DESIGN REVIEW BOARD STAFF REPORT

MEETING DATE: **May 24, 2010** REPORT COMPLETED: May 20, 2010

ITEM NUMBER: VI. A. – DESIGN REVIEW

FILE NUMBER: **DRB 06-10 – Verizon Wireless, Inc. / Charnel James for NSA Wireless, Inc. (Applicant), PG&E (Transmission Tower Owner), Rancho Laguna LLC (Property Owner).** Design review and hillside development permit for an equipment enclosure for Verizon Wireless to be located 5-feet southeast of the EBMUD fence enclosure around the Fayhill Reservoir. APN 256-040-024.

ZONING: OSM-DT (Open Space – MOSO – Density Transfer)

CEQA STATUS: The project qualifies for the following categorical exemption as listed in the State Environmental Guidelines: Section 15303 – New construction of small structures and installation of small new equipment and facilities.

PUBLIC NOTICE AND MAILING LIST:
As required by Moraga Municipal Code Section 8.72.130(A)(1), written notices of the application for design review (Design Review Board Agenda) were mailed to all property owners within three hundred (300) feet of the subject property on May 14, 2010. A map showing the area of notice and a copy of the mailing list is attached as **EXHIBIT A**. Any correspondence received prior to the meeting will be copied an passed out to the Board members at the meeting.

APPLICATION SUMMARY:
The use permit for the new transmitter facility was approved by the Planning Commission on March 1, 2010. The purpose of the new transmitter facility is to provide cellular phone service to Rheem Valley and the Campolindo High School area. The conditions of approval for the use permit are listed in Planning Commission Resolution 04-2010, which is attached as **EXHIBIT B**. Condition number 4 requires Design Review Board approval of the following:

a. Assuming that a building permit will be required for the 4-foot high retaining wall at the backside of the equipment enclosure, the applicant shall apply for a Hillside Development Permit and address the factors listed under MMC Section 8.136.070, which include slope, soil instability, drainage, soil characteristics, seismic factors, existing and future residential development, view shed, access, potential traffic congestion, fire risk, noise, glare, wildlife, dust and impact on existing vegetation.

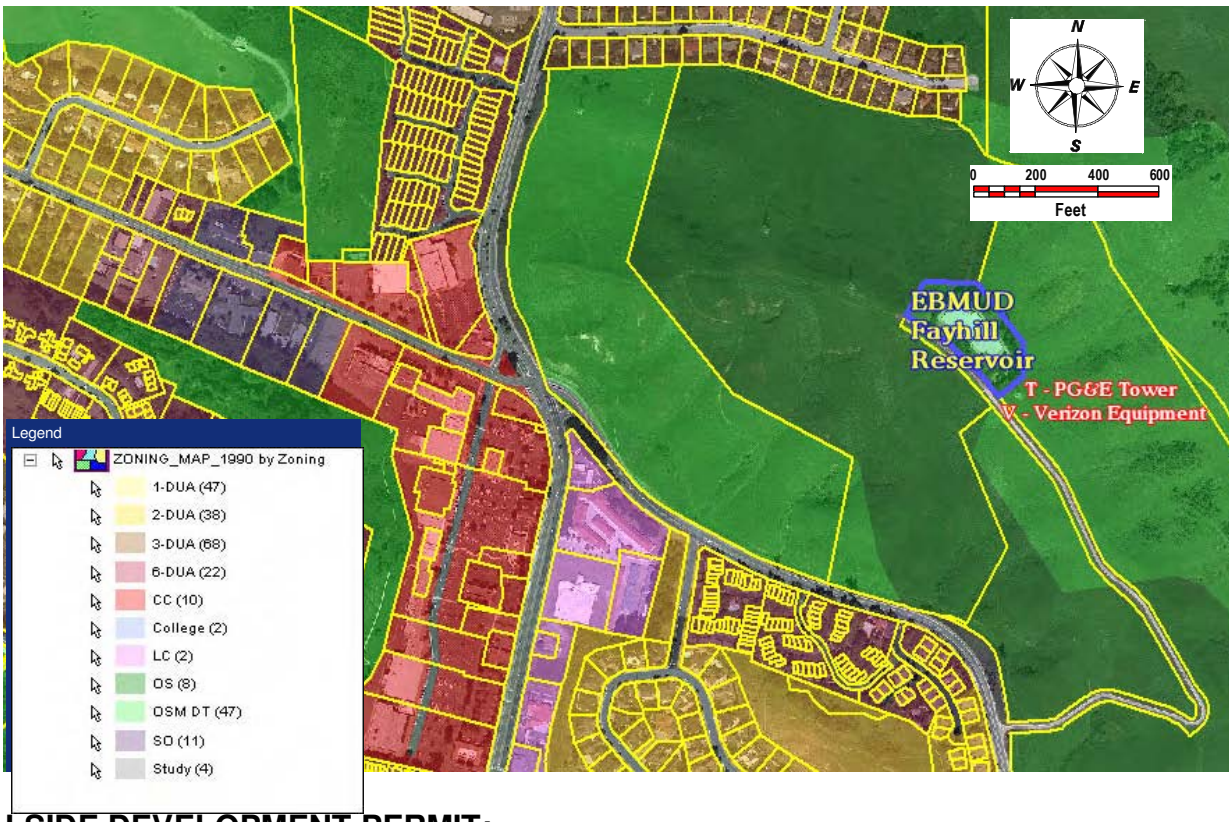
b. Plans for the equipment and the fencing of the enclosure, including the color of the fencing and equipment to blend with the natural color of the dried grass as it appears for the majority of the year.

c. Submit the color for the 9 panel antennas on the top of the PG&E tower. The paint shall have a non-reflective finish and shall be a color that will minimize visual impacts.

d. The Design Review Board may request submittal of a landscape plan if deemed necessary to help camouflage views of the equipment enclosure.

DESIGN DESCRIPTION:

The equipment enclosure will be 35-feet wide and 17-feet deep with a 5-foot high concrete block wall at the back side of the enclosure. The depth of the cut into the hill behind the wall is about 40-inches and the wall extends about 20-inches above the existing grade (see cross section on sheet A-4 of the plans). The plans include a 6-foot high chain link fence around the enclosure and on top of the concrete block wall. The equipment in the enclosure includes a 30 KVA generator for emergency power, cellular transmitter cabinets, battery cabinets and step-down transformer. The nine 6-foot high panel antennae for the telecommunications site will be located on a 12-foot extension of the existing 103-foot high PG&E transmission tower, which is located adjacent to the Fayhill Reservoir and northeast of the equipment enclosure. The location of the project site is shown on the zoning map below:



HILLSIDE DEVELOPMENT PERMIT:

Any construction upon or disturbance of soil on a slope of 20% or greater requires approval of a hillside development permit. The factors to be considered under Moraga Municipal Code Section 8.136.070 for a Hillside Development Permit are listed in **EXHIBIT C** with staff discussion of each factor. The applicant has submitted a Geotechnical Investigation Report prepared by Brown & Mills, Inc. dated December 14, 2009, which is attached as **EXHIBIT D**. The report addresses faulting, seismicity, subsurface groundwater, and other geologic hazards such as ground rupture, estimated peak ground acceleration, liquefaction potential

and ground subsidence. Recommendations are also included for site preparation, excavations and engineered fill including design parameters for retaining walls and equipment cabinet foundations. Since this application does not involve construction of a habitable structure, staff determined that the report was complete for the purpose of the hillside development permit and did not require geotechnical peer review of the report.

Condition number 5 from PC Resolution 04-2010 states in part "If the cut into the hillside exceeds 3-feet in depth, a grading permit will be required. Grading permits are issued by the Town's Engineering Department. The process for approval of a grading permit, if required, will depend upon the average slope in the area of disturbance. If the average slope in the entire area to be graded is less than 20%, then the grading plans can be approved by the Town Engineer. **…**" The cut into the hill is 40-inches deep (five 8-inch high blocks); therefore, it would exceed 3-feet and require a grading permit. The applicant has calculated the average slope in the area of disturbance to be 19.8%. Under MMC Section 14.08.030, the Design Review Administrator is authorized to approve grading operations on slopes less than 20% and less than 200 cubic yards after a determination that the grading is:

1. Consistent with the Town Design Guidelines and does not require a design exception;
2. Does not result in any Slope of 20% or more;
3. Consistent with the regulations and restriction of this Chapter and does not require a modification;
4. Not detrimental to public safety;
5. Not detrimental to storm water Runoff;
6. Not inconsistent with the General Plan.

These are the same findings that the Design Review Board is required to make for approval of grading on slopes less than 20% under MMC Section 14.12.030. Staff has included these findings in the draft action memorandum and recommended approval of the grading subject to a final determination by the Town Engineer for findings 3 and 5.

EXHIBIT C also includes a couple photographs on pages 4 and 5 to help evaluate the visual impact of the project on the hillside. The photos show a "naked eye" view and an enlarged telephoto view inset. The proposed enclosure is hardly perceptible with the naked eye. The bright orange mesh that was wrapped around the corners of the story poles makes it easier to see the proposed enclosure. If the fencing is a light brown color to blend with the dry pasture grass, it will virtually disappear from view.

DESIGN ASPECTS:

The design aspects discussed in **EXHIBIT E** are listed under Moraga Municipal Code (MMC) Section 8.72.080-A for projects that are not in a single family residential district. The project complies with the development standards that the Planning Commission established in condition number 3 from Resolution 04-2010 PC. Staff recommends that the fence along the top of the back wall be reduced to 5-feet in height so that the overall height of the wall and fence would be 6-feet 4-inches maximum. The plan view of the retaining wall on sheet A-2 appears to be reversed, where the wall should extend all the way along the northwest side and the partial wall would be on the southeast side.

With regard to the colors and materials, staff recommends that light brown wood lath or vinyl slats should be inserted into the chain link fence to approximate the color of the dried pasture grass. PG&E will be installing the antennas on the tower and the applicant stated at the Planning Commission meeting that the color will match the color of the metal structure on the tower. Staff also recommends that the color and design of the fences around the equipment enclosures for both Verizon Wireless and the adjacent AT&T installation should be similar. If the Board prefers to have a solid wood fence rather than a chain link fence with slats, then both of the enclosures should have wood fences.

APPLICABLE TOWN DESIGN GUIDELINES:

The applicable design guidelines have been listed in **EXHIBIT F** with staff discussion of each guideline. The following guidelines are the basis for some of the recommended conditions of approval.

RH5, L3.7 and L3.14 *These guidelines encourage landscaping to screen unattractive views and features such as public utilities and other elements that detract from the appearance of the surrounding area. If the Board believes that landscaping is needed to enhance the screening of the equipment enclosure, then staff would recommend large native drought tolerant and deer resistant shrubs for the southwest side of Fayhill Road across from the enclosure. The Geotechnical Investigation Report showed no significant amount of ground water, so any plants would have to depend upon seasonal rainfall. The applicant would also need to consider a temporary water tank or cistern to irrigate the plants and establish them for the first year. In staff's opinion, fenced enclosures around plants to protect them from deer would simply attract more visual attention to the telecommunications facility. Staff has not included any condition requiring landscaping in the draft action memorandum.*

RH6 and ID10.3 *Both of these guidelines promote natural appearing contour grading on hillsides and avoidance of retaining walls. If contour grading was used to create the level equipment pad, it would require substantially more grading and could involve creation of slopes steeper than 25%. The proposed retaining wall is not unreasonably high. However, the height of the retaining wall could be reduced if the pad elevation is stepped up about one foot above the elevation of Fayhill Road.*

ID3 *This guideline requires projects to address the following factors: wind barriers, shade, sound absorption, dust abatement, glare reduction, and drainage on site. The project site is located more than 1000-feet from the closest residential structures and the use permit includes conditions to limit the sound level from the 30 KVA generator. Staff has included a condition in the draft action memorandum to address dust control during construction of the project. Staff recommends that the slats for the chain link fence should not be made of a shiny or reflective material. Wood lath or non-glossy vinyl strips would be acceptable screening material to avoid a source of glare on the hillside. The Town Engineer will need to review the drainage from the impervious surfaces to insure that erosion is avoided from the concentrated flow of stormwater.*

ID6 *This guideline requires lighting to be designed and mounted so that the source of light has minimal impact off site and is directed inward toward the property. In addition to the requirements from ID6, condition number 7 from Planning Commission Resolution*

04-2010 states: "Any lighting used by technicians shall be manually operated and used only during night maintenance or emergencies. The lighting shall be constructed or located so that only the intended area is illuminated and off-site glare is fully controlled." The Verizon Wireless plans do not show any lights within the enclosure.

ID12.6 This guideline requires a sufficient number of drains behind retaining walls and requires the discharge to be directed to a landscape area. A 4-inch perforated pipe drain is shown behind the retaining wall on sheet S-2 of the plans. The discharge for this drainage pile is not shown in plan view. This will require review by the Town Engineer.

FINDINGS FOR APPROVAL:

Moraga Municipal Code (MMC) Section 8.12.090 requires the Design Review Board to make findings to support any decision approving a project. The standards listed under MMC Section 8.72.080-B have been used as the basis for the Design Review Board findings as follows:

1. **Does the proposed structure conform with good design and in general contribute to the character and image of the Town as a place of beauty, spaciousness, balance, taste, fitness, broad vistas, and high quality;**
   Comment: The proposed equipment enclosure has not been designed with any mitigation of the visual appearance. The proposed conditions of approval would add enhancements to improve the screening of the equipment inside the enclosure and reduce the profile of the enclosure on the hillside. The intent is to camouflage the enclosure and make it "disappear" as much as possible. The antennae on the extension of the PG&E tower will appear to be part of the tower if they are painted to exactly match the color of the tower.

2. **Will the structure be protected against exterior and interior noise, vibrations and other factors, which may tend to make the environment less desirable;**
   Comment: The conditions of approval include restrictions on the allowable noise from the 30 KVA emergency generator. Other than the generator, the rest of the equipment does not produce any significant amount of noise.

3. **Is the exterior design and appearance of the structure of inferior quality as to cause the nature of the neighborhood to materially depreciate in appearance and value;**
   Comment: *The "neighborhood" is a considerable distance from the project site, which is located near the middle of a very large open space parcel. The closest residential structures are over 1000-feet from the proposed installation. The purpose of the structure is to provide improved wireless communication service for the Rheem Valley and Campolindo High School areas, which could help to slightly improve the value of property in the vicinity.*

4. **Is the structure in harmony with proposed developments on land in the general area**.
   Comment: The land in the general area is private open space, which has been primarily used for grazing of cattle. The proposed telecommunications facility is a functional public utility installation and is inherently inharmonious with open pasture land. The conditions of approval are intended to reduce the visibility of the proposed equipment enclosure and make it blend in with the pasture grasses on the hillside.

If the Board denies the application, the only required finding would be a statement that the applicant failed to present evidence sufficient to permit the Board to make the findings required to grant the application. Nevertheless, additional findings would be helpful to the Planning Commission if the action of the Board is appealed.

PERMIT STREAMLINING ACT:

The application for Design Review Board approval was submitted on April 27, 2010. The Permit Streamlining Act requires a decision on the project within ***60 calendar days*** after a project has been found to be exempt from CEQA or a negative declaration is adopted for the project. The staff report was written on May 14, 2010 at which time the project was determined to be exempt from CEQA. Therefore, the application must either be approved or disapproved by June 26, 2010 unless both the Town and the applicant agree to a one time 90-day extension.

RECOMMENDATION:

Staff recommends approval of the application in accordance with the suggested findings and the conditions of approval listed in the Draft Action Memorandum attached as **EXHIBIT G**.

Prepared By Richard Chamberlain, Senior Planner

EXHIBITS:

A – Notice Area Map, Public Notice and Mailing List
B – Planning Commission Resolution 04-2010 (Verizon Wireless Use Permit)
C – Hillside Development Permit Factors
D – Geotechnical Investigation Report
E – Design Aspects to be considered for Verizon Wireless Fayhill Road
F – Applicable Town Design Guidelines for Verizon Wireless Fayhill Road
G – Draft Action Memorandum
H – Applicant's Plans

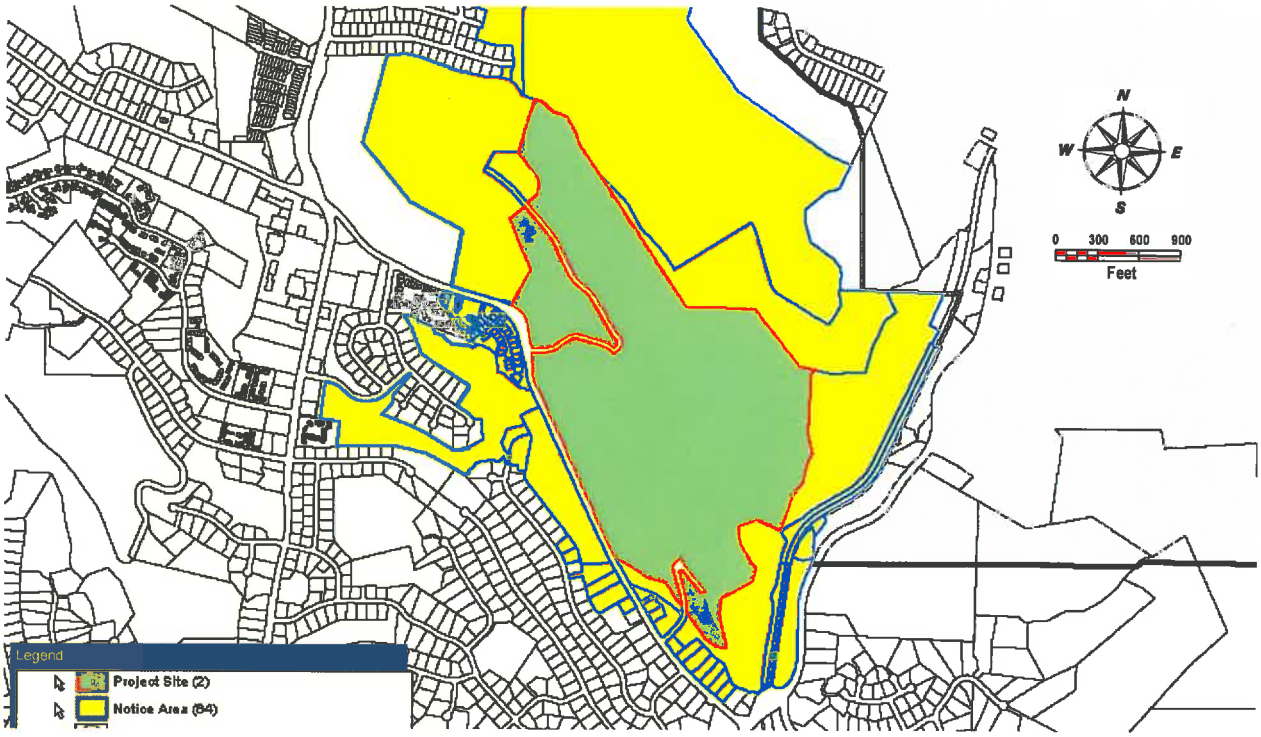
EXHIBIT A

NOTICE AREA MAP, PUBLIC NOTICE AND MAILING LIST

VICINITY MAP AND AREA OF NOTICE

Verizon Wireless and AT&T Antennas on PG&E Tower and Transmitter Equipment adjacent to Fayhill Reservoir

File Numbers:
Verizon Wireless DRB 06-10
AT&T DRB 07-10



NOTICE

Town of Moraga

YOU ARE HEREBY NOTIFIED THAT on Monday, May 24, 2010, at **7:00 p.m.**, in the **Moraga Public Library Meeting Room at 1500 St. Mary's Road**, Moraga, California, the Design Review Board of the Town of Moraga will conduct a pubic meeting to consider the following application:

DRB 06-10 – Verizon Wireless, Inc. / Charnel James for NSA Wireless, Inc. (Applicant), PG&E (Transmission Tower Owner), Rancho Laguna LLC (Property Owner). Design review and hillside development permit for an equipment enclosure for Verizon Wireless to be located 5-feet southeast of the EBMUD fence enclosure around the Fayhill Reservoir. The equipment enclosure will be 35-feet wide and 17-feet deep with a 5-foot high retaining wall behind it and a 6-foot high chain link fence around it. The equipment in the enclosure includes a 30 KVA generator for emergency power, cellular transmitter cabinets, battery cabinets and step-down transformer. Nine 6-foot high panel antennae will be located on a 12-foot extension of the existing 105-foot high PG&E transmission tower located on the Rancho Laguna property adjacent to the Fayhill Reservoir. The purpose of the new transmitter facility is to provide cellular phone service to Rheem Valley and the Campolindo High School area. The use permit for the new transmitter facility was approved by the Planning Commission on March 1, 2010. The property is zoned OSM-DT (Open Space - MOSO - Density Transfer). APN 256-040-024.

Applicant	Property Owners
Charnel James for NSA Wireless, Inc. 2000 Crow Canyon Place San Ramon, CA 94583	Rancho Laguna LLC 3001 "I" Street, Suite 200 Sacramento, CA 95816

The plans for this project are available for public review at the Moraga Planning Department, 329 Rheem Blvd. during normal business hours (Monday through Friday from 8 am to noon and 1 to 5 pm). Comments regarding the proposed project can be submitted in writing or orally at the public meeting. Written comments submitted to the Planning Department will be copied and submitted to the Design Review Board at their meeting. For additional information, contact the Planning Department at (925) 888-7042.

Richard Chamberlain
Senior Planner

NOTICE

Town of Moraga

YOU ARE HEREBY NOTIFIED THAT on Monday, May 24, 2010, at **7:00 p.m.**, in the **Moraga Public Library Meeting Room at 1500 St. Mary's Road**, Moraga, California, the Design Review Board of the Town of Moraga will conduct a pubic meeting to consider the following application:

DRB 07-10 – AT&T Wireless Transmitter Facility / Shannon McDougall (Applicant) for AT&T, PG&E (Transmission Tower Owner), Rancho Laguna LLC (Property Owner). Design review and hillside development permit for an equipment enclosure for a new AT&T telecommunications facility to be located 53-feet southeast of the EBMUD fence enclosure around the Fayhill Reservoir. The equipment enclosure will be 36-feet wide and 17-feet deep with a 3-foot high retaining wall behind it and a 6-foot high chain link fence around it. Three cabinets measuring 69-inches high, 51-inches wide and 36-inches deep will be installed initially with splice boxes for two additional cabinets in the future. Nine 6-foot high panel antennae will be mounted 42-feet above the ground near the middle of the 105-foot high PG&E transmission tower located adjacent to the Fayhill Reservoir. The purpose of the new transmitter facility is to provide cellular phone service to Rheem Valley and the Campolindo High School areas. The use permit for the new transmitter facility was approved by the Planning Commission on March 1, 2010. The property is zoned OSM-DT (Open Space - MOSO - Density Transfer). APN 256-040-024

Applicant	Property Owners
Shannon McDougall for AT&T 1023 Eagle Avenue Alameda, CA 94501	Rancho Laguna LLC 3001 "I" Street, Suite 200 Sacramento, CA 95816

The plans for this project are available for public review at the Moraga Planning Department, 329 Rheem Blvd. during normal business hours (Monday through Friday from 8 am to noon and 1 to 5 pm). Comments regarding the proposed project can be submitted in writing or orally at the public meeting. Written comments submitted to the Planning Department will be copied and submitted to the Design Review Board at their meeting. For additional information, contact the Planning Department at (925) 888-7042.

Richard Chamberlain
Senior Planner

DRB 06-10 and
DRB 07-10
Mailing List

AT T and Verizon Wireless Fayhill Road

Design Review
Board Meeting

APN	Name	Address	City & Zip
256061002	Phillip L & Keitha C Demara	PO BOX 5715	WALNUT CREEK , CA 94596 1715
256262006	Joseph G & Edith M Wargo Trust	21 BIRCHWOOD PL	MORAGA, CA 94556 2308
256420011	Genyo & Teresa D Sumiyoshi	27 VIA BARCELONA	MORAGA, CA 94556 2360
256420013	Richard P Hansen Trust	28 VIA BARCELONA	MORAGA, CA 94556 2359
256420014	Lance D Howland	26 VIA BARCELONA	MORAGA, CA 94556 2359
256420004	Kenneth Y & Emiko Yonemura Trust	7 VIA BARCELONA	MORAGA, CA 94556 2360
256420001	John P & Celia M Geraghty Trust	3 VIA BARCELONA	MORAGA, CA 94556 2360
256420028	Rancho Moraga Hoa/j Geraghty	3 VIA BARCELONA	MORAGA , CA 94556 2360
256420010	Craig & Madeleine F Bull	25 VIA BARCELONA	MORAGA, CA 94556 2360
256061010	Clyde B & Dona M Taylor	611 RHEEM BLVD	MORAGA, CA 94556 2324
256061011	John B Lerner	240 REDWOOD HWY, Apt.#6	MILL VALLEY , CA 94941 6605
256262003	Eugene D & Susan Thompson Trust	293 BIRCHWOOD DR	MORAGA, CA 94556 2302
256061009	Delbert Y & Ling Lu Yamaki	609 RHEEM BLVD	MORAGA, CA 94556 2324
256061008	John T & Lillian Brogan Trust	607 RHEEM BLVD	MORAGA, CA 94556 2324
256061007	Dennis P & Diana K Felso	605 RHEEM BLVD	MORAGA, CA 94556 2324
256061006	Aida M Peterson Trust	603 RHEEM BLVD	MORAGA, CA 94556 2324
256061005	John D & Kyoko S Garvey	601 RHEEM BLVD	MORAGA, CA 94556 2324
256061003	Ken & Alayvahn Chew	595 RHEEM BLVD	MORAGA, CA 94556 2322
256130001	Dennis J & Kathleen K Kelleher	594 RHEEM BLVD	MORAGA, CA 94556 2323
256061004	Brian D & Cynthia L Morton	599 RHEEM BLVD	MORAGA, CA 94556 2322
256040020	Lawrence W Korb	591 RHEEM BLVD	MORAGA, CA 94556 2322
256262007	Jon C & Megan R Lueteneker Trust	31 BIRCHWOOD PL	MORAGA, CA 94556 2308
256262005	Joseph G & Victoria M Bauer	11 BIRCHWOOD PL	MORAGA, CA 94556 2308
258011006	Central Cc Sanitary District	5019 IMHOFF PL	MARTINEZ , CA 94553 4316
258011005	Real Estate Services	PO BOX 24055	OAKLAND , CA 94623 1055
256040021	Drake H & Marilyn Grega Trust	1040 DOLORES DR	LAFAYETTE , CA 94549 2908
258011002	Mary E Ortland Trust	86 BUCKINGHAM DR	MORAGA , CA 94556 2407
256262002	Dean Myatt	289 BIRCHWOOD DR	MORAGA, CA 94556 2302
258011001	Wayne William Ortland	1801 ST MARYS RD	MORAGA, CA 94556
256040021	Drake H & Marilyn Grega Trust	1040 DOLORES DR	LAFAYETTE , CA 94549 2908
237160093	Mary E Ortland Trust	1801 ST MARYS RD	MORAGA, CA 94556 2700
256400022	Randall L Rasmussen Trust	251 BIRCHWOOD DR	MORAGA , CA 94556
256420007	John & Marguerite Northrup Trust	19 VIA BARCELONA	MORAGA, CA 94556 2360
256100016	John A & Antonina Inzerillo	500 RHEEM BLVD	MORAGA, CA 94556 2323
256420012	Lin Xia	29 VIA BARCELONA	MORAGA, CA 94556 2360
256420009	Harold R & Nguyen N Robison	23 VIA BARCELONA	MORAGA, CA 94556 2360
256420015	Ronald O Martin Trust	24 VIA BARCELONA	MORAGA, CA 94556 2359
256420016	Michael & Sherry Mcdonald Trust	22 VIA BARCELONA	MORAGA, CA 94556 2359
256420008	James Kenneth Larkin Trust	21 VIA BARCELONA	MORAGA, CA 94556 2360
256040009	Real Estate Services	PO BOX 24055	OAKLAND , CA 94623 1055
256420017	Lei He	18 VIA BARCELONA	MORAGA, CA 94556 2359
256420018	Charles B Simkins Trust	16 VIA BARCELONA	MORAGA, CA 94556 2359

DRB 06-10 and DRB 07-10 Mailing List

AT T and Verizon Wireless Fayhill Road

Design Review Board Meeting

256420006	T Gordon & Rosalyn S Hum Trust	17 VIA BARCELONA	MORAGA, CA 94556 2360
256420019	Hua Guo	14 VIA BARCELONA	MORAGA, CA 94556 2359
256420005	Howard H & Louise A Kerr Trust	15 VIA BARCELONA	MORAGA, CA 94556 2360
256420003	Toni M Tischler Trust	5 VIA BARCELONA	MORAGA, CA 94556 2360
256380003	Place Owners Assoc Moraga	PO BOX 6143	MORAGA, CA 94570 6143
256420002	Hee Tae & Chang Soon Lee	1 VIA BARCELONA	MORAGA, CA 94556 2360
256420029	Robert Blechman	3 VIA BARCELONA	MORAGA , CA 94556 2360
256040018	Rheem California Land Company	PO BOX 307	MORAGA , CA 94570
256310050	Woodminster Homeowners Assn	PO BOX 6	MORAGA , CA 94556 0006
256040022	Acceptance Corp Cascade Trust	PO BOX 400	MILL VALLEY, CA 94942 0400
256040008	Real Estate Services	PO BOX 24055	OAKLAND , CA 94623 1055
256040023	Kar Fung Co Ltd	853 E VALLEY BLVD, Apt.#200	SAN GABRIEL , CA 91776
256203001	Thomas R & Leslie D Henning	98 BUCKINGHAM DR	MORAGA, CA 94556 2407
256040015	Rheem Valley Properties Llc	190 N WIGET LN, Apt.#101	WALNUT CREEK, CA 94598 2440
256040024	Rancho Laguna LLC - Stefan Manolakas	1625 CREEKSIDE DR, Apt.#201	FOLSOM , CA 95630 3819
	NSA Wireless - Charnel James	2000 Crow Canyon Place, Ste 400	San Ramon, CA 94583
	AT&T - Shannon McDougall	1023 Eagle Avenue	Alameda, CA 94501
	PG&E - Sean Randall	77 Beale Street, B26L	San Francisco, CA 94105
	MSA	301 8th Street, Suite 250	San Francisco, CA 94103
	PEEK	853 Lincoln Way #106	Auburn, CA 95603
	Duplicate Addresses		
256040024	Laguna Llc Rancho	1625 CREEKSIDE DR, Apt.#201	FOLSOM , CA 95630 3819
256420027	Rancho Moraga Hoa/j Geraghty	3 VIA BARCELONA	MORAGA , CA 94556 2360
256420026	Rancho Moraga Hoa/j Geraghty	3 VIA BARCELONA	MORAGA , CA 94556 2360
256370004	Kar Fung Co Ltd	853 E VALLEY BLVD, Apt.#200	SAN GABRIEL , CA 91776
256370005	Kar Fung Co Ltd	853 E VALLEY BLVD, Apt.#200	SAN GABRIEL , CA 91776
256400025	Randall L Rasmussen Trust	251 BIRCHWOOD DR	MORAGA, CA 94556 2302
256040006	Central Cc Sanitary District	5019 IMHOFF PL	MARTINEZ , CA 94553 4316

EXHIBIT B

PLANNING COMMISSION RESOLUTION 04-2010 (VERIZON WIRELESS USE PERMIT)

BEFORE THE TOWN OF MORAGA PLANNING COMMISSION

In the Matter of:		**Resolution 04-2010**
Approval of a conditional use permit for a new Verizon Wireless telecommunications facility with nine panel antennas on a 12-foot extension of a PG&E tower and a 35-foot by 17-foot fenced equipment enclosure located adjacent to the EBMUD Fayhill Reservoir on the Rancho Laguna property.	)	File No. UP-02-2009 Adoption Date: March 1, 2010 Effective Date: March 10, 2010 (in not appealed)

WHEREAS, on April 2, 2009 an application was filed by Charnel James, NSA Wireless, Inc. on behalf of Verizon Wireless (applicant) and Stefan Manolakas, Rancho Laguna LLC (owner) for a Use Permit to allow the installation of nine 6-foot high panel antennas on a 12-foot extension of a PG&E tower and a 50-foot by 20-foot equipment pad with a 5-foot high retaining wall and a 10-foot high prefabricated building located adjacent to the EBMUD Fayhill Reservoir on the Rancho Laguna property; and

WHEREAS, on May 1, 2008 the application was found to be non-conforming with the development standards under MMC Sections 8.144.060-A2 and 8.144.060-A3; and

WHEREAS, on September 3, 2009 a revised application was submitted with a smaller 35-foot by 17-foot equipment pad with a 4-foot high retaining wall and six-foot fence around the enclosure; and

WHEREAS, on September 17, 2009 the applicant submitted the propagation maps prepared by their RF engineer to show the expanded area of service from the proposed new telecommunications facility; and

WHEREAS, on October 19, 2009 the applicant was requested to submit additional information needed to verify compliance with the MOSO guidelines; and

WHEREAS, on January 26, 2010 the applicant submitted a drawing to show that the proposed equipment enclosure would we located within a 10,220 square foot MOSO cell with an average slope of 18%; and

WHEREAS, on February 19, 2010 public hearing notices were mailed to all property owners within 300 feet of the property and posted at 2100 Donald Drive, the Moraga Commons and the Moraga Library; and

WHEREAS, the project was found to be Categorically Exempt in accordance with Section 15303 of the California Environmental Quality Act (CEQA); and

WHEREAS, on March 1, 2010 the Planning Commission held a public hearing and considered testimony from the applicant and interested parties; and

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of the Town of Moraga hereby approves the new Verizon Wireless telecommunications facility adjacent to the EBMUD Fayhill Reservoir with the findings listed below in accordance with Sections 8.12.120 of the Moraga Municipal Code and subject to the conditions listed herein:

SPECIFIC FINDINGS NECESSARY FOR ALL CONDITIONAL USE PERMITS:

Section 8.12.120 of the Moraga Municipal Code identifies the required findings that must be made to grant the Conditional Use Permit.

