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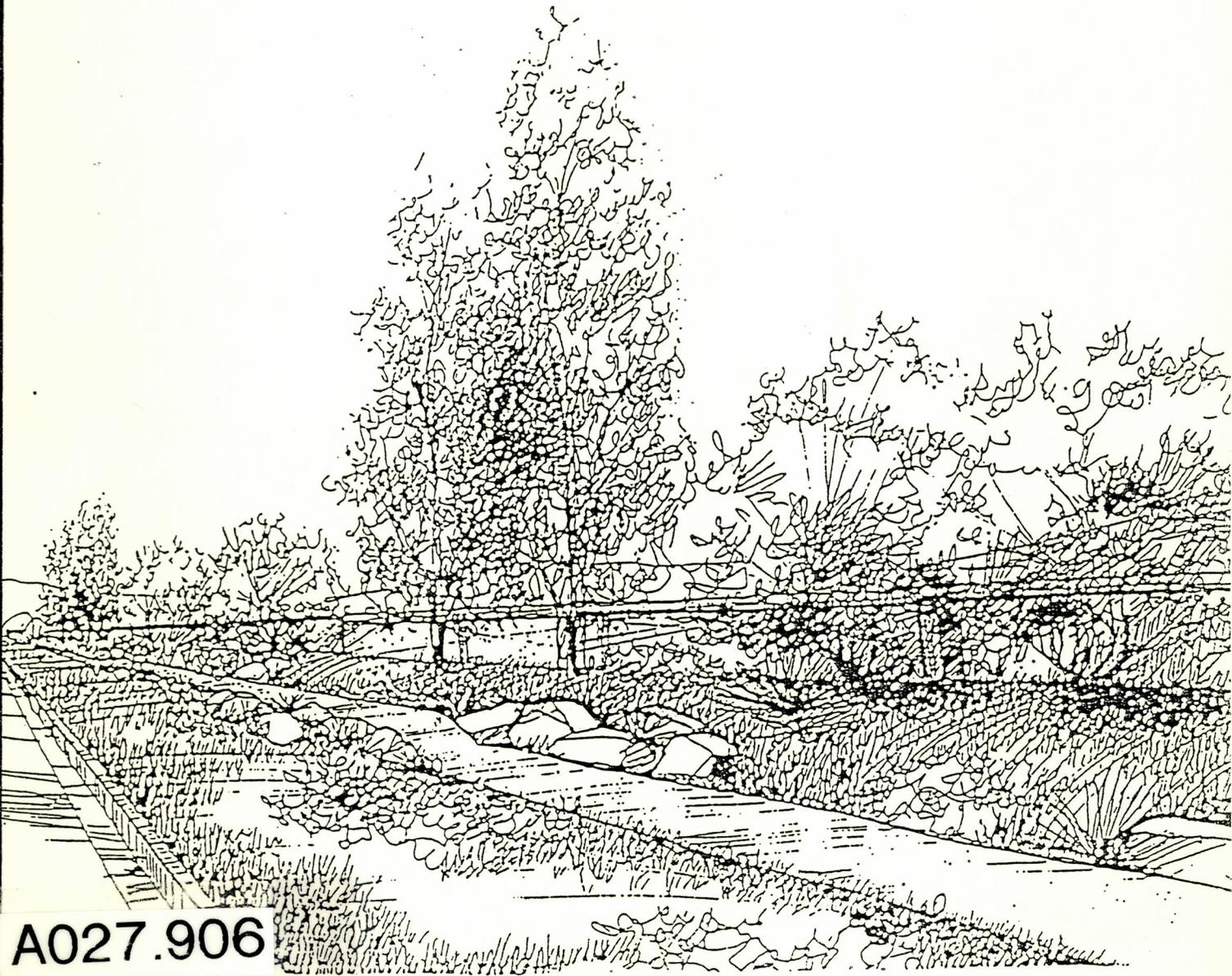
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G. WILLIAM LARSON ASSOCIATES

211 WINFIELD SCOTT PLAZA, SCOTTSDALE, ARIZONA 85251 (602) 934-0044

CHANNEL BEAUTIFICATION PROJECT

CHANNEL BEAUTIFICATION PROJECT
CITY OF SCOTTSDALE



A027.906

June 24, 1982

TO: Dennis Parker
Manager, Land & Property Management

Max Pelka ✓
Capital Imp. Engineering Manager

FROM: Don Hadder JH
Planner

LANDSCAPE TREATMENT ON HAYDEN CHANNEL

This week I received a call from Robert Grinnel, Jr. concerning the status of the Hayden Channel between Cholla and Thunderbird. He was upset at what had been installed, felt "betrayed" by the City, and even mentioned the possibility of suing the City about it.

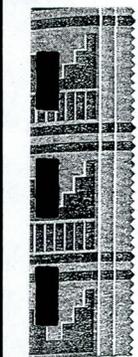
I explained to him about the recently completed concept study which had set a direction for improving the condition of the channel and that the City was moving toward design in next year's budget. I told him it would be at least a year before any construction could be expected.

He proposed establishing an "assessment district" with the adjacent neighborhoods and offered to head up a drive to get this going. I suggested this probably couldn't be done because of state law.

He seems irate and active enough to seek out Council support at some point in the future. I would recommend that a hard-lined approach to cost and timing be established to complete this project if this issue heats up in the near future.

DH/js
File





G. WILLIAM LARSON ASSOCIATES

4211 WINFIELD SCOTT PLAZA, SCOTTSDALE, ARIZONA 85251 (602) 994-0044

DATE: April 30, 1982

TO: Design Review Board & City of Scottsdale Staff

FROM: G. William Larson Associates

RE: Beautification of Drainage Channels

The integration of necessary public appurtenances in a functional yet aesthetically pleasing manner is one of the greatest challenges facing any municipality. The necessity of maintaining drainage channels within our City is something all of us are acutely aware of. The challenge to the City then becomes to integrate the channels in a pleasing manner to the surrounding community.

There are numerous approaches that can be taken to solve this problem. This proposal has explored the full range of possibilities, and together with appropriate City staff have developed viable and aesthetically integrated proposals while maintaining a level of function.

Construction cost estimates as well as annual maintenance costs and water consumption costs have been prepared to assist in the selection of alternatives.

We appreciate the foresight in your decision to address this situation. Thank you for allowing us to participate in this project.

PLANT MATERIALS

All plant materials selected for use in the proposed channel projects are either native or adapted arid region varieties. They have been selected for their hardiness, low water usage and minimal maintenance. These materials are broken down into several groups based upon their ultimate growth characteristics.

TREES

Type "A"	Mexican Palo Verde Blue Palo Verde Chilean Mesquite
Type "B"	Desert Willow Sweet Acacia Foothills Palo Verde
Type "C"	Eucalyptus Spathulata Tamarix Aphylla

SHRUBS

Type "A"	Dalea Bi-Color Arizona Rosewood Shrubby Senna Texas Ranger Cresote Large Sugar Bush Salvia Greggii
Type "B"	Four Wing Salt Bush Dodonaea Viscosa Arizona Yellow Bells Holly Grape
Type "C"	Fountain Grass Red Bird of Paradise Hesperaloe Desert Spoon

GROUND COVER

Acacia Redolens Australilian Salt-Bush Hummingbird Trumpet
--

NATIVE SEEDING

The native seeding proposed for the project are a variety of drought resistant arid region grasses which will require only intermittent watering during drought periods. They do not normally require mowing. These materials fall into two groups, as follows:

1. Buffalo Grass - maximum six inches high even texture throughout the majority of all seeded areas.
2. Indian Wheat Paper Flower
Desert Marigold Firecracker Plant
Desert Senna Mexican Poppy
Sand Verbena

As color accents at various intersections and points of interest.

NOTES ON COST ESTIMATES

Installation Costs:

All cost estimates have been reviewed with the appropriate city staff.

Maintenance Costs:

Cost estimates of channel areas with native seeding were obtained from Field Services. Hayden was figured:

Trees - \$15.00 per year (this includes pruning once a year and fertilization).

Shrubs - \$8.00 per year (this includes pruning once a year and fertilization).

Water Costs: *

Water costs were figured for plant types at once every 10 days during May - October and then once every 20 days during November - April.

* This does not include a monthly service charge of \$12.50.

PIMA ROAD - PROJECT A

PIMA ROAD ANALYSIS

The Pima project area extends approximately 2 miles from Shea Boulevard north to Thunderbird Road. The existing dirt channel is 35' wide and located on the east side of Pima Road. Pima will eventually be widened to 3 lanes in each direction. This will leave maximum 12' wide shoulder between the pavement and drainage channel.

This area is now mostly undeveloped natural desert. There are a few large lot subdivisions and individual single family large lot homes within the project area. Many of the homes have horses in the rear of their lots. The character of this area is still rural but it will begin to diminish as more residential development begins to take place.

The Pima-Bell Loop now serves as a high speed corridor from southeast Scottsdale to northeast Scottsdale and Phoenix. Pima Road will have limited access points approximately one mile apart. Median road dividers are planned for Pima Road.

There is currently some water runoff from the hillside areas to the northeast. It now intersects Pima Road at Sweetwater. The drainage channel is designed for a 100 year storm and is currently showing signs of erosion.

The landscaping for the channel area needs to buffer developing residential uses from the traffic noise on Pima Road. The exterior walls surrounding adjacent residential development should be incorporated into the buffering design of the channel to help integrate the two different land uses. For passing motorists it must provide visual interest and a positive statement of Scottsdale's identity.

The medians and parkways on the west side of Pima Road should be designed to compliment and lend continuity to the drainage channel areas. This can be done through the repetition of plant materials and design elements such as berming. The motorist should be left with a pleasant, relaxed feeling as he travels to Scottsdale's heart or from it.

PIMA ROAD CHANNEL
PROPOSED DESIGN CONCEPT

Alternative One - Straight Bottom

The first design concept for this existing dirt channel proposes a straight channel bottom with alternating native grass side slopes and level areas. An additional 25' landscape easement will be necessary for the east side slope and offset stuccoed walls. Native trees will be scattered over the side slopes and flat bottom areas to create an informal meadow wash affect. Native wild flowers such as Pennestemon and Arizona Poppy could be mixed with the grass seeds for color to highlight Cactus and Thunderbird intersections.

The side slopes will not exceed 4:1 per Traffic Engineering safety standards. There will be some flat areas along the 10' wide colored concrete bottom for settling and overflow. This should facilitate easier maintenance of the channel bottom. This concept is based on a 4' depth as required by CIP.

