



CONSTRUCTION PHASING

Rittenhouse and Chandler Heights Detention Basins

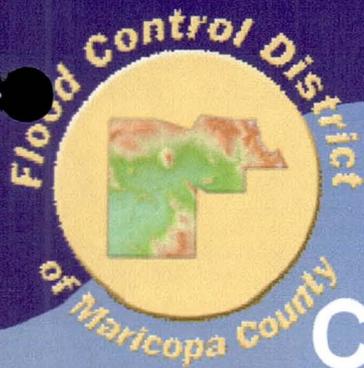
FCD 2000C040

PCN 121.03.32

PCN 121.03.33

Kirkham Michael Consulting Engineers
9201 North 25th Avenue, Suite 150
Phoenix, Arizona 85021
(602) 944-6564





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CONSTRUCTION PHASING

Rittenhouse and Chandler Heights Detention Basins

FCD 2000C040
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EMF BASINS PROJECT

PHASING ACTION ITEMS

MAY 14, 2004

Because the EMF Basins project will be constructed in multiple phases, at least seven phases at the time of completion of the design, it will be necessary to review the content of the P&S for each construction phase. It may become necessary to make revisions and updates to the P&S to reflect existing conditions at the time of advertising for each phase, and to identify changed conditions from when the P&S were finalized. Such action items would include the following:

1. The electronic .dgn and DTM InRoads CD's must be made available to the Contractors during the bidding and construction process for use in layout of the basin slopes and embankments. Use the following:
 - Use the MERGED files CD per Michael Lopez.
 - Copy onto new CD's only those files required for the specific phase under construction. Do not provide the CD's as they presently exist with more than one phase on the CD.
 - Have multiple copies made of the CD with the phase files to provide to the bidders.
2. For all phases; **C025, C026, C028, C029, C030**, review the "G" and "D" sheets for details that may not be applicable, and indicate as not applicable in an addendum.
3. Interim basin excavation phases may require a dust palliative application to the newly excavated surfaces until such time as the landscaping and seeding phases are completed. This may require changes to the SP's including addition of an appropriate bid item.
4. The SGC's should be updated to identify any interested parties wanting dirt. The contact names and numbers should be included in 104.1.
5. Review and revise the utility contact names and numbers on the general notes plan sheet, and accordingly in the SP's as required.
6. Review of existing utilities to identify the need for any additional relocations. At the completion of design only SRP Power had conflicts with 12kV and 69kV poles at RBasin and CHBasin. The RBasin poles have been relocated, and the poles at the CHBasin are to be relocated during the winter outage of 2004.
7. Phase C028 requires providing to the Contractor a copy of the following As-Built plan set dated 4/26/84 pertaining to the existing drop structure in the EMF:
 - R.W.C.D. FLOODWAY – R4ACH 3
PREPARED FOR THE SCS
AZ-84041-CH
8. The installation sequence for the geotextile barrier will need to be adjusted for the various basin phases; C025, C026, C028, C029. By addendum, certain overlapping limits of the barrier should be moved from one phase to another to avoid overlap installation of the barrier. This would affect:
 - a. **C025** – Include the portion of barrier in C026 near the phase boundary in the C025 contract.
 - b. **C026** – Delete the portion of barrier in C026 near the phase boundary that is included in the C025 contract. Provide a note in the C026 P&S identifying the existing barrier and the

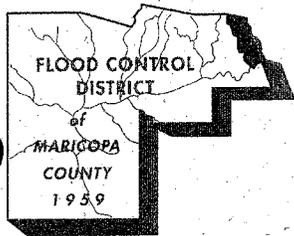
need for caution when working in the area of the barrier during basin excavation and fill construction.

c. **C028** – Delete the portion of barrier in C028 south of the outlet box culvert and include it in the C029 contract.

d. **C029** – Include the portion of barrier south of the outlet box culvert that was deleted from C028.

9. The **C028** phase for CHBasin will require that the hydroseeding of the EMF channel be done. This will require changes to the SP's, possibly best done by an addendum.
10. The cover sheets for all phases except C028 have the full contract number shown. For phase **C028** only the contract phase is identified. This may require labeling the cover sheet with the complete contract number.
11. Include in the SGC's for Phase **C029** that Queen Creek Wash flows must be managed during construction, including maintaining the wash to convey flows until such time as the new Queen Creek Channel is ready to receive and convey flows. Refer to the CHBasin phasing section in the Construction Phasing Notebook.
12. Need a TCE from Shamrock Estates located immediately east of the CHBasin and south of Ocotillo Road. This is required for construction of phase **C029**.
13. Need to identify if a permit is required from MCDOT for the fill work for Queen Creek Wash located along the west side of Higley Road. This would affect phase **C029**.
14. The reach of the proposed Sonoqui Wash Channel improvements west of Higley Road should be constructed as part of the phase **C029** improvements to Queen Creek Wash. The applicable plans and SP's should be included as an appendix to the **C029** P&S, and bid separately so that the 50/25/25 cost share split with the towns of Queen Creek and Gilbert can be tracked for reimbursement purposes.
15. For phase **C029**, using an addendum, identify the new locations of the 69kV transmission towers along Ocotillo Road alignment. Probably should use N/E coordinates to identify the new locations.
16. The landscape berms located along the Ocotillo Road alignment of the CHBasin will need to be modified for the phases **C029** and **C030**. The modification will be to identify in the P&S, likely using an addendum, that a clear distance of 25 feet must be maintained around all the 69kV poles. See item 15 above.
17. In phase **C029** must include placement of the rock mulch and hydroseeding for the Queen Creek channel. This is necessary to satisfy design assumptions by the consultant. This will require changes to the SP's, possibly best done by an addendum.
18. Determine if phase **C029** should include placement of the rock mulch and hydroseeding for the phase C028 south basin. Rilling and other erosion and dust problems may require doing this work as part of phase C029. And, must determine how best to locate the "top" limit of the rock mulch relative to the irregular line interface with the DG.
19. Obtain input from the Lands Division whether or not to have the Contractor backfill the existing "pit" located south of the Pecos Road alignment on the Rittenhouse Basin property as part of phase **C025** and/or **C026**. An On-Call contract was used during the design phases to remove the trash, debris, metal, concrete rubble etc. from the pit.

20. For phase **C026** include a note in an addendum that the "FUTURE GAS LINE BY OTHERS" as shown on drawings C9, C10 and C11 is now an EXISTING gas line.
21. The plant materials for phases **C027** and **C031** needs to be procured from local nurseries at least a year or more in advance of the contract award. TMP and LVD suggest using the Article 3 procurement process and an RFQ from local nurseries. Need to coordinate with TMP at least one and a half years out from contract award.
22. For phases **C027** and **C031**, landscape irrigation service connections for both water and electrical should be revisited to ensure that the original P&S requirements are still valid. It may become necessary to revise the service connection locations and requirements, and/or to revise in SP's Section 440 the cost to the Contractor for these service installations.
23. For phases **C027** and **C031**, must coordinate with SRP (Craig Wacker) to finalize the design for the electrical service connections for the irrigation controllers. Refer to the irrigation electrical information in the SP's, the DC&AN, and in this "action items" section, letter to Craig Wacker.
24. For phase **C027** permits will need to be obtained from the Union Pacific Railroad and from MCDOT for the installation of the irrigation service line to be connected to the future proposed 16" water line in the realigned Pecos Road, south of the Rittenhouse Channel and UPRR tracks. The permits will be necessary to allow the service line to cross under and through the road and the railroad alignments. Refer to plan drawing C30.
25. For phase **C031** a permit will need to be obtained from MCDOT or from the Town of Gilbert for installation of the irrigation service line connecting to an existing main in Queen Creek Road.
26. The landscape plans L6 and L20 for phase C031 will require modifications to accommodate SRP 69kV pole maintenance access at the CHBasin. This would affect the 15' Maintenance Access roads through the landscape areas, modifying the road layout and the surrounding landscaping. This could most likely be done in the field as a field change.
27. For phase **C031**, need to include by addendum drawing C48 from the phase C029 set of plans. This drawing shows the electrical service requirements for the irrigation off of Higley Road along the Ocotillo Road alignment.



FLOOD CONTROL DISTRICT

of

Maricopa County

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BOARD OF DIRECTORS
Fulton Brock
Andrew Kunasek
Don Stapley
Mary Rose Garrido Wilcox
Max W. Wilson

May 13, 2004

Mr. Craig Wacker
Mail Station EVS 107
PO Box 52025
Phoenix, Az 85072-2025

RE: Chandler Heights & Rittenhouse Basins Projects

Dear Craig:

Following is documentation for your file concerning the irrigation controller electrical services at previously identified locations in the Chandler Heights and Rittenhouse Basins. The Flood Control District of Maricopa County is providing this information for future reference to facilitate design and installation, and avoid a duplication of efforts when the projects are finally funded and ready for construction. An identical copy of this documentation will be in the project file at FCDMC as well.

Rittenhouse Detention Basin

Address:	6848 South Power Road
Connection Location:	First Pole west of Power Road on Pecos Road alignment
Meter Location:	Post mounted on FCDMC property on north side of Pecos Road alignment
Transformer Location:	Pole Mounted
Service Type:	Residential Underground Service
Service Size:	100 Amp Service
Transformer and pole:	Provided by Salt River Project
Service Connection Fee:	TBD
Contact:	SRP – (602) 236-8833
Fee to be paid by:	Contractor as an incidental cost to the bid items for the installation of the irrigation system.

General Notes: The transformer would be pole-mounted and the meter would be post-mounted.

Chandler Heights Basin

Controller "A" Address: 4840 South Higley Road

Connection A Location: Pole PR 0101 on the south side of Queen Creek Road west of Higley Road

Meter / Transformer location: In easement on FCDMC property and just north of the Queen Creek Channel

Service Type: Residential underground service

Service size: 100 amp service

Transformer and pole by: Salt River Project

Contact: (602) 236-8833

Fee to be paid by: Contractor as an incidental cost to the bid items for the installation of the irrigation system.

General Notes: The electric service conduit can be in the same easement as the water, but not in the same trench. SRP requires at least two (2) feet of separation, MAG says seven (7) feet. This service would use a pole riser to connect between the pole and the underground; run the underground to the termination point that is still in the easement and where the pad-mounted transformer and post-mounted meter would be set; then the service line would be run underground to the controller location further in.

Controller "B" Address: 3204 East Ocotillo Road

Connection B Location: An SRP switch south of Ocotillo Road alignment and on the east side of Higley Road.

Meter / Transformer location: In FCDMC property and just south of the Ocotillo Road alignment and east of the Queen Creek Channel.

Service Type: Residential underground service

Service Size: 100 amp service

Transformer and pole by: Salt River Project

Contact: (602) 236-8833

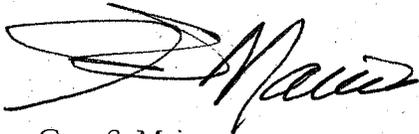
General Notes: While SRP would prefer to have the service run in an easement, in this case the District does not own the land adjacent to Higley nor on either side of the Ocotillo alignment between Higley and the Queen Creek Channel. The electric conduit would run in the

Mr. Craig Wacker
Page 3 of 3
May 13, 2004

Higley ROW as needed, then in Ocotillo alignment to the point inside the project boundary.
The pad-mounted transformer and the post-mounted meter would be installed at that point, and the service line run to the controller.

The intent would be that once the District is ready to proceed with construction, SRP can complete design and construction of these services without delay using this agreed upon information as the design basis. It is understood that to start the SRP design process, the District will need to follow the "request for service" procedures as outlined in Section 1.8 of the SRP Electric Service Specifications Manual.

Yours truly,

A handwritten signature in black ink, appearing to read "G. Maers", written in a cursive style.

Gary S. Maers
Utility Coordinator – FCDMC

File Copy for FCDMC Only

Addendum to May 12, 2004 letter re: Chandler Heights & Rittenhouse Basins

This addendum includes additional information concerning the water services for the Chandler Heights & Rittenhouse Basins and is intended for FCDMC use only.

Water service installations and connections:

Address:	7048 South Power Road
Meter size:	2 in. landscape meter
Main tap constructed by:	Contractor
Service line, meter box, and ancillary items constructed by:	Contractor
Meter installed by:	Town of Gilbert Water Dept.
Contact:	Community Development Engineering Counter Staff
Permit to Request Service:	Engineering Water Tap Permit

Address:	4810 South Higley Road
Meter Size:	2 in. landscape meter
Main tap constructed by:	Contractor
Service line, meter box, and ancillary items constructed by:	Contractor
Meter installed by:	Town of Gilbert Water Dept.
Contact:	Community Development Engineering Counter Staff
Permit to Request Service:	Engineering Water Tap Permit

General Notes: All required water service installations shall be coordinated with the Town of Gilbert Water Department. Contact the Town of Gilbert Development Services at: (480) 503-8341 a minimum of 30 (thirty) calendar days in advance of the desired date for the installation of the taps and meters.

Don Rerick - FCDX

From: Don Rerick - FCDX
Sent: Wednesday, April 14, 2004 10:28 AM
To: 'bling@kmpfh.com'; 'jkelley@kmpfh.com'
Cc: Don Rerick - FCDX
Subject: EMF Basins - Phase C029 and C030 Corrections

I spoke with Jason this morning and K-M will make the following corrections to the subject plans -

C029 -

- The O&M road DG and ABC quantities on the "Q" sheets are correct, the similar quantities in the construct notes on C37, C40, C63 will be corrected to agree. The engineer's estimate remains unchanged.
- The .dgn files on CD will not be resubmitted with these corrections to avoid creating other problems in duplicate and changing the .dgn files data. **When the as-builts are done in electronic format, these corrections can be made at that time.**

C030 -

- The O&M road DG and ABC quantities on the "Q" sheets are correct, the similar quantities in the construct notes on C63 will be corrected to agree. The engineer's estimate remains unchanged.
- The .dgn files on CD will not be resubmitted with these corrections to avoid creating other problems in duplicate and changing the .dgn files data. **When the as-builts are done in electronic format, these corrections can be made at that time.**

Corrected and resealed half-size prints and full size mylars will be resubmitted as soon as possible.

Thank you.

Don Rerick - FCDX

From: Don Rerick - FCDX
Sent: Friday, May 07, 2004 8:58 AM
To: Sidney Maxwell - FCDX
Cc: Don Rerick - FCDX
Subject: EMF Basins Original Mylars

Sid, I have made space available in my flat files in my office to store the original mylars for six of the seven phases of the project. I would like to suggest that you retain in Central Files the original mylars for the first phase that is presently being advertised, FCD 2003C028. Make a flat file location for these mylars so they can be copied as required, and then used for as-built purposes later. Title this phases as:
Chandler Heights Basin - Phase 1; FCD 2003C028

Then please not in the "Flat File Directory" that the other seven phases are located in my office. These could be listed as follows:

Chandler Heights Basin - Phase 2; FCD 2003C029

Chandler Heights Basin - Phase 3; FCD 2003C030

Chandler Heights Basin - Phase 4; FCD 2003C031

Rittenhouse Basin - Phase 1; FCD 2003C025

Rittenhouse Basin - Phase 2; FCD 2003C026

Rittenhouse Basin - Phase 3; FCD 2003C027

Thank you.

Don Rerick - FCDX

From: Don Rerick - FCDX
nt: Friday, May 07, 2004 12:02 PM
To: Don Rerick - FCDX
Subject: EMF Basins - Final Submittals

THE FINAL SUBJECT PROJECT SUBMITTALS ARE LOCATED AS FOLLOWS:

REPORTS IN ENGINEERING LIBRARY -

- DESIGN CALCULATIONS AND ANALYSIS NOTEBOOK (2 COPIES)
- CONSTRUCTION PHASING NOTEBOOK (2 COPIES)
- RITTENHOUSE BASIN GEOTECHNICAL REPORT (2 COPIES)
- CHANDLER HEIGHTS BASIN GEOTECHNICAL REPORT (2 COPIES)
- HYDROLOGY/HYDRAULICS REPORT (2 COPIES)

REPORTS IN PROJECT MANAGER (DJR) OFFICE -

- DESIGN CALCULATIONS AND ANALYSIS NOTEBOOK (2 COPIES)
- CONSTRUCTION PHASING NOTEBOOK (2 COPIES)
- RITTENHOUSE BASIN GEOTECHNICAL REPORT (1 COPY)
- CHANDLER HEIGHTS BASIN GEOTECHNICAL REPORT (1 COPY)
- HYDROLOGY/HYDRAULICS REPORT (1 COPY)
- CORRESPONDENCE NOTEBOOK (1 COPY)
- SP's FOR ALL SEVEN PHASES NOTEBOOK (1 COPY)
- O&M PLAN NOTEBOOK (1 COPY)

PLANS - ORIGINAL MYLARS FOR SEVEN PHASES -

CENTRAL FILES:

- CHANDLER HEIGHTS BASIN PHASE 1 (C028) -

PROJECT MANAGER (DJR) FLAT FILES:

- CHANDLER HEIGHTS BASIN PHASES 2, 3, 4 (C029, C030, C031)
- RITTENHOUSE BASIN PHASES 1, 2, 3 (C025, C026, C027)





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Job 0112925
Client **FCDMC**
Project **Chandler Heights and Rittenhouse Basins**
Calculated by **DAV**
Checked by —
Date **02/04/04**

CONSTRUCTION PHASING

Introduction

The Rittenhouse Basin and Chandler Heights Basin plus Queen Creek Channel were first designed as two separate construction packages. Complete plans and Special Provisions were prepared for each basin project.

Once design neared completion the Flood Control District knew that they would not be able fund construction of either project in any single budget year, so they decided to have the projects split into phased construction packages. This notebook contains information about how the splits were set up and includes cost estimates and construction schedules by phase.

The determination of how to split each project was made on the following basis:

At Rittenhouse Basin, the first phase will construct the sideweir and outlet and excavate the north portion of the basin. The project at the end of this phase will provide a complete functional facility, though the capacity of the basin and therefore the ability to reduce peak flows in the EMF will be limited. The second phase will complete basin excavation and create a fully-functioning flood control facility. The third phase will construct all landscaping and irrigation systems for the basin project.

At Chandler Heights Basin, the first phase will construct the outlet, emergency spillway, improvements in the EMF, and a portion of the basin south of Ocotillo alignment. While this will not provide any attenuation of flows in either the EMF or Queen Creek/Sanokai Wash it will be the first step. The second phase will construct the Queen Creek channel and drop structures, the sideweir, and the remaining portion of the basin south of Ocotillo alignment. At this point the basin will be fully-functional but with reduced capacity due to limited basin volume. The third phase will construct the remainder of the basin from Ocotillo north. The fourth phase will construct all landscaping and irrigation systems for the basin project.

Contents of this notebook

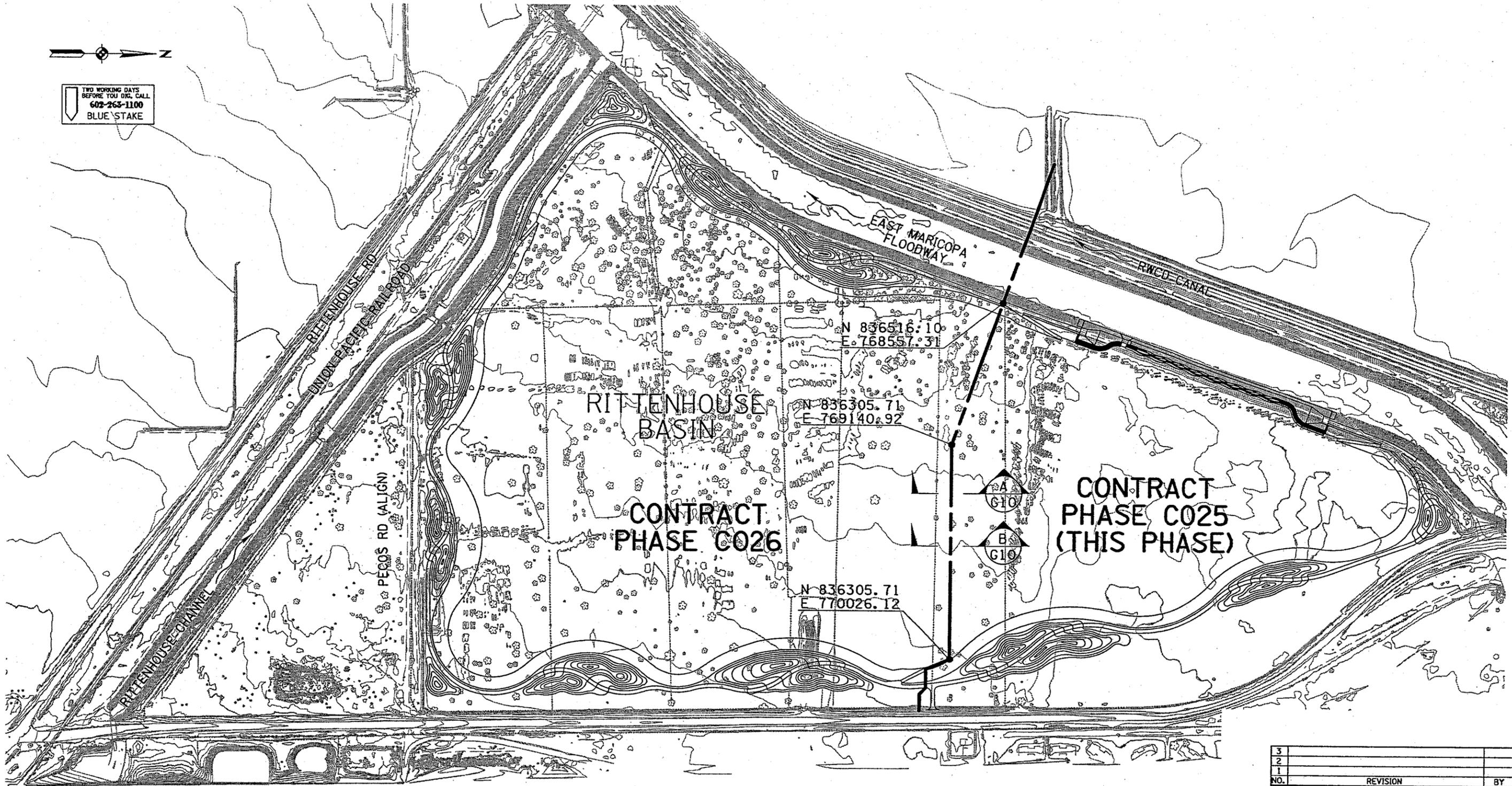
The tabs in this notebook are shown in the table on the next page, and the contents for each tabbed section is listed.

INTRODUCTION CONTENTS	This document
RITTENHOUSE BASIN SPLIT PLANNING	Tables that show how the plan set and Special Provisions for each phase were derived from the total plan set and Special Provisions
RITTENHOUSE BASIN TOTAL PROJECT INFO	Includes the cost estimate for the total basin project
RITTENHOUSE BASIN SPLIT QUANTITIES	Contains the basis for splitting certain quantities among the phase splits
RITTENHOUSE BASIN PHASE C025	Construct sideweir, outlet, and a portion of the basin. Contains the cost estimate and construction schedule for this phase, along with the supporting basis for the task schedules
RITTENHOUSE BASIN PHASE C026	Construct the remainder of the basin. Contains the cost estimate and construction schedule for this phase, along with the supporting basis for the task schedules
RITTENHOUSE BASIN PHASE C027	Construct all landscaping and irrigation systems. Contains the cost estimate and construction schedule for this phase, along with the supporting basis for the task schedules
CHANDLER HGTS BASIN SPLIT PLANNING	Tables that show how the plan set and Special Provisions for each phase were derived from the total plan set and Special Provisions
CHANDLER HGTS BASIN TOTAL PROJECT INFO	Includes the cost estimate for the total basin project
CHANDLER HGTS BASIN SPLIT QUANTITIES	Contains the basis for splitting certain quantities among the phase splits
CHANDLER HGTS BASIN PHASE C028	Construct the improvements in the EMF, the outlet, the emergency spillway, and a portion of the basin south of Ocotillo alignment. Contains the cost estimate and construction schedule for this phase, along with the supporting basis for the task schedules
CHANDLER HGTS BASIN PHASE C029	Construct the Queen Creek channel and drop structures, the sideweir, and the remainder of the basin south of Ocotillo alignment. Contains the cost estimate and construction schedule for this phase, along with the supporting basis for the task schedules
CHANDLER HGTS BASIN PHASE C030	Construct the remainder of the basin from Ocotillo alignment north. Contains the cost estimate and construction schedule for this phase, along with the supporting basis for the task schedules
CHANDLER HGTS BASIN PHASE C031	Construct all landscaping and irrigation systems. Contains the cost estimate and construction schedule for this phase, along with the supporting basis for the task schedules





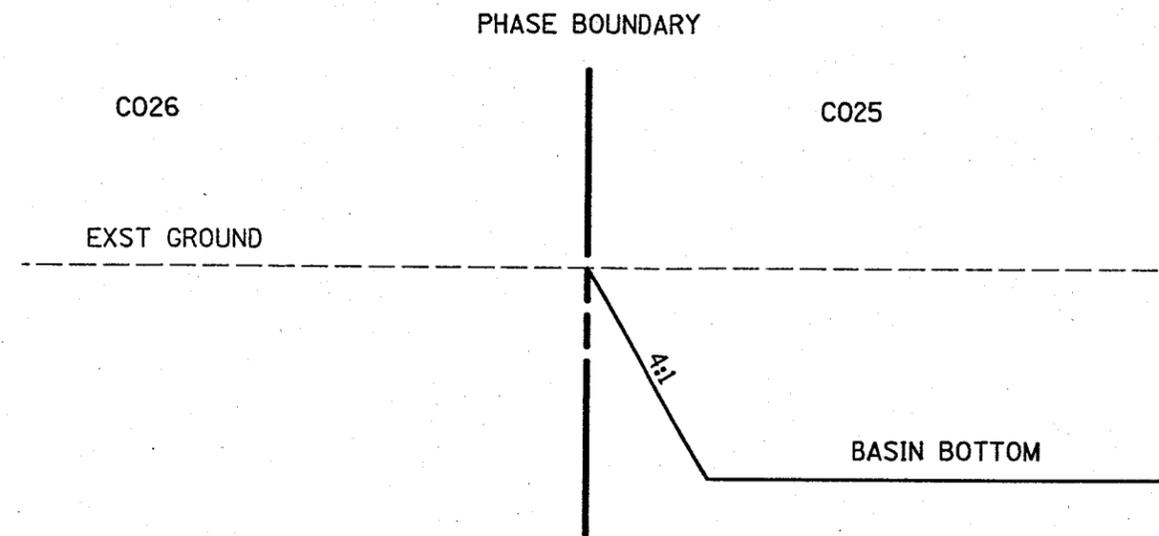
TWO WORKING DAYS
BEFORE YOU DIG, CALL
602-263-1100
BLUE STAKE



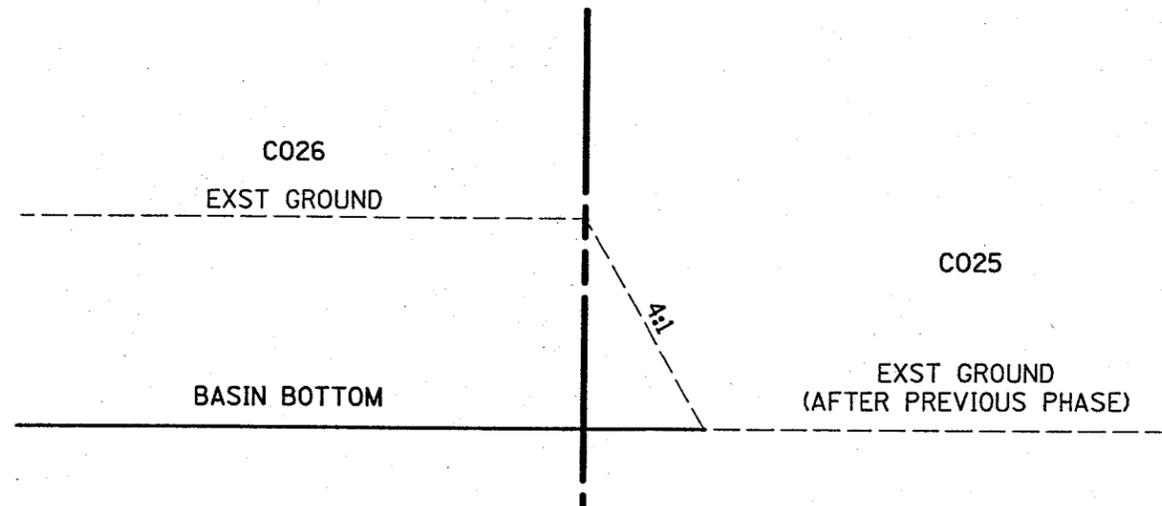
KEY MAP
NTS

LANDSCAPING
(ALL OF BASIN) IN
CONTRACT PHASE C027

3			
2			
1			
NO.	REVISION	BY	DATE
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY			
EAST MARICOPA FLOODWAY RITTENHOUSE DETENTION BASIN PROJECT CONTROL NO. 121-03-32 CONTRACT PHASE C025			
		BY	DATE
DESIGNED		DAV	01/04
DRAWN		JB	01/04
CHECKED		DAV	01/04
		KIRKHAM MICHAEL	
		DRAWING NO. G9	KEY MAP CONSTRUCTION PHASES



