical, the flow velocity, the design discharge, the consequences of overtopping, and the magnitude of flow disturbances at locations such as junctions and culverts.

The freeboard requirement for channels shall be computed from Equation 8.4, with a minimum freeboard of one foot for channels with design depths of three feet or more.

$$FB = 1/6 \left[Y_{max} + \frac{V^2}{2g} \right] \quad \textbf{(8.4)}$$

Where:

FB = Freeboard, in feet;
Y_{max} = Maximum depth of flow, in feet;
V = Average velocity of flow, in feet per second; and,
g = Acceleration due to gravity = 32.2 ft/sec^2.

The freeboard requirements described above are for uniform channel reaches where no unusual flow disturbances are anticipated. Additional freeboard is required at channel bends and junctions, where backwater effects may occur; and at locations where hydraulic jumps may occur. The additional freeboard required at channel bends and junctions is described in Sections 8.5.10 and 8.5.12 of this Manual. At those locations where a hydraulic jump could form, additional freeboard shall be provided to contain the jump according to the guidelines provided within Section 8.5.9 of this Manual.

Freeboard in regional watercourses, such as the Santa Cruz River, Rillito Creek, Tanque Verde Creek, Pantano Wash, and the Cañada del Oro Wash, shall be determined on a case-by-case basis, following a detailed river-mechanics study.

The lining of protected channels shall extend to an elevation necessary to include the freeboard requirement, unless approval to the contrary is granted, in writing, by the City of Tucson Floodplain Engineer.

8.5.2 Safety Considerations

Deep channels with steep side-slopes and high flow velocities can be a hazard to the health, safety, and welfare of the general public. Therefore, the design engineer must always consider the safety aspects of any design. The design of hazardous channels should be avoided, if possible. All channels greater than five feet deep which have side-slopes steeper than 2:1 shall have emergency escape ladders consisting of a series of iron rungs every 600 feet. Other site-specific safety measures shall be installed as deemed necessary by either the design engineer or the City Engineer.

8.5.3 Right-of-Way

All channels that are to be maintained by the City of Tucson must be dedicated to the City. Dedication may be either in fee title or in the form of an easement. The

width of the dedication shall be the width of the channel, including key-ins, plus the width of a maintenance access lane or lanes. The minimum maintenance access width for regional watercourses is thirty feet on each side of the channel. More right-of-way may be required, if a linear park is planned along the watercourse. For major watercourses greater than 2000 cfs, the required width for maintenance access is sixteen feet on each side of the channel. However, one of these access lanes may be omitted, at the discretion of the City Engineer, provided that the channel bottom equals or exceeds twenty feet in width, and is drivable utilizing maintenance vehicles. Maintenance access lanes on minor watercourses are variable, and will be established on a case-by-case basis. Generally, a 16-foot maintenance access lane on one side will be required, as a minimum. In all cases, the right-of-way must be sufficient to allow maintenance vehicles to operate freely.

In areas where basin-management plans have recommended particular channel alignments, or an alignment for a watercourse has been established by a regulatory agency, dedication shall be in accordance with same. The width of dedication in these areas shall be as recommended in the basin-management plan, or as established by the agency, unless a more recent study shows that an alternative alignment and/or width is adequate. Studies of this type must clearly demonstrate that there are no conflicts or adverse effects with existing upstream and/or downstream improvements.

8.5.4 Bank-Protection Key-Ins and Minor Side Drainage

Bank-protection key-ins refer to the additional material provided beneath the surface of the ground at the top of the bank protection. Key-ins are normally provided for concrete and shotcrete bank protection; for thin, soil-cement bank protection; and for riprap bank protection. Their purpose is (1) to prevent fractures along the upper edge of the bank protection; (2) to provide added structural stability for the bank protection; and (3) to help prevent minor side inflow from undermining and damaging the bank protection from the top. Typical key-ins are shown in Figure 8.1. The minimum key-in depth on major channels (excluding regional watercourses) shall be eighteen inches. On minor watercourses, the key-in depth shall also be eighteen inches, unless a lesser key-in is justifiable. Key-ins for soil-cement bank protection along regional watercourses are generally not required because of the thickness of the bank protection. However, if key-ins are required, the design shall be determined by a site-specific engineering analysis acceptable to the City Engineer.

When minor tributary or surface flows enter an unlined channel over its side, rill erosion can create headcuts that will travel away from the channel in the opposite direction of the tributary inflow. If the channel is lined, the side drainage can erode the soil from behind the bank protection and create hydrostatic pressures and seepage problems that can cause failure of the bank protection. Therefore, side drainage must be confined to selected entry points that are adequately protected, or the key-in associated with the lining must be deep enough to prevent, or lessen, the buildup of hydrostatic pressure and seepage behind the bank protection. Under such circumstances, and in the absence of a detailed soils analysis and a knowledge of subsurface flow patterns, the key-in shall extend to a depth that equals the depth of the channel along the tributary inflow area.

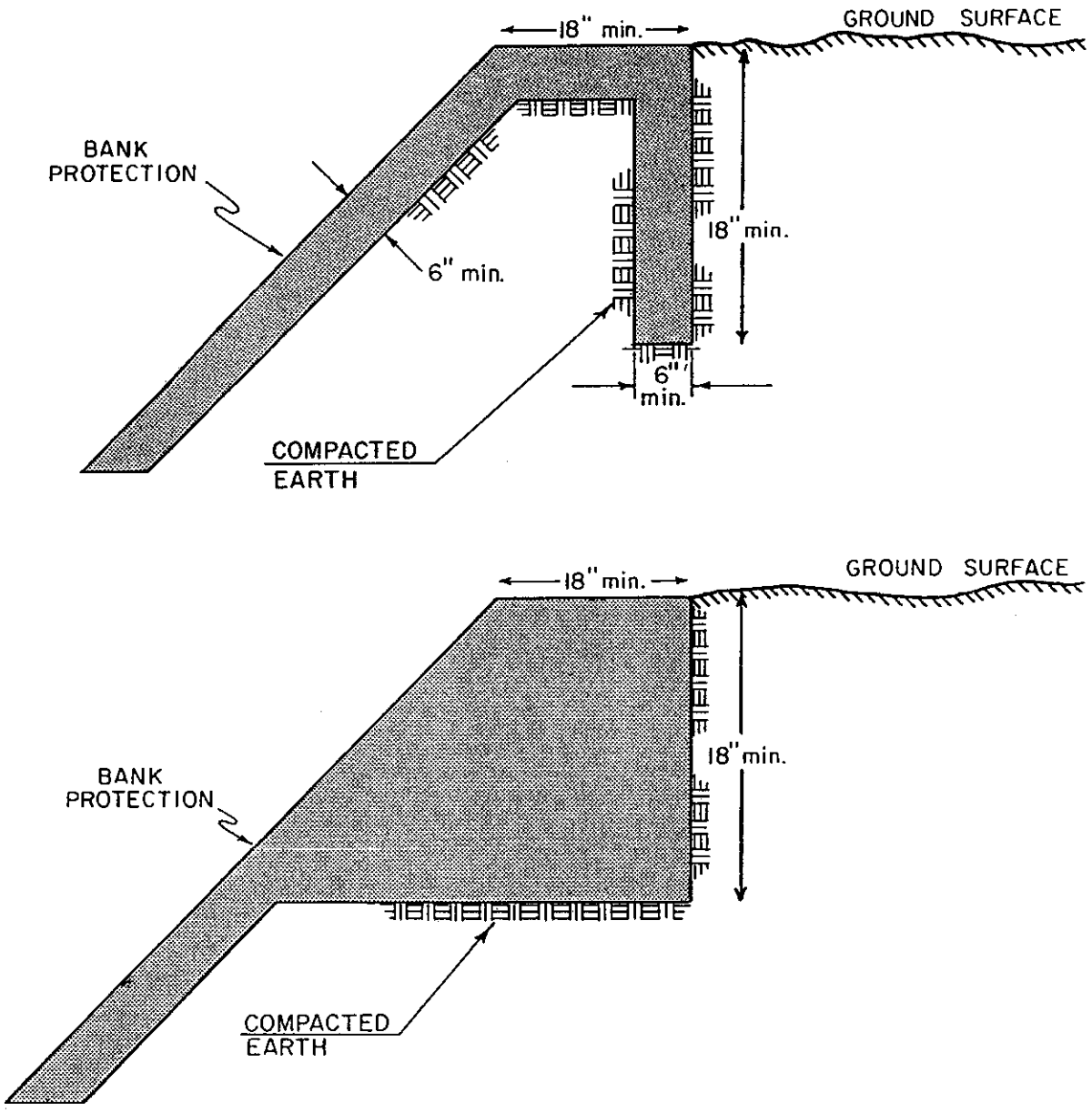


FIGURE 8.1
TYPICAL BANK-PROTECTION KEY-INs
(NOT TO SCALE)

8.5.5 Bank-Protection Toe-Downs

Bank-protection toe-downs refer to the extension of bank protection below the channel bed. Although shallow (i.e., ≤ 6.0 feet) toe-downs are normally vertical, they sometimes are extended below the channel bottom along the same side-slope as the bank itself. The purpose of a toe-down is to prevent failure of the bank protection due to scour or long-term degradation of the channel bed.

Bank-protection toe-downs shall extend to the combined depth associated with general scour, bend scour, local scour, low-flow incisement, sand-wave troughs, and long-term degradation predicted to occur within the channel. The procedures used in calculating these depths are presented in Chapter VI of this Manual. Below grade-control structures, the toe-down shall conform to the geometry of the scour hole, as determined by the methodology also presented in Chapter VI of this Manual.

The soil beneath the channel bed may contain erosion-resistant material, such as caliche. The scour depth calculated using the methodologies outlined in Chapter VI of this Manual may then become unrealistic. A geotechnical report which demonstrates that the bed is composed of erosion-resistant material may be submitted by a soils engineer to justify a reduction in the toe-down depth. However, the toe-down depth along major washes shall never be less than four feet, nor shall toe-downs along minor washes be less than one-half the depth of flow, unless bedrock is encountered.

8.5.6 Low-Flow and Compound Channels

8.5.6.1 Low-Flow Channels

Frequently, the design of a drainage channel that conveys the 100-year discharge leads to a situation in which the bottom of the channel cross section is too wide to efficiently convey the low-flow discharges. As a consequence, these more frequent discharges will create an incised low-flow channel that may meander back and forth across the bed of the channel, instead of allowing flow to spread uniformly across the entire channel width. This meandering process can cause frequent and unnecessary scouring at the toe of the primary banks; and, if left unchecked, can ultimately threaten both the horizontal and vertical stability of the channel. This meander action might even have the capability to destabilize totally lined channels by attacking the lining at the joint between the toe of the bank and the channel bottom. To avoid this meandering process, it is recommended that consideration be given to constructing a small low-flow channel within any larger channel in order to restrict the low flows to a designated area within the primary channel. This low-flow channel should be designed, where practicable, in a manner such that the unit discharge associated with the 2-year event is the same as that which exists under natural conditions. However, practical considerations may require that the low-flow channel, if installed, be somewhat smaller.

8.5.6.2 Compound Channels

A variation upon the concept of a constructed low-flow channel is the compound channel. A compound channel contains a significant portion of the design discharge in a stabilized lower channel. A terrace on each side of the stabilization contains the

remainder of the design discharge at a level above the low-flow channel. This terrace may or may not be stabilized. Compound channels are normally constructed in order to satisfy a multi-use concept (e.g., flood-control channels combined with linear parks). The Appendix to this Manual contains more information on the construction of compound channels.

When a compound channel is to be constructed within the corporate limits of the City of Tucson, the normal design discharge to be used in the low-flow portion of such a channel should be the 2-year to 10-year discharge. Because of the potential for erosion of a compound channel terrace during a large discharge event, bank protection which consists of a thin shell, or "veneer," over the supporting embankment is not recommended for these channels. However, observations made during major flood events in the Tucson area indicate that 9-foot-thick soil cement will remain in place following extensive removal of the bank material behind it. Therefore, this "massive" type of bank protection is recommended for the banks of a low-flow channel constructed within a compound channel, unless technical evidence can be provided to the City Engineer which clearly demonstrates that an alternate approach will function effectively within such a channel during a large discharge event. Because hydraulic roughness varies over the cross section of a compound channel, the hydraulic roughness must be "weighted" to develop a composite roughness coefficient for determining the correct depth/discharge relationship. Equation 6-18 in *Open-Channel Hydraulics* (Chow, 1959) is recommended for use in "weighting" roughness coefficients for compound channels.

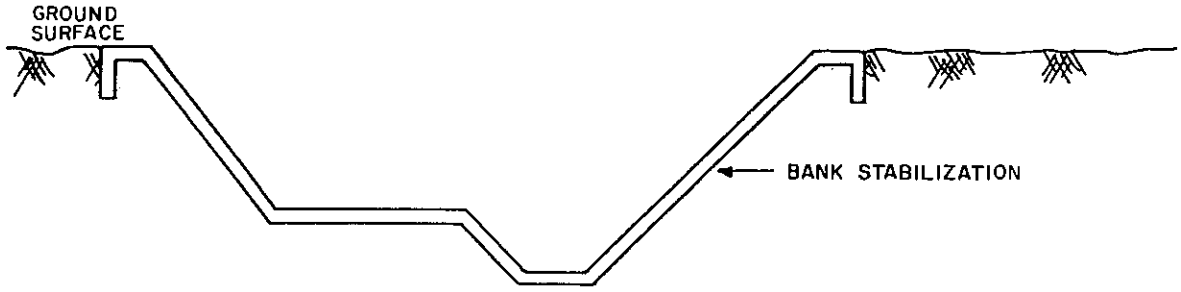
Since compound channels are normally maintenance intensive, they may not be accepted for maintenance by the City of Tucson. The City Engineer will evaluate the acceptability of these channels on a case-by-case basis. The City Engineer may also increase building setbacks from compound channels over those normally associated with completely lined channels, should the erosion potential of the affected watercourse warrant an increased setback. Figure 8.2 illustrates typical cross sections for low-flow and compound channels.

8.5.7 Upstream and Downstream Controls

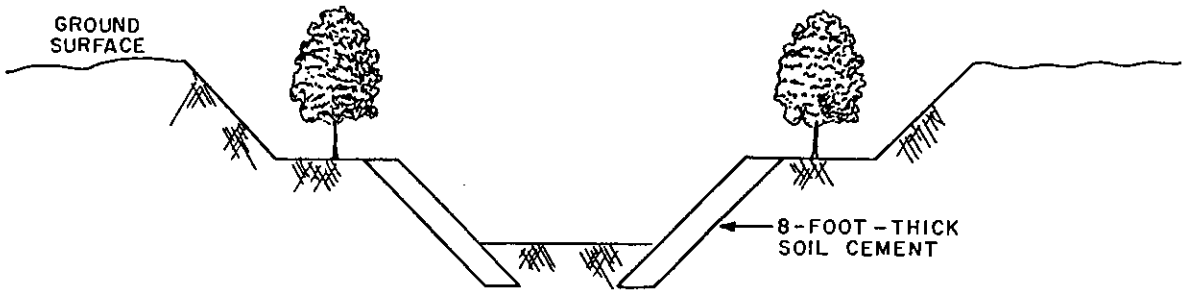
The upstream end of constructed channels must be designed to collect the entire design discharge without raising water-surface elevations on adjacent properties. This may be accomplished by providing wide entrance transitions, or collector channels, at the upstream end. See Section 8.5.11.1 of this Manual for information on entrance transitions.

The downstream end must also be designed to minimize adverse impacts upon adjacent properties. Adverse impacts could result from increased discharge, velocity, or concentration of flow. Mitigation measures to reduce or eliminate these impacts can be achieved by (1) providing expansions at the downstream end of the channels; (2) providing energy-dissipation structures; or (3) building box culverts at street crossings. See Section 8.5.11.2 of this Manual for information on exit transitions.

Drainage must be collected and delivered in the same manner and to the same concentration points that existed prior to channelization, unless a drainage master plan for the area dictates otherwise; or unless an agreement acceptable to the City Engineer



CHANNEL WITH LOW-FLOW CHANNEL (NTS)



COMPOUND CHANNEL (NTS)

FIGURE 8.2
TYPICAL LOW-FLOW AND COMPOUND CHANNELS

is obtained from all affected property owners. If a drainage master plan is available, dedication of all necessary rights-of-way shall be required, as specified within the master plan.

8.5.8 Channel Slope

The slope for a proposed channel is, to a great extent, dependent on the natural topography. However, variations can be achieved by altering the channel alignment within a development, and by adjusting the elevation of inflow and outflow points.

In general, channels with unlined bottoms should not be designed with a slope less than 0.3% in order to prevent vegetation and bed irregularities from creating stagnant pools of water after flows subside. Channels with a concrete bottom may be flatter. Where the natural fall of the land is less than 0.5%, the channel alignment producing the steepest possible slope should be chosen to avoid sediment buildup.

Abrupt changes in slope should be avoided, except where necessary to achieve a specific purpose (e.g., such as to induce a hydraulic jump). For example, if an abrupt change in slope might result in the formation of a hydraulic jump that is not desired, an analysis should be performed to determine whether a jump will occur, and where it will be located. When abrupt slope changes are unavoidable, the slope changes should not cause the channel top width to vary by more than fifteen percent.

Whenever possible, channels should be designed to convey the incoming sediment supply without causing aggradation or degradation. Refer to Chapter VI of this Manual, which addresses erosion and sedimentation, for more detailed information.

Channels with design Froude numbers between 0.86 and 1.16 should be avoided, if at all possible, because of the instability associated with critical flow.

Most channels with earthen beds are constructed on slopes that are steeper than their equilibrium slopes. In such cases, grade-control structures are required. Refer to Chapter VI for grade-control design guidelines.

8.5.9 Hydraulic Jump

A hydraulic jump occurs when flow changes rapidly from low-stage supercritical flow to high-stage subcritical flow. Hydraulic jumps can occur (1) when the slope of the channel abruptly changes from steep to mild; (2) at sudden expansions or contractions in the channel section; (3) at locations where a barrier, such as a culvert or bridge, occurs in a channel of steep slope; (4) at the downstream side of dip crossings or culverts; (5) where channels of steep slope discharge into other channels; and (6) at sharp bends.

Hydraulic jumps are useful in dissipating energy, and consequently they are often purposely forced to occur at drainageway outlet structures in order to minimize the erosive potential of floodwaters. However, because of the large amount of energy dissipated in hydraulic jumps, it is not advisable to allow them to occur except under controlled circumstances. Therefore, if during the design of a channel, it appears that a hydraulic jump might occur at an undesirable location, computations should be made

to determine the height, length, and characteristics of the jump. In addition, steps should be taken to either eliminate the jump or contain it, in order to prevent damage to the channel or surrounding property.

The type of hydraulic jump that forms, and the amount of energy it dissipates, is dependent upon the upstream Froude number, F_1.

The various types of hydraulic jumps that can occur are listed in Table 8.2.

TABLE 8.2: TYPES OF HYDRAULIC JUMPS

UPSTREAM FROUDE NUMBER	TYPE OF JUMP	ENERGY LOSS (%)
$1 < F_1 \leq 1.7$	Undular Jump	0-5
$1.7 < F_1 \leq 2.5$	Weak Jump	5-18
$2.5 < F_1 \leq 4.5$	Oscillating Jump	18-44
$4.5 < F_1 \leq 9$	Steady Jump	44-70
$F_1 > 9$	Strong Jump	70-85

8.5.9.1 Height of a Hydraulic Jump

The depth of flow immediately downstream of a hydraulic jump is referred to as the sequent depth. The sequent depth in rectangular channels can be computed by use of the following equation:

$$Y_2 = 1/2\ Y_1\ ([1 + 8F_1^2]^{1/2} - 1) \qquad \textbf{(8.5)}$$

Where:

Y_1 = Initial (upstream) flow depth, in feet;
Y_2 = Sequent (downstream) flow depth, in feet; and,
F_1 = Froude number upstream of the jump = $V_1/(gY_1)^{0.5}$, where V_1 = initial (upstream) flow velocity, in feet per second.

The solution for sequent depth in trapezoidal channels can be obtained from a trial-and-error solution of Equation 8.6. Equation 8.6 is derived from momentum equations (see Morris and Wiggert, 1972). It is also acceptable, for design purposes, to determine the sequent depth in trapezoidal channels from Equation 8.5. Equation 8.5 is much simpler to solve, and produces only slightly greater values for sequent depth for trapezoidal channels than does Equation 8.6.

$$\frac{ZY_1^3}{3} + \frac{bY_1^2}{2} + \frac{Q^2}{gA_1} = \frac{ZY_2^3}{3} + \frac{bY_2^2}{2} + \frac{Q^2}{gA_2} \qquad (8.6)$$

Where:

Y_1 & Y_2 are as defined in Equation 8.5; and,
b = Channel bottom width, in feet;
Z = Channel side-slope (horizontal/vertical), in feet per foot;
Q = Channel discharge, in cubic feet per second; and,
A_1 & A_2 = Cross-sectional areas of flow upstream and downstream, respectively, of the hydraulic jump, in square feet.

Figures 8.3 and 8.4 can also be used to determine the height of a hydraulic jump.

8.5.9.2 Length of a Hydraulic Jump

The length of a hydraulic jump, L, is defined as the distance from the front face of the jump to a point immediately downstream of the roller. Jump length can be determined from Figures 8.5 and 8.6.

8.5.9.3 Surface Profile of a Hydraulic Jump

The surface profile of a hydraulic jump may be needed to design the profile of extra bank protection, or training walls, required to contain the jump. The surface profile can be determined from Figure 8.7.

8.5.9.4 Location of a Hydraulic Jump

In most cases, a hydraulic jump will occur at the location in a channel where the initial and sequent depths and upstream Froude number satisfy Equation 8.5. This location can be found by performing direct-step calculations in either direction toward the suspected jump location, until the terms of the equation are satisfied. Refer to Section 15.7 of Chow (1959) for detailed information and an example on locating hydraulic jumps.