Arid region shrubs will be planted in the flat areas. These should be Acacia Redolens, Salt Bush to compliment the Palo Verde and Acacia Tree varieties scattered in random patterns over the site. The adjacent wall will be in modulated lengths with 5' deep offsets for variety.

Irrigation will be provided only to trees and shrubs on a regular basis by bubblers. Manual valved impact head systems will be used to water the seeded areas until they are established and during periods of drought to reduce the fire hazard dry plant materials present.

Cost Figures

<u>Item</u>	<u>Notes</u>	<u>Cost</u>
I. Construction		
Grading	179,400 CY @ \$3/CY	\$ 538,200
10' Concrete Bottom	10,350 LF @ \$2/SF	270,000
New 6' Wall	10,350 LF @ \$33/LF	341,550
Wrought Iron	170 LF @ \$11/LF	1,870
Stucco	62,100 SF @ \$0.30/SF	18,630
Trees: 15 gal	725 @ \$60/EA	43,500
Shrubs: 1 gal	725 @ \$6/EA	4,350
Native Seed Mix	776,250 SF @ \$0.10/SF	<u>77,625</u>
	Total	\$1,295,725
II. Irrigation		
Bubblers	1238 @ \$25/EA	\$ 31,000
Impact	17.8 AC @ \$5,000/AC	<u>89,000</u>
	Total	\$ 120,000

Pima Road
Cost Figures

	<u>Item</u>	<u>Notes</u>	<u>Cost</u>
III.	Maintenance		\$ 78,604
IV.	Water Costs		
	Trees	\$391/Year	
	Shrubs	\$25/Year	
	Seed	<u>\$5,500</u>	
		Total	<u>\$ 5,916</u>
V.	TOTAL COSTS:		
	Construction	\$1,295,725	
	Irrigation	120,000	
	Maintenance	78,604	
	Water	<u>5,916</u>	
	TOTAL COSTS:		<u><u>\$1,499,828</u></u>

PIMA ROAD CHANNEL
PROPOSED DESIGN CONCEPT

Alternative Two - Undulated Bottom

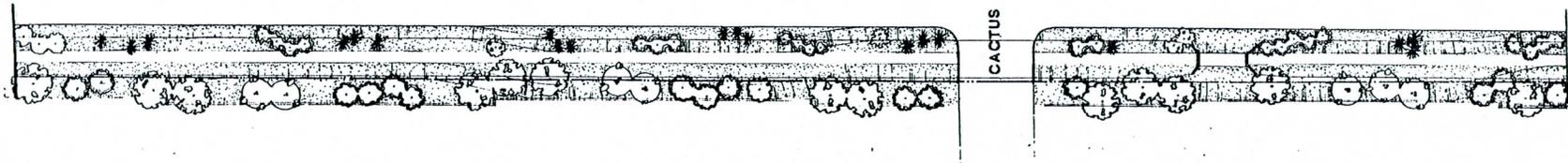
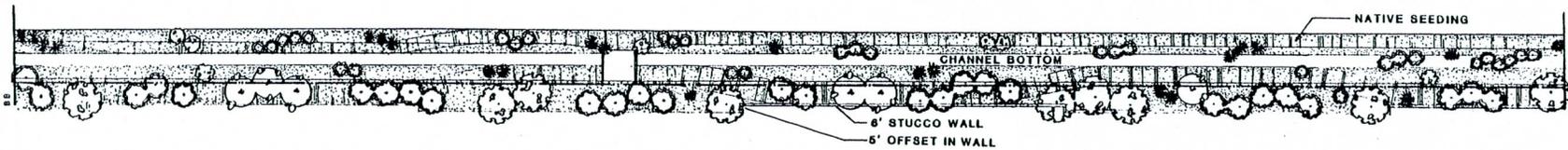
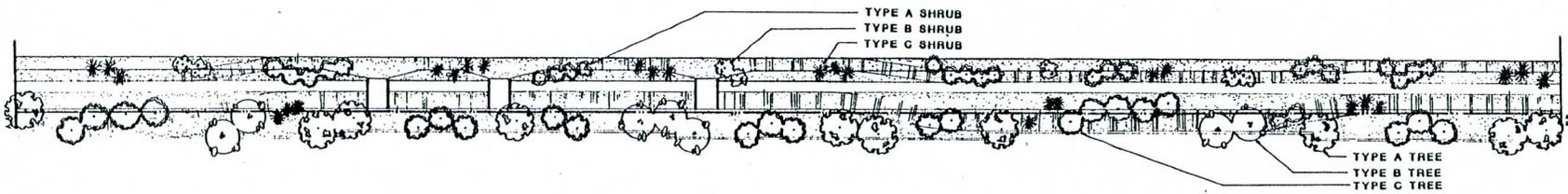
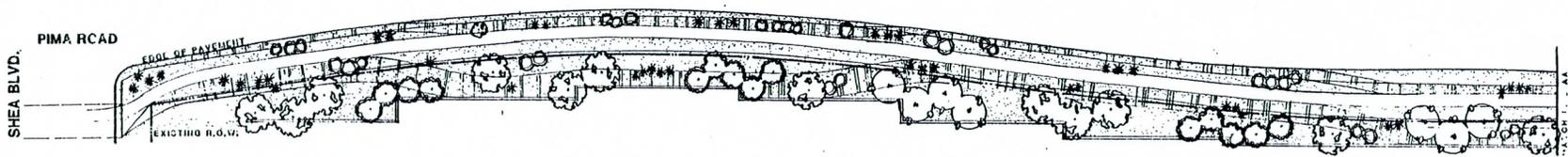
This design concept becomes more dynamic as the channel bottom gently undulates between large granite boulders set in colored gunnite in the grassy slopes. Palo Verde and Acacia Tree varieties will accent the slopes and perimeter wall. Ground covers are introduced in limited areas to tie in the low mounds with the gentle 4:1 slopes.

The 10' concrete bottom undulates slightly to remain within the existing r.o.w. Boulders are strategically located to absorb the velocity of the water as it bends down the channel bottom. No trees with larger than 4" caliper have been planted within 10' of the future edge of pavement per ADOT Standards.

Slopes and flat areas will be hydro-seeded with native grasses (such as Buffalo Grass) that do not require mowing. Boulders will be set in place and secured with gunnite. Irrigation would be the same as in Alternative One.

Cost Figures

<u>Item</u>	<u>Notes</u>	<u>Cost</u>
I. Construction		
Grading	264,500 CY @ \$3/CY	\$ 793,500
10' Concrete Bottom	10,350 LF @ \$2/SF	270,000
Granite Boulders	9,522 LF @ \$50/LF	476,100
New 6' Wall	10,350 LF @ \$33/LF	341,550
Wrought Iron	170 LF @ \$11/LF	1,870
Stucco	62,100 SF @ \$0.30/SF	18,630
Trees: 15 gal.	725 @ \$60/EA	43,500
Shrubs: 1 gal.	725 @ \$6/EA	4,350
Ground Cover - 1 gal.	2,800 @ \$6/EA	16,800
Seed Mix	776,250 SF @ \$0.10/SF	<u>77,625</u>
	Total	\$2,043,925
II. Irrigation		
Bubblers	1,600 @ \$25/EA	\$ 40,000
Impacts	17.8 AC @ \$5,000/AC	<u>89,000</u>
	Total	\$ 129,000



SCALE 1" = 50'

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ASSOCIATES

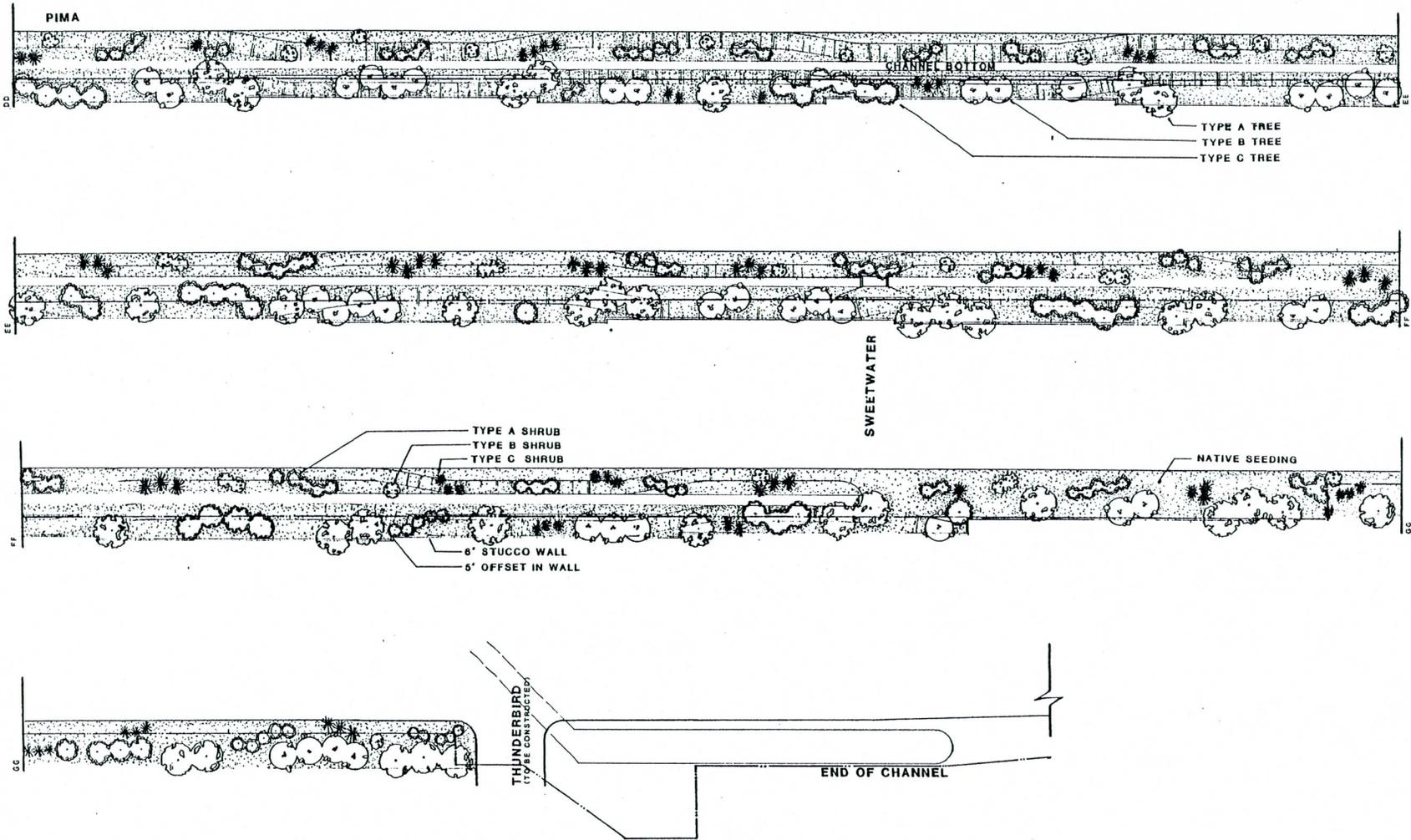
(602) 994-0044

PIMA ROAD CHANNEL
CHANNEL BEAUTIFICATION PROJECT A



1-20-82
BLO 1
V.C.M.
TR

4211 Winfield Scott Plaza, Scottsdale, AZ 85251



TYPE A TREE
 TYPE B TREE
 TYPE C TREE

TYPE A SHRUB
 TYPE B SHRUB
 TYPE C SHRUB

NATIVE SEEDING

6" STUCCO WALL
 5' OFFSET IN WALL

SWEETWATER

THUNDERBIRD
 TYPIC CONSTRUCTION

END OF CHANNEL

SCALE: 1" = 50'