(A)
G9 TYPICAL SECTION AT PHASE BOUNDARY
- FIRST PHASE



(B)
G9 TYPICAL SECTION AT PHASE BOUNDARY
- SUBSEQUENT PHASE

3			
2			
1			
NO.	REVISION	BY	DATE
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY			
EAST MARICOPA FLOODWAY RITTENHOUSE DETENTION BASIN PROJECT CONTROL NO. 121-03-32 CONTRACT PHASE C025			
		BY	DATE
	DESIGNED	DAV	01/04
	DRAWN	JB	01/04
	CHECKED	DAV	01/04
		KIRKHAM MICHAEL	
DRAWING NO. G10	TYPICAL SECTIONS CONSTRUCTION PHASES	SHEET OF 10 57	



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Job 0112925
 Client FCDMC
 Project Rittenhouse Basin
 Calculated by DAV
 Checked by *[Signature]*
 Date 02/04/04

RITTENHOUSE BASIN - DRAWING SETS BY PHASE

Content	Dwg #	Total project Sht #	Phases		
			C025	C026	C027
			Structures; part of basin	Remaining basin	Landscaping
Cover and vicinity map	G1	1	M	M	M
General notes, legend, index of sheets	G2	2	M	M	M
General structural notes	G3	3	I		
Key map - embankment	G4	4	P	P	
Key map - basin grading	G5	5	P	P	
Geometric sheet	G6	6	I	I	I
Typical sections	G7	7	I	I	I
Typical sections	G8	8	I	I	
Key map - construction phases	G9		N	N	N
Typical sections - construction phases	G10		N	N	
Quantity summary	Q1	9	M	M	
Overall removals plan	C1	10	P	P	
Geotextile plan	C2	11	P	P	P
Overall fencing plan	C3	12	P	P	P
Embankment plan	C4	13	I		
Embankment plan	C5	14	I		
Embankment plan	C6	15	P	P	
Embankment plan	C7	16		I	
Embankment plan	C8	17		I	
Embankment plan	C9	18		I	
Embankment plan	C10	19		I	
Embankment plan	C11	20		I	
Embankment plan	C12	21		I	
Embankment plan	C13	22	P	P	
Embankment plan	C14	23	I		
Basin grading plan	C15	24		I	
Basin grading plan	C16	25		I	
Basin grading plan	C17	26		I	
Basin grading plan	C18	27		I	
Basin grading plan	C19	28		I	
Basin grading plan	C20	29		I	
Basin grading plan	C21	30		I	
Basin grading plan	C22	31		I	
Basin grading plan	C23	32	P	P	
Basin grading plan	C24	33	P	P	
Basin grading plan	C25	34	P	P	
Basin grading plan	C26	35	I		
Basin grading plan	C27	36	I		
Basin grading plan	C28	37	I		
Basin grading plan	C29	38	I		
Waterline schematic sheet	C30	39			I
Misc details	D1	40	I		
Sideweir structural details	S1	41	I		
Sideweir structural details	S2	42	I		
Sideweir structural details	S3	43	I		
Sideweir structural details	S4	44	I		
Sideweir structural details	S5	45	I		
Sideweir structural details	S6	46	I		
Sideweir structural details	S7	47	I		
Sideweir structural details	S8	48	I		
Sideweir aesthetics	S9	49	I		
Outlet structural details	S10	50	I		

RITTENHOUSE BASIN - DRAWING SETS BY PHASE

Content	Dwg #	Total project Sht #	Phases		
			C025	C026	C027
			Structures; part of basin	Remaining basin	Landscaping
Outlet structural details	S11	51			
Outlet structural details	S12	52			
Trash rack details	S13	53			
Flap gate details	S14	54			
Railing details	S15	55			
Railing details	S16	56			
Railing aesthetics	S17	57			
Railing aesthetics	S18	58			
Landscape schedule and notes	L0	59			
Native seeding plan	L1	60			
Landscape plan	L2	61			
Landscape plan	L3	62			
Landscape plan	L4	63			
Landscape plan	L5	64			
Landscape plan	L6	65			
Landscape plan	L7	66			
Landscape plan	L8	67			
Landscape plan	L9	68			
Landscape plan	L10	69			
Landscape plan	L11	70			
Landscape plan	L12	71			
Landscape details	L13	72			
Irrigation schedule and notes	IR0	73			
Mainline and valve plan	IR00	74			
Irrigation plan	IR1	75			
Irrigation plan	IR2	76			
Irrigation plan	IR3	77			
Irrigation plan	IR4	78			
Irrigation plan	IR5	79			
Irrigation plan	IR6	80			
Irrigation plan	IR7	81			
Irrigation plan	IR8	82			
Irrigation plan	IR9	83			
Irrigation plan	IR10	84			
Irrigation plan	IR11	85			
Irrigation details	IR12	86			
Irrigation details	IR13	87			
Boring location map	B1	88	P	P	
General boring log sheet	B2	89			
Boring log	B3	90			
Boring log	B4	91			
Boring log	B5	92			
Boring log	B6	93			
Boring log	B7	94			
Boring log	B8	95			
Boring log	B9	96			
Boring log	B10	97			
Boring log	B11	98			
Boring log	B12	99			
Test pit log	B13	100			
Test pit log	B14	101			
Test pit log	B15	102			



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Job 0112925
 Client FCDMC
 Project Rittenhouse Basin
 Calculated by DAV
 Checked by *[Signature]*
 Date 02/04/04

RITTENHOUSE BASIN - DRAWING SETS BY PHASE

Content	Dwg #	Total project Sht #	Phases		
			C025	C026	C027
			Structures; part of basin	Remaining basin	Landscaping
Cross sections	XS1	103			
Cross sections	XS2	104			
Cross sections	XS3	105			
Cross sections	XS4	106			
Cross sections	XS5	107			

Modify more than sheet numbers M
 New drawing needed for phasing N
 Add phase bdys and change sheet numbers P
 Include as is, but modify sheet numbers I

	3	3	2
	2	2	1
	11	11	2
	41	29	32
	57	45	37



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RITTENHOUSE BASIN - SPECIAL PROVISIONS SECTIONS BY PHASE

Sections	Phases		
	C025	C026	C027
	Structures; part of basin	Remaining basin	Landscaping
SECTION 201 – CLEARING AND GRUBBING			
Subsection 201.1 – Description			
Subsection 201.5 – Payment			
SECTION 202 – MOBILIZATION			
Subsection 202.1 – Description			
Subsection 202.2 – Payment			
SECTION 206 – STRUCTURE EXCAVATION AND BACKFILL			
Subsection 206.1 – Description			
Subsection 206.3 – Structure Excavation			
Subsection 206.4 – Structure Backfill			
Subsection 206.5 – Payment			
SECTION 211 – FILL CONSTRUCTION			
Subsection 211.1 – Description	M	M	M
Subsection 211.2 – Placing			
Subsection 211.5 – Measurement			
Subsection 211.6 – Payment			
SECTION 215 – EARTHWORK			
Subsection 215.1 – Description			
Subsection 215.3 – Excavation			
Subsection 215.4 – Fill and Backfill			
Subsection 215.5 – Grading			
Subsection 215.7 – Measurement			
Subsection 215.8 – Payment			
SECTION 216 – GEOTEXTILE BARRIER			
Subsection 216.1 – Description			
Subsection 216.2 – Materials			
Subsection 216.3 – Construction			
Subsection 216.4 – Measurement			
Subsection 216.5 – Payment			
SECTION 220 – RIPRAP CONSTRUCTION			
Subsection 220.1 – Description			
Subsection 220.2 – Materials			
Subsection 220.3 – Preparation of Ground Surfaces			
Subsection 220.4 – Plain Riprap			
Subsection 220.7 – Measurement			
Subsection 220.8 – Payment			
SECTION 225 – WATERING			
Subsection 225.5 – Payment			
SECTION 301 – SUBGRADE PREPARATION			
Subsection 301.1 – Description	M	M	
Subsection 301.5 – Payment			
SECTION 310 – UNTREATED BASE (ABC)			
Subsection 310.1 – Description			
Subsection 310.2 – Material			
Subsection 310.4 – Payment			
SECTION 340 – SINGLE CURB			
Subsection 340.1 – Description			
Subsection 340.2 – Payment			
SECTION 344 – DECOMPOSED GRANITE ROAD SURFACE			
Subsection 344.1 – Description			
Subsection 344.2 – Material			
Subsection 344.3 – Payment			
SECTION 350 – REMOVAL OF EXISTING IMPROVEMENTS			
Subsection 350.1 – Description	M	M	
Subsection 350.4 – Payment			
SECTION 401 – TRAFFIC CONTROL			
Subsection 401.3 – Flagmen or Pilot Cars			
Subsection 401.5 – General Traffic Regulations			
Subsection 401.6 – Measurement			
Subsection 401.7 – Payment			
SECTION 421 – FOUR-STRAND BARBED WIRE FENCE			
Subsection 421.1 – Description			
Subsection 421.2 – Materials			
Subsection 421.3 – Constructions Requirements			



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RITTENHOUSE BASIN - SPECIAL PROVISIONS SECTIONS BY PHASE

Sections	Phases		
	C025	C026	C027
	Structures; part of basin	Remaining basin	Landscaping
Subsection 421.4 – Measurement			
Subsection 421.5 – Basis of Payment			
SECTION 430 – LANDSCAPING AND PLANTING			
Subsection 430.1 – Description:			
Subsection 430.2 – General:			
Subsection 430.2.1 – Preparing the Site for Landscaping:			
Subsection 430.3 – Native Seeding Areas			
Subsection 430.3.1 – Description:			
Subsection 430.3.2 – Quality Assurance:			
Subsection 430.3.3 – Submittals:			
Subsection 430.3.4 – Products:			
Subsection 430.3.5 – Execution:			
Subsection 430.4 – Decomposed Granite Area:			
Subsection 430.5 – Tree, Shrub, and Ground Cover Planting:			
Subsection 430.5.6 – Plant Pits:			
Subsection 430.9 – Plant Maintenance and Establishment Period:			
Subsection 430.10 – Measurement and Payment			
SECTION 432 – ROCK MULCH			
Subsection 432.1 – Description			
Subsection 432.2 – Materials			
Subsection 432.3 – Subgrade Preparation			
Subsection 432.4 – Placement			
Subsection 432.5 – Payment			
SECTION 440 – SPRINKLER IRRIGATION SYSTEM INSTALLATION			
Subsection 440.1 – Description			
Subsection 440.2 – General:			
Subsection 440.2.1 – References:			
Subsection 440.2.2 – Quality Assurances:			
Subsection 440.2.3 – Permits:			
Subsection 440.2.4 – Warranty:			
Subsection 440.2.5 – Submittals:			
Subsection 440.3 – Materials			
Subsection 440.3.1 – Equipment to be furnished:			
Subsection 440.5 – Trench Excavation and Backfill:			
Subsection 440.6 – Pipe Installation:			
Subsection 440.7 – Valves, Valve Boxes, and Special Equipment Installation:			
Subsection 440.8 – Sprinkler Head Installation and Adjustment:			
Subsection 440.8.1 – Emitters:			
Subsection 440.9 – Automatic Control System Installation:			
Subsection 440.10 – Flushing and Testing:			
Subsection 440.11 – Measurement and Payment			
SECTION 505 – CONCRETE STRUCTURES			
Subsection 505.1 – Description			
Subsection 505.6 – Placing Concrete			
Subsection 505.6.1 – Joints			
Subsection 505.8 – Curing			
Subsection 505.9.6 – Concrete Sidewalk Aesthetics	M		
Subsection 505.9.6.1 Description			
Subsection 505.9.6.3 Construction Requirements			
Subsection 505.9.6.4 Method of Measurement			
Subsection 505.9.7 – Outlet Structure Aesthetics	M		
Subsection 505.9.7.1 Description			
Subsection 505.9.7.4 Method of Measurement			
Subsection 505.10 – Payment			
SECTION 515 – STEEL STRUCTURES			
Subsection 515.1 – Description			
Subsection 515.6 – Measurement			
Subsection 515.7 – Payment			
SECTION 520 – STEEL AND ALUMINUM HANDRAILS			
Subsection 520.1 – Description			
Subsection 520.5 – Payment			
SECTION 525 – PNEUMATICALLY PLACED CONCRETE			
Subsection 525.1 – Description			
Subsection 525.12 – Payment			

RITTENHOUSE BASIN - SPECIAL PROVISIONS SECTIONS BY PHASE

Sections	Phases		
	C025 Structures; part of basin	C026 Remaining basin	C027 Landscaping
SECTION 610 – WATER LINE CONSTRUCTION			
Subsection 610.1 – Description			M
Subsection 610.18 - Measurement and Payment			
SECTION 703 – RIPRAP			
Subsection 703.1 – Stone			
Subsection 703.4 – Sacks			
SECTION 738 – HIGH DENSITY POLYETHYLENE PIPE & FITTINGS FOR STORM DRAIN & SANITARY SEWER			
Subsection 738.1.1 – Pipe for underdrains and weeps			
SECTION 795 – LANDSCAPE MATERIAL			
Subsection 795.8.4 – Decomposed granite			
SECTION 796 – GEOTEXTILES			
Subsection 796.1 – Geotextile Filter Fabric - Description			
Subsection 796.2 – Geotextile Barrier – Description			
Subsection 796.3 – Payment			

Modify more than page and bid item numbers

Include as is, but modify page and bid item numbers

5	3	2
0	0	0
95	54	55
100	57	57



RITTENHOUSE DETENTION BASIN

TOTAL PROJECT INFO

The estimate contained in this notebook is a copy of that for the total Rittenhouse Basin project. Refer to the Design Calculations and Analysis Notebook for more info about the derivation and computation of the quantities for the total project. The DC&AN also contains the design basis for the project components.



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Job 0112925

Client FCDMC

Project Rittenhouse Basin

Calculated by DAV

Checked by JJK

Date 02/08/04

Item No.	Description	Note	Unit	Quantity	Unit Cost	Amount
105 - 1	Partnering Allowance		LS	1	\$25,000.00	\$25,000.00
107 - 1	AZPDES/SWPPP Permits		LS	1	\$155,000.00	\$155,000.00
107 - 2	Public Information and Notification Allowance		LS	1	\$50,000.00	\$50,000.00
107 - 3	Project Signs Allowance		LS	1	\$3,000.00	\$3,000.00
107 - 4	Water Management		LS	1	\$100,000.00	\$100,000.00
201 - 1	Clearing & Grubbing		AC	160	\$250.00	\$40,000.00
202 - 1	Mobilization		LS	1	\$175,000.00	\$175,000.00
206 - 1	Structure Excavation		CY	14,800	\$8.00	\$118,400.00
206 - 2	Structure Backfill		CY	15,320	\$15.00	\$229,800.00
211 - 1	Earth Berms		CY	34,287	\$5.00	\$171,435.00
215 - 1	Detention Basin Excavation		CY	2,151,922	\$4.25	\$9,145,668.50
216 - 1	GeoTextile Barrier		LF	1,917	\$30.00	\$57,510.00
220 - 1	Plain Dumped Rip Rap (D ₅₀ =12")		CY	656	\$60.00	\$39,360.00
310 - 1	ABC (4") (O&M Access Roads & Ramps)		SY	17,058	\$3.00	\$51,174.00
340 - 1	Single Curb		LF	1,100	\$10.00	\$11,000.00
344 - 1	Decomposed Granite Road Surface		SY	17,058	\$4.00	\$68,232.00
350 - 1	Removal of RipRap Spillways		LS	1	\$4,500.00	\$4,500.00
350 - 2	Removal of Fence		LS	1	\$29,050.00	\$29,050.00
350 - 3	Miscellaneous Removals		LS	1	\$25,000.00	\$25,000.00
350 - 4	Removal and Disposal of Inert Material Allowance		TN	100	\$45.00	\$4,500.00
350 - 5	Removal and Disposal of Non-Inert Material Allowance		TN	6,000	\$80.00	\$480,000.00
350 - 6	Removal and Disposal of Tires Allowance		TN	50	\$900.00	\$45,000.00
401 - 1	Traffic Control		LS	1	\$225,000.00	\$225,000.00
421 - 1	4-Strand Fence and Gates		LF	274	\$3.50	\$959.00
430 - 1	Tree (15 Gallon)		EA	188	\$155.00	\$29,140.00
430 - 2	Tree (24" Box)		EA	193	\$288.00	\$55,584.00
430 - 3	Shrub/Groundcover (1 Gallon)		EA	3,261	\$12.00	\$39,132.00
430 - 4	Shrub/Accent (5 Gallon)		EA	2,409	\$20.00	\$48,180.00
430 - 5	Native Seeding		AC	118	\$2,000.00	\$236,000.00
430 - 6	Decomposed Granite Mulch		SY	84,288	\$4.00	\$337,152.00
430 - 7	Soil Amendment Allowance		LS	1	\$50,000.00	\$50,000.00
432 - 1	Rock Mulch Ground Cover		SY	51,066	\$3.50	\$178,731.00
440 - 1	Backflow Prevention Assembly		EA	1	\$3,300.00	\$3,300.00
440 - 2	Master Valve and Flow Meter		EA	1	\$300.00	\$300.00
440 - 3	2" Gate Valve		EA	1	\$200.00	\$200.00
440 - 4	2-1/2" Gate Valve		EA	7	\$250.00	\$1,750.00
440 - 5	Control Valve (Drip)(Remote)(Electric)(1")		EA	16	\$150.00	\$2,400.00
440 - 6	Quick Coupler (1")		EA	5	\$150.00	\$750.00
440 - 7	Pressure Regulator Riser		EA	46	\$90.00	\$4,140.00
440 - 8	Controller		EA	1	\$12,500.00	\$12,500.00

440	-	9	Emitter (Assembly)(Multi-Outlet)		EA	1,134	\$18.00	\$20,412.00
440	-	10	Pipe (PVC)(2-1/2") Schedule 40		LF	11,224	\$5.50	\$61,732.00
440	-	11	Pipe (PVC)(1") Schedule 40		LF	12,883	\$1.75	\$22,545.25
440	-	12	Pipe (PVC)(3/4") Schedule 40		LF	42,522	\$1.15	\$48,900.30
440	-	13	Pipe (PVC)(8") Schedule 40 (Sleeve)		LF	51	\$12.00	\$612.00
440	-	14	Pipe (PVC)(4") Schedule 40 (Sleeve)		LF	530	\$7.50	\$3,975.00
440	-	15	Water Service Connection		LS	1	\$18,000.00	\$18,000.00
440	-	16	Electrical Service Connection		LS	1	\$8,500.00	\$8,500.00
505	-	1	Sideweir and 3-6'x4' RCBC		LS	1	\$826,980.00	\$826,980.00
515	-	1	6' x 4' Flap Gates		EA	3	\$15,000.00	\$45,000.00
515	-	2	Trash Rack		EA	1	\$10,000.00	\$10,000.00
520	-	1	Handrail		LF	70	\$150.00	\$10,500.00
610	-	1	Irrigation Water Service Line		LS	1	\$62,400.00	\$62,400.00

Subtotal Construction Costs

\$13,393,404.05





RITTENHOUSE DETENTION BASIN

SPLIT QUANTITIES

This section of the notebook shows how certain quantities from the total project were distributed among the phases. In some cases the splits sum to the total for the total project. In other cases, most notably in the Section 105 and 107 bid items, the sum of the splits will total more than the amount for the total project because some activities need to be done once for each contract, and without regard for the project size.

Some items are measured directly on the drawings and listed on individual drawing sheets and summed on the Summary of Quantities drawing. No computation for phasing is needed in those cases.

Quantities for basin excavation were computed in CADD using surfaces and phase boundaries. At each interim phase boundary a "wedge" of soil is left that will be excavated in the succeeding phase and the adjustment to quantities for this is computed in this section.

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Job 0112925

Client FCDMC

Project Rittenhouse Basin

Calculated by DAV

Checked by *JMC*

Date 12/29/03

Item	Full	C025	C026	C027	Note
Partnering Allowance	\$25,000	\$25,000	\$25,000	\$25,000	1
AZPDES/SWPPP Permits	\$155,000	\$86,000	\$120,000	\$105,000	2
Public Information and Notification Allowance	\$50,000	\$50,000	\$50,000	\$50,000	3
Project Signs Allowance	\$3,000	\$3,000	\$3,000	\$3,000	3
Water Management	\$100,000	\$100,000	\$100,000	\$20,000	4
Mobilization	\$175,000	\$60,000	\$116,000	\$50,000	5

Notes:

- 1 Assume same for each contract
- 2 Assume each phase C025-C026 need new plan plus maintenance, and C027 has maintenance only. Assume plan cost is \$50,000 each time. Assume maintenance cost proportional to area. See Clear and Removals tab for area percentages for each phase.
- 3 Assume new signs and notifications for each phase.
- 4 Assume same amount for Water Mgt for C025-C026 and \$20,000 for C027 since everything is built.
- 5 Assume mobilization is relative to phase area; see Clear and Removals tab for area percentages. Assume mobilization for C027 to be \$50,000.



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Checked by JWC

Date 12/22/03

BASIN EXCAVATION

Total quantity reported in final cost estimate	2,151,922 cy
Split volume for C025	739,942
Split volume for C026	1,411,691
Sum of splits	2,151,633 cy
Difference	289 cy

Apportion difference in ratio to size of measured volumes. See wedge calcs below.

		Adjusted vol	Wedge vol	Vol used	
C025	739,942	99	740,041	-16007	724,034
C026	1,411,691	190	1,411,881	16007	1,427,888

WEDGE VOLUME (BETWEEN PHASES)

Distances along Phase Boundary:

	E side	Middle	W side
N	836305.71	836305.71	836516.10
E	770101.96	769140.92	768557.31
N diff		0.00	-210.39
E diff		961.04	583.61
N diff^2		0.00	44263.95
E diff^2		923597.88	340600.63
Sum		923597.88	384864.58
Distance		961.04	620.37

The difference in elevation between existing and proposed is:

E side	13
W side	12

Therefor, the distance along the boundary at 4:1 slope is:

E side	52.00
W side	48.00

Starting at top of embankment along EMF: Using average end areas (all units are ft)	Station	Depth	Distance to daylight	Cross section area	Incr volume
	0.00	0.00	0.00	0.00	0
	48.00	12.00	48.00	288.00	6912
	572.37	11.00	44.00	242.00	138959
	1529.41	13.00	52.00	338.00	277542
	1581.41	0.00	0.00	0.00	8788
				Total, cf	432201
				Total, cy	16007

Volume of wedge

Ignore the difference the bend in the boundary line makes since it will be subtracted from one phase and added to the other phase.



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Checked by *[Signature]*

Date 12/22/03

CLEAR AND GRUB

	Planimeter *		Percent of total
Total quantity reported in final cost estimate	44	160 ac	
Split area for C025	15	55.0 ac rounded	34%
Split area for C026	29	106.0 ac rounded	66%
Split area for C027 (whole site)		161.0	100%

REMOVALS

	Total	C025	C026
Inert material	100	34	66 tn
Non-inert material	6000	2045	3955 tn
Tires ¹	10	3	7 tn

* Area breakdown done using planimeter

¹ Used 25 TN per split, per Don Rerick request

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Project **Rittenhouse Basin**

Calculated by **DAV**

Checked by *DAV*

Date **01/27/04**

FINE GRADING AND EROSION REPAIR

Expect that most of the whole basin and channel area will need some fine grading and erosion repair

Crew of two laborers	\$ 70.00 per hr
Rubber-tired backhoe with operator, wet	\$ 70.00 per hr
	\$ 140.00 per hr
Estimate that the crew can do 2 ac per hr	\$ 70.00 per acre

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Project **Rittenhouse Basin**

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Checked by *JPK*

Date **12/29/03**

Item	Full	C025	C026	C027	Note
Traffic Control	\$225,000	\$76,500	\$148,500	\$0	1

Notes:

1 Assume each contract amount is proportional to the volume to be removed for phases C025-C026.

Basin	2,151,922	724,034	1,427,888	
	<u>2,151,922</u>	<u>724,034</u>	<u>1,427,888</u>	<u>0</u>
Percent of total		34%	66%	0%



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Calculated by **JKK**

Checked by
Date

[Handwritten initials]

STRUCTURE QUANTITIES

Lateral Weir	Concrete	CY	2148	\$350.00	\$751,800.00
	Weir Aesthetics	%	1	10%	\$75,180.00
	Total				\$826,980
	Structural Exc	CY	14,800	\$8.00	\$118,400.00
	Structural Fill	CY	10,500	\$15.00	\$157,500.00
	Structural Backfill	CY	4,820	\$15.00	\$72,300.00





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Job 0112925
 Client FCDMC
 Project Rittenhouse Basin - Phase C025
 Calculated by DAV
 Checked by JVK
 Date 02/08/04

Item No.	Description	Unit	Quantity	Unit Cost	Amount
105 - 1	Partnering Allowance	LS	1	\$25,000.00	\$25,000.00
107 - 1	AZPDES/SWPPP Permits	LS	1	\$86,000.00	\$86,000.00
107 - 2	Public Information and Notification Allowance	LS	1	\$50,000.00	\$50,000.00
107 - 3	Project Signs Allowance	LS	1	\$3,000.00	\$3,000.00
107 - 4	Water Management	LS	1	\$100,000.00	\$100,000.00
201 - 1	Clearing & Grubbing	AC	55	\$250.00	\$13,750.00
202 - 1	Mobilization	LS	1	\$60,000.00	\$60,000.00
206 - 1	Structure Excavation	CY	14,800	\$8.00	\$118,400.00
206 - 2	Structure Backfill	CY	15,320	\$15.00	\$229,800.00
211 - 1	Earth Berms	CY	10,399	\$5.00	\$51,995.00
215 - 1	Detention Basin Excavation	CY	724,034	\$4.25	\$3,077,144.50
216 - 1	GeoTextile Barrier	LF	739	\$30.00	\$22,170.00
220 - 1	Plain Dumped Rip Rap (D ₅₀ =12")	CY	656	\$60.00	\$39,360.00
310 - 1	ABC (4") (O&M Access Roads & Ramps)	SY	5,621	\$3.00	\$16,863.00
340 - 1	Single Curb	LF	1,100	\$10.00	\$11,000.00
344 - 1	Decomposed Granite Road Surface	SY	5,621	\$4.00	\$22,484.00
350 - 1	Removal of RipRap Spillways	LS	1	\$3,000.00	\$3,000.00
350 - 2	Removal of Fence	LS	1	\$6,905.50	\$6,905.50
350 - 3	Miscellaneous Removals	LS	1	\$25,000.00	\$25,000.00
350 - 4	Removal and Disposal of Inert Material Allowance	TN	34	\$45.00	\$1,530.00
350 - 5	Removal and Disposal of Non-Inert Material Allowance	TN	2,045	\$80.00	\$163,600.00
350 - 6	Removal and Disposal of Tires Allowance	TN	25	\$900.00	\$22,500.00
401 - 1	Traffic Control	LS	1	\$76,500.00	\$76,500.00
421 - 1	4-Strand Fence and Gates	LF	197	\$3.50	\$689.50
505 - 1	Sideweir and 3-6'x4' RCBC	LS	1	\$826,980.00	\$826,980.00
515 - 1	6' x 4' Flap Gates	EA	3	\$15,000.00	\$45,000.00
515 - 2	Trash Rack	EA	1	\$10,000.00	\$10,000.00
520 - 1	Handrail	LF	70	\$150.00	\$10,500.00

Subtotal Construction Costs

\$5,119,171.50



RITTENHOUSE DETENTION BASIN

CONSTRUCTION PHASE SCHEDULES

The enclosed documents describe anticipated construction schedules for the phases of this project. The phases are as follows:

- C025 – Construct the sideweir, outlet, and the northern portion of the basin (THIS PHASE)**
- C026 – Construct the remainder of the basin
- C027 – Install all landscaping and irrigation

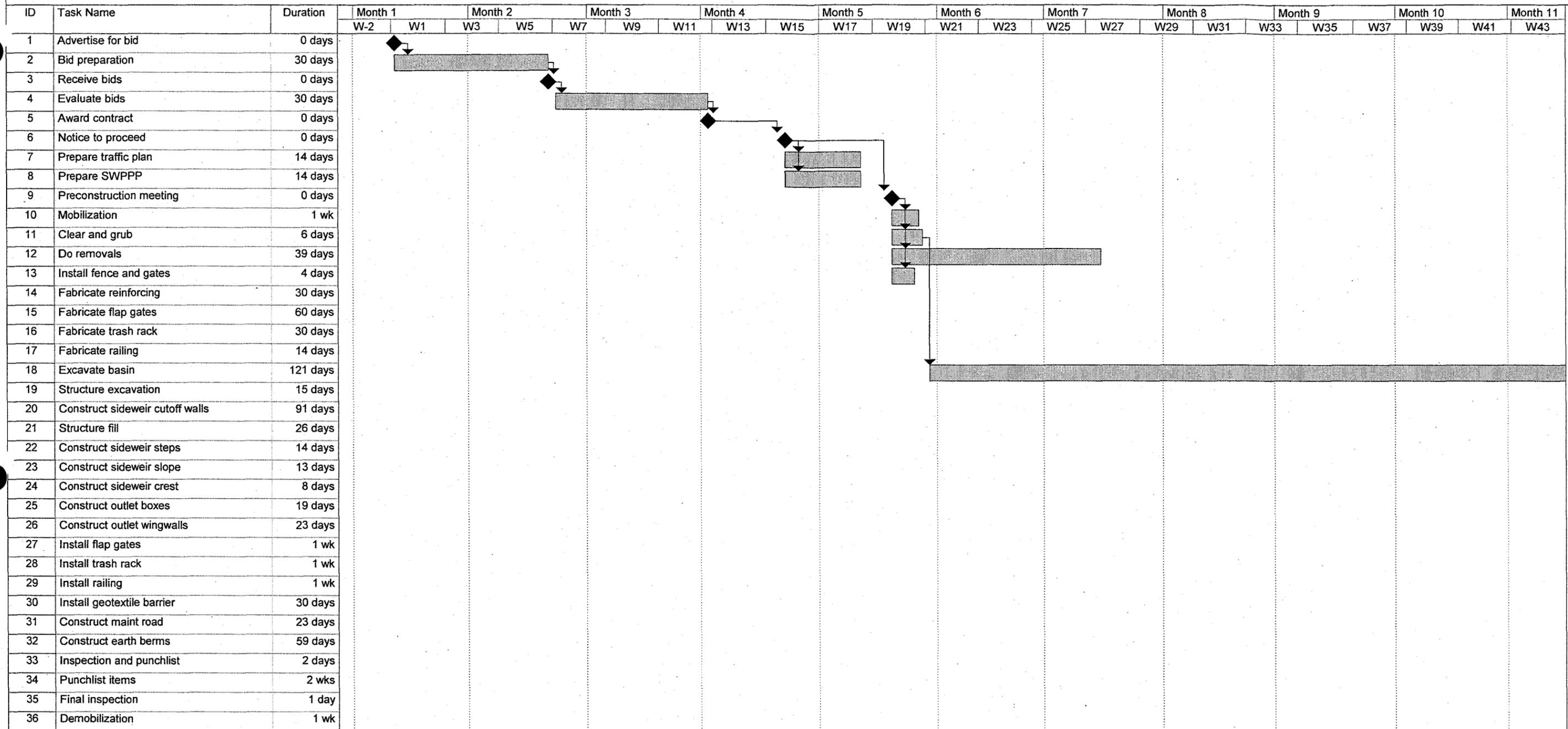
The Microsoft Project schedule bar charts show tasks to accomplish the work to be constructed in the respective phases. The timescale at the top represents calendar months and weeks from the start of the phase at the time of advertising for bids. Durations and the schedule are based on working days, Monday-Friday, eight hours per day. Available construction force resource levels were not used to determine the schedule.

