CITY OF SCOTTSDALE
DESERT GREENBELT PROJECT

Reata Pass / Beardsley Wash
Preferred Alternative Report

by: The Greiner Team

The Desert Greenbelt

May 1995

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CITY OF SCOTTSDALE
DESERT GREENBELT PROJECT

PREFERRED ALTERNATIVE REPORT

Introduction

Scottsdale enjoys a wealth of natural beauty, history and Arizona culture that is embodied in its rugged mountains and desert environment. In keeping with its image, the City made the decision to implement a policy to effectively manage stormwaters on a regional basis, while providing passive recreational opportunities for the community in a natural desert setting. The concept of the Desert Greenbelt offers North Scottsdale the opportunity to blend effective flood control and open space amenities within the environmentally sensitive desert landscape, while balancing homeowner concerns, development objectives, public safety, public landholder requirements and City-wide goals.

In November 1992, the Scottsdale City Council adopted an amendment to the Drainage Element of the ***General Plan*** which established the Desert Greenbelt concept and the proposed corridors. The Desert Greenbelt will use natural washes wherever possible and preserve the rugged character of the surrounding desert environment. The Desert Greenbelt system for this project is being designed to contain the 100-year alluvial fan flood hazard which currently exists in Scottsdale north of the Central Arizona Project (CAP) Canal.

In July 1993, the City retained the Greiner Team to perform the ***Desert Greenbelt Preliminary Design and Analysis.*** The study includes three individual project corridors: Rawhide Wash, Pima Road Channel and Reata Pass/Beardsley Wash which includes the Upper Reata Pass Wash (Figure I-1). The project has included four phases: Identifying the Concepts; Developing the Concepts; Consolidating the Concepts; and Final Refinement/Preliminary Design. Each phase includes Public Participation; Environmental Analysis; Visual, Multi-Use Recreation and Land Use Evaluation; Hydrologic/Hydraulic Engineering; and Funding Alternatives. These phases included:

- Identifying Concepts – data gathering, survey/mapping, review of various treatments and alternatives (see Snapshot Report).

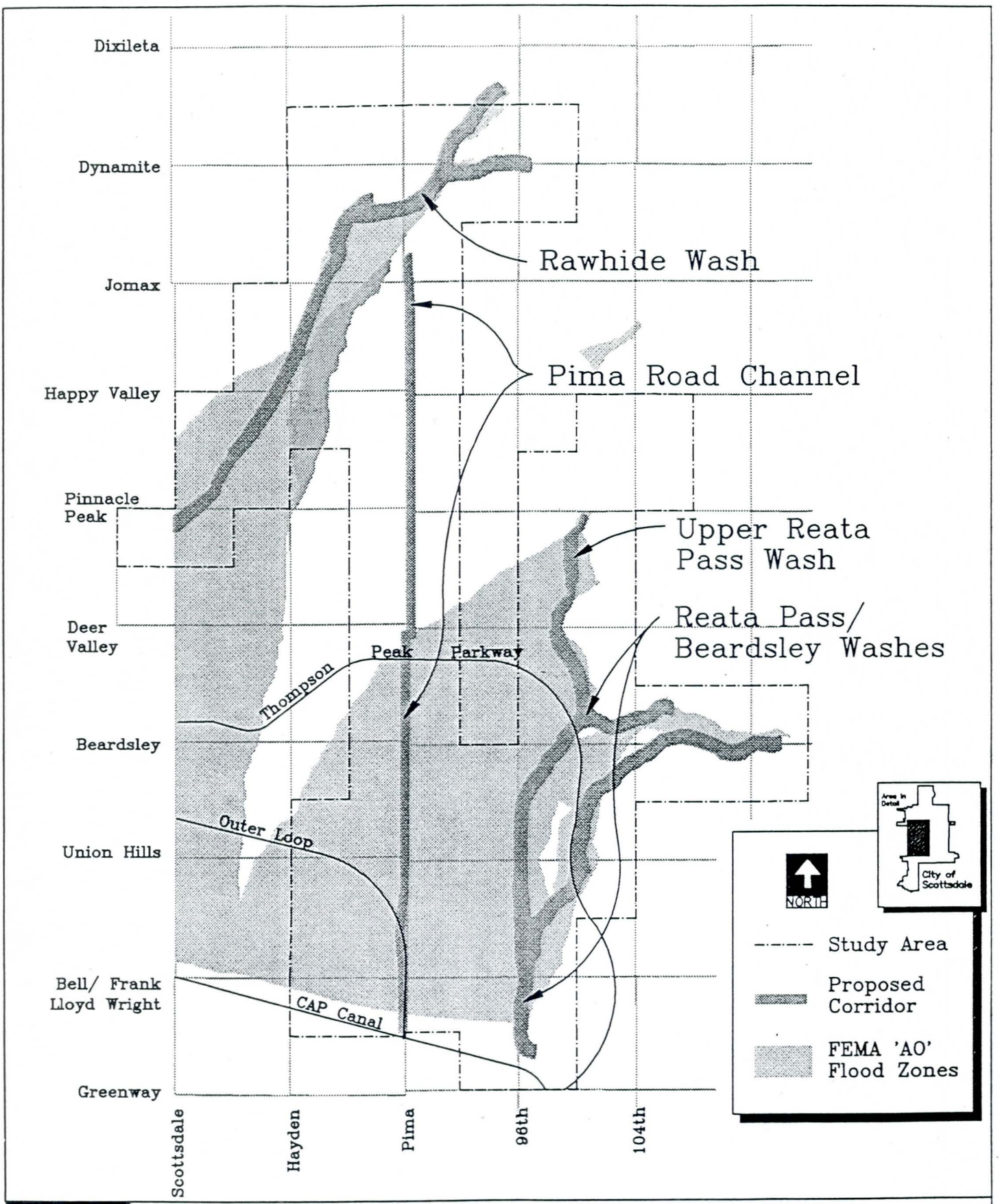
- Developing the Concepts – development of full-scale alternatives, integration of pubic concerns, refinement of hydrologic/hydraulic analyses, development of the Snapshot Study (see Specific Option Reports).

- Consolidating the Concepts – identification of specific issues and remedies; presentation of specific recommendations regarding identifiable environmental, aesthetic,

planning, land-use, recreational and hydraulic issues; development of the Specific Option Reports.

- Final Refinement/Preliminary Design – preliminary 10-percent design drawings; final environmental analysis and mitigation plan; address public involvement issues; estimates of capital, operation and maintenance costs; and funding mechanisms.

This Preferred Alternative Report, along with its accompanying addenda, represent the culmination of this effort. Upon receiving final public comment on these documents, the final 10-percent Preliminary Design Drawings will be completed and presented to Council, providing direction for the full implementation of the **Scottsdale Desert Greenbelt Project**.



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The Desert Greenbelt

Scale: 1"=6000'

Principal Washes and Channels

City of Scottsdale and Greiner, Inc.

Figure I-1

REATA PASS / BEARDSLEY WASH PREFERRED ALTERNATIVE REPORT

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CITY OF SCOTTSDALE
DESERT GREENBELT PROJECT

REATA PASS / BEARDSLEY WASH
PREFERRED ALTERNATIVE REPORT

Definition of the Alternative

The Reata/Beardsley Wash system is composed of the southern portion of the Reata Pass Wash, south of the Deer Valley Road alignment, with tributary flow from Northern Beardsley Wash and Southern Beardsley Wash. The outlet is into the Bureau of Reclamation Retention Basin at the Westworld equestrian facility. On Reata Pass Wash below Station 152+00, containment must be provided to retain flow within the main wash corridor. With the exception of the west bank for a quarter-mile south of the Deer Valley Road alignment, the remaining portion of the Reata Pass Wash is naturally contained.

The confluence of the Southern Beardsley Wash and the Reata Pass Wash is just above the existing north half of the Bell Road Bridge. Natural containment of the Southern Beardsley Wash is intermittent on the west side. The McDowell Mountains provide containment on the east.

The proposed confluence of the Northern Beardsley Wash and the Reata Pass Wash occurs at Reata Pass Wash Station 168+00. The lower half mile of Northern Beardsley Wash is being realigned for better control of stormwater. The upper portion of this wash (above Northern Beardsley Wash Station 36+00) is naturally contained.

Bridges are proposed at the southern half of Bell Road (Reata Pass Wash Station 45+00); Union Hills Drive (Reata Pass Wash Station 98+50); and two on Thompson Peak Parkway (Reata Pass Wash Station 166+00 and Southern Beardsley Wash 169+00).

Selection Rationale

<u>Below Reata Pass Wash Station 18+00 (See Sheet RTA1)</u>

<u>Objectives/Issues</u>

- Conveyance of flows into and between existing retention basins at Westworld.
    - Connection between first basins may require larger weir structure due to higher, less attenuated flow.
    - Impact of future Thompson Peak Parkway on basins should be included in analysis.
    - Work with Westworld on outlet issues.

- Construct one of two options for an energy dissipator system.
    - Locate structure near confluence of the Reata Pass Wash and the Westworld channel.
    - Protect slopes of Westworld channel and allow energy dissipation to occur naturally as the flow enters the first basin.
    - Design resolution to require participation of the Bureau of Reclamation, the City of Scottsdale and Westworld Management.

- Alignment of transition from the Reata Pass Wash to the Westworld channel.
    - The hydraulic characteristics are the deciding factors for channel alignment.
    - The existing Westworld channel requires widening and bank protection.
    - Must still provide inlet for upstream Westworld channel flow.

- Channel section through this area is a manmade, cut trapezoidal channel.
    - Erosion protection is necessary on the side slopes.

- Impact to existing infrastructure and facilities.
    - Protection or relocation of existing utilities as necessary.
    - Use and operation of existing facilities and commercial operation to be maintained through coordination with Westworld maintenance staff.
        - During construction, detours and directional signage may be required to assist users.
        - Construction will require phasing dependent upon Westworld facility usage.
    - Extensive multi-use path/trail connections at Westworld trailhead.

Hydrology/Hydraulics Summary

- Within the full-cut channel velocities are near 20 feet per second (fps) before entering into the Westworld channel.

- Depths are near seven feet with a top-width of about 180 feet.

Constraints/Public Comment

- Existing facilities and utilities constrain the channel alignment.
- Circulation element associated with multi-use path/trail.
  - Crossing conflicts between automobile/pedestrian/equestrian/cyclist circulation at Westworld road.
  - Consider alternatives for separation of users.

Benefits/Impacts

- Containment of the 100-year storm within designated drainage corridor.
- Continuation of the multi-use path/trail system in keeping with the General Plan.
- Protection of infrastructure and existing facilities from flood damage.

Reata Pass Wash Station 18+00 to Station 47+00 and to Southern Beardsley Wash Station 113+00 (See Sheets RTA1, RTA2 and SB1)

Objectives/Issues

- Ensure containment of 100-year storm within the natural wash corridor.
- Remove constriction by the Old Verde Canal (Reata Pass Wash Station 26+00) to allow passage of anticipated flow.
- Retain the natural desert wash character.
- Integrate proposed improvements with existing improvements at Bell Road (Reata Pass Wash Station 44+50).
- Design confluence to ensure proper conveyance of flow under Bell Road.

Hydrology/Hydraulics Summary

- Velocities in this reach are between 10 and 16 fps.
- Flow depth is five to six feet over widths of near 450 feet.

Constraints/Public Comment

- Retention of viable, developable parcels.

- Location of the Bell Road bridge.

Benefits/Impacts

- Containment of the 100-year storm within designated drainage corridor eliminates the Federal Emergency Management Agency (FEMA) designated flood hazard area outside of the channel.

- Continuation of the multi-use path/trail system in keeping with the General Plan.

  - Multi-use path/trail located within Reata Pass Wash.

  - Multi-use trail is located in Southern Beardsley Wash. A multi-use path is currently under study.

- Grade separation at street crossings for multi-use path/trail crossings.

- All-weather access at major roads.

Reata Pass Wash Station 47+00 to Station 113+00 (See Sheets RTA2 to RTA4)

Objectives/Issues

- Ensure containment of 100-year storm within the natural wash corridor.

- Retain the natural desert wash character.

- Lack of natural containment within the designated corridor.

- Need for manmade connections between existing washes to create a continuous low-flow channel.

  - Natural ground slope is toward the southwest.

- Integration of existing manmade overflow channel adjacent to Ironwood Village with Greenbelt improvements.

- Protection of existing developments west of the corridor.

- Ensure proper conveyance under Union Hills Drive (Reata Pass Wash Station 98+50).

Hydrology/Hydraulics Summary

- Velocities are between 11 and 15 fps, with the exception of the overflow channel at Ironwood Village where velocities are near 20 fps.

- Flow depths are between two and six feet due to the undulating character of the ground.
- Within the overflow, channel depths are near 7 feet.

Constraints/Public Comment

- Coordination with various landowners regarding future development options.
- A shorter bridge length at Union Hills Drive restricts corridor width.
- Coordination with developer may refine alignment widths dependent on adjoining land uses, containment options and developer design participation.

Benefits/Impacts

- Containment of the 100-year storm within designated drainage corridor eliminates FEMA designated flood hazard area outside of the channel.
- Continuation of the multi-use path/trail system in keeping with the General Plan.
- Grade separation at street crossings for multi-use path/trail crossings.
- All-weather crossings on major roads.

Station 113+00 to Station 153+00 (See Sheets RTA5 and RTA6)

Objectives/Issues

- Ensure containment of 100-year storm within the natural wash corridor.
- Retain the natural desert wash character.
- Lack of natural containment within the designated corridor.
- Protection of existing developments to the west.

Hydrology/Hydraulics Summary

- Velocities are between 10 and 15 fps with depths of five to six feet.
- Levees on each side of the natural braided wash provide containment.

Constraints/Public Comment

- Retain existing vegetation to the extent practicable.
- Restrict corridor width to near 400 feet.
- Coordination with developer may refine alignment widths dependent on adjoining land uses, containment options and developer design participation.

Benefits/Impacts

- Containment of the 100-year storm within designated drainage corridor eliminates FEMA designated flood hazard area outside of the channel.
- Continuation of the multi-use path/trail system in keeping with the General Plan.
- Potential minor road system may use wet crossing subject to Master Plan and City approval.
    - Requires floodwarning and path/trail notification signage.

Reata Pass Wash Station 153+00 to Station 216+00 (See Sheets RTA6 to RTA8)

Objectives/Issues

- Retain the natural desert wash character.
- Provide alignment allowing conveyance under Thompson Peak Parkway (Reata Pass Wash Station 166+00).
- Realignment of the lower portion of the Northern Beardsley Wash to relocate confluence north of the Thompson Peak Parkway bridge.
- Containment of southwest breakout flows in the quarter-mile south of the Deer Valley alignment.
    - Direct flow into the existing channel adjacent to the mountain at the southeast.
- Continuation of the multi-use path/trail system per the General Plan.

Hydrology/Hydraulics Summary

- Velocities range from 12 to 20 fps for generally supercritical flow.
- Depths vary from five to seven feet within the natural channel.

Constraints/Public Comment

- Relationship of the proposed Thompson Peak Parkway bridge and the confluence of Reata Pass Wash with Northern Beardsley Wash.
- Undulating character of the existing wash.
- Coordination with developer may refine alignment widths dependent on adjoining land uses, containment options and developer design participation.

Benefits/Impacts

- Containment of the 100-year storm within designated drainage corridor eliminates the FEMA designated flood hazard area outside of the channel.
- Continuation of the multi-use path/trail system in keeping with the General Plan.
- Grade separation at street crossings for multi-use path/trail crossings.
- All-weather crossings on major roads.
- Potential minor road system may use wet crossing subject to Master Plan and City approval.
    - Requires floodwarning and path/trail notification signage.

Southern Beardsley Wash Above Station 113+00 (See Sheets SB1 to SB6)

Objectives/Issues

- Confluence with Reata Pass Wash and State Land channel (Thompson Peak Wash)
- Design confluence to ensure proper conveyance of flow under Bell Road.
- Retain the natural desert wash character.
- Need to contain western breakout flows within the designated corridor.
- Ensure containment of the 100-year storm within the natural wash corridor.

Hydrology/Hydraulics Summary

- Velocities are near 10 fps for mainly supercritical flow.
- Water depths are near five feet within the lower portion, and near nine feet within the naturally deep upper channel.

- There is natural containment on both sides from Station 113+00 to Station 170+00 at Thompson Peak Parkway.

- Continuous natural containment is on the east bank only above Station 170+00.

Constraints/Public Comment

- Due to an abundance of large rock, the multi-use path/trail must be located on the overbank.

- Coordination with developer regarding land-use issues.

- Containment structure must withstand high velocities.

- Coordination with developer may refine alignment widths dependent on adjoining land uses, containment options and developer design participation.

Benefits/Impacts

- Containment of the 100-year storm within designated drainage corridor eliminates the FEMA designated flood hazard area outside of the channel.

- Continuation of the multi-use path/trail system in keeping with the General Plan.

- Grade separation at street crossings for multi-use path/trail crossings.

