Geotechnical Update Study
Proposed New Student Services Building And
Western Fill Slope And Partial Upper Parking Lot OC-1C Reconstruction
MiraCosta College Oceanside Campus
1 Barnard Drive, Oceanside, California

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Prepared For:

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GENERAL RECOMMENDATIONS

1. The minimum foundation design and steel reinforcement provided herein are based on soil characteristics and are not intended to be in lieu of reinforcement necessary for structural considerations.

2. Adequate staking and grading control is a critical factor in properly completing the recommended remedial and site grading operations. Grading control and staking should be provided by the project grading contractor or surveyor/civil engineer, and is beyond the geotechnical engineering services. Staking should apply the required setbacks shown on the approved plans and conform to setback requirements established by the governing agencies and applicable codes for off-site private and public properties and property lines, utility easements, right-of-ways, nearby structures and improvements, leach fields and septic systems, and graded embankments. Inadequate staking and/or lack of grading control may result in unnecessary additional grading which will increase construction costs.

3. Open or backfilled trenches parallel with a footing shall not be below a projected plane having a downward slope of 1-unit vertical to 2 units horizontal (50%) from a line 9 inches above the bottom edge of the footing, and not closer than 18 inches from the face of such footing. The Typical Trench Adjacent to Foundation is provided in the enclosed Figure 20 and may be used as a general guideline.

4. Where pipes cross under-footings, the footings shall be specially designed. Pipe sleeves shall be provided where pipes cross through footings or footing walls, and sleeve clearances shall provide for possible footing settlement, but not less than 1-inch all around the pipe. A schematic detail entitled Pipes Through or Below Foundations is included on Figure 20.

5. Expansive clayey soils should not be used for backfilling of any retaining structure. All retaining walls should be provided with a 1:1 wedge of granular, compacted backfill measured from the base of the wall footing to the finished surface and a well-constructed back drain system as shown on the Typical Retaining Wall Back Drainage, Figure 17. Planting large trees behind site retaining walls should be avoided.

6. All underground utility and plumbing trenches should be mechanically compacted to a minimum of 90% of the maximum dry density of the soil unless otherwise specified or required by the governing agencies. Care should be taken not to crush the utilities or pipes during the compaction of the soil. Very low expansive, granular import backfill soils should be used. Trench backfill materials and compaction beneath pavements within the public right-of-way shall conform to the requirements of governing agencies.

7. Finish ground surfaces immediately adjacent to the building foundations shall be sloped away from the building at a minimum 5% for a minimum horizontal distance of 10 feet measured perpendicular to face of the building wall (CBC 1804.4 Site Grading). If physical obstructions or property lines prohibit 10 feet of horizontal distance, a 5% slope shall be provided with an alternative method for diverting water away from the foundation. Swales used for this purpose shall be sloped not less than 2% where located within 10 feet of the building foundation. Impervious surfaces (concrete sidewalks) within 10 feet of the building foundation shall also be sloped at minimum 2% away from the building.

8. Care should be taken during the construction, improvements, and fine grading phases not to disrupt the designed drainage patterns. Roof lines of the buildings should be provided with roof gutters. Roof water should be collected and directed away from the buildings and structures to a suitable location.

9. All foundation trenches should be observed to ensure adequate footing embedment and confirm competent bearing soils. Foundation and slab reinforcements should also be observed and approved by the project geotechnical consultant.

10. The amount of shrinkage and related cracks that occur in the concrete slab-on-grades, flatworks and driveways depend on many factors, the most important of which is the amount of water in the concrete mix. The purpose of the slab reinforcement is to keep normal concrete shrinkage cracks closed tightly. The amount of concrete shrinkage can be minimized by reducing the amount of water in the mix. To keep shrinkage to a minimum the following should be considered:

    * Use the stiffest mix that can be handled and consolidated satisfactorily.