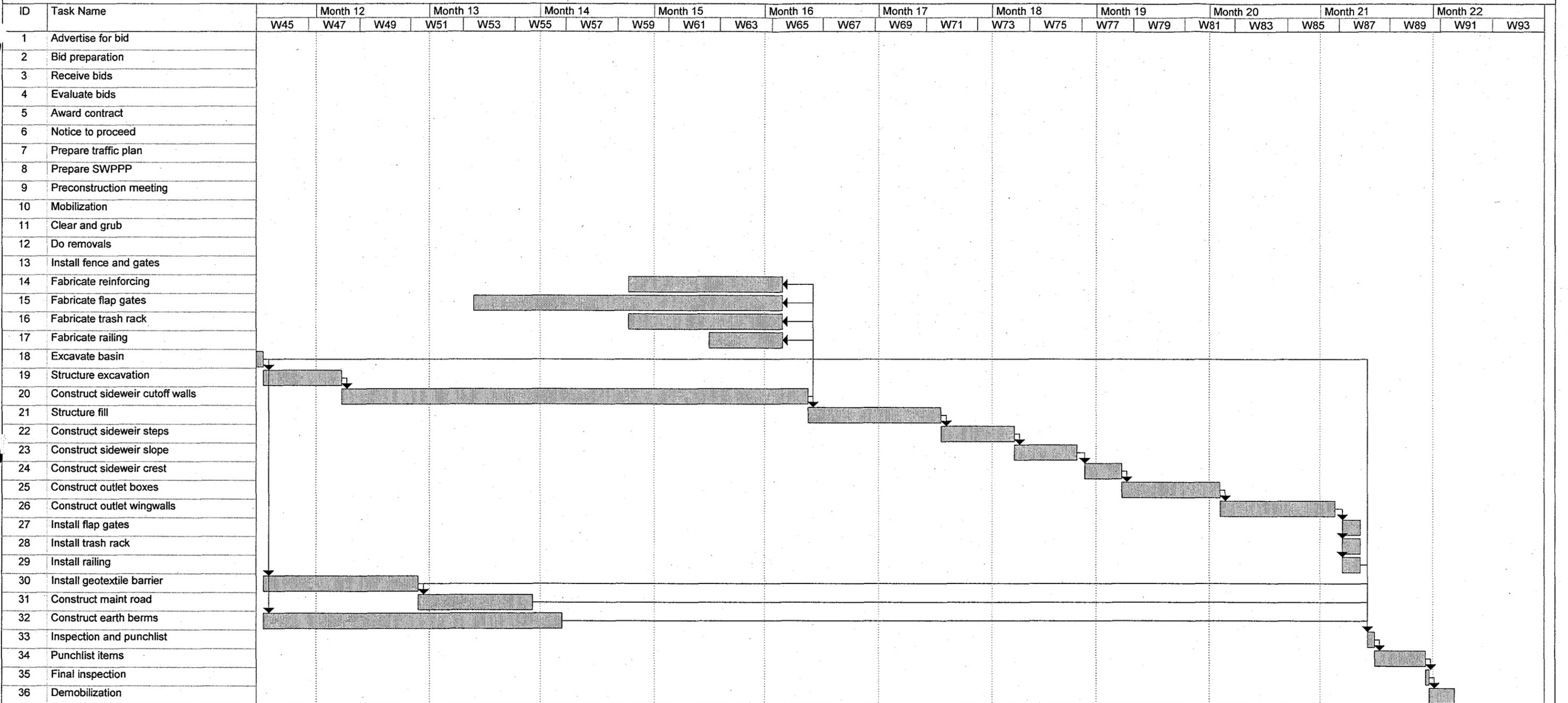
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CONSTRUCTION PHASING AND FUNDING.





RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C025
CONSTRUCTION SCHEDULE SUPPORT DATA

Task_Table1

Item: Task_Table1

Sideweir, outlet, north end of basin

ID	Name	Duration	Predecessors	Workbook Tab (or basis)
1	Advertise for bid	0 days		
2	Bid preparation	30 days	1	
3	Receive bids	0 days	2	
4	Evaluate bids	30 days	3	
5	Award contract	0 days	4	
6	Notice to proceed	0 days	5FS+14 days	
7	Prepare traffic plan	14 days	6	
8	Prepare SWPPP	14 days	6	
9	Preconstruction meeting	0 days	6FS+20 days	
10	Mobilization	1 wk	9	
11	Clear and grub	6 days	9	Clear and Grub
12	Do removals	39 days	9	Removals
13	Install fence and gates	4 days	9	
14	Fabricate reinforcing	30 days	20FF-1 wk	
15	Fabricate flap gates	60 days	20FF-1 wk	
16	Fabricate trash rack	30 days	20FF-1 wk	
17	Fabricate railing	14 days	20FF-1 wk	
18	Excavate basin	121 days	11	Excavation
19	Structure excavation	15 days	18	Structure Ex
20	Construct sideweir cutoff walls	91 days	19	Cutoff Walls
21	Structure fill	26 days	20	Structure Fill
22	Construct sideweir steps	14 days	21	Steps
23	Construct sideweir slope	13 days	22	Slope
24	Construct sideweir crest	8 days	23	Crest
25	Construct outlet boxes	19 days	24	Boxes
26	Construct outlet wingwalls	23 days	25	Wingwalls
27	Install flap gates	1 wk	26	
28	Install trash rack	1 wk	26	
29	Install railing	1 wk	26	
30	Install geotextile barrier	30 days	18	
31	Construct maint road	23 days	30	Maint Road
32	Construct earth berms	59 days	18	Berms
33	Inspection and punchlist	2 days	18,29,30,31,32	
34	Punchlist items	2 wks	33	
35	Final inspection	1 day	34	
36	Demobilization	1 wk	35	

Notes Items in blue are generated from the tab listed

RITTENHOUSE DETENTION BASIN
 PCN 121-03-32
 CONTRACT PHASE C025
 CONSTRUCTION SCHEDULE SUPPORT DATA

Maint Road

Item: Maint Road

Item	Qty, sy	Rate, sy/da	Duration, days	Basis
Maintenance Road	5621			Scraper; 50 sy/min load, haul, dump 1 cy loader, 2 cycle/min, 2 cy/min 5 - 10 cy truck; 7 min position and load; 1 0.2 hr RT haul
		30000		
		500	11.2	Haul and spread ABC; 50 sy/hr Compact ABC; 50 sy/hr
		500	11.2	Haul and spread DG; 50 sy/hr Compact DG; 50 sy/hr
		10		hrs/day
			Total	23.0 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C025
CONSTRUCTION SCHEDULE SUPPORT DATA

Wingwalls

Item: Wingwalls

Segments	2		
Pours	2		
		Days	
Form and set rebar segment	6		Per crew
Pour segment - 1 segment/day	1		Per crew
Cure - allow 3 days	3		
Strip segment - 1 segment/day	1		Per crew
Assume # of crews	1		
Each segment takes	11 days		
2 pours take	23 days		

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C025
CONSTRUCTION SCHEDULE SUPPORT DATA

Boxes

Item: Boxes

Segments	2	
Pours	2	
	Days	
Form and set rebar segment	4	Per crew
Pour segment - 1 segment/day	1	Per crew
Cure - allow 3 days	3	
Strip segment - 1 segment/day	1	Per crew
Assume # of crews	1	
Each segment takes	9 days	
2 pours take	19 days	

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C025
CONSTRUCTION SCHEDULE SUPPORT DATA

Crest

Item: Crest

Segments	15	Segment length 80 lf typ
Pours	15	

	Days	
Backfill under crest	0.5	Per crew
Set wire mesh	0.5	Per crew
Pour segment - 1 segment/day	1	Per crew
Cure - allow 1 days	1	

Assume # of crews 6

Each segment takes	3 days
15 pours take	8 days

RITTENHOUSE DETENTION BASIN
 PCN 121-03-32
 CONTRACT PHASE C025
 CONSTRUCTION SCHEDULE SUPPORT DATA

Slope

Item: Slope

Segments	15	Segment length 80 lf typ
Steps	4	
Risers	4	
Pours	240	

Days

Backfill under slope	0.5	Per crew
Set wire mesh	0.5	Per crew
Pneumatically cast lower part	0.5	Per crew
Cure - allow 1 days	1	
Form top part - 2 segment/day	0.5	Per crew
Pour top part - 1 segment/day	0.5	Per crew
Cure - allow 1 days	1	
Strip top part - 4 segment/day	0.5	Per crew

Assume # of crews 6

Each segment takes 5 days
 240 pours take 13 days

RITTENHOUSE DETENTION BASIN
 PCN 121-03-32
 CONTRACT PHASE C025
 CONSTRUCTION SCHEDULE SUPPORT DATA

Steps

Item: Steps

Segments per step	15	Segment length 80 lf typ
Steps	4	
Risers	4	
Pours	240	

	Days	
Backfill under step	0.5	Per crew
Form step - 2 segment/day	0.5	Per crew
Pour step - 1 segment/day	1	Per crew
Cure - allow 3 days	3	
Strip step - 1 segment/day	0.25	Per crew
Form riser - 1 segment/day	1	Per crew
Pour riser - 1 segment/day	1	Per crew
Cure - allow 3 days	3	
Strip riser - 2 segment/day	0.5	Per crew

Assume # of crews 12

Each segment takes	10.75 days
240 pours take	14 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C025
CONSTRUCTION SCHEDULE SUPPORT DATA

Structure Fill

Item: Structure Fill

Item	Qty, cy	Rate/day	Duration, days	Basis
Structure	15320	600	26	Scraper; 5 cy/min load, haul, dump 1 cy loader, 2 cycle/min, 2 cy/min Rollers Watering truck Say 60 cy/hr 10 hr day

Total 26 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C025
CONSTRUCTION SCHEDULE SUPPORT DATA

Cutoff Walls

Item: Cutoff Walls

Assume 15 segments per cutoff wall
2 walls
Segments 30

Segment length 80 lf typ
Basin side, channel side

Days
Form - 1/3 segment/day 3
Pour - 1 segment/day 1
Cure - allow 3 days 3
Strip - 1/2 segment/day 2

Per crew
Per crew
Per crew

Assume # of crews 3

Each segment takes 9 days
30 segments take 91 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C025
CONSTRUCTION SCHEDULE SUPPORT DATA

Structure Ex

Item: Structure Ex

Item	Qty, cy	Rate/day	Duration, days	Basis
Structure	14800	1000	15	Scraper; 5 cy/min load, haul, dump 1 cy loader, 2 cycle/min, 2 cy/min 20 - 10 cy truck; 7 min position and load; 1 hr RT haul 10 hr day

Total 15 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C025
CONSTRUCTION SCHEDULE SUPPORT DATA

Excavation

Item: Excavation

Item	Qty, cy	Rate/day	Duration, days	Basis
Basin	724034	6000	121	2 cy Shovel, 2 cycle/min (4 cy/min) 30 - 10 cy truck; 3 min position and load; 1 hr RT haul 300 cy/hr 2 setups 10 hr/day

Total 121

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C025
CONSTRUCTION SCHEDULE SUPPORT DATA

Clear and Grub

Item: Clear and Grub

Project area	55 ac
Acres per day	10 based on loader, backhoe, 2 dump trucks assume 1 hr load, 1 hr haul round trip
Duration	6 days



KIRKHAM MICHAEL

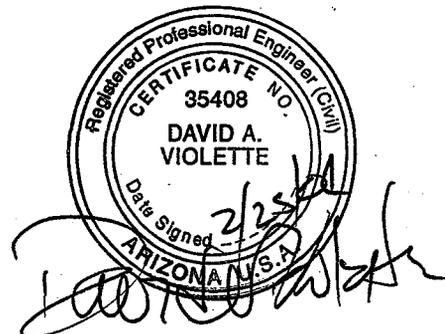
Consulting Engineers
9201 N 25th Ave, Suite 195, Phoenix AZ 85021
Phone: 602+944-6564, FAX: 944-6592

Job 0112925
Client FCDMC
Project Rittenhouse Basin - Phase C026
Calculated by DAV
Checked by *FL*
Date 02/08/04

Item No.	Description	Unit	Quantity	Unit Cost	Amount
105 - 1	Partnering Allowance	LS	1	\$25,000.00	\$25,000.00
107 - 1	AZPDES/SWPPP Permits	LS	1	\$120,000.00	\$120,000.00
107 - 2	Public Information and Notification Allowance	LS	1	\$50,000.00	\$50,000.00
107 - 3	Project Signs Allowance	LS	1	\$3,000.00	\$3,000.00
107 - 4	Water Management	LS	1	\$100,000.00	\$100,000.00
201 - 1	Clearing & Grubbing	AC	106	\$250.00	\$26,500.00
202 - 1	Mobilization	LS	1	\$116,000.00	\$116,000.00
211 - 1	Earth Berms	CY	23,888	\$5.00	\$119,440.00
215 - 1	Detention Basin Excavation	CY	1,427,888	\$4.25	\$6,068,524.00
216 - 1	GeoTextile Barrier	LF	1,178	\$30.00	\$35,340.00
310 - 1	ABC (4") (O&M Access Roads & Ramps)	SY	11,437	\$3.00	\$34,311.00
344 - 1	Decomposed Granite Road Surface	SY	11,437	\$4.00	\$45,748.00
350 - 1	Removal of RipRap Spillways	LS	1	\$1,500.00	\$1,500.00
350 - 2	Removal of Fence	LS	1	\$27,396.25	\$27,396.25
350 - 3	Miscellaneous Removals	LS	1	\$25,000.00	\$25,000.00
350 - 4	Removal and Disposal of Inert Material Allowance	TN	66	\$45.00	\$2,970.00
350 - 5	Removal and Disposal of Non-Inert Material Allowance	TN	3,955	\$80.00	\$316,400.00
350 - 6	Removal and Disposal of Tires Allowance	TN	25	\$900.00	\$22,500.00
401 - 1	Traffic Control	LS	1	\$148,500.00	\$148,500.00
421 - 1	4-Strand Fence and Gates	LF	77	\$3.50	\$269.50

Subtotal Construction Costs

\$7,288,398.75



RITTENHOUSE DETENTION BASIN**CONSTRUCTION PHASE SCHEDULES**

The enclosed documents describe anticipated construction schedules for the phases of this project. The phases are as follows:

C025 – Construct the sideweir, outlet, and the northern portion of the basin

C026 – Construct the remainder of the basin (THIS PHASE)

C027 – Install all landscaping and irrigation

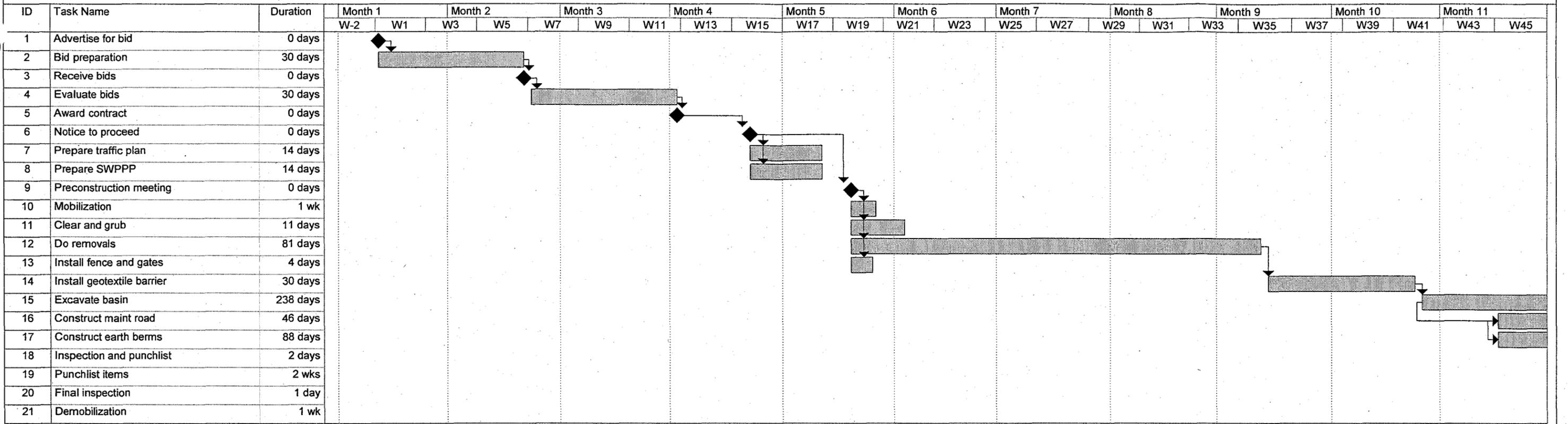
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ID	Task Name	Month 12		Month 13		Month 14		Month 15		Month 16		Month 17		Month 18		Month 19		Month 20		Month 21		Month 22		Month 23		
		W47	W49	W51	W53	W55	W57	W59	W61	W63	W65	W67	W69	W71	W73	W75	W77	W79	W81	W83	W85	W87	W89	W91	W93	W95
1	Advertise for bid																									
2	Bid preparation																									
3	Receive bids																									
4	Evaluate bids																									
5	Award contract																									
6	Notice to proceed																									
7	Prepare traffic plan																									
8	Prepare SWPPP																									
9	Preconstruction meeting																									
10	Mobilization																									
11	Clear and grub																									
12	Do removals																									
13	Install fence and gates																									
14	Install geotextile barrier																									
15	Excavate basin																									
16	Construct maint road																									
17	Construct earth berms																									
18	Inspection and punchlist																									
19	Punchlist items																									
20	Final inspection																									
21	Demobilization																									

RITTENHOUSE DETENTION BASIN
 PCN 121-03-32
 CONTRACT PHASE C026
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Task_Table1

Remainder of basin

ID	Name	Duration	Predecessors	Workbook Tab (or basis)
1	Advertise for bid	0 days		
2	Bid preparation	30 days	1	
3	Receive bids	0 days	2	
4	Evaluate bids	30 days	3	
5	Award contract	0 days	4	
6	Notice to proceed	0 days	5FS+14 days	
7	Prepare traffic plan	14 days	6	
8	Prepare SWPPP	14 days	6	
9	Preconstruction meeting	0 days	6FS+20 days	
10	Mobilization	1 wk	9	
11	Clear and grub	11 days	9	Clear and Grub
12	Do removals	81 days	9	Removals
13	Install fence and gates	4 days	9	
14	Install geotextile barrier	30 days	12	
15	Excavate basin	238 days	14	Excavation
16	Construct maint road	46 days	15SS+15 days	Maint Road
17	Construct earth berms	88 days	16SS	Berms
18	Inspection and punchlist	2 days	15,16,17	
19	Punchlist items	2 wks	18	
20	Final inspection	1 day	19	
21	Demobilization	1 wk	20	

Notes Items in blue are generated from the tab listed

RITTENHOUSE DETENTION BASIN
 PCN 121-03-32
 CONTRACT PHASE C026
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Berms

Item	Qty, cy	Rate, cy/day	Duration, days	Basis
Berms	23888	600	39.8	Scraper; 10 cy/min load, haul, dump
		500	47.8	Spread and shape; 50 cy/hr Compact; 50 cy/hr
			10	hrs/day
			Total	88.0 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C026
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Excavation

Item	Qty, cy	Rate/day	Duration, days	Basis
Basin	1427888	6000	238	2 cy Shovel, 2 cycle/min (4 cy/min) 30 - 10 cy truck; 3 min position and load; 1 hr RT haul 300 cy/hr 2 setups 10 hr/day

Total 238

RITTENHOUSE DETENTION BASIN
 PCN 121-03-32
 CONTRACT PHASE C026
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Removals

Item	Qty	Rate/day	Duration, days	Basis
Fence	15655	500	31.31	
Riprap spillways	1	1	1	
Misc			3	
Inert	66	100	0.66	Loader, 2 trucks, 1 hr load, 5 RT haul
Non-inert	3955	100	39.55	Loader, 2 trucks, 1 hr load, 5 RT haul
Tires	25	5	5	Loader, 1 truck, 1 hr load, 4 hr RT haul
			Total	
			81	<i>days</i>
Percentage of total basin	0.75			

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C026
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Clear and Grub

Project area	106 ac
Acres per day	10 based on loader, backhoe, 2 dump trucks assume 1 hr load, 1 hr haul round trip
Duration	11 days





Consulting Engineers

9201 N 25th Ave, Suite 195, Phoenix AZ 85021

Phone: 602+944-6564, FAX: 944-6592

Job 0112925

Client FCDMC

Project Rittenhouse Basin - Phase 027

Calculated by DAV

Checked by JPK

Date 02/08/04

Item No.	Description	Unit	Quantity	Unit Cost	Amount
105 - 1	Partnering Allowance	LS	1	\$25,000.00	\$25,000.00
107 - 1	AZPDES/SWPPP Permits	LS	1	\$105,000.00	\$105,000.00
107 - 2	Public Information and Notification Allowance	LS	1	\$50,000.00	\$50,000.00
107 - 3	Project Signs Allowance	LS	1	\$3,000.00	\$3,000.00
107 - 4	Water Management	LS	1	\$20,000.00	\$20,000.00
201 - 1	Clearing & Grubbing	AC	160	\$250.00	\$40,000.00
202 - 1	Mobilization	LS	1	\$50,000.00	\$50,000.00
211 - 1	Fine Grading and Erosion Repair	AC	160	\$70.00	\$11,200.00
430 - 1	Tree (15 Gallon)	EA	188	\$155.00	\$29,140.00
430 - 2	Tree (24" Box)	EA	193	\$288.00	\$55,584.00
430 - 3	Shrub/Groundcover (1 Gallon)	EA	3,261	\$12.00	\$39,132.00
430 - 4	Shrub/Accent (5 Gallon)	EA	2,409	\$20.00	\$48,180.00
430 - 5	Native Seeding	AC	118	\$2,000.00	\$236,000.00
430 - 6	Decomposed Granite Mulch	SY	84,288	\$4.00	\$337,152.00
430 - 7	Soil Amendment Allowance	LS	1	\$50,000.00	\$50,000.00
432 - 1	Rock Mulch Ground Cover	SY	51,066	\$3.50	\$178,731.00
440 - 1	Backflow Prevention Assembly	EA	1	\$3,300.00	\$3,300.00
440 - 2	Master Valve and Flow Meter	EA	1	\$300.00	\$300.00
440 - 3	2" Gate Valve	EA	1	\$200.00	\$200.00
440 - 4	2-1/2" Gate Valve	EA	7	\$250.00	\$1,750.00
440 - 5	Control Valve (Drip)(Remote)(Electric)(1")	EA	16	\$150.00	\$2,400.00
440 - 6	Quick Coupler (1")	EA	5	\$150.00	\$750.00
440 - 7	Pressure Regulator Riser	EA	46	\$90.00	\$4,140.00
440 - 8	Controller	EA	1	\$12,500.00	\$12,500.00
440 - 9	Emitter (Assembly)(Multi-Outlet)	EA	1,134	\$18.00	\$20,412.00
440 - 10	Pipe (PVC)(2-1/2") Schedule 40	LF	11,224	\$5.50	\$61,732.00
440 - 11	Pipe (PVC)(1") Schedule 40	LF	12,883	\$1.75	\$22,545.25
440 - 12	Pipe (PVC)(3/4") Schedule 40	LF	42,522	\$1.15	\$48,900.30
440 - 13	Pipe (PVC)(8") Schedule 40 (Sleeve)	LF	51	\$12.00	\$612.00
440 - 14	Pipe (PVC)(4") Schedule 40 (Sleeve)	LF	530	\$7.50	\$3,975.00
440 - 15	Water Service Connection	LS	1	\$18,000.00	\$18,000.00
440 - 16	Electrical Service Connection	LS	1	\$8,500.00	\$8,500.00
610 - 1	Irrigation Water Service Line	LS	1	\$62,400.00	\$62,400.00

Subtotal Construction Costs

\$1,550,535.55



RITTENHOUSE DETENTION BASIN

CONSTRUCTION PHASE SCHEDULES

The enclosed documents describe anticipated construction schedules for the phases of this project. The phases are as follows:

C025 – Construct the sideweir, outlet, and the northern portion of the basin

C026 – Construct the remainder of the basin

C027 – Install all landscaping and irrigation (THIS PHASE)