CHAPTER 8.12.120 – CONDITIONAL USE PERMIT REQUIRED FINDINGS.

1. **The proposed use is appropriate to the specific location** because MMC Section 8.144.030-D states that all new wireless communication facilities shall be collocated with existing facilities whenever feasible and the proposed location would be collocated on an existing PG&E transmission tower, with the equipment enclosure adjacent to the existing EBMUD Fayhill Reservoir.

2. **The proposed use is not detrimental to the health, safety, and general welfare of the Town** because the RF emissions from the nine new antennas proposed at the top of the PG&E transmission tower will comply with the Federal Communication Commission (FCC) standards.

3. **The proposed use will not adversely affect the orderly development of property within the Town** because the site is not a pristine undeveloped ridgeline and already has the PG&E transmission tower and EBMUD reservoir on the crest of the ridge.

4. **The proposed use will not adversely affect the preservation of property values and the protection of the tax base and other substantial revenue sources within the Town** because the visibility of the telecommunications equipment enclosure and antennas is substantially reduced by the great distance of more than 1,000 feet from the nearest residence and the improved wireless telecommunications service in the community could contribute to an improvement in property values.

5. **The proposed use is consistent with the objectives, policies, general land uses and programs specified in the general plan and applicable specific plans.** The proposed Verizon Wireless installation is consistent with the requirements of the Town's Wireless Communications Ordinance and qualifies for an exception to the prohibition of development within the Town's open space and ridgeline areas in accordance with the development standards listed in MMC Section 8.144.060-A. The equipment enclosure will be within a

minimum 10,000 square foot "cell" with an average slope less than 20% in accordance with the MOSO Guidelines.

6. **The proposed use will not create a nuisance or enforcement problem within the neighborhood** because the remote location of the proposed Verizon Wireless antennas and equipment has restricted access to the site and the facility will not produce any smoke or debris. On site equipment will alert personnel at Verizon Wireless if there is any breach in security.

7. **The proposed use will not encourage marginal development within the neighborhood** because the location of the facility is on a minor ridge over 800-feet in elevation where residential development or construction of other buildings would be prohibited by MOSO.

8. **The proposed use will not create a demand for public services within the Town beyond that of the ability of the Town to meet in light of taxation and spending restraints imposed by law** because the unmanned facility will be self-monitored by computers where any equipment malfunctions will be reported directly to the central office for corrective action. There would be no demand for additional public services.

9. **The proposed use is consistent with the Town's approved funding priorities.** The installation of the new Verizon Wireless telecommunications transmission facility will have no impact on the Town's funding priorities.

CONDITIONS OF APPROVAL:

1. This use permit shall be valid for an initial period of ten years. The conditional use permit may be extended by the Planning Commission for an additional ten year period following a public hearing and verification of continued compliance with the conditions of approval and a showing that the facility has been upgraded to minimize its impact, including community aesthetics, to the greatest extent permitted by the technology that exists at the time of renewal and is consistent with the provisions of federal law.

2. Within thirty (30) days after completion of the new installation, and every five years thereafter, Verizon Wireless shall conduct tests to verify compliance with FCC radio frequency emissions standards and provide such test results to the Moraga Planning Department. Such testing shall be conducted during normal business hours and on a non-holiday weekday with the facility operating at maximum power and shall measure total emissions from the cell site.

3. The following development standards for height and building setbacks shall apply to this use permit: (1) maximum height of 115-feet to the top of the antennas on the PG&E tower, (2) maximum height of 7-feet the fencing around the equipment enclosure, but any fence higher than 6-feet will require a building permit, (3) building setbacks of 300-feet to any residential structure in accordance with MMC Section 8.144.030-I.

4. The applicant shall submit the following plans for Design Review Board approval prior to issuance of a building permit:

    a. Assuming that a building permit will be required for the 4-foot high retaining wall at the backside of the equipment enclosure, the applicant shall apply for a Hillside Development Permit and address the factors listed under MMC Section 8.136.070, which include slope, soil instability, drainage, soil characteristics, seismic factors, existing and future residential development, view shed, access, potential traffic congestion, fire risk, noise, glare, wildlife, dust and impact on existing vegetation.

    b. Plans for the equipment and the fencing of the enclosure, including the color of the fencing and equipment to blend with the natural color of the dried grass as it appears for the majority of the year.

    c. Submit the color for the 9 panel antennas on the top of the PG&E tower. The paint shall have a non-reflective finish and shall be a color that will minimize visual impacts.

    d. The Design Review Board may request submittal of a landscape plan if deemed necessary to help camouflage views of the equipment enclosure.

5. If the cut into the hillside exceeds 3-feet in depth, a grading permit will be required. Grading permits are issued by the Town's Engineering Department. The process for approval of a grading permit, if required, will depend upon the average slope in the area of disturbance. If the average slope in the entire area to be graded is less than 20%, then the grading plans can be approved by the Town Engineer. If the average slope is between 20% and 25%, then plans for the grading will be submitted to the Design Review Board for approval. If the average slope is 25% or greater then the grading plans will require review by the Planning Commission and approval by the Town Council.

6. In accordance with MMC Section 8.144.070-D, the 30 KVA generator for emergency power shall comply with the following conditions to minimize noise impacts:

    a. A maximum allowable exterior noise level of sixty (60) dB at the property line of the facility must not be exceeded.

    b. Any maintenance or testing that will create noise that is audible from residences and other nearby sensitive receptors shall occur between the hours of eight a.m. to five p.m. Monday through Friday, excluding emergency repairs.

    c. The backup generator shall only be operated during power outages, emergency occurrences, or for testing and maintenance.

7. Any lighting used by technicians shall be manually operated and used only during night maintenance or emergencies. The lighting shall be constructed or located so that only the intended area is illuminated and off-site glare is fully controlled.

8. All equipment associated with this wireless communication facility shall be removed within thirty days of the discontinuation of use and the site shall be restored to its original preconstruction condition in a manner consistent with continued use by any collocated facility. The town shall be given thirty (30) days notice of intent to discontinue use of the facility prior to discontinuation of use.

ADOPTED by the Planning Commission of the Town of Moraga on March 1, 2010 by the following vote:

AYES: Commissioners Driver, Levenfeld, Obsitnik, Richards, Socolich and Wykle

NOES: Commissioner Whitley

ABSTAIN: None

ABSENT: None

Jim Obsitnik, Chair

Attest: for
Lori Salamack, Planning Director

EXHIBIT C

HILLSIDE DEVELOPMENT PERMIT FACTORS

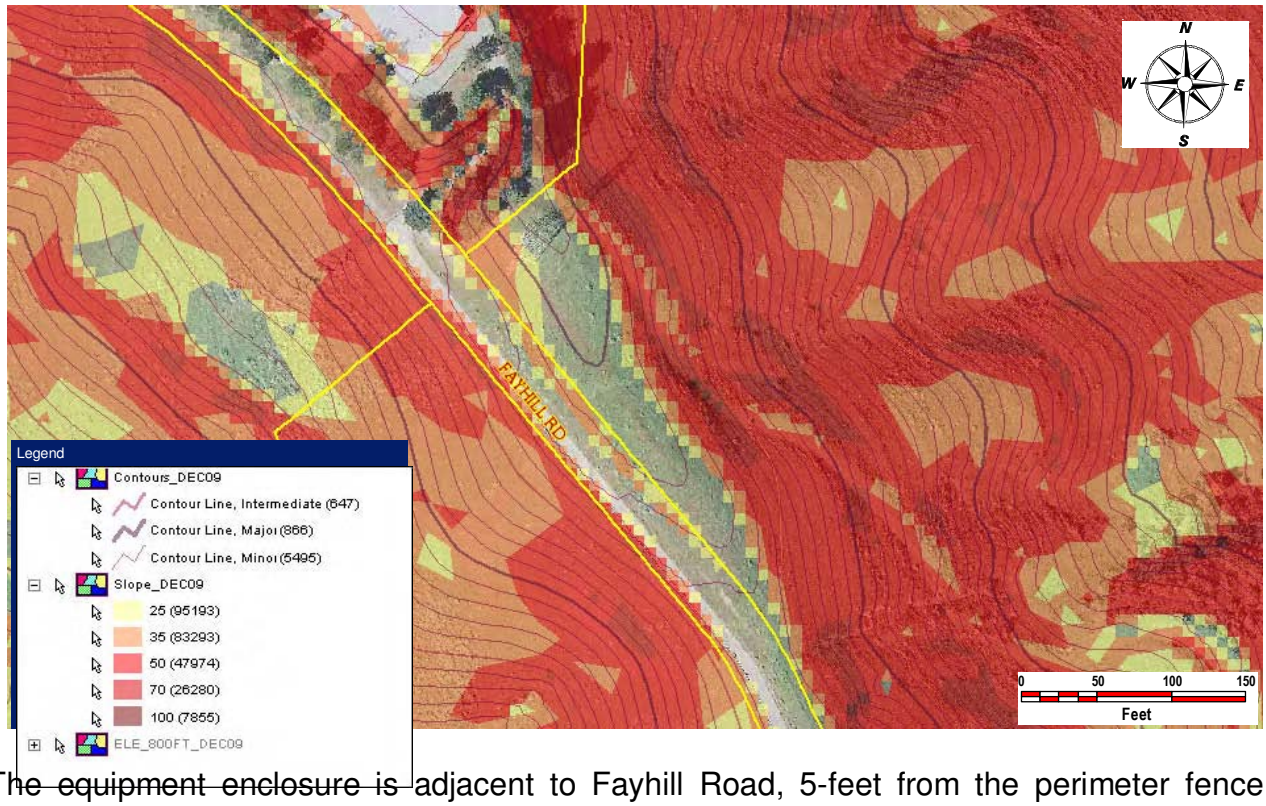
EXHIBIT C

FACTORS TO BE CONSIDERED IN ACCORDANCE WITH MORAGA MUNICIPAL CODE SECTION 8.136.070 FOR A HILLSIDE DEVELOPMENT PERMIT FOR VERIZON WIRELESS AT FAYHILL ROAD

1. **Slope**

Chapter 8.136 of the Moraga Municipal Code (MMC) applies to any project with a slope of 20% or greater. The slope of the hill below the PG&E tower varies between 35% to less than 20% along Fayhill Road as shown on the GIS Aerial Photo and topography map below:

Slope Map in vicinity of Verizon Wireless Installation on Fayhill Road



The equipment enclosure is adjacent to Fayhill Road, 5-feet from the perimeter fence around the East Bay Municipal Utility District (EBMUD) reservoir and about 53-feet southwest of the PG&E tower. The average slope in the area for the excavation of the equipment pad is shown as 19.8% on Sheet A-4 of the project plans. However, a hillside development permit is required because MMC Section 8.136.020-A-1 does not specify an "average" slope and portions of the hillside are over a 20% slope. Since this application for a telecommunications equipment installation does not involve construction of a habitable structure, staff determined that geotechnical peer review of the applicant's geotechnical investigation report was not required for the hillside development permit.

2. **Soil Instability**

The applicant submitted a Geotechnical Investigation Report prepared by Brown & Mills, Inc. dated December 14, 2009, which is attached as **EXHIBIT D**. Given the presence of shallow rock encountered during the excavation of the test pit, the report found the potential for significant ground subsidence at the site to be unlikely during or after a seismic event. On page 17 of the report, Brown and Mills, Inc. recommend that the retaining wall should extend above the level of the retained slope to provide a catchment area for eroded or sloughed surficial slope materials. Although the cut into the slope is about 40-inches deep, the total height of the wall will be 60-inches; therefore, the wall will extend about 20-inches above the existing slope.

3. **Drainage**

The drainage from the new concrete slab in the equipment enclosure has not been addressed on the project plans. Sheet S-2 of the plans show a perforated pipe sub-drain behind the retaining wall and a 3-foot wide concrete drainage apron above the wall to intercept hillside water and direct it around the enclosure. However, the combination of the increase in impervious surfaces and concentration of the storm water by the concrete drainage apron will require some form of dispersal to prevent erosion of Fayhill Road or the slope below the road. The drainage plans will require further review by the Town Engineer in conjunction with the building permit review.

4. **Soil Characteristics**

The soil characteristics were discussed in the Geotechnical Investigation Report by Brown & Mills, Inc. based on an exploratory test pit. The depth of the test pit was only about 6-feet because the backhoe hit rock below that level. The soils in the test pit consisted of medium dense silty sand to a depth of one foot below grade and moderately-weathered marine sedimentary rock. More detail is provided on Plates 3, 4 and 5 at the end of the report (**EXHIBIT D**). No free groundwater was found during excavation of the test pit, which was done during the middle of winter on December 7, 2009. The Geotechnical Investigation Report includes recommendations for site preparation, excavations and engineered fill and design parameters for the retaining walls and equipment cabinet foundations.

5. **Seismic Factors**

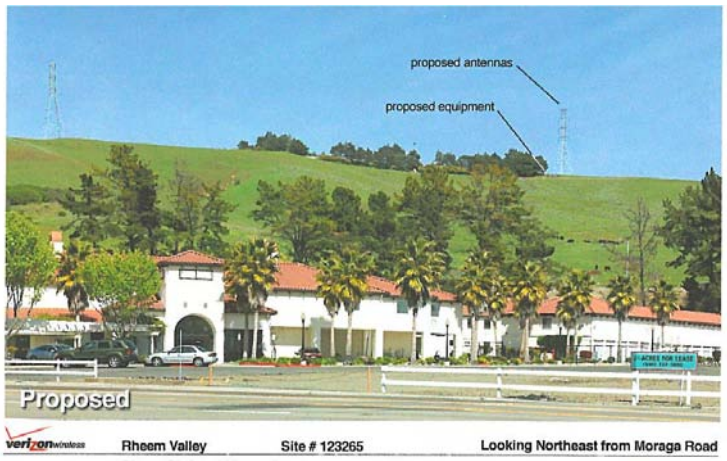
The Hayward Fault is located about 5 miles west-southwest of the project site. No active faults cross the site and it is not located within an Alquist Priolo Special Studies Zone or known Earthquake Fault Zone. The potential for ground rupture at the site is considered very unlikely. Page 7 of the report includes the CBC Seismic design parameters recommended for the project. Brown and Mills, Inc. recommend type B (i.e. rock) site classification under the CBC 2007 edition. The ground acceleration parameters are included in a table with the peak ground acceleration estimated at 0.83^{5}g (where "g" equals 32.2 feet per second squared). The report also states on page 8 that the potential for liquefaction is unlikely due to the presence of shallow rock and the lack of free groundwater. The structural calculations for the retaining wall behind the equipment enclosure will be reviewed by the building department for the building permit.

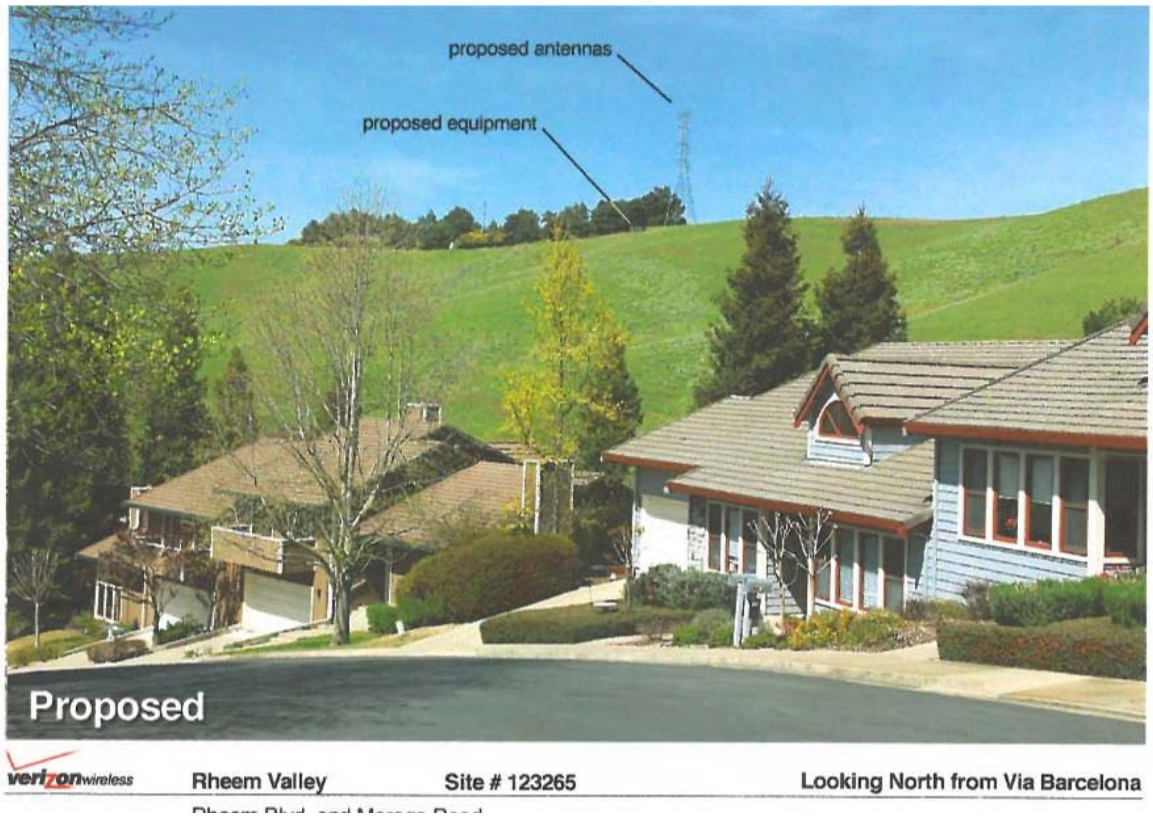
6. Existing and Future Residential Development

The proposed antennas and the equipment enclosure are not within 300 feet of any existing or proposed residential structures. The closest residential structures are located on Via Barcelona and Buckingham Drive. The home at 3 Via Barcelona is 1,126 feet from the PG&E tower and the home at 98 Buckingham Drive is 1,253 feet from the tower. The RF emissions would not have any measurable effect on any existing housing in Moraga. The subject parcel is privately maintained open space. The steep topography of the surrounding area and open space zoning would make additional residential development highly unlikely in the vicinity of the project. The proposed "Rancho Laguna" development is located much lower along the ridge and in the valley area closer to Rheem Boulevard.

7. View Shed

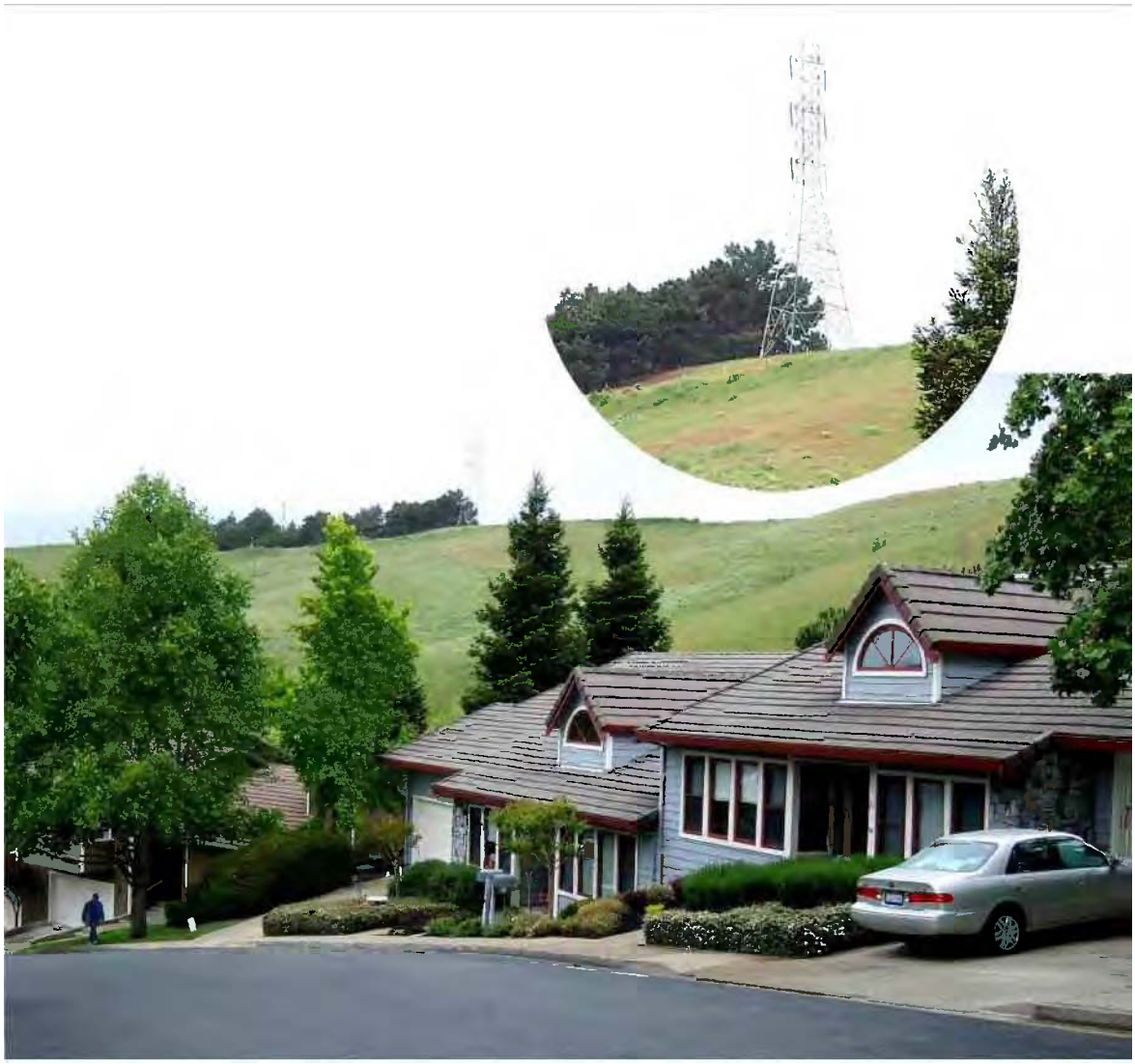
The nine new antenna at the top of the PG&E tower will not be significantly higher than the existing tower. Two new 5-foot high square sections will be added by PG&E making the 103-foot high tower 10-feet higher. In the photo simulation pictures below, the size of the antennas are relatively small in comparison to the overall size of the PG&E tower.





Story poles have been erected for the proposed equipment enclosure adjacent to Fayhill Road. Condition 4-b in the use permit requires Verizon Wireless to submit "Plans for the equipment and the fencing of the enclosure, including the color of the fencing and equipment to blend with the natural color of the dried grass as it appears for the majority of the year". The plans show a plain chain link fence around the enclosure. Staff has recommended in the draft action memorandum that light brown vinyl slates should be added in the chain link fence to make the equipment less visible. Condition 4-d in the use permit states "The Design Review Board may request submittal of a landscape plan if deemed necessary to help camouflage views of the equipment enclosure". Some trees or perhaps large native shrubs could be planted on the slope below Fayhill Road to help screen the view of the fenced enclosure. The fenced enclosure will be visible from several areas; however, these views are from a great distance and the enclosure is only visible with an extreme telephoto view. The photographs below and on the next page show a standard view with the naked eye and an enlarged telephoto view where the orange webbing around the story poles can be seen.

View from the Rheem Shopping Center (Burger King)



View from Via Barcelona

8. **<u>Noise</u>**

Condition 6 from the use permit reads "In accordance with MMC Section 8.144.070-D, the 30 KVA generator for emergency power shall comply with the following conditions to minimize noise impacts:

a. A maximum allowable exterior noise level of sixty (60) dB at the property line of the facility must not be exceeded.

b. Any maintenance or testing that will create noise that is audible from residences and other nearby sensitive receptors shall occur between the hours of eight a.m. to five p.m. Monday through Friday, excluding emergency repairs.

c. The backup generator shall only be operated during power outages, emergency occurrences, or for testing and maintenance."

There will also be noise generated during construction of the equipment enclosure and trenching of Fayhill Road for the underground cables to the telecommunications site.

These construction related noise impacts will be short-term in nature and are not expected to result in noise levels exceeding the Town's standards. The Town's Noise Ordinance limits construction activities to between the hours of 8:00 a.m. and 5:00 p.m.

9. <u>Potential traffic congestion</u>

This project will not impact traffic in the area since it is at the end of a very long private access road leading to the EBMUD Fayhill Reservoir. If the applicant needs to trench within the paved section of Rheem Boulevard to make the necessary underground connections, then an encroachment permit will be necessary from the Town's Engineering Department. The Town plans to resurface a portion of Rheem Boulevard during the summer of 2010. During this work access to Fayhill Road could be restricted.

10. <u>Fire risk</u>

The equipment within the enclosure includes a 30 KVA Generator with a 132 gallon fuel tank. The fuel tank could be a concern for increased fire risk at this remote location. A copy of the plans have been sent to the Moraga-Orinda Fire District (MOFD) for review. The applicant will need approval from the MOFD prior to release of the building permit.

11. <u>Wildlife</u>

No mature native trees, dense scrub or riparian areas, which provide important habitats for wildlife, will be removed for this project. The minor grading for the equipment enclosure is not expected to have any significant impact on wildlife on the project site.

12. <u>Dust</u>

The proposed grading is relatively minor; nevertheless, appropriate dust control mitigation measures should be implemented during the grading. The completed project would not generate any dust.

12. <u>Glare</u>

This project will have no affect on glare, since the retaining walls and fencing around the equipment will not be made of highly reflective material. At the Planning Commission meeting the applicant stated that the antennas and "top hat" will be installed by PG&E and the color of the antennas will match the color of the PG&E tower, with a non-reflective light grey paint color.

13. <u>Impact on Existing Vegetation</u>

This project will not have any impact on existing vegetation. For the most part, the existing grasses on the hillside where the new enclosure will be built are introduced pasture grasses that are not native to the area. There are no shrubs, bushes or trees in the area proposed for excavation of the equipment pad.

15. <u>Additional factors to be considered</u>

a. <u>Minimum Lot Area</u>

Comment: This is a very large private open space parcel and is not intended as a building site. The minimum lot area is not a factor for this application.

b. Appropriate Living Space

Comment: This is not a residential project and the requirement for an appropriate living space is not applicable.

c. Location of Building Sites Adjacent to Steep Slopes

Comment: The site has been chosen because of its proximity to the PG&E transmission tower. The proposed equipment enclosure is not located on the crest of the ridge and will not be seen as a silhouette above the ridgeline as verified by the photographs taken of the story poles. The equipment will be connected to the antenna via underground cables to the tower and conduit running up the legs of the tower. Power to the equipment enclosure will also be underground in a trench that will run up Fayhill Road from Rheem Boulevard.

d. Additional Restrictions or Requirements

Comment: The Design Review Board should consider any concerns of affected neighbors and include any appropriate recommendations to address any visual or aesthetic concerns in the conditions of approval.

EXHIBIT D

GEOTECHNICAL INVESTIGATION REPORT

GEOTECHNICAL INVESTIGATION REPORT

PROPOSED TELECOMMUNICATIONS FACILITY

RHEEM VALLEY, SITE NO. 123265
RHEEM BOULEVARD AND MORAGA ROAD
MORAGA, CALIFORNIA

prepared by:

BROWN & MILLS, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS ■ CONSTRUCTION MATERIALS TESTING

December 14, 2009
BMI Project No. 09S-227

Ms. Judy Summers
NSA Wireless
Bishop Ranch 15, 1St Floor
12647 Alcosta Boulevard, Suite 110
San Ramon, California 94583

Subject: Geotechnical Investigation
Proposed Telecommunications Facility
Rheem Valley, Site No. 123265
Rheem Boulevard and Moraga Road
Moraga, California

Dear Ms. Summers:

Brown & Mills is pleased to present the attached geotechnical investigation report for a proposed telecommunications facility to be located north-northwest of the intersection of Rheem Boulevard and Moraga Road in Moraga, California. Results of our study indicated the site is not within a current Earthquake Fault Zone or other area known to possess a significant geologic risk to site development. Further, we anticipate conventional grading practices may be used for most site earthwork activities and that foundation support for the planned equipment cabinets and earth retaining walls may be provided using shallow spread footings.