- All-weather crossings on major roads.

Northern Beardsley Wash Above Station 15+00 (See Sheets NB1 and NB2)

Objectives/Issues

- Retain the natural desert wash character.

- Ensure containment of the 100-year storm within the natural wash corridor.

- Realignment of the wash between Station 15+00 and Station 37+00 to facilitate confluence with Reata Pass Wash above the proposed Thompson Peak Parkway bridge.

    - The hydraulic characteristics are the deciding factors for channel alignment.

    - Channel section is a cut trapezoidal channel with erosion protection on the side slopes.

Hydrology/Hydraulics Issues

- Velocities are near 19 fps within the cut portion of the channel, but only nine fps in the natural upper portion.
- Depths are near five to six feet throughout the wash.

Constraints/Public Comment

- Due to an abundance of large rock, the multi-use path/trail must be located on the overbank.
- Coordination with developers regarding land-use issues.
- Containment structure must withstand high velocities.
- Coordination with developer may refine alignment widths dependent on adjoining land uses, containment options and developer design participation.

Benefits/Impacts

- Containment of the 100-year storm within designated drainage corridor eliminates the FEMA designated flood hazard area outside of the channel.
- Continuation of the multi-use path/trail system in keeping with the General Plan.

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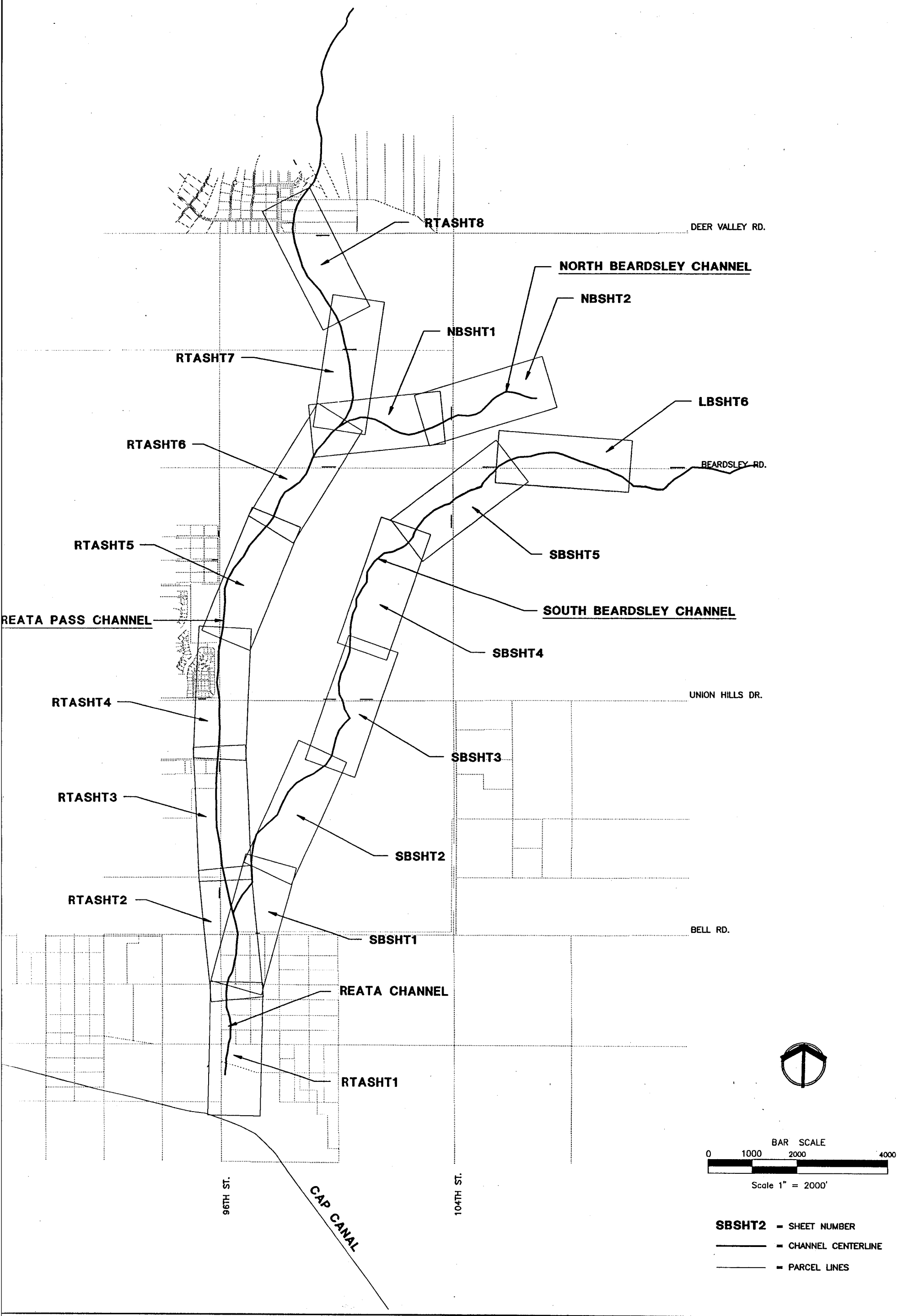

Desert Greenbelt

DRAWING NO. KEY1 of KEY1

PROJECT NAME
REATA PASS/BEARDSLEY WASH

DRAWING TITLE
Preliminary 10% Plans

Greiner
Greiner, Inc.
Phoenix, AZ
Engineers, Architects and Planners

ENGINEERS

SEAL

PROJ. NO. E029102
JOB NO.
DESIGN W.C.L.
DRAWN M.T.C.
CHECKED R.E.P.
SCALE: AS NOTED

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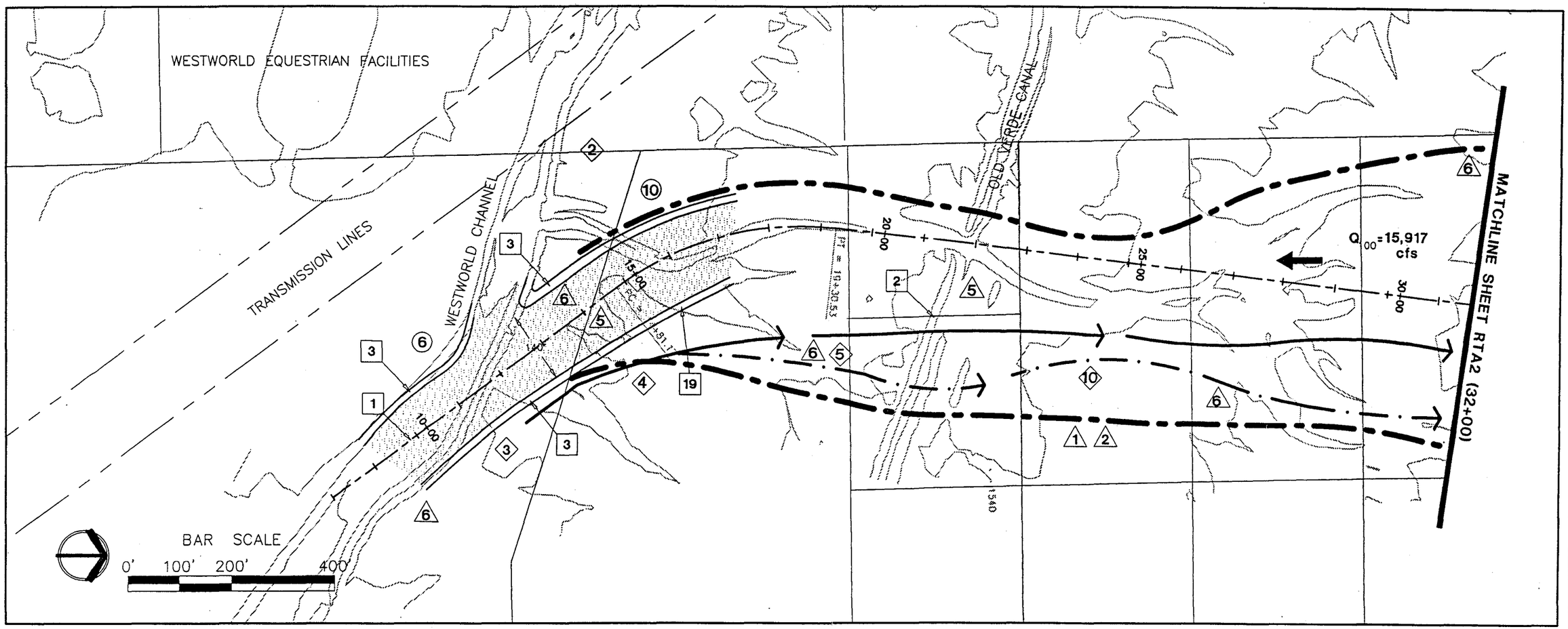

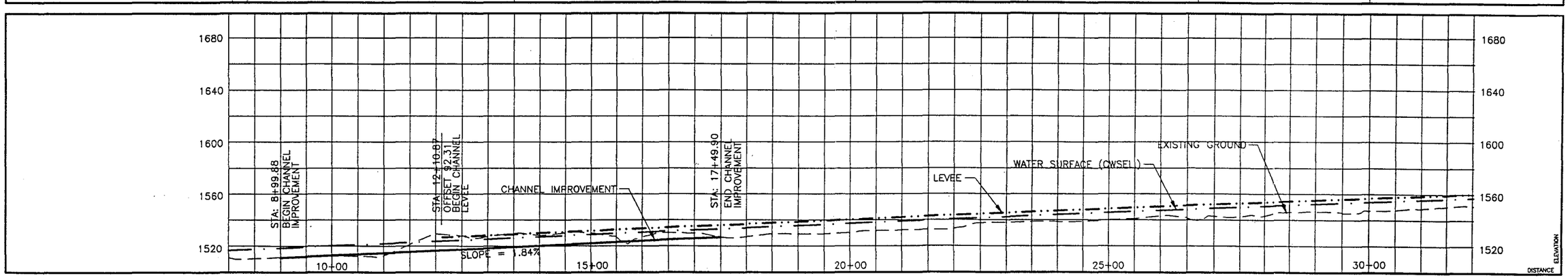

CHANNEL IMPROVEMENTS

1. OUTLET STRUCTURE/COORDINATION OF ENHANCED CHANNEL X-SECTION DOWNSTREAM INTO EXISTING BASINS.
2. REMOVE EXISTING LEVEE.
3. ARMORED SIDE SLOPE 3:1.
19. NATURAL SIDE SLOPE 3:1.

PATHS / TRAILS

2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.
3. LINKAGE OF EXISTING MULTI-USE TRAIL INTO A REGIONAL SYSTEM
4. TRAIL ACCESS OVER FLOODWALL/LEVEE.
5. TRAIL WITHIN EASEMENTS.
10. MULTI-USE PATH & TRAIL TO BE LOCATED IN OVERBANK.

LAND USE

6. ADJACENT LAND USE IMPACTED BY FINAL ALIGNMENT.
10. DETERMINE MOST APPROPRIATE USE OF REMNANT PARCEL.

MITIGATION

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION
2. FLOOD PROTECTION WALLS DESIGNED FOR 100 YR. EVENT STORM
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION.
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE.

AESTHETIC APPLICATIONS

4. FILL OVER SOIL CEMENT LEVEE
7. INTERPRETIVE ART

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

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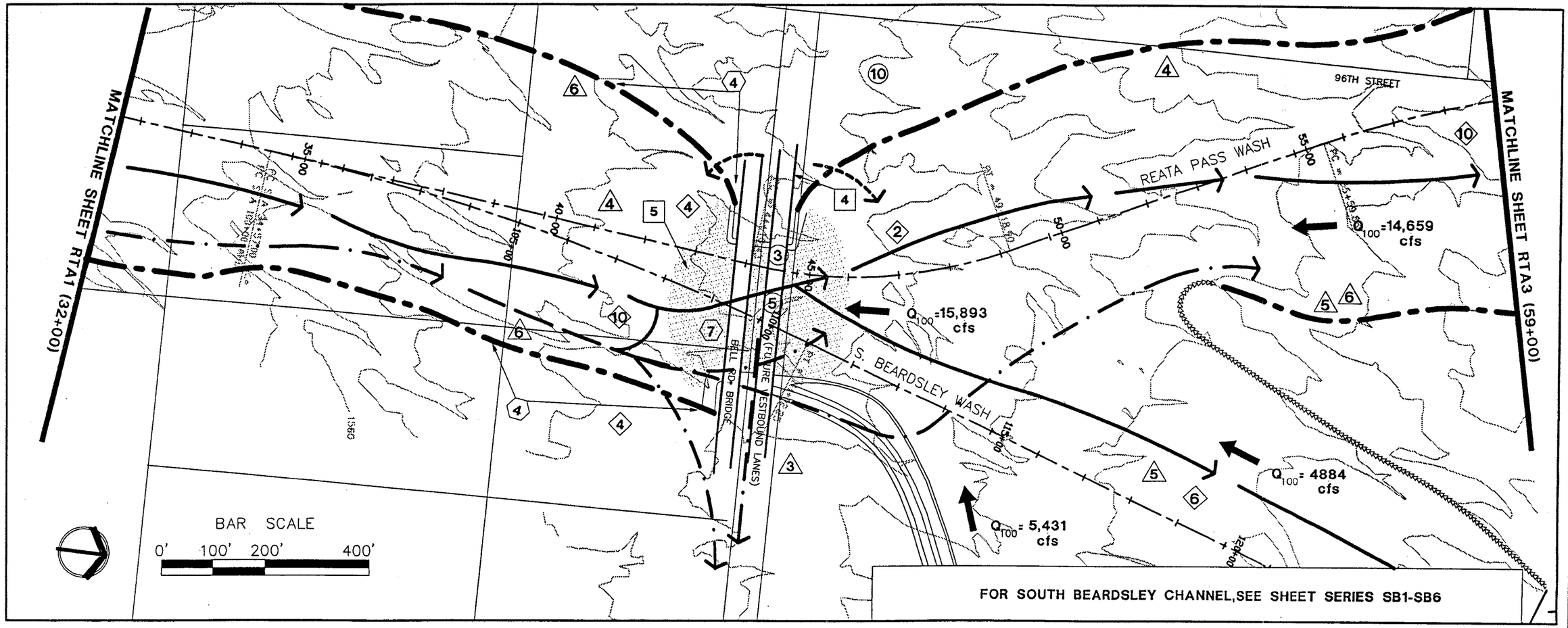
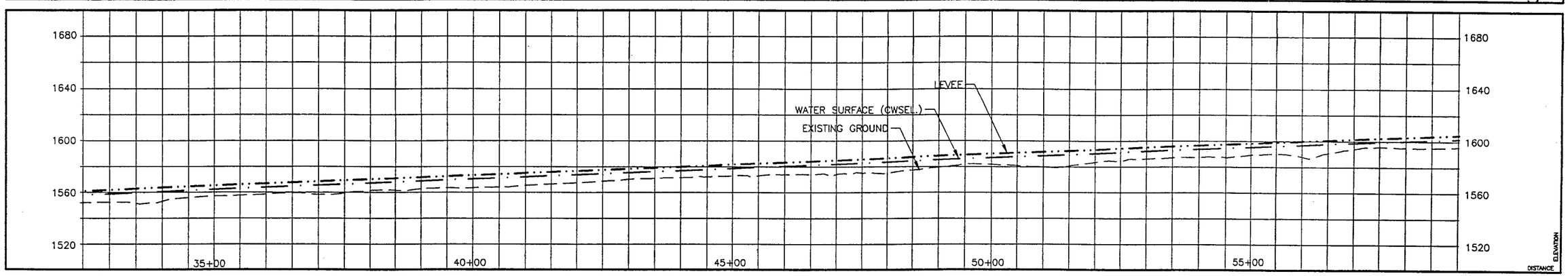
RTA1 of RTA8





CHANNEL IMPROVEMENTS

4. CONSTRUCT BRIDGE ADJACENT TO EXISTING HALF.
5. REGRADE TO IMPROVE CONVEYANCE TO BRIDGE.

PATHS / TRAILS

2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.
4. TRAIL ACCESS OVER FLOODWALL/LEVEE
10. MULTI-USE PATH & TRAIL TO BE LOCATED IN OVERBANK.

LAND USE

3. BRIDGE PROVIDES AN ALL-WEATHER CROSSING.
5. GRADE SEPARATED MULTI-USE PATH & TRAIL CROSSING.
10. DETERMINE MOST APPROPRIATE USE OF REMNANT PARCEL.

MITIGATION

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION
2. FLOOD PROTECTION WALLS DESIGNED FOR 100 YR. EVENT STORM
4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE.
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION.
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE.