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4211 Winfield Scott Plaza, Scottsdale, AZ 85251

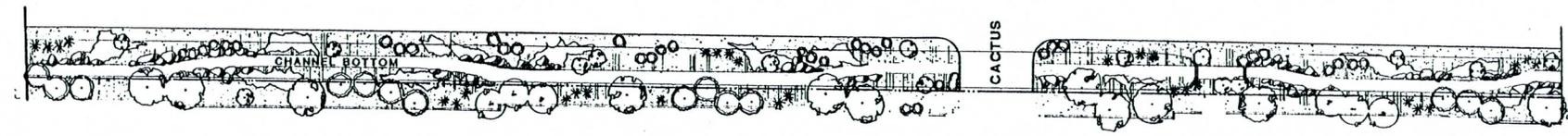
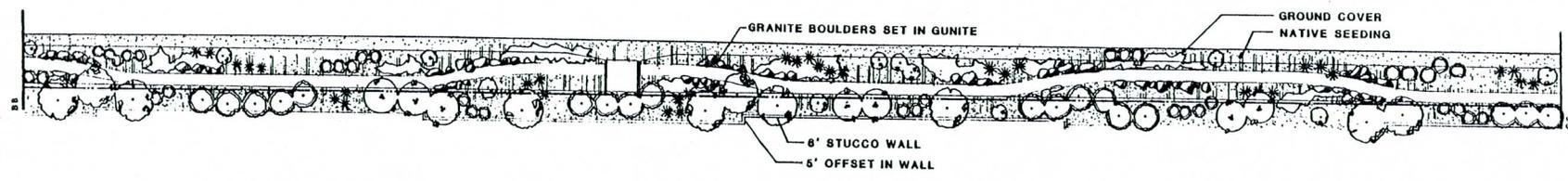
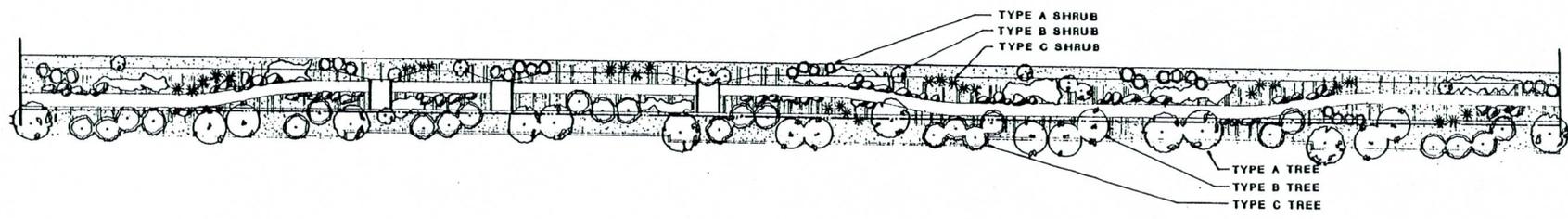
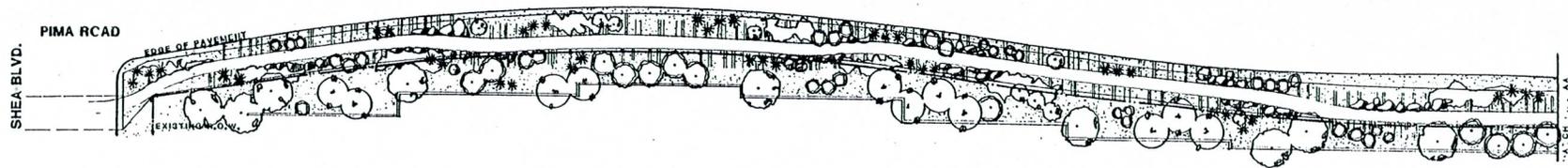
PIMA ROAD CHANNEL
 PROJECT A



DATE	1-20-82
NO.	3701
VP.#	
SCALE	1" = 50'
PROJECT	
DESIGNER	

Pima Road
Cost Figures

	<u>Item</u>	<u>Notes</u>	<u>Cost</u>
III.	Maintenance	17.8 AC @ \$4416/AC	\$ 78,604
IV.	Water Costs		
	Trees	\$391/Year	
	Shrubs	\$25/Year	
	Ground Covers	\$96	
	Seed Mix	<u>\$5,500</u>	
		Total	<u>\$ 6,012</u>
V.	TOTAL COSTS:		
	Construction	\$2,043,925	
	Irrigation	129,000	
	Maintenance	78,604	
	Water	<u>6,012</u>	
	TOTAL COSTS:		<u>\$2,257,541</u>



SCALE: 1" = 50'

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ASSOCIATES

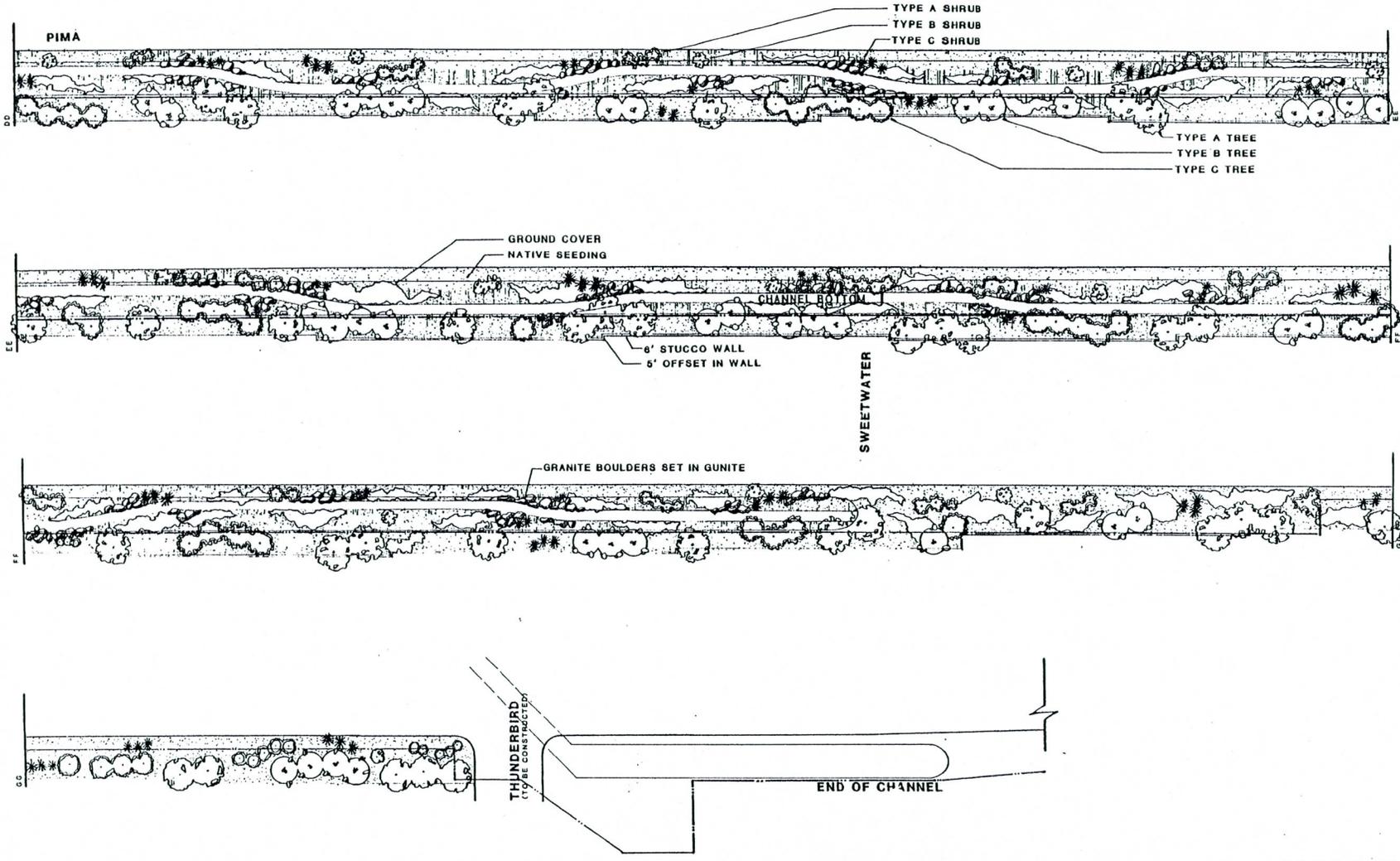
(602) 994-0044

PIMA ROAD CHANNEL
CHANNEL BEAUTIFICATION PROJECT A

NORTH

1	1/2
2	1/2
3	1/2
4	1/2
5	1/2
6	1/2
7	1/2
8	1/2
9	1/2
10	1/2

4211 Winfield Scott Plaza Scottsdale, AZ 85251



SCALE: 1" = 50'

