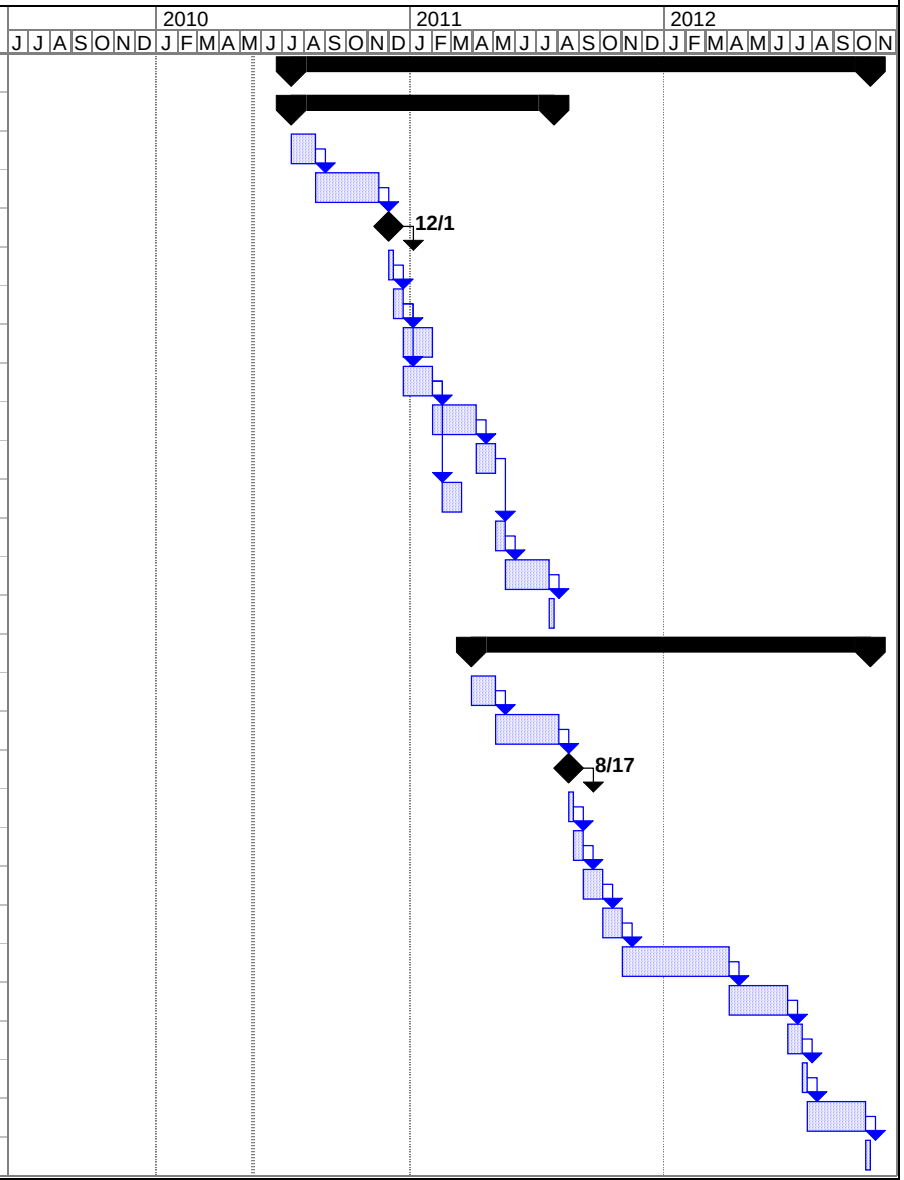
APPENDIX A
Construction Schedule
and
Construction Sequence and Method