8.5.9.5 Undular Hydraulic Jumps

An undular hydraulic jump is the type of jump which occurs where the upstream Froude number is between 1.0 and 1.7. This type of jump is characterized by a series of undular waves which form on the downstream side of the jump. Experiments have shown that the first wave of an undular jump is higher than the height given by Equation 8.5. Therefore, the height of this wave should be determined as follows:

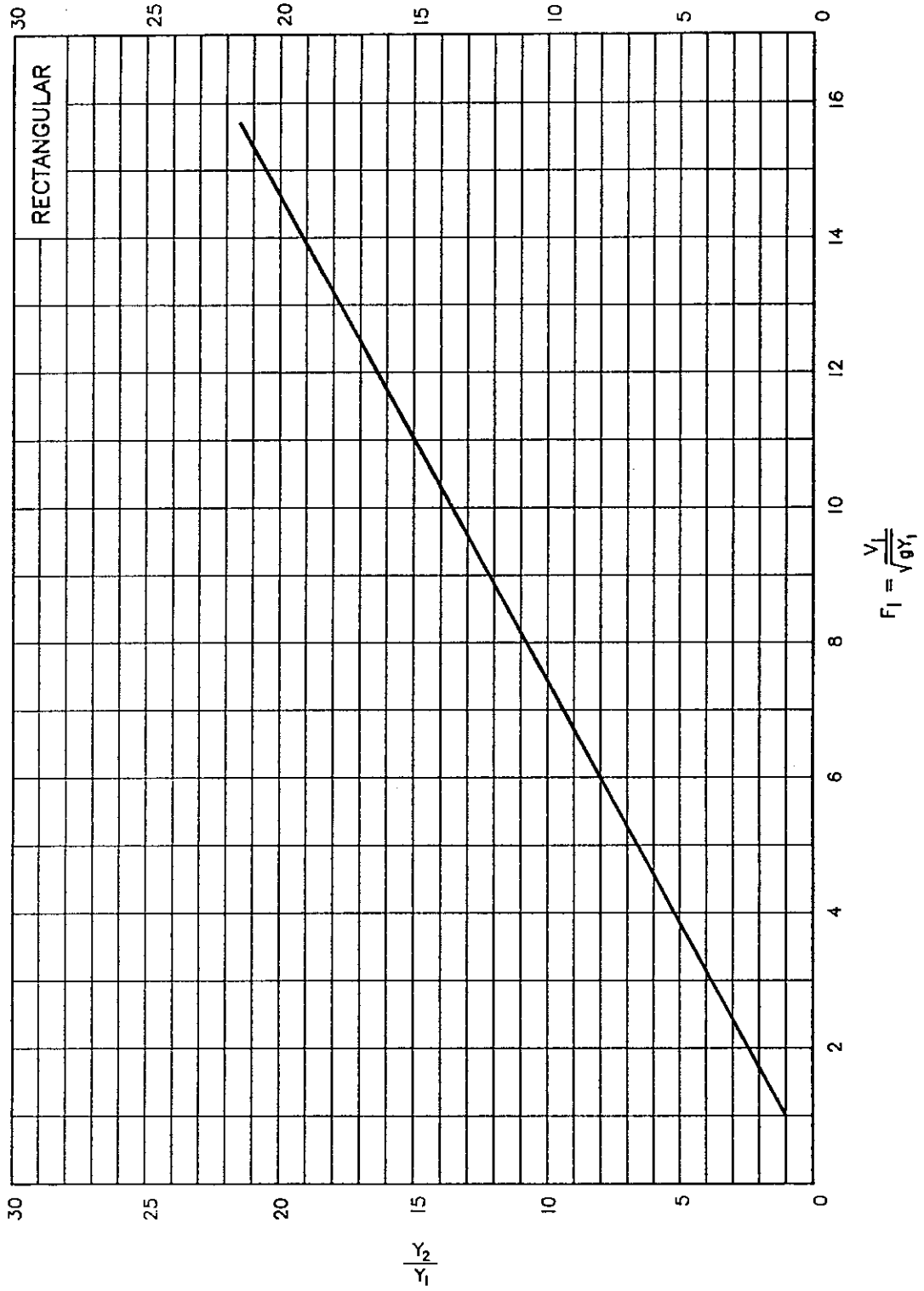


FIGURE 8.3
HEIGHT OF A HYDRAULIC JUMP FOR A HORIZONTAL, RECTANGULAR CHANNEL

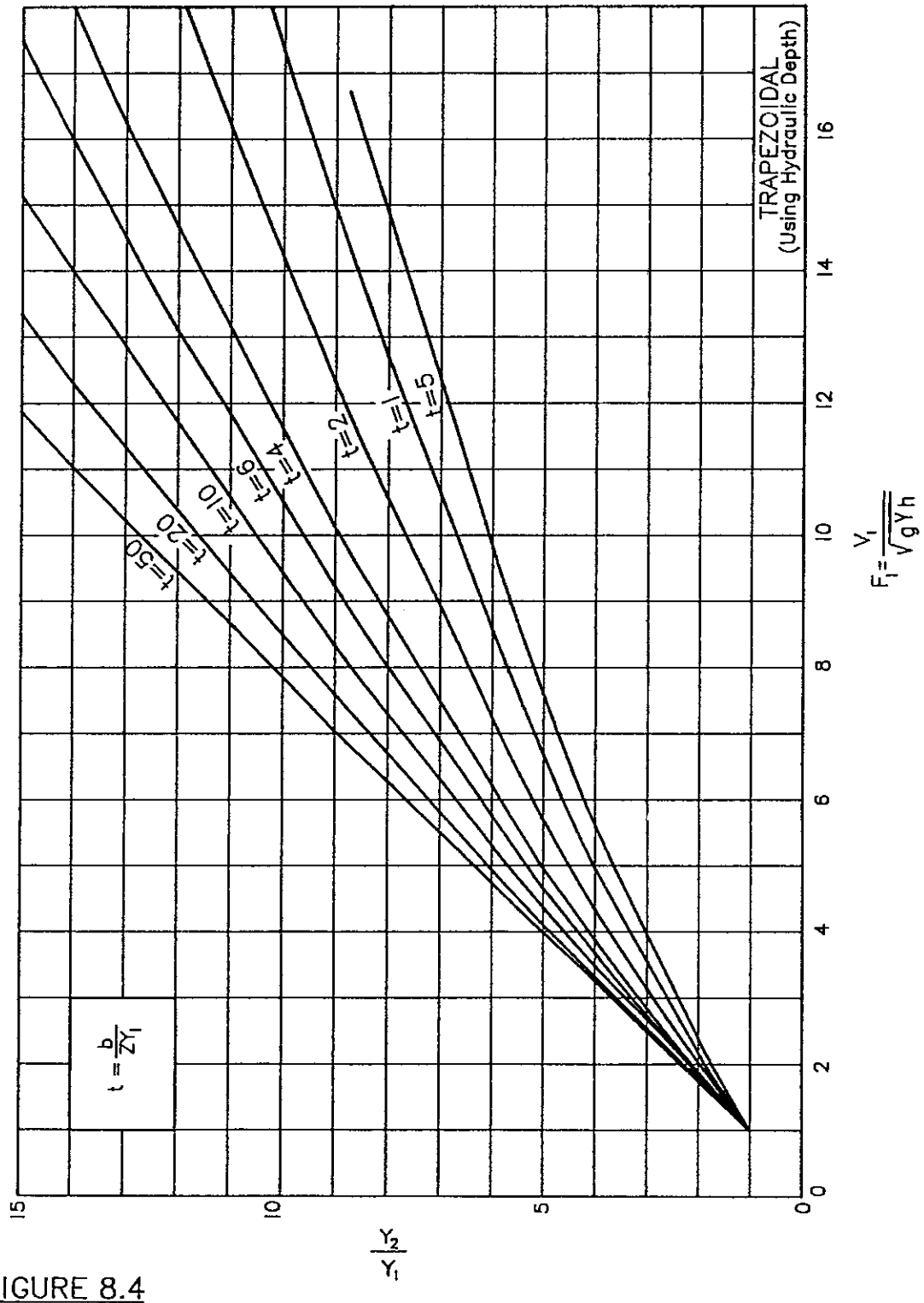


FIGURE 8.4
HEIGHT OF A HYDRAULIC JUMP FOR A HORIZONTAL, TRAPEZOIDAL CHANNEL (USING HYDRAULIC DEPTH)

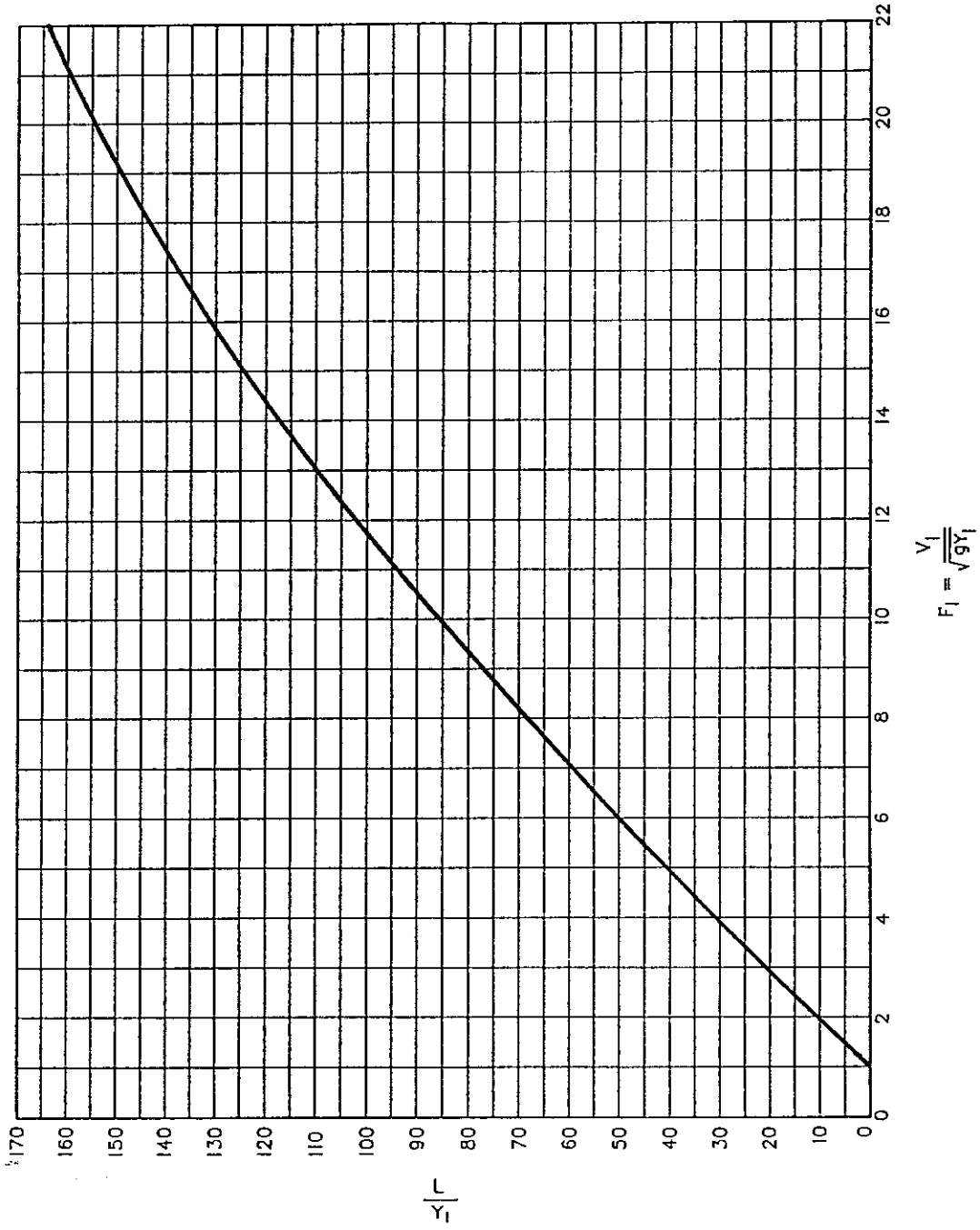


FIGURE 8.5
LENGTH OF A HYDRAULIC JUMP FOR A RECTANGULAR CHANNEL

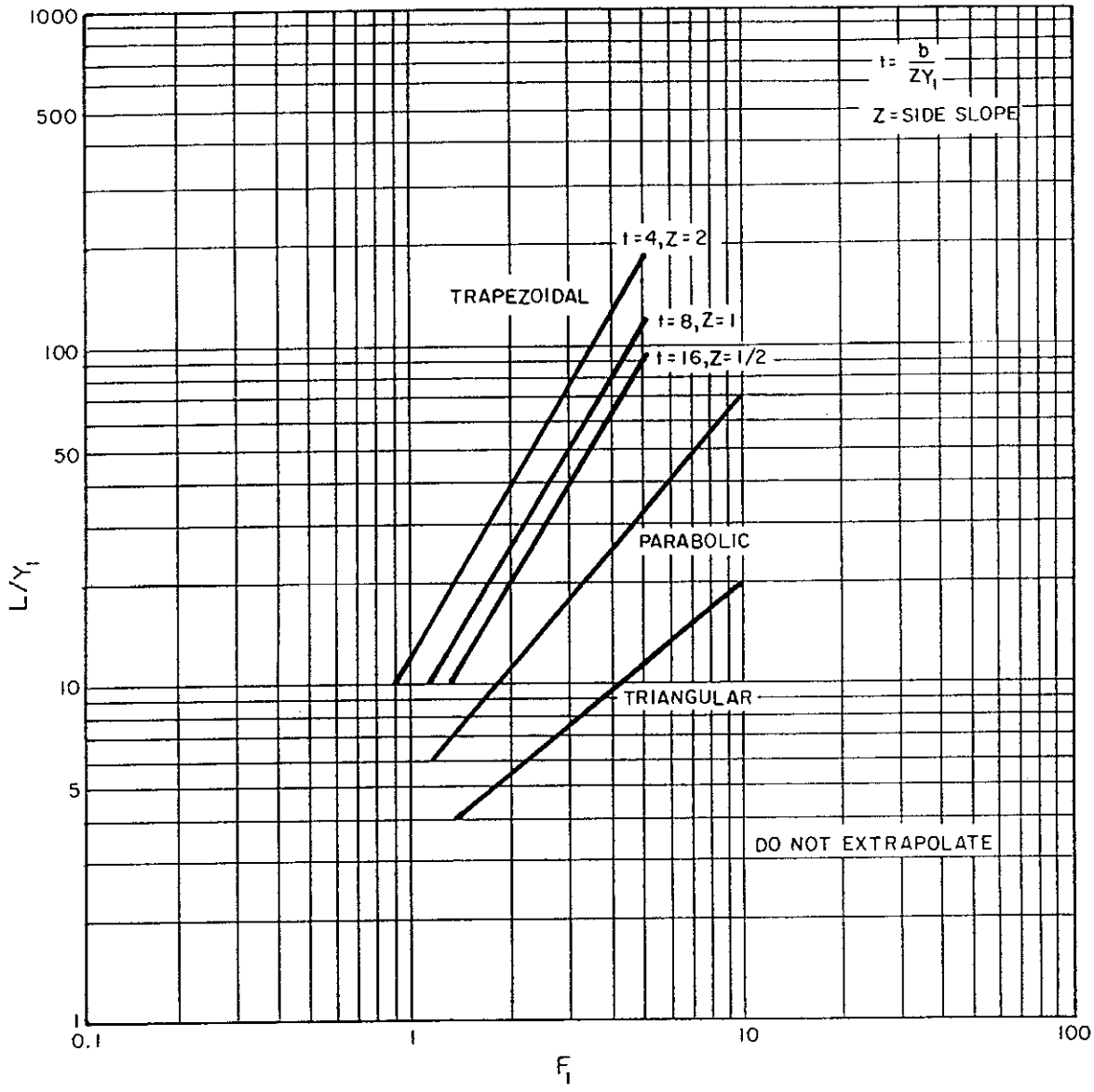


FIGURE 8.6
LENGTH OF A HYDRAULIC JUMP FOR NONRECTANGULAR CHANNELS

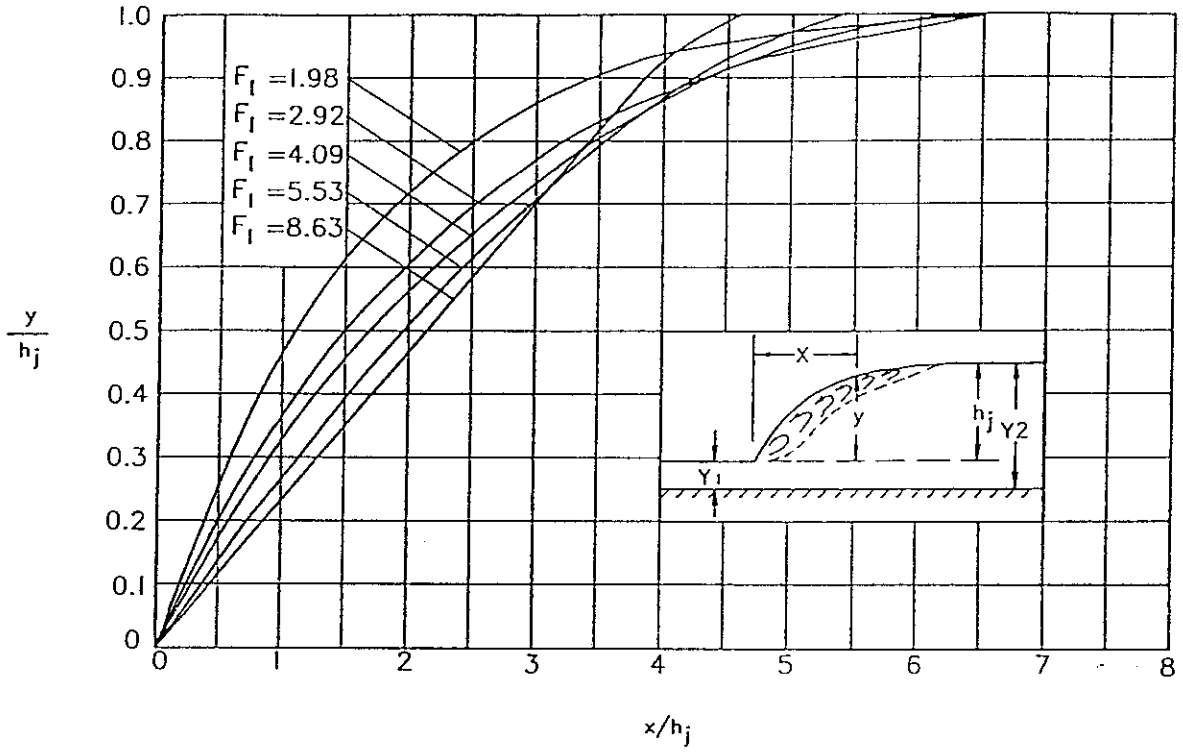


FIGURE 8.7
SURFACE PROFILE OF A HYDRAULIC JUMP

$$\frac{Y_2-Y_1}{Y_1} = F_1^2 - 1 \qquad \textbf{(8.7)}$$

Where all terms are as previously described.

See U.S. Army Corps of Engineers (1970) for the source of this equation.

8.5.10 Flow in a Curved Channel

Flow in a curved channel will create centrifugal forces which will cause a rise in the water surface along the outside of a bend. At the same time, a corresponding depression will be created in the water surface along the inside of the bend. In addition, spiral secondary currents tend to form within the bends. These currents can cause scour to occur along the outside of a bend, and deposition along the inside of a bend. Cross waves that propagate downstream will also form, if the flow around the bend is supercritical.

Although curves are inevitable in the design of most open channels, they should be minimized in order to avoid the special problems associated with their design. The design of channel bends must include consideration for superelevation, limiting curvature, bend scour, and special design curves.

8.5.10.1 Superelevation

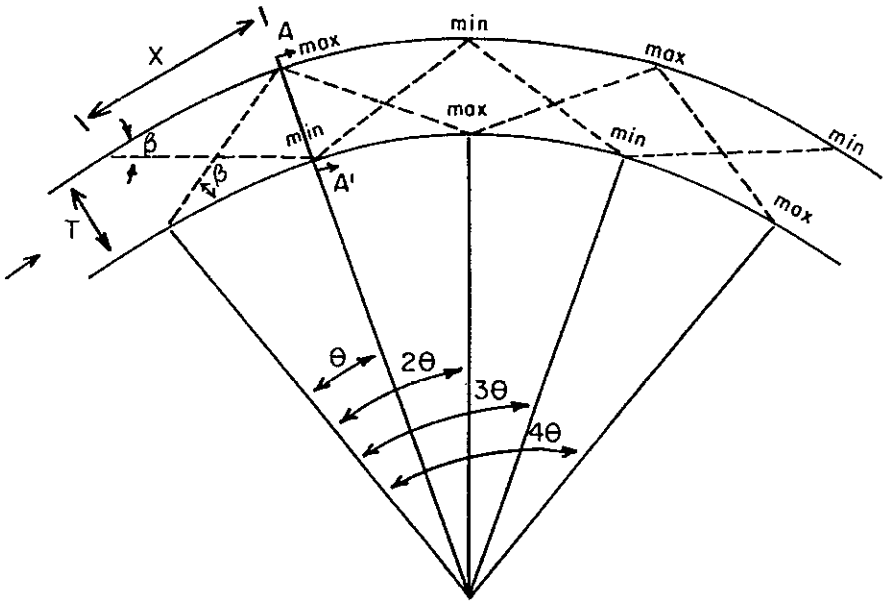
Superelevation is the rise in the water-surface elevation around the outside of a channel bend, with an accompanying lowering of the water surface along the inside of the bend. This outside rise in the water surface is generally measured with respect to the mean depth of flow in an equivalent straight reach. Additional freeboard is required along the outside of a channel bend to account for this rise (see Figure 8.8). Superelevation is computed as follows:

$$\Delta Y = \frac{1.5CV^2T}{gr_c} \qquad \textbf{(8.8)}$$

Where:

ΔY	=	Rise in water-surface elevation (superelevation) around the outside of a channel bend, in feet;
C	=	A coefficient (see Table 8.3);
V	=	Average velocity of flow, in feet per second;
T	=	Channel width at elevation of water surface, in feet;
g	=	Acceleration due to gravity (= 32.2 ft/sec^2);
r_c	=	Radius of curvature of channel centerline, in feet; and,
1.5	=	Factor of safety to account for alluvial channel conditions.