    * Use the largest maximum size of aggregate that is practical. For example, concrete made with ⅜-inch maximum size aggregate usually requires about 40-lbs. more (nearly 5-gal.) water per cubic yard than concrete with 1-inch aggregate.

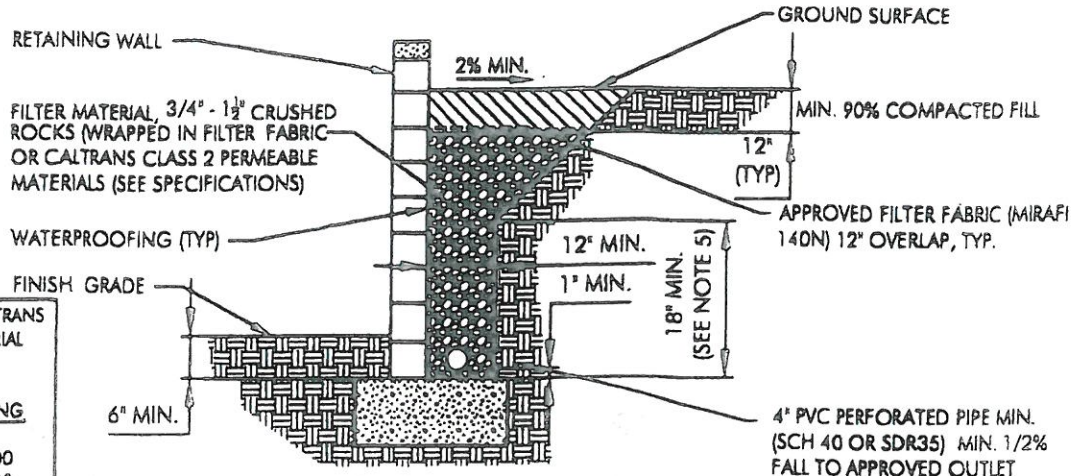
    * Cure the concrete as long as practical.

The amount of slab reinforcement provided for conventional slab-on-grade construction considers that good quality concrete materials, proportioning, craftsmanship, and control tests where appropriate and applicable are provided.

11. A preconstruction meeting between representatives of this office, the property owner or planner, college district representative, DSA inspector as well as the grading contractor/builder is recommended in order to discuss grading and construction details associated with site development.