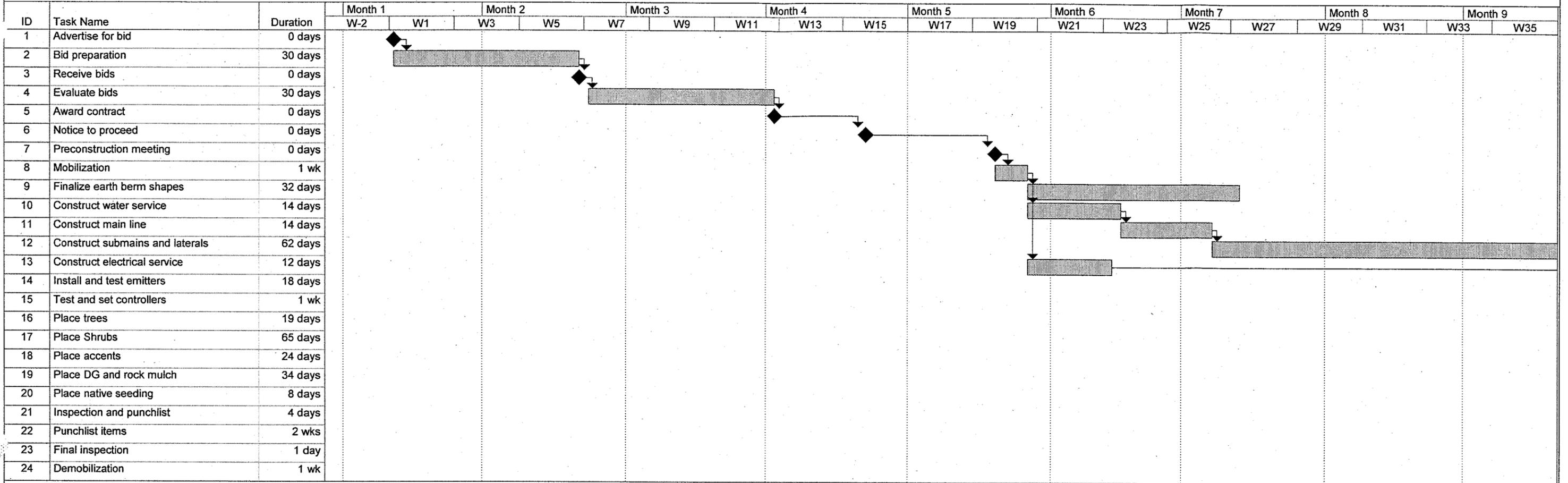
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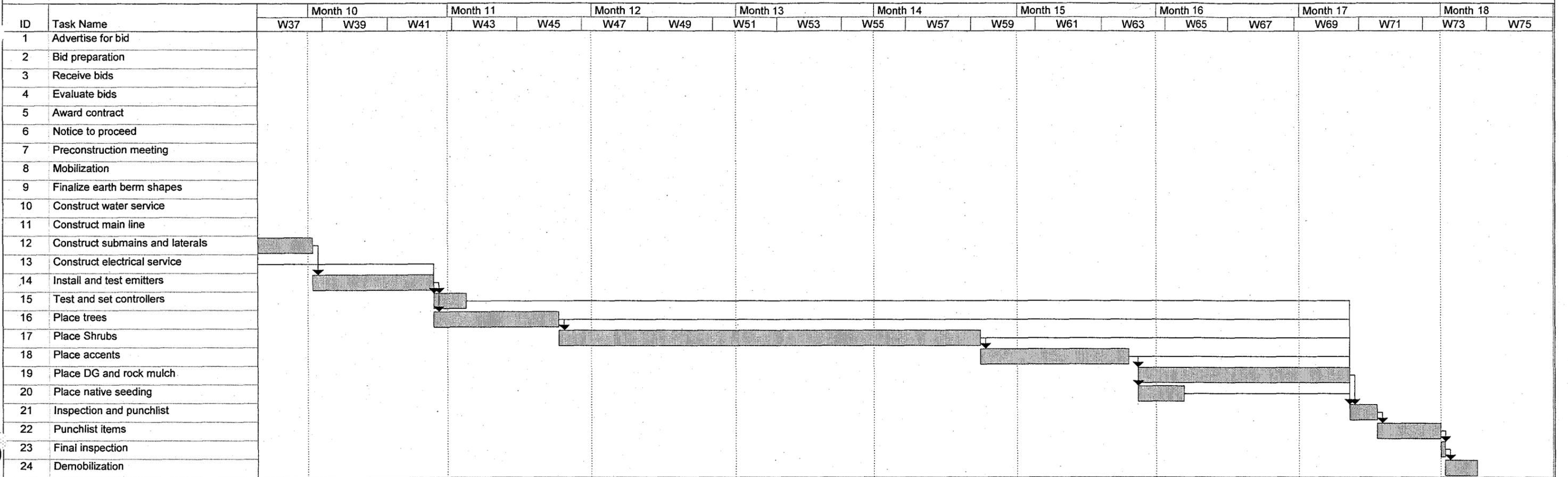
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RITTENHOUSE DETENTION BASIN
 PCN 121-03-32
 CONTRACT PHASE C027
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Task_Table1

Landscaping and irrigation

ID	Name	Duration	Predecessors	Workbook Tab (or basis)
1	Advertise for bid	0 days		
2	Bid preparation	30 days	1	
3	Receive bids	0 days	2	
4	Evaluate bids	30 days	3	
5	Award contract	0 days	4	
6	Notice to proceed	0 days	5FS+14 days	
7	Preconstruction meeting	0 days	6FS+20 days	
8	Mobilization	1 wk	7	
9	Finalize earth berm shapes	32 days	8	Berms
10	Construct water service	14 days	8	Water Service
11	Construct main line	14 days	10	Main Line
12	Construct submains and laterals	62 days	11	Laterals
13	Construct electrical service	12 days	8	Elec Service
14	Install and test emitters	18 days	12	Emitters
15	Test and set controllers	1 wk	13,14	
16	Place trees	19 days	14	Trees
17	Place Shrubs	65 days	16	Shrubs
18	Place accents	24 days	17	Accents
19	Place DG and rock mulch	34 days	18	DG and rock mulch
20	Place native seeding	8 days	18	Seeding
21	Inspection and punchlist	4 days	15,16,17,18,19,20	
22	Punchlist items	2 wks	21	
23	Final inspection	1 day	22	
24	Demobilization	1 wk	23	

Notes Items in blue are generated from the tab listed

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Berms

Item	Qty	Rate, day	Duration, days	Basis
Reshape berms	160		5	32.0 ac

Total 32.0 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Seeding

Item	Qty	Rate/day	Duration, days	Basis
Prepare ground	118	20		5.9 ac
Do hydroseeding	118	50		2.36 ac
			Total	8 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: DG and rock mulch

Item	Qty	Rate/day	Duration, days	Basis
Place DG	84288	4000		21 sy
Place rock mulch	51066	4000		13 sy
		Total		34 days

Using 5-person crew

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Accents

Item	Qty	Rate/day	Duration, days	Basis
Install accents	2409	100	24.09	ea
			Total	24 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Shrubs

Item	Qty	Rate/day	Duration, days	Basis
Install shrubs	3261	50	65.22	ea
			Total	65 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Trees

Item	Qty	Rate/day	Duration, days	Basis
Install trees	381	20	19.05	ea
			Total	19 days
	188			
	<u>193</u>			
	381			

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Emitters

Item	Qty	Rate/day	Duration, days	Basis
Install emitters	1134	100	11.34	ea
Test, disinfect, place in service	1		7	
		Total	18	days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Laterals

Item	Qty	Rate/day	Duration, days	Basis
Construct submain line and valves	12883	1000	12.883	lf
Construct laterals line and valves	42522	1000	42.522	lf
Test, disinfect, place in service	1		7	
		Total	62	days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Main Line

Item	Qty	Rate/day	Duration, days	Basis
Construct line and valves	11224	1000	11.224	lf
Test, disinfect, place in service	1		3	
		Total	14	days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Elec Service

Item	Qty	Rate/day	Duration, days	Basis
BlueStake locates and potholes	1			1
Construct slab	1			3
Construct conduit	100	200		0.5 lf
Install meter, controller equipment	1			3
SRP pull wires, make connections	1			2
Construct fence enclosure	1			2
			Total	12 days

RITTENHOUSE DETENTION BASIN
PCN 121-03-32
CONTRACT PHASE C027
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Water Service

Item	Qty	Rate/day	Duration, days	Basis
BlueStake locates and potholes	1			3
Make main tap	1			1
Bore under street, RR, utils, Rittenhouse Channel	650	200	3.25	If
Construct supply line	1000	500	2	If
Install backflow preventer, etc	1			2
Test, disinfect, place in service	1			3
			Total	14 days



Memorandum

To: Don Rerick
Subject: EMF phasing and construction sequencing
Job Number: 0112925

From: Dave Violette
Date: 8/27/03

Here are some random thoughts about matters that affect how we handle the phase drawings, and how construction sequencing might be affected.

Queen Creek Channel

We need to think through the function of the existing channel and how/when to switch to the new channel.

The current plan would have the new channel being constructed in the second phase, once the changes to the EMF and the outlet, spillway, and lower basin are done. Obviously, the existing QC channel would remain in service as is during this phase. However, we will make changes to the outlet of the sed basin while making EMF changes, and should probably include construction of this drop structure in first phase.

→ sed basin / EMF

Once construction starts on the new QC channel, the existing channel should be kept in operation until the new channel and the sideweir are ready to take the flows. Then, the switch can be made at the upper end to direct flows from the old channel to the new. Following that, the switch can be made at the lower end to eliminate the flows from the existing channel from going into the sed basin. Only after those are done should the existing channel be filled. We need to note this sequence in the CDs.

Also, this affects where the material to fill the existing channel can come from, since the new QC channel will already be constructed.

Embankment between QC Channel and CH basin

A portion of this embankment is constructed by fill above existing grades. North of Ocotillo the basin will be constructed after the new channel is done, while south of Ocotillo the basin will be constructed before the new channel.

We need the embankment to be at its designed height once flows are being carried in the new channel, but not for basin operations.

When constructing the first phase, I suggest that we call for the embankment south of Ocotillo to be constructed by excavating below existing grade but no fill above existing grade be placed. That fill would then be placed in the second phase, while the channel is being constructed.

When constructing the second phase we will have to place the fill for the embankment while constructing the channel. This will then extend the fill to where excavation for the basin will start.

Don Rerick - FCDX

From: Barry Ling [bling@kirkham.com]
Sent: Wednesday, April 07, 2004 11:06 AM
To: djr@mail.maricopa.gov
Cc: Jason Kelley
Subject: Re: EMF Basins - Design issues -field visit

Don

In answer to your email

EMF Drop structure- to be resolved by addendum as discussed in the field this morning by adding a quantity in the contract for additional rip rap. The concrete weir wall should be fine as long as it is not disturbed and the grading blends in as the plans show.

Queen Creek Channel- the intent was to use a rock mulch similar to that used in the Rittenhouse Channel. The velocities are very low and erosion should not occur even with an earthen channel. The rock mulch is an added protection. This mulch should be stable and migration downstream should not be a maintenance problem. As we discussed FCD will put the rock mulch back in the contract with the channel construction.

>>> Don Rerick - FCDX <djr@mail.maricopa.gov> 4/6/2004 1:26:01 PM >>>
Barry and Jason,

As I discussed with Jason this morning, I have identified some design issues that need clarification and possibly some attention.

EMF Drop Structure Demolition and Riprap Replacement; CHBasin C028 -
1. The riprap removal and replacement as shown on the plans does not appear to be consistent with existing field conditions at the drop structure.
2. Is the proposed construction at the existing drop structure compatible with protecting the existing concrete vertical weir crest wall just downstream of the drop structure, along the east EMF channel bank.

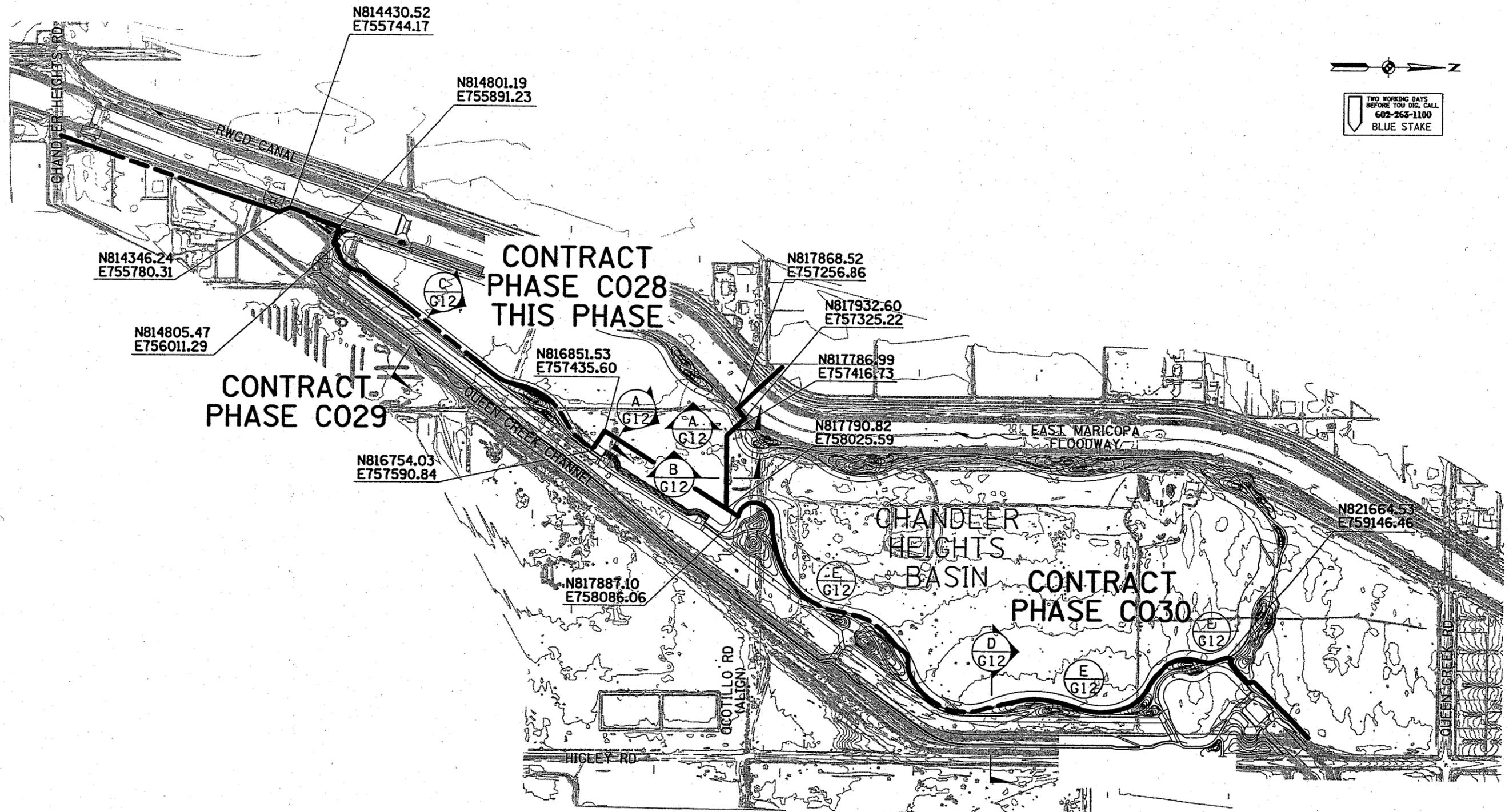
Queen Creek Channel; CHBasin C029 -
1. Was consideration given to some kind of hardened channel lining, concrete, riprap, etc. rather than an unlined channel at the choke point in the channel at station 43+97.23 to ensure that the cross section does not erode or change in its hydraulic function WRT the side weir. Flow velocities and geotech conditions would affect this condition.
2. What function other than aesthetics does the rock mulch serve on the channel side slopes? Will this mulch be stable in higher flows or will it wash out and end up in the sed basin, thereby creating a O&M headache, and possible adversely affecting the hydraulic function of the channel.

Please review and provide response to these issues. The EMF drop structure issue can be addressed in the field tomorrow. For either of these sets of issues changes may be required to the plans and/or SP's.

Thanks.



TWO WORKING DAYS
BEFORE YOU DIG, CALL
602-263-1100
BLUE STAKE



**KEY MAP
NTS**

**LANDSCAPING
(ALL OF BASIN
& CHANNELS) IN
CONTRACT PHASE
C031**

3			
2			
1			
NO.	REVISION	BY	DATE
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY			
EAST MARICOPA FLOODWAY CHANDLER HEIGHTS DETENTION BASIN PROJECT CONTROL NO. 121-03-33 CONTRACT PHASE C028			
		BY	DATE
DESIGNED		DAV	01/04
DRAWN		JB	01/04
CHECKED		DAV	01/04
		KIRKHAM MICHAEL	
		DRAWING NO. G11	KEY MAP CONSTRUCTION PHASES

PHASE BOUNDARY

C028

C029/C030

EXST GROUND

BASIN BOTTOM

4:1

(A) TYPICAL SECTION AT PHASE BOUNDARY - FIRST PHASE

C030

EXST GROUND

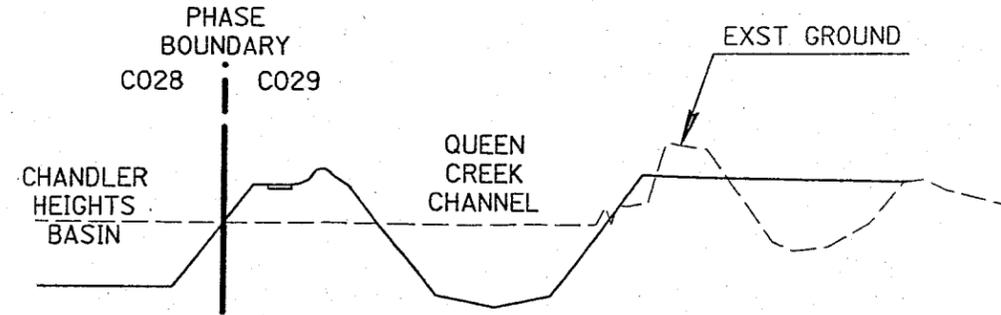
C028

EXST GROUND
(AFTER PREVIOUS PHASE)

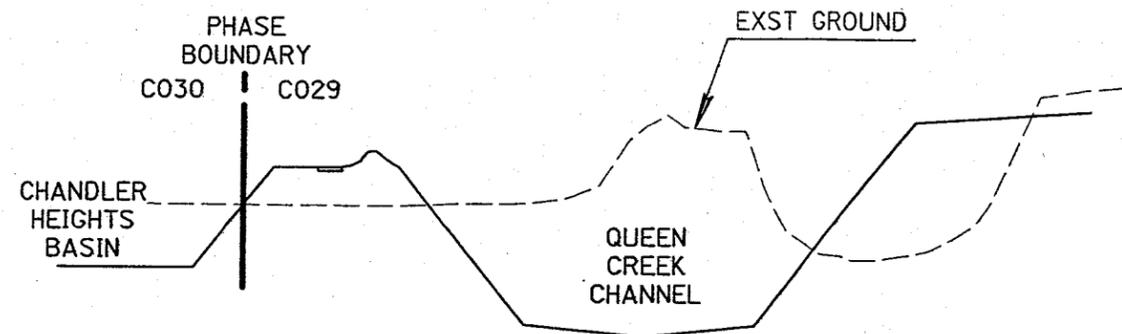
BASIN BOTTOM

4:1

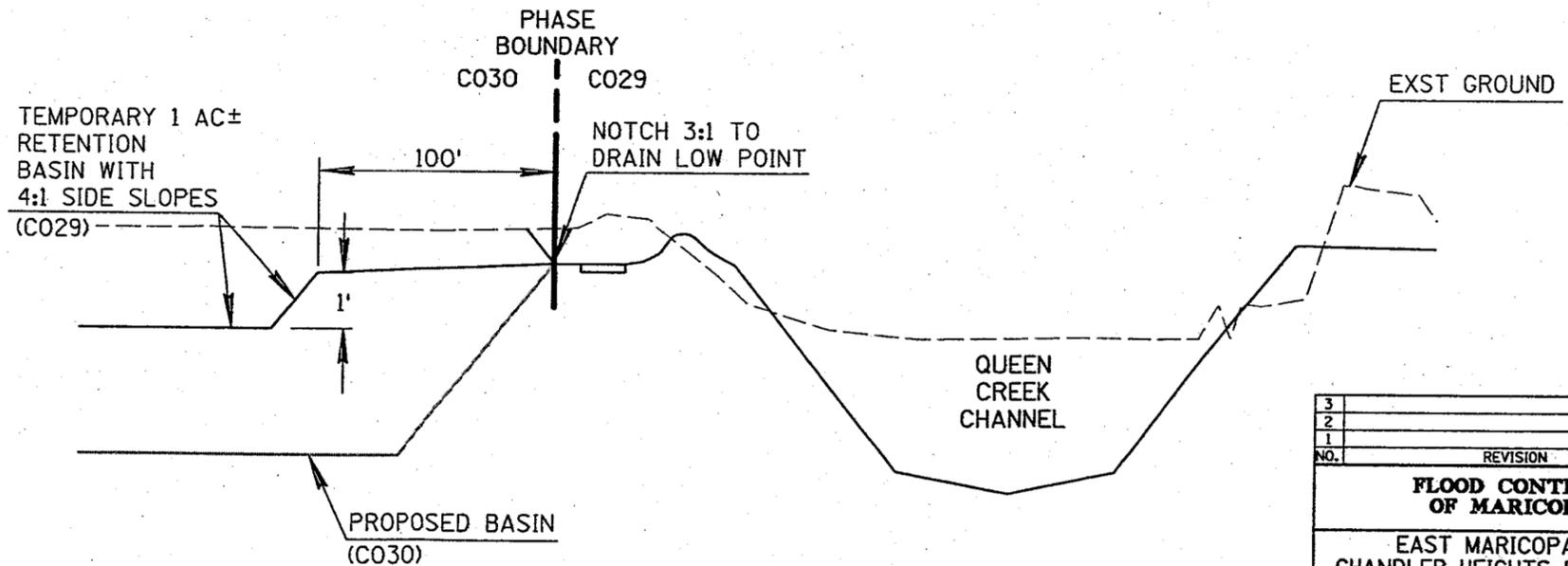
(B) TYPICAL SECTION AT PHASE BOUNDARY - SUBSEQUENT PHASE



(C) EMBANKMENT CONSTRUCTION BETWEEN PHASES C028 & C029



(D) EMBANKMENT CONSTRUCTION BETWEEN PHASES C029 & C030



(E) TEMPORARY DRAINAGE DITCH AND BASIN

STA. 64+00 TO 68+00
STA. 86+00 TO 90+00
STA. 99+00 TO 101+00

3			
2			
1			
NO.	REVISION	BY	DATE
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY			
EAST MARICOPA FLOODWAY CHANDLER HEIGHTS DETENTION BASIN PROJECT CONTROL NO. 121-03-33 CONTRACT PHASE C028			
	DESIGNED	CLJ	01/04
	DRAWN	BMM	01/04
	CHECKED	DAV	01/04
KIRKHAM MICHAEL		BY	DATE
DRAWING NO. G12	TYPICAL SECTIONS CONSTRUCTION PHASES	SHEET OF 12 74	

CHANDLER HEIGHTS BASIN - DRAWING SETS BY PHASE

Content	Dwg #	Total project Sht #	Phases			
			C028	C029	C030	C031
			EMF; outlet; spillway; basin south of Ocotillo	Queen Cr; sideweir	Remainder of basin north of Ocotillo	Landscaping
Cover and vicinity map	G1	1	M	M	M	M
General notes, legend, index of sheets	G2	2	M	M	M	M
General structural notes	G3	3	I	I		I
Key map - embankment	G4	4	P	P	P	
Key map - plan and profile	G5	5	P	P		
Key map - basin grading	G6	6	P	P	P	
Geometric sheet	G7	7	I	I	I	I
Typical sections	G8	8	I	I	I	I
Typical sections	G9	9	I	I		
Typical sections and details	G10	10	I	I	I	P
Key map - construction phases	G11		N	N	N	N
Typical sections - construction phases	G12		N	N	N	
Quantity summary	Q1	11	M	M	M	
Quantity summary	Q2	12	M	M	M	
Overall removal plan	C1	13	P	P	P	
Geotextile plan	C2	14	P	P	P	P
Overall fencing plan	C3	15		P	P	P
Embankment plan	C4	16	I			
Embankment plan	C5	17	I			
Embankment plan	C6	18	P		P	
Embankment plan	C7	19			I	
Embankment plan	C8	20			I	
Embankment plan	C9	21			I	
Embankment plan	C10	22			I	
Embankment plan	C11	23			I	
Embankment plan	C12	24		P	P	
Embankment plan	C13	25		P	P	
Embankment plan	C14	26		P	P	
Embankment plan	C15	27		P	P	
Embankment plan	C16	28		P	P	
Embankment plan	C17	29	P	P		
Embankment plan	C18	30	P	P		
Embankment plan	C19	31	P	P		
Embankment plan	C20	32	P	P		
Embankment plan	C21	33		P		
EMF improvements	C22	34	P			
EMF improvements	C23	35	I			
EMF improvements	C24	36	I			
Queen Creek improvements	C25	37	P	P		
Queen Creek improvements	C26	38		P		
Queen Creek improvements	C27	39		P		
Queen Creek improvements	C28	40		P		
Queen Creek improvements	C29	41		I		
Queen Creek improvements	C30	42		P		
Queen Creek improvements	C31	43		P		
Queen Creek improvements	C32	44		P		
Queen Creek improvements	C33	45		P		
Queen Creek improvements	C34	46		P		
Basin grading plan	C35	47	I			
Basin grading plan	C36	48	P	P		
Basin grading plan	C37	49	P	P		
Basin grading plan	C38	50	P	P		
Basin grading plan	C39	51	I			
Basin grading plan	C40	52	P	P		
Basin grading plan	C41	53	P	P		
Basin grading plan	C42	54	I			
Basin grading plan	C43	55	P	P		
Basin grading plan	C44	56	P	P		
Basin grading plan	C45	57	P		P	
Basin grading plan	C46	58	P	P	P	
Basin grading plan	C47	59		P	P	
Basin grading plan	C48	60		I		
Basin grading plan	C49	61			I	
Basin grading plan	C50	62			I	
Basin grading plan	C51	63		P	P	



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Job 0112925

Client FCDMC

Project Chandler Heights Basin

Calculated by DAV

Checked by *SPK*

Date 02/04/04

CHANDLER HEIGHTS BASIN - DRAWING SETS BY PHASE

Content	Dwg #	Total project Sht #	Phases			
			C028	C029	C030	C031
			EMF; outlet; spillway; basin south of Ocotillo	Queen Cr; sideweir	Remainder of basin north of Ocotillo	Landscaping
Basin grading plan	C52	64		I		
Basin grading plan	C53	65			I	
Basin grading plan	C54	66			I	
Basin grading plan	C55	67			I	
Basin grading plan	C56	68		P	P	
Basin grading plan	C57	69			I	
Basin grading plan	C58	70			I	
Basin grading plan	C59	71		P	P	
Basin grading plan	C60	72		P	P	
Basin grading plan	C61	73			I	
Basin grading plan	C62	74			I	
Basin grading plan	C63	75		P	P	
Basin grading plan	C64	76		P	P	
Waterline schematic sheet	C65	77				I
Misc details	D1	78		I		
Sideweir structural details	S1	79		I		
Sideweir structural details	S2	80		I		
Sideweir structural details	S3	81		I		
Sideweir structural details	S4	82		I		
Sideweir structural details	S5	83		I		
Sideweir structural details	S6	84		I		
Sideweir structural details	S7	85		I		
Sideweir aesthetics	S8	86		I		
Outlet structural details	S9	87	I			
Outlet structural details	S10	88	I			
Outlet structural details	S11	89	I			
Trash rack details	S12	90	I			
Flap gate details	S13	91	I			
Railing details	S14	92	I			
Railing details	S15	93	I			
Railing aesthetics	S16	94	I			
Railing aesthetics	S17	95	I			
Existing EMF drop structure removal details	DS1	96	I			
Drop structures general notes	DS2	97		I		
Drop structure #1	DS3	98	I			
Drop structure #2	DS4	99	I			
Drop structure #3	DS5	100		I		
Drop structure #5	DS6	101		I		
Drop structure #6	DS7	102		I		
Basin drain details	DS8	103		I		
Drop structure #7	DS9	104		I		
Drop structure #8	DS10	105		I		
Landscape legend and notes	L0	106				I
Native seeding plan	L00	107				I
Landscape plan	L1	108				I
Landscape plan	L2	109				I
Landscape plan	L3	110				I
Landscape plan	L4	111				I
Landscape plan	L5	112				I
Landscape plan	L6	113				I
Landscape plan	L7	114				I
Landscape plan	L8	115				I
Landscape plan	L9	116				I
Landscape plan	L10	117				I
Landscape plan	L11	118				I
Landscape plan	L12	119				I
Landscape plan	L13	120				I
Landscape plan	L14	121				I
Landscape plan	L15	122				I
Landscape plan	L16	123				I
Landscape plan	L17	124				I
Landscape plan	L18	125				I
Landscape plan	L19	126				I
Landscape plan	L20	127				I
Landscape plan	L21	128				I



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Job 0112925

Client FCDMC

Project Chandler Heights Basin

Calculated by DAV

Checked by *DAV*

Date 02/04/04

CHANDLER HEIGHTS BASIN - DRAWING SETS BY PHASE

Content	Dwg #	Total project Sht #	Phases			
			C028 EMF; outlet; spillway; basin south of Ocotillo	C029 Queen Cr; sideweir	C030 Remainder of basin north of Ocotillo	C031 Landscaping
Landscape plan	L22	129				
Landscape plan	L23	130				
Landscape plan	L24	131				
Landscape details	L25	132				
Irrigation schedule and notes	IR0	133				
		134				
Mainline and valve plan	IR1	135				
Irrigation plan	IR2	136				
Irrigation plan	IR3	137				
Irrigation plan	IR4	138				
Irrigation plan	IR5	139				
Irrigation plan	IR6	140				
Irrigation plan	IR7	141				
Irrigation plan	IR8	142				
Irrigation plan	IR9	143				
Irrigation plan	IR10	144				
Irrigation plan	IR11	145				
Irrigation plan	IR12	146				
Irrigation plan	IR13	147				
Irrigation plan	IR14	148				
Irrigation plan	IR15	149				
Irrigation plan	IR16	150				
Irrigation plan	IR17	151				
Irrigation plan	IR18	152				
Irrigation plan	IR19	153				
Irrigation plan	IR20	154				
Irrigation plan	IR21	155				
Irrigation plan	IR22	156				
Irrigation plan	IR23	157				
Irrigation plan	IR24	158				
Irrigation details	IR25	159				
Irrigation details	IR26	160				
Boring location map	B1	161	P	P	P	
General boring log sheet	B2	162				
Boring log	B3	163				
Boring log	B4	164				
Boring log	B5	165				
Boring log	B6	166				
Boring log	B7	167				
Boring log	B8	168				
Boring log	B9	169				
Boring log	B10	170				
Boring log	B11	171				
Boring log	B12	172				
Boring log	B13	173				
Boring log	B14	174				
Boring log	B15	175				
Boring log	B16	176				
Boring log	B17	177				
Boring log	B18	178				
Boring log	B19	179				
Boring log	B20	180				
Boring log	B21	181				
Boring log	B22	182				
Test pit log	B23	183				
Test pit log	B24	184				
Test pit log	B25	185				
Test pit log	B26	186				
Test pit log	B27	187				
Test pit log	B28	188				
Test pit log	B29	189				
Basin cross sections	XS01	190				
Basin cross sections	XS02	191				
Basin cross sections	XS03	192				
Basin cross sections	XS04	193				

