

# **SOUTH ACADEMY BUSINESS CENTER**

## **GRADING, EROSION CONTROL AND STORMWATER QUALITY REPORT**

**Prepared For:**  
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**ADP Project No. 161103**  
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## PROJECT DESCRIPTION

This proposed project is contained within a new subdivision named the South Academy Business Center. This currently vacant lot consists of 7.60 acres. It will contain a storage facility comprised of 10' x 40' trailers. It is located in Sections 3, 10 and 11, Township 15 South, Range 66 West of the Sixth Principal Meridian, County of El Paso, State of Colorado. The site is located on a narrow strip of land which is bordered on the west by State Highway 85/87 and on the east by the Denver and Rio Grande Western Railroad. Its northern boundary is situated on the south boundary line of the South Academy Boulevard right-of-way.

The proposed site is located within the West Little Johnson Drainage Basin. The flows from this area travel in a southeast direction in existing swales which run parallel to the railroad tracks.

## SITE DESCRIPTION

### Existing Site Conditions

The existing site is undeveloped and covered in Rangeland grasses. The site slopes in a southwest direction with slopes that range from 1% to 0.5%.

### Soils

The Soil Conservation Service (NRCS) soil survey for El Paso County has identified the type in this study area as a Nunn clay loam which belongs to a hydrologic soil Group C.

## EROSION AND SEDIMENT CONTROL CRITERIA

### Areas and Volumes

The proposed development will include minor grading to reshape the site for the proposed storage facility. No permanent buildings will be placed on the site. 10' x 40' trailers will be placed side by side on a bed of loose gravel.

Improvements shall include the construction of a detention/water quality basin on the property to account for the areas of disturbance. The total area of disturbance shall be about 7.3 acres.

Construction activities shall consist of clearing, grubbing and grading for the new development. Approximately 3,000 cubic yards of cut and fill shall be moved. Disturbed and exposed areas of the site shall be seeded and mulched if construction activities cease for more than 30 consecutive days.

### Erosion and Sediment Control Measures

Erosion control and sediment prevention measures describe a wide range of management procedures, schedules of activities, prohibitions on practices, and other best management practices (BMP). BMPs also include operating procedures, treatment requirements and practices to control site runoff, drainage from materials storage, spills or leaks. Structural practices for this site include silt fences, straw bales, inlet protection, and vehicular tracking control. Erosion matting may be required on unstable slopes, if directed by the engineer. General descriptions of the BMPs to be used during the construction of this project are listed below. See the Erosion Control Plans for the specific type and location of each erosion and sediment control device required for this project.

### **Initial Stage**

These BMPs shall be installed at the outset of construction, prior to the initial pre-construction meeting and any other land-disturbing activities. Initial controls are to be placed on existing grades but shall be based in part on proposed grading operations. The initial stage includes clearing, grubbing, overlot grading, and utility and other construction prior to paving operations.

### **Temporary Stabilization**

Disturbed areas will be temporarily stabilized as soon as construction activities are completed. Seeding will be applied to completed areas within 14 days of completion.

### **Vehicle Tracking Control**

A vehicle tracking control device will be installed at the construction entrance where the construction entrance intersects an existing paved private roadway.

### **Silt Fence**

Prior to the start of construction, silt fence will be installed along the perimeter of all disturbed areas that are within the project site. Silt fence shall be placed as indicated on the plan drawing. Sediment shall be removed when depth exceeds one-fourth the height of the silt fence. The engineer may require additional silt fence as necessary to retard sediment transport on or off the project site.

### **Outlet Protection**

Outlet protection at the water quality basin on the site will be provided to prevent erosion and scour of the water quality basin area by the concentrated flows gathered by the storm sewer system both during and after construction.

### **Non-Structural Practices**

Upon completion of the grading, temporary seeding and mulching will be applied to all disturbed areas on and adjacent to the site. All seeding, fertilizers, and mulching shall conform to *El Paso County Engineering Criteria Manual*.

### **Construction Timing**

The site will be graded to accommodate the proposed redevelopment items delineated previously. This project will be constructed in a single phase. Once construction begins, it will continue until the project is complete; therefore, construction phasing will not be necessary. The construction process will consist of grading (excavation and fill) activities, installation of utilities, paving, concrete placement, landscaping, and building construction. The general sequence for major construction activities will be as follows:

- Establish limits of disturbance
- Install vehicle tracking control (VTC)
- Install silt fence
- Clear and grub the site
- Excavation and fill placement
- Install gravel
- Place storage trailers on site
- Install permanent landscaping
- Install water quality/detention basin
- Remove BMPs

Install temporary sediment basin prior to earthwork.