**G. WILLIAM
LARSON
ASSOCIATES**

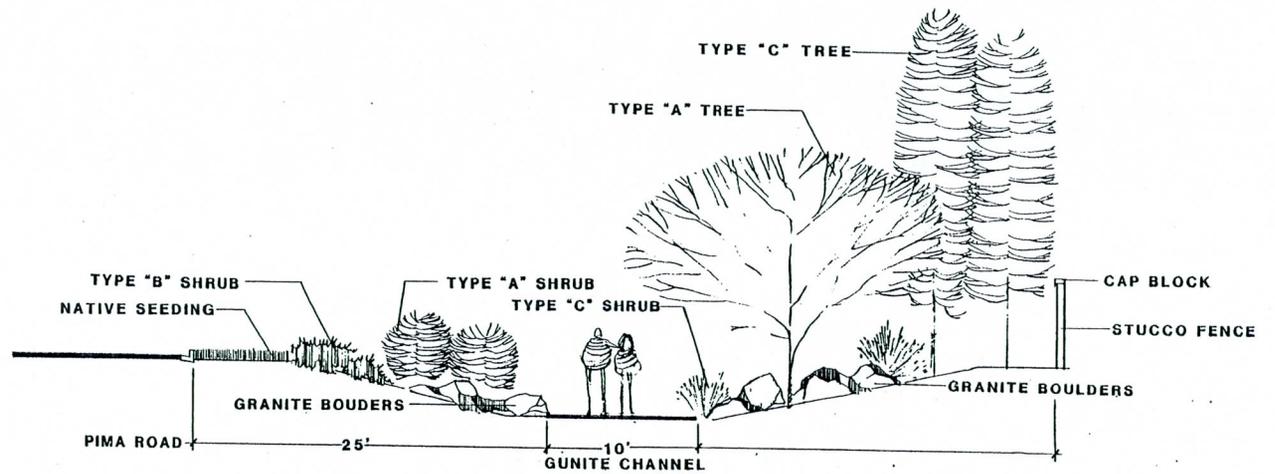
(602) 994-0044

4211 Winfield scott plaza scottsdale, az 85251

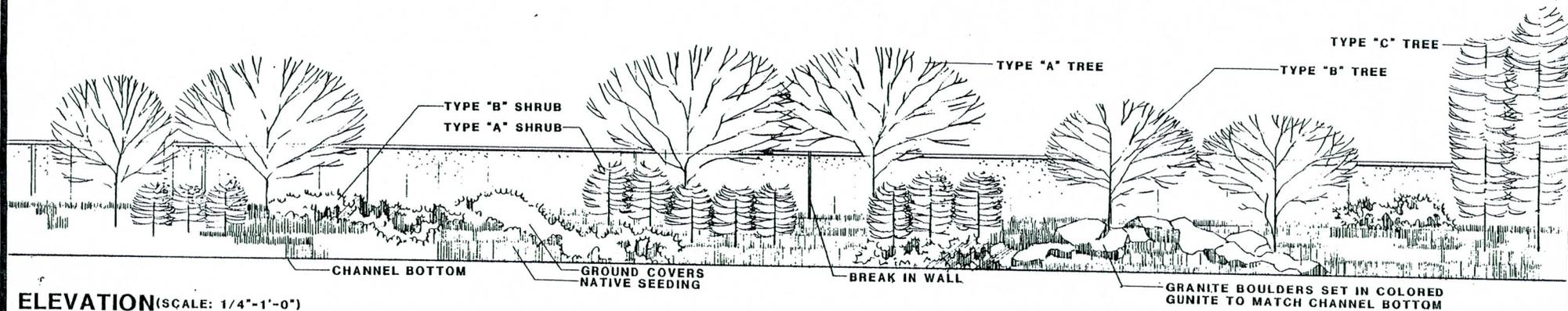
**PIMA ROAD CHANNEL
PROJECT A**



1:50-A
8101
V.D.T.
1/1
1/1



SECTION (SCALE: 1/4"-1'-0")



ELEVATION (SCALE: 1/4"-1'-0")

G. WILLIAM
LARSON
ASSOCIATES

(602) 994-0044

4211 Winfield Scott Plaza, Scottsdale, AZ 85251

PIMA ROAD CHANNEL
CHANNEL BEAUTIFICATION PROJECT A

DATE	
BY	2/1/01
PL	
CHECK	
DATE	

PIMA ROAD DESIGN CONSTRAINTS

The channel adjacent to Pima Road on the east side presents the greatest versatility because it is still in a relatively undeveloped area. The area is now quite picturesque with the surrounding desert and the mountains in the background. These amenities lead to these two design concepts of a natural meadow wash. The two options proposed both utilize the same amount of additional property - approximately 25 feet. This additional amount is a function of the 4:1 side slopes, which is the maximum slope, it is possible to landscape. It also allows the 10' concrete channel bottom for maintenance vehicle access.

The first option consists of a straight channel bottom of earthtone concrete with undulating side slopes and alternating level areas on opposite sides of the channel bottom. There are level areas located on the top of the channel that alternate from the roadside to the wallside in the same pattern as the level areas on the channel bottom. The entire area is covered with several varieties of native seeding to create color in the various seasons. The undulating side slopes change in lengths of 200' to 400' and the transition is of a very gentle nature to minimize the erosion potential during heavy water flow. Subdivision wall at the adjoining property line is of a stucco finish with a cap block and is broken up at 500' intervals by a 5' offset. This breaks up the lineal nature of the straight wall line.

The second option is similar, but of a more dynamic nature. The channel bottom undulates from side to side at approximately 400' intervals. The bottom is accented at these directional changes by rock out croppings which can be used to divert the water during heavy flow periods. It can also slow the flow down by the use of weirs if necessary. The rock out croppings are placed in colored concrete to match the channel bottom to help reduce erosion. There are individual rocks located at various locations along the channel bottom to give continuity to the design. The landscaping is similar to that of option one except there is a greater amount of ground cover and shrubbery in addition to the native seeding. This happens mostly at the rock out croppings. The wall treatment is the same as that of the first option.

HAYDEN ROAD - PROJECT B

HAYDEN ROAD CORRIDOR ANALYSIS

This Hayden drainage channel extends from Cholla Road north to Thunderbird Road. The channel is on the east side of Hayden Road and drains south for approximately 1.5 miles into a golf course at Cholla. The 40' wide channel is soil cemented and not considered by the local residents to be particularly aesthetic.

The surrounding land uses are mostly single family 35,000 square foot lots. On the east side of Hayden is a 160 acre ranch that has the potential to be developed into 35,000 square foot lots. The subdivisions adjacent to the drainage channel have concrete block walls on the property lines. Many attractive single family homes face the western side of Hayden Road.

Hayden Road may serve as a secondary access route for traffic to Scottsdale Airport to the north. McCormick Ranch is directly south of Shea.

The major objective of the treatment of this project is obviously to soften the existing impact. This can be done through plant material buffers and texture and color. The undeveloped portions offer a chance to break up the linear monotony of the existing channel and create a pleasing visual impact for residents and motorists alike.

HAYDEN ROAD CHANNEL
PROPOSED DESIGN CONCEPT

A design concept for Hayden Channel must enhance an existing soil cement channel in a cost efficient manner. This proposal modifies the existing gray color to light earth tones in undulating curvilinear patterns. To accent these patterns, planter areas have been introduced into the top portions of the channel where ground covers will spill down to soften the hard side slopes.

The planter areas will have an 18" retaining wall with a depth of no greater than 4', along the street side of Hayden Road, in accordance with CIP flow calculations in areas where no additional r.o.w. could be acquired. On the east side of the channel in undeveloped areas, the planters will be shifted out of the channel and adjacent to subdivision walls. These planters will be 18" high and approximately 6' deep to the existing/proposed walls, in-between these raised planter areas a 6" concrete header will be installed to provide a visually clean edge to the channel top and provide additional planting area. All walls will have a cap block top and be stuccoed for a more uniform appearance.

The native trees such as Palo Verde and Acacia Farnesiana would be used. Low maintenance ground covers like Acacia Ongerup are suggested for the planters.

^{some} Same irrigation will be supplied by bubblers on an automatic timer system.

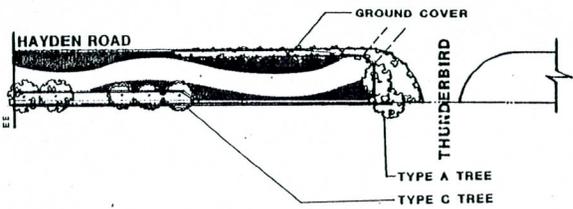
This concept provides visual interest, continuity, while still retaining the channel's basic design.

Cost Figures

	<u>Item</u>	<u>Notes</u>	<u>Cost</u>
I.	Construction		
	Saw Cut	4050 LF @ \$1.80/LF	\$ 7,290
	Break Out Existing	8160 SF @ \$0.40/SF	3,264
	Soil Cement:		
	Grading	190,155 CY @ \$2/CY	380,310
	18" retaining wall	8000 LF @ \$2/LF	16,000
	Stucco Existing walls	28,020 SF @ \$0.30/SF	8,406
	Constr. New 6' Wall	1330 LF @ \$33/LF	43,890
	Stucco	7980 SF @ \$0.30/SF	2,394
	Trees: 15 gal	162 @ \$60/EA	9,720
	Shrubs: 1 gal	1320 @ \$6/EA	7,920

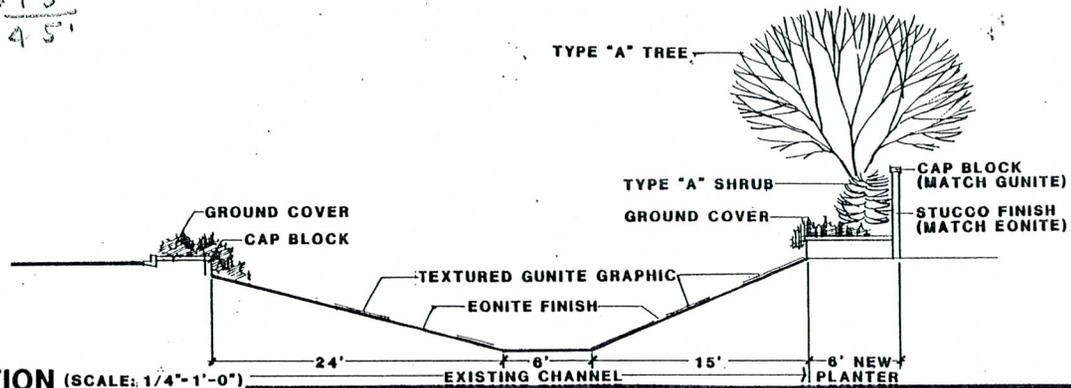
Hayden Road
Cost Figures

	<u>Item</u>	<u>Notes</u>	<u>Cost</u>
	Desert Varnish	180,000 SF @ \$0.15/SF	\$ 27,000
	Labor	4,000 LF @ \$0.90/LF	3,600
	Gunnite	2" thick colored 90,000 SF @ \$1.40/SF	126,000
	6" concrete header	6,000 LF @ \$3/LF	<u>18,000</u>
		Total	\$653,794
II.	Irrigation		
	Bubblers	800 @ \$25/EA	\$ 20,000
III.	Maintenance		
	Trees	\$2,430	
	Shrubs	<u>\$10,560</u>	
		Total	\$ 12,990
IV.	Water Costs		
	Trees	\$87.40/Year	
	Shrubs	<u>\$45.26/Year</u>	
		Total	<u>\$ 133</u>
V.	TOTAL COSTS:		
	Construction	\$653,794	
	Irrigation	20,000	
	Maintenance	12,990	
	Water	<u>133</u>	
	TOTAL COSTS:		<u>\$686,917</u>