Typical Retaining Wall Back Drainage

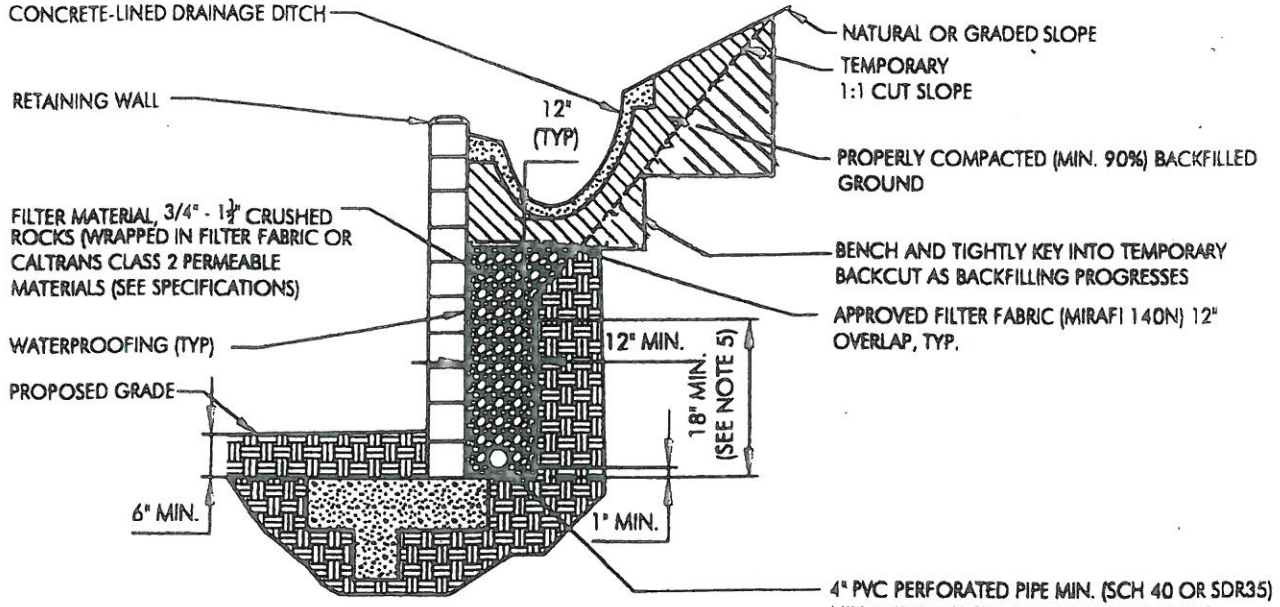
Schematic, No-Scale



SPECIFICATIONS FOR CALTRANS CLASS 2 PERMEABLE MATERIAL (68-1.025)

U.S. STANDARD SIEVE SIZE	% PASSING
1"	100
3/4	90-100
3/8	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

SAND EQUIVALENT > 75



CONSTRUCTION SPECIFICATIONS:

1. Provide granular, non-expansive backfill soil in 1:1 gradient wedge behind wall. Compact backfill to minimum 90% of laboratory standard.
2. Backdrain should consist of 4" diameter PVC pipe (Schedule 40 or equivalent) with perforations down. Drain to suitable at minimum ½%. Provide ¾" -1-½" crushed rocks filter materials wrapped in fabric (Mirafi 140N or equivalent). Delete filter fabric wrap if Caltrans Class 2 permeable material is used. Compact Class 2 permeable material to minimum 90% of laboratory standard.
3. Seal back of wall with approved waterproofing in accordance with architect's specifications.
4. Provide positive drainage to disallow ponding of water above wall. Drainage to flow away from wall at minimum 2%. Provide concrete-lined drainage ditch for slope toe retaining walls.
5. Use 1-½ cubic feet per foot with granular backfill soil and 4 cubic feet per foot if expansive backfill is used.

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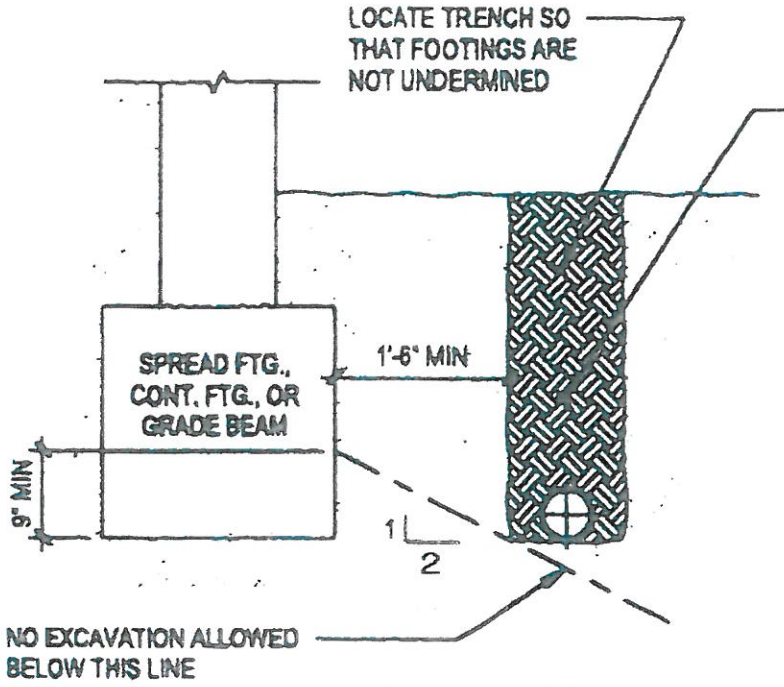
Typical Pipes Through or Trench Adjacent to Foundations