CHANDLER HEIGHTS BASIN - SPECIAL PROVISIONS SECTIONS BY PHASE

Sections	Phases			
	C028	C029	C030	C031
	EMF; outlet; spillway; basin south of Ocotillo	Queen Cr channel; sideweir	Remainder of basin north of Ocotillo	Landscaping
SECTION 201 - CLEARING AND GRUBBING				
Subsection 201.1 - Description				
Subsection 201.5 - Payment				
SECTION 202 - MOBILIZATION				
Subsection 202.1 - Description				
Subsection 202.2 - Payment				
SECTION 206 - STRUCTURE EXCAVATION AND BACKFILL				
Subsection 206.1 - Description				
Subsection 206.3 - Structure Excavation	M	M		
Subsection 206.4 - Structure Backfill				
Subsection 206.5 - Payment				
SECTION 211 - FILL CONSTRUCTION				
Subsection 211.1 - Description	M	M	M	
Subsection 211.2 - Placing				
Subsection 211.5 - Measurement				
Subsection 211.6 - Payment				
SECTION 215 - EARTHWORK				
Subsection 215.1 - Description	M	M	M	
Subsection 215.3 - Excavation				
Subsection 215.4 - Fill and Backfill				
Subsection 215.5 - Grading				
Subsection 215.7 - Measurement				
Subsection 215.8 - Payment				
SECTION 216 - GEOTEXTILE BARRIER				
Subsection 216.1 - Description				
Subsection 216.2 - Materials				
Subsection 216.3 - Construction				
Subsection 216.4 - Measurement				
Subsection 216.5 - Payment				
SECTION 220 - RIPRAP CONSTRUCTION				
Subsection 220.1 - Description	M	M		
Subsection 220.2 - Materials				
Subsection 220.3 - Preparation of Ground Surfaces				
Subsection 220.4 - Plain Riprap				
Subsection 220.5 - Grouted boulders				
Subsection 220.5.1 - Materials				
Subsection 220.5.2 - Placement				
Subsection 220.8 - Payment				
SECTION 221 - ROCK MATTRESS CONSTRUCTION				
Subsection 221.1 - Description				
Subsection 221.2 - Materials				
Subsection 221.2.1 - Rock Fill Materials				
Subsection 221.2.2 - Basket or Mattress Materials				
Subsection 221.2.3 - Gravel Bedding Materials				
Subsection 221.2.4 - Filter Fabric Materials				
Subsection 221.3 - Assembling and Placing				
Subsection 221.4 - Measurement				
Subsection 221.5 - Payment				
SECTION 225 - WATERING				
Subsection 225.5 - Payment				
SECTION 301 - SUBGRADE PREPARATION				
Subsection 301.1 - Description	M	M	M	
Subsection 301.5 - Payment				
SECTION 310 - UNTREATED BASE (ABC)				
Subsection 310.1 - Description				
Subsection 310.2 - Material				
Subsection 310.4 - Payment				
SECTION 340 - SINGLE CURB				
Subsection 340.1 - Description				
Subsection 340.2 - Payment				
SECTION 344 - DECOMPOSED GRANITE ROAD SURFACE				
Subsection 344.1 - Description				
Subsection 344.2 - Material				
Subsection 344.3 - Payment				
SECTION 345 - ADJUSTING FRAMES, COVERS, VALVE BOXES, AND WATER METER BOXES				
Subsection 345.1 - Description		M	M	
Subsection 345.6 - Payment				
SECTION 350 - REMOVAL OF EXISTING IMPROVEMENTS				
Subsection 350.1 - Description	M	M	M	
Subsection 350.2 - Construction Methods				
Subsection 350.4 - Payment	M	M	M	
SECTION 401 - TRAFFIC CONTROL				
Subsection 401.3 - Flagmen				
Subsection 401.5 - General Traffic Regulations				
Subsection 401.6 - Measurement				
Subsection 401.7 - Payment				

CHANDLER HEIGHTS BASIN - SPECIAL PROVISIONS SECTIONS BY PHASE

Sections	Phases			
	C028	C029	C030	C031
	EMF; outlet; spillway; basin south of Ocotillo	Queen Cr channel; sideweir	Remainder of basin north of Ocotillo	Landscaping
SECTION 421 - FOUR-STRAND SMOOTH WIRE FENCE				
Subsection 421.1 - Description				
Subsection 421.2 - Materials				
Subsection 421.3 - Constructions Requirements				
Subsection 421.4 - Method of Measurement				
Subsection 421.5 - Basis of Payment				
SECTION 430 - LANDSCAPING AND PLANTING				
Subsection 430.1 - Description:				
Subsection 430.2 - General:				
Subsection 430.2.1 - Preparing the Site for Landscaping:				
Subsection 430.3 - Native Seeding Areas				
Subsection 430.3.1 - Description:				
Subsection 430.3.2 - Quality Assurance:				
Subsection 430.3.3 - Submittals:				
Subsection 430.3.4 - Products:				
Subsection 430.3.5 - Execution:				
Subsection 430.4 - Decomposed Granite Area:				
Subsection 430.5 - Tree, Shrub, and Ground Cover Planting:				
Subsection 430.5.6 - Plant Pits:				
Subsection 430.9 - Plant Maintenance and Establishment Period:				
Subsection 430.10 - Measurement and Payment				
SECTION 432 - ROCK MULCH				
Subsection 432.1 - Description				
Subsection 432.2 - Materials				
Subsection 432.3 - Subgrade Preparation				
Subsection 432.4 - Placement				
Subsection 432.5 - Payment				
SECTION 440 - SPRINKLER IRRIGATION SYSTEM INSTALLATION				
Subsection 440.1 - Description				
Subsection 440.2 - General:				
Subsection 440.2.1 - References:				
Subsection 440.2.2 - Quality Assurances:				
Subsection 440.2.3 - Permits:				
Subsection 440.2.4 - Warranty:				
Subsection 440.2.5 - Submittals:				
Subsection 440.3 - Materials				
Subsection 440.3.1 - Equipment to be furnished:				
Subsection 440.5 - Trench Excavation and Backfill:				
Subsection 440.6 - Pipe Installation:				
Subsection 440.7 - Valves, Valve Boxes, and Special Equipment Installation:				
Subsection 440.8 - Sprinkler Head Installation and Adjustment:				
Subsection 440.8.1 - Emitters:				
Subsection 440.9 - Automatic Control System Installation:				
Subsection 440.10 - Flushing and Testing:				
Subsection 440.11 - Measurement and Payment				
SECTION 505 - CONCRETE STRUCTURES				
Subsection 505.1 - Description	M	M		
Subsection 505.6 - Placing Concrete				
Subsection 505.6.1 - Joints				
Subsection 505.8 - Curing				
Subsection 505.9.6 - Concrete Sideweir Aesthetics	M	M		
Subsection 505.9.6.1 Description	M	M		
Subsection 505.9.6.3 Construction Requirements				
Subsection 505.9.6.4 Method of Measurement				
Subsection 505.9.7 - Outlet Structure Aesthetics				
Subsection 505.9.7.1 Description				
Subsection 505.9.7.4 Method of Measurement				
Subsection 505.10 - Payment	M	M		
SECTION 507 - MISCELLANEOUS STRUCTURES				
Subsection 507.1 - Description	M	M		
Subsection 507.2 - Emergency Spillway				
Subsection 507.2.1 - Excavation				
Subsection 507.2.2 - Rock mattresses				
Subsection 507.2.3 - Concrete cutoff wall				
Subsection 507.3 - Grouted Boulder and Dumped Riprap Drop Structures				
Subsection 507.3.1 - Excavation				
Subsection 507.3.2 - Grouted boulders				
Subsection 507.3.3 - Boulders				
Subsection 507.3.4 - Geotextile				
Subsection 507.3.5 - Gravel bedding material				
Subsection 507.3.6 - Piping				
Subsection 507.3.7 - Grout cut-off wall				
Subsection 507.4 - Payment	M	M		
SECTION 515 - STEEL STRUCTURES				
Subsection 515.1 - Description	M	M		
Subsection 515.6 - Measurement				

CHANDLER HEIGHTS BASIN - SPECIAL PROVISIONS SECTIONS BY PHASE

Sections	Phases			
	C028	C029	C030	C031
	EMF; outlet; spillway; basin south of Ocotillo	Queen Cr channel; sideweir	Remainder of basin north of Ocotillo	Landscaping
Subsection 515.7 – Payment				
SECTION 520 – STEEL AND ALUMINUM HANDRAILS				
Subsection 520.1 – Description	M			
Subsection 520.5 – Payment				
SECTION 525 – PNEUMATICALLY PLACED CONCRETE		M		
Subsection 525.1 – Description		M		
Subsection 525.12 – Payment				
SECTION 610 – WATER LINE CONSTRUCTION				
Subsection 610.1 – Description	M			M
Subsection 610.18 – Measurement and Payment	M			M
SECTION 703 – RIPRAP		M		
Subsection 703.1 – Stone				
Subsection 703.3 – Concrete				
Subsection 703.4 – Sacks				
SECTION 738 – HIGH DENSITY POLYETHYLENE PIPE & FITTINGS FOR STORM DRAIN & SANITARY SEWER				
Subsection 738.1.1 – Pipe for underdrains and weeps				
SECTION 795 – LANDSCAPE MATERIAL				
Subsection 795.8.4 – Decomposed granite				
SECTION 796 – GEOTEXTILES				
Subsection 796.1 – Geotextile Filter Fabric - Description				
Subsection 796.2 – Geotextile Barrier – Description				
Subsection 796.3 – Payment				
SECTION 797 – GRAVEL BEDDING				
Subsection 797.1 – Description				
Subsection 797.2 – Payment				

Modify more than page and bid item numbers
Include as is, but modify page and bid item numbers

17	19	6	2
106	96	55	55
123	115	61	57



CHANDLER HEIGHTS DETENTION BASIN**TOTAL PROJECT INFO**

The estimate contained in this notebook is a copy of that for the total Chandler Heights Basin project. Refer to the Design Calculations and Analysis Notebook for more info about the derivation and computation of the quantities for the total project. The DC&AN also contains the design basis for the project components.



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Job 0112925

Client FCDMC

Project Chandler Heights Basin

Calculated by DAV

Checked by *JM*

Date 02/04/04 02/18/04 02/24/04

Item No.	Description	Note	Unit	Quantity	Unit Cost	Amount
105 - 1	Partnering Allowance		LS	1	\$25,000.00	\$25,000.00
107 - 1	AZPDES/SWPPP Permits		LS	1	\$185,000.00	\$185,000.00
107 - 2	Public Information and Notification Allowance		LS	1	\$50,000.00	\$50,000.00
107 - 3	Project Signs Allowance		LS	1	\$3,000.00	\$3,000.00
107 - 4	Water Management		LS	1	\$100,000.00	\$100,000.00
201 - 1	Clearing & Grubbing		AC	300	\$250.00	\$75,000.00
202 - 1	Mobilization		LS	1	\$350,000.00	\$350,000.00
206 - 1	Structure Excavation		CY	17,800	\$8.00	\$142,400.00
206 - 2	Structure Backfill		CY	38,614	\$15.00	\$579,210.00
211 - 1	Earth Bermis		CY	75,869	\$5.00	\$379,345.00
211 - 2	Fill Construction	1	CY	289,107	\$3.00	\$867,321.00
215 - 1	Detention Basin Excavation	1	CY	3,916,564	\$4.25	\$16,645,397.00
215 - 2	Queen Creek Channel & Sed Basin Excavation	1	CY	584,701	\$6.00	\$3,508,206.00
215 - 3	EMF Channel Excavation	1	CY	98,210	\$6.00	\$589,260.00
216 - 1	GeoTextile Barrier		LF	8,018	\$30.00	\$240,540.00
220 - 1	Plain Dumped Rip Rap (D50=12")		CY	788	\$60.00	\$47,280.00
310 - 1	ABC (4") (O&M Access Roads & Ramps)	2	SY	51,248	\$3.00	\$153,744.00
340 - 1	Single Curb		LF	982	\$10.00	\$9,820.00
344 - 1	Decomposed Granite Road Surface	3	SY	51,248	\$4.00	\$204,992.00
345 - 1	Raise Water Valve Box		EA	2	\$150.00	\$300.00
345 - 2	Raise Manhole		EA	2	\$200.00	\$400.00
345 - 3	Lower Manhole		EA	1	\$3,000.00	\$3,000.00
350 - 1	Removal of EMF Drop Structure	4	LS	1	\$25,000.00	\$25,000.00
350 - 2	Removal of Queen Creek Sed Basin Outlet Weir	6	LS	1	\$10,000.00	\$10,000.00
350 - 3	Removal of RipRap Spillways into EMF		LS	1	\$4,500.00	\$4,500.00
350 - 4	Removal of Fence		LS	1	\$29,050.00	\$29,050.00
350 - 5	Removal of Wire-Tied Rip-Rap near Higley Rd		LS	1	\$37,000.00	\$37,000.00
350 - 6	Miscellaneous Removals		LS	1	\$50,000.00	\$50,000.00
350 - 7	Removal and Disposal of Inert Material Allowance		TN	8,000	\$45.00	\$360,000.00
350 - 8	Removal and Disposal of Non-Inert Material Allowance		TN	300	\$200.00	\$60,000.00
350 - 9	Removal and Disposal of Tires Allowance		TN	75	\$900.00	\$67,500.00
401 - 1	Traffic Control		LS	1	\$300,000.00	\$300,000.00
421 - 1	4-Strand Smooth Wire Fence and Gates		LF	11,032	\$3.50	\$38,612.00
430 - 1	Tree (15 Gallon)		EA	1,085	\$155.00	\$168,175.00
430 - 2	Tree (24" box)		EA	775	\$288.00	\$223,200.00
430 - 3	Shrub/Groundcover (1 Gallon)		EA	5,598	\$12.00	\$67,176.00
430 - 4	Shrub/Accent (5 Gallon)		EA	3,236	\$20.00	\$64,720.00
430 - 5	Shrub/Accent (15 Gallon)		EA	74	\$90.00	\$6,660.00
430 - 6	Native Seeding		AC	221	\$2,000.00	\$442,000.00

430	-	7	Decomposed Granite Mulch	3	SY	192,342	\$4.00	\$769,368.00
430	-	8	Soil Amendment Allowance		LS	1	\$100,000.00	\$100,000.00
432	-	1	Rock Mulch Ground Cover	5	SY	209,340	\$3.50	\$732,690.00
440	-	1	Backflow Prevention Assembly		EA	1	\$3,300.00	\$3,300.00
440	-	2	Master Valve and Flow Meter		EA	1	\$300.00	\$300.00
440	-	3	3" Gate Valve		EA	20	\$200.00	\$4,000.00
440	-	4	4" Gate Valve		EA	2	\$250.00	\$500.00
440	-	5	Control Valve (Drip)(Remote)(Electric)(1")		EA	38	\$175.00	\$6,650.00
440	-	6	Quick Coupler (1")		EA	8	\$150.00	\$1,200.00
440	-	7	Pressure Regulator Riser		EA	170	\$90.00	\$15,300.00
440	-	8	Controller		EA	2	\$12,500.00	\$25,000.00
440	-	9	Emitter (Assembly)(Multi-Outlet)		EA	4,482	\$15.00	\$67,230.00
440	-	10	Pipe (PVC)(4") Schedule 40		LF	1,007	\$7.50	\$7,552.50
440	-	11	Pipe (PVC)(3") Schedule 40		LF	29,445	\$6.50	\$191,392.50
440	-	12	Pipe (PVC)(2") Schedule 40		LF	415	\$5.50	\$2,282.50
440	-	13	Pipe (PVC)(1") Schedule 40		LF	35,546	\$1.75	\$62,205.50
440	-	14	Pipe (PVC)(3/4") Schedule 40		LF	107,525	\$1.15	\$123,653.75
440	-	15	Pipe (PVC)(4") Schedule 40 (Sleeve)		LF	1,165	\$7.50	\$8,737.50
440	-	16	Pipe (PVC)(8") Schedule 40 (Sleeve)		LF	960	\$10.00	\$9,600.00
440	-	17	Water Service Connection		LS	1	\$18,000.00	\$18,000.00
440	-	18	Electrical Service Connection		LS	1	\$9,600.00	\$9,600.00
505	-	1	2-6'x4' RCBC Outlet Structure		LS	1	\$77,000.00	\$77,000.00
505	-	2	Sideweir		LS	1	\$1,062,215.00	\$1,062,215.00
507	-	1	Structure No. 1 at EMF		EA	1	\$588,000.00	\$588,000.00
507	-	2	Structure No. 2 at Exist Sed Basin Outlet		EA	1	\$418,000.00	\$418,000.00
507	-	3	Structure No. 3 at Exist Sed Basin Inlet		EA	1	\$344,000.00	\$344,000.00
507	-	4	Structure No. 5 in Queen Creek		EA	1	\$276,000.00	\$276,000.00
507	-	5	Structure No. 6 at New Sed Basin Outlet		EA	1	\$506,000.00	\$506,000.00
507	-	6	Structure No. 7 at New Sed Basin Inlet		EA	1	\$248,000.00	\$248,000.00
507	-	7	Structure No. 8 in Queen Creek		EA	1	\$238,000.00	\$238,000.00
507	-	8	Emergency Spillway		LS	1	\$355,000.00	\$355,000.00
515	-	1	6' x 4' Flap Gates		EA	2	\$15,000.00	\$30,000.00
515	-	2	Trash Rack		EA	1	\$7,500.00	\$7,500.00
520	-	1	Handrail		LF	70	\$150.00	\$10,500.00
610	-	1	Water Main Relocation		LS	1	\$10,000.00	\$10,000.00
610	-	2	Irrigation Water Service Line		LS	1	\$45,400.00	\$45,400.00

Subtotal Construction Costs

\$32,486,985.25

¹Quantity from SelectCAD (using dtm subtraction).

²Unit cost based on \$25/cy.

³Unit Cost Based on \$73/cy.

⁴Removal of 260 cy concrete and 176 cy of grouted rock.

⁵Unit Cost Based on \$60/cy.

⁶Based on estimated 500 cy of grouted rip-rap.





CHANDLER HEIGHTS DETENTION BASIN

SPLIT QUANTITIES

This section of the notebook shows how certain quantities from the total project were distributed among the phases. In some cases the splits sum to the total for the total project. In other cases, most notably in the Section 105 and 107 bid items, the sum of the splits will total more than the amount for the total project because some activities need to be done once for each contract, and without regard for the project size.

Some items are measured directly on the drawings and listed on individual drawing sheets and summed on the Summary of Quantities drawing. No computation for phasing is needed in those cases.

Quantities for basin excavation were computed in CADD using surfaces and phase boundaries. At each interim phase boundary a "wedge" of soil is left that will be excavated in the succeeding phase and the adjustment to quantities for this is computed in this section.

**KIRKHAM
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Client **FCDMC**Project **Chandler Heights Basin**Calculated by **DAV**Checked by *Jul*Date **12/29/03**

Item	Full	C028	C029	C030	C031	Note
Partnering Allowance	\$25,000	\$25,000	\$25,000	\$25,000	\$25,000	1
AZPDES/SWPPP Permits	\$185,000	\$83,000	\$87,000	\$116,000	\$135,000	2
Public Information and Notification Allowance	\$50,000	\$50,000	\$50,000	\$50,000	\$50,000	3
Project Signs Allowance	\$3,000	\$3,000	\$4,000	\$3,000	\$3,000	3
Water Management	\$100,000	\$100,000	\$100,000	\$100,000	\$20,000	4
Mobilization	\$350,000	\$85,000	\$95,000	\$171,000	\$100,000	5

Notes:

- 1 Assume same for each contract
- 2 Assume each phase C028-C030 need new plan plus maintenance, and C031 has maintenance only.
Assume plan cost is \$50,000 each time. Assume maintenance cost proportional to area.
See Clear and Removals tab for area percentages for each phase.
- 3 Assume new signs and notifications for each phase.
- 4 Assume same amount for Water Mgt for C028-C030 and \$20,000 for C031 since everything is built.
- 5 Assume mobilization is relative to phase area; see Clear and Removals tab for area percentages.
Assume mobilization for C031 to be \$100,000.



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Client FCDMC

Project Chandler Heights Basin

Calculated by DAV

Checked by *JW*

Date 02/20/04

A Compare final quantities from DTM (Figure 3) with previous estimates

				CUT						
				Total Project (Previous)	Total Project	C028 Basin ¹	C029 Basin ²	C030 Basin ³	EMF Channel ⁴	QC Channel ⁵
215	-	1	Detention Basin Excavation	CY	4,070,000	3,916,564	693,856	91,629	3,131,079	
215	-	2	Queen Creek Channel & Sed Basin Exc ⁵	CY	584,000	584,701				584,701
215	-	3	EMF Channel Excavation ⁴	CY	105,000	98,210			98,210	
					4,759,000	4,599,475	< as sum of parts			
						4,599,463	< total project in one part ⁶			
					3,917,548	< earlier analysis by cross sections and end areas				

				FILL						
				Total From Fig 1	Total Project	C028 Basin ¹	C029 Basin ²	C030 Basin ³	EMF Channel ⁴	QC Channel ⁵
211	-	1	Earth Berms ⁷	CY	75,869	75,868	4,220	35,636	36,012	
211	-	2	Fill Construction	CY	201,000	289,107	15,148	288	24,636	9,898
					276,869	364,975	< as sum of parts (including berms)			
						289,113	< total project in one part (without berms) ⁶			

B Compare final quantities from DTM (Figure 1) with DTM as split in Figure 2

				Total From Fig 1	Sum of Parts in Fig 2	C028 total ⁸	C029 total ⁸	C030 total ⁸	
Total cut				CY	4,599,463	4,599,462	792,066	676,317	3,131,079
Total fill				CY	289,113	289,113	25,048	239,429	24,636

C Compare quantities from DTM as split in Figure 2 with DTM as split in Figure 3

				From Fig 2	Sum of Parts in Fig 3	Basin #1	EMF Channel	
Total cut - C028				CY	792,066	792,066	693,856	98,210
Total fill - C028				CY	25,048	25,046	15,148	9,898



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Checked by *TH*

Date 02/20/04

		From Fig 2	Sum of Parts in Fig 3	Basin #2	QC Channel
Total cut - C029	CY	676,317	676,330	91,629	584,701
Total fill - C029	CY	239,429	239,425	288	239,137

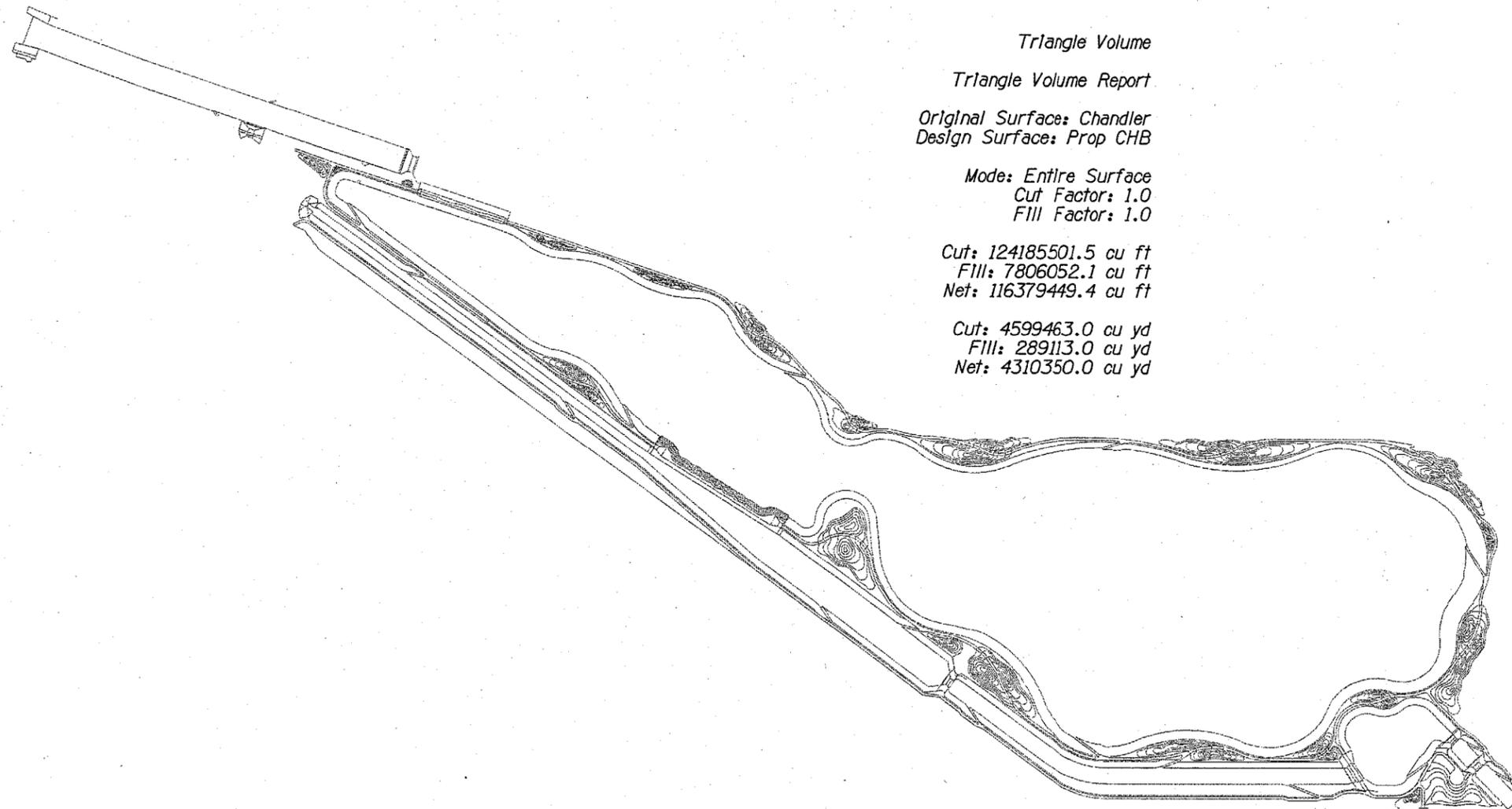
		From Fig 2	Sum of Parts in Fig 3	Basin #3
Total cut - C030	CY	3,131,079	3,131,079	3,131,079
Total fill - C030	CY	24,636	24,636	24,636

Conclusions:

- 1 From part A, the amount of cut has reduced from previous estimates and the amount of fill increased.
- 2 From part B, the amount from the total project agrees closely with the amount summed from the five parts.
This shows that the modeling approach is consistent.
- 3 From part A, the basin quantity with the final model is consistent with the quantities derived earlier using both the DTM method as well as the cross section method.
- 4 Part C shows that the disaggregation of C028 and C029 gives consistent results with the total C028 and C029 results.

Refer to the three dwgs attached for the areas covered by the numbers above.