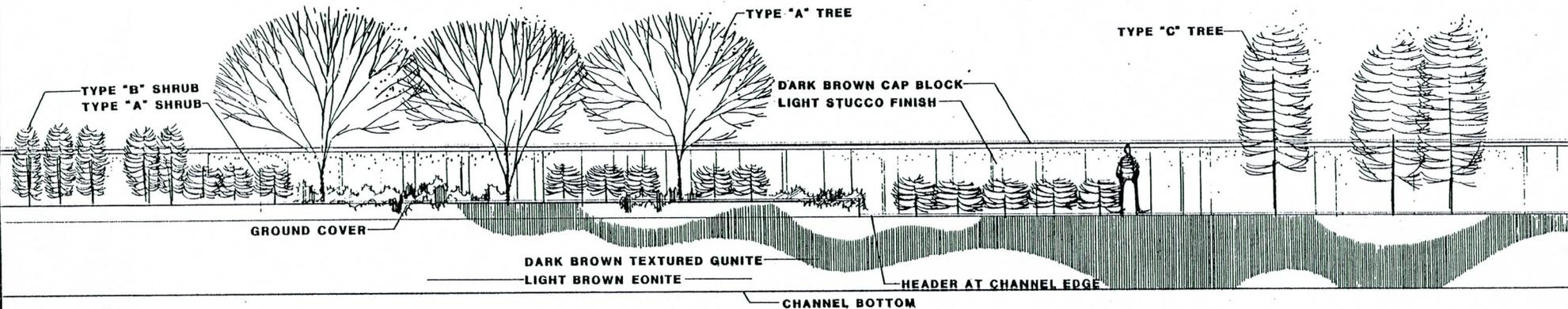


(SCALE: 1"=50')

24'
+ 15'
45'



SECTION (SCALE: 1/4"=1'-0")



ELEVATION (SCALE: 1/4"=1'-0")

G. WILLIAM
LARSON
ASSOCIATES

(602) 994-0044

4211 Winfield Scott Plaza, Scottsdale, AZ 85251

HAYDEN ROAD
PROJECT B

NORTH

1/2" = 1'-0"
1/4" = 1'-0"
1/8" = 1'-0"
1/16" = 1'-0"
1/32" = 1'-0"

HAYDEN ROAD DESIGN CONSTRAINTS

The design of the Hayden Road project was limited by the existing channel and that the greater portion of the adjoining property was already developed. This situation was complicated by the proposed widening of Hayden Road up to the edge of the existing channel. These limitations predicated the design which is proposed as follows:

The west side of the channel at the edge of Hayden Road is softened and the direct view of the channel is obscured by the use of a 4' wide planter interjected into the channel itself at varying lengths from 200'-300'. This interjection does not appreciably alter the carrying capacity of the channel. The cross section flow of the channel is reduced by approximately three sq. ft., the balance of the channel proper is left untouched. The east side of the channel from the channel's top edge to the existing and proposed subdivision walls, is broken up with 18" raised planters that alternate with the planters on the west side at 200'-300' intervals. The areas between these raised planters on the east side are also made usable by the addition of a 6" curb at the edge of the channel. This not only gives the channel edge a clean line, but also facilitates planting in these areas.

REDUCES
CHANNEL
CAPACITY?

The channel itself is to be treated with a subdued graphic of a light earth tone in an eonite finish on the greater portion of the channel wall and a dark, textured, earth tone gunnite finish to the balance of the existing soil cement. This design would be an undulating wave-like pattern that would predominately occur on the east side of the channel for greatest visibility from the roadway, but would also be carried over on the west side at varying intervals. This fluid curvilinear pattern helps to relieve the horizontal nature of the channel and draw the view out of the channel to the planters and landscaping.

The overall design of the subdivision walls, planters, eonite and gunnite are united through the use of color. The walls of all the planters, the eonite finish on the channel, and the stucco treatment of all existing and future subdivision walls are the same color, preferably a light buff. All the planters and the subdivision walls would be accented by a dark brown cap block. This color would also be used on the 6" header between the raised planters on the east side and the textured gunnite patterns in the channel. The use of the complimentary colors and textures would give the overall area a contiguous feel within itself, and help to blend it into the existing conditions of Hayden Road.

The planting palette also helps to give the area a definite character that relates to the general character of Scottsdale. The ground covers used in planters adjacent to Scottsdale Road would help to tie together the overall project and would be carried extensively on the planters on both sides of the channel. The trees and shrubbing used, all hardy natives, are of a looser design using both vertical and horizontal varieties to help break up the horizontal nature of the channel.

SCOTTSDALE ROAD - PROJECT C

SCOTTSDALE ROAD CORRIDOR ANALYSIS

The Scottsdale Road channel is located on the east side of Scottsdale Road from the Cactus Basin site north to Thunderbird Road; about 3/4 of a mile. This major arterial serves not only Scottsdale Airport but is a major thoroughfare for traffic entering into Scottsdale from the north.

The land uses to the east of Scottsdale Road in the project area are mostly residential. There will be some commercial development at the southern end of the project area. Portions of Scottsdale Road on the west are outside of city limits. Approximately 1/3 of the drainage channel distance has been installed south of Sweetwater. It has rock gabions and an 8' bicycle path at the bottom of the channel.

Landscaping for the channel should serve as a noise buffer from the heavy vehicular traffic on Scottsdale Road and developing and existing residential uses. The linear effects of the channel should be broken up whenever possible.

SCOTTSDALE ROAD - PROPOSED DESIGN CONCEPT

Limited right-of-way in several sections and the large volume of water to be carried have reduced this project to one design concept and several "given" solutions. In the restricted r.o.w. by the fire station, the channel will be 20' wide with retaining walls and 4' handrails for pedestrian safety. Thunderbird Academy, south of the fire station, will widen the channel to 50' with 4:1 slopes on both sides. Native grasses and trees will be used for continuity throughout Scottsdale Road.

The section of channel adjacent to Sweetwater Estates will feature an 8' wide concrete bottom in a soft brown tone to cut down the glare for cyclists. This will also facilitate maintenance vehicles to clean the silt off the bottom and into the adjacent nuisance water channels. Short retaining walls will be on both sides with gentle 4:1 slopes to level ground.

Due to the limited r.o.w. by Scottsdale Estates, an underground channel is the only cost effective solution. Landscaping will be similar to other sections to blend the entire design concept into a cohesive unit.

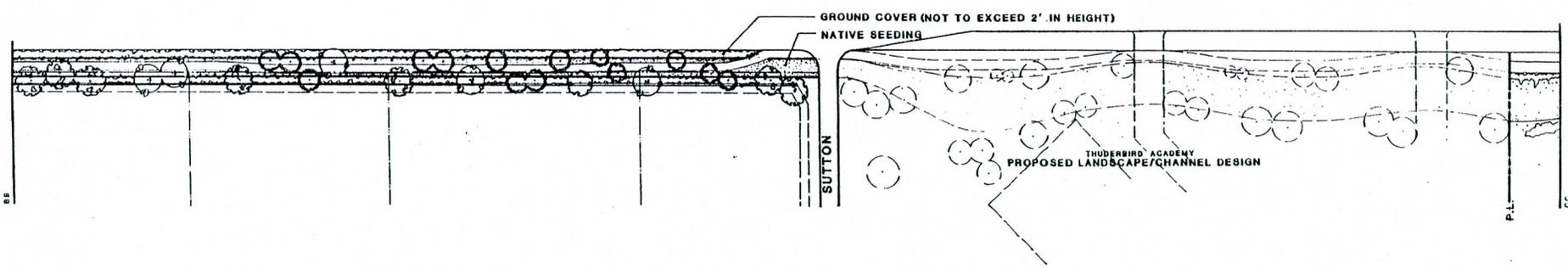
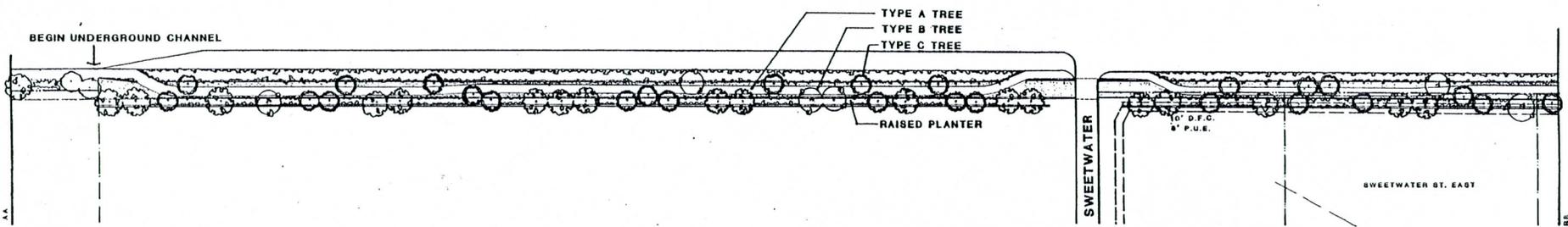
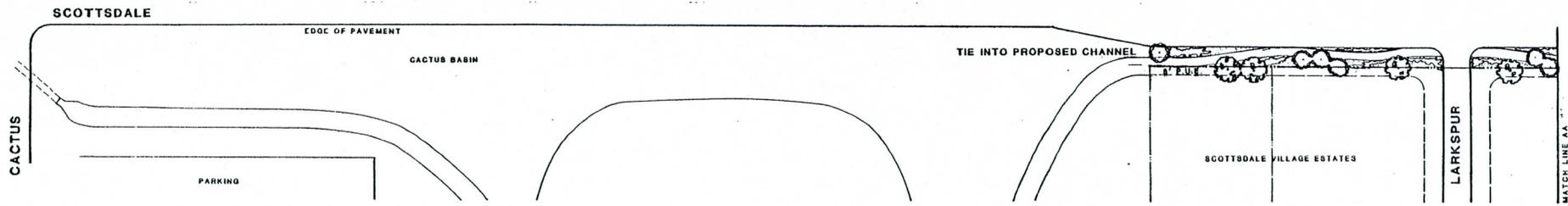
Irrigation will be provided by bubblers for trees and shrubs. Impact spray will be utilized to establish native seeding and during drought periods.