See U.S. Army Corps of Engineers (1970) for the source of this equation.



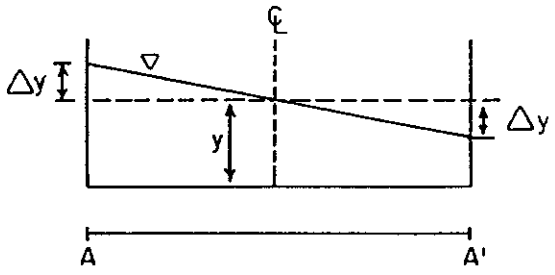


FIGURE 8.8

CROSS-WAVE PATTERN FOR SUPERCRITICAL FLOW IN A CURVED CHANNEL

The coefficient C in Equation 8.8 takes into account the rise due to cross waves and centrifugal forces.

TABLE 8.3: COEFFICIENTS FOR USE IN SUPER-ELEVATION FORMULA

FLOW TYPE	CROSS SECTION	TYPE OF CURVE	VALUE OF C
Tranquil	Rectangular	Simple Circular	0.5
Tranquil	Trapezoidal	Simple Circular	0.5
Rapid	Rectangular	Simple Circular	1.0
Rapid	Trapezoidal	Simple Circular	1.0
Rapid	Rectangular	Easement Transition	0.5
Rapid	Trapezoidal	Easement Transition	1.0

For subcritical flow, the upstream and downstream limits of additional freeboard shall correspond to the beginning and ending points of curvature according to the guidelines in U.S. Army Corps of Engineers (1970). The normal channel freeboard is expected to be adequate to contain any backwater effects of the superelevation upstream of the curve.

For supercritical flow, the disturbances caused by bends (cross waves) can propagate far downstream of the bend. Therefore, special treatment is required to eliminate or minimize these disturbances. Figure 8.8 shows a typical cross-wave pattern. The central angle of the cross-wave pattern, θ, is computed by use of the following equation:

$$\theta = \tan^{-1}\left(\frac{2b}{(2r_c+b)\tan\beta}\right) \qquad (8.9)$$

Where:

θ = Central angle of the cross-wave pattern, in degrees;
b = Channel bottom width, in feet;
r_c = Radius of curvature of channel centerline, in feet;
β = Wave front angle = $\text{Sin}^{-1}(1/F)$, in degrees; and,
F = Froude number.

See Rouse (1950) for the source of this equation.

Freeboard to account for superelevation in channels with supercritical flow shall begin at the upstream point of curvature, and continue at that level to a point downstream of the end of the curve a distance computed by Equation 8.10.

$$L' = \frac{3\,T}{\text{Tan}\,\beta} \qquad \textbf{(8.10)}$$

Where:

L' = Distance of *maximum* superelevation downstream of a curve in a channel with supercritical flow, in feet.

All other terms are as defined previously.

Beyond this point, freeboard to account for superelevation shall taper downward to the normal bank-protection height over an *additional* distance equal to $0.67L'$.

8.5.10.2 Easement Curves

Easement curves can be used to reduce cross waves in bends with supercritical flow (see Table 8.3). Easement curves are placed at both ends of the curve proper, and may be either spiral or circular in order to produce the same hydraulic effect. Circular easement curves are recommended, and must have a radius equal to twice the radius of the main curve. The length of the easement curve, L_e, is computed by:

$$L_e = \frac{0.32\,TV}{Y^{1/2}} \qquad \textbf{(8.11)}$$

Where all terms are as previously described.

8.5.10.3 Banking

Banking is an alternative to providing additional freeboard in order to contain superelevated flows around a channel bend. Banking is a modification of the cross slope of the channel bed such that the inside of the bend is lower than the outside of

the bend. When banking a channel, the difference in elevation between the inside of a bend (lowest point) and the outside of a bend (highest point) should be equal to the quantity V^2T/gr_c, in feet, where all terms are as previously defined. Hydraulically, this method is preferable to providing additional freeboard, but banking is difficult to construct. Therefore, *banking should only be used in conjunction with the design of totally lined channels.*

8.5.10.4 Limiting Curvature

For flow with a design Froude number less than 0.86, the minimum radius of curvature along the center line of the channel shall be three times the channel top width. For flow with a Froude number greater than or equal to 0.86, the minimum radius of curvature shall be computed as follows:

$$r_c = \frac{4V^2T}{gY_h} \qquad \textbf{(8.12)}$$

Where:

r_c = Radius of curvature of channel centerline, in feet;
V = Average velocity of flow, in feet per second;
T = Channel top width at the water surface, in feet; and,
Y_h = Hydraulic depth of flow, in feet.

See U.S. Army Corps of Engineers (1970) for the source of this equation.

The radius of curvature for channels with design Froude numbers greater than or equal to 0.86 shall not be less than $4T$.

8.5.11 Transitions

Transition sections designed to collect and/or discharge flow between the natural floodplain and constructed channels can be located at either the upstream or downstream ends of the constructed channels. They can also be located along a segment, or segments, of a constructed channel itself. In either case, it is necessary to design the flow transition to minimize the disturbance to flow. In the case where flow in a constructed channel is being transitioned back to the natural floodplain, sufficient distance must be allowed for the flow to adequately expand to the original width of the natural floodplain.

8.5.11.1 Entrance Transitions

When the upstream width of flow in a natural channel exceeds the width of proposed channel, a transition section must be provided. For subcritical flow, the angle of convergence, θ, between the center line of the proposed channel and the transitioning levee, or bank, is computed by use of the following equation:

$$\theta = \tan^{-1}\left(\frac{1}{3.375\ F_u}\right) \qquad \textbf{(8.13)}$$

Where:

θ = Transition angle, in degrees (see Figure 8.9); and,
F_u = Upstream Froude number.

See Pima County Department of Transportation and Flood Control District (1984) for the source of this equation.

The length, L, of the transition is computed by use of the following equation:

$$L = \frac{\Delta T}{2\tan\theta} \quad \textbf{(8.14)}$$

Where ΔT is the change in top width, in feet.

See U.S. Army Corps of Engineers (1970) for the source of this equation.

The maximum allowable transition angle is thirty degrees, unless supplemental engineering calculations demonstrate to the satisfaction of the City Engineer that an angle greater than thirty degrees can be used.

In addition to the design calculations associated with the transition section, a backwater analysis must be performed to determine what effect, if any, the transition will have upon upstream water levels.

The transition losses, h_t, to be used in the backwater analysis are to be computed by use of the following equation:

$$h_{tc} = C_c \Delta h_v \quad \textbf{(8.15a)}$$

or

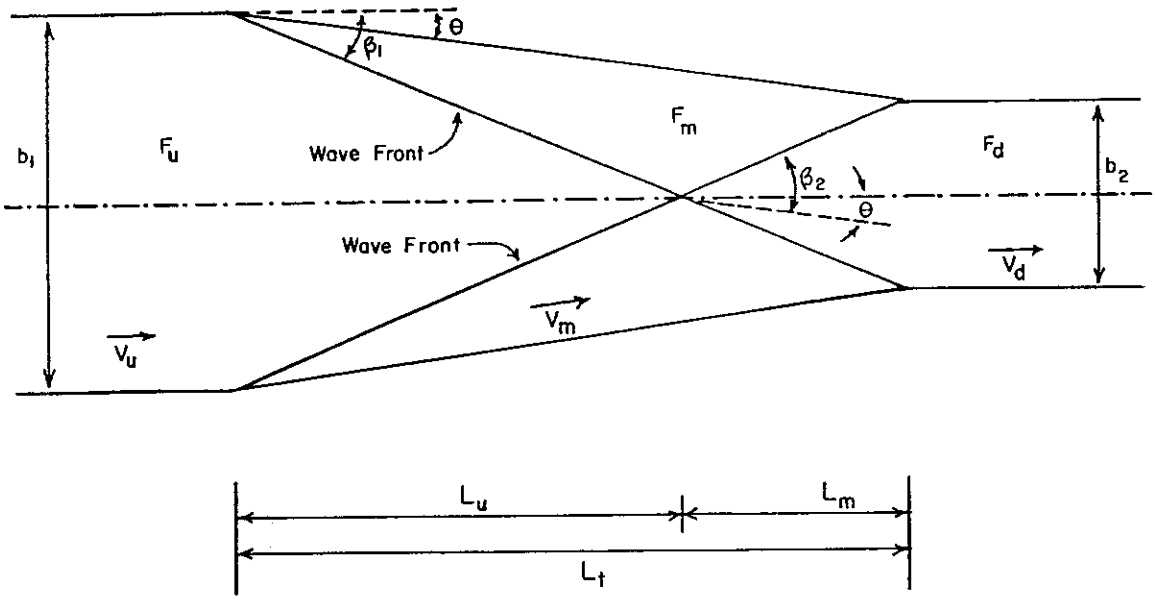
$$h_{te} = C_e \Delta h_v \quad \textbf{(8.15b)}$$

Where:

h_{tc}, h_{te} = Transition losses in contracting and expanding reaches, respectively, in feet;
C_c = Coefficient of contraction;
C_e = Coefficient of expansion; and,
Δh_v = Difference in velocity head between the upstream and downstream end of the transition, in feet.

See U.S. Army Corps of Engineers (1970) for the source of this equation.

The head-loss coefficients of expansion and contraction, C_c and C_e, are obtained from the following table:



NOTE: The subscripts u, m, and d represent upstream, midpoint, and downstream flow conditions, respectively.

FIGURE 8.9
TRANSITION FOR CHANNEL CONTRACTIONS IN SUPERCRITICAL FLOW

TABLE 8.4: HEAD-LOSS COEFFICIENTS FOR USE WITH TRANSITIONS IN OPEN CHANNELS

TRANSITION TYPE	C_c	C_e
Warped	0.10	0.20
Cylindrical quadrant	0.15	0.25
Wedge	0.30	0.50
Straight Line	0.30	0.50
Square End	0.30	0.75

For supercritical flow, entrance transitions must be designed to prevent flow disturbances which could propagate downstream. The convergence angle, θ (Figure 8.9), must be chosen to minimize cross-wave action. To accomplish this, the following three equations must also be satisfied:

$$(1) \quad L_1 = \frac{b_1}{2\text{Tan}\beta_1}; \tag{8.16}$$

and,

$$(2) \quad L_2 = \frac{b_2}{2\text{Tan}(\beta_2-\theta)}; \tag{8.17}$$

and,

$$(3) \quad L = L_1 + L_2 \tag{8.18}$$

$$(4) \quad L = \frac{b_1 - b_2}{2\ \tan\theta} \tag{8.19}$$

Where all terms are as defined in Figure 8.9.

See U.S. Army Corps of Engineers (1970) for the source of these equations.

The procedure for design of a supercritical transition is as follows:

1. Using the upstream Froude number, F_u, compute the wave-front angle, β_1, from the formula:

$$\beta = \text{Sin}^{-1}(1/F) \qquad \textbf{(8.20)}$$

Where:

$\beta = \beta_1$ and $F = F_u$ (see Figure 8.9).

2. Compute the distance L_1 from Equation 8.16.

3. Choose a trial transition length, L, where $L > L_1$.

4. Determine the trial transition angle, θ, from L, b_1, and b_2.

5. Determine the transition Froude number, F_t, from the hydraulic conditions at the distance L_1.

6. From F_t, compute a new wave-front angle, β_2, using Equation 8.20.

7. Compute L_2 according to Equation 8.17.

8. Repeat steps 3 through 7 until Equations 8.18 and 8.19 are both satisfied.

The table below is provided as an additional guide to aid in designing entrance transitions under supercritical flow conditions.

TABLE 8.5: RECOMMENDED CONVERGENCE RATES FOR ENTRANCE TRANSITIONS WITH SUPERCRITICAL FLOW

MEAN CHANNEL VELOCITY (FPS)	WALLFLARE (HORIZONTAL TO LONGITUDINAL)	θ DEGREES
10 - 15	1:10	5.71
15 - 30	1:15	3.81
30 - 40	1:20	2.86

8.5.11.2 Exit Transitions

The length of the exiting transition section, L_{TR}, where flow from the proposed channel is expanded to match the width of the natural floodplain, shall be computed by use of the following equation:

$$L_{TR} = 6.5\ (X_2 - 0.7X_1) \tag{8.21}$$

for subcritical flow ($F_u \leq 1$); and

$$L_{TR} = 6.5\ F_u\ (X_2 - 0.7X_1) \tag{8.22}$$

for supercritical flow ($F_u > 1$).

Where the terms for both equations are as described in Figure 8.10 (F_u = upstream Froude number).

Equations 8.21 and 8.22 are modified from equations found on Plate 24 of "Hydraulic Design of Flood Control Channels," U.S. Army Corps of Engineers (1970).

Exit transition sections are necessary to prevent adverse downstream impacts caused by increased flow velocities and depths. Acceptable transitions are required in all cases unless (1) an agreement, satisfactory to the City Engineer, can be made with all affected downstream property owners; or (2) a drainage master plan has been developed for the wash, which specifies a particular outlet configuration.

8.5.11.3 Internal Channel Transitions

Internal channel transitions must be gradual to minimize flow disturbances. The same formulas presented in the previous sections for entrance and exit transitions shall be used for contractions and expansions of flow within the channel. For transitions which constrict flow under subcritical conditions, use Equation 8.13 to determine the convergence angle. The maximum transition angle shall be thirty degrees. The length of the transition is computed by using Equation 8.14.

Contractions under supercritical flow conditions are computed by using Equations 8.16 through 8.20. The required length for internal expansions under supercritical flow conditions is computed by using Equation 8.22. Should a shorter transition be desired, it must be justified by computations that document the expected wave heights in accordance with procedures contained in standard hydraulics textbooks, such as Chow (1959) and Morris and Wiggert (1972). Additional freeboard, and possibly additional reinforcement of the channel lining, will be required to account for the destructive effects associated with wave formation.

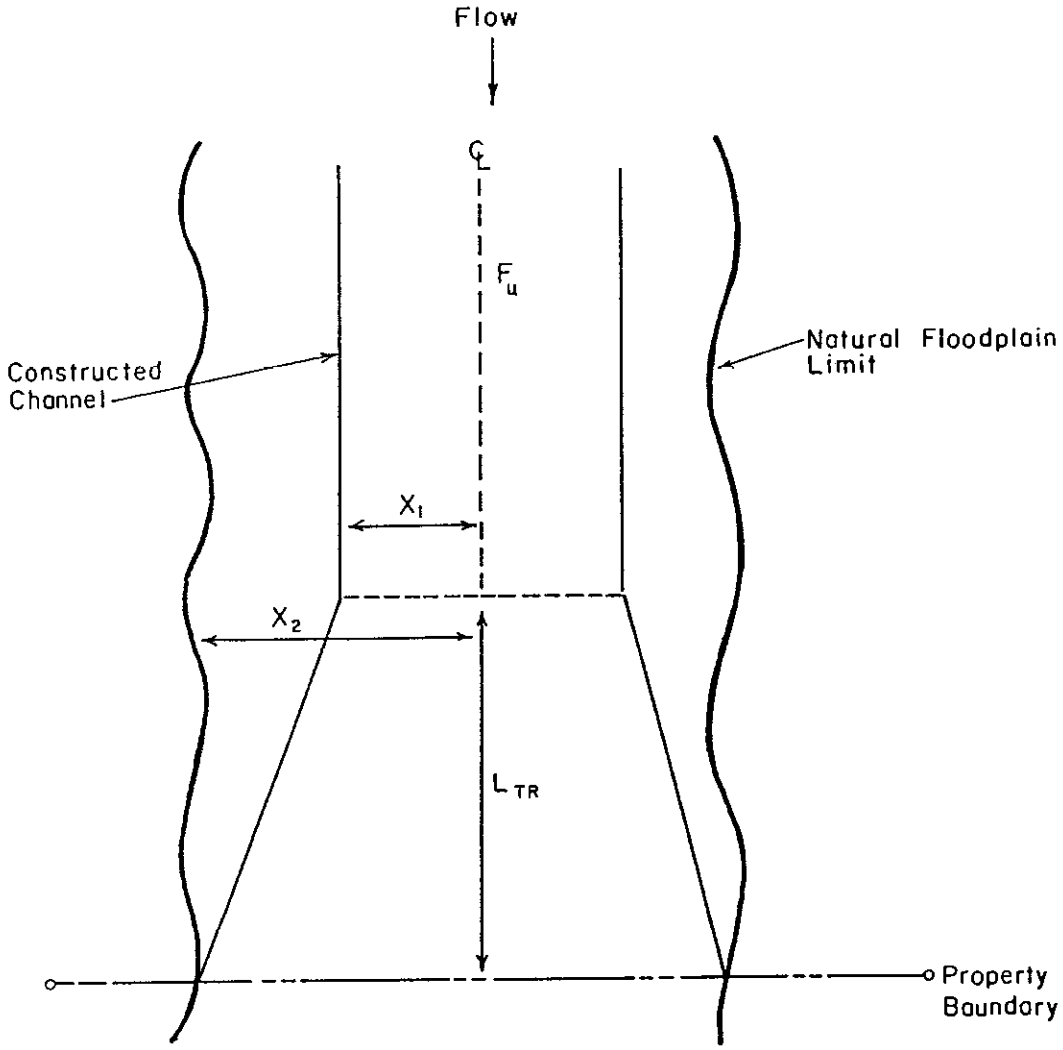


FIGURE 8.10
TRANSITION DISTANCE REQUIRED TO ALLOW FLOW TO RETURN TO NATURAL CONDITIONS

Where flow is to be transitioned from a supercritical state to a subcritical state, a hydraulic jump will develop. The jump must be contained within the transition structure. Additional freeboard will be required, as needed, to contain the jump (refer to Section 8.5.12 of this Manual for information on hydraulic jumps). Additional reinforcement of the channel lining may also be required. One method of ensuring that a hydraulic jump is contained within the designated area is to build an energy dissipator or stilling basin that is designed to contain the jump within a specified reach length. Refer to Chapter IX of this Manual for more detailed information concerning energy dissipators and/or stilling basins.

8.5.12 Channel Confluences

The design of a channel junction or a channel confluence is a very complex procedure due to the many variables involved (e.g., the angle of intersection, discharges, channel and junction shape, and the number of adjoining channels and type of flow encountered). Junctions under subcritical flow conditions must be designed to allow water to merge without creating a backwater condition that can result in the overtopping of one or more of the converging channels. The maximum wave height is generally located on the side-channel wall opposite the junction point, and on the main-channel wall downstream of the junction.

8.5.12.1 General Design Guidelines

General design guidelines for junctions are as follows:

1. Tapered training walls should be constructed between adjoining flows.

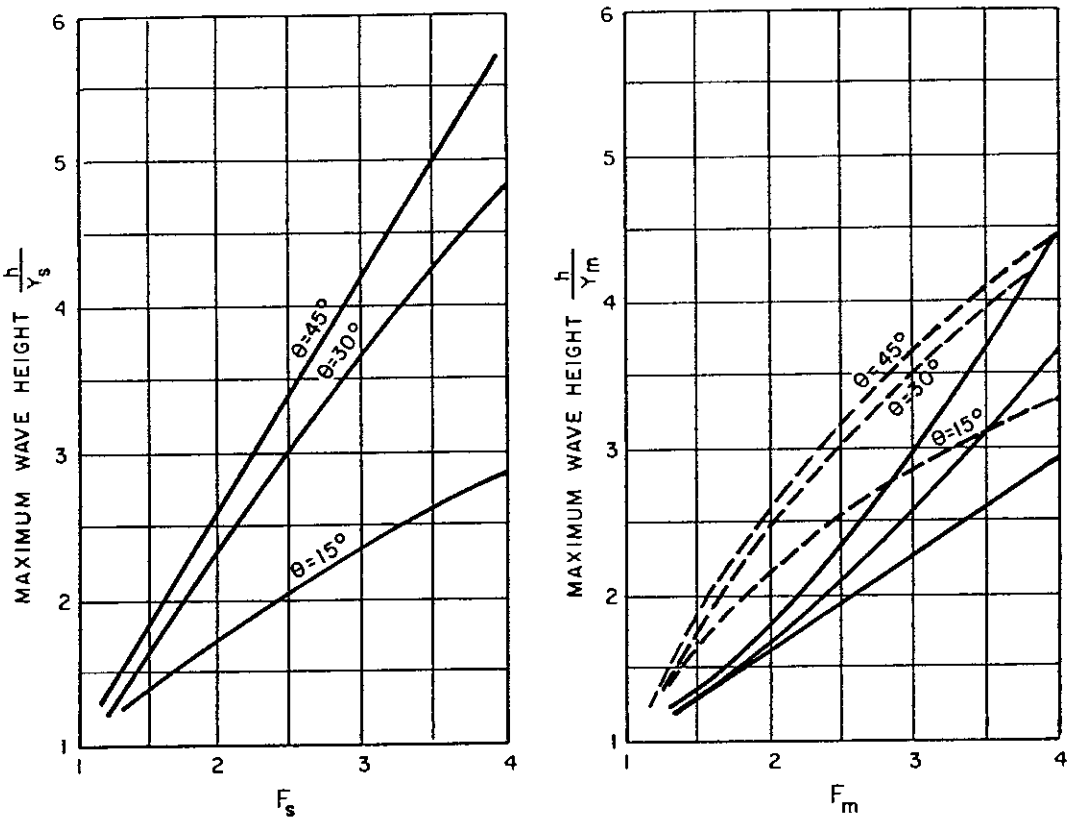
2. The side-channel wave originating at the junction apex should impinge upon the main-channel wall downstream of the enlargement (see Section 8.5.12.3 of this Manual).