Castle Hills Access Road, Drainage Improvements
Tentative Construction Schedule

ID	Task Name	Duration	Start	Finish
1	**Project**	**595 days**	**Thu 7/15/10**	**Wed 10/24/12**
2	**Phase 1 - STP-0300(122)**	**270 days**	**Thu 7/15/10**	**Wed 7/27/11**
3	Advertise for Bids	25 days	Thu 7/15/10	Wed 8/18/10
4	Award	65 days	Thu 8/19/10	Wed 11/17/10
5	NTP	0 days	Wed 12/1/10	Wed 12/1/10
6	Mobilize	5 days	Thu 12/2/10	Wed 12/8/10
7	Install Erosion Control Measures	10 days	Thu 12/9/10	Wed 12/22/10
8	House Demolition	30 days	Thu 12/23/10	Wed 2/2/11
9	Site Grading	30 days	Thu 12/23/10	Wed 2/2/11
10	Construct Gabion Wall	45 days	Thu 2/3/11	Wed 4/6/11
11	Grading	20 days	Thu 4/7/11	Wed 5/4/11
12	Install Perimeter Fence	20 days	Thu 2/17/11	Wed 3/16/11
13	Landscaping	10 days	Thu 5/5/11	Wed 5/18/11
14	Fully Protected	45 days	Thu 5/19/11	Wed 7/20/11
15	Remove Erosion Controls	5 days	Thu 7/21/11	Wed 7/27/11
16	**Phase 2**	**410 days**	**Thu 3/31/11**	**Wed 10/24/12**
17	Advertise for Bids	25 days	Thu 3/31/11	Wed 5/4/11
18	Award	65 days	Thu 5/5/11	Wed 8/3/11
19	NTP	0 days	Wed 8/17/11	Wed 8/17/11
20	Mobilize	5 days	Thu 8/18/11	Wed 8/24/11
21	Install Erosion Control Measures	10 days	Thu 8/25/11	Wed 9/7/11
22	Construct Bypass/Diversion	20 days	Thu 9/8/11	Wed 10/5/11
23	Demolition	20 days	Thu 10/6/11	Wed 11/2/11
24	Construct Conc. Drop Structure	110 days	Thu 11/3/11	Wed 4/4/12
25	Construct Gabion Wall and Apron	60 days	Thu 4/5/12	Wed 6/27/12
26	Grading	15 days	Thu 6/28/12	Wed 7/18/12
27	Grassing	5 days	Thu 7/19/12	Wed 7/25/12
28	Fully Protected	60 days	Thu 7/26/12	Wed 10/17/12
29	Remove Erosion Controls	5 days	Thu 10/18/12	Wed 10/24/12



Task
Split
Progress
Milestone
Summary
Project Summary
External Tasks
External Milestone
Deadline

Construction Sequence and Method

The project will be constructed in two (2) separate phases. The proposed improvements for Phase 1 and Phase 2 are shown in Figure 3 General Plan.

Phase 1: Temporary Water Pollution, Dust and Erosion Control Measures/BMP's: (See Figures 4, 5, 6, 7 and 8)

1. Install, maintain, monitor, repair and replace temporary BMP's including:
   a. Sediment control filters at existing catch basins,
   b. Stabilized construction ingress/egress,
   c. Temporary washdown containment areas,
   d. Concrete waste disposal basins,
   e. Dust screen,
   f. Silt fence,
   g. Temporary material storage and dewatering basins K1 and K2, and
   h. Hose connection to fire hydrant for dust control.

   All temporary BMP's will be removed after the grassing is fully established and/or after the maintenance period has ended and at the completion of the project.

2. Establish air and water quality monitoring station(s), rain gage station and other measurement devices as required by the contract documents. Obtain air quality, water quality and rainfall readings. Record, maintain and submit measurements to the state Engineer and as required by the contract documents.

Phase 1: Demolition: (See Figures 9 and 10)

1. Provide mitigation measures for lead-based paint and asbestos-containing building materials as required by the contract documents.

2. Demolish, remove, haul and dispose ten (10) residential structures, including concrete driveways, concrete walkways and slabs, CRM and CMU walls, fence, wooden foot-bridge, trees, vegetation and other items identified on the demolition plans.

3. Remove invasive plants within the stream corridor and project site. The invasive plants within the stream corridor will be removed using small, portable hand-held equipment and tools, such as a chain saw, then hauled by hand to the upland areas (back and/or front yard of properties) of the project site for disposal.

4. Stabilize the disturbed areas with hydromulch, temporary grassing, erosion control matting and other temporary erosion control measures.

Construction Sequence and Method

Phase 1: Construction of Gabion Wall for Streambank on South of Stream: (See Figure 11)

1. Install temporary silt fence at toe of south stream bank.

2. Install temporary sand bags along toe of south stream bank and divert flow around work area.

3. Remove a portion of the temporary silt fence for installation of the temporary sheet pile shoring.

4. Install temporary sheet pile shoring.

5. Excavate for the new gabion wall. Haul the dry excavated material to a legal, offsite disposal site. Haul the saturated excavated material to Temporary Material Storage and Dewatering Basin K1. See Figure 4 for the location of the basin. Haul the dried material to a legal, offsite disposal site.

6. Dewater the excavated area. Pump the dewatering effluent into Temporary Material Storage and Dewatering Basin K2. See Figure 4 for the location of the basin.