Cost Figures - Scottsdale Road - Sweetwater to Larkspur

<u>Item</u>	<u>Notes</u>	<u>Costs</u>
I. Construction		
Grading	76,611 CY @ \$3/CY	\$229,833
10' Concrete bottom	11,000 SF @ \$2/SF	22,000
Walls		
2' Retaining	1100 LF @ \$12.50/LF	13,750
3' Retaining	1100 LF @ \$18.50/LF	20,350
Trees: 15 gal.	44 @ \$60/EA	2,640
Shrubs: 1 gal.	66 @ \$6/EA	396
Groundcover: 1 gal.	300 @ \$6/EA	1,800
Native Seed Mix	110,000 SF @ \$0.10/SF	<u>11,000</u>
	Total	\$301,769
II. Irrigation		
Bubblers	141 @ \$25/EA	\$ 3,525
Impacts	2.52 AC @ \$5,000/AC	<u>12,626</u>
	Total	\$ 16,151

Scottsdale Road
Cost Figures

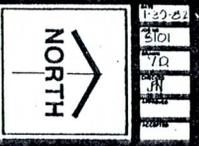
	<u>Item</u>	<u>Notes</u>	<u>Costs</u>
III.	Maintenance	2.52 AC @ \$4,416/AC	\$ 11,128
IV.	Water Costs		
	Trees	\$24/Year	
	Shrubs	\$3/Year	
	Ground Cover	\$11	
	Seed Mix	<u>\$787</u>	
		Total	<u>\$ - 828</u>
V.	TOTAL COSTS:		
	Construction	\$301,769	
	Irrigation	16,151	
	Maintenance	11,128	
	Water Costs	<u>828</u>	
	TOTAL COSTS:		<u><u>\$329,876</u></u>

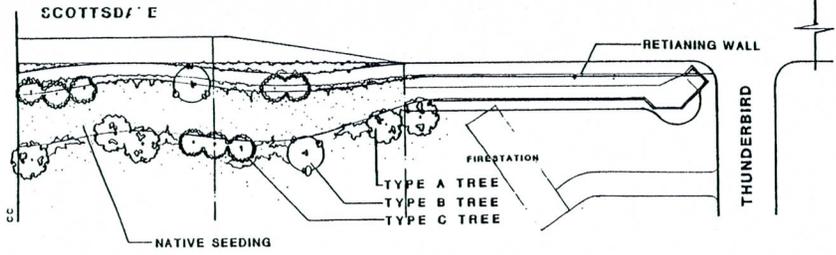


SCALE: 1"=50'

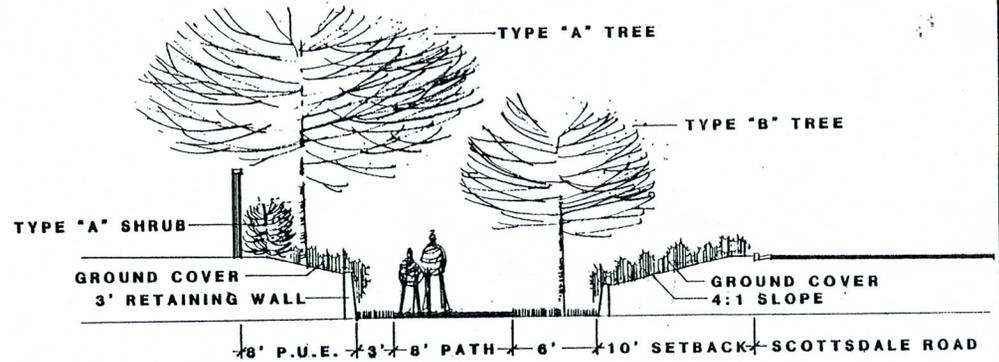
**G. WILLIAM
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ASSOCIATES**
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4211 Winfield Scott Plaza, Scottsdale, AZ 85251

**PVSP CHANNEL /
SCOTTSDALE ROAD
CHANNEL BEAUTIFICATION PROJECT C**

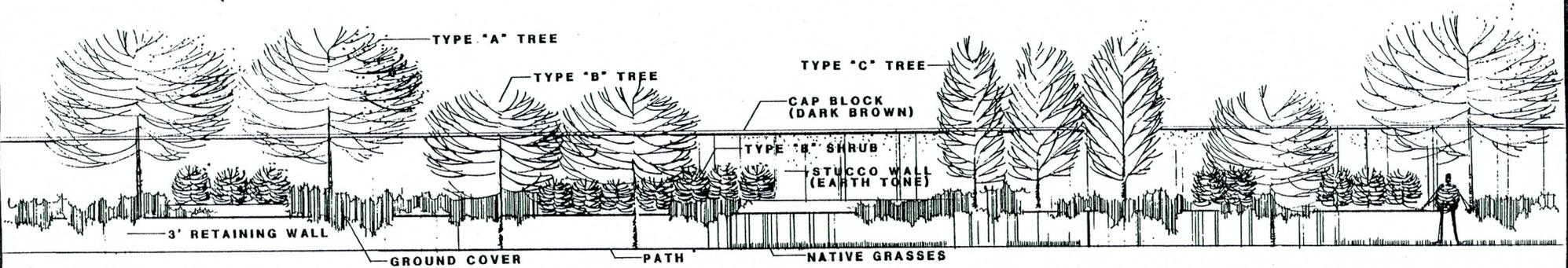




(SCALE: 1" = 50')



SECTION (SCALE: 1/4" = 1'-0")



ELEVATION (SCALE: 1/4" = 1')

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**PVSP CHANNEL /
SCOTTSDALE ROAD
PROJECT C**

NORTH

13	2002
210	
151	
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2000	

SCOTTSDALE ROAD DESIGN CONSTRAINTS

The limitations of existing r.o.w. and large flow capacities have restricted the design to one economically feasible concept for Scottsdale Road. Within the project area, restrictions vary due to the lack of additional r.o.w. Sections of the channel vary according to the existing conditions which could not be manipulated.

Starting at the northern most section, Thunderbird and Scottsdale Road, the r.o.w. is limited due to the expansion of the existing fire station. This necessitated a 4' x 20' channel with retaining walls and a handrail for pedestrian safety. As the channel leaves this property, it widens to 50' and 3' in depth. 4:1 slopes are on each side and these are seeded to produce a grassy meadow. This design concept occurs on Thunderbird Academy's property with their Architect's consent.

The area by Sweetwater east subdivision has a combination of 2' and 3' retaining walls with 4:1 slopes on both sides necessitated by the limited r.o.w. and large flow capacity. These areas are covered with a combination of native seeding, ground covers, shrubs and trees of hardy, native varieties. The earthen channel bottom is a meandering 10' wide concrete bike path. There are 3' and 6' wide planting areas alternating on both sides with native seeding and occasional trees. The concrete path also provides easy access for maintenance vehicles to remove silt and debris build-up.

This same concept is carried out in the undeveloped section. The decision to maintain the previous concept was influenced by two factors; it maintains continuity throughout the longest, unbroken, section of the channel and the cost of purchasing any additional r.o.w.

The last section of channel by Scottsdale Vista subdivision is best achieved by burying the large conduit to carry the flow. This was mandated by Capitol Improvements due to the extremely narrow right-of-way. The area will be landscaped to continue the continuity of the previous section.

71ST STREET - PROJECT C

71ST STREET CORRIDOR ANALYSIS

This drainage channel will lie along the 71st Street alignment from Mountain View Road north to Mescal Drive for approximately 1 mile. A portion of this channel has been installed behind the commercial development adjacent to Shea Boulevard. This gunnited portion has a very minimal amount of landscaping.

Undeveloped parcels will develop with varying single family densities. There is a 10 acre parcel west of Mescal Street that is zoned for multiple family development. This large parcel (and a 33 acre parcel south of Gold Dust) could present exciting possibilities for incorporating the drainage channel into their open spaces.

Chapparal High School is just west of the project site. As this drainage channel is not highly visible from the roadway and it runs between residential property, it should be of a more informal design.

71ST STREET CHANNEL - PROPOSED DESIGN CONCEPT

Alternative Two - Intermittent Flat Open Areas

Both this concept and Alternative One utilize the existing east side slope and modify the "V" bottom to a 10' wide concrete nuisance channel for maintenance purposes. The west side flat areas and slopes will be seeded with native Buffalo Grass and wildflowers for color at street intersections. Additional landscape easements of 100' maximum will be necessary and could be incorporated into the adjacent developments open space.

Slopes will vary from a 4:1 maximum slope to 7:1 with flat areas at the top and bottom of the slopes. The flat grass areas at the bottom will be used for settling and slowing of water flow. In planters adjacent to existing parking, a trailing ground cover such as Acacia Ongerup will gently cascade down the existing soil cement slopes. Trees will be scattered in natural random patterns to create a pleasant passive open space for adjacent residents.