AESTHETIC APPLICATIONS

4. FILL OVER SOIL CEMENT LEVEE
7. INTERPRETIVE ART

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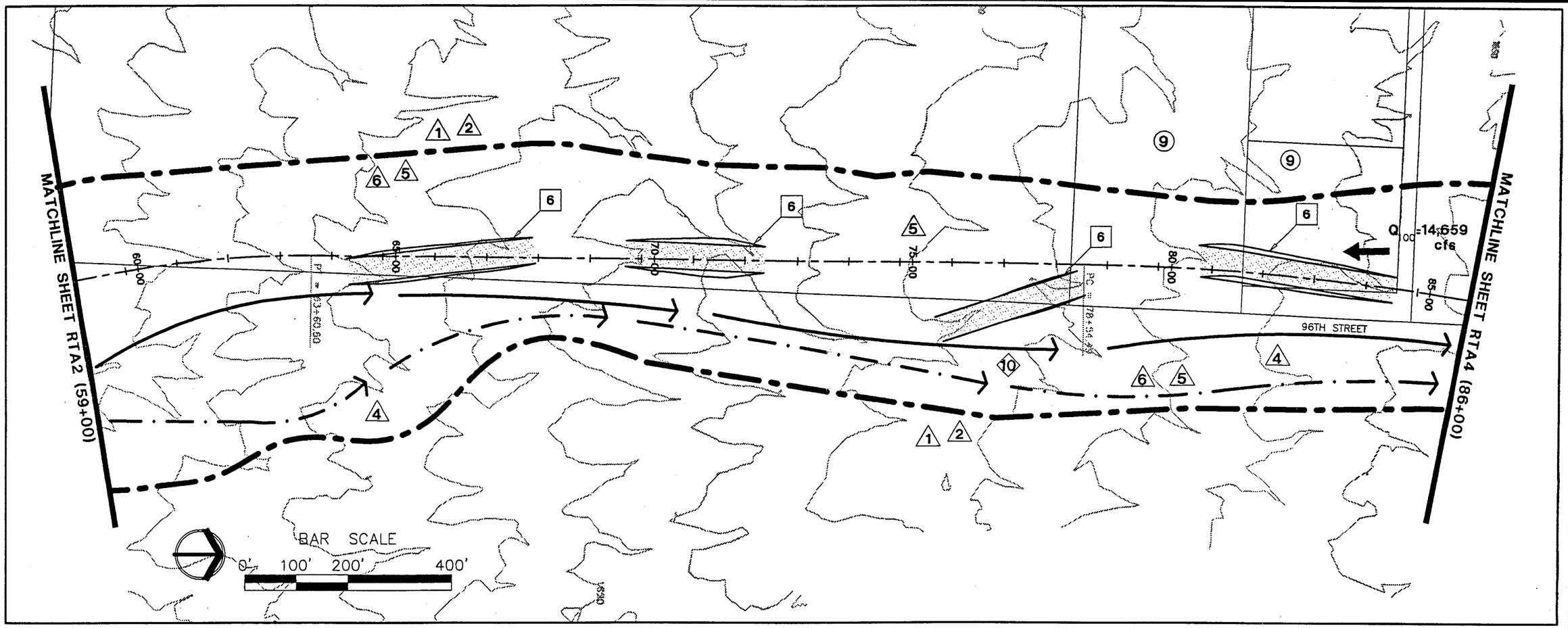
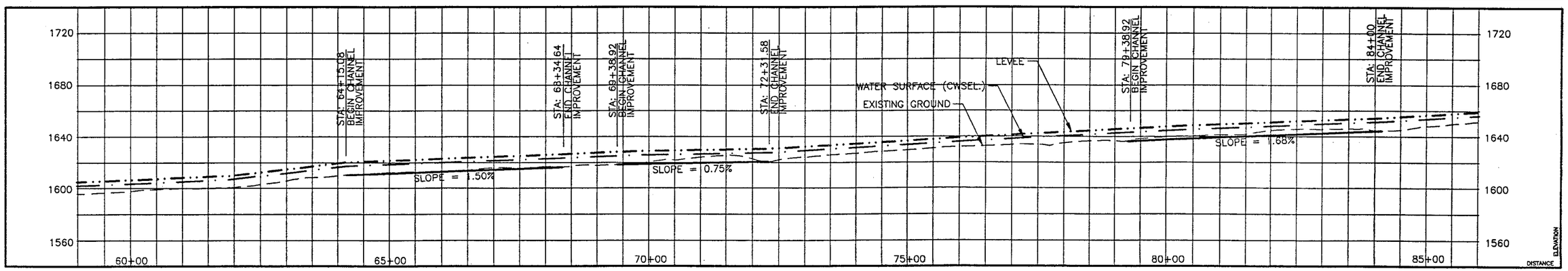
The Desert Greenbelt





CHANNEL IMPROVEMENTS □

6. EXCAVATE CONTINUOUS LOW-FLOW CHANNEL.

PATHS / TRAILS ◇

10. MULTI-USE PATH & TRAIL TO BE LOCATED IN OVERBANK.

LAND USE ○

9. RETAIN VIABLE DEVELOPABLE PARCEL TO EXTENT PRACTICABLE.

MITIGATION △

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION
2. FLOOD PROTECTION WALLS DESIGNED FOR 100 YR. EVENT STORM
4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE

AESTHETIC APPLICATIONS ⬡

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
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- CHANNEL RIGHT OF WAY
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- NATURAL CONTAINMENT
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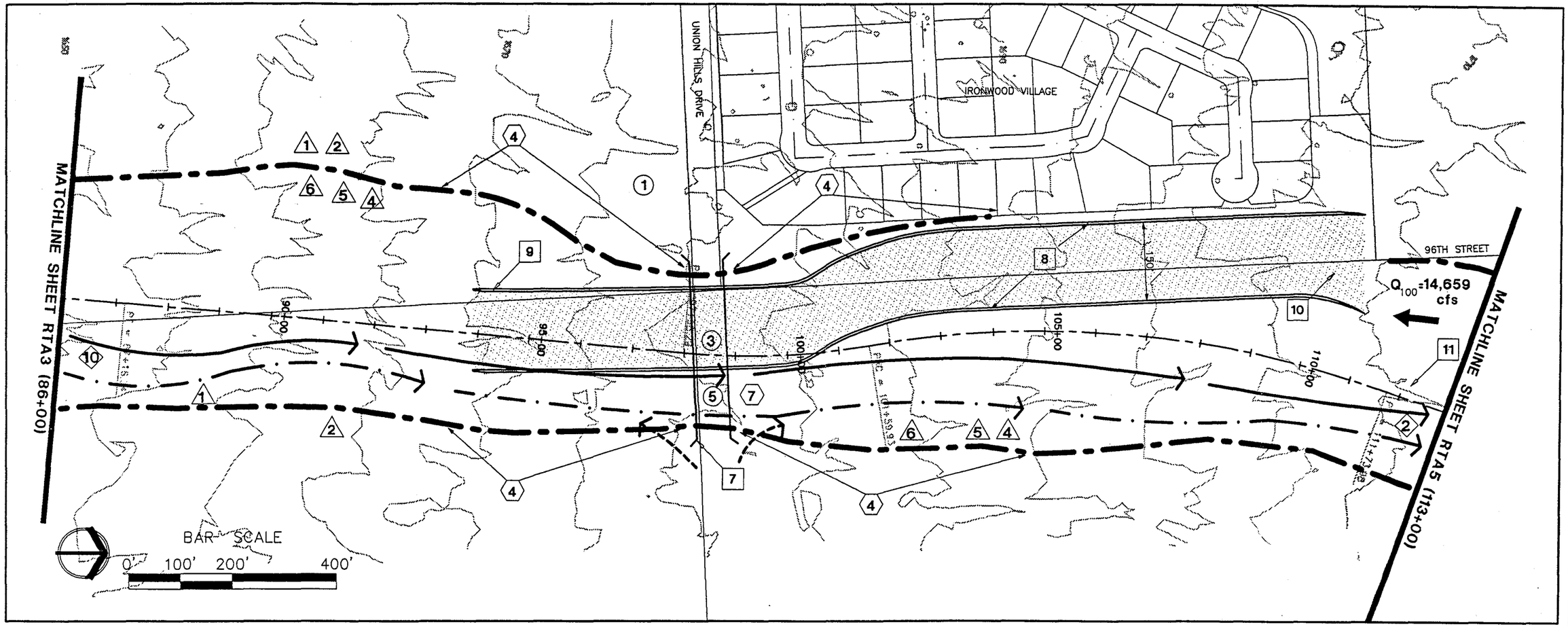
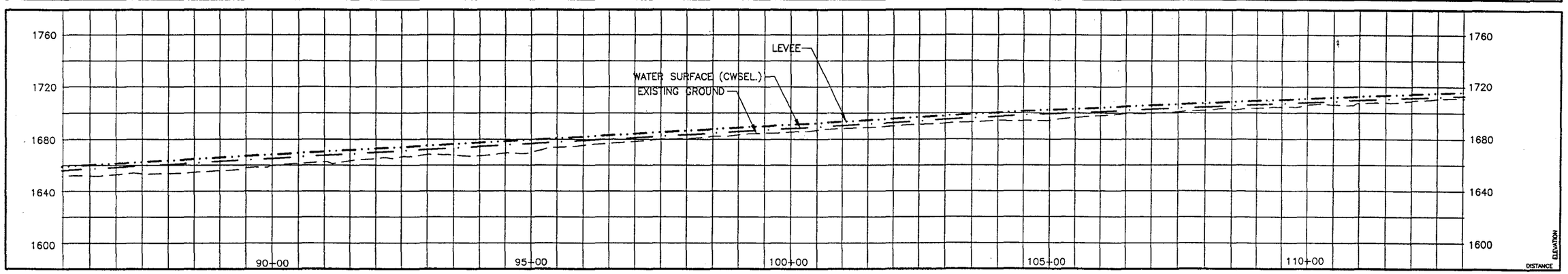
Desert Greenbelt





CHANNEL IMPROVEMENTS

7. CONSTRUCT BRIDGE.
8. IMPROVE AND STABILIZE EXISTING BANKS.
9. EXTEND CUT CHANNEL THROUGH BRIDGE.
10. GRADE OVERFLOW CHANNEL.
11. ARMOR WEIR TO OVERFLOW CHANNEL.

PATHS / TRAILS

2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.
10. MULTI-USE PATH & TRAIL TO BE LOCATED IN OVERBANK.

LAND USE

1. IMPROVEMENTS DESIGNED TO FACILITATE WASH ACCESS FOR ADJACENT PROPERTY OWNERS
3. BRIDGE/BOX CULVERT PROVIDES AN ALL-WEATHER CROSSING.
5. GRADE SEPERATED MULTI-USE PATH & TRAIL CROSSING.

MITIGATION

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION.
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4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE

AESTHETIC APPLICATIONS

4. FILL OVER SOIL CEMENT LEVEE
7. INTERPRETIVE ART

LEGEND

- MULTI-USE TRAIL
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- 5' CONTOURS

AUTH.	BY	REVISIONS	DATE

PROJ. NO. E029102
JOB NO.
DESIGN W.C.L.
DRAWN M.T.C.
CHECKED S.E.S.
SCALE AS NOTED

ENGINEERS

SEAL

Greiner
Greiner, Inc.
Phoenix, AZ
Engineers, Architects and Planners

PROJECT NAME
REATA PASS/BEARDSLEY WASH

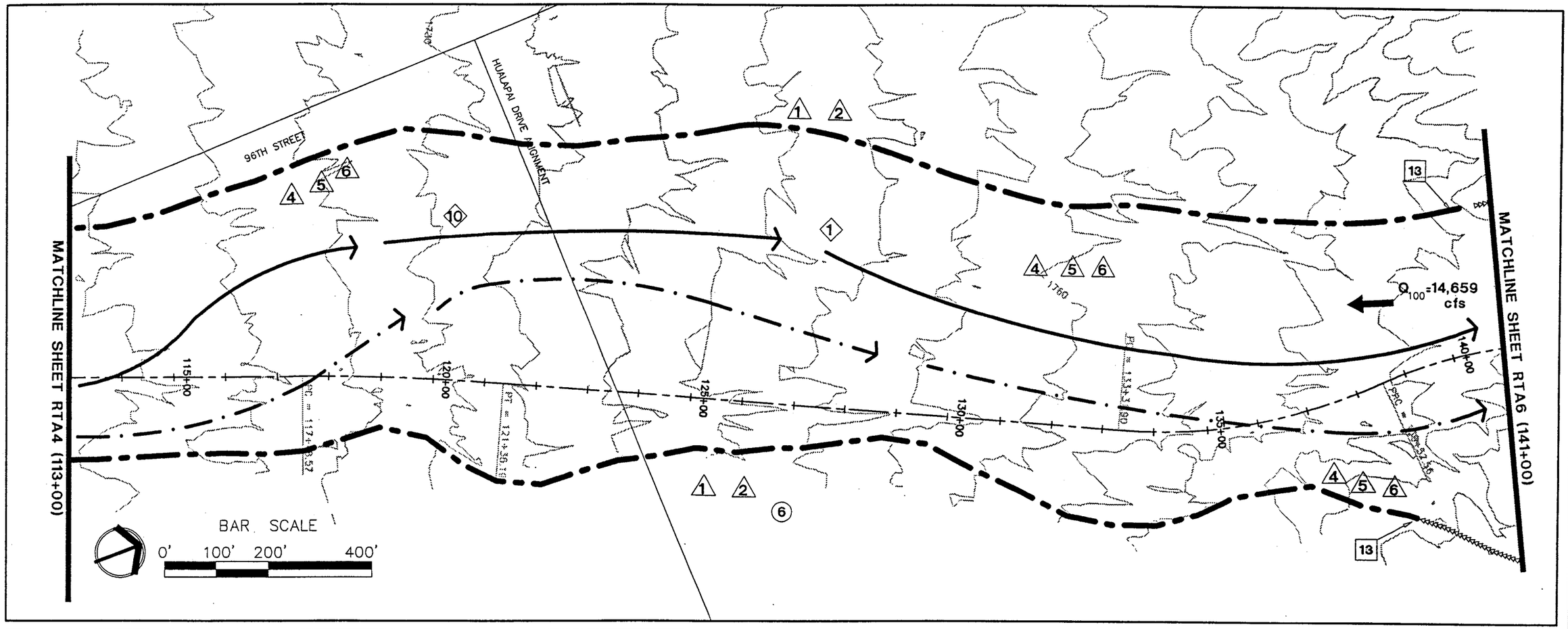
DRAWING TITLE
Preliminary 10% Plans

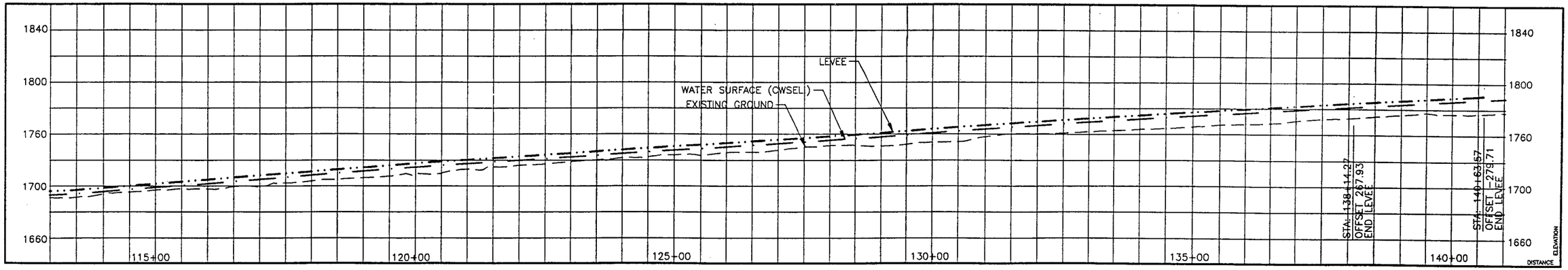
DRAWING NO.
RTA4 of RTA8

Desert Greenbelt

DESERT GREENBELT

C:\PA\E029102\CADD\RTA3-RTA4





CHANNEL IMPROVEMENTS

13. TIE LEVEE INTO EXISTING NATURAL CONTAINMENT.

PATHS / TRAILS

1. TRAILS TO FOLLOW LOW-FLOW CHANNELS OR NATURAL WASHES
10. MULTI-USE PATH & TRAIL TO BE LOCATED IN OVERBANK.

LAND USE

6. ADJACENT LAND USE IMPACTED BY FINAL ALIGNMENT.

MITIGATION

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION
2. FLOOD PROTECTION WALLS DESIGNEG FOR 100 YR. EVENT STORM
4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE.
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION.
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE.

AESTHETIC APPLICATIONS

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

DATE	REVISIONS	BY	AUTH.

