

GRADING INSPECTION CERTIFICATE

Job Address or Tract No. Tank Farm off Highway 33 Locality Ventura County
Owner Meiners Oaks County Water District Permit No. _____

ROUGH GRADING CERTIFICATION

(A) BY SOILS ENGINEER

I certify that the rough grading work incorporates all recommendations contained in the report or reports which I am responsible and all recommendations that I have made based on field inspection of the work and testing during grading. I further certify that where the reports of an Engineering Geologist, relative to this site, have recommended the installation of buttress fills or other similar stabilization measures, such earthwork construction has been completed in accordance with the approved design.

Lot Nos. Pad for new 0.15 MG Steel Water Tank

See Reports dated 4/13/15, 9/10/14, 2/26/15, 4/3/15 for test data, recommended allowable soil bearing values and other special recommendations.

Soils Engineer [Signature] Reg. No. GE 2823 Exp. 6-30-4/14/15 Date

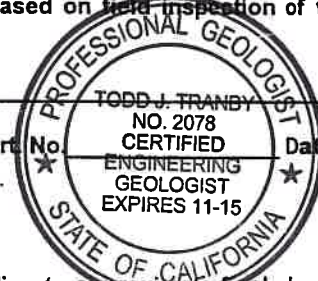


(B) BY ENGINEERING GEOLOGIST

I certify that the rough grading work incorporates all of the recommendations contained in the report or reports for which I am responsible and all recommendations that I have made based on field inspection of the work during grading.

Lot Nos. _____

Engineering Geologist [Signature] Cert. No. NO. 2078 Date 4/14/15



(C) BY CIVIL ENGINEER

I certify to the satisfactory completion of rough grading including grading to approximate final elevations; property lines located and staked; cut and fill slopes correctly graded and located in accordance with the approved design; swales and terraces graded ready for paving; berms installed, and required drainage slopes provided on the building pads. I further certify that where report or reports of an Engineering Geologist and/or Soils Engineer have been prepared relative to this site, the recommendations contained in such reports have been incorporated in the design.

Lot Nos. _____

Civil Engineer _____ Reg. No. _____ Date _____
(Signature)

GRADING CONTRACTOR CERTIFICATION

Job Address or Tract No. _____ Locality _____
Owner _____ Permit No. _____

I certify that the grading was done in accordance with the plans and specifications, the Grading Ordinance and the recommendations of the Civil Engineer, Soils Engineer and Engineering Geologist. It is understood that this certification includes only those aspects of the work that can be determined by me, as a competent Grading Contractor, without special equipment or professional skills.

Grading Contractor _____ Lic. No. _____ Date _____
(Signature)

Instructions: the owner may sign if the grading was not done by a licensed Grading Contractor.



April 13, 2015

Project No.: VT-24086-03
Report No.: 15-4-4

Attention: Mike Hollebrands
Meiners Oaks County Water District
202 W. El Roblar Drive
Meiners Oaks, California 93023

Project: Meiners Oaks Water Tank
Meiners Oaks
Ventura County, California

Subject: Final Rough Grading Report for Meiners Oaks Water Tank

- References:
- 1) Bengal Engineering, Inc., Geotechnical Design Recommendation Report, Proposed 0.75 MG Steel Water Tank Foundation, September 10, 2014
 - 2) Bengal Engineering, Inc., Project Plans, Proposed 0.75 MG Steel Water Tank Foundation, October 15, 2014
 - 3) Earth Systems Southern California, Review of Submittal No. 6, Proposed Replacement Water Tank, Meiners Oaks County Water District, February 26, 2015
 - 4) Earth Systems Southern California, Summary of Project Modifications During Grading, Proposed Replacement Water Tank, Meiners Oaks County Water District, April 3, 2015

Submitted herewith is a final report of testing and intermittent observations performed during rough grading in Meiners Oaks, California. The grading reported herein was limited to the proposed 0.75 MG Steel Water Tank.

Prior to the grading reported herein, the site had been supporting a previous water tank that was demolished.

Grading operations were performed by Damar Construction, Inc. using conventional grading equipment. Testing was authorized by Mike Hollebrands of Meiners Oaks County Water District, and coordinated with Pat Marshall of Damar.

The scope of work performed by Earth Systems Southern California was based on the recommendations provided in the referenced Geotechnical Design Recommendation Report (Bengal Engineering, Inc.) on standard provisions included within the California Building Code, and on the ordinances of the County of Ventura.