7. Construct new gabion wall along the south streambank.

    a. Install geogrid, geotextile fabric and 2-feet thick of #3 rock cushion to construct the base for the new gabion wall. Construct the gabion wall in 3-feet lifts. Install filter fabric then backfill with 3B Fine material behind the gabion wall.

8. Remove the temporary sheet pile shoring along the stream and east side of the new gabion wall. Cut the temporary sheet pile shoring located to the south and west of the new gabion wall approximately 2-feet below finish grades. The remainder of the temporary sheet pile shoring will remain.

9. Grade to new finish grades, grass and install erosion control matting. See construction plans for Phase 1, Grading Plan South of Stream. Haul and dispose of the excess graded soil material to a legal, offsite disposal site. Stabilize the disturbed areas with hydromulch, temporary grassing, and erosion control matting.

10. Remove the temporary silt fence and sand bags after the grass is established.

Phase 2: Temporary Water Pollution, Dust and Erosion Control Measures/ BMP's: (See Figure 12)

1. Install, maintain, monitor, repair and replace temporary BMP's including:
   b. Sediment control filters at existing catch basins,
   c. Stabilized construction ingress/egress,
   d. Temporary washdown containment areas,
   e. Concrete waste disposal basins,
   f. Silt fence,
   g. Temporary material storage and dewatering basins K1, K2, P1 and P2, and
   h. Hose connection to fire hydrant for dust control.

   All temporary BMP's will be removed after the grassing is fully established and/or after the maintenance period has ended and at the completion of the project.

Phase 2A: Installation of Temporary Stream Bypass/Diversion System: (See Figure 13)

1. Install temporary silt fence the north edge of the existing CRM outlet structure and stream bank. Install temporary sand bags along the bottom of stream bank for the temporary gabion outlet.

2. Excavate for the temporary gabion outlet. Haul the dry excavated material to a legal, offsite disposal site. Haul the saturated excavated material to Temporary Material Storage and Dewatering Basin P1. See figure 12 for the location of the basin. Construct the temporary gabion outlet.

3. Excavate for and install the temporary 60-inch bypass/diversion drain to the existing concrete outlet structure. Temporary store the dry excavated material onsite to be used for backfill material. Haul the saturated excavated material to Temporary Material Storage and Dewatering Basin P1. Backfill the trench and stabilize the disturbed area with hydromulch, temporary grassing and erosion control matting.

4. Remove a portion of the temporary sand bags at the gabion outlet.

5. Demolish and remove a portion of the existing concrete ditch between the 60-inch tee/riser and the existing CRM outlet structure. Prevent debris from entering into the temporary tee/riser. Clean all demolition debris from the ditch. Divert the runoff from the concrete-lined ditch into the temporary diversion pipe.

6. Install a temporary sand bag cofferdam within the outlet structure at the connection of the 60-inch bypass/diversion pipe to the existing concrete wall. Divert all stream flow around the location of 60-inch pipe and concrete wall connection.

7. Demolish a portion of the concrete wall and connect the 60-inch bypass/diversion pipe to the concrete wall of the outlet structure. Clean all demolition and construction debris from the concrete outlet slab.

8. Remove the sand bag cofferdam at the existing concrete wall.

9. Install hydromulch, grass and temporary erosion control matting to stabilize the disturbed area.

Phase 2B: Construction of Temporary Concrete Diversion Wall, Reinforced Concrete Drop Structure and Portions of Gabion Apron: (See Figure 14)

1. Install a temporary sand bag cofferdam across the outlet for construction of the temporary concrete diversion wall and divert all stream flow into the 60-inch bypass/diversion pipe.

2. Construct the temporary concrete diversion wall. Remove all construction debris.

3. Remove the sand bag cofferdam at the temporary concrete diversion wall.

4. Install temporary sheeting piles around the existing CRM outlet structure, new concrete drop structure and new gabion apron.

5. Demolish and remove the CRM outlet structure. Excavate for the new reinforced concrete drop structure, new gabion wall between the new drop structure and the gabion wall from Phase 1, and the gabion apron. Haul the dry excavated material to a legal, offsite disposal site. Haul the saturated excavated material to Temporary Material Storage and Dewatering Basin K1. See Figure 12 for the location of the basin.

6. Dewater the excavated area. Pump the dewatering effluent into Temporary Material Storage and Dewatering Basin K2. See Figure 12 for the location of the basin.