3. Junction angles, θ, should be no greater than twelve degrees for subcritical flow, and no greater than six degrees for supercritical flow. Angles greater than these are acceptable, but only if extra bank protection is provided to heights equal to or greater than the maximum wave heights given by Figure 8.11. In addition, if the tributary flow is greater than ten percent of the main channel flow, the maximum angle of the confluence should not be allowed to exceed forty-five degrees. The extra height of bank protection required at a junction should extend downstream of same a distance, L, which is computed from the following equation:

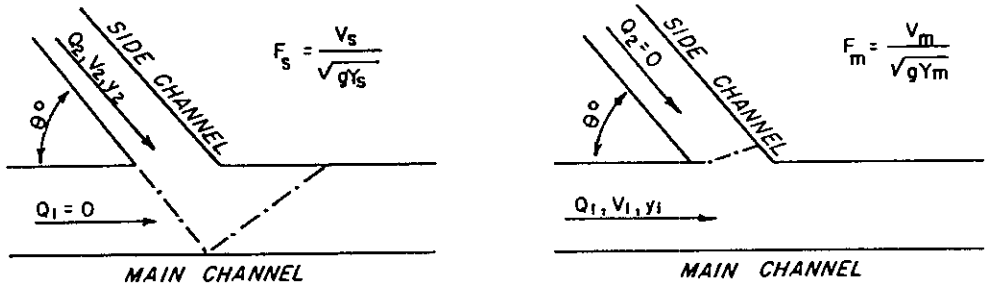
$$L = \frac{3b_2V_2}{V_3 sin\theta} \qquad (8.23)$$

Where:

b_2 = Bottom width of the main channel downstream of the junction, in feet;



NOTE: The subscripts m and s represent the main channel and side channel flow conditions, respectively.



a. SIDE CHANNEL FLOW ONLY

b. MAIN CHANNEL FLOW ONLY

– – – – RECTANGULAR CHANNEL
——— TRAPEZOIDAL CHANNEL
–·–·– APPROXIMATE FLOW LINE PATTERN

FOR DESIGN PURPOSES θ SHOULD NOT BE GREATER THAN 12° FOR SUBCRITICAL FLOWS, AND NOT GREATER THAN 6° FOR SUPERCRITICAL FLOW.

FIGURE 8.11
MAXIMUM WAVE HEIGHT AT A CHANNEL JUNCTION

V_2 = Flow velocity in the main channel downstream of the junction, in feet per second;
V_3 = Flow velocity in the tributary or side channel, in feet per second; and,
θ = Junction angle, in degrees.

Tributary flows that are less than ten percent of the main channel flow may enter at angles up to ninety degrees, but only if extra bank protection is provided to a height that equals the elevation of the energy grade line of the tributary flow. If the angle of confluence is greater than forty-five degrees, the extra bank protection must extend upstream of the junction at least for a distance equal to the bottom width of the tributary channel.

4. Critical flow conditions at junctions should be avoided, if at all possible. Froude numbers should either be below the value 0.86, or greater than the value 1.13.

5. Transition sections should be avoided in the immediate vicinity of junctions.

8.5.12.2 Momentum Equation

Open-channel flow at a junction is best analyzed using the principle of conservation of momentum. There are many momentum-balance equations available that make simplifying assumptions about the flow and confluence configuration. These equations should be used with caution, because many design situations will not adequately meet the assumptions implicit in these equations.

A series of equations developed by the Los Angeles Flood Control District (1973) are of sufficient detail to be applicable for most junctions. These equations shall be used for designing projects to be located within the City of Tucson, unless the engineer can justify using other equations. The general form of the momentum equation is:

$$P_{h2} + M_2 = P_{h1} + M_1 + M_3 \text{Cos}\theta + P_{hi} + P_{hw} - P_{hf} \quad \textbf{(8.24)}$$

Where:
P_{h1} = Hydrostatic pressure on Section 1;
P_{h2} = Hydrostatic pressure on Section 2;
P_{hi} = Horizontal component of hydrostatic pressure on the channel invert;
P_{hw} = Axial component of hydrostatic pressure on the channel walls;
P_{hf} = Retardation force of friction;
M_1 = Momentum of the moving mass of water entering the junction at Section 1;

M_2 = Momentum of moving mass of water leaving the junction at Section 2; and,

$M_3 \text{Cos}\theta$ = Axial component of momentum of the moving mass of water entering the junction at Section 3.

Figures 8.12 and 8.13 show the relationship between the main channel and the tributary channel with respect to the preceding equation. For a trapezoidal channel, the following equations represent the variables comprising Equation 8.24:

$$M_1 = \frac{Q_1^2}{g(b_1+Z_1Y_1)Y_1} = \frac{Q_1^2}{gA_1} \tag{8.25}$$

$$M_2 = \frac{Q_2^2}{g(b_2+Z_2Y_2)Y_2} = \frac{Q_2^2}{gA_2} \tag{8.26}$$

$$M_3 = \frac{Q_3^2}{g(b_3+Z_3Y_3)Y_3} = \frac{Q_3^2}{gA_3} \tag{8.27}$$

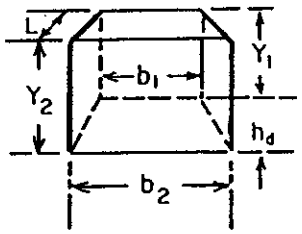
$$P_{h1} = \frac{Y_1^2}{6}(3b_1 + 2Z_1Y_1) \tag{8.28}$$

$$P_{h2} = \frac{Y_2^2}{6}(3b_2 + 2Z_2Y_2) \tag{8.29}$$

$$P_{hi} = \frac{b_1+b_2}{2} h_d \left[Y_1 + \frac{(Y_2-Y_1)(b_1+2b_2)}{3(b_1+b_2)} \right] \tag{8.30}$$

$$P_{hw} = \frac{Y_1+Y_2}{4} \left[\frac{b_1+b_2}{2}(Y_1-Y_2)+h'(Z_1Y_1+Z_2Y_2)+(b_2+Z_2Y_2)Y_2-(b_1+Z_1Y_1)Y_1 \right] \tag{8.31}$$

$$P_{hf} = \frac{L(S_1+S_2)}{4} \left[(b_1 + Z_1Y_1)Y_1 + (b_2+Z_2Y_2)Y_2 \right] \tag{8.32}$$



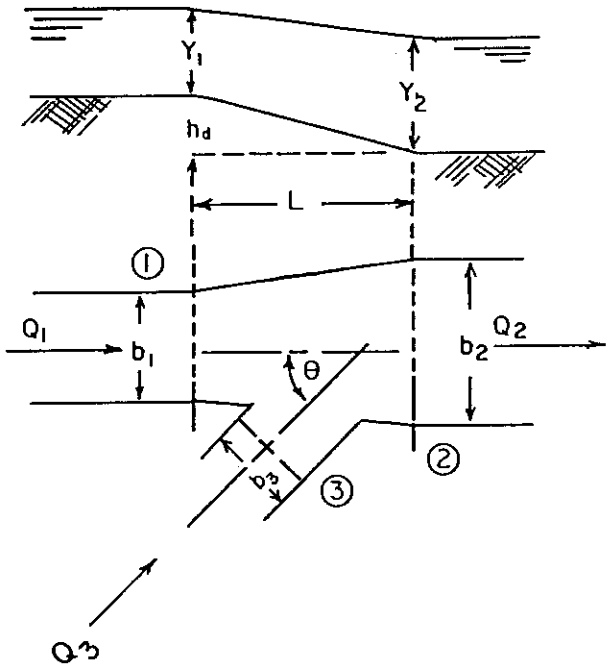


FIGURE 8.12
RECTANGULAR CHANNEL JUNCTION

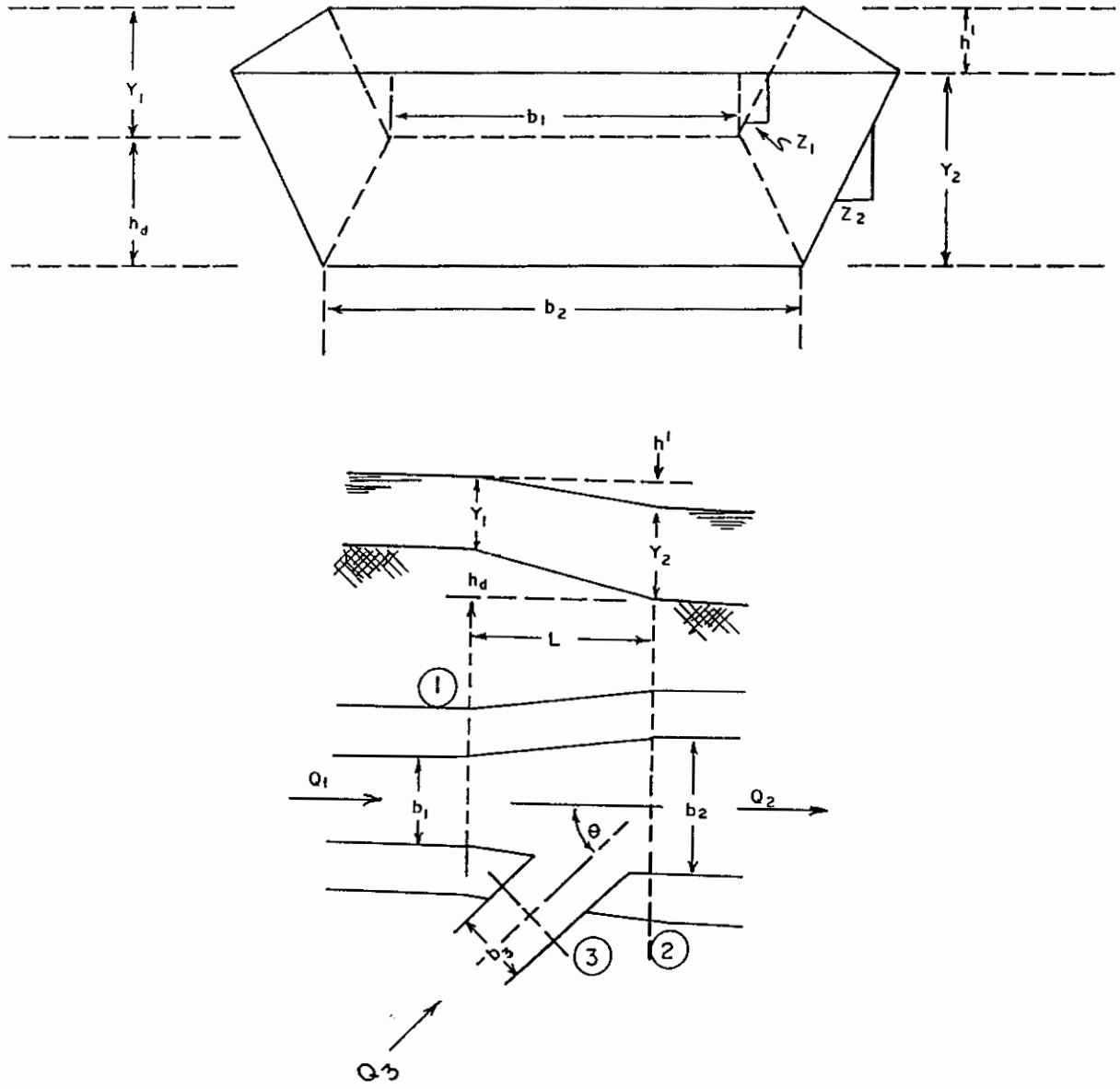


FIGURE 8.13
TRAPEZOIDAL CHANNEL JUNCTION

For a rectangular channel, the equations which represent the variables comprising Equation 8.24 are:

$$M_1 = \frac{Q_1^2}{g b_1 Y_1} \tag{8.33}$$

$$M_2 = \frac{Q_2^2}{g b_2 Y_2} \tag{8.34}$$

$$M_3 = \frac{Q_3^2}{g b_3 Y_3} \tag{8.35}$$

$$P_{h1} = \frac{b_1 Y_1^2}{2} \tag{8.36}$$

$$P_{h2} = \frac{b_2 Y_2^2}{2} \tag{8.37}$$

$$P_{hi} = h_d \left(\frac{b_1+b_2}{2}\right) \left[Y_1 + \frac{(Y_2-Y_1)(b_1+2b_2)}{3(b_1+b_2)}\right] \tag{8.38}$$

$$P_{hw} = \frac{Y_1+Y_2}{4} (b_2-b_1) \left[Y_1 + \frac{(Y_2-Y_1)(Y_1+2Y_2)}{3(Y_1+Y_2)}\right] \tag{8.39}$$

$$P_{hf} = \frac{L(S_1+S_2)}{4} (b_1 Y_1 + b_2 Y_2) \tag{8.40}$$

Where:

b_1, b_2, b_3	=	Bottom widths of channels 1, 2, and 3, respectively, in feet;
Y_1, Y_2, Y_3	=	Flow depths in channels 1, 2, and 3, respectively, in feet;
Q_1, Q_2, Q_3	=	Discharges in channels 1, 2, and 3, respectively, in cubic feet per second;
Z_1, Z_2, Z_3	=	Side-slopes of channels 1, 2, and 3, respectively (horizontal/vertical), in feet per foot;
S_1, S_2	=	Friction slopes of channels 1 and 2, respectively.
L	=	Length of channel junction, in feet.

h_d = Vertical drop in channel bottom through the junction, in feet; and,

h' = Vertical drop in water surface through the junction, in feet.

8.5.12.3 Design Procedure: Supercritical Flow

The design of junctions under supercritical flow conditions involves an iterative procedure in which different curve layouts are checked against the momentum equation until one is found that is acceptable. The upstream channel widths and hydraulic conditions are known, while the downstream channel width and depth of flow are the unknown parameters. The procedure is as follows:

1. Assume a downstream width of the channel bottom based upon the total discharge, the approximate channel shape, the selected roughness, and the slope. It is suggested that the first estimate of the width be the combined width of the two upstream channels (b_1+b_3).

   (In the following discussion b_1 refers to the upstream width of the main channel, b_2 is the width of the main channel at the downstream end of the junction, b_3 is the width of the secondary [tributary] channel, and b_4 is the width of the main channel downstream and beyond the influence of the junction).

2. Prepare the confluence layout assuming that the main-channel walls are parallel to the channel center line, as shown in Figure 8.14. If the difference (Δb_1) in widths between b_1 and b_2 is less than b_3, a centerline offset, as shown in Figure 8.14 A, is recommended. If Δb_1 is greater than b_3, an offset with respect to the right bank, as shown in Figure 8.14 B, is recommended to ensure that the horizontal distance between the parallel alignment of the left banks of the main channels b_1 and b_2 is equal to or less than b_3.

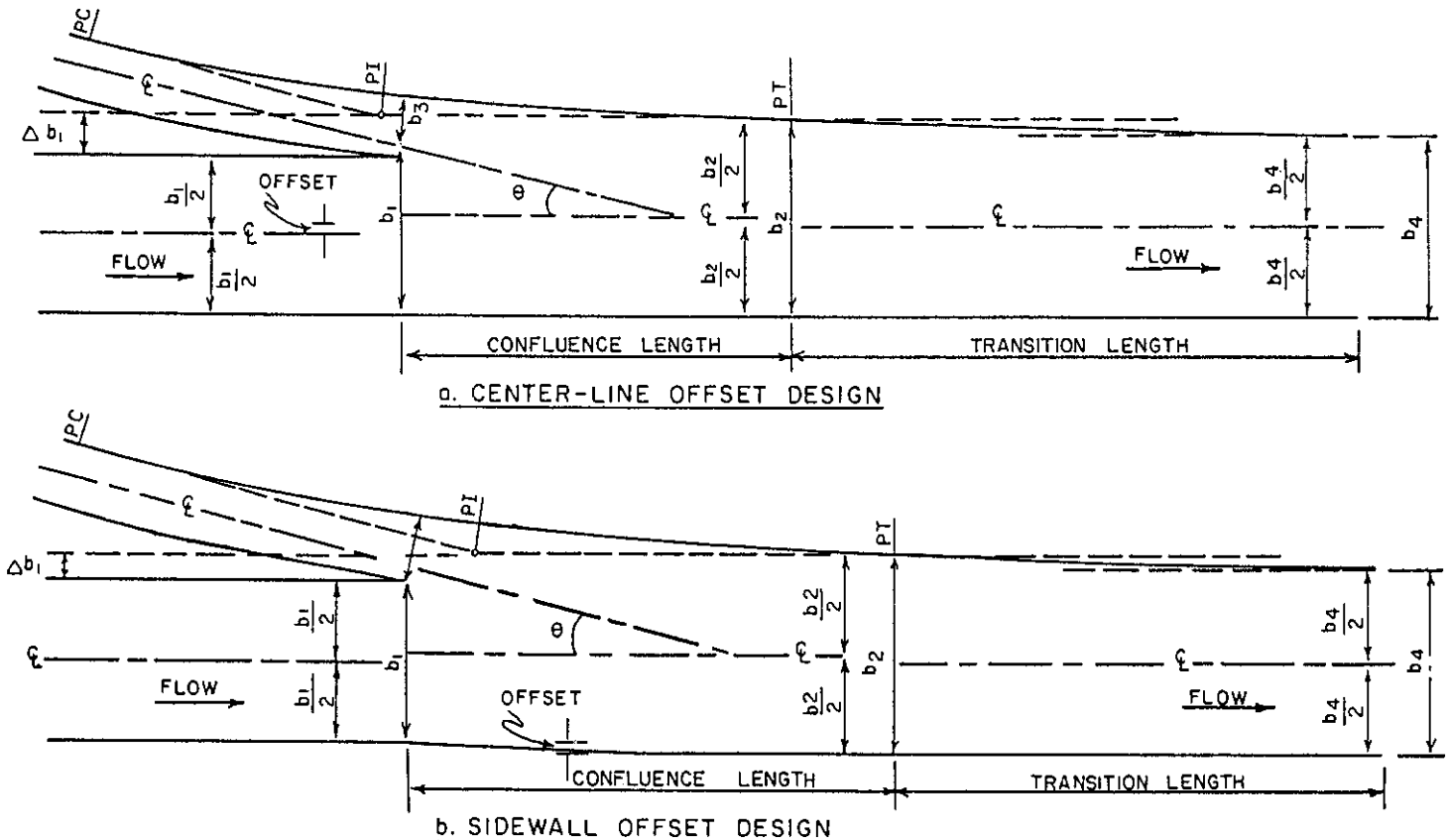
3. Using the point of intersection, *PI*, of the channel walls, draw a circular curve which is determined by the apex angle, θ (Figure 8.14). The radius of curvature of the curve is determined by use of the following equation:

$$r_c = \frac{4V_3^2 b_3}{gY_3} + 400 \qquad (8.41)$$

Where all terms are as previously defined.

See U.S. Army Corps of Engineers (1970) for the source of this equation.

This curve will connect the intersecting, straight channel walls, as shown in Figure 8.14, and will represent the revised edge of the bottom of the channel through the confluence area.



*FOR DESIGN PURPOSES, θ SHOULD BE NOT GREATER THAN 12 DEGREES FOR SUBCRITICAL FLOW AND NOT GREATER THAN 6 DEGREES FOR SUPER-CRITICAL FLOW.

FIGURE 8.14
TYPICAL CONFLUENCE LAYOUTS

4. Make the inside bank of the tributary channel bottom concentric with the circular curve, and locate the apex of the junction at the point where this edge of the tributary channel meets the main channel. The distance, L_o, between the Point of Tangency, PT, and the junction apex is computed by use of the following equation:

$$L_o = (r_c + b_3) \operatorname{Sin}\left[\operatorname{Cos}^{-1}\left[1 - \frac{b_3 - \Delta b_1}{r_c + b_3}\right]\right] \tag{8.42}$$

The total length of the curve, L_{ct}, from PC to PT, can be computed from:

$$L_{ct} = \frac{2\pi r\theta}{360} \tag{8.43}$$

The location of the point of curvature, PC, can be computed from:

$$PC = PI - r \operatorname{Tan}\frac{\theta}{2} \tag{8.44}$$

The location of the point of Tangency, PT, can be computed from:

$$PT = PC + L_{ct} \tag{8.45}$$

Figure 8.14 shows the relationship of these parameters.

5. Compute the confluence length, L_c, by using the following equations (Los Angeles County Flood Control District, 1973):

$$L_{c1} = \frac{b_3}{\operatorname{Sin}\theta}\ ; \tag{8.46}$$

and,

$$L_{c2} = 5(b_2 - b_1) \tag{8.47}$$

and compare these lengths to the distance L_o (Equation 8.42) from the apex to the PT point. The longest of the three is the confluence length, L_c.

6. Using the confluence length, L_c, and the momentum equation (i.e., Equation 8.24), determine the depth of flow and hydraulic conditions at b_2. If either the depth of flow or water-surface elevation is significantly different than its value in the upstream main channel, select a new b_2 and repeat the procedure.

7. Once satisfactory hydraulic conditions at b_2 have been established, determine the transition distance to b_4 by the procedure outlined in Section 8.5.11 of this Manual. (Note: b_2 in Section 10.5.11 of this Manual is equivalent to b_4 in this section of the Manual.)

   An example of this procedure is provided at the end of this chapter.

When designing junctions, consideration should be given to the waves that will occur along the opposite channel wall when only one of the converging channels is discharging into the composite channel. Due to the sporadic nature of thunderstorms in the Tucson Area, it is possible to have flow in one channel and not in the other. Under supercritical flow conditions, experiments have shown that waves can be quite high, particularly if the angle of confluence is excessive. Fortunately, if the angle of confluence is equal to or less than twelve degrees (preferably six degrees), and the design procedure described above is followed, these type of waves should not be a problem. However, should a greater angle of confluence be dictated by site conditions, extra freeboard will be required according to the procedure described in Section 8.5.12.1(3) of this Manual in order to contain waves created by flow impinging onto the opposite bank.

8.5.13 Collector Channels

Collector channels are generally designed to collect unconsolidated sheet flow, or wide, shallow, braided flow for the purpose of removing the downstream property from the floodplain. Collector channels generally do not follow the existing drainage pattern. Therefore, they have more stringent design requirements than do most other channels.

8.5.13.1 Cross Section and Slope

Collector channels provide the best hydraulic performance if the width/depth ratio is as low as possible. Cross sections with wide bottoms and low depths should be avoided, if topography permits. Channel slopes should be as steep as reasonably possible to help accelerate the water and prevent sediment buildup.