To be fully effective, erosion and sediment control measures must be installed and phased with the construction activities. The vehicular tracking control device shall be installed at the entrance prior to the mobilization of construction equipment on-site. Prior to the clearing and grubbing of the entire construction area, localized clearing shall be performed for the placement of perimeter erosion control measures. Site clearing shall commence only after the perimeter erosion control measures are in place. Erosion control devices must be in place to reduce the potential of eroded excavated material entering the storm drainage system. Protection devices shall be placed during grading activities, in the appropriate areas, as indicated on the plan drawing that is located in the Appendix.

Anticipated starting and completion date: September 1, 2017 to November 1, 2017

Expected date on which the final stabilization will be completed: December 1, 2017

### **Permanent Stabilization**

Disturbed areas shall be permanently stabilized as soon as construction activities are completed. Viable vegetative cover shall be established no later than one year from disturbance. Areas to be revegetated shall be treated with soil amendments to provide an adequate grown medium to sustain vegetation and shall match the existing 70 percent pre-disturbed vegetation cover.

The seedbed shall be well settled and firm, but friable enough that seed can be placed at the seeding depth specified. The seedbed shall be reasonably free of weeds. Soils that have been over-compacted by traffic or equipment, especially when wet, shall be tilled to break up rooting restrictive layers and then harrowed, rolled, or packed to prepare the required firm seedbed. Mulch shall be applied at a rate of two and one-half (2 ½) tons per acre and shall be spread uniformly, in a continuous blanket, after seeding is complete. Mulch shall be clean, weed and seed free, long-stemmed grass or hay, or long-stemmed straw of oats, wheat, or rye. At least 50 percent of mulch, by weight, shall be ten inches or longer. Mulch shall be spread by hand or blower-type mulch spreader. Mulching shall be started on the windward side of relatively flat areas or on the upper part of steep slope and continued uniformly until the area is covered. The mulch shall not be bunched. Immediately following spreading, the mulch shall be anchored to the soil by a v-type wheel land packer or scalloped-disk land packer designed to force mulch into the soil surface a minimum of three inches. All seeded areas shall be mulched after seeding on the same day as the seeding. The type of seed mix used for permanent vegetation shall utilize perennial grasses as delineated on the plans.

### **Stormwater Management**

All developed stormwater will be routed through the EDB facilities to provide stormwater quality as delineated on the drawings.

### **Maintenance**

All temporary and permanent erosion and sediment control practices shall be maintained and repaired as needed by the contractor throughout the duration of construction to assure that each BMP will function as intended. As required by the stormwater discharge permit, a weekly inspection of these items will be performed. In addition, all facilities must be inspected by the owner or the owner's representative following each heavy precipitation or snowmelt event that results in runoff, with maintenance occurring immediately after discovering a need.

Silt fence may require periodic replacement. All sediment accumulated behind the silt fence must be removed and disposed of properly when depth exceeds one-fourth the height of the silt fence. On-site construction traffic will be monitored to minimize the transport of sediment onto the proposed on-site streets, as well as onto adjacent city streets. The Owner, Site Developer, Contractor, and/or their authorized agents shall prevent loss of cut and fill material being transported to and from the site by taking appropriate measures. All mud and sediment tracked onto public streets shall be cleaned immediately. Road cleaning includes shoveling and sweeping activities.

Diversion ditches shall be kept clean and functional during construction. They shall be routinely checked on a weekly basis and cleaned if the height of sedimentation exceeds one-half its depth.

Inlet/outlet protection shall be inspected to ensure proper operation. Excess debris or sediment must be removed prior to final acceptance of the project.

The temporary sedimentation pond shall remain in place until such time as the major grading operations in the area are completed and the ground stabilized by either temporary or permanent measures. The ponds will be cleaned out periodically with depth of sediment at no time allowed to accumulate more than one-half the depth of the facility.