Though we anticipate the site may be developed generally using conventional grading and foundation construction techniques, it should be noted conditions were identified by our field exploration program that may require special design and/or construction provisions for some project components. A brief summary of these conditions as well as possible design and/or construction provisions to address these potential concerns are outlined below.

- Moderately-weathered marine sedimentary rock was initially encountered during our field exploration program at a depth of approximately one foot below existing site grade. Further, the exploratory test pit performed for this investigation encountered essential backhoe refusal (on rock) at a depth of about 6 feet below existing site grade. In our opinion, the presence of on-site rock may impact trench (and other shallow) excavations into these materials. In our opinion a large, track-mounted excavator, possibly equipped with a single ripper tooth, hydraulic percussion hammer, rock wheel, or other similar equipment specifically intended

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Email Address: bmi.sac@sbcglobal.net

for rock removal may be required to advance excavations within some areas of the site or which extend to deeper depths.

- In addition to excavation difficulties, perched water may develop above on-site rock subsequent to wet weather. The presence of perched groundwater could hinder trenching operations and may necessitate the use of a sump or other type of dewatering system for some trench and/or other earthwork excavations.

Specific comments regarding the conditions outlined above, as well as recommendations regarding the geotechnical aspects of project design and construction, are presented in the following report.

We appreciate the opportunity of providing our services for this project. If you have questions regarding this report or if we may be of further assistance, please contact the undersigned.

Sincerely,

Brown & Mills, Inc.

R. Keith Brown 12/14/09

REGISTERED PROFESSIONAL ENGINEER
R. KEITH BROWN
No. 2141
Exp. 12/31/2009
GEOTECHNICAL
STATE OF CALIFORNIA

R. Keith Brown, P.E.
Principal

cc: Client (4 bound copies sent via first class mail and one copy sent via email)

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GEOTECHNICAL INVESTIGATION REPORT
PROPOSED TELECOMMUNICATIONS FACILITY
RHEEM VALLEY, SITE NO. 123265
RHEEM BOULEVARD AND MORAGA ROAD
MORAGA, CALIFORNIA

INTRODUCTION

GENERAL

This report presents the results of our geotechnical investigation for a proposed telecommunications facility to be located north-northwest of the intersection of Rheem Boulevard and Moraga Road in Moraga, California. The purpose of our investigation was to explore and evaluate the subsurface conditions at the site in order to develop recommendations related to the geotechnical aspects of project design and construction.

The project site is located within the northwest portion of the U.S Geological Survey 7.5 minute Los Trampas Ridge quadrangle at coordinates[1] N 37 51 36 (37.8603), W 122 06 57 (122.116). The approximate site location relative to existing topographic features and roads is shown on Plate 1.

PROPOSED CONSTRUCTION

We understand the proposed project will involve construction of a telecommunications facility which will include the installation of antennas on an existing power transmission tower as well as cabinets (or cabinet) supported-on-grade. Appurtenant construction may include underground utilities and earth retaining walls.

Plans indicating final site grades were not available at the time this report was prepared; however, as site topography is gently-to-moderately sloping, we anticipate earthwork cuts and fills generally less than about 3 feet in vertical extent may be utilized to achieve a level building area. Excavations for underground utilities are not anticipated to exceed about 5 feet below existing or final site grades.

A plot plan indicating the proposed project area is presented on Plate 2.

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[1] Datum reference: North American Datum of 1927.

SCOPE OF SERVICES

The scope of our services was outlined in our proposal dated November 10, 2009, and included the following:

- Review readily available (and relevant) literature pertaining to site geology, faulting, and seismicity.
- Exploration of the subsurface conditions at the site using one exploratory test pit.
- Field resistivity tests conducted in general accordance with ASTM Test Method G 57 (Wenner Four-Electrode Method).
- Preparation of this report which includes:
  - A description of the proposed project;
  - A summary of our field exploration program and field resistivity tests;
  - A description of site surface and subsurface conditions encountered during our field investigation;
  - Our comments regarding potential geologic hazards which could affect the site or proposed project;
  - California Building Code (CBC, 2007 edition) seismic parameters; and
  - Recommendations related to the geotechnical aspects of site preparation and engineered fill, temporary excavations and trench backfill, earth retaining walls, earthen slopes, and foundation design and construction.

FIELD INVESTIGATION

EXPLORATORY TEST PIT

Subsurface conditions at the site were explored on December 7, 2009, by excavating one test pit to a depth of about 6 feet below existing site grade. The test pit was excavated using a Case 580, tractor-mounted backhoe equipped with a 24-inch-wide bucket. The approximate location of the test pit performed for this investigation is shown on Plate 2.

Note: The test pit performed for this investigation was prematurely terminated (i.e., reached a depth less than initially planned) due to essential bucket refusal on rock.

Our technician maintained a log of the test pit, visually classified the soils and rock encountered according to the Unified Soil Classification System (see Plate 3) or Rock Classification Legend (see Plate 4), respectively, and obtained representative samples of the subsurface materials. After the test pit was completed, it was loosely backfilled with the excavated material. A log of the exploratory test pit performed for this investigation is presented on Plate 5.

FIELD RESISTIVITY TESTING

A total of 3 field resistivity tests were conducted on December 7, 2009, in general accordance with ASTM Test Method G 57 (Wenner Four-Electrode Method). Tests were performed at one location (line) within the area of the planned telecommunications facility. Results of our field resistivity testing are presented below.

Line No.	Location	Orientation	Inner Electrode Spacing (ft)[2]	Outer Electrode Spacing (ft)	Measured Resistivity (ohm-cm)
R1	Approximately 20 feet east of planned equipment installation	N-S	5	5	6,510
R1	Approximately 20 feet east of planned equipment installation	N-S	10	10	59,370
R1	Approximately 20 feet east of planned equipment installation	N-S	20	20	264,270

[2] The inner electrode spacing roughly corresponds to the depth over which the measured resistivity would be applicable.

SITE CONDITIONS

GEOLOGY AND SEISMICITY

Geologic Setting

The project site is located within the Coast Range geologic province. The geologic structure of this province is complex, having been molded by numerous mountain building events characterized by extensive folding, faulting, and fracturing of variable intensity. Regionally, these folds and faults trend northwesterly and are responsible for the development of a pronounced northwest trending ridge-valley system.

Based on our review of the California Division of Mines and Geology map titled: "Geologic Map of the San Francisco-San Jose Quadrangle, California," compiled by D.L. Wagner, E.J. Bortugno, and R.D. McJunkin (published 1991), the project site lies within an area of Mesozoic-age marine sedimentary rock.

Faulting and Seismicity

The project site is located within a region of California characterized by active faulting. The closest, active[3] fault mapped by the California Division of Mines and Geology[4] is the Hayward Fault, located about five miles to the west-southwest of the site.

SURFACE

The project site is located north-northwest of the intersection of Rheem Boulevard and Moraga Road in Moraga, California. At the time of our field investigation, the area of the planned equipment cabinets and earthy retaining walls were vacant of visible past development and were vegetated with grasses. Existing topography within the immediate site area sloped gently-to-moderately down towards the southwest.

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[3] Within this report, a fault is considered active if there is evidence of Holocene (i.e., within the past 10,000 to 12,000 years) surface displacement along one or more of its segments or branches.

[4] Reference: California Division of Mines and Geology map titled: "Fault Activity Map of California and Adjacent Areas," compiled by Charles W. Jennings, published 1994.

SUBSURFACE

Earth materials encountered in the test pit performed for this investigation consisted predominantly of medium dense silty sand to a depth of about one foot below existing site grade. Below these near-surface soils, moderately-weathered, moderately-strong-to-strong marine sedimentary rock was encountered to the maximum depth explored (approximately 6 feet below existing site grade).

No free groundwater was encountered during our field investigation. However, groundwater conditions can vary depending on the season, precipitation, runoff conditions, irrigation and/or groundwater pumping practices (both on and off site), the level of nearby bodies of water, and possibly other factors. Further, during the winter or spring season, or shortly after significant precipitation, perched groundwater (or groundwater seepage) may be present above on-site rock. Therefore, groundwater conditions presented in this report may not be representative of those which may be encountered during or subsequent to construction.

A more detailed description of the subsurface conditions encountered during our field investigation is provided on the attached log.

CONCLUSIONS AND RECOMMENDATIONS

GENERAL

Results of our study indicated the site is not within a current Earthquake Fault Zone or other area known to possess a significant geologic risk to site development. Further, we anticipate conventional grading practices may be used for most site earthwork activities and that foundation support for the planned equipment cabinets and earth retaining walls may be provided using shallow spread footings.

Though we anticipate the site may be developed generally using conventional grading and foundation construction techniques, it should be noted conditions were identified by our field exploration program that may require special design and/or construction provisions for some project components. A brief summary of these conditions as well as possible design and/or construction provisions to address these potential concerns are outlined below.

- Moderately-weathered marine sedimentary rock was initially encountered during our field exploration program at a depth of approximately one foot below existing site grade. Further, the exploratory test pit performed for this investigation encountered essential backhoe refusal (on rock) at a depth of about 6 feet below existing site grade. In our opinion, the presence of on-site rock may impact trench (and other shallow) excavations into these materials. In our opinion a large, track-mounted excavator, possibly equipped with a single ripper tooth, hydraulic percussion hammer, rock wheel, or other similar equipment specifically intended for rock removal may be required to advance excavations within some areas of the site or which extend to deeper depths.

- In addition to excavation difficulties, perched water may develop above on-site rock subsequent to wet weather. The presence of perched groundwater could hinder trenching operations and may necessitate the use of a sump or other type of dewatering system for some trench and/or other earthwork excavations.

Specific comments regarding the conditions outlined above, as well as recommendations regarding the geotechnical aspects of project design and construction, are presented in the following sections of this report.

GEOLOGIC HAZARDS

Ground Rupture

No active faults are known to cross the site area, nor is the site within a current Earthquake Fault Zone (formerly known as an Alquist Priolo Special Studies Zone). Therefore, it is our professional

opinion that the potential for ground rupture (or other similar effect) at the site in the event of a seismic event is highly unlikely.

CBC Seismic Design Parameters

In the event the California Building Code (CBC, 2007 edition) is used for seismic design, it is our opinion encountered subsurface conditions (and those suspected below the maximum depth explored) would warrant a type B (i.e., rock) Site Classification. Further, using software provided by the United States Geological Survey (i.e. Java Ground Motion Parameter Calculator - Version 5.0.9a), site-specific spectral response acceleration parameters were obtained for the maximum considered earthquake and are summarized in the table below.

Spectral Response Acceleration Parameters		Value
Mapped spectral acceleration for short periods	S_S	1.500g
Mapped spectral acceleration at 1-second period	S_1	0.600g
Site coefficient for short periods	Fa	1.000
Site coefficient at 1-second period	Fv	1.000
Adjusted earthquake spectral response acceleration for short periods	S_{MS}	1.500g
Adjusted earthquake spectral response acceleration at 1-second period	S_{M1}	0.600g
Design earthquake spectral response acceleration for short periods	S_{DS}	1.000g
Design earthquake spectral response acceleration at 1-second period	S_{D1}	0.400g

Estimated Peak Ground Acceleration

In order to assess potential ground motions at the site due to seismic activity, we utilized the USGS Probabilistic Seismic Hazard Map 2008 gridded values via the Internet. Values of attenuated ground motion compiled within this database are based on the closest distance between the site and various measures of fault-plane rupture for each fault in the source model. For a Class B (rock) site, a peak ground acceleration (PGA) of 0.83[5]g (where "g" equals 32.2 feet per second per second) was obtained for the maximum considered earthquake event (i.e., 2 percent probability of exceedance in 50 years).

[5] Values obtained from the USGS Probabilistic Seismic Hazard Map database are for "firm rock" sites. The value obtained was adjusted for site-specific ground conditions using National Earthquake Hazards Reduction Program (NEHRP, 1994) correction factors.

Liquefaction

Liquefaction is a phenomenon whereby loose, saturated, granular soil deposits lose a significant portion of their shear strength due to excess pore water pressure buildup resulting from cyclic loading, such as that caused by an earthquake. Among other effects, liquefaction can result in densification of such deposits after an earthquake as excess pore pressures are dissipated (and hence settlements of overlying deposits). The primary factors deciding liquefaction potential of a soil deposit are: (1) the level and duration of seismic ground motions; (2) the type and consistency of the soils; and (3) the depth to groundwater.

Subsurface earth materials encountered during our field investigation generally consisted of medium dense silty sand underlain (at a relatively shallow depth) by moderately-weathered, moderately-strong-to-strong marine sedimentary rock. No free groundwater was encountered during our field investigation.

Given the presence of shallow rock and the lack of free groundwater encountered during our field investigation, it is our professional opinion that the potential for liquefaction at the site during or subsequent to a seismic event is unlikely.

Ground Subsidence

Ground subsidence within the site area would typically be due to densification of subsurface soils during or subsequent to a seismic event. Generally, loose, granular soils would be most susceptible to densification, resulting in ground subsidence.

Given the presence of shallow rock encountered during our field investigation, it is our professional opinion that the potential for significant ground subsidence at the site during or subsequent to a seismic event is unlikely.

SHALLOW ROCK

Moderately-weathered, moderately-strong-to-strong marine sedimentary rock was encountered in the test pit performed for this investigation at a depth of about one foot below existing site grade. Further, backhoe refusal on this rock was encountered in the test pit performed for this investigation at a depth of about 6 feet below existing site grade. Based on this experience as well as our general knowledge of the site area, we anticipate trench (and other shallow) excavations into these materials may be difficult with a conventional backhoe. Therefore, a large, track-mounted excavator, possibly equipped with a single ripper tooth, hydraulic percussion hammer, rock wheel, or other similar equipment specifically intended for rock removal may be required to advance excavations within some areas of the site or which extend to deeper depths.

In addition to excavation difficulties, perched water may develop above on-site rock subsequent to wet weather. The presence of perched groundwater could hinder trenching operations and may necessitate the use of a sump or other type of dewatering system for some trench and/or other earthwork excavations (see section below titled: "TEMPORARY DEWATERING").

SITE PREPARATION

Stripping

Within the area of proposed construction, any existing vegetation, organic soil, or debris should be stripped and disposed of off-site or outside the construction limits. In the event organic soils or tree roots are encountered (or suspected) at or beneath the stripped surface, deep stripping or grubbing will be required to remove these (or other similar) deleterious materials.

Existing Utilities

If abandoned (or to be abandoned), below-grade utility lines, septic tanks, cesspools, wells, and/or foundations are encountered or are known to exist within the area of construction, they should be removed and disposed of off-site. Existing, below-grade utility pipelines (if any) which extend beyond the limits of the proposed construction and will be abandoned in-place should be plugged with cement grout to prevent migration of soil and/or water. All excavations resulting from removal activities should be cleaned of all loose or disturbed material (including previously-placed backfill) prior to placing any fill or backfill.

Exploratory Test Pit Backfill

Backfill used to fill the exploratory test pit performed for this investigation was loosely-placed and, therefore, may be compressible or susceptible to future subsidence. If planned improvements will be located over this area, we recommend all backfill associated with this test pit be excavated and replaced with engineered fill. The approximate location of the test pit performed for this investigation is shown on Plate 2.

Scarification and Compaction

If engineered fill is required for this project, we recommend the ground surface upon which this fill will be placed be scarified to a depth of 8 inches, uniformly moisture-conditioned to between 0 and 5 percent above the optimum moisture content, and compacted to at least 90 percent of the maximum dry density as determined by ASTM (American Society for Testing and Materials) Test Method D

1557[6]. In the event the exposed subgrade consists of undisturbed on-site rock, scarification and compaction may be omitted if approved by the project Geotechnical Engineer.

Overexcavation of Loose or Disturbed Material

Within areas grubbed or otherwise disturbed below a depth of about 12 inches, in-place scarification and compaction may not be adequate to densify all disturbed soil. Therefore, overexcavation of the disturbed soil, scarification and compaction of the exposed subgrade, and replacement with engineered fill may be required in these areas.

Wet/Unstable Soil Conditions

If site preparation or earthwork grading (if any) is performed in the winter or spring season, or shortly after significant precipitation or irrigation, near-surface site soils may be significantly over optimum moisture content. Further, perched water may be encountered above on-site rock regardless of the season. These conditions could hinder equipment as well as efforts to compact site soils to a specified level of compaction. If soils over optimum moisture content are encountered during construction, disking to aerate, replacement with imported material, chemical treatment, stabilization with a geotextile fabric or grid, and/or other methods will likely be required to facilitate earthwork operations. The applicable method will depend on the contractor's capabilities as well as other project-related factors beyond the scope of this study. Therefore, if over-optimum soil conditions and/or perched water are encountered during construction, the project Geotechnical Engineer should review these conditions (as well as the contractor's capabilities) and, if appropriate, provide recommendations for their treatment.

TEMPORARY DEWATERING

Though no free groundwater was encountered during our field investigation, we anticipate even shallow excavations may encounter groundwater perched over on-site rock during or subsequent to wet weather. If perched groundwater is encountered during construction, dewatering may be required to facilitate construction. In our opinion dewatering of narrow trench excavations which penetrate less than a few feet below the groundwater surface and do not encounter loose and/or cohesionless soil or highly-fractured rock may be possible using a sump system. Dewatering of more extensive excavations, or excavations which encounter loose and/or cohesionless soil or highly-fractured rock, will likely require well points, deep wells, and/or deep sumps. To help maintain the stability of these types of excavations, groundwater levels should be drawn-down a minimum of 2 feet below the lowest portion of the excavation prior to excavating.

[6] This test procedure should be used wherever relative compaction, maximum dry density, or optimum moisture content is referenced within this report.

Since temporary dewatering will impact and be dependent on construction methods and scheduling, we recommend the contractor be solely responsible for the design, installation, maintenance, and performance of all temporary dewatering systems. Further, perched water conditions can be highly dependent on the season, precipitation, runoff conditions, and possibly other factors. Therefore, groundwater conditions presented in this report may not be representative of those which may be encountered at the time of construction. We recommend the contractor verify groundwater conditions and evaluate dewatering requirements prior to bidding and/or construction.

TEMPORARY EXCAVATIONS

General

All excavations must comply with applicable local, state, and federal safety regulations including the current OSHA Excavation and Trench Safety Standards. Construction site safety generally is the responsibility of the contractor, who should be solely responsible for the means, methods, and sequencing of construction operations.

Construction Considerations

Construction equipment, building materials, excavated soil, vehicular traffic, and other similar loads should not be allowed near the top of any unshored or unbraced excavation. Where the stability of adjoining buildings, walls, pavements, or other similar improvements is endangered by excavation operations, support systems such as shoring, bracing, or underpinning may be required to provide structural stability and to protect personnel working within the excavation. Since excavation operations are dependent on construction methods and scheduling, the contractor should be solely responsible for the design, installation, maintenance, and performance of all shoring, bracing, underpinning, and other similar systems. Under no circumstances should comments provided herein be inferred to mean that Brown & Mills is assuming any responsibility for temporary excavations, or for the design, installation, maintenance, and performance of any shoring, bracing, underpinning, or other similar systems.

During wet weather, earthen berms or other methods should be used to prevent runoff water from entering all excavations. All runoff water within or adjacent to any excavations should be collected and disposed of outside the construction limits.

Excavation Conditions

Shallow rock was encountered in the test pit performed for this investigation at a depth of about one foot below existing site grade. Further, backhoe refusal on this rock was encountered in the test pit performed for this investigation at a depth of about 6 feet below existing site grade. Based on this experience as well as our general knowledge of the site area, we anticipate trench (and other shallow)

excavations into these materials may be difficult with a conventional backhoe. Therefore, a large, track-mounted excavator, possibly equipped with a single ripper tooth, hydraulic percussion hammer, rock wheel, or other similar equipment specifically intended for rock removal may be required to advance excavations within some areas of the site or which extend to deeper depths.

In addition to excavation difficulties, perched water may develop above on-site rock subsequent to wet weather. The presence of perched groundwater could hinder trenching operations and may necessitate the use of a sump or other type of dewatering system for some trench and/or other earthwork excavations (see section above titled: "TEMPORARY DEWATERING").

BENCHING REQUIREMENTS

If fill is to be placed on slopes steeper than 5(h):1(v), the slope to receive this fill should be benched prior to or during fill placement. In general, benches should extend through any loose or disturbed soil or rock, extend a minimum of 2 feet (measured horizontally) into the existing slope, and be offset no more than 4 feet vertically.

ENGINEERED FILL

Materials - General

If engineered fill is required for this project, we recommend this material consist of soil and/or soil-aggregate mixtures generally less than 3 inches in maximum dimension, nearly-free of organic or other deleterious debris, and essentially non-plastic. Typically, mixtures of gravel, sand, silt, low placticity clay, and/or rock fragments are acceptable for use as engineered fill. Specific requirements for engineered fill as well as applicable test procedures to verify material suitability are provided on the following page.

Soil Property		ASTM Test Procedure	
Gradation		Test Designation	Test Description
Sieve Size	Percent Passing		
3-inch	100	D 422	Particle-Size Analysis of Soils
¾-inch	70 to 100	D 422	Particle-Size Analysis of Soils
200	Greater than about 10	D 422	Particle-Size Analysis of Soils
Plasticity			
Liquid Limit	Plasticity Index	D 4318	Liquid Limit, Plastic Limit, and Plasticity Index of Soils
Less than 35	Less than 15		
Expansion Potential			
Less than 20		D 4829	Expansion Index of Soils
Organic Content			
Less than 3 percent		D 2974	Moisture, Ash, and Organic Matter of Peat and Other Organic Soils
Maximum Dry Unit Weight			
More than 100 pounds per cubic foot		D 1557	Laboratory Compaction Characteristics of Soil Using Modified Effort

On-Site Soil Materials

In general, we anticipate near-surface, on-site soils free of organic or other deleterious debris may be used for engineered fill.

On-Site Rock Materials

On-site rock may require special handling and/or processing to reduce the size of the excavated material and meet the requirements provided above for engineered fill (i.e., engineered fill should be generally less than 3 inches in maximum dimension). In order to use on-site rock for engineered fill, we recommend these materials either be: (1) processed (i.e., pulverized) with heavy equipment to reduce individual rock fragments to generally less than about 3 inches in maximum dimension; or (2) screened, raked, or selectively processed to remove individual rock fragments more than about 3

inches in maximum dimension. In general, we recommend all rock in excess of about 3 inches in maximum dimension be disposed of off-site or outside the construction limits.

Imported Materials

All imported soil and/or soil-aggregate mixtures used for engineered fill should: (1) meet the material requirements outlined above (see section titled "Materials - General"); and (2) be sampled, tested and approved by the project Geotechnical Engineer prior to being transported to the site.

Placement and Compaction

Soil, processed on-site rock, and/or soil-aggregate mixtures used for engineered fill should be uniformly moisture-conditioned to between 0 and 5 percent above the optimum moisture content, placed in horizontal lifts less than 8 inches in loose thickness, and compacted to at least 90 percent relative compaction. In pavement areas, engineered fill placed within 12 inches of finished subgrade[7] should be compacted to at least 95 percent relative compaction.

TRENCH BACKFILL

Materials

Pipe zone backfill (i.e., material beneath and in the immediate vicinity of the pipe) should consist of on-site or imported soil less than one inch in maximum dimension; trench zone backfill (i.e., material placed between the pipe zone backfill and finished subgrade) may consist of on-site soil and/or processed rock which meets the material requirements previously-provided for engineered fill.

If imported material is used for pipe or trench zone backfill, we recommend it consist of fine-grained sand. In general, use of coarse-grained sand and/or gravel is not recommended due to the potential for soil migration into, and water seepage along, trenches backfilled with this type of material.

Recommendations provided above for pipe zone backfill are minimum requirements only. More stringent material specifications may be required to fulfill local codes and/or bedding requirements for specific types of pipe. We recommend the project Civil Engineer develop these material specifications based on planned pipe types, bedding conditions, and other factors beyond the scope of this study.

[7] Within this report, finished subgrade refers to the top surface of undisturbed on-site rock, on-site soil compacted during site preparation, compacted trench backfill, and/or engineered fill.

Placement and Compaction

Trench backfill should be placed and compacted in accordance with recommendations previously-provided for engineered fill. Mechanical compaction is strongly recommended; ponding or jetting should not be allowed unless specifically reviewed and approved by the project Geotechnical Engineer prior to construction.

Important Note: All pipe zone backfill should be placed on undisturbed earth materials. In the event earth materials located directly beneath the planned pipe zone backfill are disturbed during construction, these materials should either be compacted in-place (if the depth of disturbance is less than about 12 inches deep), or removed (if the depth of disturbance is greater than about 12 inches) and replaced in accordance with recommendations previously-provided for engineered fill.

EARTH RETAINING WALLS

Lateral Earth Pressures

We understand earth retaining walls[8] will be utilized within portions of this project. All such walls should be designed to resist the earth pressure exerted by the retained backfill (and/or excavated earthen embankment), as well as any additional lateral forces that will be applied to the walls due to surface loads (placed near the top of the walls). The active earth pressure against walls that are unrestrained (i.e., walls free to rotate or are considered flexible) and with level backfill may be taken as equivalent to the pressure exerted by a fluid weighing 45 pounds per cubic foot (pcf).

In the event wall backfill (and/or excavated earthen embankment) is not level (i.e., ascending away from the top of the walls), the active earth pressure used for design should be increased beyond the value provided above. The appropriate increase will depend on the location and gradient of the sloped backfill (and/or excavated earthen embankment). In general, the value provided above would remain applicable if the toe of the ascending slope is located no closer than the wall height from the top of the wall. For slopes located closer than the wall height and ascending at a gradient of 2(h):1(v), the value provided above should be increased to 60 pcf.

[8] Recommendations provided herein are for conventional retaining walls consisting of cast-in-place concrete or masonry construction less than 5 feet in height. If other forms of construction (such as crib, reinforced earth, interlocking block, wood, etc.) or higher walls are to be used, parameters provided herein may not be applicable and further review by the project Geotechnical Engineer may be necessary.

Surcharge Loads

Additional lateral forces that may be applied to earth retaining walls due to surface loads (placed near the top of the walls) will be highly dependent on the type and location of these surface loads (if any). For the case of a uniform areal surcharge placed at the top of an unrestrained earth retaining wall, forty percent of this load may be assumed to act as a uniform horizontal pressure over the entire height of the wall. For other conditions (i.e., point or strip loads), the project Geotechnical Engineer should review the anticipated loading and provide case specific design criteria.

Wall Rotation

It should be noted some outward rotation of an unrestrained earth retaining wall will occur in order to develop the active pressures provided above. For design purposes, wall rotation may be expressed as a horizontal displacement of the top of the wall (away from the retained earth) a distance equal to approximately two percent of the wall height. Since wall displacements could impact adjacent improvements (as well as the wall=s appearance), the wall designer should consider these displacements in both the design of any earth retaining walls as well as any adjacent improvements. Such considerations could include cambering all earth retaining walls to account for post-construction displacements, restricting improvements located immediately adjacent to the top of any and all earth retaining walls, and possibly other provisions. In the event the wall designer determines possible horizontal wall displacements will adversely impact adjacent improvements, a restrained wall should be considered at these locations.

Restrained Walls

In the event earth retaining walls are restrained (or partially restrained) from rotation, earth pressures used for design should be increased beyond the values provided above. The at-rest earth pressure against walls that are restrained from rotation and with level backfill may be taken as equivalent to the pressure exerted by a fluid weighing 65 pounds per cubic foot (pcf). Sixty percent of any uniform areal surcharge placed at the top of a restrained wall may be assumed to act as a uniform horizontal pressure over the entire height of the wall.

Foundations

Earth retaining walls may be supported using spread footings constructed of reinforced concrete and founded on undisturbed on-site rock. Foundation parameters provided below for the planned equipment cabinet (or cabinets) may be used for the design of earth retaining wall foundations (see section below titled: "EQUIPMENT CABINET FOUNDATIONS").

Seismic Loads

Depending on design considerations beyond the scope of this study, it may be appropriate to design planned earth retaining walls for seismic loading. The seismically-induced earth pressure against walls that are unrestrained (i.e., walls free to rotate or are considered flexible) and with level backfill (or retaining level ground) may be taken as a triangular distribution of pressure with the maximum load occurring at the ground surface, linearly decreasing to zero at the base of the wall. For the project site, the maximum load (at the ground surface) may be assumed to be 50 times the wall height, where the wall height is in units of feet and the resulting load is in pounds per square foot. In the event planned earth retaining walls are restrained (or partially restrained) from rotation, the maximum load (at the ground surface) should be increased to 140 times the wall height, where the wall height is in units of feet and the resulting load is in pounds per square foot.

Drainage

The above-recommended values do not include lateral pressures due to hydrostatic forces. Therefore, wall backfill should be free-draining, and provisions should be made to collect and dispose of excess water that may accumulate behind earth retaining structures. Wall drainage may be provided by free-draining gravel (drainrock) surrounded by synthetic filter fabric or a prefabricated drainage composite. A detail showing a typical wall drain is presented on Plate 6.

Backfill Placement and Compaction

All backfill should be placed and compacted in accordance with recommendations previously-provided for engineered fill. Light equipment should be used during backfill compaction to minimize the potential for overstressing the adjacent wall.

Other Considerations

Though design of planned walls will be by others, we suggest these walls extend above the level of the retained slope to provide a catchment area for eroded or sloughed surficial slope materials. Further, if during construction any required temporary earthen cut slopes (which will later be retained by a wall) sloughs or otherwise becomes unstable (beyond that which will be retained by the wall), special provisions may be required to stabilize the slope. We recommend the project Geotechnical Engineer should review all such conditions and, if appropriate, provide recommendations for their treatment.

EARTHEN SLOPES

General

Earthen cut and fill slopes less than 5 feet in height may be constructed at a gradient of 2(h):1(v) or flatter; slopes in excess of 5 feet should be constructed at a gradient of 2-1/2(h):1(v) or flatter. All cut and fill slopes should be revegetated with deep-rooted, perennial grasses or other suitable method soon after construction. To further reduce the potential for erosion, surface runoff should not be allowed to flow onto, over, or across any on-site slope(s) more than a few feet in height. Typically, surface runoff water may be intercepted and redirected using a small berm or shallow gutter (placed at the top of the slope), or by grading adjacent areas to drain away from the top of all downward trending slopes.

Setbacks

Structures located near the top (or bottom) of a slope steeper than 3(h):1(v) should maintain a minimum set-back in accordance with requirements outlined in Section 1805.3 of the California Building Code (CBC, 2007 edition), or 3 feet (measured horizontally from the top or bottom of slope to the closest point of approach of the structure), whichever is greater. All other planned surface improvements (including pavements, sidewalks, etc.) should not be placed any closer than 3 feet (measured horizontally) from the top of any slope steeper than 3(h):1(v). In the event below-grade improvements (such as underground utilities) are to be located within the vicinity (and parallel) to any slope faces steeper than 3(h):1(v), these features should not be placed any closer than 5 feet (measured horizontally) from the nearby slope face.