- ¹ Subarea Basin #1 on Figure 3
- ² Subarea Basin #2 on Figure 3
- ³ Subarea Basin #3 on Figure 3
- ⁴ Subarea EMF Channel on Figure 3
- ⁵ Subarea Basin #3QC Channel on Figure 3
- ⁶ Figure 1
- ⁷ Taken from construction dwgs
- ⁸ Figure 2



Triangle Volume
Triangle Volume Report
Original Surface: Chandler
Design Surface: Prop CHB
Mode: Entire Surface
Cut Factor: 1.0
Fill Factor: 1.0
Cut: 124185501.5 cu ft
Fill: 7806052.1 cu ft
Net: 116379449.4 cu ft
Cut: 4599463.0 cu yd
Fill: 289113.0 cu yd
Net: 4310350.0 cu yd

Triangle Volume

Triangle Volume Report

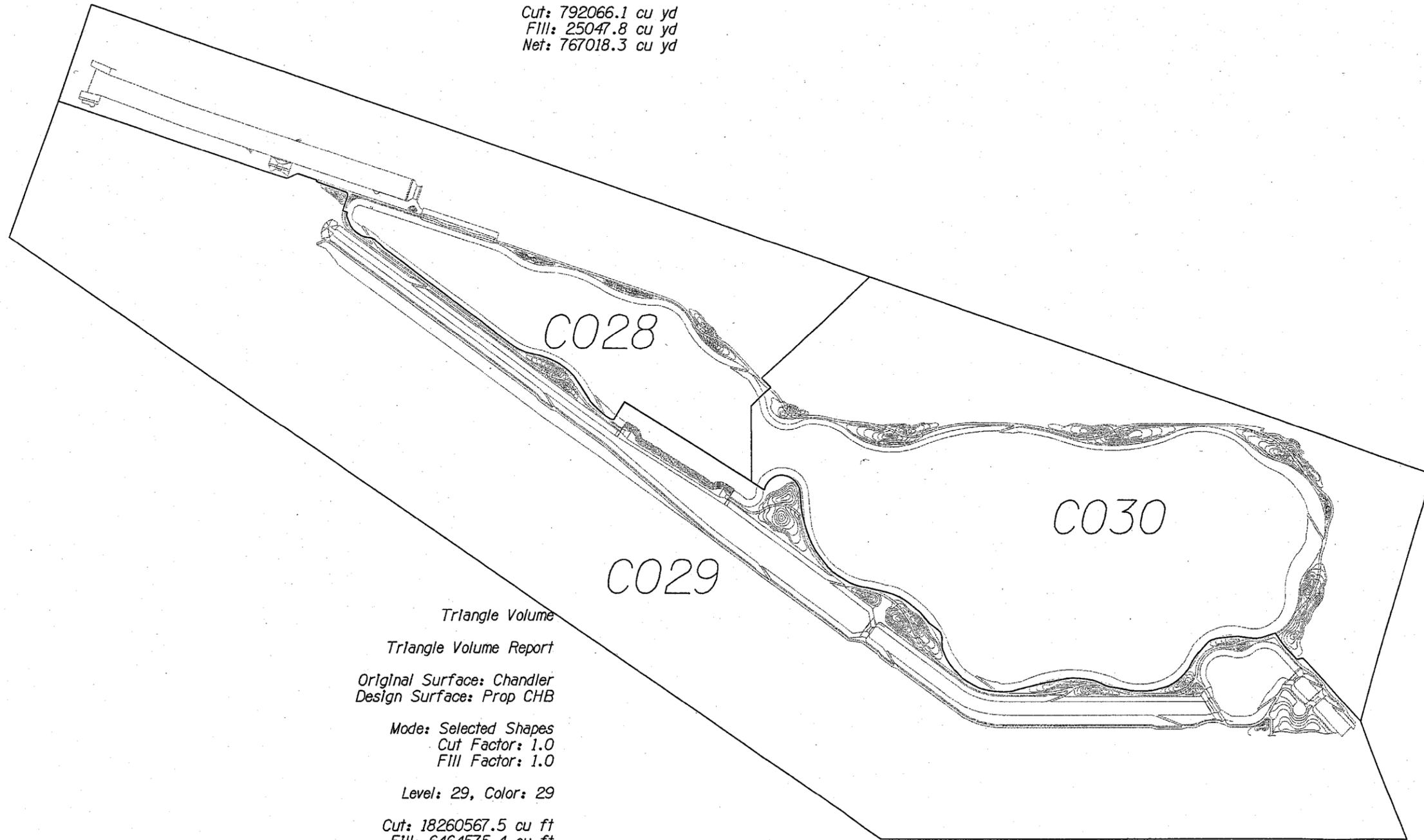
Original Surface: Chandler
Design Surface: Prop CHB

Mode: Selected Shapes
Cut Factor: 1.0
Fill Factor: 1.0

Level: 28, Color: 38

Cut: 21385784.1 cu ft
Fill: 676289.6 cu ft
Net: 20709494.6 cu ft

Cut: 792066.1 cu yd
Fill: 25047.8 cu yd
Net: 767018.3 cu yd



Triangle Volume
Triangle Volume Report
Original Surface: Chandler
Design Surface: Prop CHB

Mode: Selected Shapes
Cut Factor: 1.0
Fill Factor: 1.0

Level: 29, Color: 29

Cut: 18260567.5 cu ft
Fill: 6464575.4 cu ft
Net: 11795992.1 cu ft

Cut: 676317.3 cu yd
Fill: 239428.7 cu yd
Net: 436888.6 cu yd

Triangle Volume

Triangle Volume Report

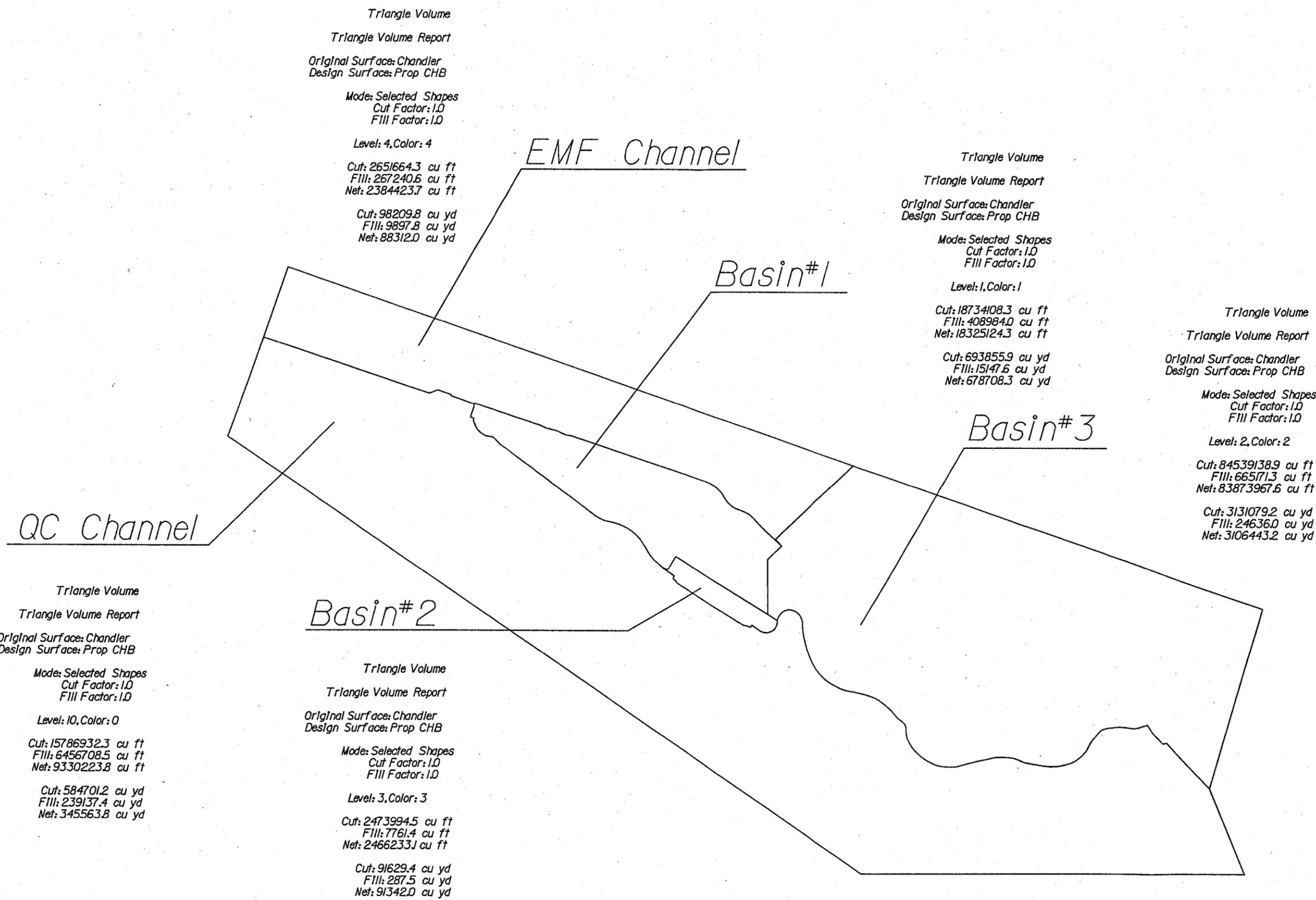
Original Surface: Chandler
Design Surface: Prop CHB

Mode: Selected Shapes
Cut Factor: 1.0
Fill Factor: 1.0

Level: 30, Color: 31

Cut: 84539138.9 cu ft
Fill: 665171.3 cu ft
Net: 83873967.7 cu ft

Cut: 3131079.2 cu yd
Fill: 24636.0 cu yd
Net: 3106443.2 cu yd



Triangle Volume
 Triangle Volume Report
 Original Surface: Chandler
 Design Surface: Prop CHB
 Mode: Selected Shapes
 Cut Factor: 1.0
 Fill Factor: 1.0
 Level: 4, Color: 4
 Cut: 2651664.3 cu ft
 Fill: 257240.6 cu ft
 Net: 2384423.7 cu ft
 Cut: 98209.8 cu yd
 Fill: 9897.8 cu yd
 Net: 88312.0 cu yd

Triangle Volume
 Triangle Volume Report
 Original Surface: Chandler
 Design Surface: Prop CHB
 Mode: Selected Shapes
 Cut Factor: 1.0
 Fill Factor: 1.0
 Level: 1, Color: 1
 Cut: 18734108.3 cu ft
 Fill: 408984.0 cu ft
 Net: 18325124.3 cu ft
 Cut: 693855.9 cu yd
 Fill: 15147.6 cu yd
 Net: 678708.3 cu yd

Triangle Volume
 Triangle Volume Report
 Original Surface: Chandler
 Design Surface: Prop CHB
 Mode: Selected Shapes
 Cut Factor: 1.0
 Fill Factor: 1.0
 Level: 2, Color: 2
 Cut: 84539138.9 cu ft
 Fill: 665171.3 cu ft
 Net: 83873967.6 cu ft
 Cut: 3131079.2 cu yd
 Fill: 24636.0 cu yd
 Net: 3106443.2 cu yd

Triangle Volume
 Triangle Volume Report
 Original Surface: Chandler
 Design Surface: Prop CHB
 Mode: Selected Shapes
 Cut Factor: 1.0
 Fill Factor: 1.0
 Level: 10, Color: 0
 Cut: 15786932.3 cu ft
 Fill: 6456708.5 cu ft
 Net: 9330223.8 cu ft
 Cut: 584701.2 cu yd
 Fill: 239137.4 cu yd
 Net: 345563.8 cu yd

Triangle Volume
 Triangle Volume Report
 Original Surface: Chandler
 Design Surface: Prop CHB
 Mode: Selected Shapes
 Cut Factor: 1.0
 Fill Factor: 1.0
 Level: 3, Color: 3
 Cut: 2473994.5 cu ft
 Fill: 7761.4 cu ft
 Net: 2466233.1 cu ft
 Cut: 91629.4 cu yd
 Fill: 287.5 cu yd
 Net: 91342.0 cu yd



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Project **Chandler Heights Basin**

Calculated by **DAV**

Checked by *[Signature]*

Date **02/04/04 02/24/04**

BASIN EXCAVATION

(See attached sketch defining the points used below)

Total quantity reported in final cost estimate

		3,916,564 ey	
		InRoads	
	Vol	Report	less for
Split volume for C028	715,406	820,406	105,000 EMF Channel
Split volume for C029	120,744	704,744	584,000 QC Channel
Split volume for C030	3,134,404	3,134,404	
Sum of splits		3,970,554 ey	
Difference		-53,990 ey	

Apportion difference in ratio to size of measured volumes. See wedge calcs below.

		Adjustment	Adjusted vol	Wedge vol	Vol used
C028	715,406	-9,728	705,678	-24009	681,669
C029	120,744	-1,642	119,102	15573	134,675
C030	3,134,404	-42,620	3,091,784	8437	3,100,221

Refer to tab: DTM Analysis for final qtys.
 See wedge calcs below.

			Wedge vol	Vol used
C028	693,856		-24009	669,847
C029	91,629		15573	107,202
C030	3,131,079		8437	3,139,516

A WEDGE VOLUME BETWEEN PHASE C028 AND C029 (SUBTRACT FROM C028)

		Elev diff	Dist along slope		
W side		10	40.00		
S end		14	56.00		
				Cross section	
Starting at top of embankment along EMF:	Point	Station	Depth	Distance to daylight	Incr volume
Using average end areas (all units are ft)	A	0.00	0.00	0.00	0
	B	70.00	11.00	44.00	8470
	C	761.00	13.00	52.00	200390
	D	1873.00	14.00	56.00	405880
	E	2044.00	0.00	0.00	33516
				Total, cf	648256
				Total, cy	24009
				Volume of wedge	

B WEDGE VOLUME BETWEEN C028 AND C029 (ADD TO C029)

				Distance to daylight	Cross section area	Incr volume
Starting at top of embankment south end of sideweir:	Point	Station	Depth			
Using average end areas (all units are ft)	F	0.00	0.00	0.00	0.00	0
	D	171.00	14.00	56.00	392.00	33516
	C	1283.00	13.00	52.00	338.00	405880
					Total, cf	439396
					Total, cy	16274
					Volume of wedge	



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Checked by [Signature]

Date 02/04/04 02/24/04

C WEDGE VOLUME BETWEEN C029 AND C030 (SUBTRACT FROM C029, ADD TO C030)

Starting at the point where C028, C029, and C030 meet:	Point	Station	Depth	Distance to daylight	Cross section area	Incr volume
Using average end areas (all units are ft)	C	0.00	13.00	52.00	338.00	0
	F	112.00	0.00	0.00	0.00	18928
					Total, cf	18928
					Total, cy	701

Volume of wedge

C WEDGE VOLUME BETWEEN C028 AND C030 (ADD TO C030)

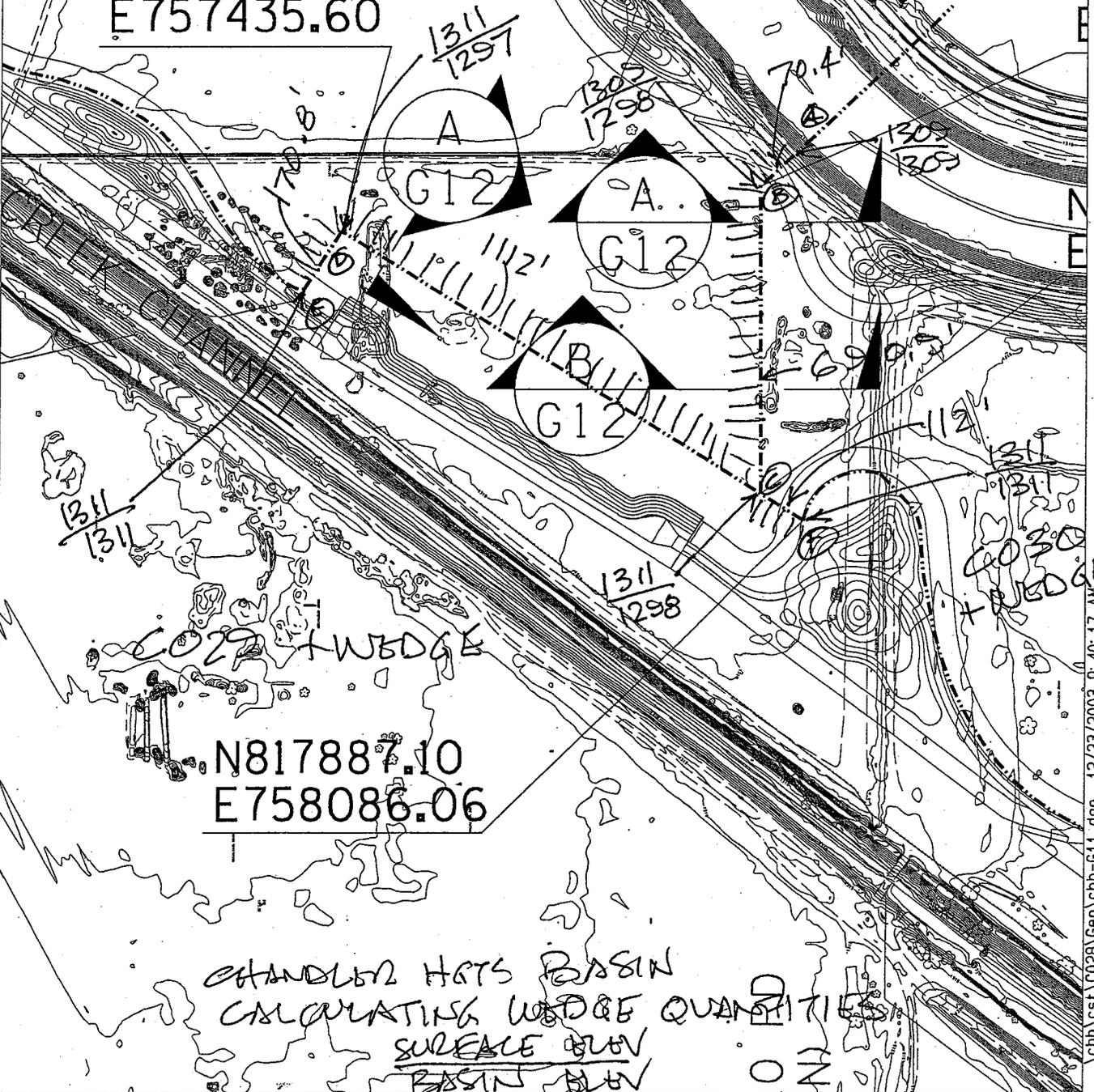
Starting at top of embankment along EMF:	Point	Station	Depth	Distance to daylight	Cross section area	Incr volume
Using average end areas (all units are ft)	A	0.00	0.00	0.00	0.00	0
	B	70.00	11.00	44.00	242.00	8470
	C	761.00	13.00	52.00	338.00	200390
					Total, cf	208860
					Total, cy	7736

Volume of wedge

SKETCH TO ACCOMPANY
BAR NETWORK COMPS FOR
SPLITE

CONTRACT HASE C028

C028 - WEDGE
N816851.53
E757435.60



1311
1311

C028 WEDGE

N817887.10
E758086.06

CHANDLER HGTS BASIN
CALCULATING WEDGE QUANTITIES
SURFACE BLN
BASIN BLN

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Client **FCDMC**

Project **Chandler Heights Basin**

Calculated by **DAV**

Checked by *Jell*

Date **02/03/04 02/24/04**

CLEAR AND GRUB

	Planimeter *		Percent of total Area used	
Total quantity reported in final cost estimate	21.5	300 ac		
Split area for C028	5.2	72.6 ac	24%	73
Split area for C029	5.8	80.9 ac	27%	81
Split area for C030	10.5	146.5 ac	49%	147
	21.5	300.0	100%	

REMOVALS

	Total	C028	C029	C030	
Inert material	8,000	1935	2158	3907 tn	
Non-inert material	300	73	81	147 tn	
Tires ¹	75	18	20	37 tn	
Inert material		2000	2000	4000 tn	
Non-inert material		100	100	100 tn	<USE

* Area breakdown done using planimeter

1 Used 25 TN per split, per Don Rerick request



Flood Control District of Maricopa County

INTEROFFICE MEMORANDUM

Date: March 2, 2004

To: Don Rerick

From: Bob Stevens, Environmental Planning

A handwritten signature in black ink, appearing to read "Bob Stevens".

Subject: Environmental Site Assessment for the Chandler Heights Basin and channelization of Queen Creek from Higley Road to EMF

A Phase 1 Environmental Site Assessment for the Chandler Heights Basin was completed by URS Corporation, on January 10, 2002. The assessment was completed in accordance to ASTM Standard E 1527-00 and included a site description, site reconnaissance, historical review and regulatory review of the basin property and adjacent areas within a ¼ mile of the site. Project boundaries included a triangular shaped parcel including the EMF to the west, Queen Creek Road to the north, and Queen Creek Wash to the east. The site assessment included specific portions of the west bank of the Queen Creek Wash bordering the basin. However, areas within the invert of the channel were not included in the site assessment.

Since the basin project includes re-channelization of the Queen Creek Wash, between Higley Road Bridge and the East Maricopa Floodway, then additional site assessment work was required for acquisition of the project property.

Early assessment of the property included only portions of the west bank within the Queen Creek Wash, adjacent to the basin. Other areas within the invert and the east bank were not included. Historical and regulatory review from the early site assessment indicated that there were no reported environmental hazards within ¼ mile of the site, which would include the designated portion of the Queen Creek wash. As part of the District's due diligence, a site reconnaissance of the Queen Creek Wash has been completed and will be included as an addendum to the original Phase I site assessment of the basin.

On March 1, 2004, I completed a site assessment of the Queen Creek Channel from Higley Road bridge to the confluence with the EMF. The site assessment included the following:

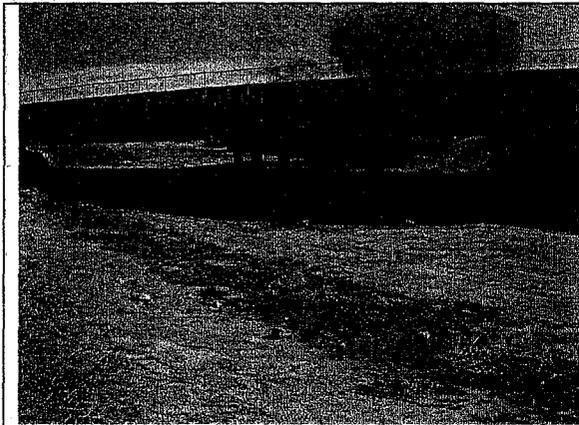
The east and west banks of the wash included miscellaneous construction debris from wild cat dumping activities. Debris included primarily concrete slabs and broken culvert pipes, small quantities of pvc pipe, car bodies, wooden planks, glass, automobile tires, landscaping debris including wooden shrubs and manure and engine parts (transmission shell). There was no evidence of stained soils, nor the presence of containers of waste such as drums, crates or buckets which could store potential hazardous chemicals.

Recommendations:

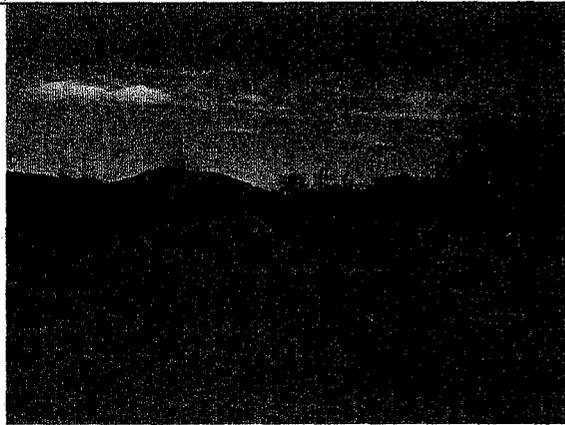
Since there is evidence of wildcat dumping along the banks of the wash, material may be present at depth. I recommend that the District include a bid item in the construction specifications for removal of the present inert and non-inert waste along the banks and for potential material which could be found at depth.

Enclosure

Cc: RBS
File: Qnck(1.5.8)



Looking upstream at the Higley Road Bridge.



Looking immediately downstream of the bridge at debris along each bank of the wash.



Looking downstream at car body along east bank of the wash.



Looking downstream at construction debris along east bank. Debris included tires, wood planks and concrete debris.

Queen Creek Wash



Looking downstream at construction debris along east bank. Debris included concrete slabs, metal and pvc pipes and wood planks



Looking upstream at concrete debris along east bank.

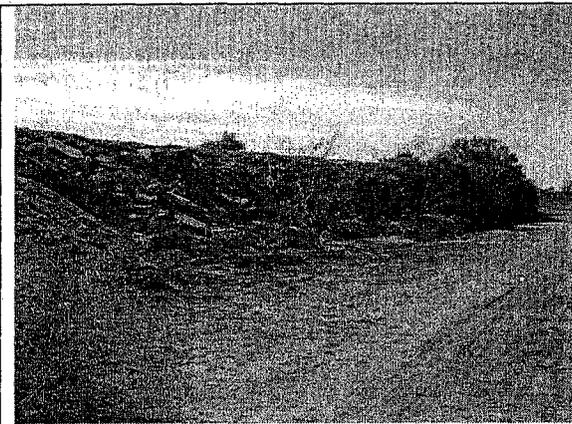


Close up of concrete debris from wildcat dumping.



Looking downstream at car door and miscellaneous debris along east bank.

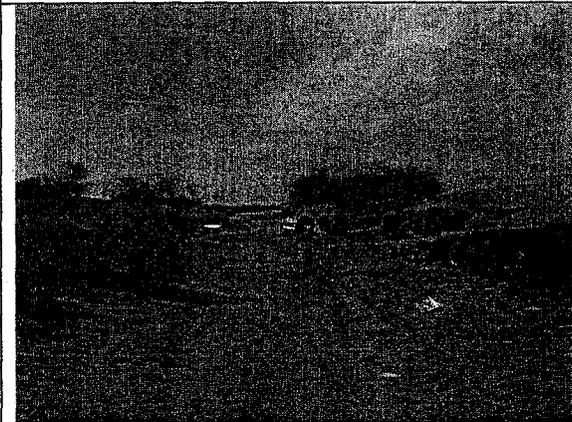
Queen Creek Wash



Looking at end of concrete debris along west bank of the wash approximately 2000 feet from Higley Road bridge.



Looking at landscaping debris including manure, concrete slabs and wood planks



Looking at end of the debris line along both banks at Ocotillo Alignment.



Looking at off road vehicular traffic across the channel.