## Cost

An engineer's cost estimate for the anticipated erosion and sediment control items for the entire site are listed below:

Section 1 – Grading & Erosion Control BMPs	Quantity	Units	Price	Total
Earthwork	600	CY	\$5	\$3,000.00
Permanent Seeding	1.0	AC	\$582	\$ 582.00
Mulching	1.0	AC	\$507	\$ 507.50
Erosion Bales	2	EA	\$21	\$ 42.00
Inlet Protection	1	EA	\$153	\$ 153.00
Vehicle Tracking Control	1	EA	\$1,625	\$ 1,625.00
Silt Fence	3870	LF	\$4	\$15,480.00
TOTAL EROSION & SEDIMENT CONTROL COST				\$21,389.00

## STORMWATER MANAGEMENT

### Stormwater Management

Stormwater quality shall be protected and preserved throughout the life of this development. During mass grading and construction, measures such as sediment fences, straw bales, and vehicle tracking control shall be used to minimize erosion and sedimentation on site. During construction, the proposed extended detention basin shall function as a temporary sediment basin to reduce the potential for sediment leaving this development. Temporary diversion dikes shall be constructed to transport runoff that may contain sediment to the temporary sediment basin located on site until a stormwater system is installed. After various stages of the construction, when applicable, temporary or permanent erosion control stabilization shall be installed and maintained (landscaping, seeding, mulching, etc.).

## Potential Pollution Sources

Materials are sometimes used at the construction site that present a potential for contamination of stormwater runoff. These include sediment, equipment/vehicle washing, vehicle maintenance and fueling, petroleum products, paint, solvents, treated wood products, asphalt (bituminous) paving, concrete, concrete-curing compounds, metal, waste storage and disposal and other liquid chemicals such as fertilizers, herbicides, and pesticides. Practices that can be used to prevent or minimize toxic materials in runoff from a construction site are described in this section.

Areas at the construction site that are used for storage of toxic materials and petroleum products shall be designed with an enclosure, container, or dike located around the perimeter of the storage area to prevent discharge of these materials in runoff from the construction site. These barriers shall also function to contain spilled materials from contact with surface runoff. Proposed locations for storage of toxic materials have not been determined at the time of this report. Locations shall depend upon construction phasing.

Measures to prevent spills or leaks of fuel, gear oil, lubricants, antifreeze, and other fluids from construction vehicles and heavy equipment shall be considered to protect groundwater and runoff quality. All equipment maintenance shall be performed in designated areas and shall use spill control measures, such as drip pans, to contain petroleum products. Spills of construction-related materials, such as paints, solvents, or other fluids and chemicals, shall be cleaned up immediately and disposed of properly.

Trash receptacles shall be provided and kept clean as required to keep the site clean of trash. In addition, portable toilets shall be provided for all workers on the site during construction. All portable toilet facilities shall be located at least three feet from curb flow lines and paved surfaces. The facilities shall be stationed on ground and secured down to prevent tipping.

Potable water is anticipated as a non-stormwater discharge. Potable water shall be used for grading, dust control, and irrigation of erosion control and permanent landscaping. An effort shall be made to use only the amount of potable water required for these operations.

## Owner Inspection and Maintenance of Constructed BMPs

All inspection logs will include signatures on the logs and be kept on site along with other SWWP records.

1. **Minimum Inspection Schedule.** The permittee shall, at a minimum, make a thorough inspection at least once every 14 calendar days. Also, post-storm event inspections shall be conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. Provided the timing is appropriate, the post-storm inspections shall be used to fulfill the 14-day routine inspection requirement. A more frequent inspection schedule than the minimum inspections described may be necessary to ensure that BMPs continue to operate as needed to comply with the permit.
  - 1.1. **Post-Storm Event Inspections at Temporarily Idle Sites.** If no construction activities will occur following a storm event, post-storm event inspections shall be conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. The occurrence of any such delayed inspection must be documented in the inspection record. Routine inspections still must be conducted at least every 14 calendar days.

1.2. **Inspections at Completed Sites/Areas.** For sites, or portions of sites, that meet the following criteria; but final stabilization has not been achieved due to a vegetative cover that has not become established, the permittee shall make a thorough inspection of their stormwater management system at least once every month. Post-storm event inspections are not required. This reduced inspection schedule is only allowed if:

1.2.1.all construction activities that will result in surface ground disturbance are completed;

1.2.2.all activities required for final stabilization in accordance with the Grading and Erosion Control/Stormwater Quality Plan have been completed, with the exception of the application of seed that has not occurred due to seasonal conditions or the necessity for additional seed application to augment previous efforts; and

1.2.3.the Grading and Erosion Control/Stormwater Quality Plan has been amended to indicate those areas that will be inspected in accordance with the reduced schedule allowed for in this section.

1.3. **Winter Conditions Inspections Exclusion.** No changes are expected for winter work.