EQUIPMENT CABINET FOUNDATIONS

General

Foundation support for planned equipment cabinets (and planned earth retaining walls) may be provided using either spread footings or a mat foundation (mat foundations should typically consist of a slab with thickened edges). In general, these proposed foundations should be constructed of reinforced concrete and founded on undisturbed on-site rock. Additionally, we recommend all spread footings be a minimum of 12 inches wide and embedded a minimum of 18 inches below the lowest adjacent final subgrade and at least 6 inches into undisturbed on-site rock; the thickened edge of all mat slab foundations should also be embedded a minimum of 18 inches below the lowest adjacent final subgrade and at least 6 inches into undisturbed on-site rock.

Important Note: We anticipate foundations located on the downhill side of the proposed equipment area will need to be deepened (in excess of 18 inches below the lowest adjacent final subgrade) to penetrate all existing on-site soil and extend at least 6 inches into undisturbed on-site rock.

Allowable Bearing Pressure

An allowable bearing pressure of 2,500 pounds per square foot (psf) may be used for the design of proposed spread and/or mat foundations which possess the above minimum dimensions. The allowable bearing pressure provided is a net value; therefore, the weight of the foundation (which extends below finished subgrade) may be neglected when computing dead loads. The allowable bearing pressure provided herein applies to dead plus live loads, includes a calculated factor of safety of at least 3, and may be increased by 1/3 for short-term loading due to wind or seismic forces. For mat foundations subject to overturning forces, the maximum edge pressure should not exceed the allowable bearing pressure.

Lateral Resistance

Resistance to lateral loads (including those due to wind or seismic forces) may be provided by frictional resistance between the bottom of proposed concrete spread or mat foundations and the underlying rock, and by passive earth pressure against the sides of the foundations. A coefficient of friction of 0.3 may be used between cast-in-place concrete foundations and the underlying rock; passive pressure available in undisturbed native soil, on-site rock, and/or engineered fill may be taken as equivalent to the pressure exerted by a fluid weighing 250 pounds per cubic foot (pcf). To account for possible future loss of subgrade support due to surface disturbance, we recommend earth materials located within the uppermost 1/2-foot of the embedded portion of all shallow spread and/or mat foundations be neglected when evaluating passive pressures.

Lateral resistance parameters provided above are ultimate values. Therefore, a suitable factor of safety should be applied to these values for design purposes. The appropriate factor of safety will depend on the design condition and should be determined by the project Structural Engineer. Depending on the application, typical factors of safety could range from 1.0 to 1.5.

Construction Considerations

Prior to placing steel or concrete, foundation excavations should be cleaned of all debris, loose or disturbed soil or rock, and any water.

ADDITIONAL SERVICES

We recommend Brown & Mills review final earthwork grading (if any) and/or foundation plans and specifications to evaluate that recommendations contained herein have been properly interpreted and implemented during design. Further, all site earthwork activities, including site preparation, placement of engineered fill and trench and/or wall backfill, and all foundation excavations should be monitored by a representative from Brown & Mills.

Monitoring services are an essential component of our design services. Monitoring allows us to observe the soil conditions encountered during construction, evaluate the applicability of the recommendations presented in this report to the soil conditions encountered, and recommend appropriate changes in design or construction procedures if conditions differ from those described herein.

LIMITATIONS

This report has been prepared in substantial accordance with the generally accepted geotechnical engineering practice as it existed in the site area at the time our services were rendered. No warranty is either expressed or implied.

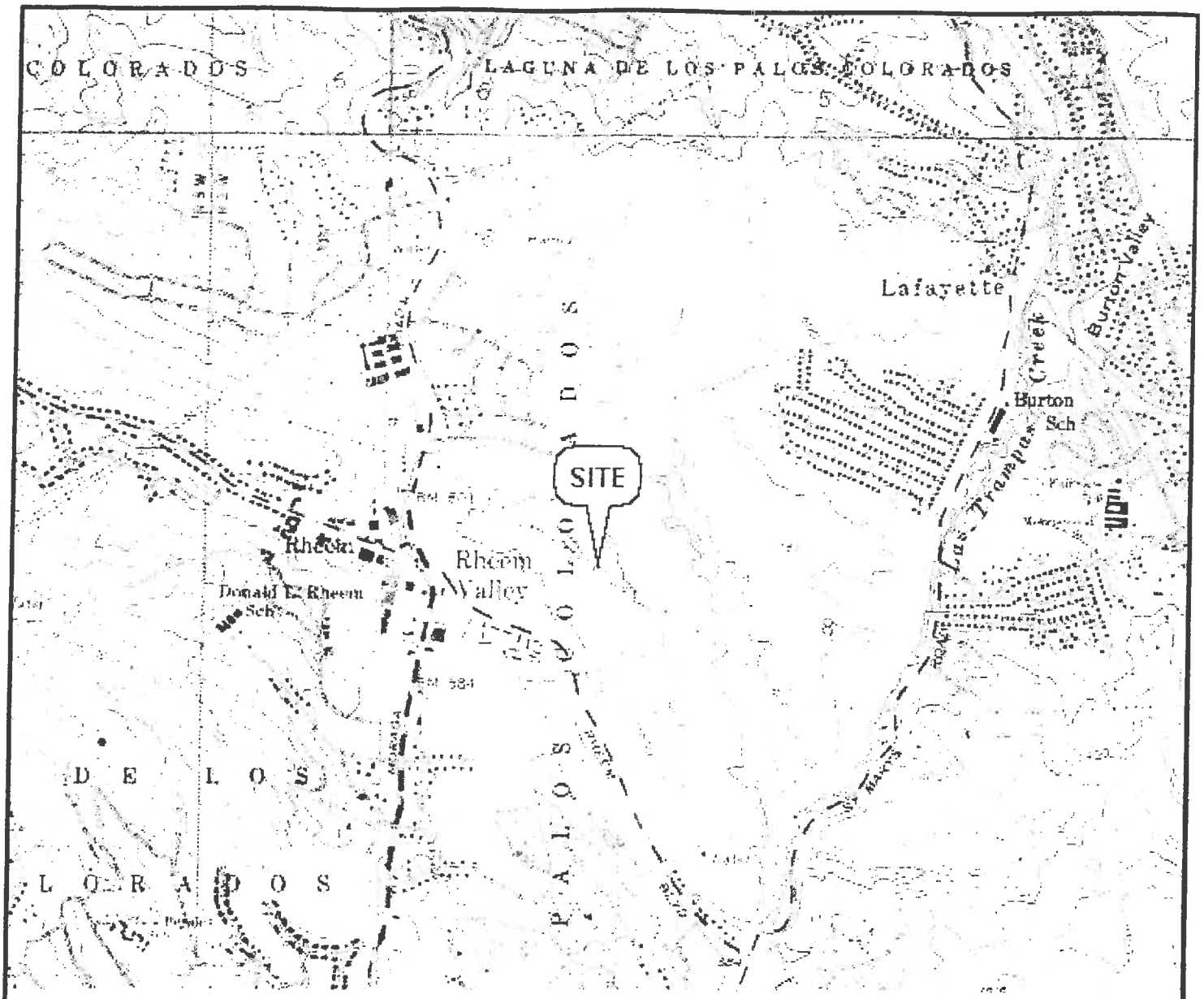
Conclusions and recommendations contained in this report were based on the conditions encountered during our field investigation and are applicable only to those project features described above (see section titled "PROPOSED CONSTRUCTION"). It is possible subsurface conditions could vary beyond the point explored. If conditions are encountered during construction which differ from those described in this report, or if the scope or nature of the proposed construction changes, we should be notified immediately in order to review and, if deemed necessary, conduct additional studies and/or provide supplemental recommendations.

Recommendations provided in this report are based on the assumption that an adequate program of tests and observations will be conducted by Brown & Mills during the construction phase in order to evaluate compliance with our recommendations.

The scope of services provided by Brown & Mills for this project did not include the investigation and/or evaluation of toxic substances, or soil or groundwater contamination of any type. If such conditions are encountered during site development, additional studies may be required. Further, services provided by Brown & Mills for this project did not include the investigation and/or evaluation of soil corrosivity. Depending on planned pipe types, bedding conditions, and other factors beyond the scope of this study, it may be appropriate to evaluate soil corrosivity prior to development.

This report may be used only by our client, and only for the purposes stated herein, within a reasonable time from its issuance. Land use, site conditions, and other factors may change over time which may require additional studies. In the event a significant period of time elapses between the date of this report and construction, Brown & Mills shall be notified of such occurrence in order to review current conditions. Depending on that review, additional studies and/or an updated or revised report may be required prior to completion of final design.

Any party other than our client who wishes to use all or any portion of this report shall notify Brown & Mills of such intended use. Based on the intended use as well as other site-related factors, Brown & Mills may require that additional studies be conducted and that an updated or revised report be issued. Failure to comply with any of the requirements outlined above by the client or any other party shall release Brown & Mills from any liability arising from the unauthorized use of this report.



NORTH

SCALE 1:24,000

1 1/2 1/4 0 MILES 1/2 1

2 1 1/2 0 KILOMETERS 1 2

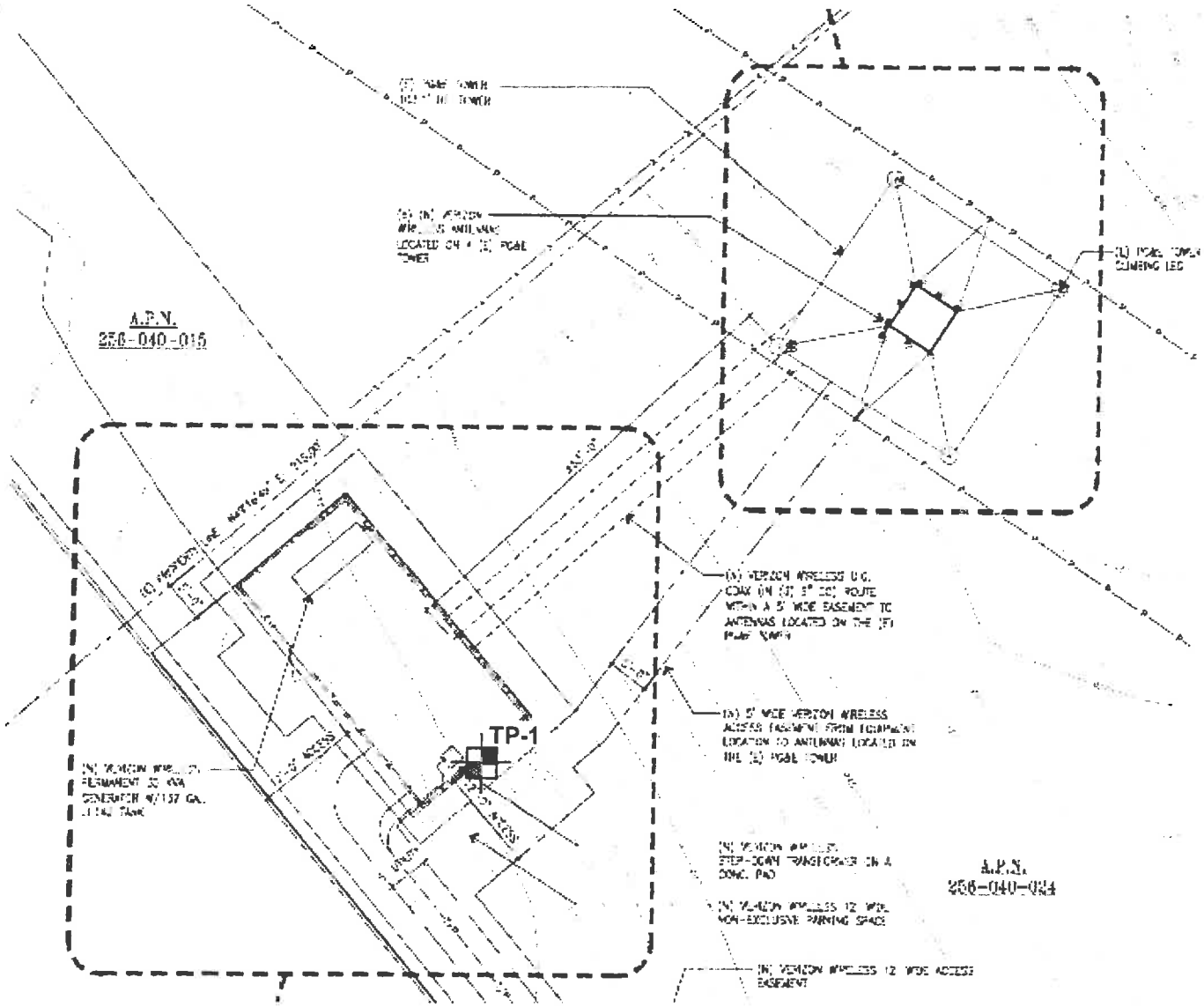
REFERENCE: LOS TRAMPAS RIDGE QUADRANGLE, CALIFORNIA, 7.5 MINUTE SERIES, UNITED STATES GEOLOGIC SURVEY.

BMI PROJECT NO. ▶ 09S-227

VICINITY MAP
PROPOSED TELECOMMUNICATIONS FACILITY
RHEEM VALLEY, SITE NO. 123265
MORAGA, CALIFORNIA

PLATE

1



NORTH

NO SCALE

LEGEND

TP-1
TEST PIT LOCATION AND DESIGNATION

NOTE: The test pit was located in the field by visual methods. Therefore, the location of the test pit shown on this plan should be considered highly approximate.

REFERENCE: Plan prepared by MSA titled "PROJECT AREA PLAN," Sheet A-1, dated June 25, 2009 (latest revision).

BMI PROJECT NO. ▶ 09S-227

SITE PLAN
PROPOSED TELECOMMUNICATIONS FACILITY
RHEEM VALLEY, SITE NO. 123265
MORAGA, CALIFORNIA

PLATE
2

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYM.	DESCRIPTION
COARSE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS GREATER THAN NO. 200 SIEVE	GRAVELS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS (LITTLE OR NO FINES)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
		GRAVELS (APPRECIABLE FINES)	GM	Silty gravels, poorly-graded gravel-sand-silt mixtures
			GC	Clayey gravels, poorly-graded gravel-sand-clay mixtures
	SANDS MORE THAN 50% OF COARSE FRACTION PASSES NO. 4 SIEVE	SANDS (LITTLE OR NO FINES)	SW	Well-graded sands, gravelly sands, little or no fines
			SP	Poorly-graded sand, gravelly sands, little or no fines
		SANDS (APPRECIABLE FINES)	SM	Silty sands, poorly-graded sand-gravel-silt mixtures
			SC	Clayey sands, poorly-graded sand-gravel-clay mixtures
FINE-GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO.200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	Inorganic silts and very fine sands, silty or clayey fine sands, clayey silts with slight plasticity
			CL	Inorganic clays of low-to-medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and clays of low plasticity
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic silts and clays of high plasticity
HIGHLY ORGANIC SOILS			PT	Peat, humus, swamp soils with high organic content

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

LOG SYMBOLS AND DEFINITIONS

FIELD		LABORTORY	
	STANDARD PENETRATION SPLIT SPOON SAMPLER (2-INCH OUTSIDE DIAMETER)	-4	% PASSING NO.4 SIEVE (ASTM TEST METHOD C 136)
	CALIFORNIA SAMPLER (3-INCH OUTSIDE DIAMETER)	-200	% PASSING NO. 200 SIEVE (ASTM TEST METHOD C 117)
	MODIFIED CALIFORNIA SAMPLER (2.5-INCH OUTSIDE DIAMETER)	LL	LIQUID LIMIT (ASTM TEST METHOD D 4318)
	BAG/BULK	PI	PLASTICITY INDEX (ASTM TEST METHOD D 4318)
	THIN-WALLED SHELBY TUBE (3-INCH OUTSIDE DIAMETER)	R-VAL	RESISTANCE VALUE (CALTRANS TEST 301)
	WATER LEVEL (LEVEL ESTABLISHED AS NOTED ON LOGS)	EI	EXPANSION INDEX (UBC STANDARD 29-2)
	WATER OR SEEPAGE ENCOUNTERED (LEVEL NOT ESTABLISHED)	COL	COLLAPSE POTENTIAL (ASTM TEST METHOD D 5333)

GENERAL NOTES:

1. Lines separating soil or rock strata on logs are approximate boundaries only. Actual transitions may be gradual and, in the case of selectively sampled boring, may vary by as much as the sample interval.
2. In general, Unified Soil Classification designations shown on the logs were evaluated using visual methods only. Actual designations (based on laboratory tests) may vary.
3. Logs represent general soil conditions on the date and at the location indicated. No warranty is provided as to the continuity of soil conditions between individual sample locations.
4. Unconfined comprehensive strengths reported on the logs (if any) were obtained using a pocket penetrometer.

BMI PROJECT NO. ▶ 09S-227

LOG LEGEND
PROPOSED TELECOMMUNICATIONS FACILITY
RHEEM VALLEY, SITE NO. 123265
MORAGA, CALIFORNIA

PLATE 3

FRACTURING	
LOG TERM	DEFINITION
Very Widely	>6 feet
Widely	2 to 6 feet
Moderately	8 to 24 inches
Closely	2 ½ to 8 inches
Very Closely	¾ to 2 ½ inches

ROCK QUALITY DESIGNATION (RQD)	
RQD (%)	ROCK QUALITY
90 - 100	Excellent
75 - 90	Good
50 - 75	Fair
25 - 50	Poor
0 - 25	Very Poor

WEATHERING	
LOG TERM	DESCRIPTION/ DEFINITION
Fresh	No visible sign of decomposition or discoloration. Rings under hammer impact.
Slightly Weathered	Slight discoloration inwards from open fractures; otherwise similar to fresh.
Moderately Weathered	Discoloration throughout. Strength less than fresh rock; specimens cannot be broken by hand or scraped with knife.
Highly Weathered	Specimens can be broken by hand with effort and shaved with knife. Texture becoming indistinct but fabric preserved.
Completely Weathered	Minerals decomposed to soil but fabric and structure preserved. Specimens easily crumbled or penetrated.

COMPETENCY			
CLASS	LOG TERM	DESCRIPTION/ DEFINITION	APPROXIMATE RANGE OF UNCONFINED COMPR ESSIVE STRENTHS (tsf)
I	Extremely Strong	Many blows with geologic hammer required to break intact specimens.	>2000
II	Very Strong	Hand-held specimens break with pick-end of hammer under more than one blow.	1000 - 2000
III	Strong	Hand-held specimens can be broken with single, moderate blow with pick-end of hammer.	500 – 1000
IV	Moderately Strong	Specimens can be scraped with knife; light blow with pick-end of hammer causes indentations.	250 – 500
V	Weak	Specimens crumble under moderate blow with pick-end of hammer.	10 – 250
VI	Friable	Specimens crumble in hand.	N/A

BMI PROJECT NO. ▶ 09S-227

ROCK LEGEND
PROPOSED TELECOMMUNICATIONS FACILITY
RHEEM VALLEY, SITE NO. 123265
MORAGA, CALIFORNIA

PLATE

4

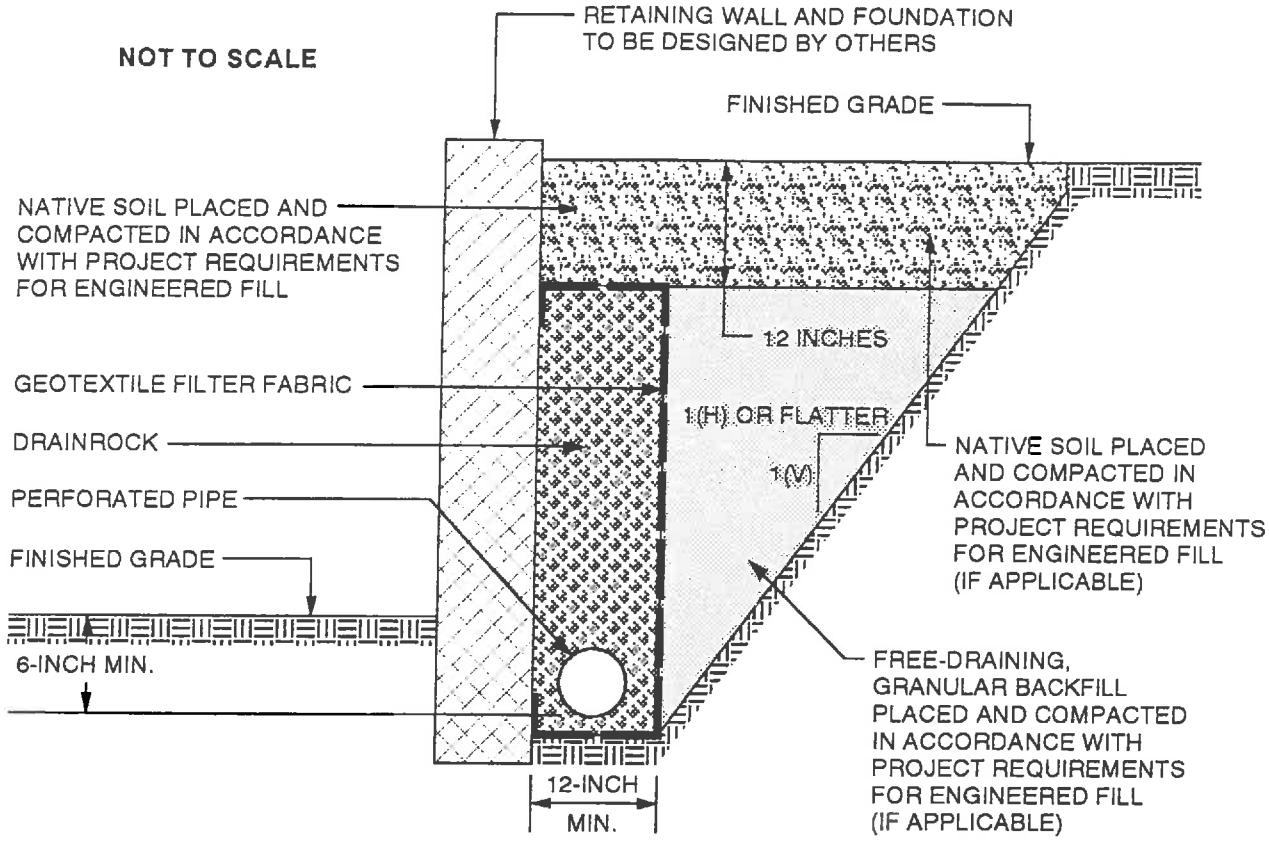
EXPLORATION DATE	LOGGED BY	TOTAL DEPTH	TEST PIT NO.
December 7, 2009	Peter Schurman	6 feet	TP-1
EXPLORATION EQUIPMENT: Case 580 backhoe equipped with a 24-inch-wide bucket		BACKFILL MATERIAL: Excavated soil	

FIELD						DESCRIPTION	LABORATORY		
DEPTH (IN FEET)	SAMPLE TYPE	SAMPLE NO.	BLOWS/FOOT	UNCONFINED COMP. STRENGTH (TSF)	USCS LETTER SYMBOL	SURFACE CONDITIONS: Gently sloping; grasses GROUNDWATER CONDITIONS: No free groundwater encountered APPROX. GROUND SURFACE ELEVATION (IN FEET): N/A	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	OTHER LAB TESTS SEE LOG LEGEND FOR ABBREVIATION DEFINITIONS
1	X	1			SM	***Silty SAND:*** Brown, moist, medium dense, fine-to-medium grained, with some clay			
2, 3, 4, 5	X	2				***MARINE SEDIMENTARY ROCK:*** Consisting predominantly of sandstone, brown and gray, moderately weathered, weak-to-moderately strong grades strong			
6, 7, 8, 9, 10						*Test pit terminated at a depth of approximately 6 feet below existing site grade due to essential refusal on rock.*			

BMI PROJECT NO. 09S-227

LOG OF EXPLORATORY TEST PIT
PROPOSED TELECOMMUNICATIONS FACILITY
RHEEM VALLEY, SITE NO. 123265
MORAGA, CALIFORNIA

PLATE 5



NOTES:

1. Geotextile filter fabric should consist of Mirafi 140NS, AMACO 4546, or other equivalent fabric approved by the project Geotechnical Engineer.
2. Geotextile filter fabric should be stored, handled, and installed in accordance with manufacturer's recommendations.
3. Perforated pipe should be at least 4 inches in diameter and consist either of perforated, Type C, high density polyethylene (HDPE) pipe (such as manufactured by ADS or equivalent) or Schedule 40 PVC (holes placed down and no more than 1/4-inch in diameter).
4. The bottom of all perforated pipes should be placed within 1 to 3 inches of the bottom of the drainrock. All perforated pipes should be centered (horizontally) within the drainrock.
5. Drainrock should consist of poorly-graded, durable crushed stone, sized such that 100 percent passes the 1-inch sieve and less than 5 percent passes the No. 4 sieve.
6. Solid collector pipe(s) should be at least 4 inches in diameter.
7. All HDPE pipe sections should be joined using split fittings, secured using nylon wire ties (two per joint) and polyethylene tape. All PVC pipe should be joined using slip fittings secured with the appropriate adhesive)
8. Perforated and solid conduit collector pipes should be sloped a minimum of one percent (1%) to drain.
9. Water collected by the perforated pipe should be directed by solid conduit (of similar type and diameter to perforated) to a sump, ditch, storm drain, or other suitable area for disposal.
10. A prefabricated drainage composite may be substituted for drainrock encased in geotextile filter fabric. Prefabricated drainage composite may consist of Miradrain 6000 or other equivalent composite approved by the project Geotechnical Engineer.
11. Recommendations provided above are for conventional retaining walls consisting of cast-in-place concrete or masonry construction. If other forms of construction (such as crib, reinforced earth, interlocking block, wood, etc.) are to be used, drainage provisions provided above may not be applicable and further review by the project Geotechnical Engineer may be required.
12. In general, a wedge of free-draining granular backfill (see above) should be used for walls which retain poor-draining soils (such as clays).

BMI PROJECT NO.▶ 09S-227	**TYPICAL WALL DRAIN DETAIL** **PROPOSED TELECOMMUNICATIONS FACILITY** **RHEEM VALLEY, SITE NO. 123265** **MORAGA, CALIFORNIA**	PLATE **6**

EXHIBIT E

DESIGN ASPECTS TO BE CONSIDERED FOR VERIZON WIRELESS FAYHILL ROAD INSTALLATION

EXHIBIT E

DESIGN ASPECTS TO BE CONSIDERED IN ACCORDANCE WITH MORAGA MUNICIPAL CODE SECTION 8.72.080-A FOR THE VERIZON WIRELESS TELECOMMUNICATIONS INSTALLATION ADJACENT TO THE EBMUD FAYHILL RESERVOIR

1. **Maximum height, lot coverage and setbacks:**
   On March 1, 2010 the Planning Commission approved the Use Permit for the new telecommunications facility for Verizon Wireless. Since the project is within an Open Space – MOSO zoned property, the Commission established the development standards for the project under condition number 3 in Resolution 04-2010 PC. The maximum height was set at 115-feet to the top of the antennas on the PG&E tower. The Verizon antennas must be at least 17-feet 6-inches from the high voltage wires. The new "top hat" will add 10-feet to the top of the existing 103-foot high tower. The maximum height for the fencing around the equipment enclosure was set at 7-feet. It was noted in the use permit that any fence higher than 6-feet would require a building permit. The building setbacks were set at 300-feet from any residential structure in accordance with MMC Section 8.144.030-I. At present the closest residential homes are over 1000-feet from the PG&E tower and the equipment enclosure. The proposed new home sites for the Rancho Laguna II project will also be over 1000-feet from the new telecommunications installation. The lot coverage guidelines do not apply to fenced enclosures and the FAR guidelines are only applicable to residential lots that are 20,000 square feet or smaller in size.

2. **Overall mass and bulk of structures:**
   The 17-foot by 35-foot fenced equipment enclosure is located a considerable distance from vantage points where it can be seen. As shown on pages 4 and 5 of **EXHIBIT C** the enclosure is barely visible with the naked eye and can only be seen clearly with an enlarged telephoto view. The bright orange mesh that was wrapped around the corners of the story poles also helps make the proposed enclosure visible. If the fencing is a light brown color to blend with the dry pasture grass, it will virtually disappear from view. The fact that the equipment enclosure is set into the hillside also lowers the profile of the structure. Nevertheless, one improvement could be made. The retaining wall at the back of the enclosure is about 16-inches above the concrete drainage apron along the hillside and the fence is located on the top of the wall. The combined height of the fence and wall would be 7-feet 4-inches. Staff would recommend that the fence along the top of the back wall be reduced to 5-feet in height so that the overall height of the wall and fence would be 6-feet 4-inches maximum. Another alternative would be to have the fence go around the perimeter of the enclosure at the existing grade and have the retaining wall inside the fence line.

3. **Special features of the development, such as walls, screens, towers and signs:**
   As noted in the last paragraph on page 17 of the Geotechnical Investigation Report under "Other Considerations", Brown and Mills, Inc. recommend that the retaining wall

should extend above the level of the retained slope to provide a catchment area. The southeast section elevation drawing on sheet A-4 of the plans shows the concrete block wall rising about 16-inches above the ground level at the back of the enclosure. This complies with the recommendation of the Geotechnical engineers. The plan view of the retaining wall around the enclosure on sheet A-2 of the plans appears to be reversed. Staff believes the wall should extend all the way along the northwest side, which is closest to the EBMUD Fayhill Reservoir enclosure and the partial wall would be on the southeast side adjacent to the non-exclusive parking space for maintenance of the facility.

The PG&E tower is an existing structure and co-location of wireless antennas with other utilities is encouraged under the Town's Wireless Communications Ordinance. As noted elsewhere in this report, PG&E will be extending the tower by 10-feet to accommodate the new Verizon Wireless antennas. PG&E personnel will also be installing the antennas on their tower.

4. **Effective concealment and sound attenuation of exposed mechanical and electrical equipment:**
   The primary purpose of the enclosure is to provide some security around the new telecommunication equipment cabinets and the 30 KVA emergency generator and 132 gallon fuel tank. A secondary purpose is to screen the view of the equipment. The proposed chain link fence would not be effective for sound attenuation of the generator when it is running; however, the great distance of over 1000-feet to the nearest residential structures would help to attenuate the sound to some degree. The generator is only for emergency power and would not be running on a regular basis. MMC Section 8.144.070-D-1 states that the maximum allowable exterior noise level at the property line cannot exceed sixty (60) dB. This requirement is included as condition 6-a of the use permit (Resolution 04-2010 – **EXHIBIT B**).

5. **Colors and materials on the exterior face of the building or structures, striving for a limited number of colors and materials for each project:**
   Use permit condition numbers 4-b and 4-c require the applicant to submit:

   b. Plans for the equipment and the fencing of the enclosure, including the color of the fencing and equipment to blend with the natural color of the dried grass as it appears for the majority of the year.
   c. Submit the color for the 9 panel antennas on the top of the PG&E tower. The paint shall have a non-reflective finish and shall be a color that will minimize visual impacts.