PROJ. NO. E029102
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DRAWN M.T.C.
CHECKED S.E.S.
SCALE: AS NOTED

ENGINEERS

SEAL

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Phoenix, AZ
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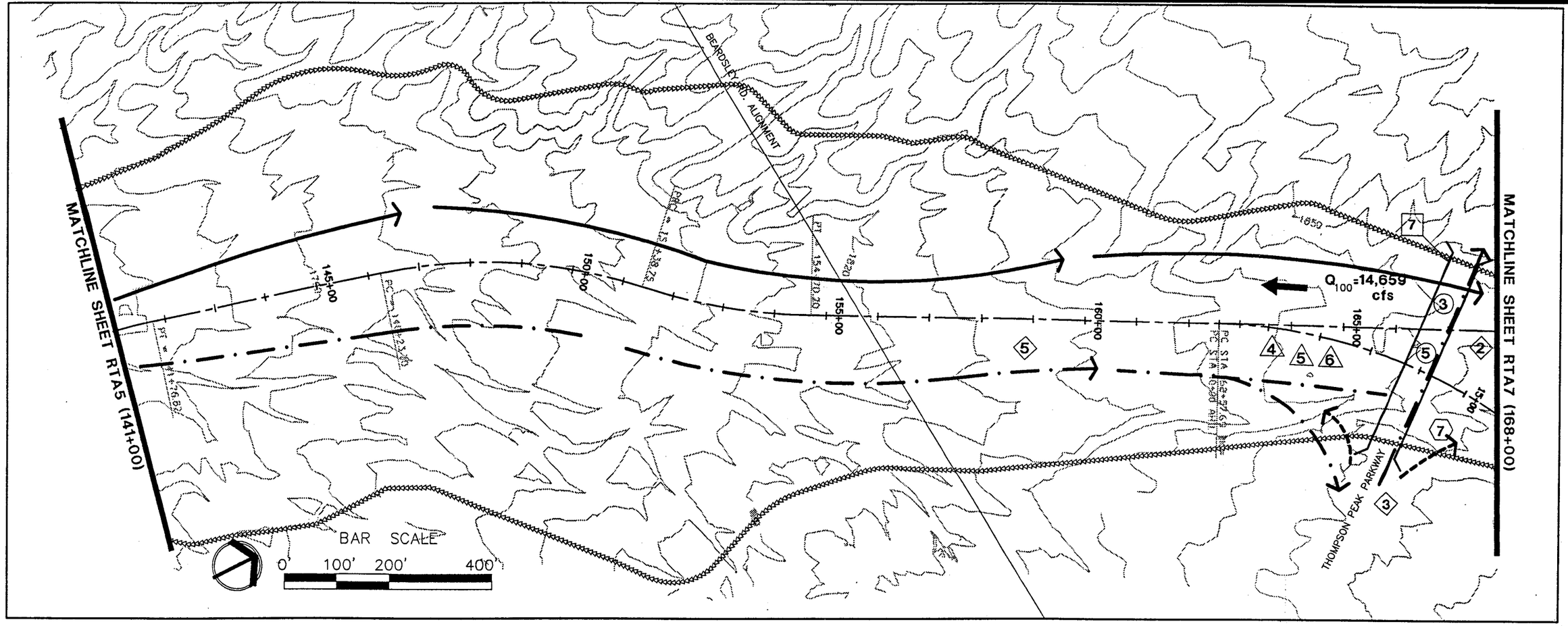
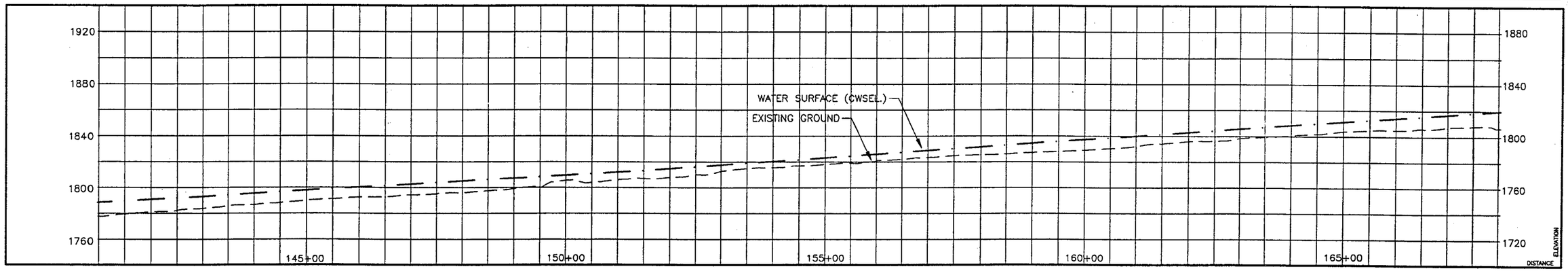
PROJECT NAME: REATA PASS/BEARDSLEY WASH

DRAWING TITLE: Preliminary 10% Plans

DRAWING NO. RTA5 of RTA8

The Desert Greenbelt





CHANNEL IMPROVEMENTS

7. CONSTRUCT BRIDGE.

PATHS / TRAILS

2. INSTALL SIGNAGE TO DIRECT TRAIL USERS
3. LINKAGE OF EXISTING MULTI-USE TRAIL INTO A REGIONAL SYSTEM
5. TRAIL WITHIN EASEMENT

LAND USE

3. BRIDGE/BOX CULVERT PROVIDES AN ALL-WEATHER CROSSING.
5. GRADE SEPARATED MULTI-USE PATH & TRAIL CROSSING.

MITIGATION

AESTHETIC APPLICATIONS

7. INTERPRETIVE ART

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

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ENGINEERS

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Phoenix, AZ
Engineers, Architects and Planners

PROJECT TITLE: REATA PASS\BEARDSLEY WASH

DRAWING TITLE: Preliminary 10% Plans

DRAWING NO.
RTA6 of RTA8

The Desert Greenbelt

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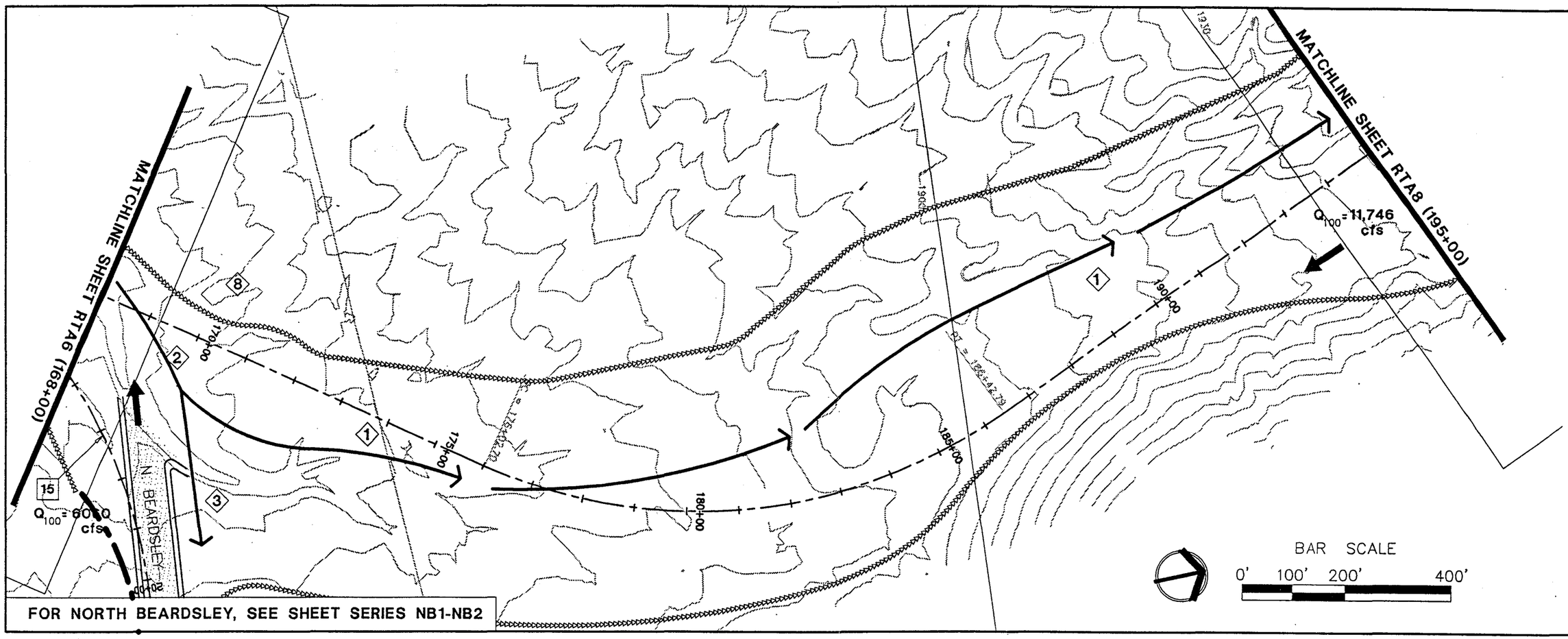

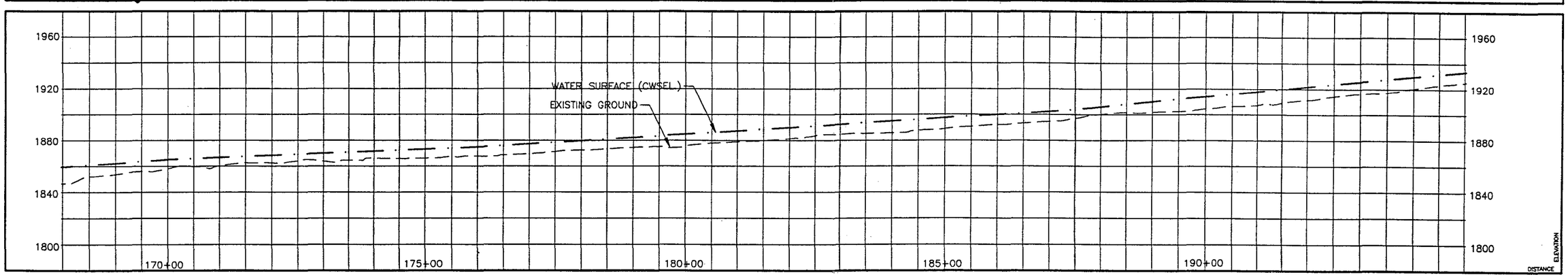

CHANNEL IMPROVEMENTS

15. FOR NORTH BEARDSLEY CHANNEL, SEE SHEET SERIES NB1-NB2.

PATHS / TRAILS

1. TRAILS TO FOLLOW LOW-FLOW CHANNELS OR NATURAL WASHES.
2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.
3. LINKAGE OF MULTI-USE TRAIL INTO A REGIONAL SYSTEM.
8. MULTI-USE PATH ALIGNMENT CURRENTLY UNDER STUDY.

LAND USE

MITIGATION

AESTHETIC APPLICATIONS

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

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ENGINEERS

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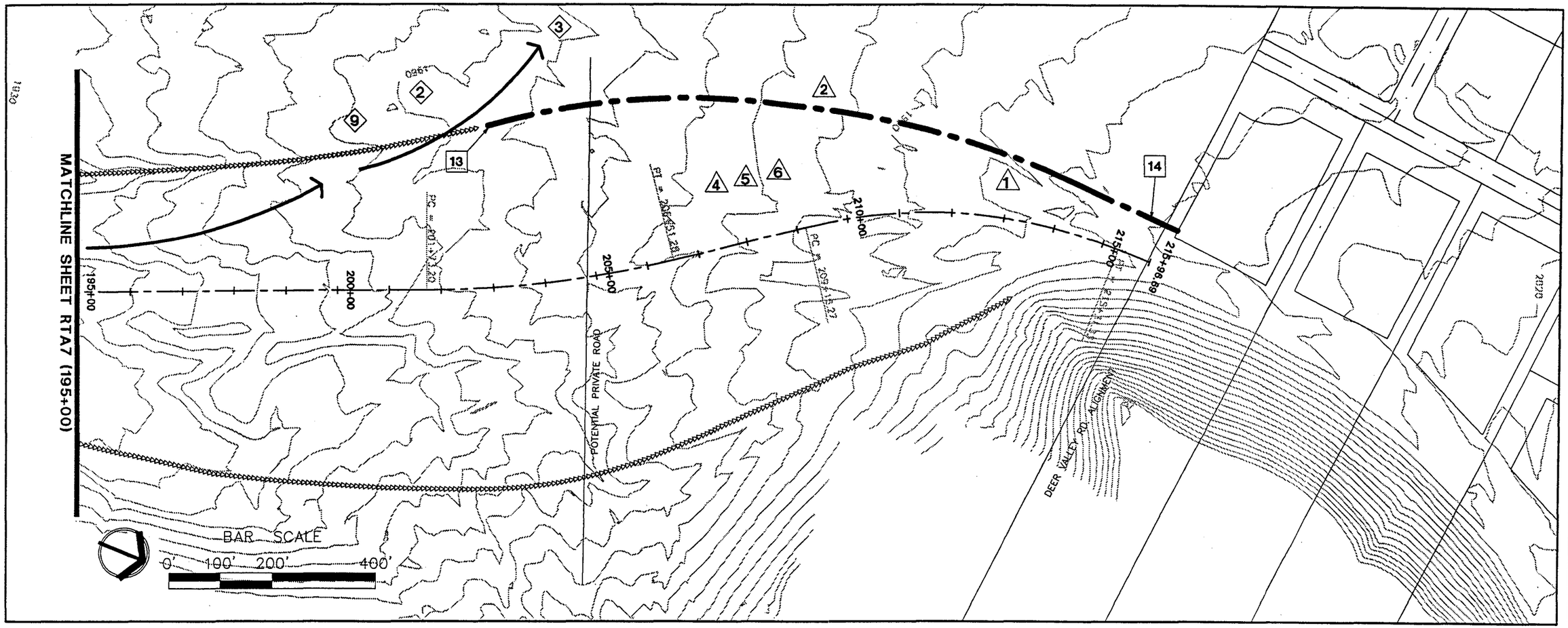
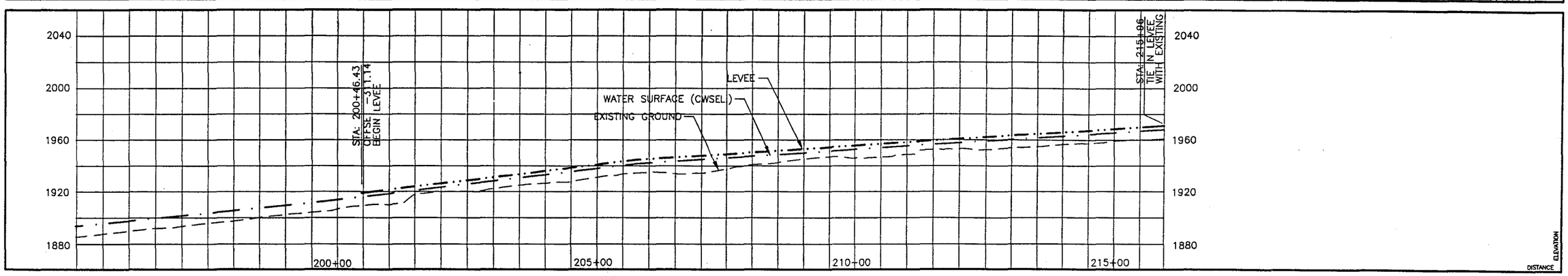
PROJECT NAME
REATA PASS\BEARDSLEY WASH

DRAWING TITLE
Preliminary 10% Plans

DRAWING NO.
RTA7 of RTA8





CHANNEL IMPROVEMENTS

13. TIE LEVEE INTO EXISTING NATURAL CONTAINMENT.
14. LINK WITH UPPER REATA PASS IMPROVEMENTS.

PATHS / TRAILS

2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.
3. LINKAGE OF MULTI-USE TRAIL INTO A REGIONAL SYSTEM.
9. MULTI-USE TRAIL ALIGNMENT CURRENTLY UNDER STUDY IN GENERAL PLAN AMENDMENT.

LAND USE

MITIGATION

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION.
2. FLOOD PROTECTION WALLS DESIGNED FOR 100 YR. EVENT STORM
4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE.
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION.
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE.

AESTHETIC APPLICATIONS

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

REVISIONS	DATE	BY	AUTH.