Queen Creek Wash



Consulting Engineers

9201 N 25th Ave, Suite 195, Phoenix AZ 85021
Phone: 602+944-6564, FAX: 944-6592

Job 0112925

Client FCDMC

Project Chandler Heights Basin

Calculated by DAY

Checked by *[Signature]*

Date 01/27/04

FINE GRADING AND EROSION REPAIR

Expect that most of the whole basin and channel area will need some fine grading and erosion repair

Crew of two laborers	\$ 70.00 per hr
Rubber-tired backhoe with operator, wet	\$ 70.00 per hr
	\$ 140.00 per hr
Estimate that the crew can do 2 ac per hr	\$ 70.00 per acre



Consulting Engineers

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Phone: 602+944-6564, FAX: 944-6592

Job 0112925

Client FCDMC

Project Chandler Heights Basin

Calculated by DAV

Checked by *JM*

Date 12/29/03 02/24/04

STRUCTURE EXCAVATION AND BACKFILL

Refer to calculations in DC&AN

	Excav	Backfill	Phase
Sideweir	17,650	38,464	C029
Outlet	150	150	C028
Totals	17800	38614	

**KIRKHAM
MICHAEL**

Consulting Engineers

9201 N 25th Ave, Suite 195, Phoenix AZ 85021

Phone: 602+944-6564, FAX: 944-6592

Job 0112925

Client **FCDMC**Project **Chandler Heights Basin**Calculated by **DAV**

Checked by

Date **12/29/03 03/01/04**

Item	Full	C028	C029	C030	C031	Note
Traffic Control	\$300,000	\$51,000	\$46,000	\$203,000	\$0	1
				(adjusted to 203,000 to match total)		

Notes:

1 Assume each contract amount is proportional to the volume to be removed for phases C028-C030.

Basin	3,916,564	669,847	107,202	3,139,516	
EMF channel	98,210	98,210	0	0	
QC channel	584,701	0	584,701	0	
	<u>4,599,475</u>	<u>768,057</u>	<u>691,903</u>	<u>3,139,516</u>	<u>0</u>
Percent of total		17%	15%	68%	0%



KIRKHAM MICHAEL

Consulting Engineers

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Phone: 602+944-6564, FAX: 944-6592

Job 0112925

Client FCDMC

Project Chandler Heights Basin - Phase C028

Calculated by DAV

Checked by JKK

Date 02/04/04

02/18/04

03/18/04

02/24/04

Item No.	Description	Note	Unit	Quantity	Unit Cost	Amount
105 - 1	Partnering Allowance		LS	1	\$25,000.00	\$25,000.00
107 - 1	AZPDES/SWPPP Permits		LS	1	\$83,000.00	\$83,000.00
107 - 2	Public Information and Notification Allowance		LS	1	\$50,000.00	\$50,000.00
107 - 3	Project Signs Allowance		LS	1	\$3,000.00	\$3,000.00
107 - 4	Water Management		LS	1	\$100,000.00	\$100,000.00
201 - 1	Clearing & Grubbing		AC	73	\$250.00	\$18,250.00
202 - 1	Mobilization		LS	1	\$85,000.00	\$85,000.00
206 - 1	Structure Excavation		CY	150	\$8.00	\$1,200.00
206 - 2	Structure Backfill		CY	150	\$15.00	\$2,250.00
211 - 1	Earth Berms		CY	4,220	\$5.00	\$21,100.00
211 - 2	Fill Construction		CY	25,046	\$3.00	\$75,138.00
215 - 1	Detention Basin Excavation		CY	669,847	\$4.25	\$2,846,849.75
215 - 2	EMF Channel Excavation		CY	98,210	\$6.00	\$589,260.00
216 - 1	Geotextile Barrier		LF	1,995	\$30.00	\$59,850.00
220 - 1	Plain Dumped Riprap (D50=12")		CY	486	\$60.00	\$29,160.00
310 - 1	ABC (4") (O&M Access Roads & Ramps)		SY	6,757	\$3.00	\$20,271.00
344 - 1	Decomposed Granite Road Surface		SY	6,757	\$4.00	\$27,028.00
350 - 1	Removal of EMF Drop Structure		LS	1	\$25,000.00	\$25,000.00
350 - 2	Removal of Queen Creek Sed Basin Outlet Weir		LS	1	\$10,000.00	\$10,000.00
350 - 3	Removal of Riprap Spillways into EMF		LS	1	\$1,500.00	\$1,500.00
350 - 4	Removal of Fence		LS	1	\$6,389.25	\$6,389.25
350 - 5	Miscellaneous Removals		LS	1	\$50,000.00	\$50,000.00
350 - 6	Removal and Disposal of Inert Material Allowance		TN	2,000	\$45.00	\$90,000.00
350 - 7	Removal and Disposal of Non-Inert Material Allowance		TN	100	\$200.00	\$20,000.00
350 - 8	Removal and Disposal of Tires Allowance		TN	25	\$900.00	\$22,500.00
401 - 1	Traffic Control		LS	1	\$51,000.00	\$51,000.00
505 - 1	2-6'x4' RCBC Outlet Structure		LS	1	\$77,000.00	\$77,000.00
507 - 1	Structure No. 1 at EMF		LS	1	\$588,000.00	\$588,000.00
507 - 2	Structure No. 2 at Exist Sed Basin Outlet		LS	1	\$418,000.00	\$418,000.00
507 - 3	Emergency Spillway		LS	1	\$355,000.00	\$355,000.00
515 - 1	6' x 4' Flap Gates		EA	2	\$15,000.00	\$30,000.00
515 - 2	Trash Rack		EA	1	\$7,500.00	\$7,500.00
520 - 1	Handrail		LF	70	\$150.00	\$10,500.00
610 - 1	Water Main Relocation		LS	1	\$10,000.00	\$10,000.00

Subtotal Construction Costs

\$5,808,746.00



CHANDLER HEIGHTS DETENTION BASIN

CONSTRUCTION PHASE SCHEDULES

The enclosed documents describe anticipated construction schedules for the phases of this project. The phases are as follows:

C028 – Construct the improvements in the EMF, the outlet, spillway, and lower portion of the basin (THIS PHASE)

C029 – Construct the improvements in Queen Creek Channel and the sideweir

C030 – Construct the remainder of the basin

C031 – Install all landscaping and irrigation

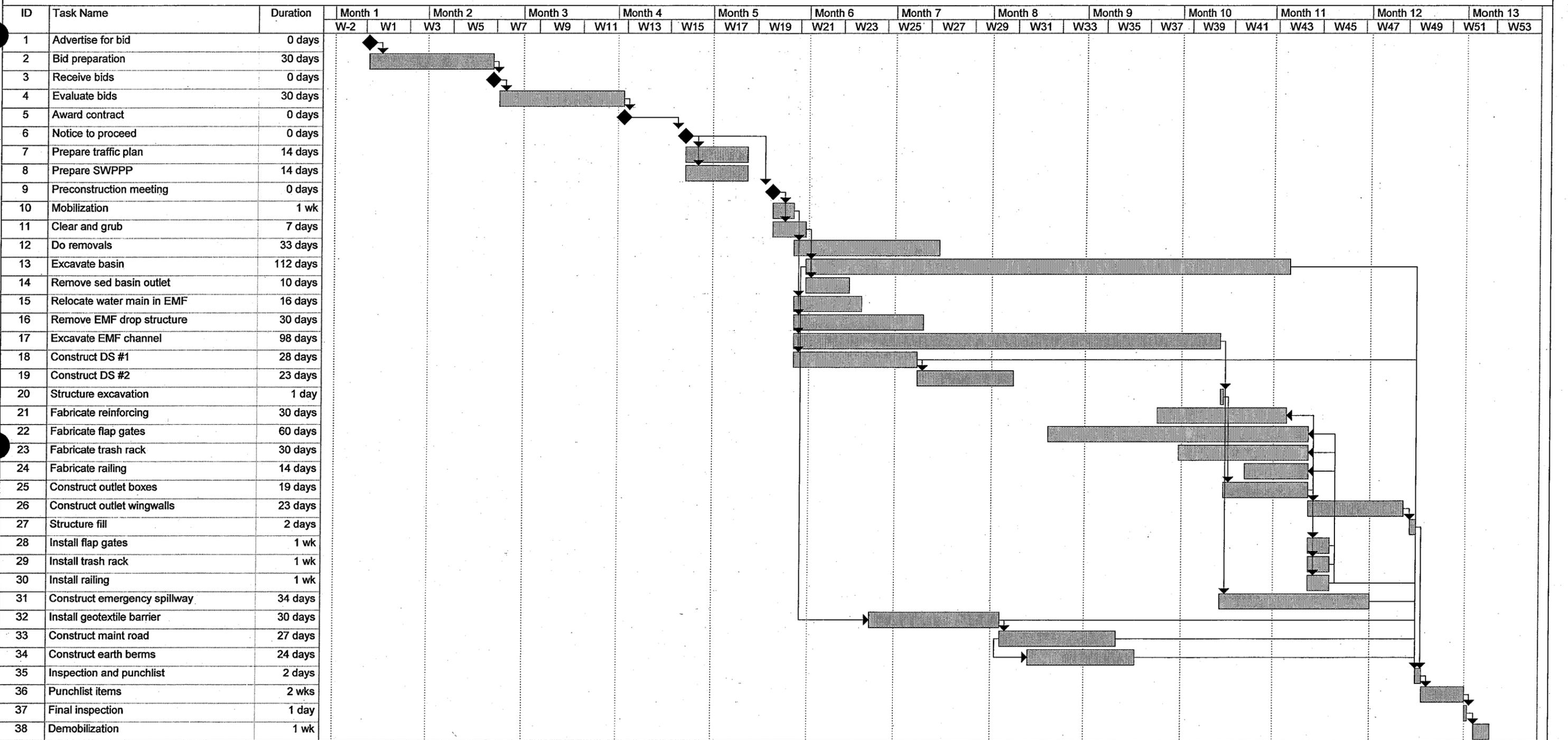
The Microsoft Project schedule bar charts show tasks to accomplish the work to be constructed in the respective phases. The timescale at the top represents calendar months and weeks from the start of the phase at the time of advertising for bids. Durations and the schedule are based on working days, Monday-Friday, eight hours per day. Available construction force resource levels were not used to determine the schedule.

The Microsoft Excel workbook for each phase contains the information presented in the schedule. The first sheet of each workbook, labeled Task_Table1, contains the schedule data. The columns labeled Name, Duration, and Predecessors are copied directly into Microsoft Project to create the schedules shown.

Several of the work items are estimated from breakdowns shown on supporting sheets in the workbook. The column labeled Workgroup Tab identifies the name of the supporting tab where applicable.

While care was used to realistically estimate the work breakdown tasks, the work activities needed for each task, and the level of resources anticipated for each task these schedules should not be construed to represent an actual work plan as developed by any Contractor. These documents should not be used for preparation of bids, evaluating change order requests, or determining completed work effort during construction.

THE INFORMATION PRESENTED IN THESE DOCUMENTS IS FOR THE EXCLUSIVE USE OF
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY IN PLANNING FOR
CONSTRUCTION PHASING AND FUNDING.



CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Task_Table1

Construct EMF improvements, outlet, emergency spillway, lower basin

ID	Name	Duration	Predecessors	Workbook Tab (or basis)
1	Advertise for bid	0 days		
2	Bid preparation	30 days	1	
3	Receive bids	0 days	2	
4	Evaluate bids	30 days	3	
5	Award contract	0 days	4	
6	Notice to proceed	0 days	5FS+14 days	
7	Prepare traffic plan	14 days	6	
8	Prepare SWPPP	14 days	6	
9	Preconstruction meeting	0 days	6FS+20 days	
10	Mobilization	1 wk	9	
11	Clear and grub	7 days	9	Clear and Grub
12	Do removals	33 days	10	Removals
13	Excavate basin	112 days	11	Excavation
14	Remove sed basin outlet	10 days	11	Sed Basin
15	Relocate water main in EMF	16 days	10	Water Main
16	Remove EMF drop structure	30 days	10	EMF Drop
17	Excavate EMF channel	98 days	10	EMF Channel
18	Construct DS #1	28 days	10	DS #1
19	Construct DS #2	23 days	18	DS #2
20	Structure excavation	1 days	17	Structure Ex
21	Fabricate reinforcing	30 days	25FF-1 wk	
22	Fabricate flap gates	60 days	28FF-1 wk	
23	Fabricate trash rack	30 days	29FF-1 wk	
24	Fabricate railing	14 days	30FF-1 wk	
25	Construct outlet boxes	19 days	20	Boxes
26	Construct outlet wingwalls	23 days	25	Wingwalls
27	Structure fill	2 days	26	Structure Fill
28	Install flap gates	1 wk	25	
29	Install trash rack	1 wk	25	
30	Install railing	1 wk	25	
31	Construct emergency spillway	34 days	17	Spillway
32	Install geotextile barrier	30 days	13SS+15 days	
33	Construct maint road	27 days	32	Maint Road
34	Construct earth berms	24 days	33SS+7 days	Berms
35	Inspection and punchlist	2 days	13,18,27,30,31,32,33,34	
36	Punchlist items	2 wks	35	
37	Final inspection	1 day	36	
38	Demobilization	1 wk	37	

Notes Items in blue are generated from the tab listed

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C028
 CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Maint Road

Item	Qty, sy	Rate, sy/day	Duration, days	Basis
Maintenance Road	6664			Scraper; 50 sy/min load, haul, dump 1 cy loader, 2 cycle/min, 2 cy/min 5 - 10 cy truck; 7 min position and load; 1 hr
		30000	0.2	RT haul
		500	13.3	Haul and spread ABC; 50 sy/hr Compact ABC; 50 sy/hr
		500	13.3	Haul and spread DG; 50 sy/hr Compact DG; 50 sy/hr
		10		hrs/day
		Total	27.0	<i>days</i>

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

outlet
Item: Wingwalls

Segments	2	
Pours	2	
	Days	
Form and set rebar segment	6	Per crew
Pour segment - 1 segment/day	1	Per crew
Cure - allow 3 days	3	
Strip segment - 1 segment/day	1	Per crew
Assume # of crews	1	
Each segment takes	11 days	
2 pours take	23 days	

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C028
 CONSTRUCTION SCHEDULE SUPPORTING DATA

outlet
 Item: Boxes

Segments	2	
Pours	2	
	Days	
Form and set rebar segment	4	Per crew
Pour segment - 1 segment/day	1	Per crew
Cure - allow 3 days	3	
Strip segment - 1 segment/day	1	Per crew
Assume # of crews	1	
Each segment takes	9 days	
2 pours take	19 days	

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: DS #1

Area of rock	1922	sy	17299 sf
		Rate/day	Days
Excavate shape			3.0
Place gravel and filter	500		3.8 sy/day
Place drain			1
Place rock	100		19.2 sy/day
Cleanup			1
Total			28 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: DS #2

Area of rock	1513	sy	13621 sf
		Rate/day	Days
Excavate shape			3.0
Place gravel and filter	500	3.0 sy/day	
Place drain		1	
Place rock	100	15.1 sy/day	
Cleanup		1	
Total			23 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: EMF Channel

Channel length	2400	lf		
Excavation width	300	lf		
Excavation depth	4	ft		
Excavation volume	106667	cy	USE >	98210 cy, from final estimate

	Rate/day	Days
Excavate channel	2000	49.1 cy/day
Finish grade	2000	40.0 sy/day
Seed		4.0
Cleanup		5

Total 98 days

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C028
 CONSTRUCTION SCHEDULE SUPPORTING DATA

Remove
 Item: EMF Drop

Riprap removal	741	cy
Excavation	4444	cy
Concrete removals	2000	cy
Backfill	1000	cy

	Rate/day	Days
Riprap removal and stockpile	200	3.7
Excavate around structure	1000	4.4
Demolition	200	10.0
Backfill	200	5
Replace riprap	200	3.7
Cleanup		3
Total		30 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Relocate
Item: Water Main

Main length	239	lf
Trench	266	cy
Backfill	133	cy

	Rate/day	Days
Excavate trench	50	4.8
Lay main and backfill	50	4.8
Test and disinfect		3.0
Connect to existing		2
Cleanup		1
Total		16 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Remove
Item: Sed Basin
outlet

Excavation	1481	cy
Outlet sill length	200	lf
Backfill	500	cy

	Rate/day	Days
Excavate	1000	1.5
Demolish sill	50	4.0
Backfill	200	2.5
Cleanup		2

Total 10 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Construct
Emergency
Item: Spillway

Excavation	3456	cy
Cutoff wall length	600	lf
Gravel and filter area	1400	sy
Mattress area	1400	sy

	Rate/day	Days
Excavate for spillway	1000	3.5
Construct cutoff wall	100	6.0
Place gravel and filter	200	7.0
Place rock mattresses	100	14
Cleanup		4

Total 34 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Structure Ex

Item	Qty, cy	Rate/day	Duration, days	Basis
Structure	150	1000	0	Scraper; 5 cy/min load, haul, dump 1 cy loader, 2 cycle/min, 2 cy/min 20 - 10 cy truck; 7 min position and load; 1 hr RT haul 10 hr day

Total
0
1 use *days*

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Excavation

Item	Qty, cy	Rate/day	Duration, days Basis
Basin (from final estimate)	669847	6000	112 2 cy Shovel, 2 cycle/min (4 cy/min) 30 - 10 cy truck; 3 min position and load; 1 hr RT haul
			300 cy/hr 2 setups 10 hr/day
		Total	112

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C028
 CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Removals

Item	Qty	Rate/day	Duration, days	Basis
Fence	3651	500	7.302	
Riprap spillways	1	1	1	
Misc			3	
Inert	2000	100	20	Loader, 2 trucks, 1 hr load, 5 RT haul
Non-inert	100	100	1	Loader, 2 trucks, 1 hr load, 5 RT haul
Tires	25	100	0.25	Loader, 1 truck, 1 hr load, 4 hr RT haul
			Total	
			33	

from final estimate

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C028
CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Clear and Grub

Project area	73 ac	from estimate
Acres per day	10	based on loader, backhoe, 2 dump trucks assume 1 hr load, 1 hr haul round trip
Duration	7	days





Consulting Engineers

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Phone: 602+944-6564, FAX: 944-6592

Job 0112925

Client FCDMC

Project Chandler Heights Basin - Phase C029

Calculated by DAV

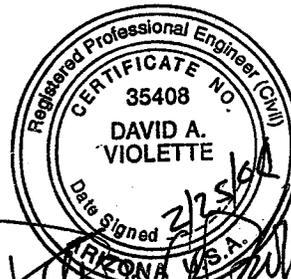
Checked by *[Signature]*

Date 02/04/04 02/18/04 02/24/04

Item No.	Description	Note	Unit	Quantity	Unit Cost	Amount
105 - 1	Partnering Allowance		LS	1	\$25,000.00	\$25,000.00
107 - 1	AZPDES/SWPPP Permits		LS	1	\$87,000.00	\$87,000.00
107 - 2	Public Information and Notification Allowance		LS	1	\$50,000.00	\$50,000.00
107 - 3	Project Signs Allowance		LS	1	\$4,000.00	\$4,000.00
107 - 4	Water Management		LS	1	\$100,000.00	\$100,000.00
201 - 1	Clearing & Grubbing		AC	81	\$250.00	\$20,250.00
202 - 1	Mobilization		LS	1	\$95,000.00	\$95,000.00
206 - 1	Structure Excavation		CY	17,650	\$8.00	\$141,200.00
206 - 2	Structure Backfill		CY	38,464	\$15.00	\$576,960.00
211 - 1	Earth Berms		CY	35,636	\$5.00	\$178,180.00
211 - 2	Fill Construction		CY	239,425	\$3.00	\$718,275.00
215 - 1	Detention Basin Excavation		CY	107,202	\$4.25	\$455,608.50
215 - 2	Queen Creek Channel & Sed Basin Excavation		CY	584,701	\$6.00	\$3,508,206.00
216 - 1	Geotextile Barrier		LF	4,719	\$30.00	\$141,570.00
220 - 1	Plain Dumped Riprap (D50=12")		CY	302	\$60.00	\$18,120.00
310 - 1	ABC (4") (O&M Access Roads & Ramps)		SY	34,149	\$3.00	\$102,447.00
340 - 1	Single Curb		LF	982	\$10.00	\$9,820.00
344 - 1	Decomposed Granite Road Surface		SY	34,149	\$4.00	\$136,596.00
345 - 1	Raise Water Valve Box		EA	1	\$150.00	\$150.00
345 - 2	Raise Manhole		EA	1	\$200.00	\$200.00
345 - 3	Lower Manhole		EA	1	\$3,000.00	\$3,000.00
350 - 1	Removal of Fence		LS	1	\$15,500.00	\$15,500.00
350 - 2	Removal of Wire-Tied Riprap near Higley Rd		LS	1	\$37,000.00	\$37,000.00
350 - 3	Miscellaneous Removals		LS	1	\$50,000.00	\$50,000.00
350 - 4	Removal and Disposal of Inert Material Allowance		TN	2,000	\$45.00	\$90,000.00
350 - 5	Removal and Disposal of Non-Inert Material Allowance		TN	100	\$200.00	\$20,000.00
350 - 6	Removal and Disposal of Tires Allowance		TN	25	\$900.00	\$22,500.00
401 - 1	Traffic Control		LS	1	\$46,000.00	\$46,000.00
421 - 1	4-Strand Smooth Wire Fence and Gates		LF	9,523	\$3.50	\$33,330.50
505 - 1	Sideweir		LS	1	\$1,062,215.00	\$1,062,215.00
507 - 1	Structure No. 3 at Exist Sed Basin Inlet		EA	1	\$344,000.00	\$344,000.00
507 - 2	Structure No. 5 in Queen Creek		EA	1	\$276,000.00	\$276,000.00
507 - 3	Structure No. 6 at New Sed Basin Outlet		EA	1	\$506,000.00	\$506,000.00
507 - 4	Structure No. 7 at New Sed Basin Inlet		EA	1	\$248,000.00	\$248,000.00
507 - 5	Structure No. 8 in Queen Creek		EA	1	\$238,000.00	\$238,000.00

Subtotal Construction Costs

\$9,360,128.00



CHANDLER HEIGHTS DETENTION BASIN

CONSTRUCTION PHASE SCHEDULES

The enclosed documents describe anticipated construction schedules for the phases of this project. The phases are as follows:

- C028 – Construct the improvements in the EMF, the outlet, spillway, and lower portion of the basin
- C029 – Construct the improvements in Queen Creek Channel and the sideweir (THIS PHASE)**
- C030 – Construct the remainder of the basin
- C031 – Install all landscaping and irrigation

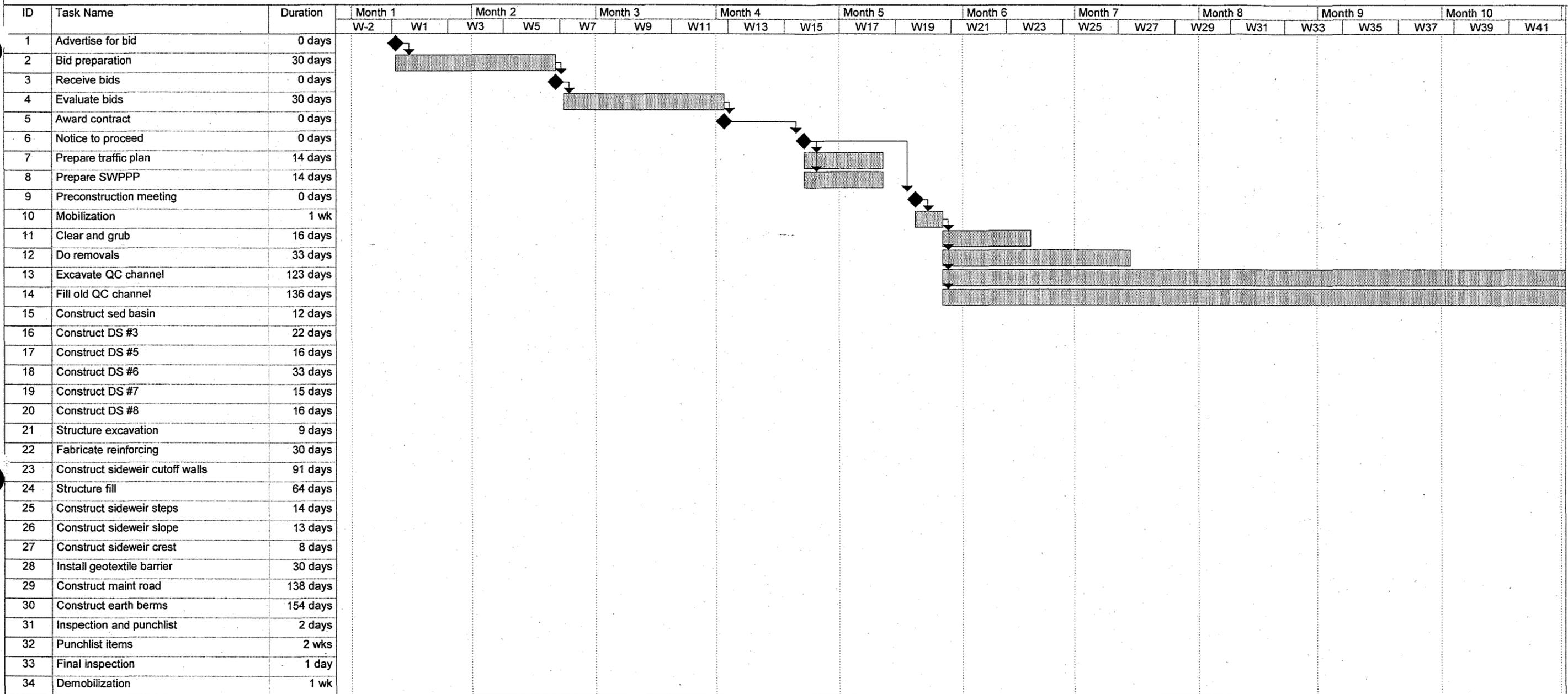
The Microsoft Project schedule bar charts show tasks to accomplish the work to be constructed in the respective phases. The timescale at the top represents calendar months and weeks from the start of the phase at the time of advertising for bids. Durations and the schedule are based on working days, Monday-Friday, eight hours per day. Available construction force resource levels were not used to determine the schedule.

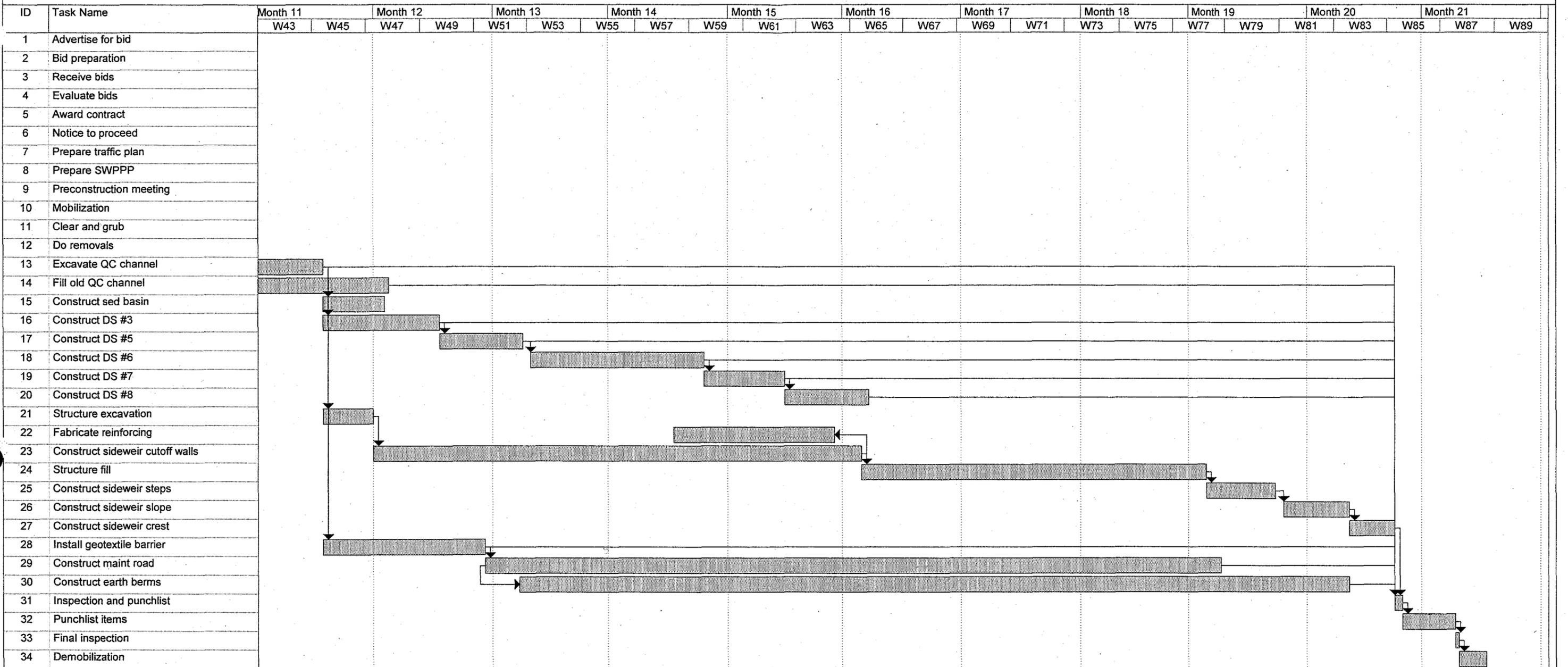
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Several of the work items are estimated from breakdowns shown on supporting sheets in the workbook. The column labeled Workgroup Tab identifies the name of the supporting tab where applicable.

While care was used to realistically estimate the work breakdown tasks, the work activities needed for each task, and the level of resources anticipated for each task these schedules should not be construed to represent an actual work plan as developed by any Contractor. These documents should not be used for preparation of bids, evaluating change order requests, or determining completed work effort during construction.

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CONSTRUCTION PHASING AND FUNDING.





CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Task_Table1

Construct QC channel improvements, sideweir

ID	Name	Duration	Predecessors	Workbook Tab
1	Advertise for bid	0 days		
2	Bid preparation	30 days		1
3	Receive bids	0 days		2
4	Evaluate bids	30 days		3
5	Award contract	0 days		4
6	Notice to proceed	0 days	5FS+14 days	
7	Prepare traffic plan	14 days		6
8	Prepare SWPPP	14 days		6
9	Preconstruction meeting	0 days	6FS+20 days	
10	Mobilization	1 wk		9
11	Clear and grub	16 days		10 Clear and Grub
12	Do removals	33 days		10 Removals
13	Excavate QC channel	123 days		10 QC Channel
14	Fill old QC channel	136 days		10 QC Fill
15	Construct sed basin	12 days		13 Sed Basin
16	Construct DS #3	22 days		13 DS #3
17	Construct DS #5	16 days		16 DS #5
18	Construct DS #6	33 days		17 DS #6
19	Construct DS #7	15 days		18 DS #7
20	Construct DS #8	16 days		19 DS #8
21	Structure excavation	9 days		13 Structure Ex
22	Fabricate reinforcing	30 days	23FF-1 wk	
23	Construct sideweir cutoff walls	91 days		21 Cutoff Walls
24	Structure fill	64 days		23 Structure Fill
25	Construct sideweir steps	14 days		24 Steps
26	Construct sideweir slope	13 days		25 Slope
27	Construct sideweir crest	8 days		26 Crest
28	Install geotextile barrier	30 days		13
29	Construct maint road	138 days		28 Maint Road
30	Construct earth berms	154 days	29SS+7 days	Berms
31	Inspection and punchlist	2 days	13,14,16,17,18,19,20,27,28,29,30	
32	Punchlist items	2 wks		31
33	Final inspection	1 day		32
34	Demobilization	1 wk		33

Notes Items in blue are generated from the tab listed

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C029
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Berms

Item	Qty, cy	Rate, cy/day	Duration, days	Basis
Berms	35636	3000	11.9	Shovel; 5 cy/min load
		500	71.3	Haul and dump; 50 cy/hr
		500	71.3	Spread and shape; 50 cy/hr Compact; 50 cy/hr
			10	hrs/day
			Total	154.0 days

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C029
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Maint Road

Item	Qty, sy	Rate, sy/day	Duration, days	Basis
Maintenance Road	34149			Scraper; 50 sy/min load, haul, dump 1 cy loader, 2 cycle/min, 2 cy/min 5 - 10 cy truck; 7 min position and load; 1 hr
		30000	1.1	RT haul
		500	68.3	Haul and spread ABC; 50 sy/hr Compact ABC; 50 sy/hr
		500	68.3	Haul and spread DG; 50 sy/hr Compact DG; 50 sy/hr
		10		hrs/day
		Total	138.0	

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C029
 CONSTRUCTION SCHEDULE SUPPORT DATA

sidewear
 Item: Crest

Segments	15	Segment length 80 lf typ
Pours	15	

	Days	
Backfill under crest	0.5	Per crew
Set wire mesh	0.5	Per crew
Pour segment - 1 segment/day	1	Per crew
Cure - allow 1 days	1	

Assume # of crews 6

Each segment takes 3 days
 15 pours take 8 days

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C029
 CONSTRUCTION SCHEDULE SUPPORT DATA

Sidewear
 Item: Slope

Segments	15	Segment length 80 lf typ
Steps	4	
Risers	4	
Pours	240	

	Days	
Backfill under slope	0.5	Per crew
Set wire mesh	0.5	Per crew
Pneumatically cast lower part	0.5	Per crew
Cure - allow 1 days	1	
Form top part - 2 segment/day	0.5	Per crew
Pour top part - 1 segment/day	0.5	Per crew
Cure - allow 1 days	1	
Strip top part - 4 segment/day	0.5	Per crew

Assume # of crews 6

Each segment takes 5 days
 240 pours take 13 days

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C029
 CONSTRUCTION SCHEDULE SUPPORT DATA

Sidewear
 Item: Steps

Segments per step	15	Segment length 80 lf typ
Steps	4	
Risers	4	
Pours	240	

	Days	
Backfill under step	0.5	Per crew
Form step - 2 segment/day	0.5	Per crew
Pour step - 1 segment/day	1	Per crew
Cure - allow 3 days	3	
Strip step - 1 segment/day	0.25	Per crew
Form riser - 1 segment/day	1	Per crew
Pour riser - 1 segment/day	1	Per crew
Cure - allow 3 days	3	
Strip riser - 2 segment/day	0.5	Per crew

Assume # of crews 12

Each segment takes 10.75 days
 240 pours take 14 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Sidewalk
Item: Cutoff Walls

Assume 15 segments per cutoff wall
2 walls
Segments 30

Segment length 80 if typ
Basin side, channel side

Days
Form - 1/3 segment/day 3
Pour - 1 segment/day 1
Cure - allow 3 days 3
Strip - 1/2 segment/day 2

Per crew
Per crew
Per crew

Assume # of crews 3

Each segment takes 9 days
30 segments take 91 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: DS #8

Area of rock	883	sy	7944 sf
		Rate/day	Days
Excavate shape			3.0
Place gravel and filter	500	1.8 sy/day	
Place drain		1	
Place rock	100	8.8 sy/day	
Cleanup		1	
	Total		16 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: DS #7

Area of rock	840	sy	7563 sf
		Rate/day	Days
Excavate shape			3.0
Place gravel and filter	500	1.7 sy/day	
Place drain		1	
Place rock	100	8.4 sy/day	
Cleanup		1	
Total			15 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: DS #6

Area of rock	2347	sy	21125 sf
		Rate/day	Days
Excavate shape			3.0
Place gravel and filter	500	4.7 sy/day	
Place drain		1	
Place rock	100	23.5 sy/day	
Cleanup		1	
Total			33 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: DS #5

Area of rock	914	sy	8225 sf
		Rate/day	Days
Excavate shape			3.0
Place gravel and filter	500	1.8 sy/day	
Place drain		1	
Place rock	100	9.1 sy/day	
Cleanup		1	
	Total		16 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: DS #3

Area of rock	1421	sy	12789 sf
		Rate/day	Days
Excavate shape			3.0
Place gravel and filter	500		2.8 sy/day
Place drain			1
Place rock	100		14.2 sy/day
Cleanup			1
Total			22 days

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C029
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: QC Fill

Channel length	4000	lf	
Excavation width	50	lf	
Excavation depth	5	ft	
Fill volume	37037	cy	239137 from final estimate

	Rate/day	Days
Fill channel	2000	119.6 cy/day
Finish grade	2000	11.1 sy/day
Cleanup		5

Total		136 days
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CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C029
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: QC Channel

Channel length	9750	lf	
Excavation width	150	lf	
Excavation depth	10	ft	
Excavation volume	541667	cy	583169 from CAD, use

	Rate/day	Days
Excavate channel	6000	97.2 cy/day
Finish grade	8000	20.3 sy/day
Cleanup		5

Total		123 days
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CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C029
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Structure Fill

Item	Qty, cy	Rate/day	Duration, days	Basis	
Structure	38,464	600	64	Scraper; 5 cy/min load, haul, dump 1 cy loader, 2 cycle/min, 2 cy/min Rollers Watering truck Say 60 cy/hr 10 hr day	<div style="border: 1px solid black; display: inline-block; padding: 2px;">38,614</div> total 150 outlet 38,464

Total 64 *days*

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Structure Ex

Item	Qty, cy	Rate/day	Duration, days	Basis
Structure	17650	2000	9	Scraper; 5 cy/min load, haul, dump 1 cy loader, 2 cycle/min, 2 cy/min 20 - 10 cy truck; 7 min position and load; 1 hr RT haul 10 hr day

Total

9 days

from estimate 17800 total
 150 outlet
 17650 use

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Sed Basin

Excavation	10370	cy		
			Rate/day	Days
Excavate			1000	10.4
Cleanup				2
	Total			12 days

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C029
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Removals

Item	Qty	Rate/day	Duration, days	Basis
Fence	16600	2000	8.3	
Misc			3	
Inert	2158	100	21.58	Loader, 2 trucks, 1 hr load, 5 RT haul
Non-inert	100	100	1	Loader, 2 trucks, 1 hr load, 5 RT haul
Tires	25	100	0.25	Loader, 1 truck, 1 hr load, 4 hr RT haul
			Total	
				34 <i>days</i>

Percentage of total basin 0.25

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C029
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Clear and Grub

Project area 81.0 ac
Acres per day 5 based on loader, backhoe, 2 dump trucks
assume 1 hr load, 1 hr haul round trip
Duration 16 *days*



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Job 0112925

Client FCDMC

Project Chandler Heights Basin - Phase C030

Calculated by DAV

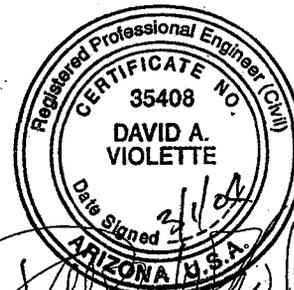
Checked by

Date 02/04/04 02/18/04 03/01/04

Item No.	Description	Note	Unit	Quantity	Unit Cost	Amount
105 - 1	Partnering Allowance		LS	1	\$25,000.00	\$25,000.00
107 - 1	AZPDES/SWPPP Permits		LS	1	\$116,000.00	\$116,000.00
107 - 2	Public Information and Notification Allowance		LS	1	\$50,000.00	\$50,000.00
107 - 3	Project Signs Allowance		LS	1	\$3,000.00	\$3,000.00
107 - 4	Water Management		LS	1	\$100,000.00	\$100,000.00
201 - 1	Clearing & Grubbing		AC	147	\$250.00	\$36,750.00
202 - 1	Mobilization		LS	1	\$171,000.00	\$171,000.00
211 - 1	Earth Berms		CY	36,013	\$5.00	\$180,065.00
211 - 2	Fill Construction		CY	24,636	\$3.00	\$73,908.00
215 - 1	Detention Basin Excavation		CY	3,139,516	\$4.25	\$13,342,943.00
216 - 1	Geotextile Barrier		LF	1,304	\$30.00	\$39,120.00
310 - 1	ABC (4") (O&M Access Roads & Ramps)		SY	10,342	\$3.00	\$31,026.00
344 - 1	Decomposed Granite Road Surface		SY	10,342	\$4.00	\$41,368.00
345 - 1	Raise Water Valve Box		EA	1	\$150.00	\$150.00
345 - 2	Raise Manhole		EA	1	\$200.00	\$200.00
350 - 1	Removal of Riprap Spillways into EMF		LS	1	\$3,000.00	\$3,000.00
350 - 2	Removal of Fence		LS	1	\$7,700.00	\$7,700.00
350 - 3	Miscellaneous Removals		LS	1	\$50,000.00	\$50,000.00
350 - 4	Removal and Disposal of Inert Material Allowance		TN	4,000	\$45.00	\$180,000.00
350 - 5	Removal and Disposal of Non-Inert Material Allowance		TN	147	\$200.00	\$29,400.00
350 - 6	Removal and Disposal of Tires Allowance		TN	25	\$900.00	\$22,500.00
401 - 1	Traffic Control		LS	1	\$203,000.00	\$203,000.00
421 - 1	4-Strand Smooth Wire Fence and Gates		LF	1,512	\$3.50	\$5,292.00

Subtotal Construction Costs

\$14,711,422.00



CHANDLER HEIGHTS DETENTION BASIN

CONSTRUCTION PHASE SCHEDULES

The enclosed documents describe anticipated construction schedules for the phases of this project. The phases are as follows:

- C028 – Construct the improvements in the EMF, the outlet, spillway, and lower portion of the basin
- C029 – Construct the improvements in Queen Creek Channel and the sideweir
- C030 – Construct the remainder of the basin (THIS PHASE)**
- C031 – Install all landscaping and irrigation

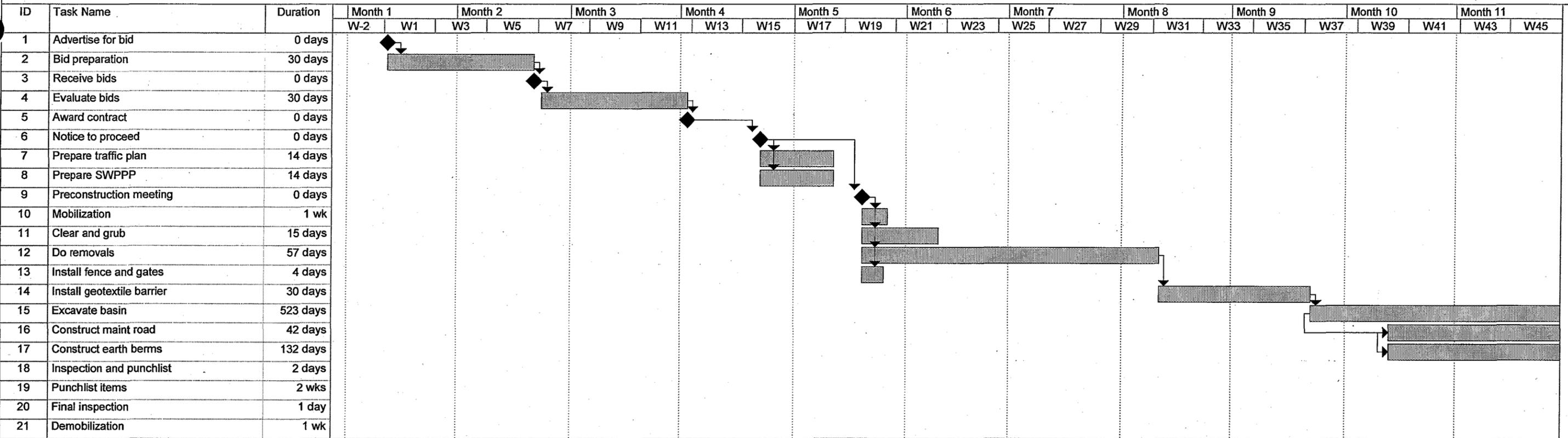
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ID	Task Name	Month 12		Month 13		Month 14		Month 15		Month 16		Month 17		Month 18		Month 19		Month 20		Month 21		Month 22		Month 23			
		W47	W49	W51	W53	W55	W57	W59	W61	W63	W65	W67	W69	W71	W73	W75	W77	W79	W81	W83	W85	W87	W89	W91	W93	W95	W97
1	Advertise for bid																										
2	Bid preparation																										
3	Receive bids																										
4	Evaluate bids																										
5	Award contract																										
6	Notice to proceed																										
7	Prepare traffic plan																										
8	Prepare SWPPP																										
9	Preconstruction meeting																										
10	Mobilization																										
11	Clear and grub																										
12	Do removals																										
13	Install fence and gates																										
14	Install geotextile barrier																										
15	Excavate basin	[Task bar spanning from Week 47 to Week 97]																									
16	Construct maint road	[Task bar spanning from Week 47 to Week 49]																									
17	Construct earth berms	[Task bar spanning from Week 47 to Week 63]																									
18	Inspection and punchlist																										
19	Punchlist items																										
20	Final inspection																										
21	Demobilization																										

ID	Task Name	Month 24		Month 25		Month 26		Month 27		Month 28		Month 29		Month 30		Month 31		Month 32		Month 33		Month 34		Month 35			
		W99	W101	W103	W105	W107	W109	W111	W113	W115	W117	W119	W121	W123	W125	W127	W129	W131	W133	W135	W137	W139	W141	W143	W145	W147	W149
1	Advertise for bid																										
2	Bid preparation																										
3	Receive bids																										
4	Evaluate bids																										
5	Award contract																										
6	Notice to proceed																										
7	Prepare traffic plan																										
8	Prepare SWPPP																										
9	Preconstruction meeting																										
10	Mobilization																										
11	Clear and grub																										
12	Do removals																										
13	Install fence and gates																										
14	Install geotextile barrier																										
15	Excavate basin																										
16	Construct maint road																										
17	Construct earth berms																										
18	Inspection and punchlist																										
19	Punchlist items																										
20	Final inspection																										
21	Demobilization																										

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C030
 CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Task_Table1

Basin north of Ocotillo alignment

ID	Name	Duration	Predecessors	Workbook Tab (or basis)
1	Advertise for bid	0 days		
2	Bid preparation	30 days	1	
3	Receive bids	0 days	2	
4	Evaluate bids	30 days	3	
5	Award contract	0 days	4	
6	Notice to proceed	0 days	5FS+14 days	
7	Prepare traffic plan	14 days	6	
8	Prepare SWPPP	14 days	6	
9	Preconstruction meeting	0 days	6FS+20 days	
10	Mobilization	1 wk	9	
11	Clear and grub	15 days	9	Clear and Grub
12	Do removals	57 days	9	Removals
13	Install fence and gates	4 days	9	
14	Install geotextile barrier	30 days	12	
15	Excavate basin	523 days	14	Excavation
16	Construct maint road	42 days	15SS+15 days	Maint Road
17	Construct earth berms	132 days	16SS	Berms
18	Inspection and punchlist	2 days	15,16,17	
19	Punchlist items	2 wks	18	
20	Final inspection	1 day	19	
21	Demobilization	1 wk	20	

Notes Items in blue are generated from the tab listed

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C030
CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Excavation

Item	Qty, cy	Rate/day	Duration, days	Basis
Basin	3139516	6000	523	2 cy Shovel, 2 cycle/min (4 cy/min) 30 - 10 cy truck; 3 min position and load; 1 hr RT haul 300 cy/hr 2 setups 10 hr/day

Total 523

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C030
 CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Removals

Item	Qty	Rate/day	Duration, days	Basis
Fence	4401	500	8.802	
Riprap spillways	3	1	3	
Misc			3	
Inert	4000	100	40	Loader, 2 trucks, 1 hr load, 5 RT haul
Non-inert	147	100	1.47	Loader, 2 trucks, 1 hr load, 5 RT haul
Tires	25	50	0.5	Loader, 1 truck, 1 hr load, 4 hr RT haul
			Total	57
Percentage of total basin	0.5			

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C030
CONSTRUCTION SCHEDULE SUPPORTING DATA

Item: Clear and Grub

Project area	147 ac
Acres per day	10 based on loader, backhoe, 2 dump trucks assume 1 hr load, 1 hr haul round trip
Duration	15



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Job **0112925**
Client **FCDMC**
Project **Chandler Heights Basin - Phase C031**
Calculated by **DAV**
Checked by **JFK**
Date **02/03/04**

Item No.	Description	Note	Unit	Quantity	Unit Cost	Amount
105 - 1	Partnering Allowance		LS	1	\$25,000.00	\$25,000.00
107 - 1	AZPDES/SWPPP Permits		LS	1	\$135,000.00	\$135,000.00
107 - 2	Public Information and Notification Allowance		LS	1	\$50,000.00	\$50,000.00
107 - 3	Project Signs Allowance		LS	1	\$3,000.00	\$3,000.00
107 - 4	Water Management		LS	1	\$20,000.00	\$20,000.00
201 - 1	Clearing & Grubbing		AC	300	\$100.00	\$30,000.00
202 - 1	Mobilization		LS	1	\$100,000.00	\$100,000.00
211 - 1	Fine Grading and Erosion Repair		AC	300	\$70.00	\$21,000.00
430 - 1	Tree (15 Gallon)		EA	1,085	\$155.00	\$168,175.00
430 - 2	Tree (24" box)		EA	775	\$288.00	\$223,200.00
430 - 3	Shrub/Groundcover (1 Gallon)		EA	5,598	\$12.00	\$67,176.00
430 - 4	Shrub/Accent (5 Gallon)		EA	3,236	\$20.00	\$64,720.00
430 - 5	Shrub/Accent (15 Gallon)		EA	74	\$90.00	\$6,660.00
430 - 6	Native Seeding		AC	221	\$2,000.00	\$442,000.00
430 - 7	Decomposed Granite Mulch		SY	192,342	\$4.00	\$769,368.00
430 - 8	Soil Amendment Allowance		LS	1	\$100,000.00	\$100,000.00
432 - 1	Rock Mulch Ground Cover		SY	209,340	\$3.50	\$732,690.00
440 - 1	Backflow Prevention Assembly		EA	1	\$3,300.00	\$3,300.00
440 - 2	Master Valve and Flow Meter		EA	1	\$300.00	\$300.00
440 - 3	3" Gate Valve		EA	20	\$200.00	\$4,000.00
440 - 4	4" Gate Valve		EA	2	\$250.00	\$500.00
440 - 5	Control Valve (Drip)(Remote)(Electric)(1")		EA	38	\$175.00	\$6,650.00
440 - 6	Quick Coupler (1")		EA	8	\$150.00	\$1,200.00
440 - 7	Pressure Regulator Riser		EA	170	\$90.00	\$15,300.00
440 - 8	Controller		EA	2	\$12,500.00	\$25,000.00
440 - 9	Emitter (Assembly)(Multi-Outlet)		EA	4,482	\$15.00	\$67,230.00
440 - 10	Pipe (PVC)(4") Schedule 40		LF	1,007	\$7.50	\$7,552.50
440 - 11	Pipe (PVC)(3") Schedule 40		LF	29,445	\$6.50	\$191,392.50
440 - 12	Pipe (PVC)(2") Schedule 40		LF	415	\$5.50	\$2,282.50
440 - 13	Pipe (PVC)(1") Schedule 40		LF	35,546	\$1.75	\$62,205.50
440 - 14	Pipe (PVC)(3/4") Schedule 40		LF	107,525	\$1.15	\$123,653.75
440 - 15	Pipe (PVC)(4") Schedule 40 (Sleeve)		LF	1,165	\$7.50	\$8,737.50
440 - 16	Pipe (PVC)(8") Schedule 40 (Sleeve)		LF	960	\$10.00	\$9,600.00
440 - 17	Water Service Connection		LS	1	\$18,000.00	\$18,000.00
440 - 18	Electrical Service Connection		LS	1	\$9,600.00	\$9,600.00
610 - 1	Irrigation Water Service Line		LS	1	\$45,400.00	\$45,400.00

Subtotal Construction Costs

\$3,559,893.25



CHANDLER HEIGHTS DETENTION BASIN

CONSTRUCTION PHASE SCHEDULES

The enclosed documents describe anticipated construction schedules for the phases of this project. The phases are as follows:

C028 – Construct the improvements in the EMF, the outlet, spillway, and lower portion of the basin

C029 – Construct the improvements in Queen Creek Channel and the sideweir

C030 – Construct the remainder of the basin

C031 – Install all landscaping and irrigation (THIS PHASE)

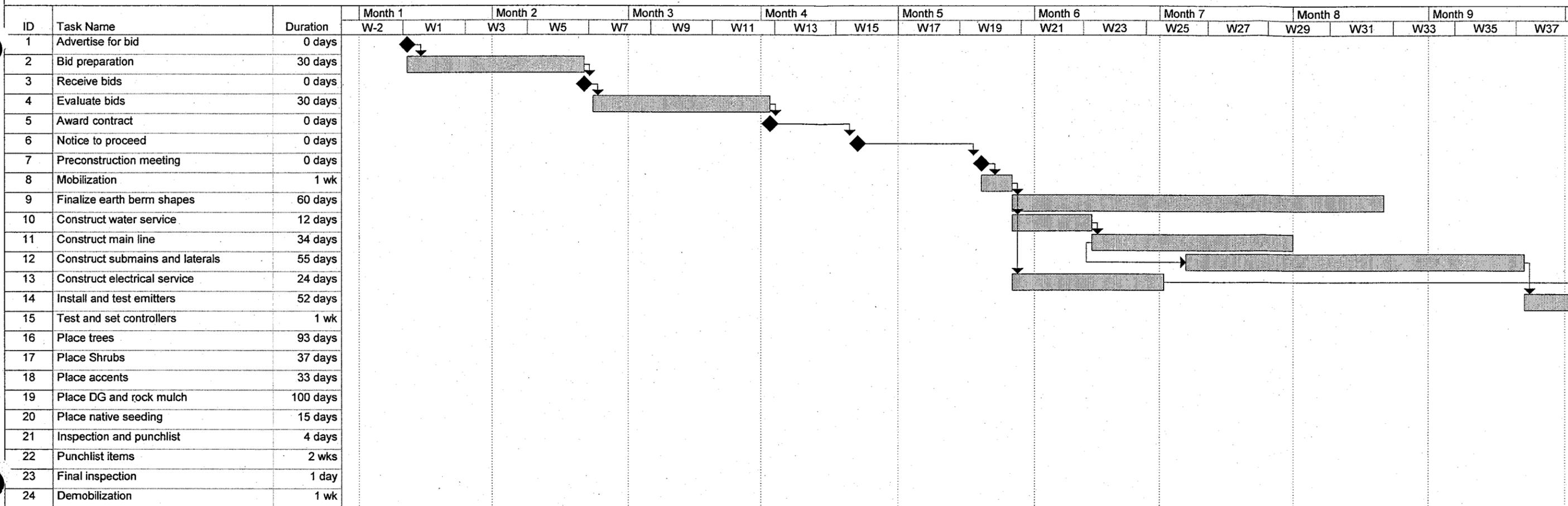
The Microsoft Project schedule bar charts show tasks to accomplish the work to be constructed in the respective phases. The timescale at the top represents calendar months and weeks from the start of the phase at the time of advertising for bids. Durations and the schedule are based on working days, Monday-Friday, eight hours per day. Available construction force resource levels were not used to determine the schedule.

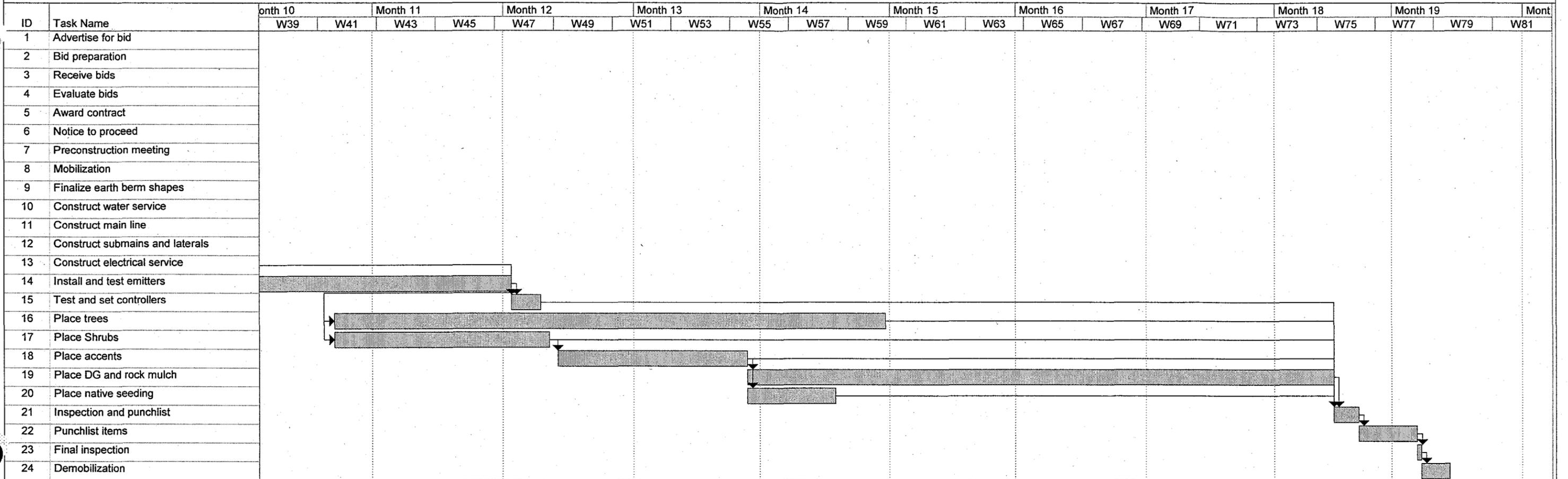
The Microsoft Excel workbook for each phase contains the information presented in the schedule. The first sheet of each workbook, labeled Task_Table1, contains the schedule data. The columns labeled Name, Duration, and Predecessors are copied directly into Microsoft Project to create the schedules shown.

Several of the work items are estimated from breakdowns shown on supporting sheets in the workbook. The column labeled Workgroup Tab identifies the name of the supporting tab where applicable.

While care was used to realistically estimate the work breakdown tasks, the work activities needed for each task, and the level of resources anticipated for each task these schedules should not be construed to represent an actual work plan as developed by any Contractor. These documents should not be used for preparation of bids, evaluating change order requests, or determining completed work effort during construction.

THE INFORMATION PRESENTED IN THESE DOCUMENTS IS FOR THE EXCLUSIVE USE OF
THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY IN PLANNING FOR
CONSTRUCTION PHASING AND FUNDING.





CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Task_Table1

Landscaping and irrigation

ID	Name	Duration	Predecessors	Workbook Tab (or basis)
1	Advertise for bid	0 days		
2	Bid preparation	30 days	1	
3	Receive bids	0 days	2	
4	Evaluate bids	30 days	3	
5	Award contract	0 days	4	
6	Notice to proceed	0 days	5FS+14 days	
7	Preconstruction meeting	0 days	6FS+20 days	
8	Mobilization	1 wk	7	
9	Finalize earth berm shapes	60 days	8	Berms
10	Construct water service	12 days	8	Water Service
11	Construct main line	34 days	10	Main Line
12	Construct submains and laterals	55 days	11SS+15 days	Laterals
13	Construct electrical service	24 days	8	Elec Service
14	Install and test emitters	52 days	12	Emitters
15	Test and set controllers	1 wk	13,14	
16	Place trees	93 days	14FS-30 days	Trees
17	Place Shrubs	37 days	14FS-30 days	Shrubs
18	Place accents	33 days	17	Accents
19	Place DG and rock mulch	100 days	18	DG and rock mulch
20	Place native seeding	15 days	18	Seeding
21	Inspection and punchlist	4 days	15,16,17,18,19,20	
22	Punchlist items	2 wks	21	
23	Final inspection	1 day	22	
24	Demobilization	1 wk	23	

Notes Items in blue are generated from the tab listed

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Berms

Item	Qty	Rate, day	Duration, days	Basis
Reshape berms	300		5	60.0 ac

Total			60.0 days	
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CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Seeding

Item	Qty	Rate/day	Duration, days	Basis
Prepare ground	221	20	11.05	ac
Do hydroseeding	221	50	4.42	ac
		Total	15	days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: DG and rock mulch

Item	Qty	Rate/day	Duration, days	Basis
Place DG	192342	4000	48.1	sy
Place rock mulch	209340	4000	52.3	sy
		Total	100	days

Using 5-person crew

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Accents

Item	Qty	Rate/day	Duration, days	Basis
Install accents	3310	100	33	ea
			Total	33 days
	3236			
	74			
	<hr/>			
	3310			

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Shrubs

Item	Qty	Rate/day	Duration, days	Basis
Install shrubs	5598	150	37	ea
			Total	37 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Trees

Item	Qty	Rate/day	Duration, days	Basis
Install trees	1860	20	93	ea

Total 93 days

1085
775
1860

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Emitters

Item	Qty	Rate/day	Duration, days	Basis
Install emitters	4482	100	44.82	ea
Test, disinfect, place in service	3		7	
		Total	52	days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Laterals

Item	Qty	Rate/day	Duration, days	Basis
Construct submain line and valves	35546	3000	11.8	If
Construct laterals line and valves	107525	3000	35.8	If
Test, disinfect, place in service	3		7	
		Total	55	days

35546
107525

143071

CHANDLER HEIGHTS DETENTION BASIN
 PCN 121-03-33
 CONTRACT PHASE C031
 CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Main Line

Item	Qty	Rate/day	Duration, days	Basis
Construct line and valves	30867	1000	30.867	lf
Test, disinfect, place in service	1		3	
	Total		34 days	

415
1007
29445
<hr style="width: 50px; margin-left: 0;"/>
30867

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Elec Service

Item	Qty	Rate/day	Duration, days	Basis
BlueStake locates and potholes	1			1
Construct slab	1			3
Construct conduit	100	200		0.5 lf
Install meter, controller equipment	1			3
SRP pull wires, make connections	1			2
Construct fence enclosure	1			2
Number of services	2			
		Total		24 days

CHANDLER HEIGHTS DETENTION BASIN
PCN 121-03-33
CONTRACT PHASE C031
CONSTRUCTION SCHEDULE SUPPORT DATA

Item: Water Service

Item	Qty	Rate/day	Duration, days	Basis
BlueStake locates and potholes	1			3
Make main tap	1			1
Bore under street	100	200		0.5 lf
Construct supply line	1045	500		2.09 lf
Install backflow preventer, etc	1			2
Test, disinfect, place in service	1			3
		Total		12 days