8.5.13.2 Depth

The discharge in collector channels increases with distance along the channel. Collector channel flows are subject to head losses associated with the impact and turbulence created by flow entering the channel over its bank, in addition to the normal losses created by friction. Therefore, normal-depth procedures and step-backwater calculations are *not* applicable. The correct procedure for analyzing spatially-varied flow of the type that occurs in collector channels is given in many

hydraulics textbooks under the heading "Side-Channel Spillways" (e.g., see Chow, 1959, page 329).

The minimum depth of a collector channel in the City of Tucson shall be twice the critical depth of the design flood for channels with supercritical slopes, and twice the normal depth of the design flood for channels with subcritical slopes. This depth will vary along the length of the channel as the discharge increases. The transition from the collector channel to the main channel shall be designed using standard backwater procedures. Backwater computations should begin at the point where inflow over the side of the collector channel ceases, and end at a point where normal depth is encountered, or where flow is no longer affected by the collector channel.

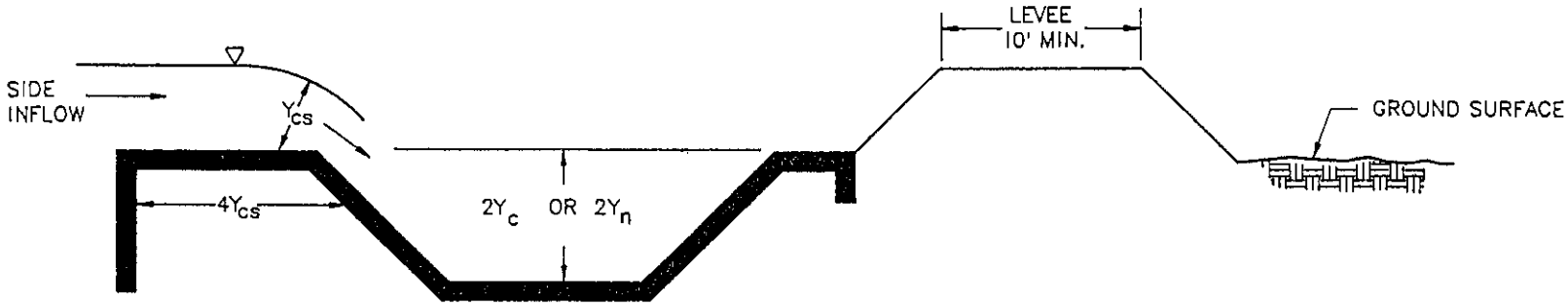
When unusual circumstances exist, such as the presence of a definite control point at or near the end of a collector channel, the "Method of Numerical Integration," as outlined in Chow (1959) shall be used to design same. This method may also be used if there is reason to believe that the guidelines presented above result in an overdesign of a collector channel.

8.5.13.3 Erosion Protection

Erosion protection for a collector channel requires special consideration because of inflow from the side. Hydrostatic pressure in the soil and seepage behind the bank protection can cause the bank protection to fail. Another problem is scour caused by side inflow.

To prevent failure of the bank protection along a collector channel due to side inflow, seepage, and/or hydrostatic pressure, a horizontal concrete apron is normally required along the top of the upstream (inflow) side of the collector channel. This concrete apron shall be connected to the bank protection, and have a width, measured perpendicular to the bank, which is at least four times the critical depth of side inflow during the design flood. A key-in at the upstream edge of the concrete apron should extend to a depth equal to the depth of the collector channel. However, the apron and key-in are not required if the channel bank is constructed of 9-foot-thick soil cement.

The bottom of the collector channel shall be lined, unless the toe-down protection for the bank is deep enough to protect against the scour caused by side inflow. The procedures given in Chapter VI of this Manual shall be used to compute side-inflow scour depth. Normal-depth shall be used as the tailwater depth in the channel for this equation. If the width of the channel is less than five times the computed scour depth, extra toe-down protection to the full depth of scour is needed on *both* banks. For channel bottom widths at least ten times the depth of scour, no extra toe-down is needed on the opposite bank. For widths between five and ten times the depth of scour, the toe-down on the opposite bank should be computed via a linear interpolation between the side-flow scour depth and the normal toe-down depth. A typical collector channel is shown in Figure 8.15.



Y_{cs} = CRITICAL DEPTH OF SIDE FLOW

Y_c = CRITICAL DEPTH OF CHANNEL FLOW

Y_n = NORMAL DEPTH OF CHANNEL FLOW

NOTE:
A PROPERLY DESIGNED LEVEE OF HEIGHT Y_{cc} OR Y_{nc} CAN BE CONSTRUCTED ALONG THE BANK OPPOSITE THE SIDE INFLOW IN LIEU OF THE $2Y_{cc}$ OR $2Y_{nc}$ REQUIREMENT.

FIGURE 8.15
TYPICAL COLLECTOR–CHANNEL CROSS SECTION

8.5.13.4 Sediment

Depending upon the amount of sediment supply, and upon sediment-transport capacity, a collector channel could either aggrade or degrade, if not properly designed. The reader is referred to Chapter VI of this Manual for those procedures that consider the effects of deposition and/or scour of alluvial sediments upon open-channel design.

8.5.13.5 Additional Design Considerations

Material removed by excavation to form the collector channel could be used to construct a levee along the side opposite the lateral inflow. Such a levee, if properly designed, would then be able to serve as a substitute for the depth requirement otherwise imposed upon the design of a collector channel (i.e., two times the appropriate flow depth), and would ensure that all lateral inflow is captured by the collector channel. The minimum height of such a levee should be equal to the normal depth of flow at the peak of the design flood for subcritical conditions, and equal to the critical depth of flow at the peak of the design flood for supercritical conditions.

The lowest floor of the first tier of buildings along the downstream side of a collector channel should be at least one foot above the 100-year water-surface elevation in the collector channel in order to safeguard against possible failure of the collector-channel embankment. This water-surface elevation shall be determined either by the Method of Numerical Integration or by assuming an elevation equal to either (1) two times the normal depth at the peak of the design flood for subcritical flow, or (2) two times the critical depth at the peak of the design flood for supercritical flow, whichever is greater.

EXAMPLE 8.1: SEQUENT DEPTH IN A TRAPEZOIDAL CHANNEL

A hydraulic jump is to be formed in a trapezoidal channel through the use of baffle blocks and an abrupt change in slope from steep to mild. Hydraulic conditions *upstream* of the jump are:

Discharge (Q)	=	500 cfs
Channel Slope (S)	=	0.015
Bottom Width (b)	=	10 ft
Side Slopes (Z)	=	1:1
Roughness (n)	=	0.015
Depth (Y)	=	2.3 ft
Froude Number (F_u)	=	2.2
Hydraulic Depth (Y_h)	=	1.9 ft

Equation 8.6 will be used. Normal depth *upstream* of the jump is 2.3 feet; so, as an initial estimate, a sequent depth of four feet will be chosen. From Equation 8.6:

$$\frac{1(2.3)^3}{3} + \frac{10(2.3)^2}{2} + \frac{500^2}{g(28.3)} = \frac{1(4)^3}{3} + \frac{10(4)^2}{2} + \frac{500^2}{g(56.0)}$$

$$304.9 = 240.0$$

Momentum does not balance, so a new sequent depth is chosen. By trial and error, the sequent depth is found to be 5.6 ft:

$$\frac{1(2.3)^3}{3} + \frac{10(2.3)^2}{2} + \frac{500^2}{g(28.3)} = \frac{1(5.6)^3}{3} + \frac{10(5.6)^2}{2} + \frac{500^2}{g(87.4)}$$

$$304.9 = 304.2 \quad \text{(close enough)}$$

The engineer should exercise care in using Equation 8.6, especially with calculator or computer-program "root solvers," because there are two other roots besides the correct one for sequent depth. One obvious solution is $Y_2 = Y_1$. The third root is usually negative. In this case, the value -13.1 also satisfies the equation.

Figure 8.4 can also be used to solve for sequent depth in this example. To do this, first compute $t = 10/[1(2.3)] = 4.3$. From Figure 8.4, using $F_u = 2.2$ and $t = 4.3$, $Y_2/Y_1 = 2.4$. Y_2 is then: 2.4 (2.3 ft) = 5.5 ft.

EXAMPLE 8.2: THE DESIGN OF AN OPEN-CHANNEL JUNCTION UNDER SUPER-CRITICAL FLOW CONDITIONS

In this example, a main-channel flow, Q_1, of 2000 cubic feet per second (cfs) is to be joined by a side-channel flow, Q_3, of 775 cfs. The confluence angle, θ, is six degrees. The slope and bottom-width of the side channel have been established to ensure that the depth of flow at the junction is the same as the depth of flow in the main channel. It is desired that this depth of flow be maintained throughout the junction.

Hydraulic conditions in the section located upstream of the channel junction are as follows:

Main Channel			Side Channel		
Q_1	=	2000 cfs	Q_3	=	775 cfs
n	=	0.015 (concrete)	n	=	0.015 (concrete)
b_1	=	20.0 ft	b_3	=	8.0 ft
Y_1	=	4.0 ft	Y_3	=	4.0 ft
Z	=	1:1	Z	=	1:1
S_1	=	0.01 ft/ft	S_3	=	0.008 ft/ft
F_1	=	2.0	F_3	=	1.70
A_1	=	95.8 ft^2	A_3	=	47.8 ft^2
V_1	=	20.9 fps	V_3	=	16.2 fps

Hydraulic conditions in the composite channel section located downstream of the junction are as follows:

Q_4	=	2775 cfs
n	=	0.015 (concrete)
b_4	=	28.0 ft
Y_4	=	4.0 ft
Z	=	1:1
S	=	0.01 ft/ft
F	=	2.0
A_4	=	127.7 ft^2
V_4	=	21.7 fps

STEP 1: Assume $b_2 = b_1+b_3 = 20+8 =$ *28 feet*.

Use centerline offset (Figure 8.14 A).

$\Delta b_1 = 8\ ft$

$$r_c = \frac{4V_3^2 b_3}{gY_3} + 400 = \frac{4(16.2)^2(8)}{g(4)} + 400 = \textit{465.2 feet}$$

Assume station $PI =$ *100+00*

Station $PC = 100+00 - r_c \text{ Tan } \frac{\theta}{2}$

Station $PC = 100+00 - 465.2\ Tan\ 6/2 =$ *99+75.62*

Curve length, $L_{ct}, = r_c\ (\theta)\ \frac{2\pi}{360}$

$$L = 465.2(6)\ \frac{2\pi}{360} = \textit{48.72 feet}$$

Station $PT = 99+75.62 + 48.72 =$ *100+24.34*

Because $b_3 = \Delta b_1$, the distance from the apex to PT is 0.

The confluence length, L_c, is:

$$L_c = \frac{(8)}{Sin\ (6°)} = \textit{76.5 feet}$$

or

$$L_c = \frac{(28-20)10}{2} = \textit{40.0 feet}$$

Using the largest of these values yields:

$L_c =$ *76.5 feet*

Assume the depth of flow at $b_2 = 4$ *feet*.

From Equations 8.25 to 8.32:

$$M_1 = \frac{(2000^2)}{[20+1(4)]g(4)} = \underline{\underline{1294.0}}$$

$$M_2 = \frac{(2775)^2}{[28+1(4)]g(4)} = \underline{\underline{1868.4}}$$

$$M_3 = \frac{(775)^2}{(47.8)g} = \underline{\underline{390.2}}$$

$$P_{h1} = \frac{(4)^2}{6}[3(20) + 2(1)4] = \underline{\underline{181.3}}$$

$$P_{h2} = \frac{(4)^2}{6}[3(28) + 2(1)4] = \underline{\underline{245.3}}$$

$$P_{hi} = \left(\frac{20+28}{2}\right)0.77\left(4 + \frac{(4-4)[20+2(28)]}{3(20+28)}\right)$$

$$= \underline{\underline{73.9}}$$

$$P_{hw} = \frac{4+4}{4}\left(\frac{20+28}{2}(4-4)+0.77\,[1(4)+1(4)]+[28+1(4)]4-4[20+1(4)]\right)$$

$$= \underline{\underline{76.3}}$$

$$P_{hf} = \frac{76.5\,(0.01+0.01)}{4}\left([20+1(4)]4+[28+1(4)]4\right)$$

$$= \underline{\underline{85.7}}$$

Using Equation 8.24:

$$245.3+1868.4 = 181.3+1294.0+390.2\text{Cos}6°+73.9+76.3-85.7$$

$$2113.7 = \underline{1927.9}$$

Since forces do not balance, another depth should be tried using the same width.

By trial and error, obtain $D_2 = \underline{4.5 \text{ feet}}$.

$$M_2 = \frac{(2775)^2}{[28+1(4.5)]g(4.5)} = \underline{1635.2}$$

$$P_{h2} = \frac{(4.5)^2}{6}[3(28) + 2(1)4.5] = \underline{313.9}$$

$$P_{hi} = \left[\frac{20+28}{2}\right] 0.77 \left[4 + \frac{(4.5-4.0)[20+2(28)]}{3(20+28)}\right]$$

$$= \underline{78.8}$$

$$P_{hw} = \frac{4.0+4.5}{4}\left[\frac{20+28}{2}(4.0-4.5)+0.27[1(4)+1(4.5)]+[28+1(4.5)]4.5-[20+1(4)]4\right]$$

$$= \underline{86.2}$$

$$P_{hf} = \frac{76.5(0.01+0.01)}{4}\left[[20+1(4)]4 + [28+1(4.5)]4.5\right]$$

$$= \underline{92.7}$$

By Equation 8.23:

$$313.9+1635.2 = 181.3+1294.0+390.2Cos6°+78.8+86.2-92.7$$

$$1949.1 = \underline{1935.7} \qquad \text{(close enough)}$$

The momentum balance at this point is close enough to cease further iterations. Therefore, the hydraulic conditions at the end of the junction are as follows:

Q = 2775 cfs
b_3 = 28.0 ft
Y_3 = 4.5 ft
Z = 1:1
F_3 = 1.7
V_3 = 19.0 fps
A_3 = 146.3 ft^2

Additional bank-protection height will be needed to accommodate this depth. A step-backwater computation may be used to compute the distance from the end of the junction to the point at which normal depth occurs.

10.6.9 Clogging

The following guidelines should be followed to provide an appropriate factor of safety against clogging at pavement inlets:

GRATES AND SLOTTED DRAINS:

1. Sump Conditions:

   a. Orifice Flow: required area = 2.0 x calculated area.

   b. Weir Flow: required perimeter = 2.0 x calculated perimeter.

2. Continuous-grade conditions:

   a. Required length of opening = 2.0 x calculated length.

CURB INLETS:

1. Sump Conditions:

   a. Required length of opening = 1.50 x calculated length.

2. Continuous-grade conditions:

   a. Required length of opening = 1.25 x calculated length.

COMBINATION GRATE AND CURB INLET:

1. Sump Conditions:

   a. Orifice Flow: required area = 2.0 x calculated area for grate; required length = 1.25 x calculated length for curb inlet.

   b. Weir flow: required perimeter = 1.0 x calculated perimeter for grate; required length = 1.25 x calculated length for curb inlet.

2. Continuous-grade conditions:

   a. Required length of opening = 1.0 x calculated length for grate; required length = 1.25 x calculated length for curb inlet.

ADOT STANDARD TYPE-3 CATCH BASINS:

1. Continuous-Grade Conditions:

   a. Required curb-inlet length upstream from catch basin = 1.25 x calculated length.

   b. Required length of grate = 1.0 x calculated length.

These general guidelines should be used unless more-detailed information about clogging for a specific grate type is available. A publication by the American Society of Civil Engineers and Water Pollution Control Federation (1987) gives relative rankings for debris-handling efficiencies of several types of grates. Figure 10.5 can also be used to obtain an estimate of the ability of a grate to handle debris. Grates that are longer than necessary to intercept 100 percent of frontal flow will have greater debris-handling efficiencies than will shorter grates.

10.7 Inlet Design Procedure

Inlet Locations:

1. Using the plan-and-profile information developed for the proposed roadway, locate all points where 100-percent interception of runoff will be required. These will be located at sumps, street intersections, and at other locations where it is felt that anything less than 100-percent interception would be unacceptably hazardous.

2. Choose a proposed street-and-gutter cross section. The maximum allowable cross-slope for a street is two percent. Depressed concrete gutters with a width of twenty-one inches and a cross-slope of 0.048 may be used to increase gutter capacity. Using the proposed cross section and slopes, determine the maximum discharge that the street will carry according to the design limitations.

3. Locate drainage area (D.A.) concentration points and determine discharges for all offsite runoff affecting the project. Offsite inlets will be needed for all offsite drainage exceeding the design capacity of the street.

4. The remaining drainage area should consist of the street itself, and possibly some offsite sheet flow. The watershed should be long, and more or less of uniform width. Using (1) an assumed time of concentration of five minutes; (2) the maximum discharge capacity computed in Step Two; and (3) an appropriate runoff coefficient, apply the City of Tucson hydrology method in order to determine the area of watershed required to produce the maximum allowable street discharge. When this area is divided by the width of the watershed, it will give the length of the watershed from its approximate upstream end to the first storm-drain inlet. Check the watershed hydrology to ensure that the assumed five-minute time of concentration is correct.

To determine total gutter flow, the cross section is divided into segments of equal width, and the discharge for each segment is computed by Manning's equation. The parabola can be approximated very closely by two-foot-wide segments. The total discharge is the sum of the discharges in all segments. This procedure is illustrated by Example 10.13.1, found at the end of this chapter.

Some streets within the City of Tucson have inverted crowns (i.e., the lowest point is at the center of the street, instead of at the curb). Discharge for this type of street cross section can be estimated using the following procedures.

For a parabolic cross section, use Manning's equation, along with the following relationships:

$$\text{Area } (A) = 2/3TY, \text{ in square feet;} \quad \textbf{(10.6)}$$

$$\text{Wetted perimeter } (P) = T + 8/3\left[\frac{Y^2}{T}\right], \text{ in feet;} \quad \textbf{(10.7)}$$

$$\text{Top Width } (T) = 3/2\left[\frac{A}{Y}\right], \text{ in feet; and,} \quad \textbf{(10.8)}$$

$$\text{Hydraulic Depth } (Y_h) = 2/3\ Y, \text{ in feet.} \quad \textbf{(10.9)}$$

Where:

Y = Maximum Depth, in feet.

However, it should be noted that, within the City of Tucson, streets with inverted crowns are normally built using a triangular cross section. For flow in a triangular inverted-crown section, use either Equation 10.3 or the nomograph shown in Figure 10.1.

10.6 Pavement Inlets

The capability of pavement inlets to quickly remove water from the street and into a storm drain depends upon their inlet geometry and upon the flow characteristics in the street and gutter. Pavement inlets are normally divided into the following three general types, with each having many variations:

1. Grate inlets: These inlets consist either of an opening in the gutter, covered by one or more grates, or an opening which spans the entire width of pavement (i.e., a "street grate").

2. Curb inlets: These inlets consist of a vertical opening in the curb, through which the gutter flow passes.

3. Combination inlets: These inlets consist of a curb inlet and a grate inlet acting as a single unit.

Grate inlets are most effective where clogging due to debris is not a problem. Excluding the effect of debris, the inlet capacity of grates in a sag condition depends mainly upon the open area of the grate and upon the depth of ponding. Capacity of grate inlets on a continuous grade depends primarily upon the discharge flowing directly over the grate, and upon the length and type of grate.

Grate inlets become more effective in relation to curb inlets as the grade of the roadway increases. *On grades of over three percent, grate inlets should be used instead of curb inlets.* Grates are also useful where cross-slopes for depressed gutters at curb inlets are not desirable, from a traffic standpoint, and at locations other than the edge of curb. For instance, grates are commonly used to collect flow at the middle of an inverted street.

The most efficient types of grates on a continuous grade are those which have all bars parallel to the direction of flow. Unfortunately, these grates typically are not safe for bicyclists; and therefore are *not permitted* to be used on City streets. However, there are many varieties of "bicycle-safe" grates which can be used on City streets (the interested reader should refer to a publication by the American Society of Civil Engineers and the Water Pollution Control Federation, 1987).

Curb inlets have few clogging problems; and they are most effective on relatively flat grades, where the depth of flow is sufficient for the inlet to perform efficiently. The interception capacity of curb inlets is largely dependent upon flow or ponding depth at the curb, and upon the length and height of the curb inlet. The flow-interception capacity is increased by a gutter depression at the curb inlet, or a depressed (composite) gutter to increase the proportion of the total flow adjacent to the curb. Top-slab supports can decrease the capacity of an inlet, if placed flush with the opening. Supports should be recessed several inches from the curb line.

One advantage to curb inlets is that they pose little threat to bicyclists. A disadvantage is that the openings are relatively wide, and could pose a danger to children. Therefore, it is recommended that curb inlets with a height of six inches or more be fitted with cross bars. Another disadvantage of curb inlets is that the depression adjacent to them could be hazardous to traffic at some locations.

Combination inlets can be very effective if the grate is placed at the downstream end of the structure--thereby allowing the curb inlet to collect the debris before it can clog the grate. The design capacity of these structures is the sum of the individual design capacities. If the curb inlet and grate are placed adjacent to each other, the total design capacity is only that of the grate alone.

Capacity charts for grate and curb inlets are widely available. However, due to the variety of configurations on the market, it is considered more useful here to merely present the basic relationships under which they operate.

10.6.1 Capacity of a Grate Inlet in a Sag

At low-water depths, a grate inlet in a sag operates as a weir, with a crest length equal to the outside perimeter of the grate along which the flow enters. Weir operation continues to a depth of about 0.4 foot above the top of grate, and the discharge intercepted by the grate is:

$$Q_i = 3.0\ P_g Y^{3/2} \qquad (10.10)$$

Where:

Q_i = Rate of discharge into the grate opening, in cubic feet per second;
P_g = Perimeter of grate opening, in feet, disregarding bars and neglecting the side against the curb, if present; and,
Y = Depth of water at the grate, in feet.