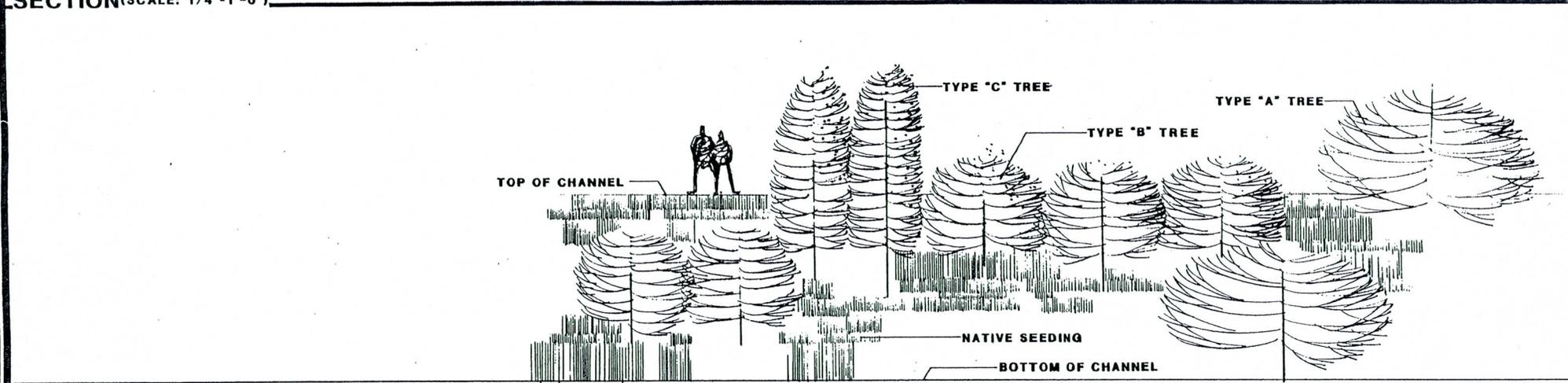
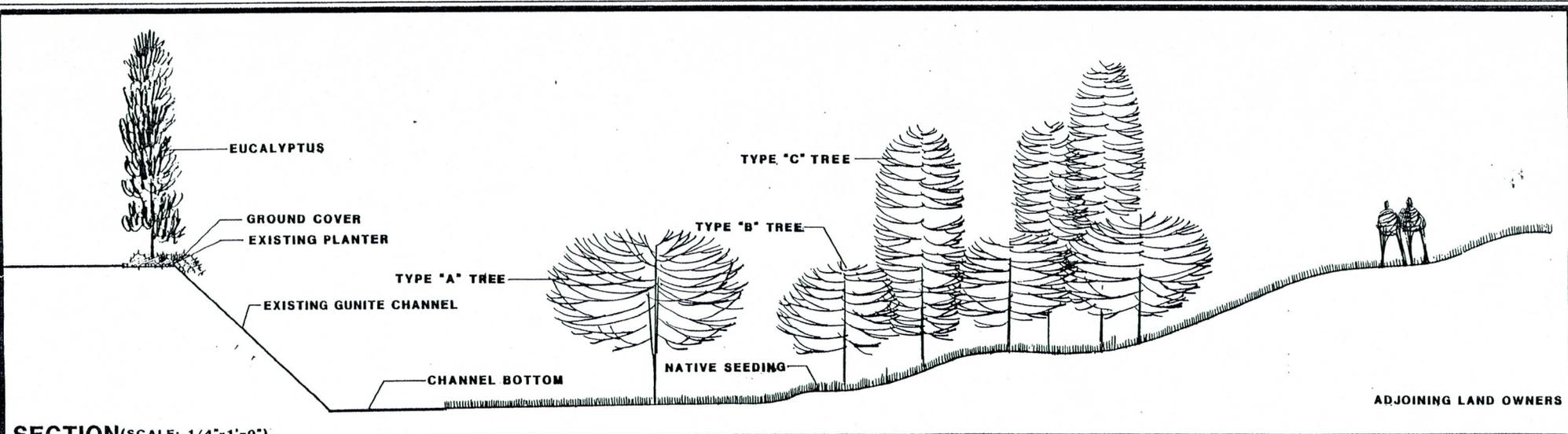
Irrigation for seeded areas will be provided by manual impact heads to water only when necessary. Trees and ground cover will be irrigated by drip emitters.

Cost Figures

<u>Item</u>	<u>Notes</u>	<u>Costs</u>
I.	Construction	
	Sawcut Bottom	1200 LF @ \$1.80/LF \$ 2,160
	Break-out Existing	18,000 SF @ \$0.40/SF 7,200
	Soil cement	25,500 SF @ \$1.15/SF 29,325
	Grading	304,910 CY @ \$3/CY 914,730
	10' Concrete bottom	30,000 SF @ \$2/SF 60,000
	Color	30,000 SF @ \$0.05/SF 1,500
	18" curb for planter	1,700 LF @ \$7/LF 11,900
	Trees	320 @ \$60/EA 19,200
	Groundcover	572 @ \$6/EA 3,432
	Native seed mix	600,000 SF @ \$0.10/SF <u>60,000</u>
	Total	\$1,109,447
II.	Irrigation	
	Bubblers	606 @ \$25/EA \$ 15,150
	Impacts	13.7 @ \$5,000/AC <u>68,870</u>
	Total	\$ 84,020

71st Street
Cost Figures

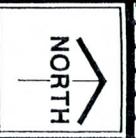
	<u>Item</u>	<u>Notes</u>	<u>Costs</u>
III.	Maintenance	13.67/AC @ \$4,416/AC	\$ 60,366
IV.	Water Costs		
	Trees	\$172/Year	
	Groundcovers	\$20/Year	
	Native seed	\$4,274/Year	
		Total	<u>\$ 4,446</u>
V.	TOTAL COSTS:		
	Construction	\$1,109,447	
	Irrigation	84,020	
	Maintenance	60,366	
	Water Costs	<u>4,446</u>	
	TOTAL COSTS:		<u>\$1,258,279</u>



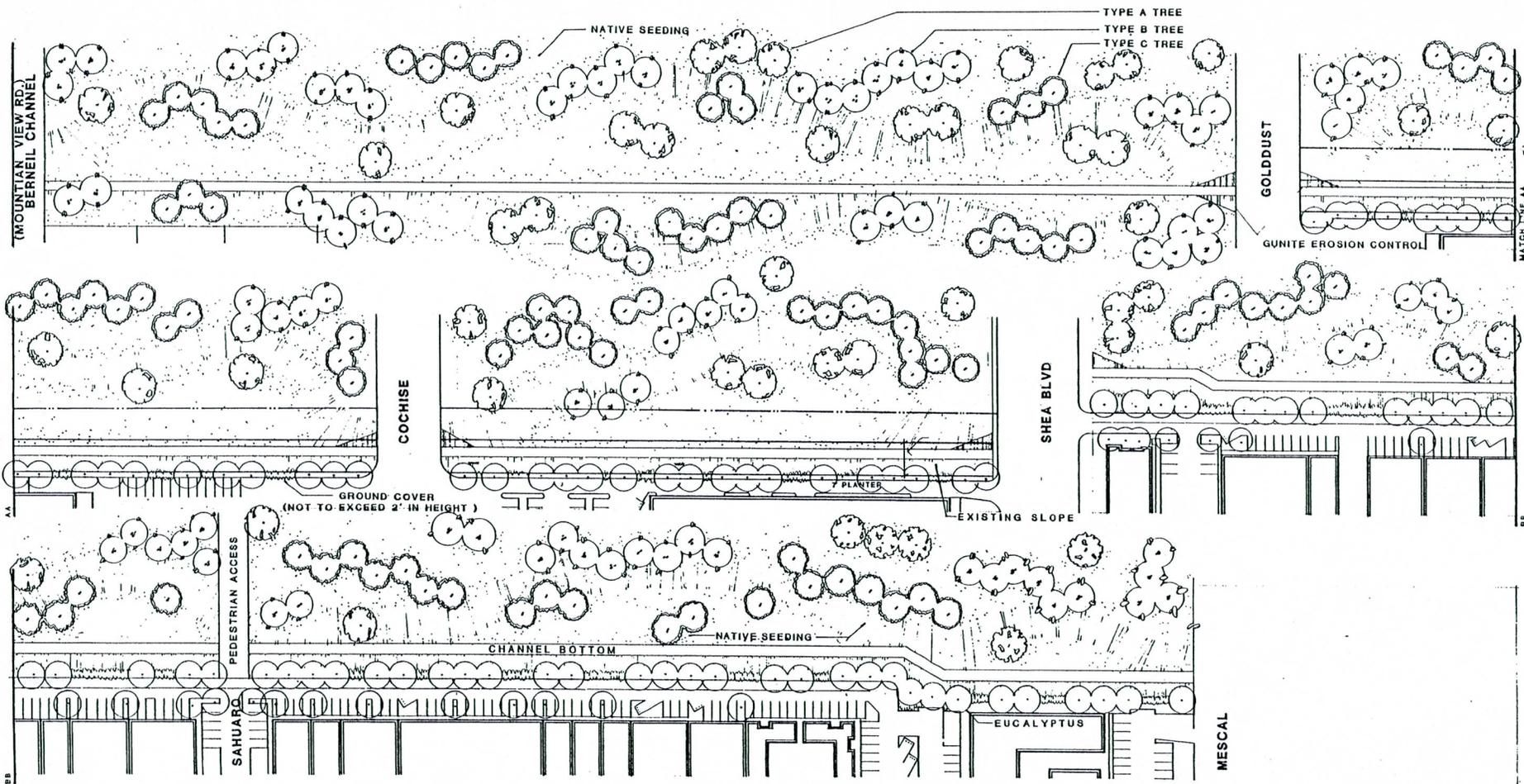
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PVSP CHANNEL /
71 STREET
PROJECT C



DATE	3/1/04
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DATE	



SCALE: 1"=50'

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ASSOCIATES

(602) 954-0044

4211 Winfield Scott Plaza Scottsdale, AZ 85261

PVSP CHANNEL /
71 STREET
CHANNEL BEAUTIFICATION PROJECT C



1/20/02
2/10/01
11/01/00
08/01/00
05/01/00
02/01/00

71ST STREET DESIGN CONSTRAINTS

The existing channel along the 71st Street alignment presents a situation where the City and adjacent property owners can both benefit from the channel improvements. The existing channel only covers a portion of the total project. The availability of additional r.o.w. from adjacent undeveloped property provides a variety of options not possible in developed areas. The flow capacities, however, must be maintained regardless of the r.o.w. involved.

The east side of the existing channel abutts the rear of Gold Dust Plaza, an existing commercial development. Since the east side of the channel is already constructed, it sets the development concept for the unconstructed portions of the channel.

These design concepts begin with saw cutting the existing "V" bottom and replacing it with a flat 10' wide concrete bottom to facilitate maintenance vehicles while cleaning silt and debris build-up. The balance of the channel would be treated with a series of gentle slopes. A 4:1 slope would be the maximum and other slopes will vary depending on the amount of r.o.w. and adjoining property use. These slopes will be seeded with native grasses for two reasons; native grasses are a softer, more aesthetic treatment than soil cement and would help prevent erosion and control weeds better than a plain dirt channel. The seeded gentle, bermed slopes and scattered trees create a park-like atmosphere for viewing from Scottsdale Road and adjacent properties. This basic idea has evolved into two separate concepts. They share some basic components while retaining their individual nature.

Alternative One would be to utilize the minimum amount of adjoining property. The channel side slopes remain a constant 4:1 slope since this is the maximum slope able to support and maintain growth. This constant slope is interrupted by a 6' wide flat terrace that interrupts the slope at varying elevations throughout the length of the project. Trees planted on the terrace will accent the face of the slope. Additional trees in random patterns will be scattered throughout the slope. The depth that this option interjects into the adjacent property is determined by the amount of property to maintain a minimum 4:1 slope.

The Second Alternative requires a greater amount of r.o.w. but will certainly be an asset to adjoining development. This option also removes the west side from the existing channel and replaces it with a 10' wide concrete bottom. It differs however, in that it has large, flat areas directly abutting the channel bottom which functions as a settlement area. Gentle slopes (4:1 to 7:1) rise from the flat areas to the top of the channel. This design concept is very loose and informal with hardy, native trees scattered in random patterns over the site. Native seeding of grasses will create a meadow atmosphere. The use of the open areas at the bottom of the channel would lend itself to the use of dip sections in the roadways that cross the channel, rather than the use of large box culverts.