## CONCLUSION

This SWMP Report and the Best Management Practices (BMPs) specified on the Erosion Control Plans have been designed to reduce any adverse impacts the construction of this project might have on the surrounding properties. If properly installed and maintained, the design shall protect the quality of the stormwater runoff that is released from this development.

All temporary erosion and sediment control measures shall be removed and disposed of within thirty (30) days after final site stabilization is achieved, or after temporary measures are no longer needed, whichever occurs earliest, or as authorized by the local governing jurisdiction.

Temporary erosion control measures may be removed only after streets and drives are paved, and all disturbed areas have been stabilized. Trapped sediment and disturbed soil areas resulting from the disposal of temporary measures must be returned to final plan grades and permanently stabilized to prevent additional soil erosion.

Final stabilization is reached when all soil disturbing activities at the site have been completed, and uniform vegetative cover has been established with a density of at least 70 percent of pre-disturbance levels; or equivalent permanent, physical erosion reduction methods have been employed.

### Compliance with Standards

This report was prepared in accordance with the procedures and concepts outlined in the *El Paso County Engineering Criteria Manual*.

## REFERENCES

- *City of Colorado Springs Drainage Criteria Manual*, Volume 2, including Addendums I and II.
- *El Paso County Engineering Criteria Manual*.



## **APPENDIX A**

### Grading and Erosion Control Plans

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The map displays the Project Site area in the City of San Jose, California. The site is located at the intersection of Highway 101 and Highway 88, marked by a black star. The map includes labels for various streets and landmarks, such as the San Jose River and the San Jose City Center. The map is oriented with North at the top.

NORTH 

THIS GRADING AND EROSION CONTROL PLAN WAS PREPARED UNDER MY DIRECTION AND SUPERVISION AND IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. SAID PLAN HAS BEEN PREPARED ACCORDING TO THE CRITERIA ESTABLISHED BY THE COUNTY FOR GRADING AND EROSION CONTROL PLANS. I ACCEPT RESPONSIBILITY FOR ANY LIABILITY CAUSED BY ANY NEGLIGENT ACTS, ERRORS OR OMISSIONS ON MY PART IN PREPARING THIS PLAN.

SHEET INDEX:

1. DRAINAGE, GRADING AND EROSION CONTROL COVER SHEET
2. GRADING & EROSION CONTROL PLAN
3. OUTLET DETAIL & NOTES
4. GRADING & EROSION CONTROL DETAILS

DATE:	12/28/17	DESIGNED BY	MAB
JOB NO.	161103	PROJECT ENGINEER	MAB
CAD FILE NO.	FINAL DWG	PROJECT MANAGER	MAB
DRAWN BY	HJG	SCALE:	
		HORIZ.	N/A
		VERT.	N/A