   Staff has included a recommendation in the draft action memorandum for insertion of light brown wood or vinyl slats in the chain link fence to approximate the color of the dried pasture grass. At the Planning Commission meeting the applicant explained that PG&E would be installing the antennas on the tower and that the color will match the color of the metal structure on the tower. It was believed that any other color actually attracts attention to the antennas. An example was given of some "sky blue" colored antennas on a PG&E tower near Dixon, California that are more noticeable due to the contrast with the color of the tower.

6. **Avoidance of repetition of identical entities whenever possible:**
Under MMC Section 8.144.030-D, all new wireless communications facilities shall be co-located with existing facilities whenever feasible and aesthetically desirable. The nine Verizon Wireless antennae on the PG&E tower will be the second co-location on this tower because AT&T was first to sign a contract with PG&E for a wireless installation. Nevertheless, both of these telecommunications companies have been working closely together to obtain the necessary approvals for their installations. Since PG&E requires 17-feet 6-inches minimum clearance between the antennas and the high voltage wires, there will be no space available on this tower for any additional antennae by other wireless service providers.

7. **Harmonious relationship with existing adjoining developments avoiding both excessive variety and monotonous repetition, but allowing similarity of style, if warranted:**
There are only two "adjoining developments" in close proximity to the proposed Verizon Wireless equipment enclosure. The EBMUD Fayhill Reservoir is located 5-feet northwest of the enclosure and has a barbed wire fence around it. The reservoir tank is densely screened by Monterrey Pine trees. The other "adjoining development" is the proposed AT&T equipment enclosure. The AT&T application is different from the Verizon Wireless application in several ways. The grading for the AT&T enclosure has been modified to avoid the need for a grading permit. The AT&T equipment enclosure has a slightly elevated pad above the level of Fayhill Road so that the rear retaining wall does not exceed three feet in height. This approach would also provide the opportunity for some of the excavated earth behind the enclosure to be used as fill below the equipment pad and thereby reduce the amount of soil to be taken off site. The fence around the AT&T enclosure is not mounted on top of the retaining wall but goes around the outside of the enclosure adjacent to the wall and follows the slope of the hillside. Another significant difference in the fence design is that the AT&T fence includes a 12-inch high angled security barrier along the top of the six-foot chain link fence with three strands of galvanized spring steel wire. Staff would recommend that both the Verizon Wireless and AT&T fence designs and colors should be similar. For example, if the Board prefers to have a solid wood fence rather than a chain link fence with slats, then both of the enclosures should have wood fences. Similar fence designs would not be "monotonous repetition" because it would create a more harmonious relationship in design for the two adjacent enclosures.

8. **Pleasing landscaping which incorporates existing landscaping and terrain as a complement to the structure, using plants which thrive in the Moraga climate and which are large enough in size to be effective:**
The applicant has not submitted any proposed landscaping to mitigate views of the equipment enclosure. Currently, there are only non-native pasture grasses in the vicinity of the project. Landscape screening would not be necessary along the back or sides of the enclosure because the only angle of view would be from the southwest front side. Since the southwest front side of the equipment enclosure is located adjacent to the road, any new landscaping would have to be on the slope on the opposite side of Fayhill Road. If landscaping is deemed necessary by the Board to help mitigate views of the enclosure, staff would then recommend native draught tolerant large shrubs that are deer

resistant. If the plants are not deer resistant then they would have to be fenced to keep the deer from eating them. This was done at the wireless transmitter sites at the top of Alta Mesa, near the EBMUD Carter Reservoir. However, the fenced landscaping enclosures tend to counteract the natural appearance of the landscaping.

9. **Compliance with Chapter 8.132 (scenic corridors)*:***
   The subject property is not located within 500-feet of the Rheem Boulevard or Moraga Road scenic corridors. Although the project can be seen from these two scenic corridor roads, it is not subject to the provisions in the Town's Scenic Corridor Ordinance.

EXHIBIT F

APPLICABLE TOWN DESIGN GUIDELINES FOR VERIZON WIRELESS FAYHILL ROAD INSTALLATION

EXHIBIT F

DESIGN GUIDELINE ANALYSIS FOR VERIZON WIRELESS TELECOMMUNICATIONS INSTALLATION ON FAYHILL ROAD

3 MAINTAIN THE TOWN'S SEMI-RURAL CHARACTER (SRC)

APPLICABLE TO ALL TYPES OF DEVELOPMENT

These guidelines are intended to help preserve the semi-rural features that make Moraga unique when considering applications for development. Therefore, ***these guidelines are applicable to all types of development.***

SRC1 Retain, protect, and utilize existing natural features, such as trees and other vegetation, interesting ground forms, rocks, water, and significant views in the design.
Comment: *There are no significant natural features in the proposed location for the equipment enclosure.*

SRC2 The impact and presence of vehicles resulting from the development should be minimized through proper siting and screening in order to buffer parking areas from locations both interior and exterior to the site.
Comment: *The project is located near the end of a long private access road to the East Bay Municipal Utility District (EBMUD) Fayhill Reservoir. After the project is completed, the vehicle trips will only be for maintenance of the equipment and are expected to be very infrequent.*

SRC3 Circulation systems should avoid conflict between vehicular, bicycle and pedestrian traffic. Emergency and service vehicle access shall be accommodated within the circulation system.
Comment: *There would be no conflicts between vehicular, bicycle and pedestrian traffic since Fayhill Road is a private access road and is gated to restrict access to authorized vehicles only.*

SRC4 Accessory structures should not encroach upon front yard and exterior side yard setbacks.
Comment: *The equipment enclosure is located a great distance from the property lines of adjacent developed parcels. The only property line that is close to the Verizon Wireless equipment enclosure is the EBMUD property, which is 5-feet from the proposed Verizon Wireless enclosure.*

SRC5 Preserve natural site amenities.

a. Development should be planned in relation to natural features.
b. Natural features must be protected both during and after construction of the project.
c. Retain trees and other native vegetation, consistent with tree preservation ordinance, to maintain current stability of steep hillsides, retain moisture, prevent erosion, and enhance the natural scenic beauty. Grading under tree driplines should be avoided to protect the root system during development.

d. Treat significant natural features, such as creeks, rock out-croppings, and prominent knolls, as assets.

Comment: *There are no significant natural features near the proposed equipment enclosure, including trees or native vegetation, creeks, rock out-croppings or other natural assets.*

SRC7 New trees should be planted to compliment the natural pattern of tree placement.

Comment: *There is no natural tree pattern in the vicinity of the project. The EBMUD Fayhill reservoir has many Monterrey Pines planted around the water tank, but they are not a native species. If additional screening of the enclosure is deemed necessary, the trees would have to be on the south side of Fayhill Road since the enclosure is immediately adjacent to the road.*

SRC8 Mature native tree groupings should be protected.

Comment: *No mature native trees will be removed for the project.*

SRC9 Improvements should be sited away from creeks to enhance safety and to protect existing drainage patterns, riparian habitat, and wildlife.

Comment: *The project is not near any creek or riparian habitat.*

4 PROTECT RIDGELINES AND HILLSIDE AREAS (RH)

APPLICABLE TO ALL RIDGELINE AND HILLSIDE CONSTRUCTION

RH1 Protect ridgelines from development.

Comment: *The ridgeline northeast of Rheem Boulevard is not defined as a "major ridgeline" under Moraga Municipal Code (MMC) Section 8.52.080. Only Indian Ridge, Sanders Ridge, Mulholland Ridge and Campolindo Ridge are listed as major ridges. Therefore the ridgeline at the Fayhill Reservoir is not subject to the prohibition of development within 500-feet of the ridgeline by MMC Chapter 8.128 (Ridgeline Protection). All ridgelines above 800-feet in elevation are classified as "Minor ridgelines". This would include the ridgeline northeast of Rheem Boulevard. Under MMC Section 8.52.140, development is prohibited "on the <u>crests</u> of minor ridgelines" in the MOSO district. The existing PG&E tower straddles the centerline of the minor ridgeline at an elevation of 953.9-feet. The addition of the wireless antennas to the existing tower would not be considered "construction or erection of a structure" under the definition of development in the MOSO guidelines. The addition of the antennas would be a modification of the existing structure. Under MMC Section 8.144.030-D, new wireless installations "shall be collocated with existing and/or with other planned new facilities whenever feasible and aesthetically desirable." The proposed location for the equipment enclosure is at an elevation of 933-feet, which would be 20-feet lower than the elevation at the crest of the minor ridgeline.*

RH2 New development should be sited in areas that are least sensitive in terms of environmental and visual resources, including areas of flat or gently sloping topography.

Comment: *The PG&E tower is an existing feature on the ridgeline. The proposed equipment enclosure is sited about 60-feet from the crest of the ridge and 20-feet below the crest of the ridge. The project has been located in a MOSO cell with an average slope less than 20%.*

RH3 In hillside and ridgeline areas, building sites should be sited so that visual impacts are minimized.

Comment: *The site for the equipment enclosure can only be seen from the southwest side because the enclosure will be excavated into the hillside so that the sides and rear of the enclosure will be hidden by the hillside. Only very distant views of the enclosure are possible from the southwest side due to the remote location of the site. The pictures on pages 4 and 5 of* ***EXHIBIT C*** *show that the enclosures are only visible with extreme magnification. Nevertheless, the visual impacts can be further reduced by inserting wood or vinyl slats in the chain link fence to help screen the view of the equipment within the enclosure. The slats should also be painted or colored a light brown to match the color of the dried pasture grass in the vicinity of the enclosure.*

RH4 The roofline of all hillside buildings should blend with or follow the ridgeline's natural contour.

Comment: *This guideline is not applicable because the proposed enclosure does not have a roof and is not classified as a "building".*

RH5 Hillside buildings and other improvements should have a low visual profile. Dense native landscaping should be provided to blend structures with the natural setting.

Comment *The enclosure has been set into the hillside to reduce the visual profile; however, the fence on top of the retaining wall at the back of the enclosure could be lowered to 5-feet because it is on top of a 16-inch high wall. This would help reduce the visual profile. Dense native landscaping cannot be installed along the southwest side of the enclosure because it is immediately adjacent to Fayhill Road. Some landscaping could be installed on the slope on the opposite side of Fayhill Road, but it would have to be highly deer resistant and drought tolerant. The Geotechnical Investigation Report showed no significant amount of ground water, so any plants would have to depend upon seasonal rainfall. If the plants are not deer resistant, then they would need to be protected with fencing, which could detract from the natural appearance of the landscaping.*

RH6 Hillside grading shall blend with natural slopes and be contoured to achieve a natural appearance. The use of retaining walls and other man-made grading features to mitigate geologic hazards should be avoided.

Comment: *The proposed retaining wall is necessary to create a level pad for the equipment and is not proposed for mitigation of any geologic hazard. If contour grading was used to create the level pad, it would require substantially more grading and could involve creation of slopes steeper than 25%. The retaining wall will be hidden behind the fenced enclosure and is not unreasonably high. Nevertheless, the height of the retaining wall could be reduced if the pad elevation is elevated about one foot above the elevation of Fayhill Road.*

RH7 On hillside lots fire safe landscaping should be used. Landscaping should be distributed around structures to provide screening from off-site views. Adequate water supplies and fire-fighting access shall be provided.

Comment: *If landscaping is deemed necessary to provide screening of the enclosure fence, then it could be reviewed by the Moraga-Orinda Fire District (MOFD)*

to make sure that it is not a species that could contribute to wild-land fires. However, the most important criteria for any landscaping will be that it is deer resistant and drought tolerant.

RH8 In hillside areas, solid board privacy fences should only be used when located close to the residence. Site perimeter and other distant fencing should remain visually open (i.e., split rail or deer fencing) in order to minimize the visual "ribbon-like" effect of fencing on the hillsides.

Comment: *The purpose of the fencing around the enclosure is primarily for security of the telecommunications equipment and secondarily for screening the view of the equipment. Staff recommends wood or vinyl slats in the chain link fence painted to match the color of the dried pasture grass around the site. A solid wood fence would probably be less secure at this remote location. If this equipment enclosure was located in an urbanized area close to homes or business in Moraga, then an attractive heavy timber fence might be more appropriate.*

RH10 Preserve both close-up and distant views of the natural hillside and ridgeline landscape as seen from valley areas.

Comment: *The fenced enclosure will be visible from several areas in the Rheem Valley; however, the views are from a great distance and the enclosure will not be very perceptible with the naked eye. The photographs on pages 4 and 5 of* ***EXHIBIT C*** *show enlarged telephoto views as insets. The story poles around the proposed location for the equipment enclosure were wrapped with a bright orange plastic mesh fence material, which makes them visible, but with wood or vinyl slats in the chain link fence the enclosure should blend with the surrounding pasture grass.*

RH11 All new structures located in hazardous fire areas (such as hillsides) should be constructed with fire resistant exterior materials consistent with applicable building codes and standards.

Comment: *Solid wood fencing would probably be less fire resistant than chain link fencing with non-reflective vinyl slats.*

5 COMPLEMENT EXISTING LANDSCAPING (L)

L1 FIRE SAFE LANDSCAPING

L1.2 Consideration should be given to avoiding flammable trees and shrubs where possible. Consult the Moraga Fire Protection District for highly flammable plant species to be avoided such as certain pine, juniper, and eucalyptus species.

Comment: *The applicant's submittal does not include any tree planting. If some trees or shrubs are deemed necessary to help screen the enclosure, then they should not be a highly flammable species.*

L1.3 Landscaping should be properly irrigated to assure that plants retain their fire retardant capability, but shall not be over watered so as to create runoff from the site.

Comment: *No landscaping is proposed with this submittal. When landscaping was installed at the top of Alta Mesa above the EBMUD Carter Reservoir, a temporary water tank was installed to provide water to the new plants to help get them started. The plants were selected as native draught tolerant species and they are now*

growing without any irrigation system. If landscaping is deemed necessary for screening of the enclosure, then a temporary water tank would probably be necessary to establish the plants.

L3 COMMERCIAL (AND OFFICE) LANDSCAPING AND IRRIGATION

L3.7 Dense landscaping should be incorporated into any project to screen unattractive views and features such as storage areas, trash enclosures, parking lots, public utilities, and other elements that detract from the appearance of the surrounding area.
Comment: *The enclosure will not be very perceptible with the naked eye from surrounding developed properties because it is located within a very large open space parcel and is a long distance from the other properties in the vicinity. In the event that the Board believes that landscaping is needed to enhance the screening of the equipment enclosure, then staff would recommend large native drought tolerant shrubs be chosen for the southwest side of Fayhill Road across from the enclosure.*

L3.14 Water-conserving system design and materials and drip irrigation should be used wherever appropriate.
Comment: *If plants are installed, then a temporary water tank would be needed to establish the plants for the first year of growth. Another alternative would be to install an underground cistern that would be fed by the stormwater coming from the drainage channel around the enclosure. The cistern could be connected to a drip irrigation system for the plants which could be activated by a timer which would turn on a small pump.*

6 ENHANCE TOWN'S SCENIC CORRIDORS (SC)

The project is not within 500-feet of Rheem Boulevard or Moraga Road and is therefore not subject to the Town's Scenic Corridor Ordinance or the scenic corridor guidelines. See guideline RH10 for visual impacts from Rheem Valley.

7 MINIMIZE THE IMPACTS OF DEVELOPMENTS (ID)

To the extent possible, development should be concentrated in areas that are least sensitive in terms of environmental and visual resources, including: a) areas of flat or gently sloping topography outside of flood plain or natural drainage areas; b) the Moraga Center and Rheem park area; c) Infill parcels in areas of existing developments.

ID1-7 APPLICABLE TO ALL DEVELOPMENT

ID1 Downhill or uphill portions of any project shall provide landscaped treatment to address potential erosion, to be in harmony with adjacent developments, and to provide a complimenting view from distant horizons. Dense native landscaping should be used to blend hillside structures with the natural setting.
Comment: *See comments for RH10 and L3.7 above. The Town Engineer will need to review the drainage plans to make sure that erosion does not occur from the new concrete drainage channel around the enclosure.*

ID3 Wind barriers, shade, sound absorption, dust abatement, glare reduction, and proper drainage should be provided on site.

Comment: *The project site is located more than 1000-feet from the closest residential structures and the use permit includes conditions to limit the sound level from the 30 KVA generator. Staff has included some conditions in the draft action memorandum to address dust control during construction of the project. After the project is completed there would be no need for dust abatement. Staff recommends that the slats to be inserted in the chain link fence should not be a shiny or reflective material. Wood lath or non-glossy vinyl strips would be acceptable screening material to avoid a source of glare on the hillside. As stated above, the Town Engineer will need to review the drainage from the impervious surfaces to insure that erosion is avoided from the concentrated flow of stormwater.*

ID5 Geologic hazards shall be addressed:

a. Construction should not take place in geologic hazard areas identified as landslides, springs, or earthquake fault zones.
b. Risk of off-site geologic property damage should be minimized by locating development away from areas which are vulnerable to slope failure.
c. Professional evaluation of soil conditions and potential geologic hazards should be completed for all new homes.

   Comment: *The applicant submitted a Geotechnical Investigation Report prepared by Brown & Mills, Inc. dated December 14, 2009, which is attached as* ***EXHIBIT D****. No geologic hazards or near surface ground water were identified. There is no risk of off-site property damage due to slope failure from this project. Since the equipment enclosure is not for human habitation, geotechnical peer review was not deemed to be necessary for this project. See* ***EXHIBIT C*** *for a more thorough discussion of the geologic issues.*

ID6 The level of lighting should not exceed the needs for security and safety or detract from the aesthetics of the development.

a. Outdoor lighting should be related to the design of the structure.
b. Outdoor light fixtures should be designed and mounted so that the source of light has minimal impact off site.
c. Outdoor lighting should be directed inward toward the property and may require additional screening to avoid spillage onto adjacent residential properties.

   Comment: *In addition to the above design guidelines for lighting, condition number 7 from Planning Commission Resolution 04-2010 reads "Any lighting used by technicians shall be manually operated and used only during night maintenance or emergencies. The lighting shall be constructed or located so that only the intended area is illuminated and off-site glare is fully controlled." The Verizon Wireless plans do not show any lights within the enclosure.*

ID7 Design shall be consistent with the Moraga Municipal Code section 13.04.090.

Comment: *Compliance with MMC Section 13.04.090 could be included as conditions of approval, since it is primarily compliance with the best management practices (BMP's) for drainage, erosion control and other site maintenance standards. The BMPs will be taken into consideration by the Town Engineer during his review of the drainage for the new 17 by 35-foot concrete equipment platform and the 3-foot wide concrete drainage apron around the periphery of the enclosure.*

ID9 PAVING

ID9.1 Impervious surfaces shall be minimized through site design and building methods. Directly connected impervious surfaces shall be minimized to avoid excessive concentrated stormwater runoff. Any runoff from impervious surfaces shall be directed to pervious areas or landscaped depressions.

Comment: *Since the project site is an extremely large open space parcel, there is an ample area for stormwater runoff to drain to pervious areas. The only concern is that the concentration of stormwater by the drainage apron above the enclosure does not lead to erosion of the hillside below the enclosure. The water needs to be dispersed over the slope to avoid the potential for erosion.*

ID10 GRADING

ID10.1 Grading for any purpose may be permitted only in accordance with an approved development plan that is found to be geologically safe and aesthetically pleasing.

Comment: *The limited amount of grading for the project is necessary to create a level pad for the placement of the telecommunications equipment and the 30 KVA emergency power generator. The general development plan was approved by the Planning Commission on March 1, 2010 when the use permit was approved. The applicant submitted a Geotechnical Investigation Report which found the project to be geologically safe. The 40-inch deep cut into the slope will be supported by a retaining wall, which will be hidden behind the fence at the front of the equipment enclosure. The question of aesthetics will be decided by the Board.*

ID10.2 Where the pre-development slope is less than 20% a grading permit may be required. See the Moraga Municipal Code 14.08.010 for details.

Comment: *The applicant has calculated the average predevelopment slope in the area of disturbance to be 19.8% (Note of page A-4, southeast section elevation drawing). A grading permit is required under MMC Section 14.04.031-4 because the grading exceeds 3-feet in depth. The grading could be approved by the Design Review Administrator; however, a hillside development permit was also required for alteration of a slope over 20% and for this reason the findings for approval of the grading permit have been included in the draft action memorandum as noted in* ***EXHIBIT C****. The companion application for AT&T avoided the need for a grading permit by elevating the pad for the equipment so that the depth of the cut into the hillside was less than 3-feet.*

ID10.3 When the pre-development slope is greater than or equal to 20%, development shall be avoided, but may be permitted if supported by site-specific analysis. When grading land with a slope of 20% or more, soil displacement and retaining wall use shall be minimized by using contour grading techniques. In MOSO areas, development shall be prohibited on slopes with an average gradient of 20% or greater. Design shall be consistent with Moraga Municipal Code Title 14.

Comment: *It would seem that a retaining wall is the best solution to minimize the grading for the equipment pad. If contour grading was used to avoid the use of a retaining wall, the area of disturbance of the hillside would be substantially increased. In order to avoid any slopes steeper than 3:1 in accordance with guideline ID10.6, the hill behind the equipment pad would have to be cut back for a minimum of 10-feet to*

allow for the 40-inch high cut provided that the slope behind the wall was totally flat. In actual fact, the hill behind the enclosure continues to slope upward for a distance of approximately 60-feet to the crest of the ridge, which is 20-feet above the equipment pad elevation. Therefore, a 3:1 cut slope behind the enclosure would have to chase the slope all the way to the crest of the ridge, with more than three times the area of disturbance. This analysis begs the question of what is more important – minimizing grading or retaining walls? The Town Engineer will make the determination of consistency with MMC Title 14 (the Grading Ordinance), for his review of the grading permit application.

ID10.5 Cut slopes should be placed behind buildings or other structures where they will be screened.

Comment: *The cut slope is behind the equipment enclosure and will be effectively hidden by the fence around the enclosure.*

ID10.6 Preserve the natural topography of the land, especially at the horizon:

a. Round off graded slopes, in a manner that conforms to the natural contours of the land and to the surrounding terrain. Sharp angles produced by earth moving, specifically at the top and toe of graded slopes shall be avoided.
b. Slopes shall be contour graded to achieve a natural appearance.
c. Slopes shall be blended with the contours of contiguous properties and create a smooth transition.
d. Grading shall minimize scars due to cuts, fills, and drainage benches on natural slopes.

   Neither cuts nor fills shall result in slopes steeper than 3:1 (horizontal to vertical), except where natural slopes are steeper. Where steeper slopes are unavoidable, special mitigation measures shall be incorporated into the design construction and maintenance of the slopes.

   Comment: *See comments for design guideline ID10.3 above.*

ID11 RETAINING WALLS

ID11.1 Retaining walls (excluding foundation retaining walls) and other man-made grading features may only be used to mitigate geologic hazards when:

a. required to decrease the possibility of personal injury or property damage
b. designed to blend with the natural terrain and avoid an artificial or structural appearance
c. appropriately screened by landscaping
d. designed to avoid creating a tunnel effect along roadways and to ensure unrestricted views for vehicular and pedestrian safety
e. designed to ensure minimal public and/or private maintenance costs

   Comment: *The proposed retaining wall is not designed to mitigate a geologic hazard other than hold the soil in place behind the wall. As shown in the discussion for ID10.3, the proposed retaining wall will substantially reduce the total amount of grading that would have been required for natural contour grading.*

ID11.2 Exterior retaining wall*s* shall be limited to five feet in height, unless it is visible from off site, in which case it shall be no higher than three feet. The total height of a retaining wall and fencing on top of the wall shall not exceed eight feet without Design Review Board approval. A guardrail or handrail (provided a solid fence does not support it) may be located on top of the retaining wall.

Comment: *The actual height of the retained soil is only 40-inches; however the total height of the "retaining" wall is 5-feet. Brown & Mills, Inc., the geotechnical consultants for the project, recommended on page 17 of their report that the retaining wall extend above the level of the retained slope to provide a catchment area behind the wall. The fence on top of the wall will serve the purpose of a guardrail, but it could be reduced to 5-feet high because the wall is 16-inches above grade across the back of the enclosure.*

ID11.3 A retaining wall exceeding 3 feet requires professional engineering, a building permit, and may require a grading permit. Design Review Board approval is required if the retaining wall is visible from off-site.

Comment: *A building permit will be required for the retaining wall.*

ID12 STORMWATER GUIDELINES

ID12.4 Drainage should follow natural flow patterns and, where appropriate, plans should develop wide area flow patterns, rather than concentrating flow at one point.

Comment: *The 3-foot wide drainage apron around the enclosure will concentrate some of the stormwater, which will then require disbursement to avoid causing erosion of the slope below Fayhill Road.*

ID12.6 A sufficient number of drains should be provided for retaining wall backdrains to provide an outlet for water that may accumulate behind retaining walls. Such drainage facilities shall be directed to a landscape area or manufactured treatment system prior to connecting to the storm drain system. Design shall be consistent with the Moraga Municipal Code section 13.04.060d.

Comment: *Sheet S-2 of the plans show a 4-inch perforated pipe drain behind the retaining wall. The discharge for this drainage pile is not shown in plan view.*

EXHIBIT G

DRAFT ACTION MEMORANDUM

D R A F T

Town of Moraga

PLANNING DEPARTMENT
329 RHEEM BOULEVARD
MORAGA, CA 94556
(925) 888-7050

DESIGN REVIEW BOARD ACTION MEMORANDUM

On May 24, 2010, the Town of Moraga Design Review Board considered the application described below:

> **DRB 06-10 – Verizon Wireless, Inc. / Charnel James for NSA Wireless, Inc. (Applicant), PG&E (Transmission Tower Owner), Rancho Laguna LLC (Property Owner).** Design review and hillside development permit for an equipment enclosure for Verizon Wireless to be located 5-feet southeast of the EBMUD fence enclosure around the Fayhill Reservoir. The equipment enclosure will be 35-feet wide and 17-feet deep with a 5-foot high retaining wall behind it and a 6-foot high chain link fence around it. Nine 6-foot high panel antennae will be located on a 12-foot extension of the existing 103-foot high PG&E transmission tower located on the Rancho Laguna property adjacent to the Fayhill Reservoir. APN 256-040-024.

DESIGN REVIEW BOARD ACTION:

The DESIGN REVIEW BOARD hereby grants approval of the project in accordance with the following findings, design guideline exceptions and conditions of approval:

PART 1: DESIGN REVIEW FINDINGS:

In accordance with Moraga Municipal Code Section 8.72.080(B), the following findings must be made in order to approve an application for design review in land use districts other than single-family residential:

1. The proposed structure conforms with good design and in general contributes to the character and image of the Town as a place of beauty, spaciousness, balance, taste, fitness, broad vistas, and high quality because the proposed conditions of approval would add enhancements to improve the screening of the equipment inside the ground enclosure and reduce the profile of the enclosure on the hillside. The intent of the conditions of approval is to camouflage the enclosure and make it “disappear” as

much as possible. The antennae on the PG&E tower will also appear to be part of the existing tower if they are painted to match the color of the tower.

2. The structure is protected against exterior and interior noise, vibrations and other factors, which may tend to make the environment less desirable because the conditions of approval include restrictions on the allowable noise from the 30 KVA emergency generator and the telecommunications equipment does not produce any significant amount of noise.

3. The exterior design and appearance of the structure is not of inferior quality as to cause the nature of the neighborhood to materially depreciate in appearance and value because the purpose of the equipment enclosure is to provide security and visual screening for the telecommunications facility, which is intended for improved wireless communication service for the "neighborhood" including Rheem Valley and Campolindo High School areas.

4. The structure is in harmony with proposed developments on land in the general area because the conditions of approval are intended to reduce the visibility of the proposed equipment enclosure and make it blend in with the pasture grasses on the hillside.

PART 2: FINDINGS FOR GRADING PERMIT:

In accordance with Moraga Municipal Code Section 14.12.030, the following findings are required for the Design Review Board to approve grading on slopes less than 20%.

1. The grading is consistent with the Town Design Guidelines and does not require a design exception. Project analysis showed that the use of a retaining wall behind the equipment enclosure will substantially reduce the grading that would be required to install the equipment pad with natural contour grading and 3:1 maximum slopes.

2. The grading does not result in any slope of 20% or more. No exposed slopes will exceed a 20% slope in the area of disturbance.

3. The grading is consistent with the regulations and restrictions under Chapter 14 of the Municipal Code (the Grading Ordinance) and does not require a modification. NOTE: A final determination on this finding shall be made by the Town Engineer prior to release of the grading permit.

4. The proposed grading will not detrimental to public safety. The Geotechnical Investigation Report prepared by Brown & Mills, Inc. showed that the grading would not adversely impact public safety.

5. The grading will not be detrimental to storm water runoff. NOTE: A final determination on this finding shall be made by the Town Engineer prior to release of the grading permit.

6. The proposed grading is not inconsistent with the General Plan. The new design guidelines were based upon the goals and policies in the Town's 2002 General Plan; therefore, compliance with the Town Design Guidelines automatically guarantees consistency with the General Plan.

PART 3: CONDITIONS OF APPROVAL:

1. That the plans for construction of the new telecommunications equipment enclosure shall be substantially in accordance with the plans date stamped "Official Exhibit", May 24, 2010, and on file in the Town of Moraga Planning Department, except that the following changes shall be made to the plans prior to approval of the building permit.

   a. Light brown wood lath or vinyl slats shall be installed in the chain link fence to make it blend with the color of the dried pasture grass on the hillside and to help conceal the equipment cabinets within the enclosure in accordance with design guidelines RH3, RH8 and RH10.

   b. The slats for the chain link fence shall not be made of a shiny or reflective material that would be a source of glare on the hillside in compliance with guideline ID3.

   c. In accordance with design guideline RH5 to reduce the visual profile of the enclosure, the fence on top of the retaining wall at the back of the enclosure shall be lowered to 5-feet since it is on top of a 16-inch high wall.

   d. If a light fixture is needed for emergency maintenance of the equipment at night, it shall be shown on the plans. The source of the light shall be shielded so that it is not a source of glare on the hillside in accordance with design guideline ID6. Operation of the light shall conform to condition number 7 from Resolution 04-2010 PC.

   Any other significant changes to the plans or to the proposed grading shall be subject to further DRB approval.

2. If the applicant wants to avoid the need for a grading permit as required under MMC Section 14.04.031-4, then the following changes to the plans would need to be made:

   a. The depth of the cut for the retaining wall would need to be reduced to less than three (3) feet and the total amount of soil displacement must be less than 50 cubic yards.

   b. The height of the retaining wall could be reduced if the pad elevation for the equipment is elevated about one foot higher than Fayhill Road. This would also reduce the amount of off-haul from the cut in accordance with design guideline ID11.2.