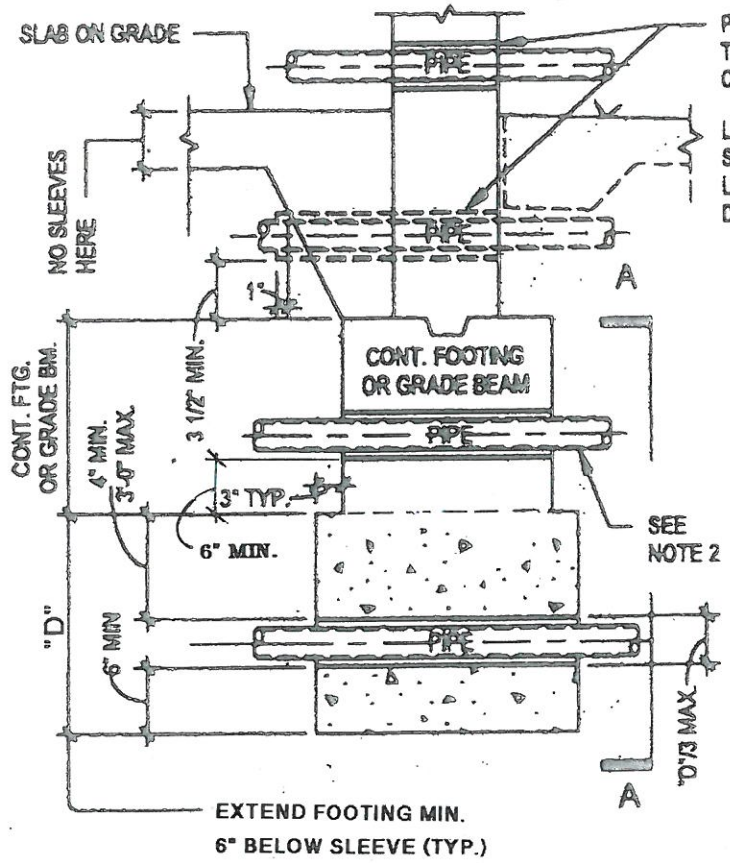
Schematic, No-Scale

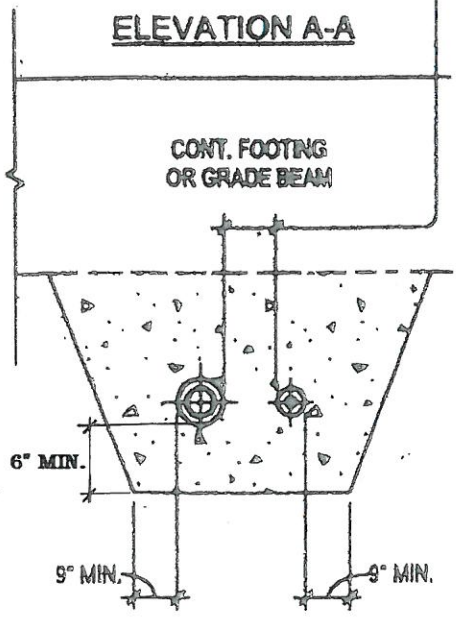


NOTES:

1. DO NOT PLACE SLEEVES OR CONDUIT IN ISOLATED SPREAD FOOTINGS - RUN AROUND OR BELOW THESE FOOTINGS.
2. SLEEVES ARE NOT TO PASS THROUGH CONTINUOUS FOOTINGS OR GRADE BEAMS UNLESS SHOWN OTHERWISE - WHERE SLEEVES ARE PERMITTED, SEE SEE SECTION BELOW

Trench Adjacent to Foundation





Pipes Through or Below Foundation

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