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ENGINEERS

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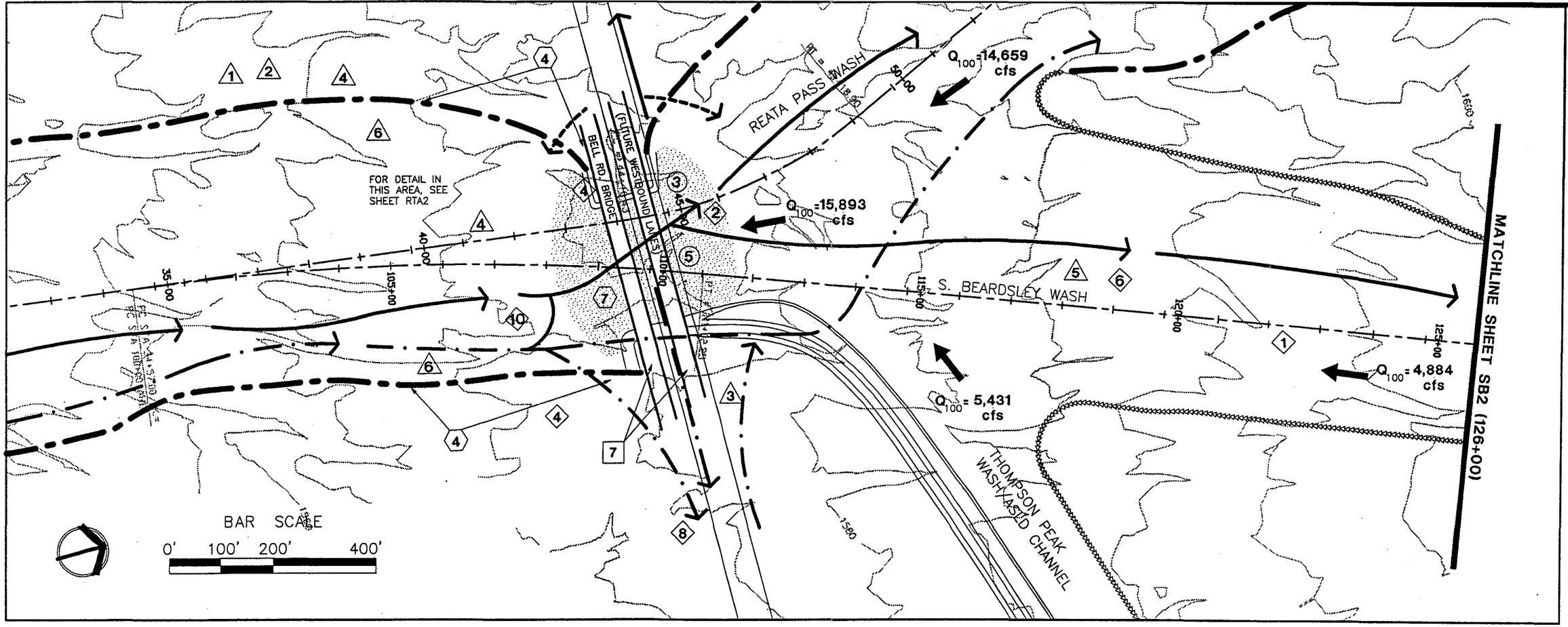
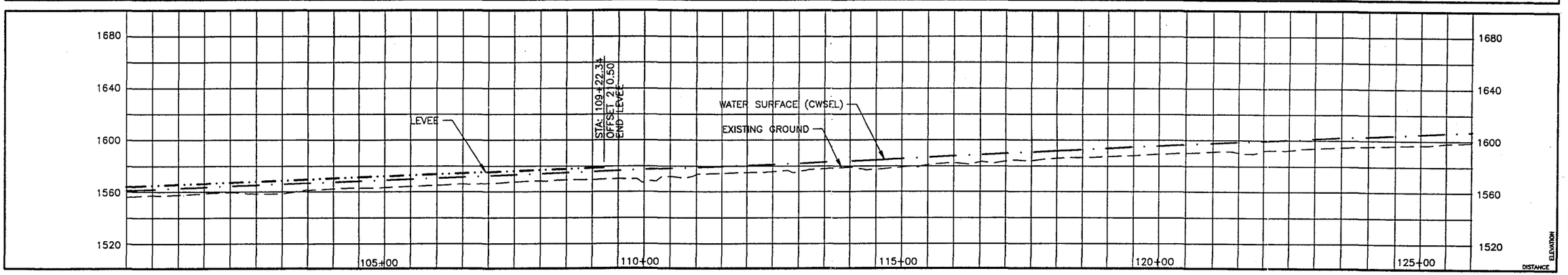
PROJECT NAME: REATA PASS\BEARDSLEY WASH

DRAWING TITLE: Preliminary 10% Plans

DRAWING NO. RTA8 of RTA8

Desert Foothills





CHANNEL IMPROVEMENTS

7. CONSTRUCT BRIDGE.

PATHS / TRAILS

1. TRAILS TO FOLLOW LOW-FLOW CHANNELS OR NATURAL WASHES.
2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.
3. LINKAGE OF EXISTING MULTI-USE TRAIL INTO A REGIONAL SYSTEM.
4. TRAIL ACCESS OVER FLOODWALL/LEVEE.
8. MULTI-USE PATH CURRENTLY UNDER STUDY IN GENERAL PLAN ADMENDMENT.

LAND USE

3. BRIDGE/BOX CULVERT PROVIDES AN ALL WEATHER CROSSING
5. GRADE SEPARATED MULTI-USE PATH & TRAIL CROSSING
7. LOW FLOW CHANNEL IS BRIDGED

MITIGATION

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION.
2. FLOOD PROTECTION WALLS DESIGNED FOR 100 YR. EVENT STORM.
3. COLOR, FORM, AND TEXTURE BLEND W/ THE DESERT SETTING.
4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE.
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION.
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE.

AESTHETIC APPLICATIONS

4. FILL OVER SOIL CEMENT LEVEE
7. INTERPRETIVE ART

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

AUTH.	BY	REVISIONS	DATE

PROJ. NO. E029102
JOB NO.
DESIGN W.C.L.
DRAWN M.T.C.
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SCALE: AS NOTED

ENGINEERS

SEAL

Greiner
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Phoenix, AZ
Engineers, Architects and Planners

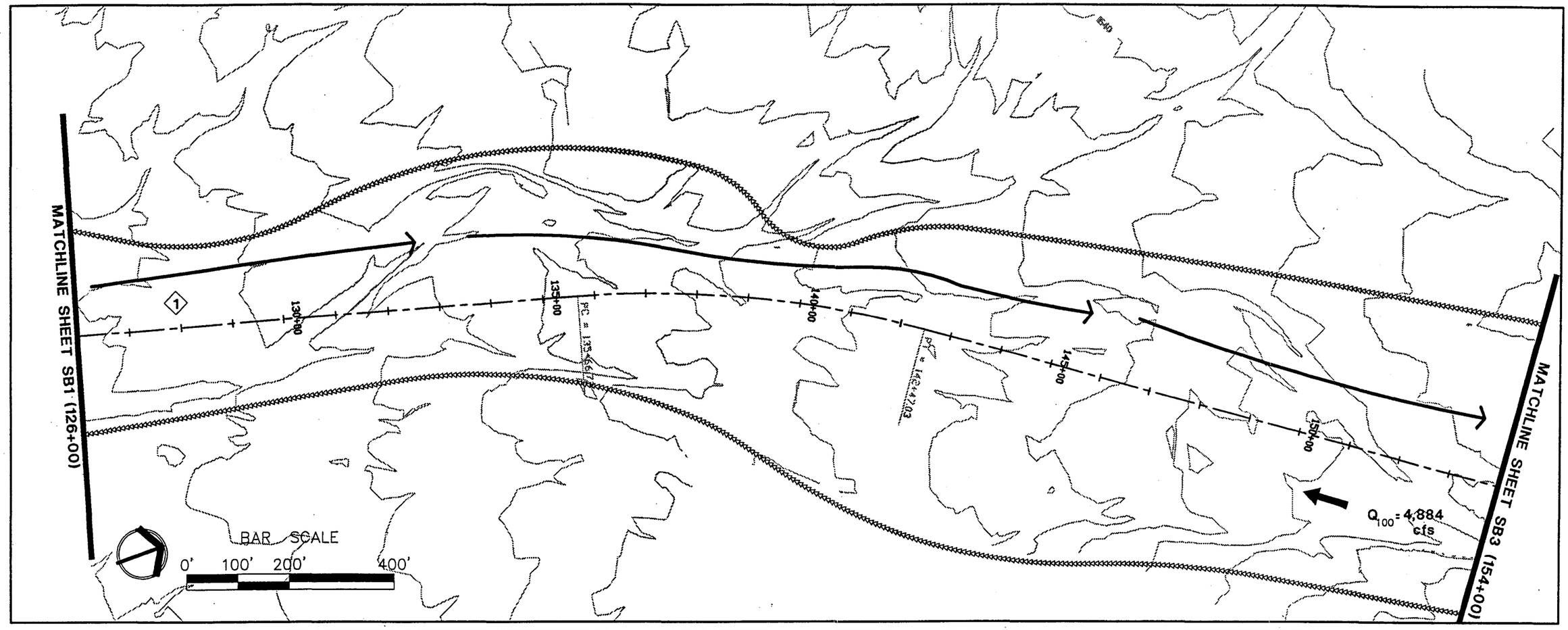
PROJECT NAME: REATA PASS\BEARDSLEY WASH

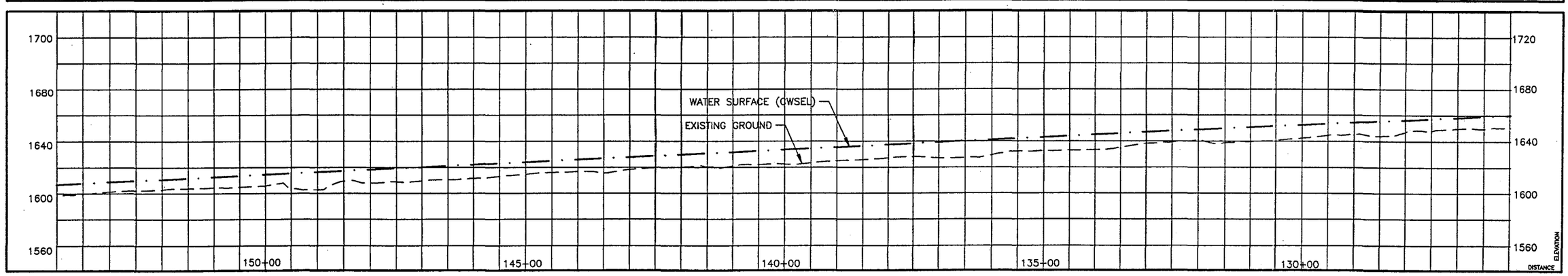
DRAWING TITLE: Preliminary 10% Plans

DRAWING NO.
SB1 of SB6

The Desert Greenbelt

DESERT GREENBELT





CHANNEL IMPROVEMENTS

PATHS / TRAILS

1. TRAILS TO FOLLOW LOW-FLOW CHANNELS OR NATURAL WASHES

LAND USE

MITIGATION

AESTHETIC APPLICATIONS

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

DATE	REVISIONS	BY	AUTH.

PROJ. NO. E029102
JOB NO.
DESIGN W.C.L.
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SCALE: AS NOTED

ENGINEERS

SEAL

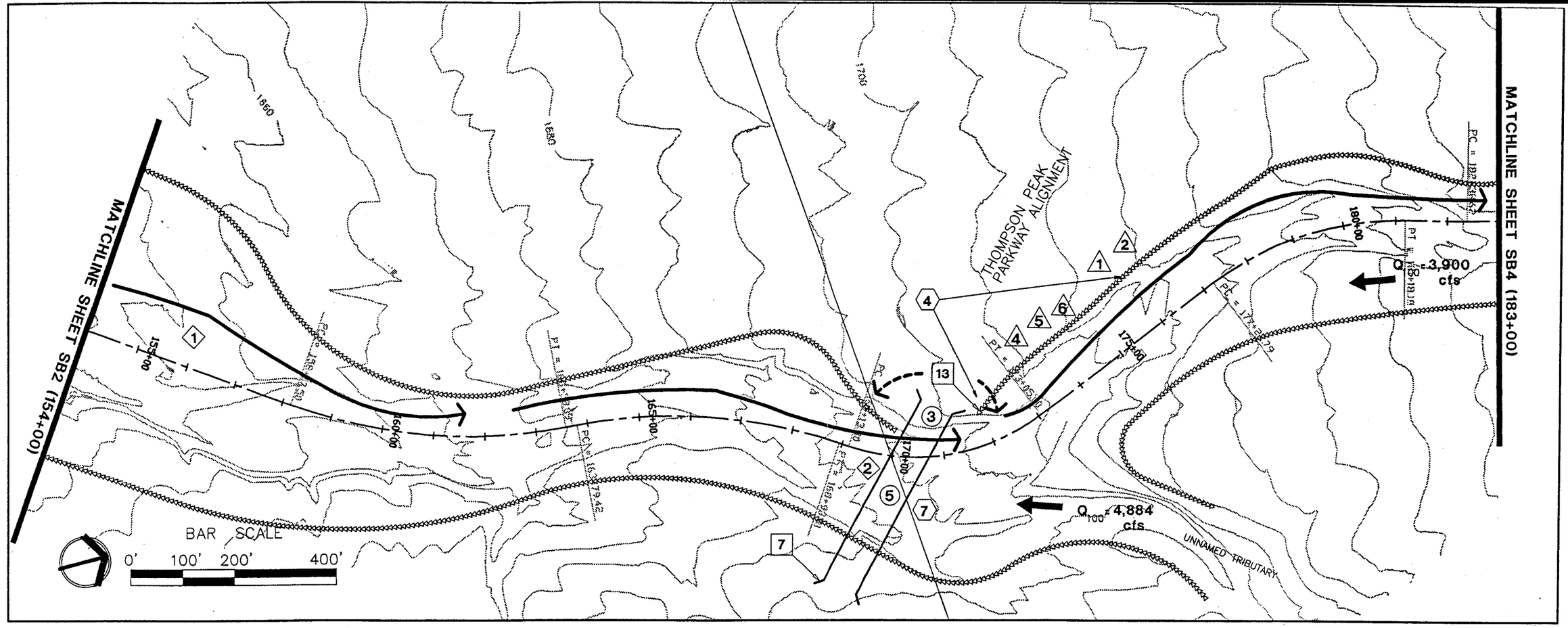
Greiner
Greiner, Inc.
Phoenix, AZ
Engineers, Architects and Planners

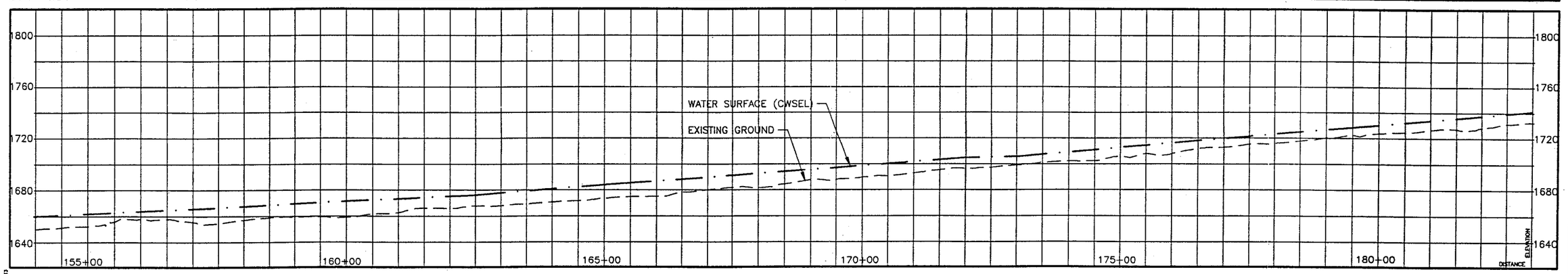
PROJECT NAME
REATA PASS\BEARDSLEY WASH

DRAWING TITLE
Preliminary 10% Plans

DRAWING NO.
SB2 of SB6

The Desert Greenbelt





CHANNEL IMPROVEMENTS

7. CONSTRUCT BRIDGE.
13. TIE LEVEE INTO EXISTING NATURAL CONTAINMENT.

PATHS / TRAILS

1. TRAILS TO FOLLOW LOW-FLOW CHANNELS OR NATURAL WASHES
2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.

LAND USE

3. BRIDGE/BOX CULVERT PROVIDES AN ALL-WEATHER CROSSING.
5. GRADE SEPARATED MULTI-USE PATH & TRAIL CROSSING.

MITIGATION

4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE.
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION.
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE.