3. The applicant shall submit a $137 design review fee to the Moraga-Orinda Fire District (MOFD) and provide evidence that the MOFD has approved the plans prior to receiving Planning Department approval of the building permit plans. In particular, the MOFD shall review the safety features for the 132 gallon fuel tank for the emergency 30 KVA generator. If landscaping is deemed necessary to provide screening of the enclosure fence, then it shall also be reviewed by the MOFD to make sure that it is not a species that could help fuel a wild-land fire in accordance with design guidelines RH7 and L1.2.

4. In compliance with design guidelines ID1, ID3, ID7, ID9.1, ID12.4, and ID12.6, drainage plans shall be submitted for review by the Town Engineering Department prior to the issuance of the grading or building permit. The increased peak runoff from the concrete pad of the equipment enclosure and the concentration of the stormwater from the concrete drainage apron around the back of the enclosure shall not be directed across

Fayhill Road or down the slope in a fashion that would lead to erosion of the road or the slope.

5. Prior to the issuance of a grading permit, the following plans may be required by the Town Engineer:

   a. In accordance with design guideline ID12.6, the discharge for the 4-inch perforated pipe drain behind the retaining wall, shown on section drawing on sheet S-2 of the plans, shall be shown in the plan view.

   b. A Storm Water Pollution Prevention Plan (SWPPP) incorporating selected Best Management Practices (BMPs) as outlined in Moraga's Storm Water Management Plan (SWMP). An Erosion Control Plan shall be required as one of the selected BMPS. The erosion control facilities shall conform to those outlined in the California Storm Water Best Management Practice Handbook and the ABAG Manual of Standards for Erosion and Sediment Control Measures.

   c. The applicant shall submit plans for trenching for utilities. All new utility distribution facilities including electric, telephone and cable television systems shall be installed underground from point of connection to the equipment enclosure.

   d. The applicant shall file a Notice of Intent (NOI) with the State Water Resources Control Board according to the Town's Municipal-Regional Permit requirements.

6. Grading shall be limited to the 19.8% average slope area calculated on the plans for the area of disturbance.

7. The design of the retaining wall shall comply with the recommendations in the Geotechnical Investigation Report by Brown and Mills, Inc. dated December 14, 2009.

8. The applicant shall apply for and pay all appropriate fees for building permits, plan checks and inspections.

9. Grading operations shall occur between April 15 and October 15, in order to avoid seasonal rainfall. The erosion control plan required with the SWPPP (see Condition 6-a, above) shall be submitted to the Town Engineer for review and approval prior to September 1. All erosion control measures shall be installed and deemed operational by the project engineer and Town Grading Inspector prior to October 1. Erosion control measures shall be designed for long-term maintenance in order to provide protection throughout the winter.

10. All work to be undertaken within the right-of-way of Rheem Boulevard is to be shown on the construction plans (i.e. joint utility trench). Prior to undertaking any work within the public right-of-way, an encroachment permit shall be obtained from the Town Engineering Department.

11. The grading contractor, building contractor and the applicant shall be responsible for preventing spills of soil, rock or other debris on to the Town's streets. If any spills occur as a result of the grading or construction for this project, the responsible party will be required to immediately cleanup the spill and repair any damage to the streets to the satisfaction of the Town Engineer.

12. Parking of grading equipment, tractor tread vehicles and all construction vehicles and equipment on Rheem Boulevard is prohibited. These vehicles shall be delivered to the property by trailer and kept on site during grading and construction operations.

13. All utility connections for the new telecommunications facility shall be installed underground from point of connection.

14. If archaeological materials are encountered during grading operation, all work within 100 feet of the find shall be stopped, and the Planning Director shall be notified within 24 hours. The Applicant shall retain a qualified archaeologist to evaluate the significance of the find, prepare a report that documents the field investigation, and advise the Town and the Applicant regarding any mitigation measures deemed necessary.

15. The Applicant and its contractors shall be responsible to prevent erosion of soil on the property. If inspection by the Town shows evidence that erosion has occurred, then the Applicant and their contractor shall be held responsible for the immediate cleanup of any soil deposits attributed to the project and correction of the cause of the soil erosion.

16. The Applicant shall provide phone numbers for its grading contractor and other responsible individuals so that the Town can contact these people at any time in the event that emergency repairs to the erosion control measures are needed.

17. Grading and construction activities shall be conducted in such a manner as to minimize the generation of dust in accordance with design guideline ID3. During the grading operation, the contractor shall wet down the grading areas at least twice daily during dry periods or as needed to prevent the generation of excessive dust. The wheels of hauling trucks shall be washed as needed when exiting the site to prevent tracking excessive dirt onto Rheem Boulevard. Any dust producing material shall be covered while being hauled, and storage piles of dust producing material on site shall be covered.

18. The hours of project construction and grading operations shall be limited from 8 a.m. to 5 p.m. in accordance with Moraga Municipal Code (MMC) Section 7.12.090.

19. These Conditions of Approval shall be located in the “Notes” section of the Building Plans.

20. If a building permit or grading permit is not obtained within one year from the date of this Design Review Board action, this approval becomes null and void. However, this action may be renewed by the Planning Director for a maximum period of one (1) year provided the applicant places such a request in writing to the Planning Director showing good cause prior to the expiration of the Design Review Board approval.

Design Review Board action is appealable to the Planning Commission within 10 calendar days after the date of the decision. If you have any questions regarding the action of the Board, please contact the Moraga Planning Department at (925) 376-5200.

EXHIBIT H

APPLICANT'S PLANS

SITE NAME:
RHEEM VALLEY

SITE NUMBER:
123265

RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

TOWER #: 24/11
LINE NAME: CONTRA COSTA 230KV
SAP #: 40746 201

THESE PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ISSUANCE OF A BUILDING PERMIT AND ALL SHEETS HAVE BEEN ISSUED "FOR CONSTRUCTION".

ABV	ABOVE	RET	RETURN
ADJ	ADJUSTABLE	REV	REVISION
ALT	ALTERNATE	SCH	SCHEDULE
APPROX	APPROXIMATE	SECT	SECTION
APP	APPROXIMATE	SF	SQUARE FOOT
AUTO	AUTOMATIC	SHT	SHEET
BEL	BELOW	SIM	SIMILAR
BLK	BLOCK	SPEC	SPECIFICATION
BOT	BOTTOM	SPECS	SPECIFICATIONS
CHAM	CHAMFER	SPL	SPECIAL
CIR	CIRCLE	SQ	SQUARE
CIRC	CIRCUMFERENCE	STD	STANDARD
CLR	CLEAR	SYM	SYMETRICAL
COL	COLUMN	SYS	SYSTEM
COMB	COMBINATION	TEMP	TEMPORARY
CONT	CONTINUOUS	THK	THICK(NESS)
CTR	COUNTER	TOL	TOLERANCE
DEP	DEPRESSED	TYP	TYPICAL
DET	DETAIL	VERT	VERTICAL
DIAG	DIAGONAL	W/	WITH
DIAM	DIAMETER	W/O	WITHOUT
DIM	DIMENSION	PAR	PARALLEL
DIV	DIVISION	PERI	PERIMETER
DN	DOWN	PT	POINT
DWG	DRAWING	RAD	RADIUS
EA	EACH	REF	REFERENCE
EQ	EQUAL	REM	REMOVE
EQPT	EQUIPMENT		
EXG	EXISTING		
FUT	FUTURE		
HD	HEAVY DUTY		
HDWR	HARDWARE		
HORZ	HORIZONTAL		
HR	HOUR		
HT	HEIGHT		
ID	INSIDE DIAMETER		
L	LENGTH		
LBL	LABEL		
MAX	MAXIMUM		
MECH	MECHANICAL		
MED	MEDIUM		
MFR	MANUFACTURER		
MIN	MINIMUM		
MIR	MIRROR		
MISC	MISCELLANEOUS		
MM	MILLIMETER(S)		
MTL	MATERIAL		
NOM	NOMINAL		
NTS	NOT TO SCALE		
OD	OUTSIDE DIAMETER		

ABBREVIATIONS

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUCTED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. CALIFORNIA ADMINISTRATIVE CODE (INCL. TITLES 24 & 25) 2007
2. CALIFORNIA BUILDING CODES 2007
3. CALIFORNIA ELECTRICAL CODES 2007
4. CALIFORNIA MECHANICAL CODES 2007
5. CALIFORNIA PLUMBING CODES 2007
6. ANSI / EIA-222 E&F
7. LOCAL BUILDING CODES
8. CITY / COUNTY ORDINANCES
9. CALIFORNIA FIRE CODE 2007 EDITION

CODE COMPLIANCE

NAME: VERIZON WIRELESS
ADDRESS: 2785 MITCHELL DRIVE
WALNUT CREEK, CA 94598
CONTACT: JIM GRAHAM
PHONE: (925) 279-6333

AGENT

NAME: NSA WIRELESS
ADDRESS: 2000 CROW CANYON PLACE, STE. 400
SAN RAMON, CA 94583
CONTACT: CHARNEL McGALL – ZONING
PHONE: (925) 244-1890
ROGER SHARP – CONSTRUCTION
(925) 244-1890 (EX. 228)
FAX: (925) 355-0672

APPLICANT/LESSEE

ARCHITECT:

CONSULTANT'S NAME: MSA ARCHITECTURE AND PLANNING, INC.
ADDRESS: 4425 17TH STREET
CITY, STATE, ZIP: SAN FRANCISCO, CA 94114
CONTACT: ROBERT ZEHM
PHONE: (415) 503-1363

SURVEYOR:

CONSULTANT'S NAME: PHIL AUER SURVEYING
ADDRESS: 14407 CORTE LEJOS
CITY, STATE, ZIP: BAKERSFIELD, CA 93314
PHONE: (661) 587-6129

UTILITY COORDINATION:

CONSULTANT'S NAME: TELECOM PLUS
ADDRESS: 7027 DUBLIN BLVD. STE. #621
CITY, STATE, ZIP: DUBLIN, CA 94568
PHONE: (925) 556-6600
FAX: (925) 556-6605

PROJECT TEAM

PROJECT SUMMARY:
THE PROJECT CONSISTS OF:

- (N) VERIZON WIRELESS 17'-0" X 35'-0" (595.0 S.F.) LEASE AREA AND EQUIPMENT COMPOUND
- THE INSTALLATION OF VERIZON WIRELESS OUTDOOR RADIO CABINETS & (2) GPS ANTENNAS WITHIN 6' HT. CHAINLINK FENCE
- ±4' HT. CMU RETAINING WALL WITH A 6' CHAINLINK FENCE AROUND THE EQUIPMENT COMPOUND
- THE INSTALLATION OF A PERMENANT 30 KVA GENERATOR W/132 GAL. UL142 TANK
- THE INSTALLATION OF (9) (N) 6' VERIZON PANEL ANTENNAS MOUNTED ON A (P) 10' TOP HAT EXTENSION ON AN (E) 103.1' PG&E TOWER.
- UNDERGROUND COAX RUN FROM (N) EQUIPMENT TO ANTENNAS LOCATED ON (E) PG&E TOWER.
- UTILITY RUN, ±2500 FT. UG ROUTE, TO FOLLOW (E) EASEMENT UP ROAD FROM MORAGA ROAD

PROJECT DESCRIPTION

PROPERTY INFORMATION

OWNER/TOWER: PG&E
ADDRESS: 77 BEALE STREET B26L
SAN FRANCISCO, CA 94105
CONTACT: MIKE SULLIVAN
PHONE: (925) 323-9664
SITE NUMBER: G-CA-123265
TOWER NUMBER: 40746201
LINE NAME & VOLTAGE: CONTRA COSTA-MORAGA #1 230KV
SAP TOWER NUMBER: 24/11
SBE NUMBER: N/A
OWNER/GROUND: RANCHO LAGUNA LLC
7700 COLLEGE TOWN DR. #215
SACRAMENTO, CA 95826
CONTACT: STEFAN MANOLAKAS
PHONE: 949-554-9361
SAP #: 40746201
CURRENT ZONING: MOSO-AGRICULTURAL
A.P.N.: 256-040-024

GPS POINT

NAD:	83	NAD:	27
LAT:	N37°51'36.63"	LAT:	N37°51'36.90"
LONG:	W122°07'01.57"	LONG:	W122°06'57.70"

NOTE: NORTH SHOWN HAS BEEN ESTABLISHED USING COMPASS AND IS APPROXIMATE. ALL ANTENNA AZIMUTHS ARE TRUE NORTH. MAGNETIC DEVIATION HAS NOT BEEN ACCOUNTED FOR. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.

PROJECT SUMMARY

CONTRA COSTA COUNTY

VICINITY MAP

SITE DIRECTIONS FROM VERIZON WIRELESS WALNUT CREEK OFFICE:

START:
2785 MITCHELL DRIVE
WALNUT CREEK, CA 94598

1. TAKE MITCHELL DRIVE TO N. WIGET LANE TURN LEFT
2. TURN RIGHT ON IGNACIO VALLEY ROAD
3. IGNACIO VALLEY RD BECOMES HILLSIDE AVE
4. MERGE ON TO CA 24 WEST TOWARD OAKLAND
5. TAKE THE CENTRAL LAFAYETTE EXIT
6. TURN RIGHT ON DEER HILL RD
7. TURN RIGHT ON 1ST STREET
8. TURN RIGHT ON MT DIABLO BLVD
9. TURN LEFT ON MORAGA ROAD
10 TURN LEFT ON RHEEM BLVD
11 GO ABOUT 1/4 MILE AND LOOK FOR ACCESS ROAD AND GATE ON LEFT.

END:
RHEEM BLVD & MORAGA RD.
MORAGA, CA 94556

DRIVING DIRECTIONS

SHEET	DESCRIPTION	REV.
T-1	TITLE SHEET	2
T-2	GENERAL NOTES	2
T-3	CONDITIONS OF APPROVAL	2
LS-1	SITE SURVEY	5
LS-2	SITE SURVEY	5
A-1	OVERALL SITE PLAN, PLAN AT UTILITY P.O.C. & PROJECT AREA PLAN	2
A-2	ENLARGED EQUIPMENT LAYOUT	2
A-2.1	VERIZON WIRELESS EQUIP. LAYOUT (FOR REFERENCE)	2
A-3	ENLARGED ANTENNA LAYOUT	2
A-4	ELEVATION	2
A-5	ELEVATION	2
A-6	ELEVATION	2
A-7	ELEVATION	2
A-8	DETAILS	2
A-9	DETAILS	2
A-10	DETAILS	2
S-1	SITE KEY PLAN AND STRUCTURAL NOTES	2
S-2	EQUIPMENT SUPPORT PLAN AND SECTION	2
E-1	UTILITY SITE PLAN ABBREVIATION NOTES & SYMBOLS	2
E-2	SINGLE LINE DIAGRAM NOTES & DETAILS	2
E-3	EQUIPMENT GROUNDING PLAN	2
E-4	ANTENNA GROUNDING PLAN	2
E-5	GROUNDING DETAILS	2
E-6	ELECTRICAL DETAILS	2
E-7	PG&E GROUNDING REQUIREMENTS	2

SHEET INDEX

verizon wireless
2785 MITCHELL DRIVE
WALNUT CREEK, CA 94598

MSA
Architecture & Planning, Inc.
4425 17th Street
San Francisco, Ca 94114
415.503.1363 fax 949.291.1120
Santa Ana San Diego San Francisco

NSA Wireless, Inc.
Site Acquisition * Planning * Construction Management * Site Modification
2000 Crow Canyon Place, Ste. 400
San Ramon, CA 94583
Fax: (925) 355-0672
Phone: (925) 244-1880

AGE SEAL

PROJECT NO: 123265
DRAWN BY: MJF
CHECKED BY: RZ
CAD FILE: 123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO VERIZON WIRELESS IS STRICTLY PROHIBITED.

SITE
123265
RHEEM VALLEY
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

Apr 21, 2010 - 1:20pm jolejundrine F:_VERIZON\VERIZON ACTIVE_VERIZON SF_MSA Verizon\Project Sites\MSA WIRELESS\123265 Rheem\CDS\123265-T-SHEETS.dwg

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE LOCAL BUILDING CODE, THE LATEST EDITION AND ALL OTHER APPLICABLE CODES AND ORDINANCES.
2. CONTRACTOR SHALL VISIT THE JOB SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK
3. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT AND APPURTENANCES, AND LABOR NECESSARY TO EFFECT ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
4. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM AUTHORIZED REPRESENTATIVE OR THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK.
5. DETAILS ARE INTENDED TO SHOW END RESULT OF DESIGN. MINOR MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK.
6. CONTRACTOR SHALL RECEIVE CLARIFICATION IN WRITING, AND SHALL RECEIVE IN WRITING AUTHORIZATION TO PROCEED BEFORE STARTING WORK ON ANY ITEMS NOT CLEARLY DEFINED OR IDENTIFIED BY THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL NOTIFY THE ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND TO BE IN THE FIELD.
8. CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK USING THE BEST CONSTRUCTION SKILLS AND ATTENTION. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER CONTRACT, UNLESS OTHERWISE NOTED.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE WORK AREA, BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFORM TO ALL OSHA REQUIREMENTS.
10. CONTRACTOR SHALL COORDINATE HIS WORK WITH THE SUPERINTENDENT OF BUILDINGS & GROUNDS AND SCHEDULE HIS ACTIVITIES AND WORKING HOURS IN ACCORDANCE WITH THE REQUIREMENTS.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS WORK WITH THE WORK OF OTHERS AS IT MAY RELATE TO RADIO EQUIPMENT, ANTENNAS AND ANY OTHER PORTIONS OF THE WORK.
12. PROVIDE 48 HOURS WRITTEN NOTICE TO THE ENGINEER, & OWNER PRIOR TO COMMENCEMENT OF WORK.
13. PROVIDE A PORTABLE FIRE EXTINGUISHER WITH A RATING OF NOT LESS THAN 2-A OR 2-A/10-BC WITHIN 75 FEET TRAVEL DISTANCE TO ALL PORTIONS OF THE WORK AREA DURING CONSTRUCTION.
14. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.
15. MAKE NECESSARY PROVISIONS TO PROTECT EXISTING SURFACES, EQUIPMENT, IMPROVEMENTS, PIPING ETC. AND IMMEDIATELY REPAIR ANY DAMAGE THAT OCCURS DURING CONSTRUCTION.
16. IN DRILLING HOLES INTO CONCRETE WHETHER FOR FASTENING OR ANCHORING PURPOSES, OR PENETRATIONS THROUGH THE FLOOR FOR CONDUIT RUNS, PIPE RUNS, ETC., IT MUST BE CLEARLY UNDERSTOOD THAT REINFORCING STEEL SHALL NOT BE DRILLED INTO, CUT OR DAMAGED UNDER ANY CIRCUMSTANCES (UNLESS OTHERWISE NOTED). LOCATIONS OF REINFORCING STEEL ARE NOT DEFINITELY KNOWN AND THEREFORE MUST BE SEARCHED FOR BY APPROPRIATE METHODS AND EQUIPMENT.
17. REPAIR ALL EXISTING WALL SURFACES DAMAGED DURING CONSTRUCTION SUCH THAT THEY MATCH AND BLEND IN WITH ADJACENT SURFACES.
18. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH U.L. LISTED AND FIRE CODE APPROVED MATERIALS.
19. KEEP CONTRACT AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DIRT, DEBRIS, AND RUBBISH. EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY OF THE OWNER SHALL BE REMOVED. LEAVE PREMISES IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL ITEMS UNTIL COMPLETION OF CONSTRUCTION.
20. COMPLETE JOB SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER THE DATE OF ACCEPTANCE. ANY WORK, MATERIALS, OR EQUIPMENT FOUND TO BE DEFECTIVE DURING THAT PERIOD SHALL BE CORRECTED IMMEDIATELY UPON WRITTEN NOTIFICATION AT NO ADDITIONAL COST.
21. MINIMUM BEND RADIUS OF ANTENNA CABLES SHALL BE IN ACCORDANCE WITH CABLE MANUFACTURERS RECOMMENDATIONS.

ANTENNA MOUNTING NOTES

1. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO ANSI/EIA/TIA- 222-G "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES" OR APPLICABLE LOCAL CODES.
2. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT-DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS OTHERWISE NOTED.
3. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC-COATING (HOT-DIP) ON IRON AND STEEL HARDWARE", UNLESS OTHERWISE NOTED.
4. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.
5. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH DOUBLE NUTS AND SHALL BE INSTALLED SNUG TIGHT.
6. AT WOOD STUDS WALL 2- 3/8"ø x 4" LONG LAG BOLTS TOP AND BOTTOM CENTER AT STUDS.
7. AT STL. STUDS WALL USE 2-1/2"ø THRU BOLTS TOP AND BOTTOM TO UNISTRUT BACKING
8. AT CONCRETE WALL USE 2-1/2"ø HILTI KB-TZ TOP AND BOTTOM EMBED 3" MIN. ICBO# 1385
9. NORTH SHOWN HAS BEEN ESTABLISHED USING COMPASS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.

GENERAL ELECTRICAL NOTES

SEE ELECTRICAL DWGS.

GROUNDING NOTES

SEE ELECTRICAL DWGS.

REINFORCING STEEL

ALL REINFORCING STEEL SHALL BE NEW DEFORMED BARS CONFORMING TO ASTM A-615 GRADE 60.
LAP REINFORCING STEEL AT SPLICES TO THE FOLLOWING MINIMUM LENGTHS UNLESS NOTED OTHERWISE:

#3 AND #4.....2'-0"
#5.....2'-6"

STRUCTURAL NOTES

1. ALL CONSTRUCTION AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND UBC-CURRENT CODE.
2. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE, AND SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES AND CONDITIONS OF ALL WORK AND MATERIALS INCLUDING THOSE FURNISHED BY SUB-CONTRACTORS. ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE STRUCTURAL ENGINEER IMMEDIATELY AND BE RESOLVED BEFORE PROCEEDING WITH THE WORK.
3. STRUCTURAL DRAWINGS SHALL WORK IN CONJUNCTION WITH ARCHITECTURAL MECHANICAL, AND ELECTRICAL DRAWINGS.
4. DESIGN, MATERIALS, EQUIPMENT AND PRODUCTS OTHER THAN THOSE DESCRIBED OR INDICATED ON THE DRAWINGS MAY BE CONSIDERED FOR USE PROVIDED PRIOR APPROVAL IS OBTAINED FROM THE STRUCTURAL ENGINEER.
5. ALL CONDITIONS SHOWN OR NOTED AS EXISTING ARE BASED ON BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE DRAWINGS. NO WARRANTY IS IMPLIED TO THEIR ACCURACY. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS. SHOULD CONDITIONS BECOME APPRENT WHICH DIFFER FROM THE CONDITIONS SHOWN, THEY SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF STRUCTURAL ENGINEER. STRUCTURAL ENGINEER WILL THEN PREPARE ADDITIONAL DRAWINGS AS MAY BE NEEDED TO ACCOMODATE THE CONDITIONS AS BROUGHT TO THEIR ATTENTION.
6. MECHANICAL EQUIPMENT MUST BE FIRMLY ATTACHED TO THE STRUCTURE. ISOLATORS, FASTENERS AND ANY OTHER ELEMENT PROVIDING STABILITY FOR MECHANICAL EQUIPMENT SHALL BE CAPABLE OF TRANSMITTING CODE REQUIRED LOADS, BUT IN NO EVENT LESS THAN A SHEAR LOAD EQUIVALENT TO 0.45 TIMES THE OPERATING WEIGHT OF EQUIPMENT.
7. DESIGN, MATERIALS, EQUIPMENT AND PRODUCTS OTHER THAN THOSE DESCRIBED OR INDICATED ON THE DRAWINGS MAY BE CONSIDERED FOR USE PROVIDED PRIOR APPROVAL IS OBTAINED FROM THE STRUCTURAL ENGINEER.

CONCRETE NOTES

1. DESIGN AND CONSTRUCTION SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" ACI 318.
2. ULTIMATE COMPRESSIVE STRENGTH OF CONCRETE AT 28 DAYS SHALL BE 2500 PSI.
3. CONCRETE WORK AND MATERIALS SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS", ACI 301.
4. CEMENT SHALL BE PORTLAND CEMENT CONFORMING TO ASTM C150 TYPE I.
5. CONCRETE SLUMP SHALL NOT EXCEED 5 INCHES UNLESS SPECIFICALLY AUTHORIZED BY THE ENGINEER. SLUMP SHALL BE DETERMINED IN ACCORDANCE WITH ASTM C143.
6. READY MIX CONCRETE SHALL COMPLY WITH ACI-304 AND ASTM C-94 WITH A MAXIMUM WATER CEMENT RATIO OF 0.50. TIME BETWEEN INTRODUCTION OF WATER AND THE PLACEMENT OF CONCRETE SHALL NOT EXCEED 1-1/2 HOURS.
7. PROVIDE AIR ENTRAINMENT IN EXTERIOR EXPOSED CONCRETE TO OBTAIN TOTAL AIR CONTENT OF 5% ±1% IN ACCORDANCE WITH ACI 301.
8. CONCRETE COVER FOR REINFORCING SHALL BE 3 INCHES FOR CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH. AT ALL OTHER CONCRETE SURFACES, MINIMUM COVER SHALL BE 2 INCHES FOR #6 AND LARGER BARS, AND 1 1/2 INCHES FOR #5 AND SMALLER BARS.
9. REMOVE ALL LOOSE MATERIAL AND DEBRIS FROM SURFACE PRIOR TO PLACING CONCRETE.
10. EXTERIOR WALKING SURFACES SHALL RECEIVE A BROOM FINISH.
11. THROUGHOUT CONSTRUCTION, THE CONCRETE WORK SHALL BE ADEQUATELY PROTECTED AGAINST DAMAGE DUE TO EXCESSIVE LOADING, CONSTRUCTION EQUIPMENT, MATERIALS OR METHODS, ICE, RAIN, SNOW, EXCESSIVE HEAT AND FREEZING.
12. DRYING OUT OF CONCRETE, ESPECIALLY DURING THE FIRST 24 HOURS, SHALL BE CAREFULLY GUARDED AGAINST, ALL SURFACES SHALL BE MOIST CURED OR PROTECTED USING A MEMBRANE CURING AGENT APPLIED AS SOON AS FORMS ARE REMOVED. IF MEMBRANE CURING AGENT IS USED, EXERCISE CARE NOT TO DAMAGE SURFACE.
13. REF. TO STRUCTURAL DRAWINGS FOR CMU & GROUT SPECS.

CABLE MARKING COLOR CONVENTION

	ALPHA (50')		BETA (170')		GAMMA (290')		GPS
850	TX1/RX1	TX2/RX2	TX3/RX3	TX4/RX4	TX5/RX5	TX6/RX6	BLUE
	YELLOW/RED/GREEN	YELLOW/RED/RED/GREEN/GREEN	BLUE/RED/GREEN	BLUE/RED/RED/GREEN/GREEN	ORANGE/RED/GREEN	ORANGE/RED/RED/GREEN/GREEN	
LENGTH (Feet)	±170'	±170'	±165'	±165'	±165'	±165'	±10'
SIZE	7/8"	7/8"	7/8"	7/8"	7/8"	7/8"	1/2"
1900	TX1/RX1	TX2/RX2	TX3/RX3	TX4/RX4	TX5/RX5	TX6/RX6	PURPLE/BLUE
	PURPLE/YELLOW/RED/GREEN	PURPLE/YELLOW/RED/RED/GREEN/GREEN	PURPLE/BLUE/RED/GREEN	PURPLE/BLUE/RED/RED/GREEN/GREEN	PURPLE/ORANGE/RED/GREEN	PURPLE/ORANGE/RED/RED/GREEN/GREEN	
LENGTH (Feet)	±170'	±170'	±165'	±165'	±165'	±165'	±10'
SIZE	1 5/8"	1 5/8"	1 5/8"	1 5/8"	1 5/8"	1 5/8"	1/2"
700	PURPLE/PURPLE/YELLOW/RED/GREEN	PURPLE/PURPLE/YELLOW/YELLOW/RED/RED/GREEN/GREEN	PURPLE/PURPLE/BLUE/RED/GREEN	PURPLE/PURPLE/BLUE/RED/RED/GREEN/GREEN	PURPLE/PURPLE/ORANGE/RED/GREEN	PURPLE/PURPLE/ORANGE/RED/RED/GREEN/GREEN	-
LENGTH (Feet)	±170'	±170'	±165'	±165'	±165'	±165'	-
SIZE	7/8"	7/8"	7/8"	7/8"	7/8"	7/8"	-
DOWN TILT	0°	0°	0°	0°	0°	0°	-

SPECIAL INSPECTION REQUIREMENTS

- ☐ SOILS COMPLIANCE PRIOR TO FOUNDATION INSPECTION
- ☐ CONCRETE OVER 2500 PSI AT 28 DAYS
- ☐ CONCRETE PLACEMENT AT SLAB ON GRADE
- ☐ WRITTEN CERTIFICATION FOR PROPER PLACEMENT OF REINFORCEMENTS AT SLAB ON GRADE
- ☐ FOUNDATION EXCAVATION AND FILL INCLUDING UTILITY TRENCHES
- ☐ CERTIFICATION OF BUILDING PAD, FOUNDATION AND FILL BY THE GEOTECHNICAL ENIGNEER OF THE RECORD
- ☐ VERIFICATIONS OF MILL REPORT
- ☐ IDENTIFICATION OF STEEL AND AT JOB SITE
- ☐ EPOXY BOLTS IN CONCRETE OR MASONRY
- ☐ ANCHOR BOLTS INSTALLATION AND PLACEMENT IN CONCRETE.
- ☐ HIGH STRENGTH BOLTING
- ☐ SPRAYED -ON- FIREPROOFING
- ☐ STRUCTURAL MASONRY
- ☐ PRESTRESSED CONCRETE
- ☐ ALL FIELD WELDING
- ☐ REINFORCING PLACEMENT
- ☐ DESIGNER SPECIFIED (SEE SHEET#__)
- ☐ OTHER _____

SUBMITTAL DOCUMENTS FOR DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE ARCHITECT OR ENGINEER OF RECORD, WHO SHALL REVIEW THEM AND FORWARD THEM TO THE BUILDING OFFICIAL WITH A NOTATION INDICATING THAT THE DEFERRED SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE DESIGN OF THE BUILDING. THE DEFERRED AND SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN APPROVED BY THE BUILDING OFFICIAL.