The following is a more complete discussion of the grading reported herein:

1. Vegetation and debris were cleared from construction area surface prior to the start of grading operations.
2. Previously existing uncertified fill areas were excavated to dense Sespe Formation bedrock units on the bottom surface of the overexcavation (as recommended in Reference No. 1.) Soils were overexcavated to a minimum depth and lateral criteria defined in Reference No. 1 (Text and Sheet ST-104.) The surface that resulted from the overexcavation was scarified to a depth of 1 foot; moisture conditioned, and recompacted to 90% of the maximum dry density. The northwestern portion of the bottom surface was additionally overexcavated up to about 5 feet to fully remove old fill to the bedrock. This additional excavation was then filled with 4-inch minus rock. Two layers of Tensar BX 1200 geogrid were placed in the additional excavation (one about 2 feet below top of rock and one over the rock.) The benches (vertical and lateral surfaces) and the bottom of the excavation were then covered with a non-woven Mirifi 140N fabric per the requirement of Reference No. 1.
3. Two backdrains were constructed (one at the bottom of the unreinforced zone and one at the bottom of the reinforced zone.) The backdrains consisted of a minimum 4-inch diameter perforated PVC/polyethylene pipe placed within 1 cubic foot per lineal foot of gravel, all wrapped within filter fabric. Solid-walled outlet pipes with head walls were taken to daylight on the slope face at the west side of the project.
4. Unreinforced zone fill materials consisting of screened on-site soils and reinforced zone fill materials consisting of impacted soils were placed in thin, moisture conditioned layers, and compacted into place. Compaction was tested intermittently during compaction operations to a minimum of 95% of the maximum dry density. Both the unreinforced and reinforced materials met testing requirements for laboratory testing specified in Reference No. 1.
5. Maximum density and optimum moistures of soils used during grading were determined in the laboratory in accordance with ASTM D 1557, Method A or C. Test results are as follows:

<u>Soil Description</u>	<u>USCS</u>	<u>Maximum Density</u>	<u>Optimum Moisture</u>
Brown gravelly silty sand	SM	127.0 pcf	9.0%
Light grey sandy gravel	GP	137.0 pcf	8.0%

6. A total of 46 field density compaction tests were performed. Compaction tests were performed in accordance with ASTM D 6938, Nuclear Density Test Method. Test results indicate that the minimum of 95% of maximum density has been obtained in the areas tested.

7. Based upon intermittent observations and testing during the grading operations from March 11 through March 31, 2015, on this project, it is the opinion of this firm that the intent of the recommendations of the referenced Geotechnical Design Recommendation Report, (Reference No. 1), as well as the ordinances of the County of Ventura have been met. In addition, it is the opinion of this firm that the tank pad is acceptable for its intended use. No warranty, is made, expressed or implied, except that services were performed in accordance with engineering principles generally accepted at this time and location.
8. Representative samples of the bearing soils were obtained and sampled for Expansion Index per ASTM D 4829. The expansion index was found to be 0, which is in the very low expansion category.
9. Foundation excavations should be observed prior to placement of forms or reinforcing steel to verify that bearing materials are as expected.
10. Because bearing soils are non-expansive, testing of premoistening is not required. However, foundation and slab areas should be moistened prior to placing concrete.
11. As used herein, the term "observation" implies only that the progress of work was observed and tests were performed upon which an opinion was based as to whether the work essentially complies with the job requirements.
12. With any manufactured product, there are statistical variations in its uniformity and in the accuracy of tests used to measure its qualities. As compared with other manufactured products, field construction usually has wider fluctuations in both product and test results. Thus, even with very careful observation and testing, it cannot be said that all parts of the product comply with the job requirements.
13. It is recommended that the Geotechnical Engineer be provided the opportunity for a general review of any changes to the final design and/or location of the proposed structures in order that earthwork and foundation recommendations may be properly interpreted. If the Geotechnical Engineer is not accorded the privilege of making this recommended review, he can assume no responsibility for misinterpretation of his recommendations.

April 13, 2015

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Project No.: VT-24086-03
Report No.: 15-4-4

If there are any questions concerning this report, please do not hesitate to contact this office.

Respectfully submitted,

**EARTH SYSTEMS
SOUTHERN CALIFORNIA**

Reviewed and Approved,


Anthony P. Mazzei
Geotechnical Engineer



Chris Cooper
Field Technician

Attach: Compaction Test Results
 Site Plan

Enclose: Rough Grading Certification

Copies: 4 - Client
 1 - Project File


Todd J. Tranby
Engineering Geologist

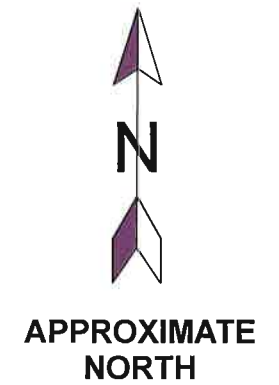


REPORT OF RELATIVE COMPACTIONS

Date: April 13, 2015
 Job Name: Meiners Oaks Water Tank
 Job Location: Meiners Oaks, California