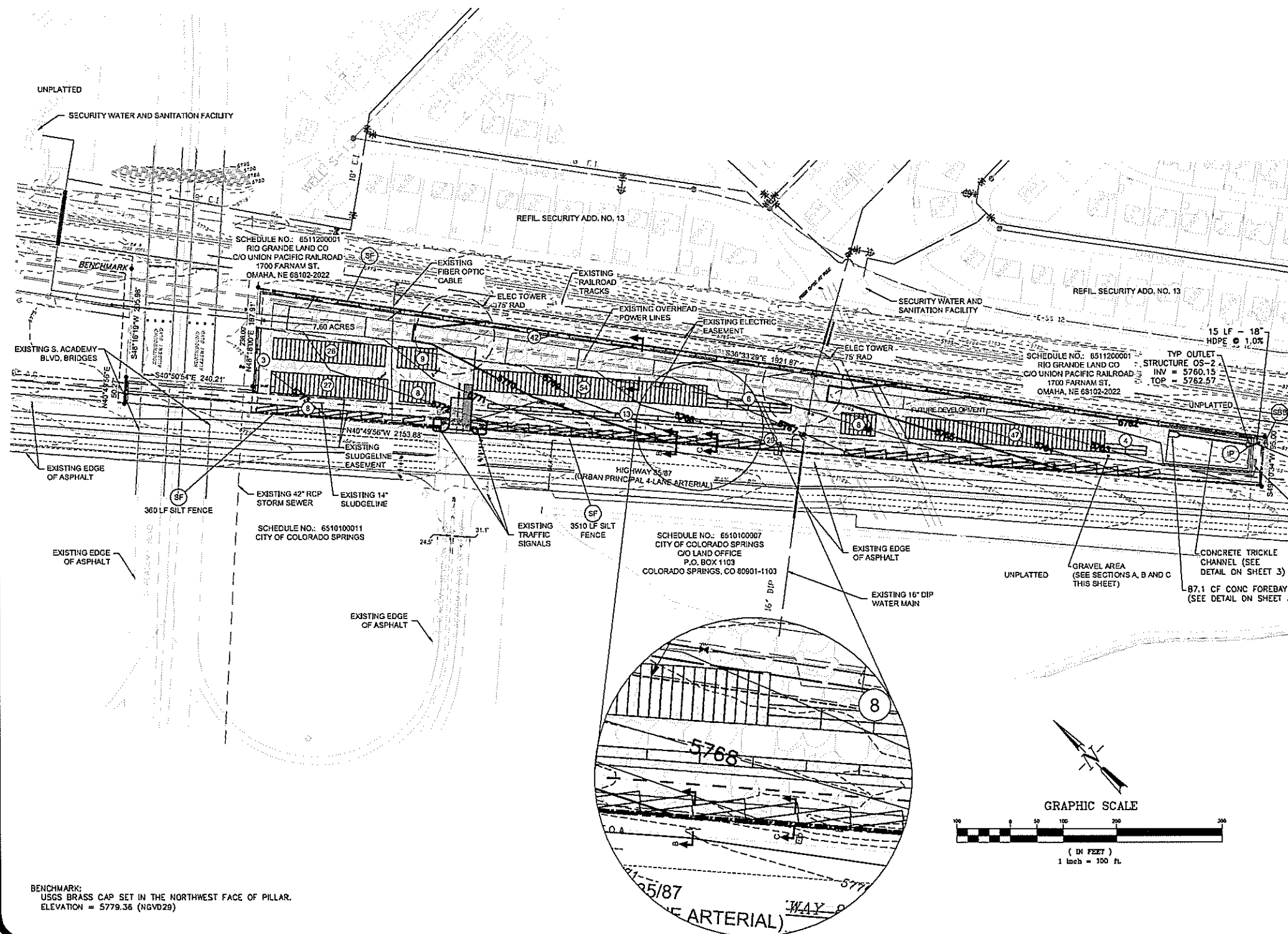
3520 Austin Bluffs Parkway  
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**DRAINAGE, GRADING & EROSION CONTROL COVER**

1 of 4

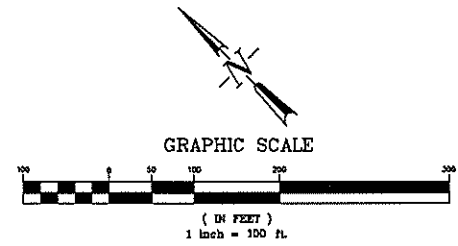
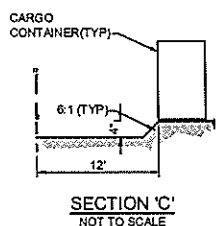
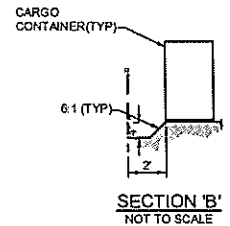
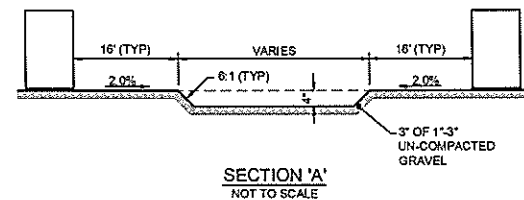
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BENCHMARK:  
USGS BRASS CAP SET IN THE NORTHWEST FACE OF PILLAR.  
ELEVATION = 5779.36 (NGVD29)

LEGEND:

- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- U/G PIPE (MATERIAL AND SIZE AS NOTED)
- SF SILT FENCE
- LIMITS OF CONSTRUCTION
- VEHICLE TRACKING CONTROL
- STRAW BALE BARRIER
- INLET PROTECTION
- TRAFFIC FLOW ARROWS



DESIGNED BY	AND
PROJECT ENGINEER	AND
PROJECT MANAGER	AND
SCALE	11'-0\"/>

PREPARED BY:

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ENGINEERING FOR THE FUTURE

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BY	
REVISION	
DATE	
NO.	

**SOUTH ACADEMY BUSINESS CENTER**  
**4425 HWY 85-87**  
**EL PASO COUNTY, COLORADO**  
**DRAIN, GRADING AND EROSION CONT. PLAN**