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AIE SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	02/02/10	80% CONSTRUCTION

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MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
T-2

Apr 21, 2010 - 1:20pm jolejandrino P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-T-SHEETS.dwg

BEFORE THE TOWN OF MORAGA PLANNING COMMISSION

In the Matter of:	Resolution 04-2010
Approval of a conditional use permit for a new Verizon Wireless telecommunications facility with nine panel antennas on a 12-foot extension of a PG&E tower and a 35-foot by 17-foot fenced equipment enclosure located adjacent to the EBMUD Fayhill Reservoir on the Rancho Laguna property.	File No. UP-02-2009 Adoption Date: March 1, 2010 Effective Date: March 10, 2010 (in not appealed)

WHEREAS, on April 2, 2009 an application was filed by Chamel James, NSA Wireless, Inc. on behalf of Verizon Wireless (applicant) and Stefan Manolakas, Rancho Laguna LLC (owner) for a Use Permit to allow the installation of nine 6-foot high panel antennas on a 12-foot extension of a PG&E tower and a 50-foot by 20-foot equipment pad with a 5-foot high retaining wall and a 10-foot high prefabricated building located adjacent to the EBMUD Fayhill Reservoir on the Rancho Laguna property; and

WHEREAS, on May 1, 2008 the application was found to be non-conforming with the development standards under MMC Sections 8.144.060-A2 and 8.144.060-A3; and

WHEREAS, on September 3, 2009 a revised application was submitted with a smaller 35-foot by 17-foot equipment pad with a 4-foot high retaining wall and six-foot fence around the enclosure; and

WHEREAS, on September 17, 2009 the applicant submitted the propagation maps prepared by their RF engineer to show the expanded area of service from the proposed new telecommunications facility; and

WHEREAS, on October 19, 2009 the applicant was requested to submit additional information needed to verify compliance with the MOSO guidelines; and

WHEREAS, on January 26, 2010 the applicant submitted a drawing to show that the proposed equipment enclosure would we located within a 10,220 square foot MOSO cell with an average slope of 18%; and

WHEREAS, on February 19, 2010 public hearing notices were mailed to all property owners within 300 feet of the property and posted at 2100 Donald Drive, the Moraga Commons and the Moraga Library; and

WHEREAS, the project was found to be Categorically Exempt in accordance with Section 15303 of the California Environmental Quality Act (CEQA); and

WHEREAS, on March 1, 2010 the Planning Commission held a public hearing and considered testimony from the applicant and interested parties; and

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of the Town of Moraga hereby approves the new Verizon Wireless telecommunications facility adjacent to the EBMUD Fayhill Reservoir with the findings listed below in accordance with Sections 8.12.120 of the Moraga Municipal Code and subject to the conditions listed herein:

SPECIFIC FINDINGS NECESSARY FOR ALL CONDITIONAL USE PERMITS:

Section 8.12.120 of the Moraga Municipal Code identifies the required findings that must be made to grant the Conditional Use Permit.

CHAPTER 8.12.120 – CONDITIONAL USE PERMIT REQUIRED FINDINGS.

1. **The proposed use is appropriate to the specific location** because MMC Section 8.144.030-D states that all new wireless communication facilities shall be collocated with existing facilities whenever feasible and the proposed location would be collocated on an existing PG&E transmission tower, with the equipment enclosure adjacent to the existing EBMUD Fayhill Reservoir.

2. **The proposed use is not detrimental to the health, safety, and general welfare of the Town** because the RF emissions from the nine new antennas proposed at the top of the PG&E transmission tower will comply with the Federal Communication Commission (FCC) standards.

3. **The proposed use will not adversely affect the orderly development of property within the Town** because the site is not a pristine undeveloped ridgeline and already has the PG&E transmission tower and EBMUD reservoir on the crest of the ridge.

4. **The proposed use will not adversely affect the preservation of property values and the protection of the tax base and other substantial revenue sources within the Town** because the visibility of the telecommunications equipment enclosure and antennas is substantially reduced by the great distance of more than 1,000 feet from the nearest residence and the improved wireless telecommunications service in the community could contribute to an improvement in property values.

5. **The proposed use is consistent with the objectives, policies, general land uses and programs specified in the general plan and applicable specific plans.** The proposed Verizon Wireless installation is consistent with the requirements of the Town's Wireless Communications Ordinance and qualifies for an exception to the prohibition of development within the Town's open space and ridgeline areas in accordance with the development standards listed in MMC Section 8.144.060-A. The equipment enclosure will be within a

minimum 10,000 square foot "cell" with an average slope less than 20% in accordance with the MOSO Guidelines.

6. **The proposed use will not create a nuisance or enforcement problem within the neighborhood** because the remote location of the proposed Verizon Wireless antennas and equipment has restricted access to the site and the facility will not produce any smoke or debris. On site equipment will alert personnel at Verizon Wireless if there is any breach in security.

7. **The proposed use will not encourage marginal development within the neighborhood** because the location of the facility is on a minor ridge over 800-feet in elevation where residential development or construction of other buildings would be prohibited by MOSO.

8. **The proposed use will not create a demand for public services within the Town beyond that of the ability of the Town to meet in light of taxation and spending restraints imposed by law** because the unmanned facility will be self-monitored by computers where any equipment malfunctions will be reported directly to the central office for corrective action. There would be no demand for additional public services.

9. **The proposed use is consistent with the Town's approved funding priorities.** The installation of the new Verizon Wireless telecommunications transmission facility will have no impact on the Town's funding priorities.

CONDITIONS OF APPROVAL:

1. This use permit shall be valid for an initial period of ten years. The conditional use permit may be extended by the Planning Commission for an additional ten year period following a public hearing and verification of continued compliance with the conditions of approval and a showing that the facility has been upgraded to minimize its impact, including community aesthetics, to the greatest extent permitted by the technology that exists at the time of renewal and is consistent with the provisions of federal law.

2. Within thirty (30) days after completion of the new installation, and every five years thereafter, Verizon Wireless shall conduct tests to verify compliance with FCC radio frequency emissions standards and provide such test results to the Moraga Planning Department. Such testing shall be conducted during normal business hours and on a non-holiday weekday with the facility operating at maximum power and shall measure total emissions from the cell site.

3. The following development standards for height and building setbacks shall apply to this use permit: (1) maximum height of 115-feet to the top of the antennas on the PG&E tower, (2) maximum height of 7-feet the fencing around the equipment enclosure, but any fence higher than 6-feet will require a building permit, (3) building setbacks of 300-feet to any residential structure in accordance with MMC Section 8.144.030-I.

4. The applicant shall submit the following plans for Design Review Board approval prior to issuance of a building permit:

   a. Assuming that a building permit will be required for the 4-foot high retaining wall at the backside of the equipment enclosure, the applicant shall apply for a Hillside Development Permit and address the factors listed under MMC Section 8.136.070, which include slope, soil instability, drainage, soil characteristics, seismic factors, existing and future residential development, view shed, access, potential traffic congestion, fire risk, noise, glare, wildlife, dust and impact on existing vegetation.

   b. Plans for the equipment and the fencing of the enclosure, including the color of the fencing and equipment to blend with the natural color of the dried grass as it appears for the majority of the year.

   c. Submit the color for the 9 panel antennas on the top of the PG&E tower. The paint shall have a non-reflective finish and shall be a color that will minimize visual impacts.

   d. The Design Review Board may request submittal of a landscape plan if deemed necessary to help camouflage views of the equipment enclosure.

5. If the cut into the hillside exceeds 3-feet in depth, a grading permit will be required. Grading permits are issued by the Town's Engineering Department. The process for approval of a grading permit, if required, will depend upon the average slope in the area of disturbance. If the average slope in the entire area to be graded is less than 20%, then the grading plans can be approved by the Town Engineer. If the average slope is between 20% and 25%, then plans for the grading will be submitted to the Design Review Board for approval. If the average slope is 25% or greater then the grading plans will require review by the Planning Commission and approval by the Town Council.

6. In accordance with MMC Section 8.144.070-D, the 30 KVA generator for emergency power shall comply with the following conditions to minimize noise impacts:

   a. A maximum allowable exterior noise level of sixty (60) dB at the property line of the facility must not be exceeded.

   b. Any maintenance or testing that will create noise that is audible from residences and other nearby sensitive receptors shall occur between the hours of eight a.m. to five p.m. Monday through Friday, excluding emergency repairs.

   c. The backup generator shall only be operated during power outages, emergency occurrences, or for testing and maintenance.

7. Any lighting used by technicians shall be manually operated and used only during night maintenance or emergencies. The lighting shall be constructed or located so that only the intended area is illuminated and off-site glare is fully controlled.

8. All equipment associated with this wireless communication facility shall be removed within thirty days of the discontinuation of use and the site shall be restored to its original preconstruction condition in a manner consistent with continued use by any collocated facility. The town shall be given thirty (30) days notice of intent to discontinue use of the facility prior to discontinuation of use.

ADOPTED by the Planning Commission of the Town of Moraga on March 1, 2010 by the following vote:

AYES: Commissioners Driver, Levenfeld, Obsitnik, Richards, Scocilich and Wykle

NOES: Commissioner Whitley

ABSTAIN: None

ABSENT: None

Jim Obsitnik, Chair

Attest: Lori Salamack, Planning Director

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AHE SEAL

PROJECT NO:	123265
DRAWN BY:	MF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
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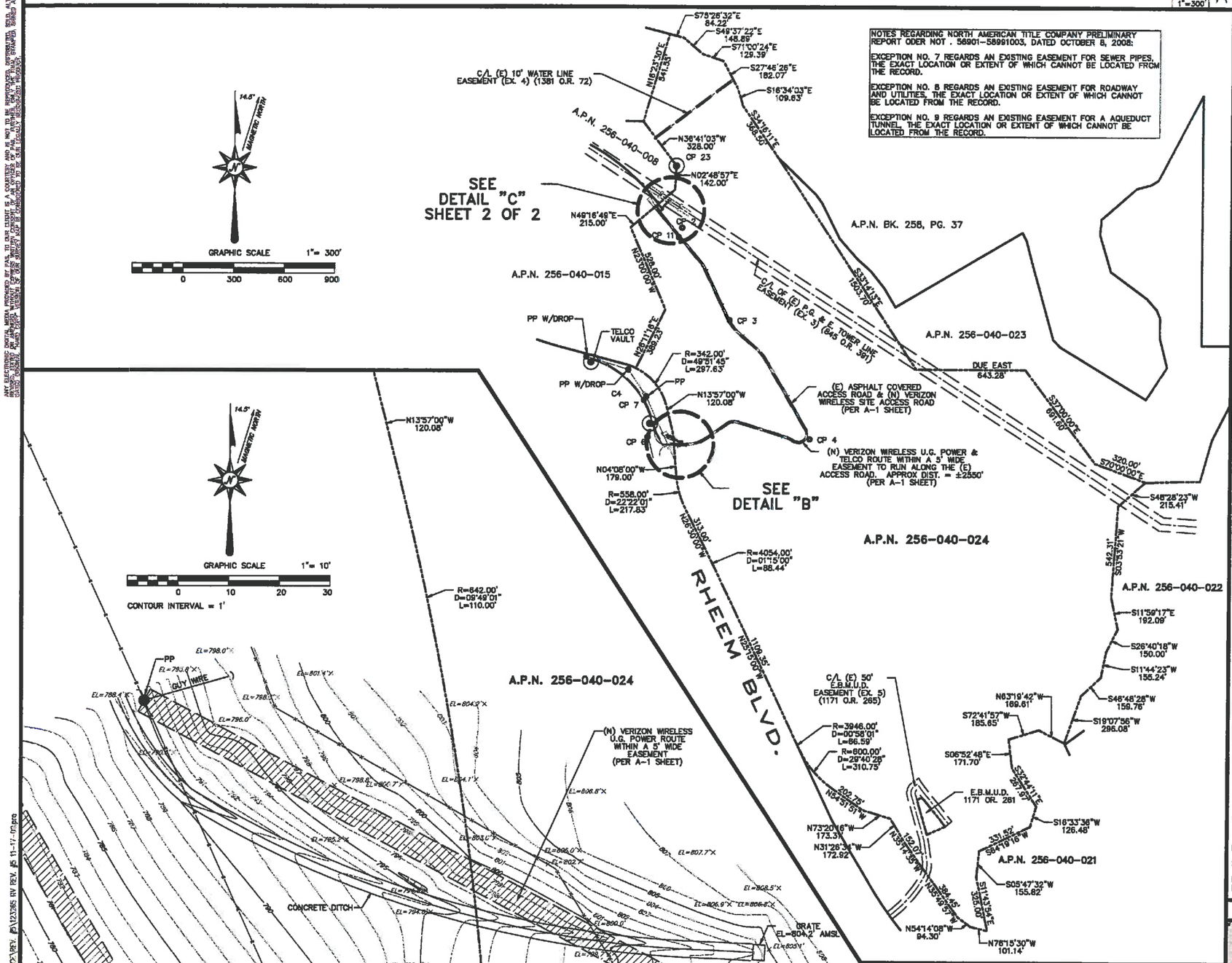
SHEET TITLE
CONDITIONS OF APPROVAL

SHEET NUMBER
T-3

Apr 21, 2010 - 1:20pm jolejandrine P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-T-SHEETS.dwg

DETAIL "A"

SCALE: 1"=300' A



NOTES REGARDING NORTH AMERICAN TITLE COMPANY PRELIMINARY REPORT ODER NOT . 56901-58991003, DATED OCTOBER 8, 2008:

EXCEPTION NO. 7 REGARDS AN EXISTING EASEMENT FOR SEWER PIPES. THE EXACT LOCATION OR EXTENT OF WHICH CANNOT BE LOCATED FROM THE RECORD.

EXCEPTION NO. 8 REGARDS AN EXISTING EASEMENT FOR ROADWAY AND UTILITIES. THE EXACT LOCATION OR EXTENT OF WHICH CANNOT BE LOCATED FROM THE RECORD.

EXCEPTION NO. 9 REGARDS AN EXISTING EASEMENT FOR A AQUEDUCT TUNNEL. THE EXACT LOCATION OR EXTENT OF WHICH CANNOT BE LOCATED FROM THE RECORD.

DETAIL "B"

SCALE: 1"=10' B

LEGEND

MANHOLE	FIRE HYDRANT
LIGHT POLE	MONUMENT
TREE	HANDICAPPED PARKING
JP JOINT POLE	TP TELEPHONE POLE
PP POWER POLE	+ EL=124.5' SPOT ELEVATION

EDGE OF PAVEMENT
E E
OVERHEAD ELECTRIC LINE
X X X
FENCE LINE

PROPERTY LINE
AMSL.....ABOVE MEAN SEA LEVEL
AGL.....ABOVE GROUND LEVEL
● CP §.....FIELD CONTROL POINT

DATE OF SURVEY: 12/05/08

SURVEYED BY/ OR UNDER THE DIRECTION OF: Oliver Philip Auer L.S. 5075 Expires 06/30/11

NOTES:

COMPLETE PRELIMINARY REPORT (WITH ALL SUPPORTING DOCUMENTATION) WAS AVAILABLE AT TIME OF FIELD SURVEY. THIS IS NOT A BOUNDARY SURVEY. THIS IS A SPECIALIZED TOPOGRAPHIC SURVEY MAP WITH PROPERTY LINES AND EASEMENTS BEING A GRAPHIC DEPICTION OF VARIOUS INFORMATION GATHERED FROM PRELIMINARY TITLE REPORTS OR PROPERTY HISTORY REPORTS, BACK-UP DOCUMENTS OF RECORD, MAPS AND AVAILABLE MONUMENTS FOUND DURING THE FIELD SURVEY. NO PROPERTY MONUMENTS WERE SET. UNLESS OTHERWISE NOTED, NO UNDERGROUND UTILITY LOCATING SERVICE COMPANY WAS CONTACTED PRIOR TO THIS MAP BEING PREPARED; THEREFORE, THERE MAY BE NON-VISIBLE OR OBSCURE UTILITIES EXISTING ON THE PROPERTY NOT SHOWN ON THIS MAP.

SUBJECT PROPERTY DESCRIPTION:

IN THE STATE OF CALIFORNIA, COUNTY OF CONTRA COSTA, TOWN OF MORAGA, BEING PARCEL 1 OF THE LANDS CONVEYED TO RANCHO LAGUNA, LLC, PER GRANT DEED, RECORDED OCTOBER 30, 2000, DOCUMENT NO. 2000-0242028-00, CONTRA COSTA COUNTY OFFICIAL RECORDS.

EXCEPTING THEREFROM THAT PORTION DESCRIBED IN THE DEED TO TWIN OAKS CONSTRUCTION, RECORDED JUNE 9, 2003, AS INSTRUMENT NO. 2003-0269095, CONTRA COSTA COUNTY OFFICIAL RECORDS.

LEASE AREA DESCRIPTION:

COMMENCING AT A POINT IN THE NORTHWESTERLY BOUNDARY OF THE ABOVE SAID LANDS, SAID POINT BEING THE NORTHERLY TERMINOUS OF THE FOLLOWING COURSE: SOUTH 49°16'49" WEST 129 FEET, AS SHOWN IN THE ABOVE MENTIONED GRANT DEED (DOCUMENT NO. 2000-0242028-00); THENCE SOUTH 47°08'17" WEST 131.71 FEET TO THE POINT OF BEGINNING; THENCE SOUTH 40°43'11" EAST 35.00 FEET; THENCE SOUTH 49°16'49" WEST 18.50 FEET; THENCE NORTH 40°43'11" WEST 35.00 FEET; THENCE NORTH 49°16'49" EAST 18.50 FEET TO THE POINT OF BEGINNING.

CONTAINING 648 SQUARE FEET MORE OR LESS.

TOGETHER WITH PROPOSED 5 FOOT WIDE AND 12 FOOT WIDE ACCESS EASEMENTS AS GENERALLY SHOWN HEREON.

TOGETHER WITH PROPOSED 5 FOOT WIDE COAXIAL CABLE AND UTILITY EASEMENTS, AS GENERALLY SHOWN HEREON.

BASIS OF ELEVATIONS: NGVD 29 DATUM.

BASIS OF BEARINGS: CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE 3, NAD 83.

PROJECT BENCH: AS SHOWN ON SHEET 2 OF 2.

OWNER'S INFORMATION:
RANCO LAGUNA, LLC, AS TO 87.5%; WILLIAM C. CUMMINGS, AS TO 12.5%
OWNERS ADDRESS VARIES
OWNERS CITY, STATE & ZIP VARIES
A.P.N. 256-040-024

NET AREA OF:
UNDERLYING PARCEL(S): 178.89±AC LEASE AREA: 648± SQ. FT.

FLOOD PLAIN ELEVATION OF LEASE AREA IN ZONE C, AN AREA OF MINIMAL FLOODING, AS SHOWN ON FEMA FIRM MAP COMMUNITY-PANEL NUMBER 060370-002A, DATED MAY 19, 1981.

FAA 1A CERTIFICATION:

LATITUDE AND LONGITUDE WAS OBTAINED FROM INFORMATION PROVIDED BY A GPS SURVEY. THE GEODETIC POSITION SHOWN WAS DETERMINED UTILIZING FAST-STATIC GPS OBSERVATIONS FROM USGS MONUMENTS USING TRIMBLE 4600LS RECEIVERS. THE DATA WAS DIFFERENTIALLY CORRECTED WITH TRIMBLE GPS SURVEY SOFTWARE.

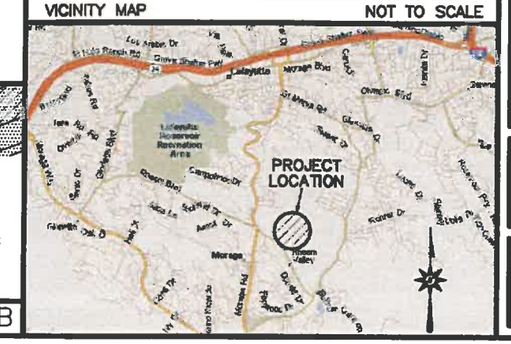
LATITUDE AND LONGITUDE DENOTED ON THIS PLAN ARE ACCURATE TO WITHIN 15± FEET HORIZONTALLY AND THE ELEVATIONS SHOWN ON THIS PLAN ARE ACCURATE TO WITHIN 3± FEET VERTICALLY.

ELEVATION OF GROUND AT GPS POINT: 952.7' AMSL

STRUCTURE HEIGHT: TOP OF P.G. & .E LATTICE TOWER/EL=1055.8' AMSL/HT=103.1' AGL

LATITUDE: N37°51'36.90" LATITUDE: N37°51'36.63"
LONGITUDE: W122°06'57.70" (NAD 27) LONGITUDE: W122°07'01.57" (NAD 83)

VICINITY MAP NOT TO SCALE



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2785 MITCHELL DRIVE
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Phil Auer Surveying
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Bakersfield, CA 93312
Phone: (661) 587-6129
Mobile: (510) 714-7224
E-mail: ls5075@earthlink.net

SURVEYOR SEAL

PROJECT NO: 123265
DRAWN BY: TCN
CHECKED BY: OPA
CAD FILE: 123265

SUBMITTALS

6	11/17/09	REV. #5
5	04/29/09	REV. #4
4	02/24/09	REV. #3
3	02/23/09	REV. #2
2	01/29/09	REV. #1
1	01/05/09	90% ISSUE

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO VERIZON WIRELESS IS STRICTLY PROHIBITED.

SITE
RHEEM VALLEY
123265
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
SURVEY SHEET

SHEET NUMBER
LS1
SHEET 1 OF 2

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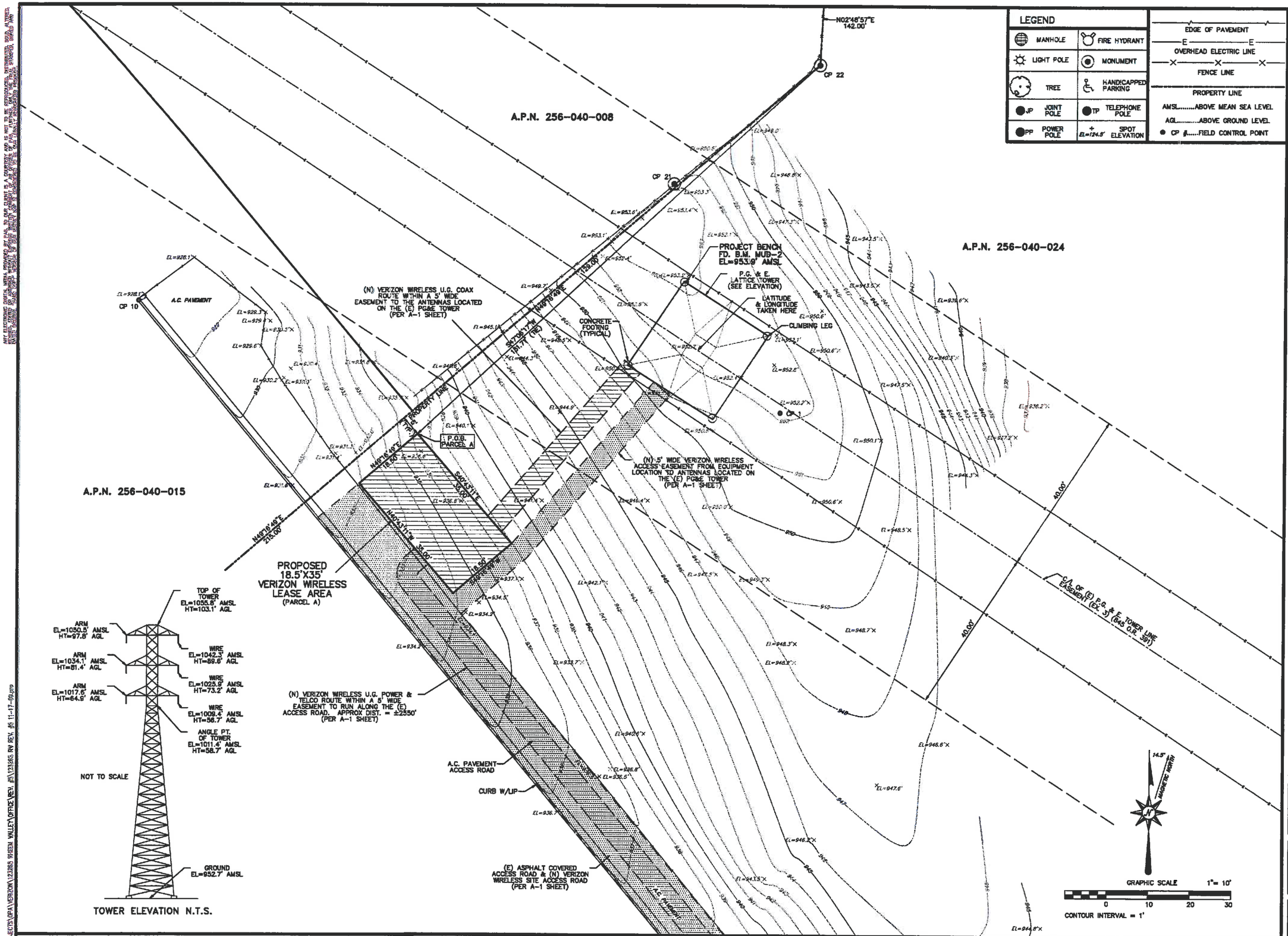
E:\PROJECTS\OPA\VERIZON\123265 RHEEM VALLEY\CFP\CA\REV. #3\123265 RV REV. #3 11-17-09.pro



LEGEND

MANHOLE	FIRE HYDRANT
LIGHT POLE	MONUMENT
TREE	HANDICAPPED PARKING
JP JOINT POLE	TP TELEPHONE POLE
PP POWER POLE	+ EL=124.5' SPOT ELEVATION

EDGE OF PAVEMENT
E E OVERHEAD ELECTRIC LINE
X X X FENCE LINE
PROPERTY LINE
AMSL.....ABOVE MEAN SEA LEVEL
AGL.....ABOVE GROUND LEVEL
● CP #.....FIELD CONTROL POINT

DETAIL "C"

SCALE: 1"=10' C

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Mobile: (610) 714-7224
E-mail: ls5076@earthlink.net

SURVEYOR SEAL

PROJECT NO:	123265
DRAWN BY:	TCN
CHECKED BY:	OPA
CAD FILE:	123265

SUBMITTALS

6	11/17/09	REV. #5
5	04/29/09	REV. #4
4	02/24/09	REV. #3
3	02/23/09	REV. #2
2	01/29/09	REV. #1
1	01/05/09	90% ISSUE

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SITE
RHEEM VALLEY
123265
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
SURVEY SHEET

SHEET NUMBER
LS2
SHEET 2 OF 2

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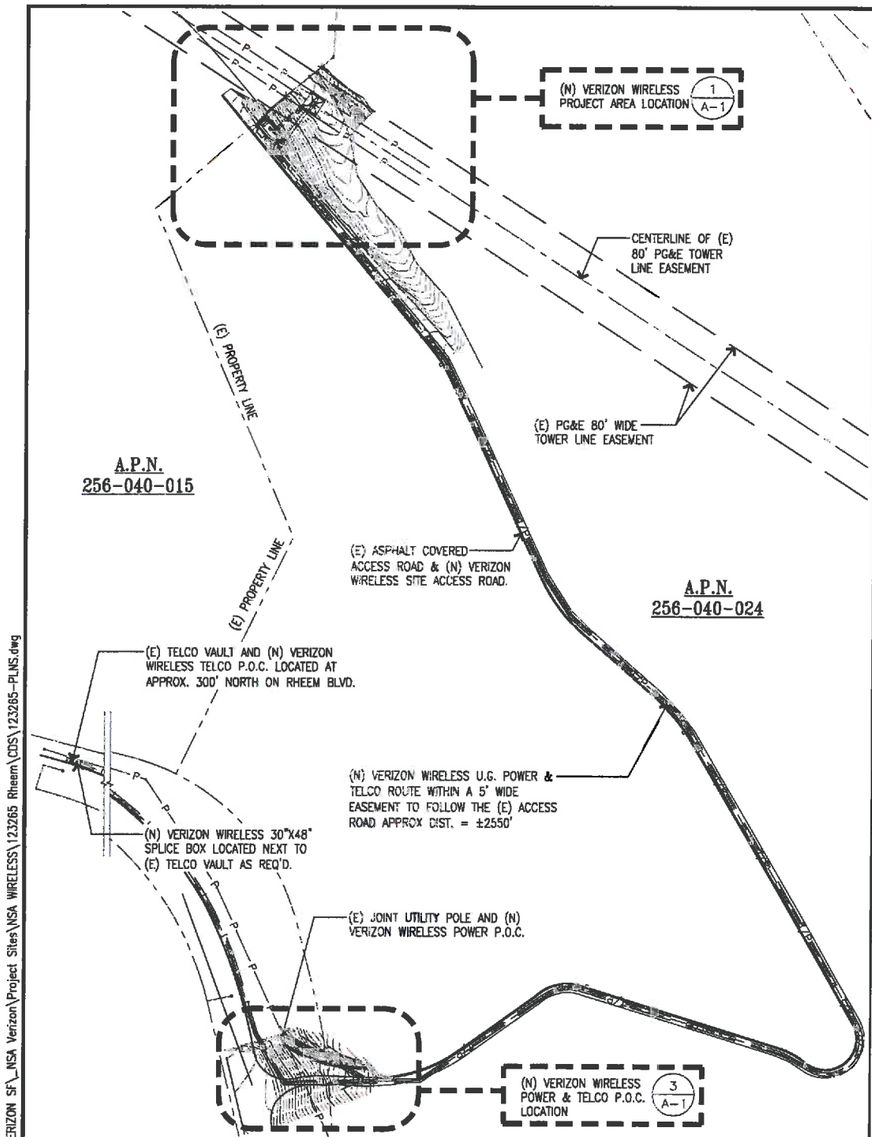
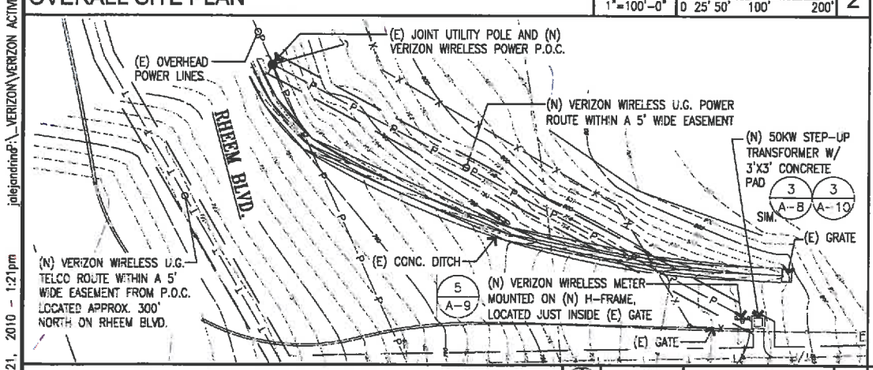
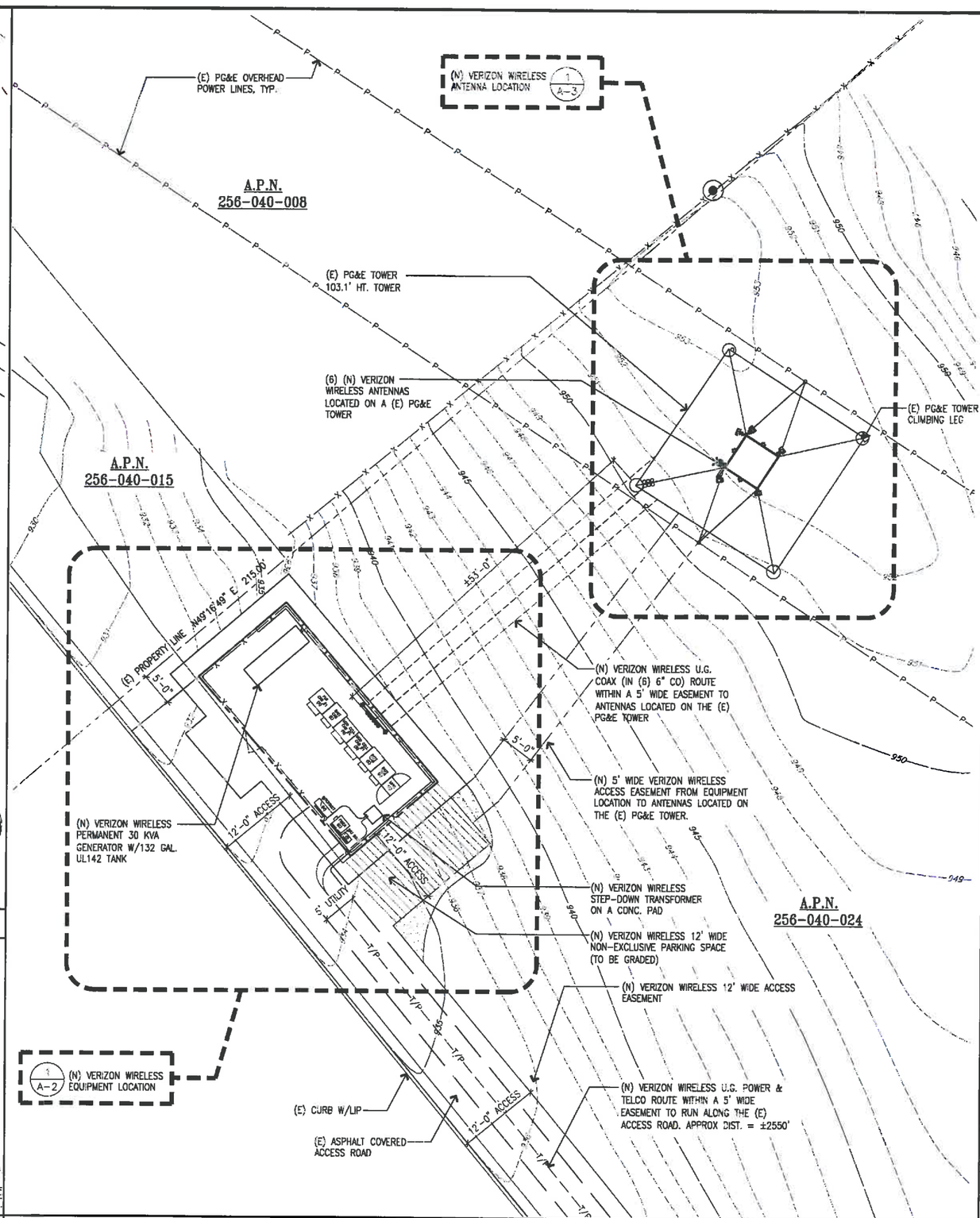
F:\PROJECTS\OPA\VERIZON\123265 RHEEM VALLEY\OFFICE\REV: #5\123265 RV REV. #5 11-17-09.DWG