When the depth at the grate exceeds about 1.4 feet, the grate begins to operate as an orifice, and the discharge intercepted by the grate is:

$$Q_i = 5.35\ AY^{1/2} \qquad (10.11)$$

Where:

Q_i = Rate of discharge into the grate opening, in cubic feet per second;
A = Clear-opening area of the grate, in square feet; and,
Y = Depth of ponded water above the top of grate, in feet.

For depths over the grate between about 0.4 feet and about 1.4 feet, the operation of the grate inlet is indefinite. In this case, the depth of flow should be computed by both equations. The equation which yields the higher of the two values for depth should then be used for design purposes.

If the grate is sloped such that the side away from the curb is considerably higher than the curb side, the side inflow and end inflow should be computed separately. Inflow over the end of a grate, when it is operating as a weir, should be computed from:

$$Q_e = 2/5 \left(\frac{CL}{Y_2 - Y_1} \right) \left(Y_2^{5/2} - Y_1^{5/2} \right) \qquad (10.12)$$

Where:

Q_e = Rate of discharge over the end of the grate opening, in cubic feet per second;
Y_1 = Depth of flow at the shallow side of the grate, in feet;
Y_2 = Depth of flow at the deep side of the grate, in feet;
L = Distance from Y_1 to Y_2, in feet; and,
C = Weir coefficient = 3.0.

Total interception of the flow is then computed by summing the flows calculated at each end of the grate opening, using Equation 10.12, with the flow calculated on each side of the grate opening, using Equation 10.10.

When a sloped grate is operating under conditions of orifice flow, the following equation should be used to compute its interception capacity:

$$Q_i = 3.60\left(\frac{A}{Y_2 - Y_1}\right)\left(Y_2^{3/2} - Y_1^{3/2}\right) \quad (10.13)$$

Where all terms are as previously defined within Equation 10.11 and Equation 10.12.

10.6.2 Capacity of a Curb Inlet in a Sag

A curb inlet in a sag operates as a weir to depths up to the height of the curb inlet, and as an orifice at depths greater than 1.4 times the opening height. Between those depths, flow is in a transition stage.

The equation for computing the interception capacity of a curb inlet *without a depression* which operates as a weir is:

$$Q_i = 2.3\ LY_i^{3/2} \quad (10.14)$$

Where:

L = Length of curb inlet, in feet; and,
Y_i = Depth at lip of curb inlet, in feet (i.e., $Y_i = TS_x$).

The equation for computing the interception capacity of a *depressed* curb inlet which operates as a weir is:

$$Q_i = 2.3\ (L + 1.8W)Y_i^{3/2} \quad (10.15)$$

Where:

W = Lateral width of depression, in feet; and all other terms are as previously described.

Equation 10.15 is applicable to depths at the curb which are approximately equal to the height of the opening, plus the depth of the depression.

Curb inlets operate as orifices at depths greater than $1.4(h)$ (see Figure 10.3). The equation for interception capacity is then:

$$Q_i = 5.35A(Y_i - h/2)^{1/2} \quad \textbf{(10.16a)}$$

or

$$Q_i = 5.35\ AY_o^{1/2} \quad \textbf{(10.16b)}$$

Where:

Y_o = Effective head on the center of the orifice throat, in feet;
A = Clear area of opening, in feet;
Y_i = Depth at lip of curb inlet, in feet;
h = Height of curb-inlet orifice, in feet; and,
L = Length of curb inlet, in feet.

Figure 10.3 gives the relationship between the variables for horizontal-throat, inclined-throat, and vertical-throat inlets.

Curb-inlet capacity in the transition stage, when ponding depth is 1.0 to 1.4 times the opening height, should be computed using both the weir equation and the orifice equation. The equation which yields the lesser discharge at equal head should then be used for design purposes.

10.6.3 Capacity of a Combination Inlet in a Sag

When weir-flow applies, the interception capacity of a combination inlet in a sag, consisting of a grate and a curb inlet, is essentially equal to the capacity of the grate only, unless the grate becomes clogged. In orifice flow, the capacity is equal to the capacity of the grate, plus the capacity of the curb inlet.

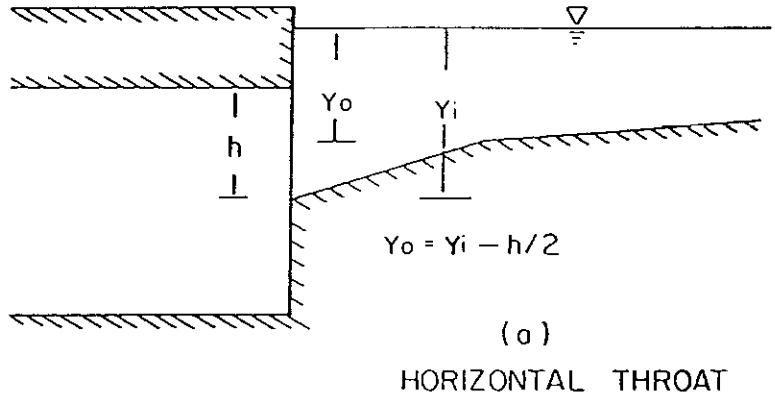
10.6.4 Capacity of a Slotted Inlet in a Sag

A slotted inlet in a sag normally operates as a weir to depths of about 0.2 feet. At depths greater than about 0.4 feet, it performs as an orifice. Between these depths, the more conservative of the two equations (i.e., the one which predicts the greatest depth) should be used for design purposes. The interception capacity, Q_i, of a slotted inlet operating as an orifice should be computed from:

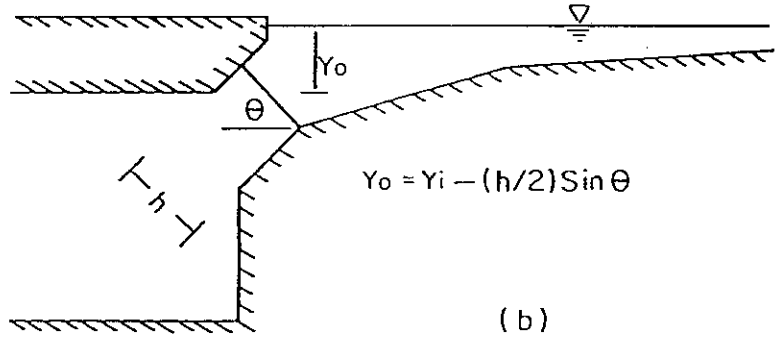
$$Q_i = 6.42\ LWY^{1/2} \quad \textbf{(10.17)}$$

$Q = 5.35 h L Y_o^{1/2}$

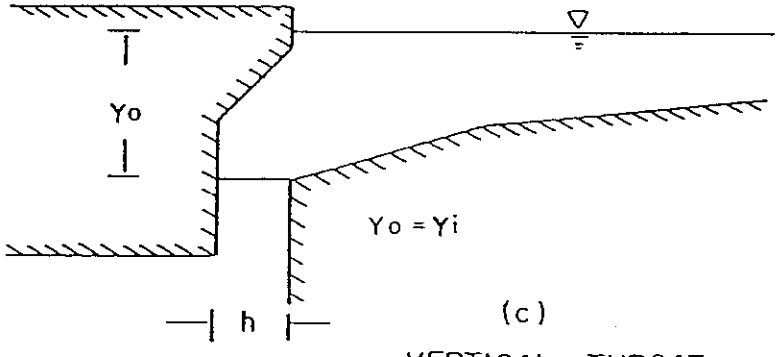
L = Length of Opening



(a)
HORIZONTAL THROAT



(b)
INCLINED THROAT



(c)
VERTICAL THROAT

FIGURE 10.3
CURB-OPENING INLETS

Where:

L = Length of slot, in feet;
W = Width of slot, in feet; and,
Y = Depth of water at slot, in feet.

10.6.5 Capacity of a Grate Inlet on a Continuous Grade

A grate inlet on a continuous grade will intercept all of the frontal flow passing over the grate, unless the grate becomes clogged or splash-over occurs. Splash-over will occur, and only a portion of the frontal flow will be intercepted, if the velocity is high or the grate is short. Normally, a small part of the flow along the side of the grate will also be intercepted. Therefore, the total capacity of a grate is the sum of the frontal flow and the side flow, minus the splash-over flow.

The amount of frontal flow, Q_f, should be computed with the following equation:

$$\frac{Q_f}{Q_T} = E_o = 1 - (1 - W/T)^{8/3}$$

Where:

Q_f = Frontal flow at width W, in cubic feet per second;
Q_T = Total gutter flow, in cubic feet per second;
W = Width of grate, in feet;
T = Total spread of water at the gutter, in feet; and,
E_o = Ratio of frontal flow to total gutter flow.

Figure 10.4 provides a graphical solution of the frontal-flow equation.

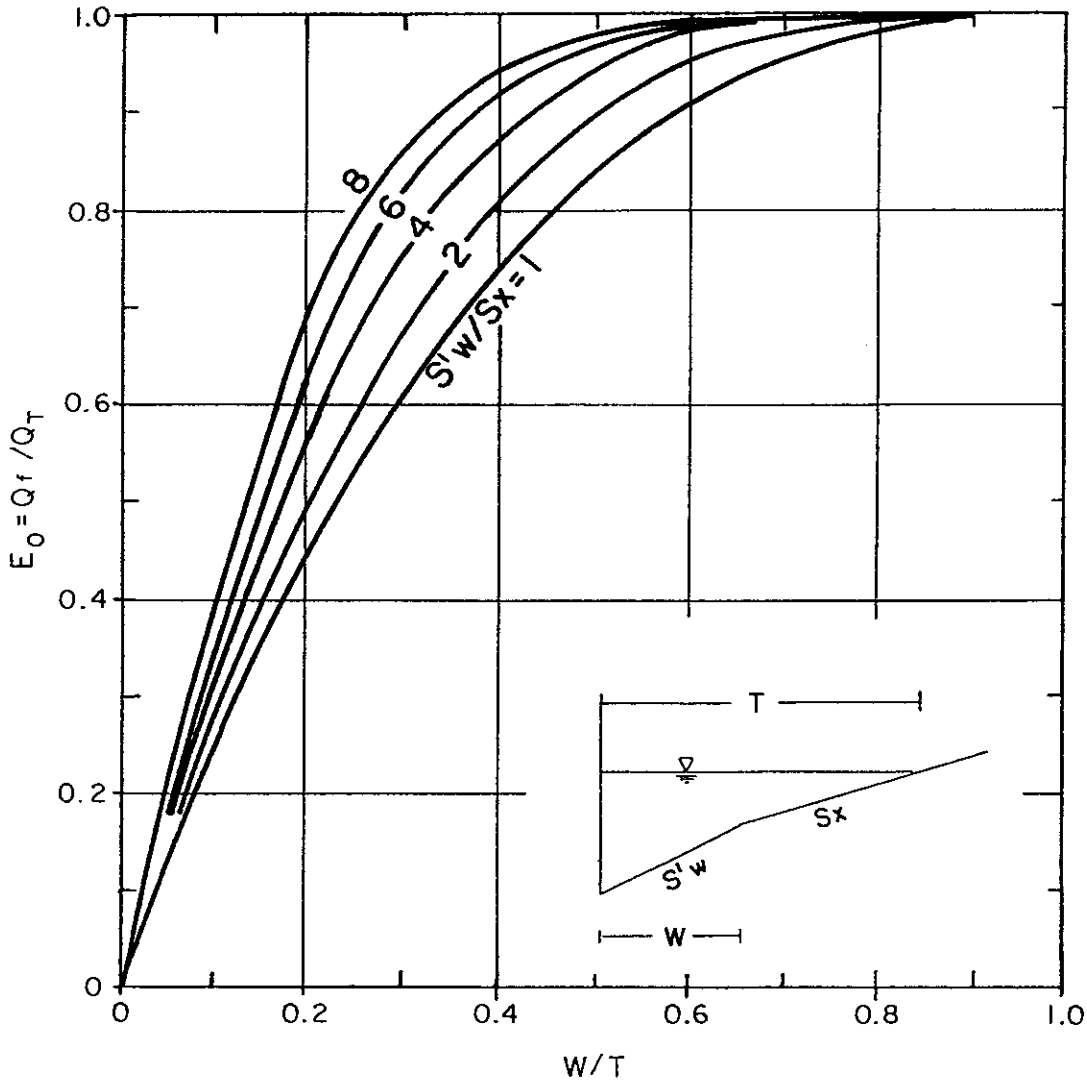
The ratio, R_f, of frontal flow intercepted, Q_{fi}, to total frontal flow, Q_f, is expressed by:

$$\frac{Q_{fi}}{Q_f} = R_f = 1 - 0.09\,(V - V_o) \qquad \textbf{(10.19)}$$

Where:

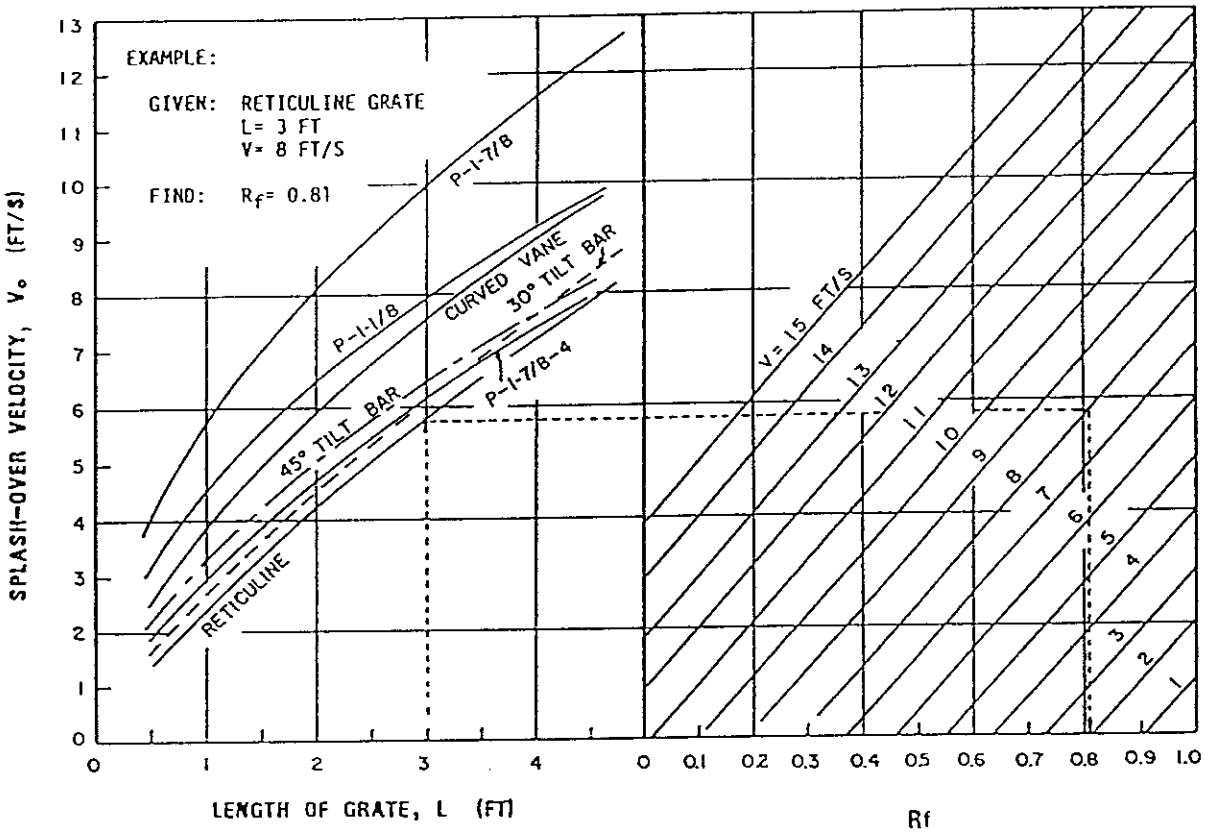
V = Velocity of flow in the gutter, in feet per second; and,
V_o = Gutter velocity at which splash-over first occurs, in feet per second.

V_o is different for different grates, and must be determined experimentally. Figure 10.5 gives splash-over velocities for several common grate types and sizes described in a publication by the American Society of Civil Engineers and Water Pollution Control Federation (1987). Figure 10.5 also provides a graphical solution to the ratio of frontal flow captured to total frontal flow.



$$Q_f = E_o Q_T$$

FIGURE 10.4
RATIO OF FRONTAL FLOW TO TOTAL GUTTER FLOW



$$Q_{fi} = R_f Q_f$$

FIGURE 10.5
FRONTAL-FLOW INTERCEPTION EFFICIENCY FOR GRATE INLETS

The amount of side flow, Q_s, is equal to the total flow minus the frontal flow (i.e., $Q_s = Q_T - Q_f$).

The ratio, R_{sf}, of side flow intercepted, Q_{si}, to total side flow, Q_s, is given by:

$$\frac{Q_{si}}{Q_s} = R_{sf} = \left[1 + \frac{0.15\,V^{1.8}}{S_x\,L^{2.3}} \right]^{-1.0} \qquad \textbf{(10.20)}$$

Where:

L = Length of the grate, in feet, and the other terms are as previously defined.

Note the negative exponent in this equation. Figure 10.6 provides a graphical solution to this equation.

The total interception capacity (Q_i) of a grate inlet on a continuous grade is therefore equal to:

$$Q_i = R_f Q_f + R_{sf} Q_s \qquad \textbf{(10.21)}$$

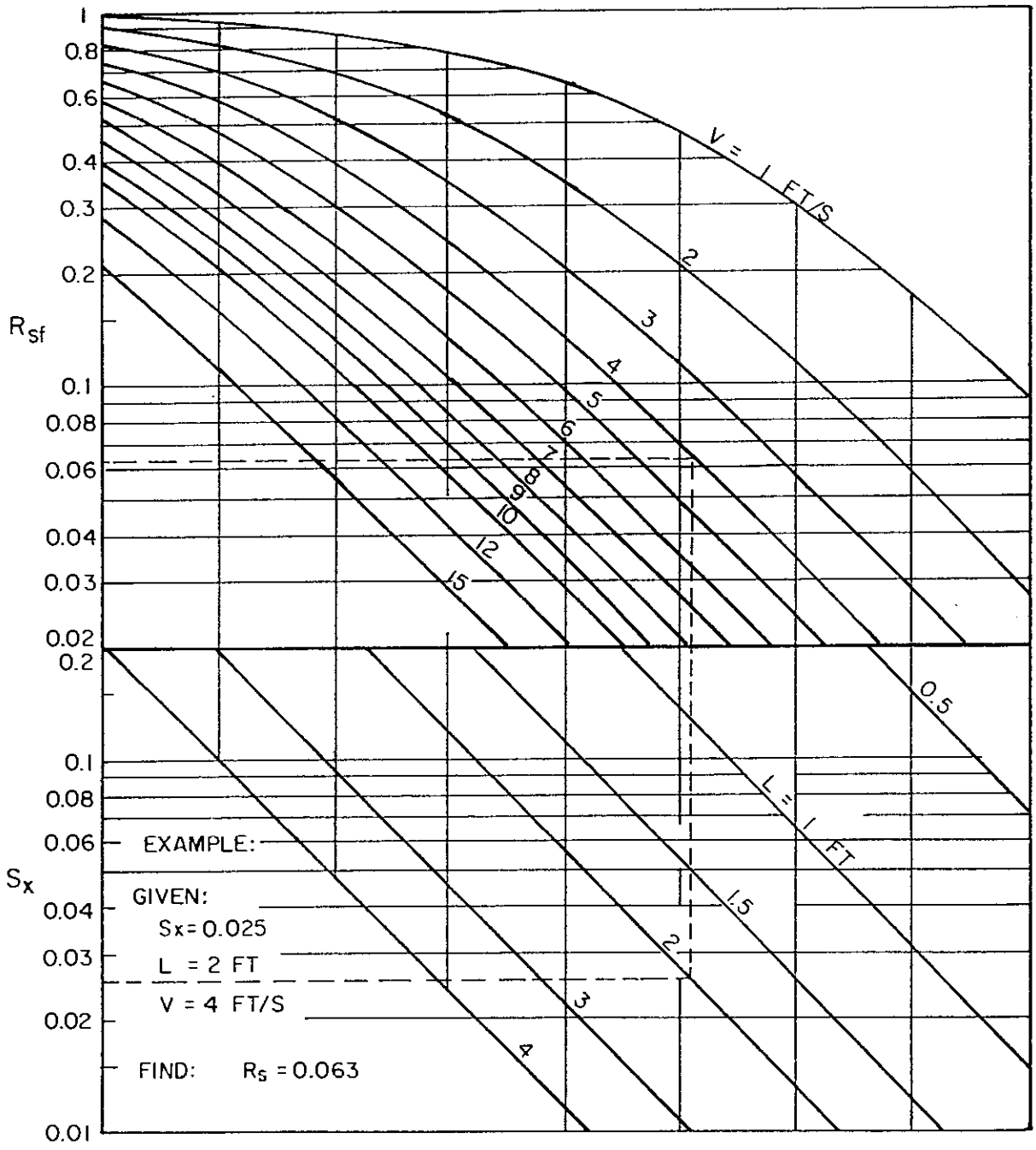
10.6.6 Capacity of a Curb Inlet on a Continuous Grade

The length of a curb inlet required for total interception of gutter flow on a pavement section with a straight cross-slope (i.e., no gutter depression) is expressed by:

$$L_t = 0.6 \left[Q_T^{0.42} S_o^{0.3} \right] \left[\frac{1}{n\,S_x} \right]^{0.6} \qquad \textbf{(10.22)}$$

Where:

L_t = Curb-inlet length required to intercept 100 percent of the gutter flow, in feet;
S_x = Pavement cross-slope, in feet per foot;
S_o = Longitudinal slope of gutter, in feet per foot; and,
n = Manning's roughness coefficient.



$$Q_{si} = R_{sf} Q_s$$

FIGURE 10.6
SIDE-FLOW INTERCEPTION EFFICIENCY FOR GRATE INLETS

The efficiency of curb inlets shorter than the length required for total interception is expressed by:

$$E_i = 1 - (1 - L_i/L_t)^{1.8} \quad (10.23)$$

Where:

E_i = Ratio of discharge intercepted by the curb inlet to total discharge (i.e., the "efficiency" of the curb inlet);
L_i = Curb-inlet length, in feet; and,
L_t = As defined in Equation 10.22

Figure 10.7 is a nomograph for the solution of Equation 10.22, and Figure 10.8 provides a solution of Equation 10.23.