AESTHETIC APPLICATIONS

4. FILL OVER SOIL CEMENT LEVEE
7. INTERPRETIVE ART

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

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ENGINEERS

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SEAL

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Phoenix, AZ
Engineers, Architects and Planners

PROJECT NAME: REATA PASS\BEARDSLEY WASH

DRAWING TITLE: Preliminary 10% Plans

DRAWING NO.
SB3 of SB6

The Desert Greenbelt

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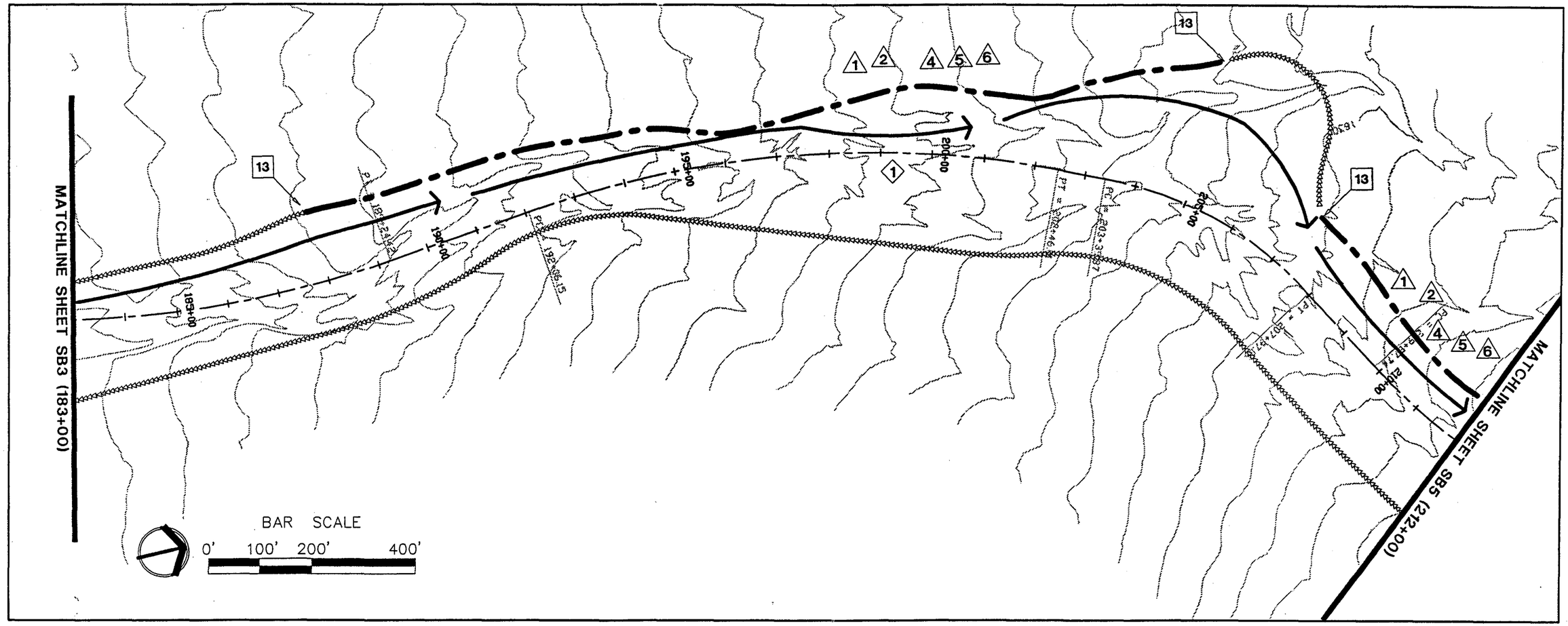
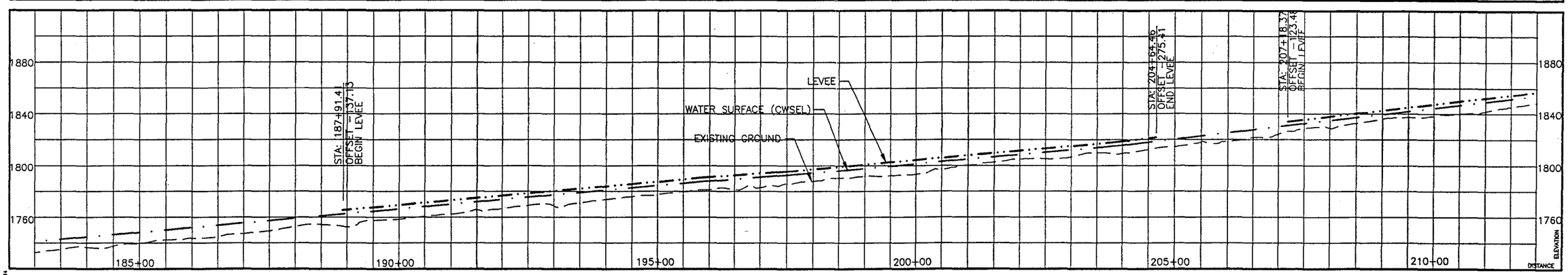
4 SHT GREENBELT





CHANNEL IMPROVEMENTS

13. TIE LEVEE INTO EXISTING NATURAL CONTAINMENT.

PATHS / TRAILS

1. TRAILS TO FOLLOW LOW-FLOW CHANNELS OR NATURAL WASHES

LAND USE

MITIGATION

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION
2. FLOOD PROTECTION WALLS DESIGNED FOR 100 YR. EVENT STORM
4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE

AESTHETIC APPLICATIONS

4. FILL OVER SOIL CEMENT LEVEE
7. INTERPRETIVE ART

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

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PROJECT NAME
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DRAWING TITLE
Preliminary 10% Plans

DRAWING NO.
SB4 of SB6

The Desert Greenbelt

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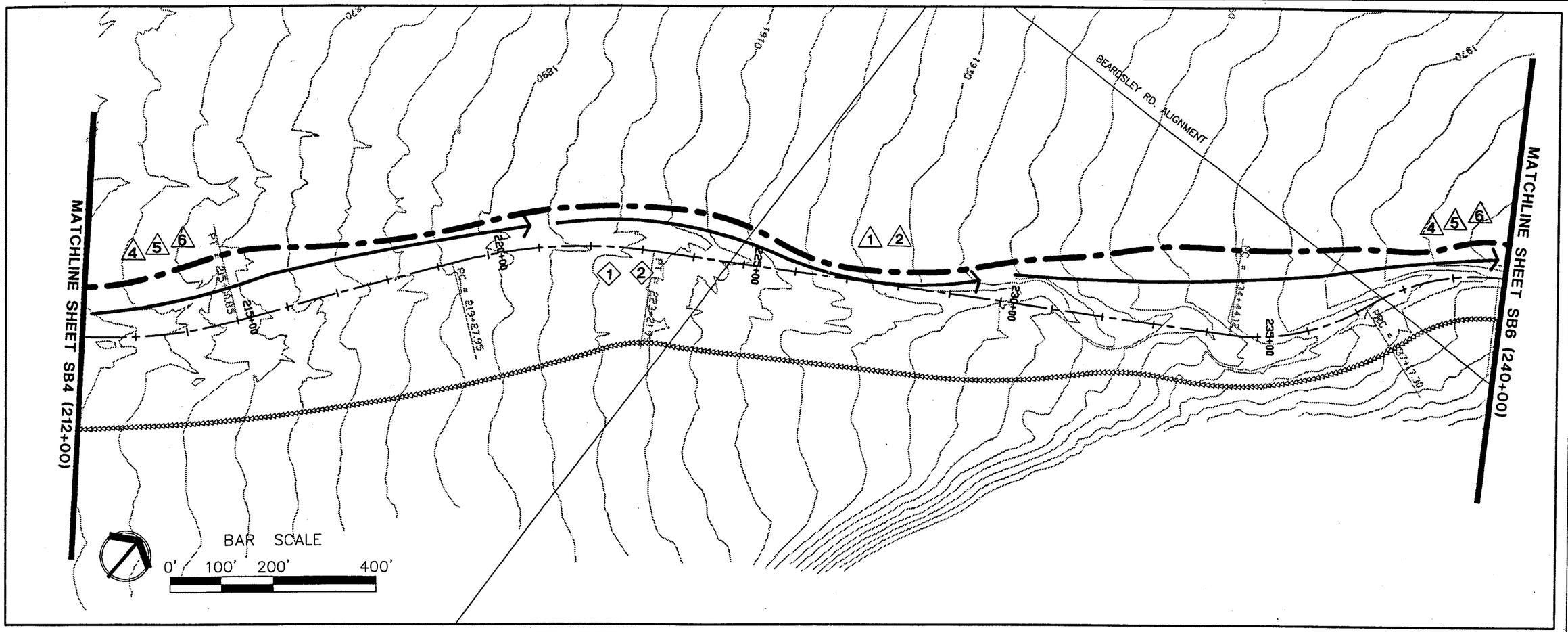

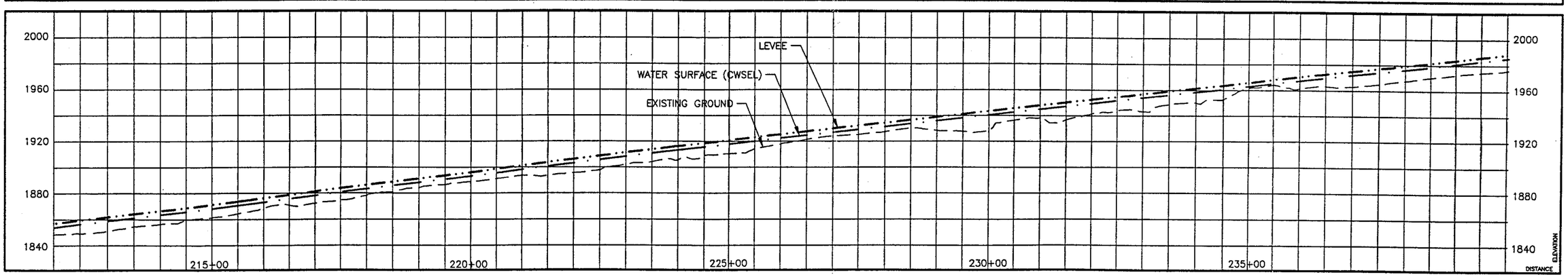

CHANNEL IMPROVEMENTS

PATHS / TRAILS

1. TRAILS TO FOLLOW LOW-FLOW CHANNEL OR NATURAL WASHES
2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.

LAND USE

MITIGATION

4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE.
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION.
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE.

AESTHETIC APPLICATIONS

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

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PROJECT NAME: REATA PASS\BEARDSLEY WASH

DRAWING TITLE: Preliminary 10% Plans

DRAWING NO. SB5 of SB6

Dept Greenbelt

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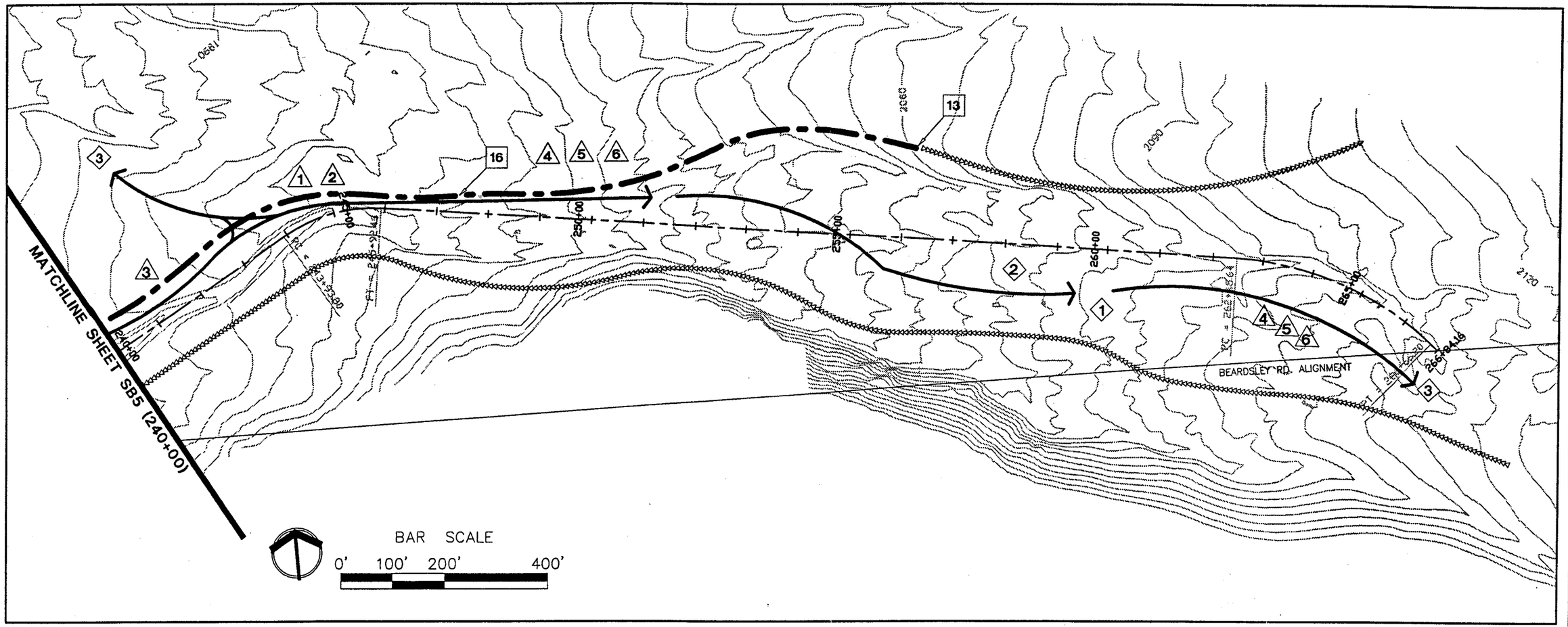
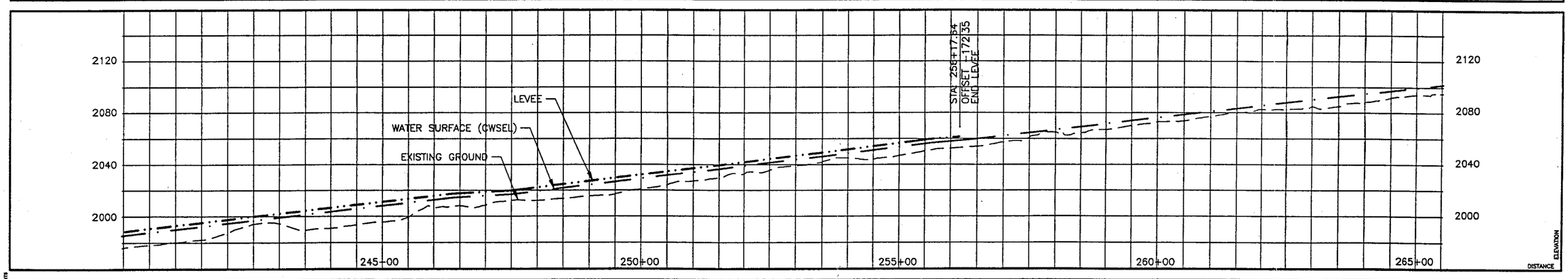
SAT GREENBELT





CHANNEL IMPROVEMENTS

13. TIE LEVEE INTO EXISTING NATURAL CONTAINMENT.
16. CONSTRUCTION TO CONTAIN BREAKOUT FLOW.

PATHS / TRAILS

2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.
3. LINKAGE OF EXISTING MULTI-USE TRAIL INTO A REGIONAL SYSTEM.

LAND USE

MITIGATION

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION
2. FLOOD PROTECTION WALLS DESIGNED FOR 100 YR. EVENT STORM
4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE.
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION.
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE.