71ST STREET CHANNEL - PROPOSED DESIGN CONCEPT

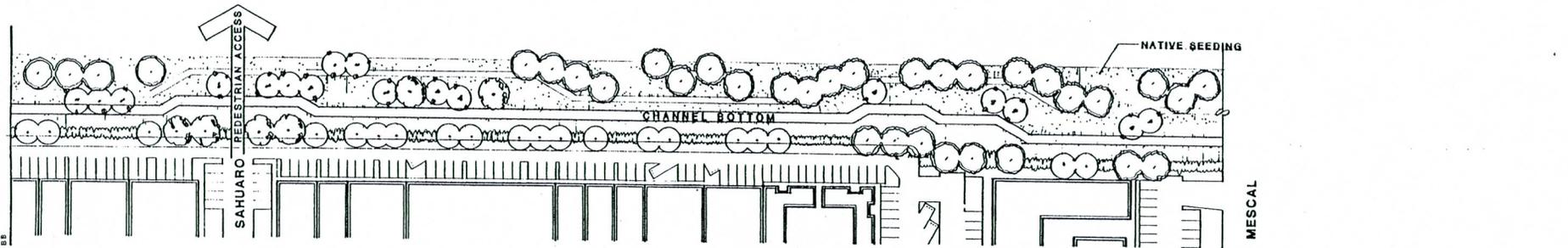
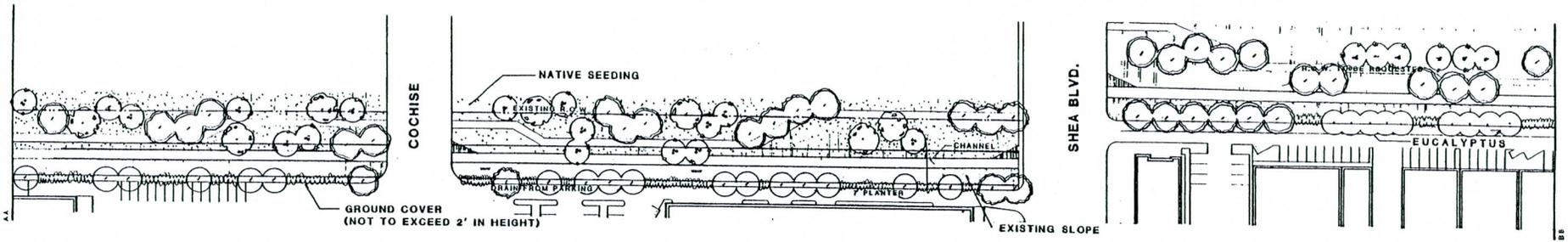
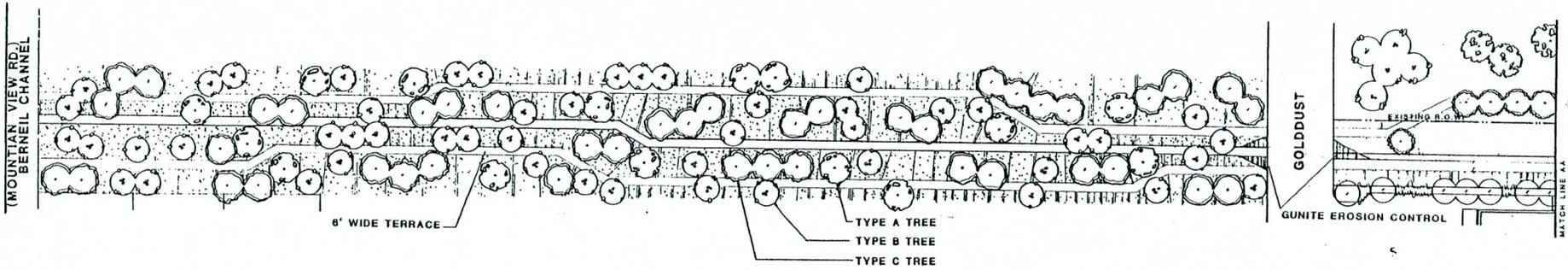
Alternative One - Terraced Design

This design concept utilizes the existing east side slope, but modifies the bottom and west side which do not now perform satisfactorily. The west side will be removed and the existing "V" bottom modified to a 10' concrete nuisance bottom channel to enable maintenance access with their large equipment. West side slopes will maintain a consistently gentle 4:1 slope. These will be seeded with native grasses such as Buffalo or Indian Wheat. Trees will be scattered over the slopes and terrace to produce a softer, more natural setting. A 5'-7' planter will be continued (as is now existing) along the east side of the channel adjacent to parking lots. Screen trees will be planted with ground covers that will trail down the east side of the slopes to soften the existing gunnited slope.

The overall effect of these improvements will not only increase efficiency, but the large trees will help screen adjacent properties that will develop into single family lots.

Cost Figures

<u>Item</u>	<u>Notes</u>	<u>Costs</u>
I. Construction		
Sawcut Bottom	1200 LF @ \$1.80/LF	\$ 2,160
Breakout Westside	18,000 SF @ \$0.40/SF	7,200
Grading	199,155 CY @ \$3/CY	570,465
Soil cement	25,500 SF @ \$1.15/SF	29,325
10' Concrete bottom	3,000 LF @ \$2/SF	60,000
Color	30,000 SF @ \$0.05/SF	1,500
18" curbing for planter	1700 LF @ \$7/LF	11,900
Trees: 15 gal	200 @ \$60/EA	12,000
Ground Cover	572 @ \$6/EA	3,432
Native seed mix	240,000 SF @ \$0.10/SF	<u>24,000</u>
	Total	\$721,982
II. Irrigation		
Bubblers	486 @ \$25/EA	\$ 12,150
Impacts	5.5 AC @ \$5,000/AC	<u>27,548</u>
	Total	\$ 39,698



SCALE: 1"=50'

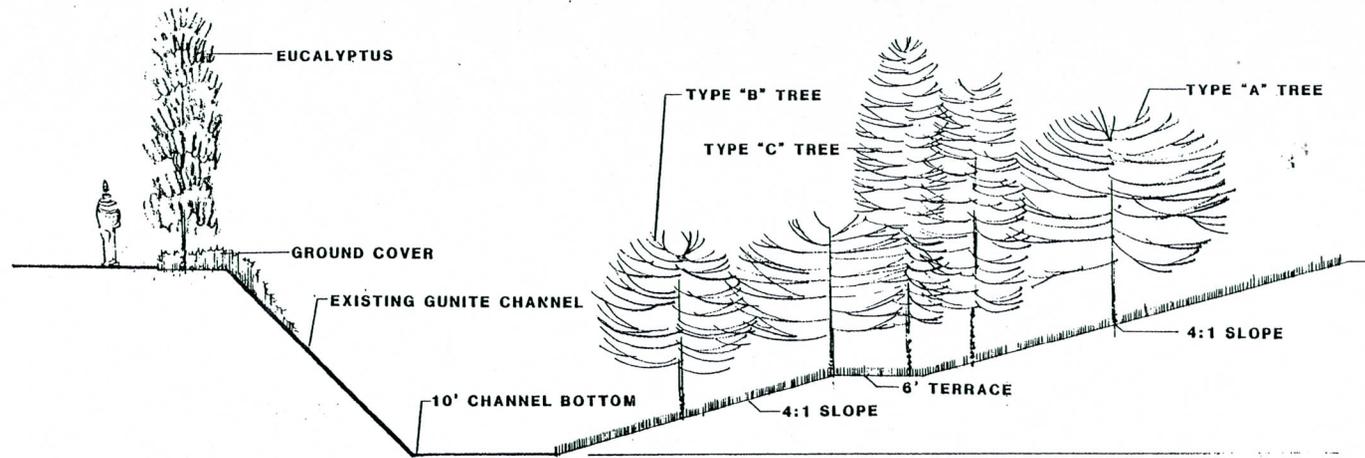
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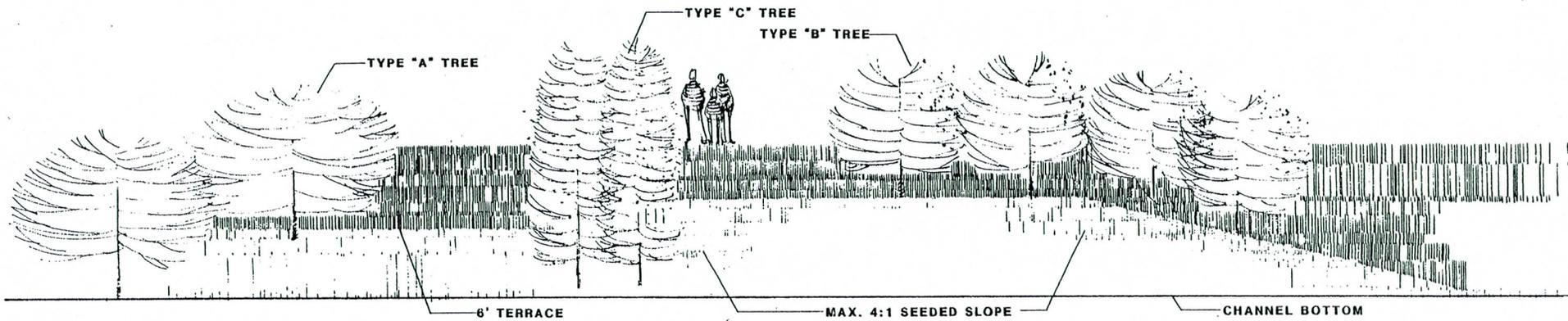
PVSP CHANNEL / 71 STREET
CHANNEL BEAUTIFICATION PROJECT C



4211 Winfield, Scottsdale, AZ 85261



SECTION (SCALE: 1/4" 1'-0")



ELEVATION (SCALE: 1/4" 1'-0")

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PVSP CHANNEL /
71 STREET
CHANNEL BEAUTIFICATION PROJECT C

DATE	
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71st Street
Cost Figures

	<u>Item</u>	<u>Notes</u>	<u>Costs</u>
III.	Maintenance	5.5 AC @ \$4416/AC	\$ 24,288
IV.	Water Costs		
	Trees	\$108/Year	
	Ground Cover	\$20/Year	
	Native Seed	<u>\$1,719</u>	
		Total	<u>\$ 1,847</u>
V.	TOTAL COSTS:		
	Construction	\$721,982	
	Irrigation	39,698	
	Maintenance	24,288	
	Water	<u>1,719</u>	
	TOTAL COSTS:		<u><u>\$787,815</u></u>