The length of inlet required for total interception by depressed curb inlets, or curb inlets in depressed gutter sections, can be found by the use of an equivalent cross slope, S_e, in place of S_x in Equation 10.22, as determined by the following equation:

$$S_e = S_x + S'_w E_o \quad (10.24)$$

Where:

$S'_w = \frac{a}{12W}$ = Cross-slope of the gutter, measured from the cross-slope of pavement, S_x, in feet per foot.

And where:

a = Gutter depression, in inches, at the curb inlet (measured as the vertical distance between the low point of the gutter and the point where the cross slope of the pavement intersects the curb. For a standard twenty-one-inch gutter width, with a one-inch drop from one side to the other and a two-percent street cross-slope, "a" is equal to six-tenths of an inch);
W = Width of depressed gutter, in feet; and,
E_o = Ratio of flow in the depressed section to total gutter flow.

NOTE: E_o is the same ratio as that used to compute the frontal flow interception of a grate inlet.

Equations 10.22 and 10.23 can be combined to directly compute the length of the curb inlet required to intercept a certain percentage of the total discharge. This expression is:

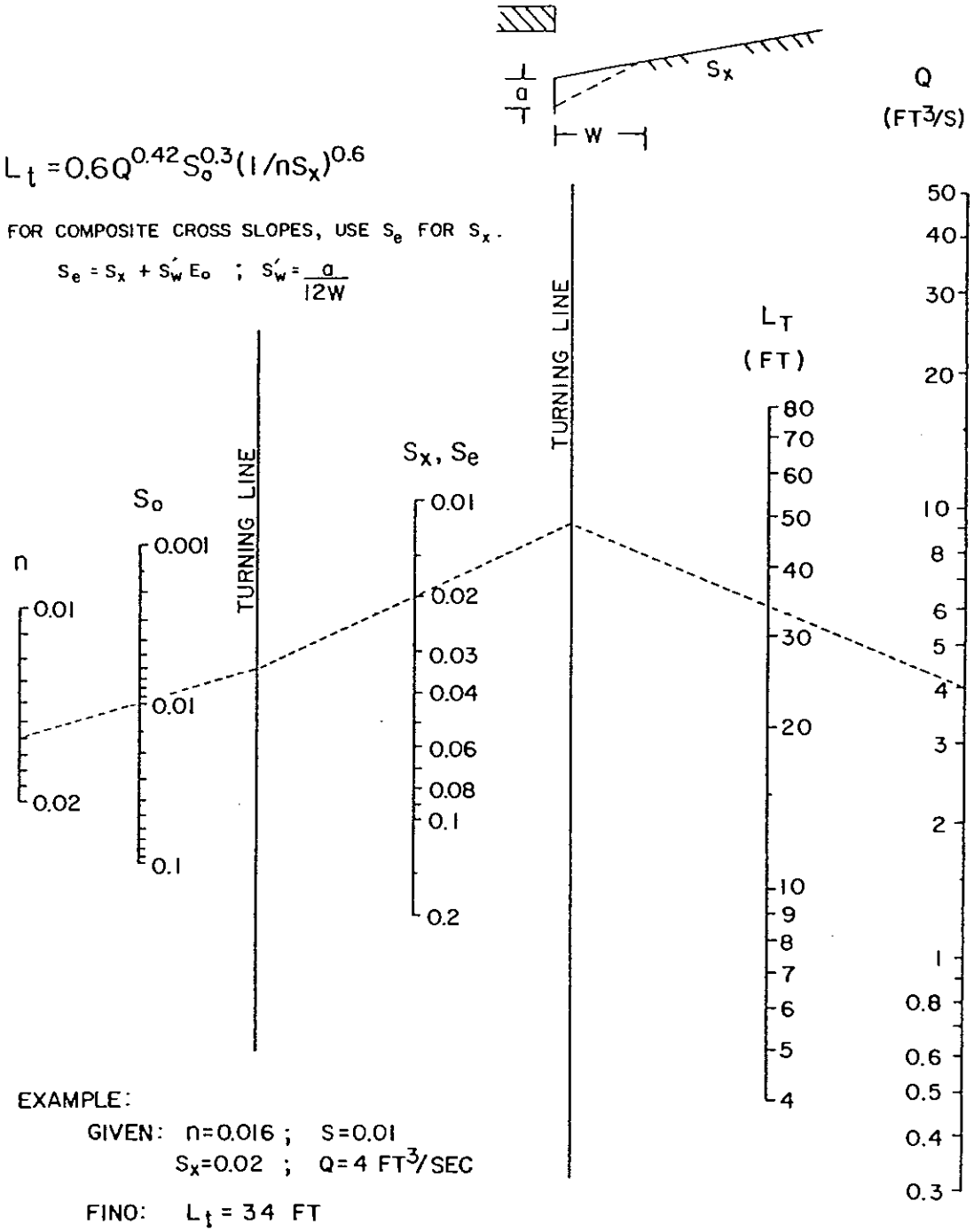


FIGURE 10.7
INLET LENGTH FOR TOTAL INTERCEPTION BY CURB OPENINGS AND SLOTTED DRAINS

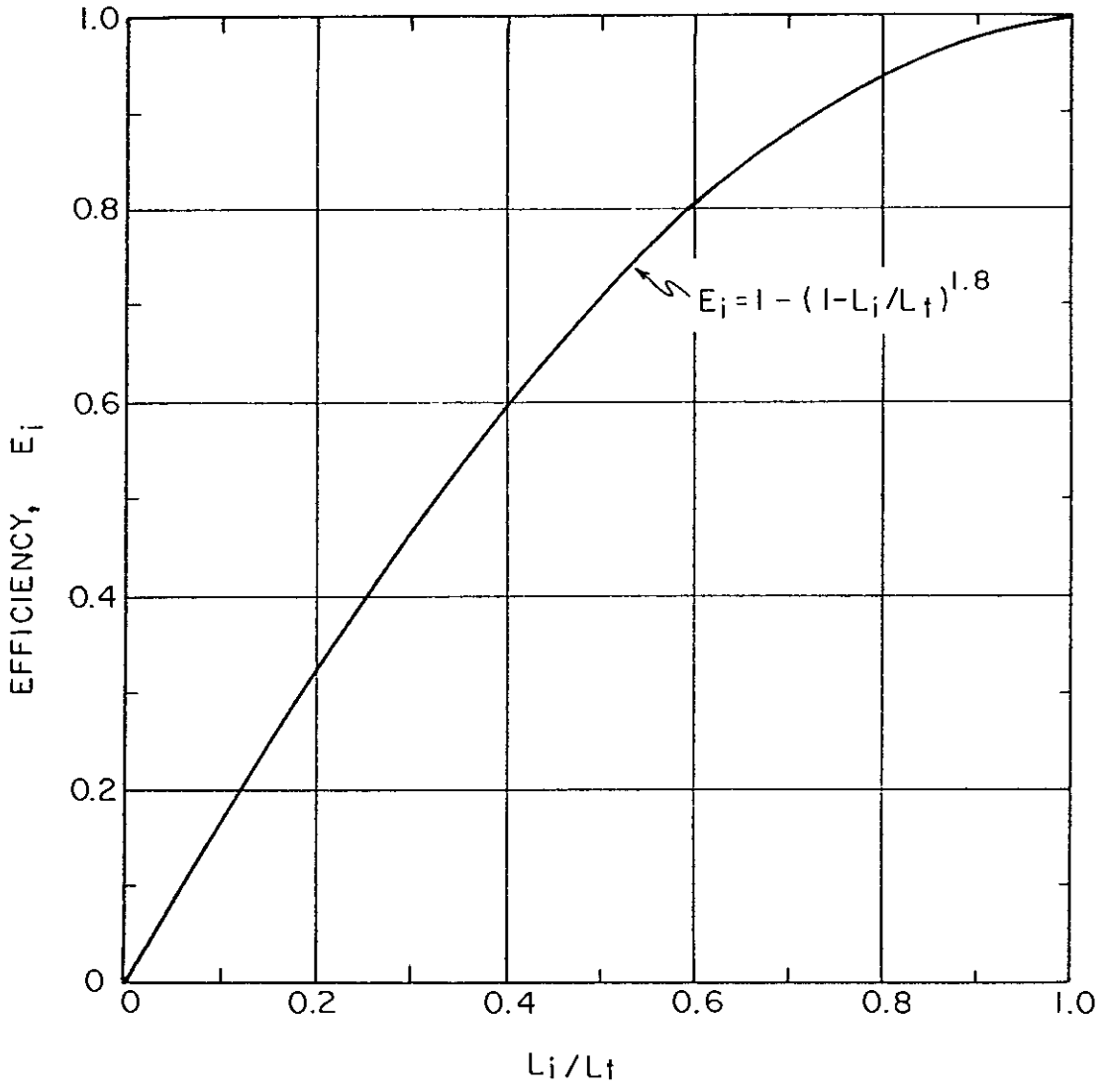


FIGURE 10.8
INLET INTERCEPTION EFFICIENCY FOR
CURB OPENINGS AND SLOTTED DRAINS

$$L_i = 0.6 \left(\frac{Q^{0.42} S_o^{0.3}}{n^{0.6} S_x^{0.6}} \right) \left[1 - [1-E_i]^{0.56} \right] \quad (10.25)$$

Where all terms are as previously defined.

As with Equation 10.22, the S_x term is replaced by an equivalent cross slope, S_e, for a compound gutter section (see Figure 10.9). The equivalent cross slope can then be computed by combining Equations 10.4 and 10.24 to form the expression:

$$S_e = S_x + 0.0467 \left(\frac{a S_o^{1/2}}{Q n} \right) \left(\frac{Y_{cf}^{8/3} - Y_{gb}^{8/3}}{Y_{cf} - Y_{gb}} \right) \quad (10.26)$$

Where all terms are as previously defined.

NOTE: In Equation 10.24, the "Y_{cf}" and "Y_{gb}" terms represent the depth of flow at the curb face and the depth of flow at the gutter edge, in the gutter approaching the curb inlet, respectively.

As a rule of thumb, for preliminary sizing of curb-inlet lengths with compound gutter sections, it can be assumed that the curb-inlet capacity is 0.75 cfs/foot, if the pavement spread is over two lanes, and 0.40 cfs/foot, if the pavement spread is over only one lane. This assumes a two-inch depressed gutter at the curb inlet; a 75-percent inlet efficiency; and *no consideration for clogging due to debris.*

10.6.7 Capacity of a Combination Inlet on a Continuous Grade

A combination inlet on a continuous grade, where the curb inlet and grate are placed side-by-side, does not have much greater capacity than the grate alone. This type of inlet should not be used on a continuous grade. However, combination inlets with the curb inlet located upstream of the grate are useful, because the curb inlet intercepts normal debris loads which could otherwise clog the grate on a frequent basis. The capacity of these inlets is the sum of the capacities of the curb inlet and the grate. However, the discharge over the grate must be reduced by an amount equal to the interception capacity of the curb inlet.

10.6.8 Capacity of a Slotted Inlet on a Continuous Grade

The capacity of a slotted inlet on a continuous grade can be computed using the same formulas and charts that are used for computing curb-inlet capacities. The advantage of using slotted inlets is their versatility. They can be used on both curbed and uncurbed streets to collect a wide variety of flow patterns.

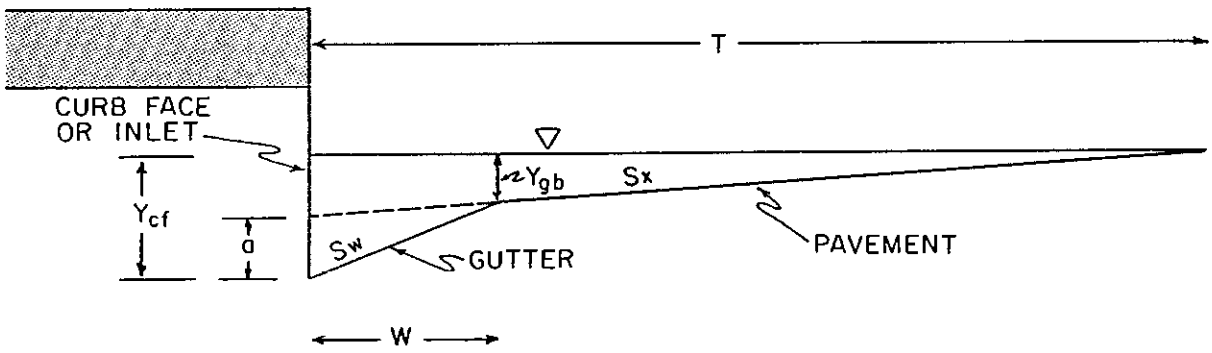


FIGURE 10.9
COMPOUND GUTTER SECTION

10.6.9 Clogging

The following guidelines should be followed to provide an appropriate factor of safety against clogging at pavement inlets:

GRATES AND SLOTTED DRAINS:

1. Sump Conditions:
   a. Orifice Flow: required area = 2.0 x calculated area.
   b. Weir Flow: required perimeter = 2.0 x calculated perimeter.
2. Continuous-grade conditions:
   a. Required length of opening = 2.0 x calculated length.

CURB INLETS:

1. Sump Conditions:
   a. Required length of opening = 1.50 x calculated length.
2. Continuous-grade conditions:
   a. Required length of opening = 1.25 x calculated length.

COMBINATION GRATE AND CURB INLET:

1. Sump Conditions:
   a. Orifice Flow: required area = 2.0 x calculated area for grate; required length = 1.25 x calculated length for curb inlet.
   b. Weir flow: required perimeter = 1.0 x calculated perimeter for grate; required length = 1.25 x calculated length for curb inlet.
2. Continuous-grade conditions:
   a. Required length of opening = 1.0 x calculated length for grate; required length = 1.25 x calculated length for curb inlet.

ADOT STANDARD TYPE-3 CATCH BASINS:

1. Continuous-Grade Conditions:

   a. Required curb-inlet length upstream from catch basin = 1.25 x calculated length.

   b. Required length of grate = 1.0 x calculated length.

These general guidelines should be used unless more-detailed information about clogging for a specific grate type is available. A publication by the American Society of Civil Engineers and Water Pollution Control Federation (1987) gives relative rankings for debris-handling efficiencies of several types of grates. Figure 10.5 can also be used to obtain an estimate of the ability of a grate to handle debris. Grates that are longer than necessary to intercept 100 percent of frontal flow will have greater debris-handling efficiencies than will shorter grates.

10.7 Inlet Design Procedure

Inlet Locations:

1. Using the plan-and-profile information developed for the proposed roadway, locate all points where 100-percent interception of runoff will be required. These will be located at sumps, street intersections, and at other locations where it is felt that anything less than 100-percent interception would be unacceptably hazardous.

2. Choose a proposed street-and-gutter cross section. The maximum allowable cross-slope for a street is two percent. Depressed concrete gutters with a width of twenty-one inches and a cross-slope of 0.048 may be used to increase gutter capacity. Using the proposed cross section and slopes, determine the maximum discharge that the street will carry according to the design limitations.

3. Locate drainage area (D.A.) concentration points and determine discharges for all offsite runoff affecting the project. Offsite inlets will be needed for all offsite drainage exceeding the design capacity of the street.

4. The remaining drainage area should consist of the street itself, and possibly some offsite sheet flow. The watershed should be long, and more or less of uniform width. Using (1) an assumed time of concentration of five minutes; (2) the maximum discharge capacity computed in Step Two; and (3) an appropriate runoff coefficient, apply the City of Tucson hydrology method in order to determine the area of watershed required to produce the maximum allowable street discharge. When this area is divided by the width of the watershed, it will give the length of the watershed from its approximate upstream end to the first storm-drain inlet. Check the watershed hydrology to ensure that the assumed five-minute time of concentration is correct.

For design discharges less than the 100-year flood, use appropriate ratios and procedures as outlined in Chapter IV of this Manual.

5. Choose a type of inlet that is appropriate for the location; and, using the appropriate procedures as described herein, develop a preliminary inlet design. Approximately 75 percent of the flow should be intercepted for maximum design efficiency.

6. Repeat Step Four to determine the distance to the next downstream inlet. Although not strictly accurate, the carry-over flow, Q_{co}, is added directly to the discharge produced in the intervening watershed between the two inlets. In reality, there should be a lag in peaks, and the amount to be accepted by a downstream inlet should be determined by adding hydrographs. However, this procedure would soon become very tedious. In view of the fact that the times of concentration are generally small, and that the inlets are spaced close together, direct adding of peaks is acceptable, and provides a measure of safety to the final design of the inlets.

7. Steps Five and Six are repeated, as necessary, until all drainage is accounted for within the system. At this time, needed revisions may become apparent for practical or economic reasons. Revisions should be made, and standard designs chosen, for all inlets. If the standard designs differ from the preliminary designs, the procedure should be repeated with the standard designs in order to ensure that the system works properly.

Work sheets for this procedure are presented in Figure 10.10, and an example is provided at the end of this chapter.

10.8 Storm-Drain Calculations

The two simplest methods of hydraulic analysis for use in the design of storm drains are (1) the "normal-flow method", and (2) the "pressure-flow method". The "normal-flow method" is much simpler to utilize, but it is often inaccurate. Its use often results in undersized pipes--especially if there are manholes, bends, junctions, and transitions that create energy (head) losses in the storm drain. On the other hand, the "normal-flow method" could also result in the design of storm drains that are larger and more expensive than necessary--particularly if there is sufficient head to create higher than normal flow velocities.

The pipe slope and the friction slope of storm drains designed for normal flow are assumed to be equal. It is therefore not necessary to calculate a hydraulic grade line for these storm drains if the soffits of connecting pipes of unequal size are set at the same elevation, and if the so-called "minor" head losses along the storm drain are minimal.

A hydraulic grade line for pressure flow will need to be computed whenever there is a high tailwater; or when it is desired to determine the effects which occur when a larger than design-frequency storm occurs; or whenever minor losses or pipe alignment may induce pressure flow; or when it is desired to check to see if a smaller pipe size

Sheet_____ Of_____

PAVEMENT-DRAINAGE WORKSHEET

LOCATION DATA:

Location: _____

Project No: _____

DESIGN DATA:

Frequency_____

T_{all} = n = _____

Curb Height =

RUNOFF CALCULATIONS:

From Station	To Station	L ft.	W ft.	D.A. acre,	C_w	T_c min.	I in/hr.	Q_{100} cfs	Q_{design} cfs	Q_{co} cfs	Q_T cfs	S_o ft/ft	S_x ft/ft	D_{ft}	T_{ft}

INLET CALCULATIONS

Station	Inlet Type	Y ft.	Q_i cfs	$Q_{co} = Q_T - Q_i$

Computed by:_____ Checked by:_____

Figure 10.10: Pavement Drainage Worksheet

could be used under conditions of pressure flow. It will generally be a requirement to compute the design hydraulic grade line for any proposed storm drain.

10.8.1 Normal-Depth Calculations

Normal-depth calculations are accomplished by using Manning's equation:

$$Q = \frac{1.486}{n}\left[\frac{A}{P}\right]^{2/3} S_o^{1/2} A \qquad (10.27)$$

Where:

Q = Discharge, in cubic feet per second;
A = Flow area within the pipe, in feet;
n = Manning's roughness coefficient;
P = Wetted perimeter of flow, in feet; and,
S_o = Pipe slope, in feet per foot.

Figure 10.11 shows the relationship of these parameters for a circular conduit.

10.8.2 Pressure-Flow Calculations: Computation of Hydraulic Grade Line

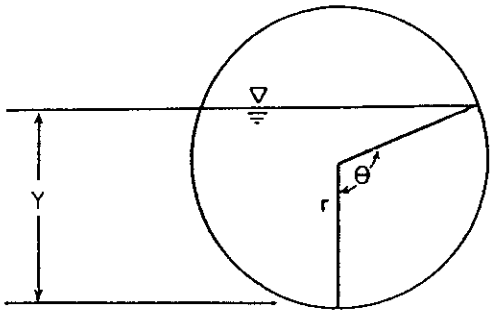
Hydraulic grade-line computations for pressure flow are based on the Bernoulli equation. This equation is as follows:

$$\frac{V_1^2}{2g} + D_{hg1} + S_o L = \frac{V_2^2}{2g} + D_{hg2} + S_f L + H_m \qquad (10.28)$$

Where:

H_m = "Minor" head losses, in feet, and all other terms are as defined by Figure 10.12.

The hydraulic grade line is computed by starting with the control tailwater elevation at the drain outlet, and subsequently performing a hydraulic grade-line calculation in the upstream direction. Friction and minor losses are computed for each segment of the storm drain. These energy losses are added to the total energy elevation at the downstream endpoint of the storm-drain segment in order to obtain the total energy elevation at the upstream endpoint of the segment. The hydraulic grade line is equal to the total energy grade line, minus velocity head at any point along the storm drain.