AESTHETIC APPLICATIONS

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
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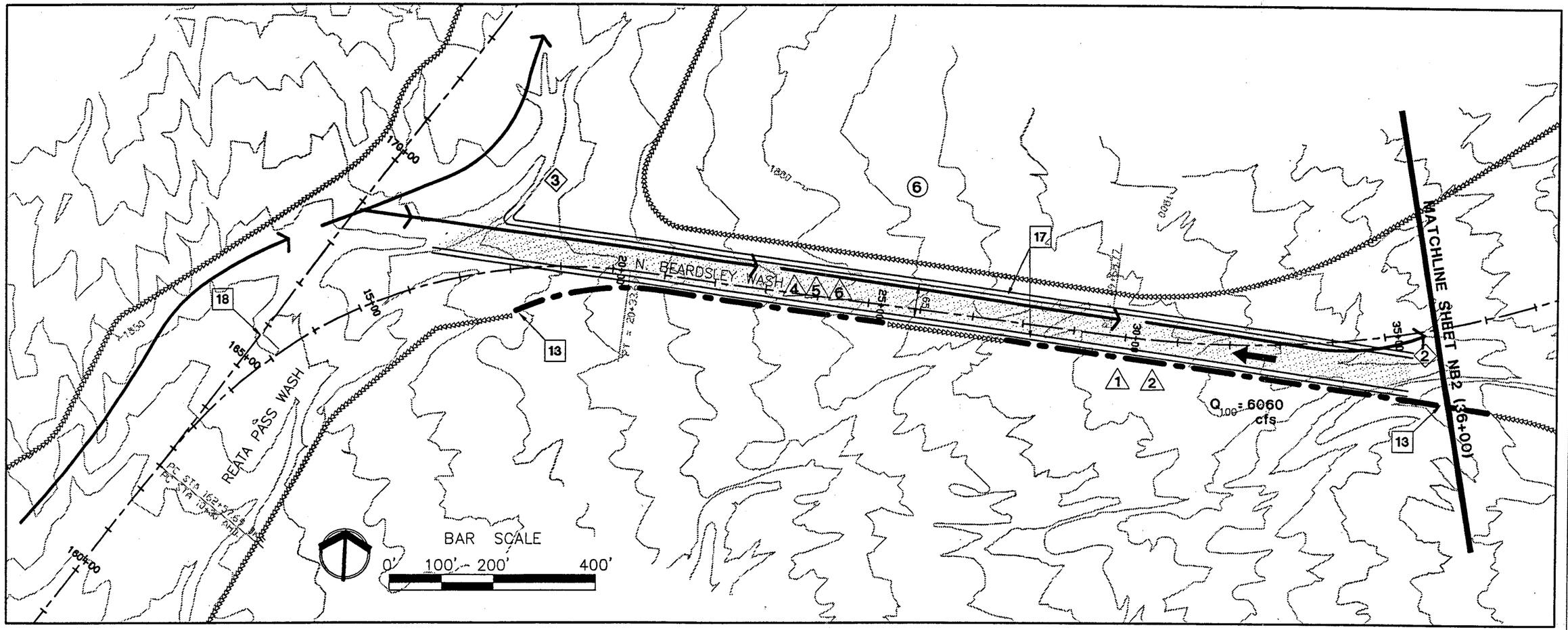
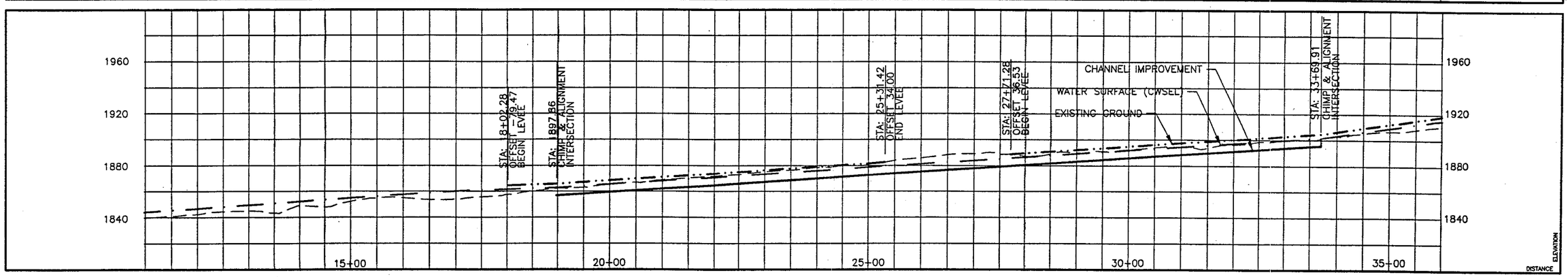
PROJECT NAME: REATA PASS\BEARDSLEY WASH

DRAWING TITLE: Preliminary 10% Plans

DRAWING NO. SB6 of SB6

The Desert Greenbelt





CHANNEL IMPROVEMENTS

13. TIE LEVEE INTO EXISTING NATURAL CONTAINMENT.
17. 1:1 SIDE SLOPE, LEAVE IN NATURAL STATE.
18. FOR REATA CHANNEL SEE SHEET SERIES RTA1 - RTA8.

PATHS / TRAILS

2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.
3. LINKAGE OF EXISTING MULTI-USE TRAIL INTO A REGIONAL SYSTEM.

LAND USE

6. ADJACENT LAND USE IMPACTED BY FINAL ALIGNMENT.

MITIGATION

1. FLOODWALL/LEVEE DESIGNED TO MINIMIZE IMPACT ON EXISTING VEGETATION
2. FLOOD PROTECTION WALLS DESIGNED FOR 100 YR. EVENT STORM
4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE

AESTHETIC APPLICATIONS

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
- PATH
- FLOODWALL
- CHANNEL RIGHT OF WAY
- SOIL CEMENT LEVEE
- NATURAL CONTAINMENT
- ACCESS LEVEE
- CONCRETE SLOPE
- BANK PROTECTION
- REGRADE
- DROP STRUCTURE
- GRADE CUT
- 10+00 CHANNEL CENTERLINE AND STATIONING
- 5' CONTOURS

AUTH.	BY	REVISIONS	DATE

PROJ. NO. E029102
JOB NO.
DESIGN W.C.L.
DRAWN M.T.C.
CHECKED S.E.S.
SCALE: AS NOTED

ENGINEERS

SEAL

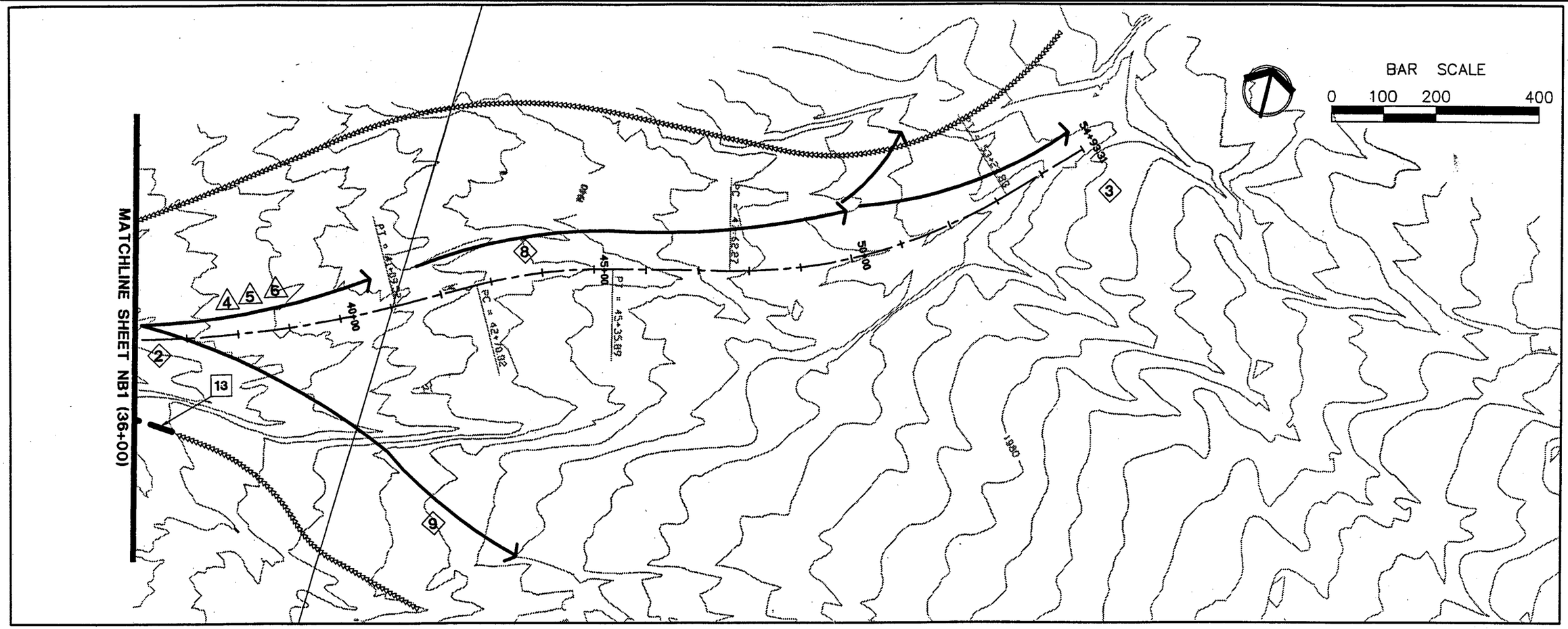
Greiner
Greiner, Inc.
Phoenix, AZ
Engineers, Architects and Planners

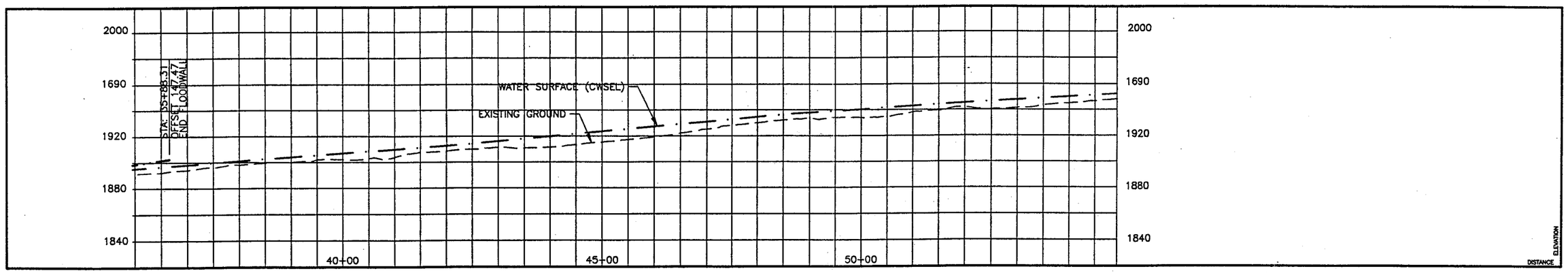
PROJECT NAME: REATA PASS\BEARDSLEY WASH

DRAWING TITLE: Preliminary 10% Plans

DRAWING NO.
NB1 of NB2

Desert Greenbelt





CHANNEL IMPROVEMENTS

13. TIE LEVEE INTO EXISTING NATURAL CONTAINMENT.

PATHS / TRAILS

2. INSTALL SIGNAGE TO DIRECT TRAIL USERS.
3. LINKAGE OF EXISTING MULTI-USE TRAIL INTO A REGIONAL SYSTEM.
8. MULTI-USE TRAIL ALIGNMENT CURRENTLY UNDER STUDY IN GENERAL PLAN AMENDMENT.

LAND USE

MITIGATION

4. RETAIN EXISTING VEGETATION TO EXTENT PRACTICABLE.
5. SALVAGE VEGETATION IMPACTED BY CONSTRUCTION.
6. REVEGETATE DISTURBED AREAS WHERE PRACTICABLE.

AESTHETIC APPLICATIONS

LEGEND

- MULTI-USE TRAIL
- MAINTENANCE ACCESS
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PROJECT NAME: REATA PASS\BEARDSLEY WASH

DRAWING TITLE: Preliminary 10% Plans

DRAWING NO.
NB2 of NB2

The Desert Greenbelt

DESIGN: WEDDINGLT

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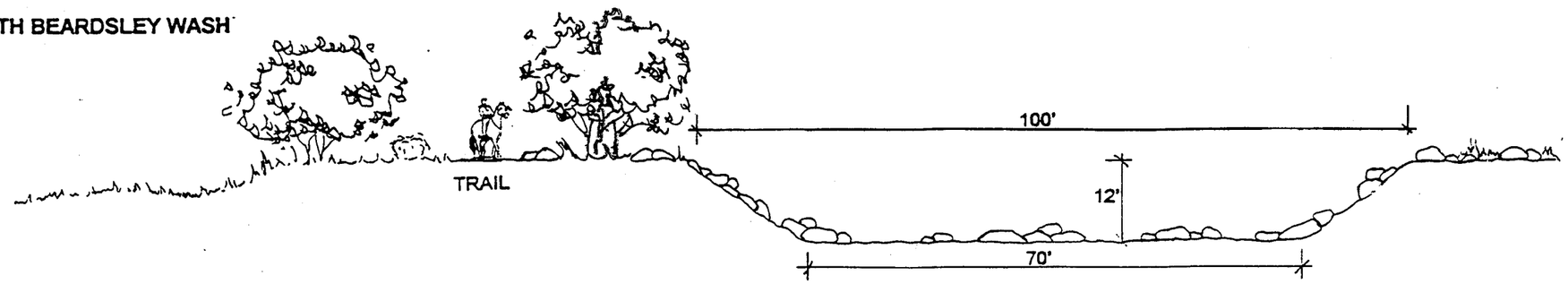
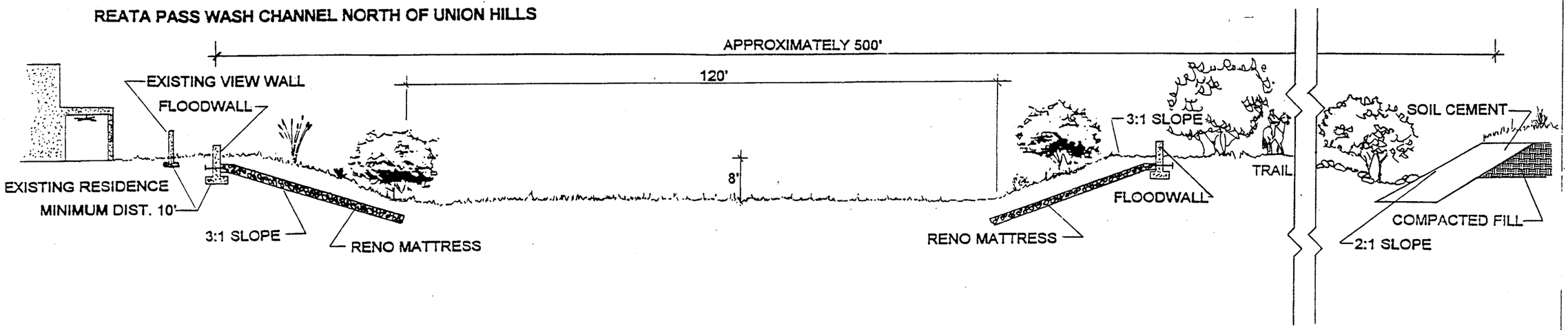
REATA PASS/BEARDSLEY WASH TYPICAL CROSS SECTIONS
NORTH OF UNION HILLS DRIVE

NORTH BEARDSLEY WASH



REATA PASS WASH CHANNEL NORTH OF UNION HILLS



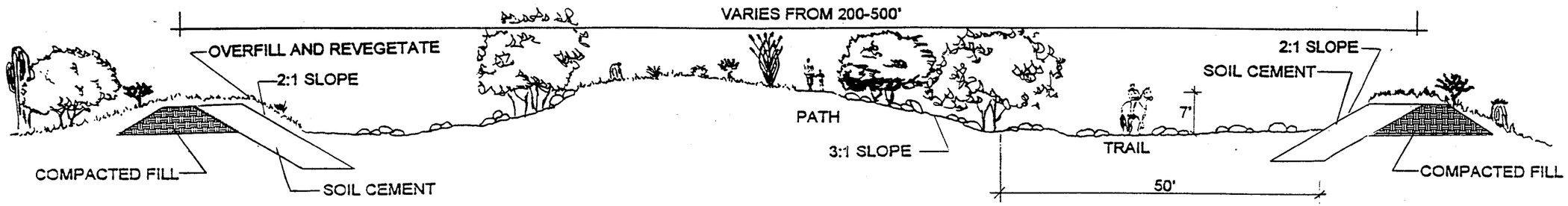
0 20' 40'

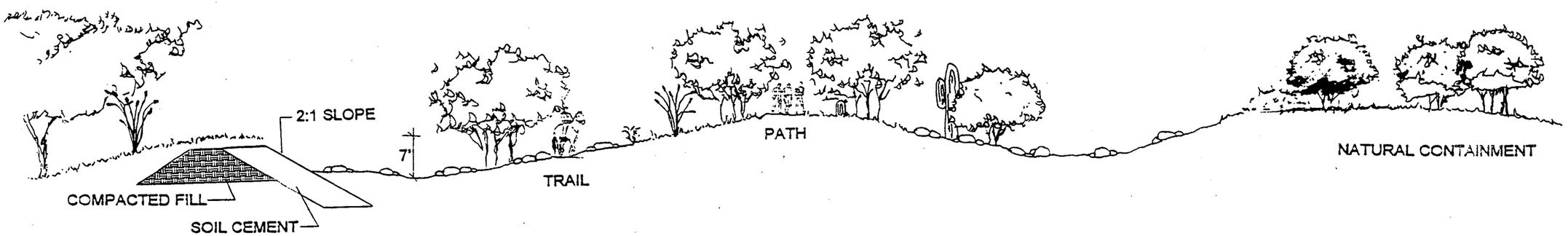
SCALE: 1" = 20'