Project No.: VT-24086-03
 Report No.: 15-4-4

Test No.	Date	Location	Elevation (ft)	Dry Density (pcf)	Moisture Content (%)	Relative Comp. (%)	Max. Density (pcf)
1	3/11/15	Per Plan - East 2/3 Bottom	903.0	121.7	11.6	96	127.0
2	3/11/15	Per Plan - East 2/3 Bottom	903.0	121.5	11.4	96	127.0
3	3/11/15	Per Plan - East 2/3 Bottom	903.0	120.9	11.3	95	127.0
4	3/11/15	Per Plan - 1st Lift	903.6	120.5	12.3	95	127.0
5	3/11/15	Per Plan - 1st Lift	903.6	120.0	11.0	94	127.0
6	3/11/15	Per Plan - 1st Lift	903.6	125.0	10.8	98	127.0
7	3/12/15	Per Plan - West Excavation	903.6	121.2	11.2	95	127.0
8	3/12/15	Per Plan - West Excavation	903.6	120.5	11.7	95	127.0
9	3/12/15	Per Plan - Main Tank Pad	904.3	121.8	11.4	96	127.0
10	3/12/15	Per Plan - Main Tank Pad	904.3	120.8	11.8	95	127.0
11	3/13/15	Per Plan - Unreinforced Tank Pad Fill	905.0	121.4	11.7	96	127.0
12	3/13/15	Per Plan - Unreinforced Tank Pad Fill	905.0	122.3	12.5	96	127.0
13	3/13/15	Per Plan - Unreinforced Tank Pad Fill	905.6	120.7	12.5	95	127.0
14	3/13/15	Per Plan - Unreinforced Tank Pad Fill	905.6	121.4	11.7	96	127.0
15	3/13/15	Per Plan - Unreinforced Tank Pad Fill	906.3	122.4	11.8	96	127.0
16	3/13/15	Per Plan - Unreinforced Tank Pad Fill	906.3	124.0	12.1	98	127.0
17	3/16/15	Per Plan - Unreinforced Zone Fill	907.0	121.3	12.2	96	127.0
18	3/16/15	Per Plan - Unreinforced Zone Fill	908.0	120.9	11.4	95	127.0
19	3/16/15	Per Plan - Unreinforced Zone Fill	909.3	122.1	13.6	96	127.0
20	3/16/15	Per Plan - Unreinforced Zone Fill	910.0	123.4	14.1	97	127.0
21	3/16/15	Per Plan - Unreinforced Zone Fill	910.0	120.8	12.2	95	127.0
22	3/20/15	Per Plan - Reinforced Zone Fill	911.0	130.2	9.0	95	137.0
23	3/20/15	Per Plan - Reinforced Zone Fill	911.0	130.7	7.8	95	137.0
24	3/20/15	Per Plan - Reinforced Zone Fill	911.0	131.8	8.6	96	137.0
25	3/23/15	Per Plan - Reinforced Zone Fill	911.5	131.8	8.3	96	137.0
26	3/23/15	Per Plan - Reinforced Zone Fill	911.5	131.6	8.0	96	137.0
27	3/23/15	Per Plan - Reinforced Zone Fill	912.5	132.8	8.2	97	137.0
28	3/23/15	Per Plan - Reinforced Zone Fill	912.5	131.2	7.9	96	137.0
29	3/24/15	Per Plan - Reinforced Zone Fill	913.0	132.3	9.1	97	137.0
30	3/24/15	Per Plan - Reinforced Zone Fill	913.0	130.4	8.8	95	137.0
31	3/24/15	Per Plan - Reinforced Zone Fill	913.5	130.7	9.0	95	137.0
32	3/24/15	Per Plan - Reinforced Zone Fill	913.5	131.1	9.1	96	137.0
33	3/25/15	Per Plan - Reinforced Zone Fill	914.5	130.1	8.2	95	137.0
34	3/25/15	Per Plan - Reinforced Zone Fill	914.5	131.8	9.3	96	137.0
35	3/25/15	Per Plan - Reinforced Zone Fill	915.0	131.3	8.1	96	137.0



4" Minus Crushed Rock
Backdrain

TOP OF EXCAVATION
LINE (APPROX)

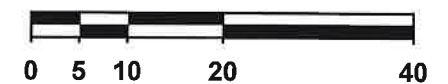
TOE OF EXCAVATION
LINE (APPROX)

REDN
RING

Backdrain Outlet

○ - APPROXIMATE COMPACTION
TEST LOCATION

APPROXIMATE SCALE
1 in = 20 ft



SITE PLAN

MEINERS WATER TANK
VENTURA COUNTY, CALIFORNIA



Earth Systems
Southern California