$\theta = \cos^{-1}\left(\frac{r-Y}{r}\right)$ (in radians)

$A = r^2(\theta - \sin\theta\cos\theta)$

$P = 2r\theta$

D = DIAMETER PIPE = 2r

MAX Q AT $\frac{Y}{D} = 0.938$

MAX R AT $\frac{Y}{D} = 0.813$

R = HYDRAULIC RADIUS = $\frac{A}{P}$

FIGURE 10.11
HYDRAULIC PARAMETERS OF A CIRCULAR CROSS SECTION

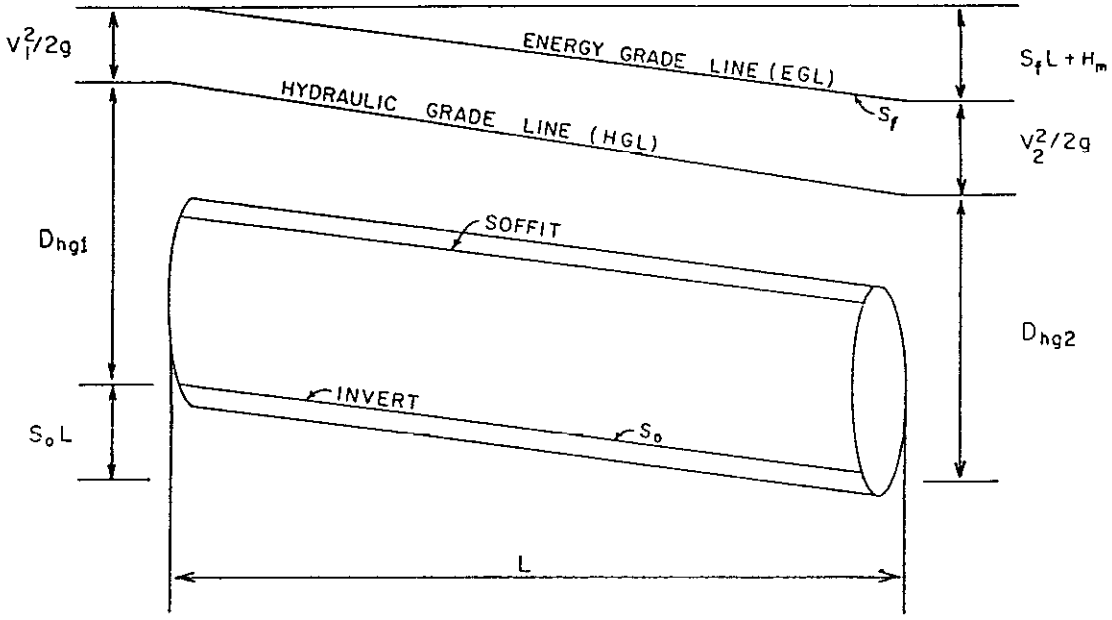


FIGURE 10.12
HEAD-LOSS DIAGRAM FOR PIPES

10.8.3 Friction Losses

Friction losses, h_f, are computed by Manning's equation for an assumed or given discharge. The form of Manning's equation used is:

$$S_f = \frac{29.2n^2}{R^{1.33}} \left(\frac{V^2}{2g} \right) \tag{10.29}$$

Where:

R = Hydraulic radius (i.e., the cross-sectional area of flow divided by the wetted perimeter of flow), in feet.

All other terms are as previously defined.

The friction loss for a storm-drain segment is then computed by the following equation:

$$h_f = S_f L = \text{Friction loss} \tag{10.30}$$

10.8.4 Minor Losses

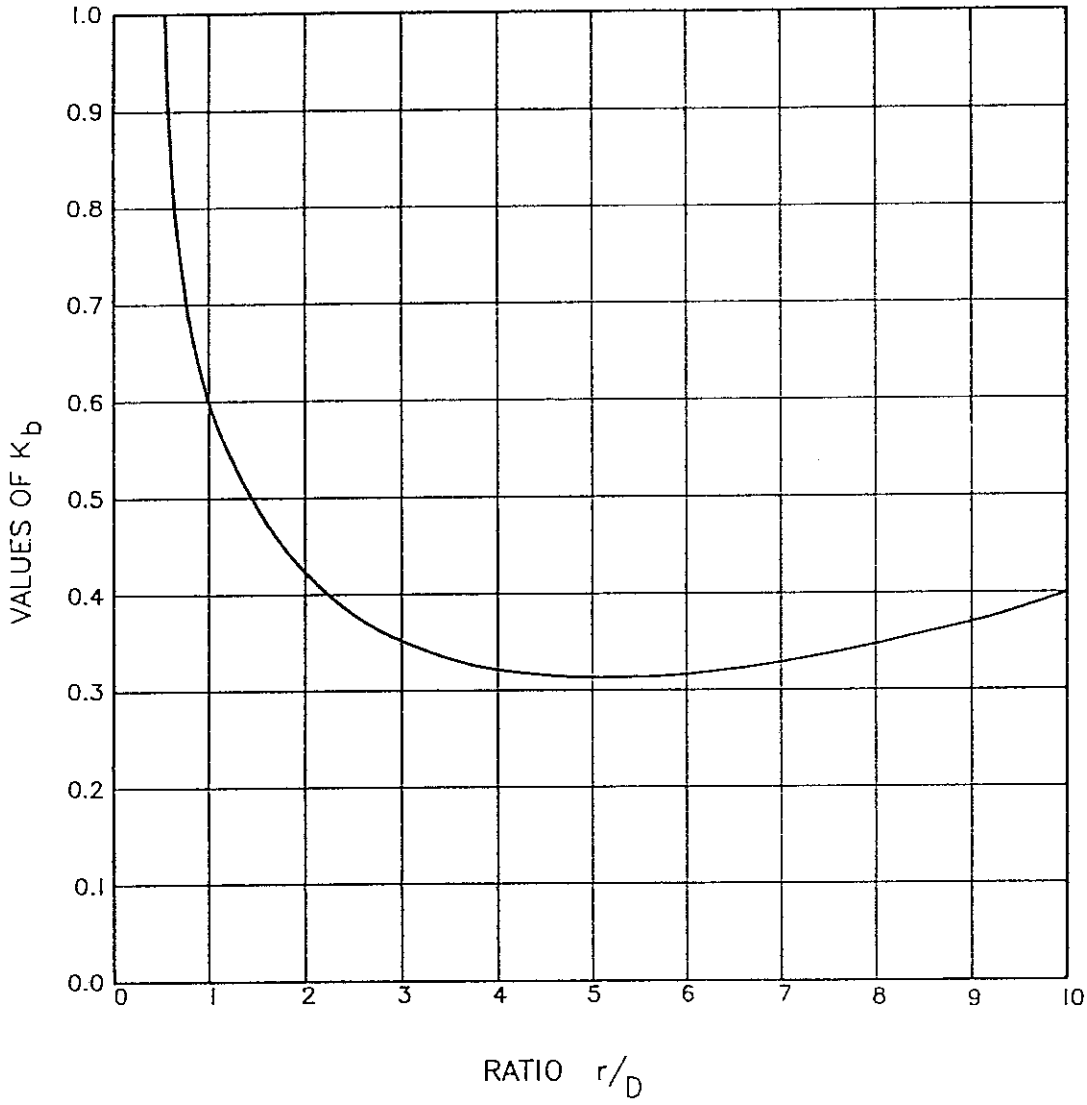
"Minor" losses in a storm drain are those that are associated with the energy necessary for the passage of water through areas such as junctions, manholes, and transitions. The total head loss is the sum of friction losses and minor losses. Minor losses, H_m, are normally represented as a factor K of velocity head:

$$H_m = K \left(\frac{V^2}{2g} \right) \tag{10.31}$$

The factor K varies widely, depending on the type of loss (e.g., bend, entrance, junction, manhole, etc.) and the configuration of the particular structure creating the head loss. A publication by the Denver Regional Council of Governments (1969) gives detailed information on minor losses, as do many hydraulics text books. It is important to note that these so-called "minor" losses can sometimes exceed friction losses within a storm-drain system, and therefore should always be evaluated at some point during the design process. Some of the more common minor losses encountered in storm-drain design are covered in the following sections.

10.8.5 Bend Losses

Head-loss coefficients for pipe bends with a deflection angle of 90 degrees, K_{b90}, can be determined from Figure 10.13.



r = radius of ℄ of bend; D = diameter
of circular section or side of square section

FIGURE 10.13
HEAD–LOSS COEFFICIENT FOR 90° PIPE BEND

K_{b90} for 90-degree, square elbows, where there is no rounding of corners of the intersecting conduits, ranges from 1.25 to 1.50. In cases of bends where the deflection is less than 90 degrees, determine the head-loss coefficients for bends as follows:

K_b (For bend < 90°) =

$$\left[1 - \left[\frac{90 - \text{deflection in degrees}}{90}\right]^2\right] K_{b90} \qquad (10.32)$$

Bend head loss, h_b, is then:

$$h_b = K_b \left[\frac{V^2}{2g}\right] \qquad (10.33)$$

10.8.6 Junction Losses

Junction losses, h_j, where the diameter of the main pipe does not change, shall be computed by:

$$h_j = \frac{V_2^2}{2g} - \frac{V_1^2}{2g} - \left[\frac{A_3 V_3^2}{A_2 g}\right] Cos\theta \qquad (10.34)$$

Figure 10.14A illustrates this type of junction.

In the case where $D_1 \neq D_2$, junction loss shall be calculated by the Thompson equation:

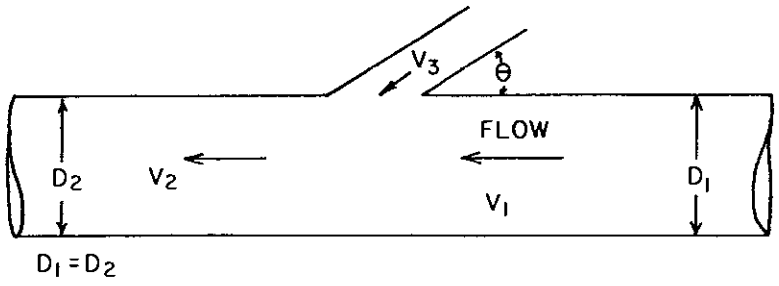
$$\Delta HG = \left[\frac{2}{A_1 + A_2}\right] \left[\frac{Q_2 V_2 - Q_1 V_1 - Q_3 V_3 Cos\theta}{g}\right] \qquad (10.35)$$

Figure 10.14B illustrates this type of junction.

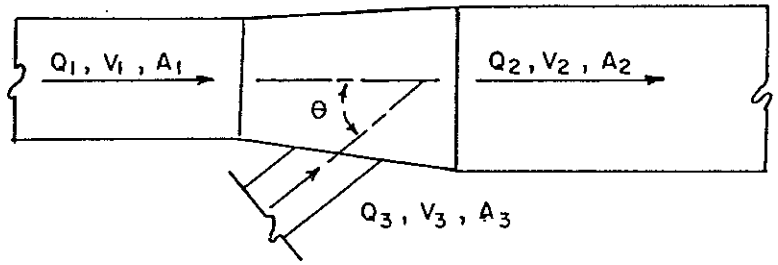
Where:

ΔHG = Difference in hydraulic gradient for the two ends of the junction, in feet;

A JUNCTION



B JUNCTION



C TRANSITION

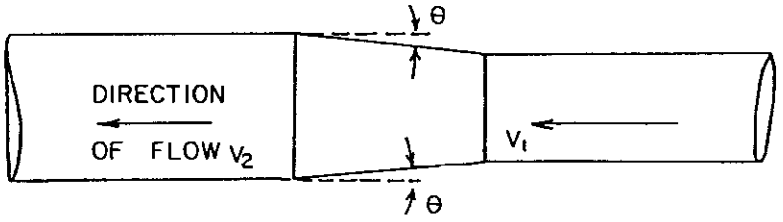


FIGURE 10.14
JUNCTION AND TRANSITION CONFIGURATIONS

A_1 = Flow area of mainline pipe upstream of the junction, in square feet;
A_2 = Area of mainline pipe downstream of the junction, in square feet;
A_3 = Area of tributary pipe, in square feet;
Q_1 = Discharge of mainline pipe upstream of the junction, in cubic feet per second;
Q_2 = Discharge of mainline pipe downstream of the junction, in cubic feet per second;
Q_3 = Discharge of tributary pipe, in cubic feet per second;
V_1 = Flow velocity in mainline pipe upstream of the junction, in feet per second;
V_2 = Flow velocity in mainline pipe downstream of the junction, in feet per second;
V_3 = Flow velocity in tributary pipe, in feet per second; and,
θ = The angle formed by the junction between the tributary pipe and the mainline pipe, in degrees.

It is very important to note that ΔHG in this equation is the difference in hydraulic grade-line elevation, not the energy grade line. The total energy loss at the junction, h_j, is represented by:

$$h_j = \Delta HG + \frac{V_1^2}{2g} - \frac{V_2^2}{2g} \qquad \textbf{(10.36)}$$

Junction loss should always be applied at the upstream side of the junction.

At junctions where there is more than one tributary inflow, the computation of head loss becomes more complicated. In most simple cases, Equation 10.35 can be used by subtracting $Q_n V_n \text{Cos}\theta$ terms in the numerator for each junction pipe. A publication by the Denver Regional Council of Governments (1969) gives junction losses for many detailed examples found in storm-drain design.

10.8.7 Transition Losses

Transition losses, h_t, for velocities which increase in the direction of flow (i.e., a contraction) are to be calculated using the following formula:

$$h_{tc} = 0.1\left(\frac{V_2^2}{2g} - \frac{V_1^2}{2g}\right) \qquad \textbf{(10.37)}$$

Where velocities decrease in the direction of flow (i.e., an expansion), the formula to be used is:

$$h_{te} = 0.2\left[\frac{V_1^2}{2g} - \frac{V_2^2}{2g}\right] \quad \textbf{(10.38)}$$

See Figure 10.14C for a diagram which illustrates how to calculate transition losses using Equation 10.36.

10.8.8 Manhole Losses

For manholes with no change in pipe size or discharge, and where the flow is straight through, manhole losses, h_{mh}, shall be computed by:

$$h_{mh} = K_{mh}\left[\frac{V^2}{2g}\right] \quad \textbf{(10.39)}$$

Where $K_{mh} = 0.05$.

Head loss for manholes where flow changes direction, but where there is no change in discharge or pipe size, should be determined from Figure 10.15.

For manholes which contain junctions, or that have changes in pipe size, the head loss associated with these elements should be computed according to the guidelines for junction and transition losses, as presented within this chapter. This head loss should then be added to the head loss computed by use of either Equation 10.39 or Figure 10.15, in order to obtain the total head loss through these types of manholes.

10.8.9 Entrance and Outlet Losses

Entrance losses, h_e, are calculated by the following equation:

$$h_e = K_e\left[\frac{V^2}{2g}\right] \quad \textbf{(10.40)}$$

Values for K_e are given by:

TYPE OF INLET	VALUE OF K_e
Inward Projecting	0.78
Sharp Cornered	0.50
Bell Mouth (Beveled)	0.04

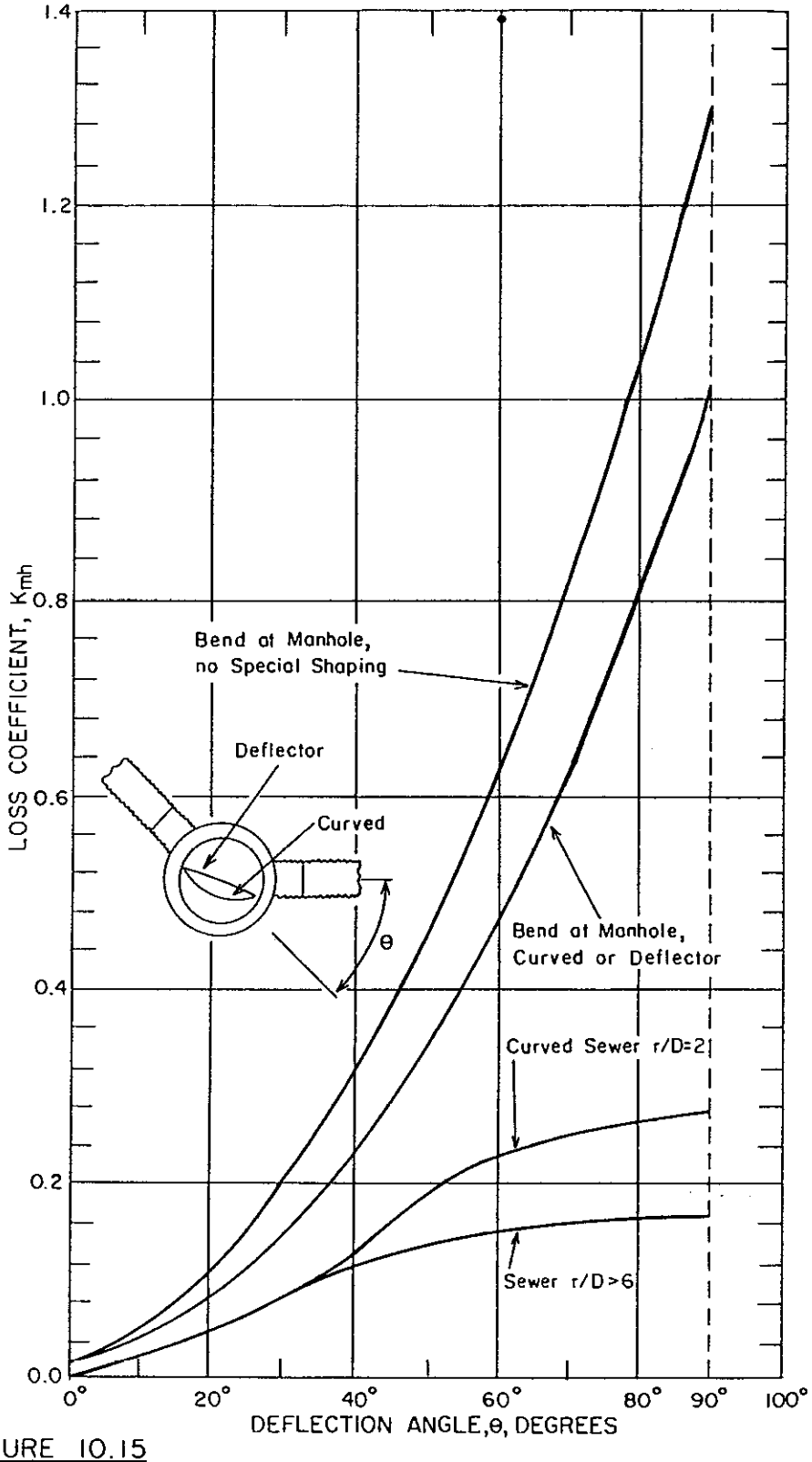


FIGURE 10.15
MANHOLE HEAD LOSS

CULVERT OUTLET VELOCITY	SUGGESTED OUTLET PROTECTION
Less than 4 fps	No protection required
More than 4 fps and less than 10 fps	Dumped rock riprap
More than 10 fps	Wire-tied riprap

If the velocity is greater than 10 fps, consider using a concrete energy dissipator, or increasing culvert size.

2. Structurally-designed downstream cut-off walls should be installed whenever the equilibrium channel slope is less than the existing channel slope. Refer to Chapter VI of this Manual for the sizing and spacing of cut-off walls.

3. Downstream embankment stabilization should be provided whenever the 100-year design flood overtops the roadway for a continuous period of time exceeding 10 minutes in duration (Pima County Department of Transportation and Flood Control District, 1984, P. VI-8).

11.5 Culvert vs. Bridge Crossings

Sedimentation at culvert crossings may be a problem when the culvert cannot transport all of the sediment being delivered by the approach channel. In general, pipe culverts will transport less sediment than box culverts, and smooth pipes (e.g., concrete) will transport more sediment than corrugated metal pipes. However, the most effective method of eliminating sedimentation problems is to utilize a bridge structure which minimizes changes to the hydraulics or geometry of the approach channel. Equation 11.9 is provided as an aid to the engineer in determining if a particular culvert crossing may experience sediment deposition either within the culvert or at its entrance.

$$\Re_s = \frac{Q_{ac}}{Q_p}\left(\frac{S_{ac}}{S_p}\right)^{1.66}\left(\frac{n_{ac}}{n_p}\right)^{-1.55}\left(\frac{R_{ac}}{R_p}\right)^{0.91} \qquad \textbf{(11.9)}$$

Where:

$\Re_s$ = Sediment-transport ratio (channel to culvert);
Q_{ac} = Discharge in approach channel, in cubic feet per second;
Q_p = Total culvert discharge, in cubic feet per second;
S_{ac} = Longitudinal slope of approach channel, in feet/foot;
S_p = Longitudinal slope of culvert, in feet/foot;
n_{ac} = Manning's roughness coefficient for the approach channel;

DEFAULT TO CRITICAL SLOPE ONLY IF PIPE IS FLOWING UNDER PRESSURE FLOW - PER ZELLER'S ADDENDUM

n_p = Manning's roughness coefficient for the culvert;
R_{ac} = Hydraulic radius of flow in approach channel, in feet; and,
R_p = Hydraulic radius of flow within the culvert, in feet.

If the value $\mathfrak{R}_s$ in Equation 11.9 is less than 1.0, the culvert will most likely be able to transport the sediment being delivered by the approach channel. If the value of $\mathfrak{R}_s$ is greater than 1.0, sedimentation may occur, and an alternate culvert or a bridge structure should be considered. The value of S_p in Equation 11.9 should never exceed the critical slope of the culvert for the discharge involved. The culvert itself may be placed on a slope greater than critical, but critical slope should always be used in Equation 11.9 under such circumstances. Additionally, if tailwater exceeds the soffit of the culvert, then a hydraulic grade line should be calculated, and the friction slope of the culvert should be used in Equation 11.9.

11.6 At-Grade (Dip) Crossings

Crossings of watercourses which are designed to allow drainage to flow across roadways at-grade are commonly referred to as either *at-grade* or *dip* crossings. These "structures" are often used where strict all-weather-access criteria do not need to be met. Nevertheless, when flows pass over *at-grade* crossings, hazardous conditions may be created both during and immediately after such flows because of downstream erosion and/or sediment and debris buildup within the crossing itself.

In order to minimize these hazardous conditions during and immediately after a flow event, the *at-grade* crossing should be built with a minimum four-percent cross slope, unless horizontal and vertical controls for traffic safety dictate otherwise, in order to reduce the potential for sedimentation within the crossing. The cross-slope should be accomplished by providing the vertical rise on the upstream side of the crossing, with the downstream side meeting existing grade (Pima County Department of Transportation and Flood Control District, 1984). At a minimum, a two-foot-deep cutoff wall should be placed along the upstream side of the *at-grade* crossing in order to protect the pavement edge from general scour. In addition, an adequately deep cutoff wall (i.e., based upon criteria contained within this Manual, but in no case less than three feet in depth), should be placed along the downstream side of the pavement in order to prevent erosion damage, due to local scour and channel degradation, from occurring immediately downstream of the *at-grade* crossing.