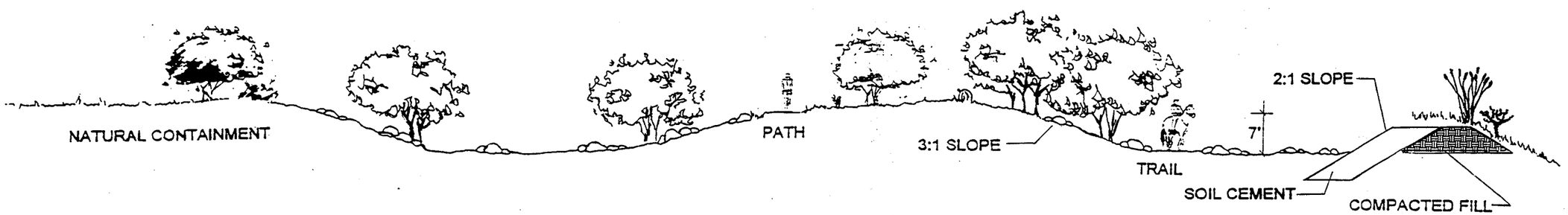
VIEWS TO NORTH

The Desert Greenbelt

CHANNEL NORTH OF BELL ROAD TO DEER VALLEY ROAD







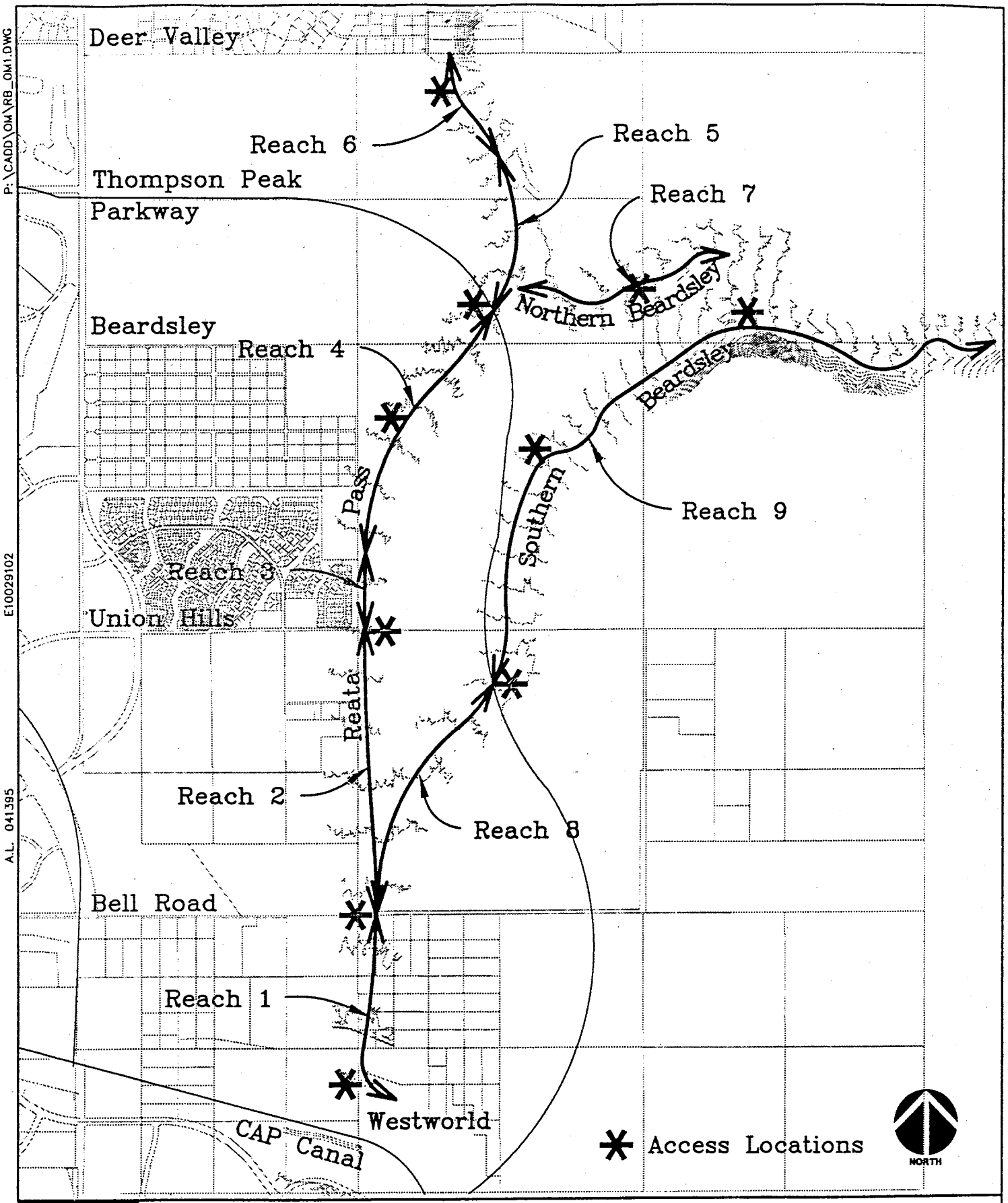
0 20 40

SCALE IN FEET

VIEWS TO NORTH

TYPICAL CROSS SECTIONS OF LOWER REATA/BEARDSLEY CHANNEL CONTAINMENT

The Desert Greenbelt



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The Desert Greenbelt

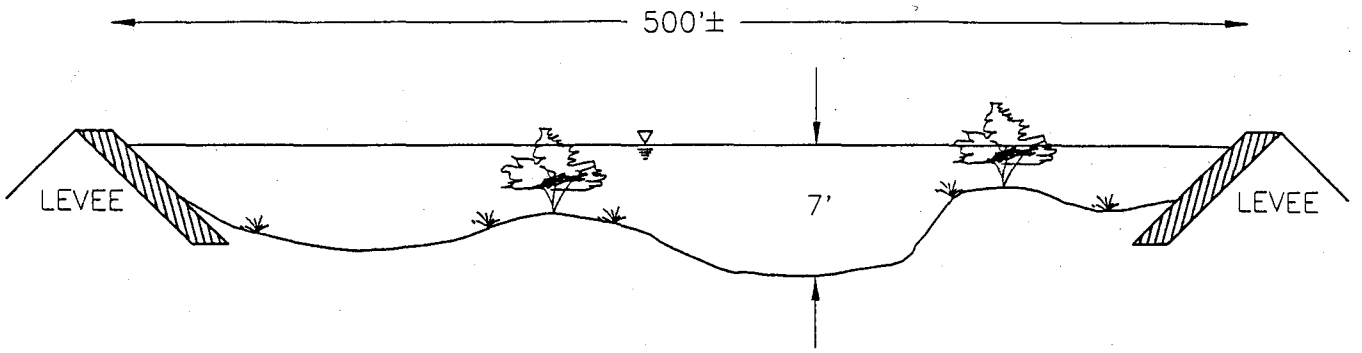
Reata Pass/Beardsley Wash Channel

Keymap

Not to Scale

Greiner

Figure 1-1



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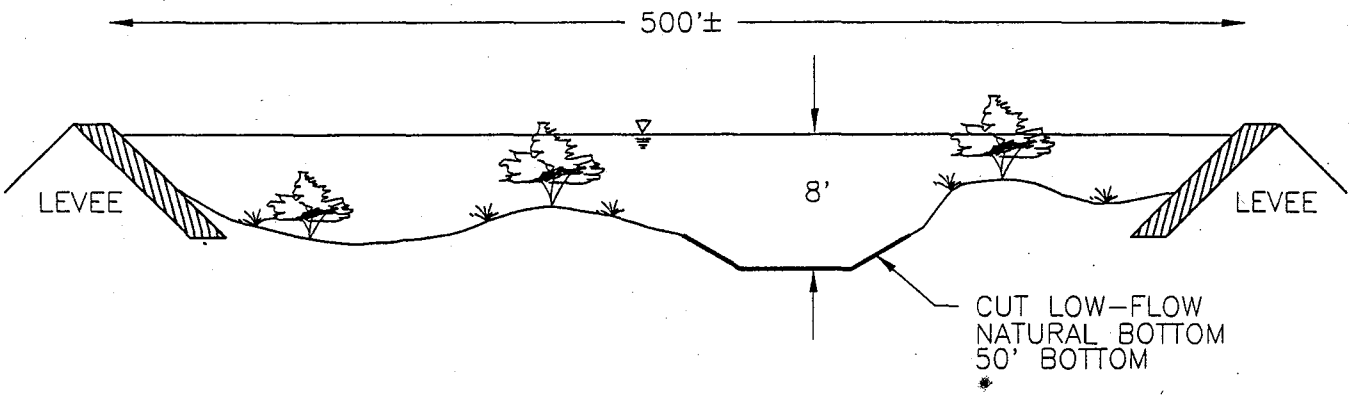

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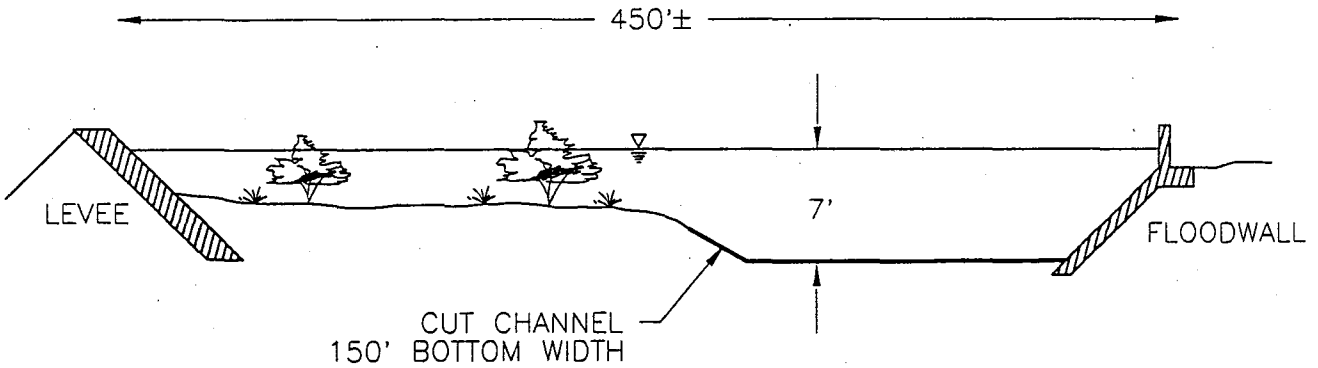

REACH 3

The Desert Greenbelt

Reata Pass/Beardsley Wash
Typical Section Variations
Reaches 1 thru 3

- Sections look downstream
- Levees may be covered with fill and revegetated in areas.

Not to Scale

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Figure 1-2

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Scottsdale D.G.
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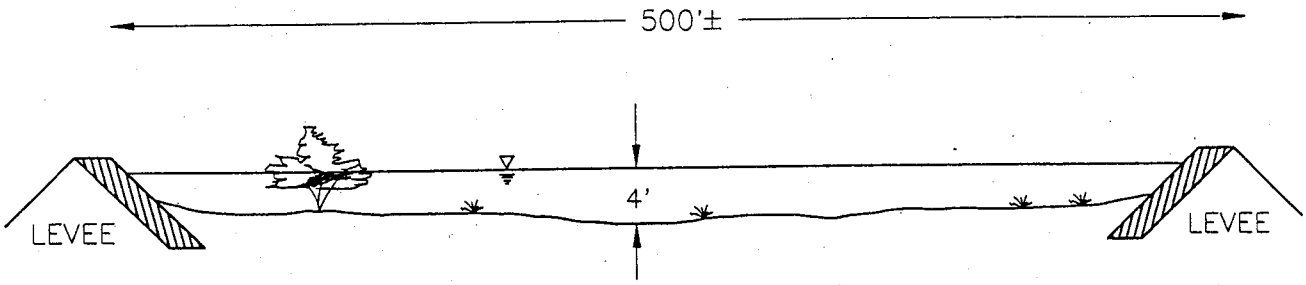

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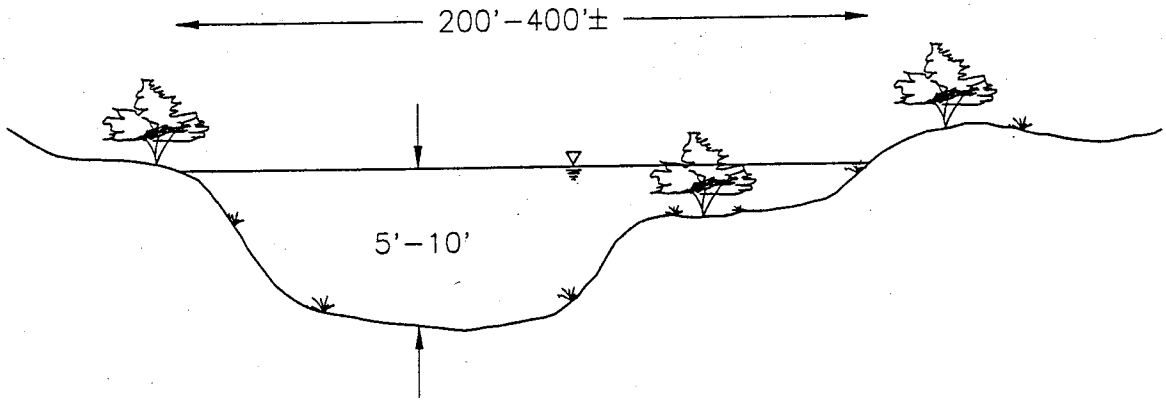

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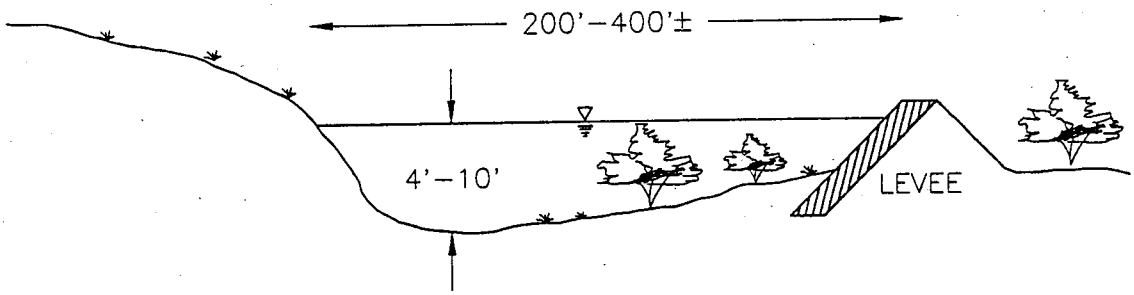

REACH 6

The Desert Greenbelt

Reata Pass/Beardsley Wash
Typical Section Variations
Reaches 4 thru 6

- Sections look downstream
- Levees may be covered with fill and revegetated in areas.

Not to Scale

Greiner

Figure 1–3

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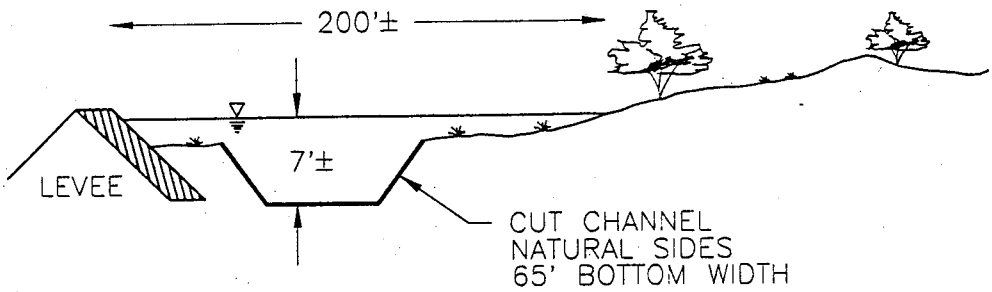

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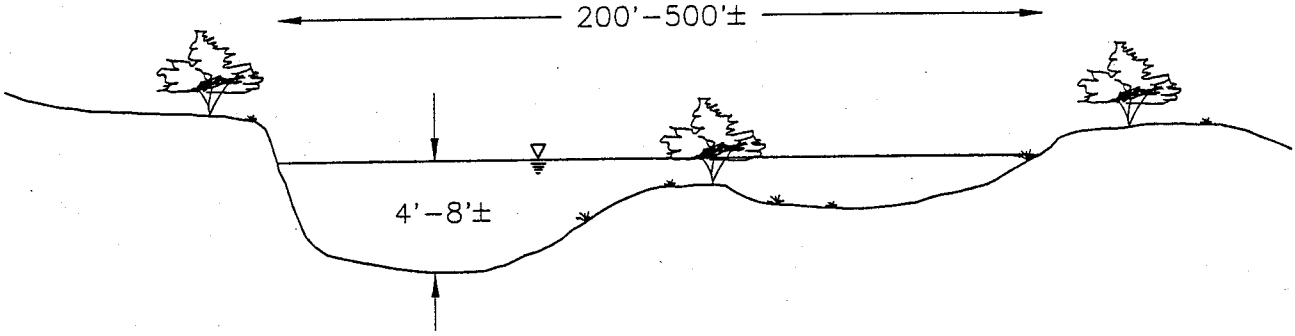

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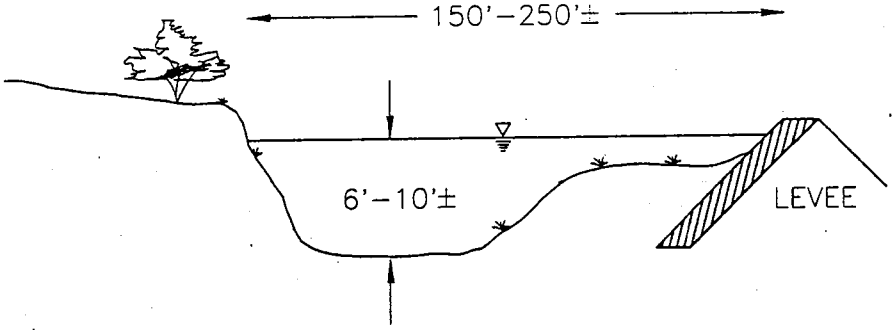

REACH 9

Reata Pass/Beardsley Wash
Typical Section Variations
Reaches 7 thru 9

- Sections look downstream
- Levees may be covered with fill and revegetated in areas.

Not to Scale

Greiner

Figure 1–4

The Desert Greenbelt

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