7. Construct the new reinforced concrete drop structure, gabion wall between the new drop structure and gabion wall from Phase 1.

a. Once the excavation has reached a depth below the 3B fin cushion material, the contractor may install a concrete mudslab to provide a working platform for the construction works and to minimize groundwater intrusion. The contractor may utilize 3B fine cushion material as the working platform.

b. Drill for and install the micropile deep foundation.

c. Install filter fabric and 2-feet thick 3B Fine cushion material to below the invert slab of the concrete drop structure.

d. Form and construct the reinforced concrete invert slab including 3-inch diameter weep holes.

e. Form and construct the reinforced concrete drop structure walls including 3-inch diameter weep holes.

f. Install continuous flashing compound waterproofing at all construction joints between the concrete invert slab and concrete walls.

g. Install filter fabric then backfill with aggregate filter material and 3B Fine material between the reinforced concrete walls and the temporary sheet piles.

8. Construct a portion of the new gabion apron.

Phase 2C: Removal of Temporary Concrete Diversion Wall and Sheet Piles: (See Figure 15)

1. Install temporary sand bags along the north edge of the new gabion apron and downstream of the temporary sheet piles.

2. Remove the temporary sheet piles around the new reinforced concrete drop structure, gabion wall and apron.

3. Install temporary silt fence along the top of the new gabion wall and downstream of the new concrete drop structure.

4. Construct the concrete apron and concrete walls of the new drop structure and connect to the existing concrete outlet.

5. Install temporary sand bag cofferdam upstream of the temporary concrete diversion wall.

6. Demolish and remove the temporary concrete diversion wall. Removal all demolition debris.

7. Remove the temporary sand bags along the downstream edge of the gabion apron.

8. Remove the temporary sand bag cofferdam located upstream of the demolished temporary concrete diversion wall.

9. Grade to new finish grades, grass and install erosion control matting. See Grading Plan, South of Stream.

Phase 2D: Removal of Temporary Bypass/Diversion Drain: (See Figure 16)

1. Install a temporary sand bag cofferdam at the inlet of the 60-inch diversion pipe.

2. Install a pump and piping from the existing concrete-lined ditch to the new concrete drop structure. Install a temporary sand bag cofferdam in the existing concrete ditch and pump the flow into the new concrete drop structure.

3. Install a temporary sand bag cofferdam on the new concrete drop structure apron.

4. Install temporary sand bags at gabion outlet.

5. Excavate for and remove the temporary 60-inch bypass/diversion pipe and gabion outlet. Backfill to existing grades.

6. Reconstruct the concrete wall at the inlet of the temporary 60-inch bypass/diversion pipe. Remove all construction debris from the concrete apron.

7. Construct the new concrete lined ditch and connect existing ditch to the new concrete drop structure. Remove all construction debris from the new concrete lined ditch.

8. Remove the temporary sand bag cofferdam in the existing concrete ditch, at the inlet of the 60-inch bypass/diversion pipe and on the new concrete drop structure apron. Remove the pump and piping.

9. Stabilize the disturbed areas with hydromulch, grass and erosion control matting.

Phase 2E: Construction of New Gabion Wall: (See Figure 17)

1. Install temporary sand bags long the bottom of the north stream bank near the downstream limits of the new gabion wall.

2. Install temporary sheet piles around the new gabion wall along the north stream bank.

3. Excavate for the new gabion wall. Haul the dry excavated material to a legal, offsite disposal site. Haul the saturated excavated material to Temporary Material Storage and Dewatering Basin P1. See Figure 12 for the location of the basin.
4. Dewater the excavated area. Pump the dewatering effluent into Temporary Material Storage and Dewatering Basin P2. See Figure 12 for the location of the basin.

5. Construct the new gabion wall and backfill to new finish grades.

Phase 2F: Construction of Remainder of New Gabion Apron: (See Figure 18)

1. Install temporary silt fence along the top of the new gabion wall (north stream bank).

2. Install a temporary sand bag cofferdam on the new concrete drop structure apron to divert stream flow away from the work area.

3. Relocate the sand bags (from Phase 2C) onto the gabion apron. Install filter fabric along the north edge of the gabion apron.

4. Excavate for the remaining new gabion apron. Haul the saturated excavated material to Temporary Material Storage and Dewatering Basin P1. See Figure 12 for the location of the basin.

5. Dewater the excavated area. Pump the dewatering effluent into Temporary Material Storage and Dewatering Basin P2. See Figure 12 for the location of the basin.

6. Install the gabion apron.

7. Remove all temporary sand bags.

8. Grade to new finish grades, grass and install erosion control matting. See Grading Plan, North of Stream.