OVERALL SITE PLAN — SCALE 1"=100'-0" — 0 25' 50' 100' 200' — 2



ENLARGED PLAN AT POWER P.O.C. — SCALE 1/16"=1'-0" — 0 5' 15' 30' — 3



PROJECT AREA PLAN — SCALE 1/8"=1'-0" — 0 1' 4' 8' 16' — 1

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Phone: (925) 244-3890

AHJ SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	60% CONSTRUCTION

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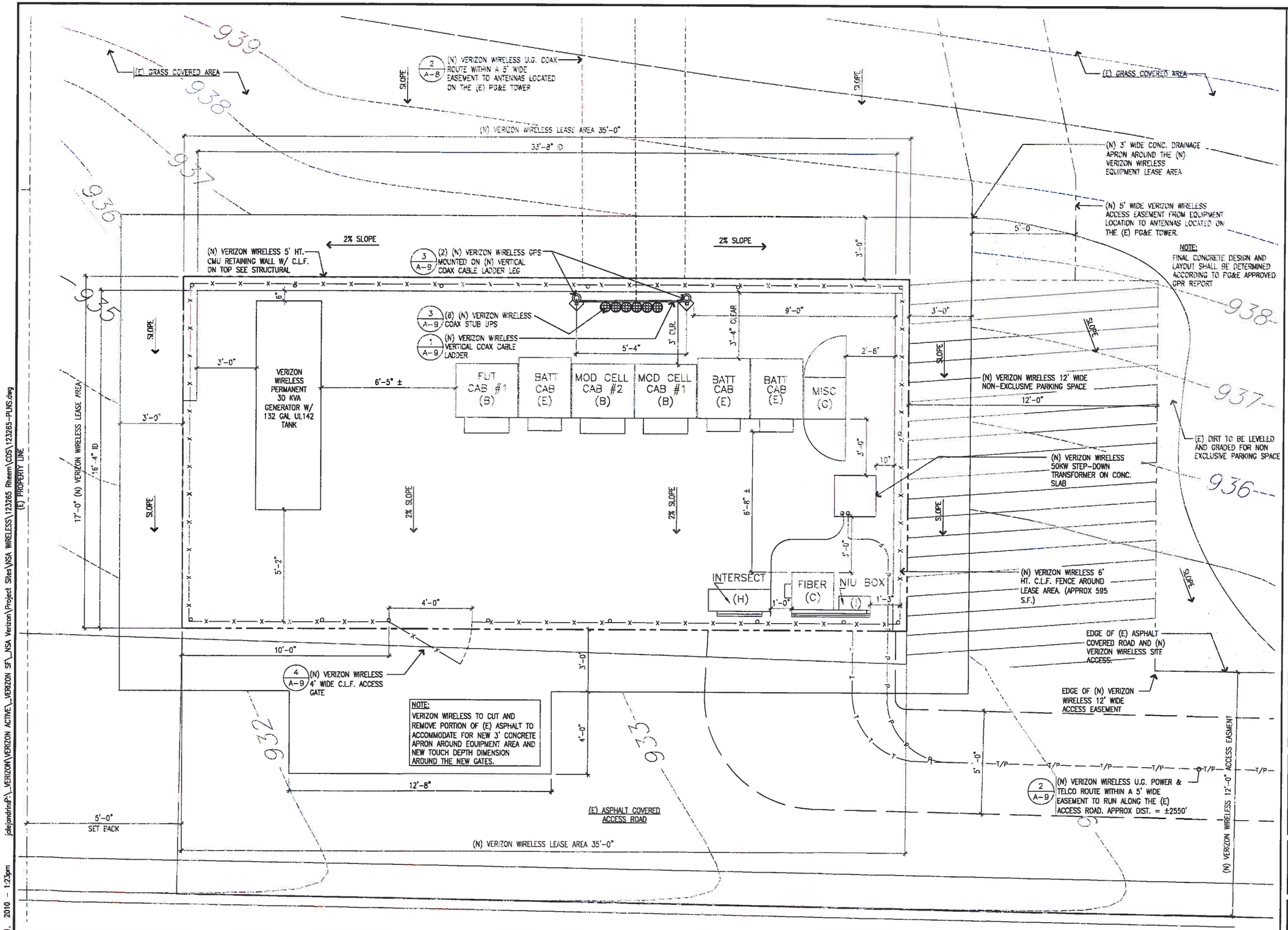
SITE
123265
RHEEM VALLEY
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
OVERALL SITE PLAN
UTILITY P.O.C. PLAN
PROJECT AREA PLAN

SHEET NUMBER
A-1

Apr 21, 2010 - 1:21pm jolejandrind P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-PLNS.dwg



ENLARGED EQUIPMENT LAYOUT

SCALE 1/2"=1'-0" 0 1' 4'

1

Apr 21, 2010 – 1:23pm jdelgandrind\P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-PLNS.dwg

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AHJ SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

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1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

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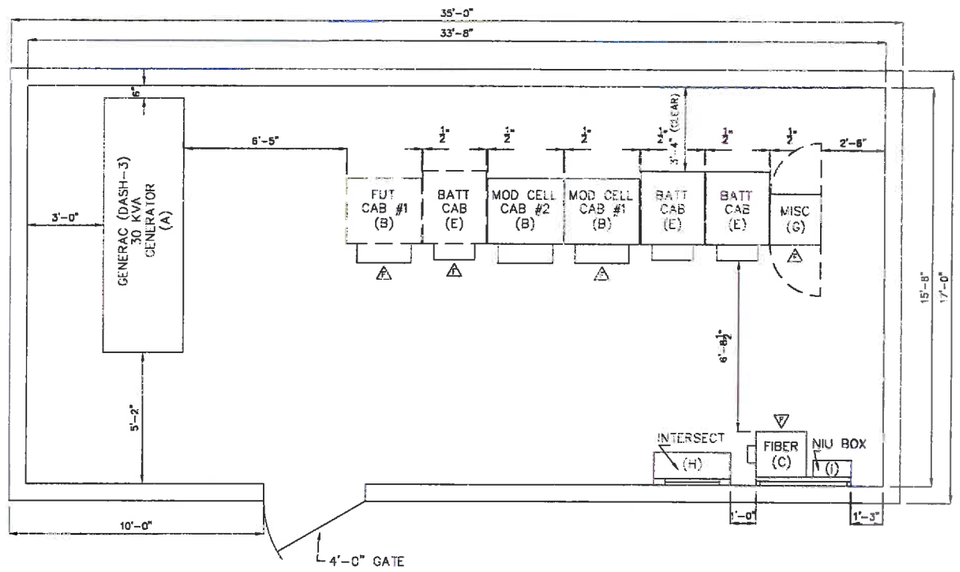
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
ENLARGED EQUIPMENT LAYOUT

SHEET NUMBER
A-2



PROPOSED FLEXENT OUTDOOR MOD CELL EQUIPMENT LAYOUT (GND LEVEL)

SCALE: 1/4"=1'-0"

NOTES: BATT CAB = TYCO W/ 10 STRINGS OF 170AH BATTERIES (1700AH)
MOD CELL #1 = PRIMARY 850 OUTDOOR MOD 4.0B WITH INTEGRATED DC POWER
MOD CELL #2 = GROWTH PCS OUTDOOR MOD 4.0B WITH INTEGRATED DC POWER

SYM	WIDTH	DEPTH	HEIGHT
A	3'-1 1/2"	10'-0"	7'-0"
B	2'-11 1/2"	3'-4"	7'-0"
C	2'-1"	2'-0"	3'-4"
D	2'-0"	1'-11"	6'-0"
E	2'-6"	3'-8"	7'-0"
F	2'-6"	1'-1"	3'-8"
G	2'-0"	2'-0"	6'-6"
H	3'-0"	1'-0 1/2"	7'-0"
I	1'-8 1/2"	0'-9"	1'-2"

SHEET 1 | ISSUE X

RHEEM VALLEY (123265)

AMA060209 REV 1

LEGEND:

1. WAVE GUIDE ENTRY PORT
2. MASTER GROUND BAR
3. TELCO ENTRANCE PANEL (4' X 8' X 3/4")
4. a)GNB 3-75A27 BATTERY MODULES (6V - 1015 AH)
   b)GNB 3-90A27 BATTERY MODULES (6V - 1140 AH)
   c)GNB 3-85A29 BATTERY MODULES (6V-1210 AH) MUST BE STACKED
   d)POWERSAFE VH-34 BATTERY MODULES (2V - 1040 AH)
   e)C&D HD1100 BATTERY MODULES (6V - 1100 AH)
5. AIR CONDITIONING UNIT
6. SECONDARY AC POWER DISTRIBUTION PANEL
7. TRANSFER SWITCH (MANUAL OR AUTOMATIC)
8. MAIN AC POWER DISTRIBUTION PANEL
9. COMMERCIAL POWER DISCONNECT SWITCH
10. FENWAL FIRE ALARM PANEL
11. ALARM TERMINAL CABINET
12. IRRIGATION CONTROLLER
13. HALON GAS STORAGE TANK/FM200 TANK
14. +24V POWER BUSBAR
15. -48V POWER BUSBAR
16. LIGHTNING ARRESTOR
17. ELECTROSTATIC DISCHARGE MAT (ESD MAT)
18. SNAP CONNECTOR FOR ESD MAT
19. TIME CLOCK PANEL
20. AIR CONDITIONING CONTROL PANEL
21. THERMOSTAT
22. EXHAUST FAN CONTROL PANEL
23. SURGE ARRESTOR
24. DEHYDRATOR
25. TRANSFORMER
26. FIRE EXTINGUISHER
27. EXHAUST FAN
28. AIR INTAKE
29. APPLETON PLUG

NOTES:

EFP = EQUIPMENT FLOOR PLAN
PPD = POWER PLANT DETAILS
EQR = EQUIPMENT RACK PROFILES
SID = SITE INTERCONNECT DETAILS
--- = FUTURE
—— = EQUIPPED

PBM +24V MODULAR POWER BAY (LORAIN OR AT&T)
PB +24V STANDARD POWER DISTRIBUTION BAYS (E/W LORAIN RL200F25 RECTIFIERS)
PBR LORAIN RL200F25 RECTIFIER BAY
MISC MISCELLANEOUS BAY
AIF AT&T ANTENNA INTERFACE FRAME
RCF AT&T RADIO CHANNEL FRAME
LAF AT&T LINEAR AMPLIFIER FRAME
MW MICROWAVE BAY
CDPD CELLULAR DIGITAL PACKET DATA
△ DENOTES FRONT OF BAY LINEUP

SHEET NO.	1	2	3	4
EFP ISSUE NO.	1	1		
PPD ISSUE NO.				
EQR ISSUE NO.				
SID ISSUE NO.				

CHR 101794

REVISIONS	ENGR APRV
PROJ. NO: 2006292657 IR - MODCELL OUTDOOR X	AMA
ISS: 06/02/09	

verizon wireless
ECP: PLEASANTON
DCS: X
REGION: X AREA: MORAGA
LOCATION CODE: 123265
SWITCH SITE NO: X
SITE NAME: RHEEM VALLEY

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2785 MITCHELL DRIVE
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Phone: (925) 244-5090

AHE SEAL

PROJECT NO: 123265
DRAWN BY: MIF
CHECKED BY: RZ
CAD FILE: 123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

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SITE
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RHEEM VALLEY
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

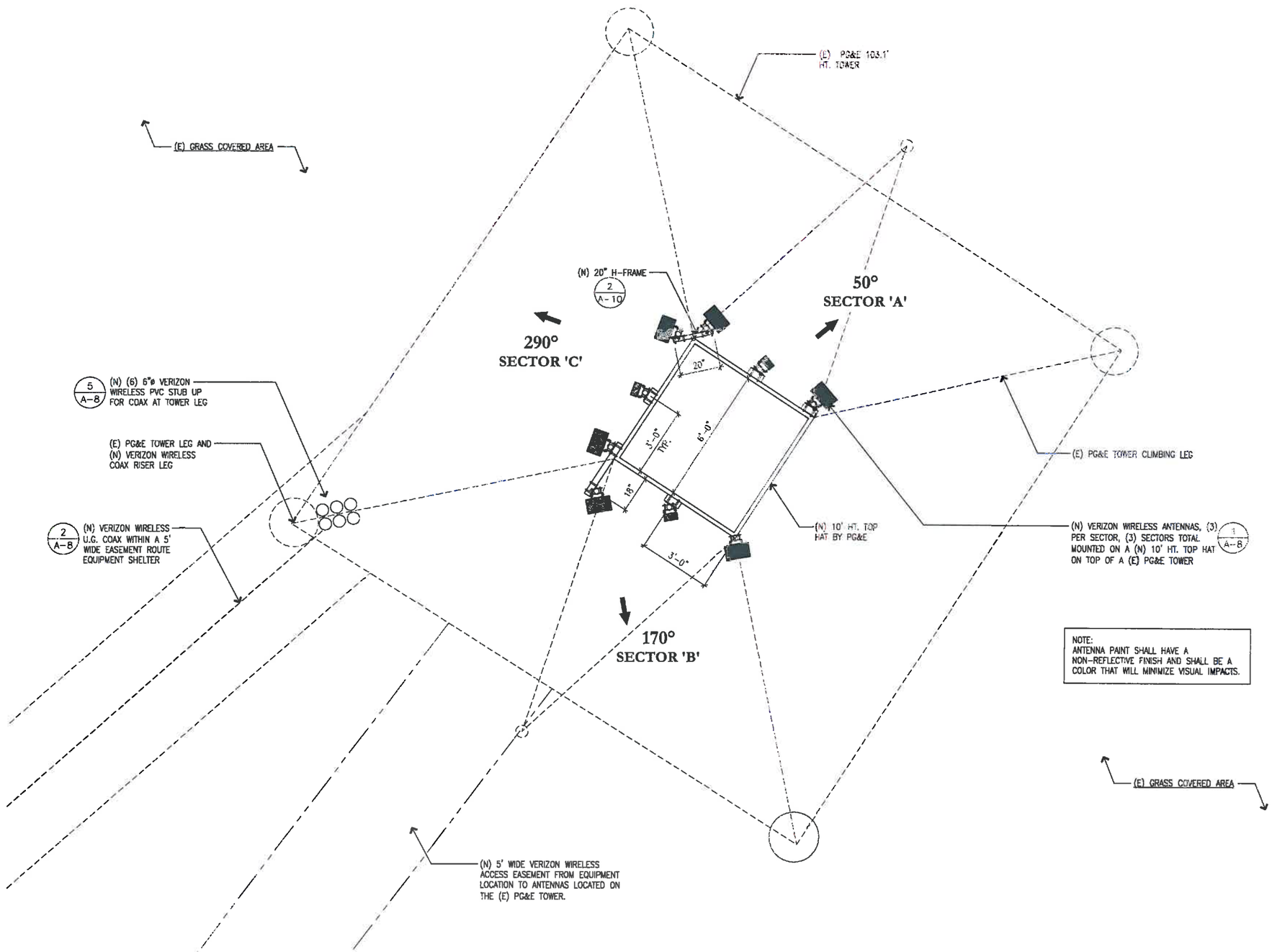
SHEET TITLE
VERIZON WIRELESS EQUIP. LAYOUT (FOR REFERENCE)

SHEET NUMBER
A-2.1

VERIZON WIRELESS EQUIPMENT LAYOUT (FOR REFERENCE)

SCALE NOT TO SCALE | 1

Apr 21, 2010 - 1:09pm jalejandrinaP:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-PLNS.dwg



ENLARGED ANTENNA LAYOUT

SCALE 1/2"=1'-0" (0 1' 4')

1

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ARE SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

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MORAGA, CA 94556
CONTRA COSTA COUNTY

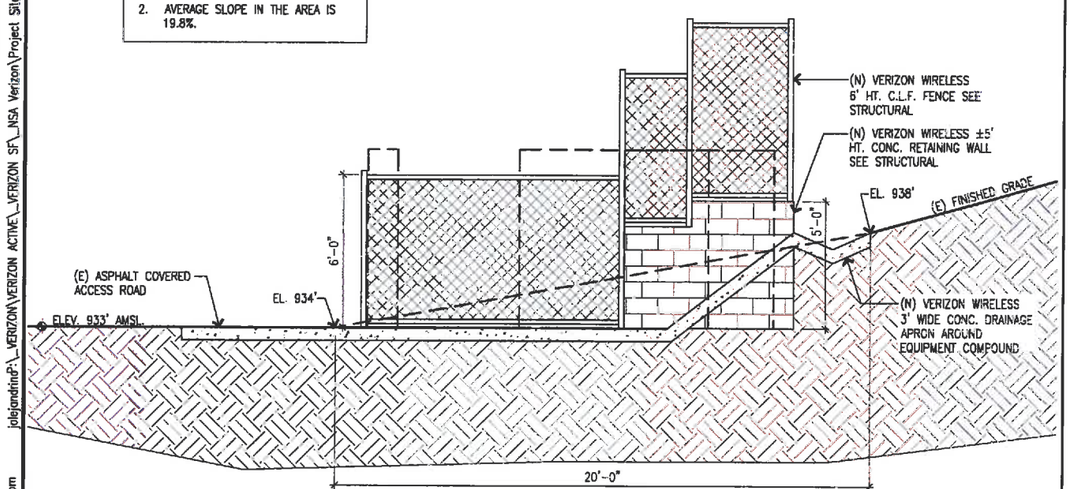
SHEET TITLE
ENLARGED ANTENNA LAYOUT

SHEET NUMBER
A-3

Apr 21, 2010 - 1:09pm jalejandrinoP:_VERIZON\VERIZON ACTIVE_VERIZON SF_MSA Verizon\Project Sites\MSA WIRELESS\123265 Rheem\CD5\123265-PLNS.dwg

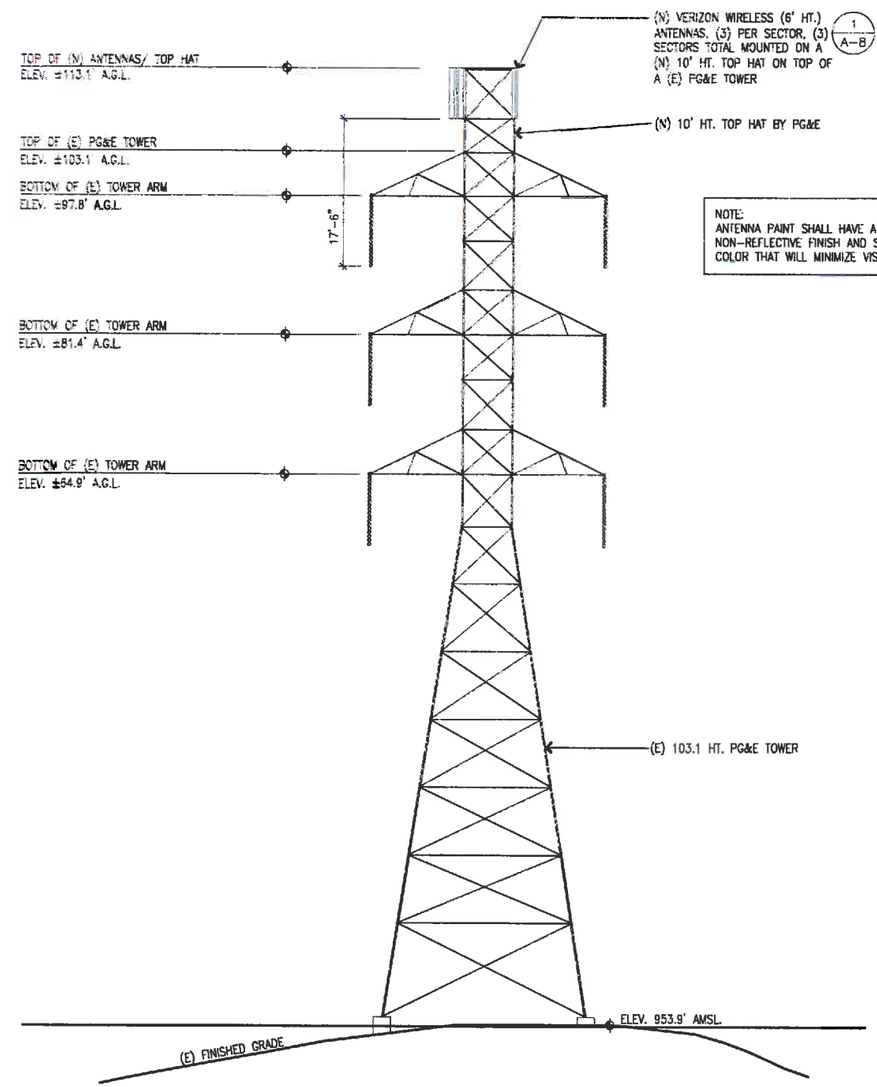
NOTE:

1. COLOR OF FENCING AND EQUIPMENT SHALL BLEND WITH THE NATURAL COLOR OF THE DRIED GRASS AS IT APPEARS FOR THE MAJORITY OF THE YEAR.
2. AVERAGE SLOPE IN THE AREA IS 19.8%.



20 FT DEEP TO TOP OF SWALE = 19.8% SLOPE

SOUTHEAST SECTION-ELEVATION AT EQUIPMENT LOCATION | SCALE 3/8"=1'-0" | 0 1' 3' 5' | 2



NOTE:
ANTENNA PAINT SHALL HAVE A NON-REFLECTIVE FINISH AND SHALL BE A COLOR THAT WILL MINIMIZE VISUAL IMPACTS.

SOUTHEAST ELEVATION AT ANTENNA LOCATION | SCALE 1/8"=1'-0" | 0 1' 4' 8' 16 | 1

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Phone: (925) 264-1890

A&E SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

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1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

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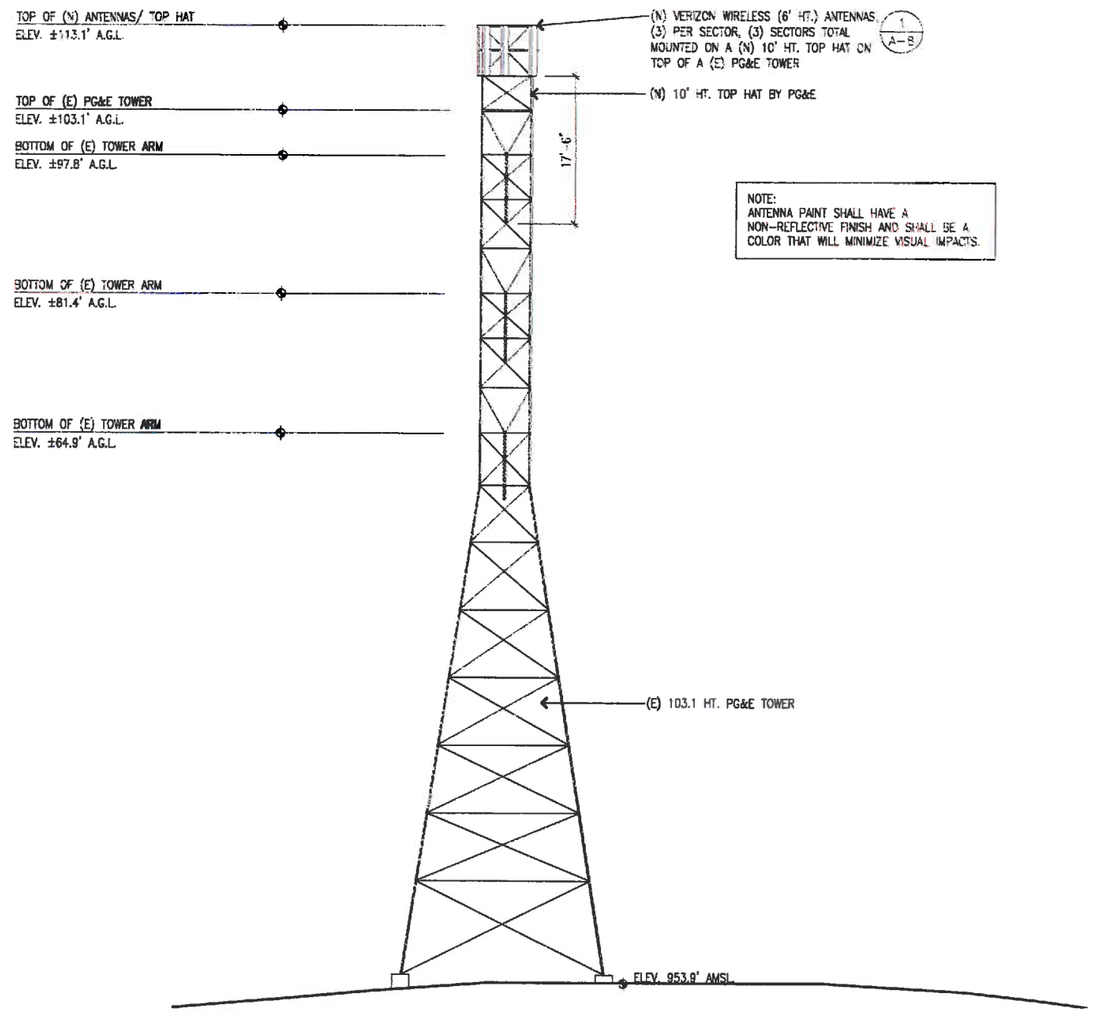
SITE
123265
RHEEM VALLEY
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
ELEVATION

SHEET NUMBER
A-4

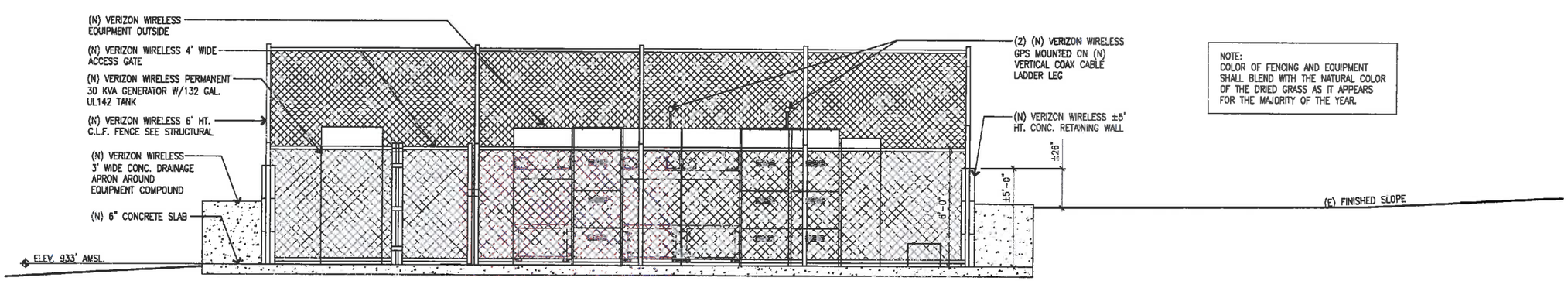
Apr 21, 2010 - 1:09pm jolejondrinP:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-19_NS.dwg



NOTE:
ANTENNA PAINT SHALL HAVE A NON-REFLECTIVE FINISH AND SHALL BE A COLOR THAT WILL MINIMIZE VISUAL IMPACTS.

SOUTHWEST ELEVATION AT ANTENNA LOCATION

SCALE 1/8"=1'-0" 0 1' 4' 8' 16 — 1



NOTE:
COLOR OF FENCING AND EQUIPMENT SHALL BLEND WITH THE NATURAL COLOR OF THE DRIED GRASS AS IT APPEARS FOR THE MAJORITY OF THE YEAR.

SOUTHWEST SECTION-ELEVATION AT EQUIPMENT LOCATION

SCALE 3/8"=1'-0" 0 1' 3' 5' — 2

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Santa Ana San Diego San Francisco

NSA Wireless, Inc.
Site Acquisition * Planning * Construction Management * Site Modification
2000 Crow Canyon Place, Ste. 400
San Ramon, CA 94583
Fax: (925) 355-0672
Phone: (925) 244-1890

ARE SEAL

PROJECT NO:	123265
DRAWN BY:	MH
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/09/10	60% CONSTRUCTION

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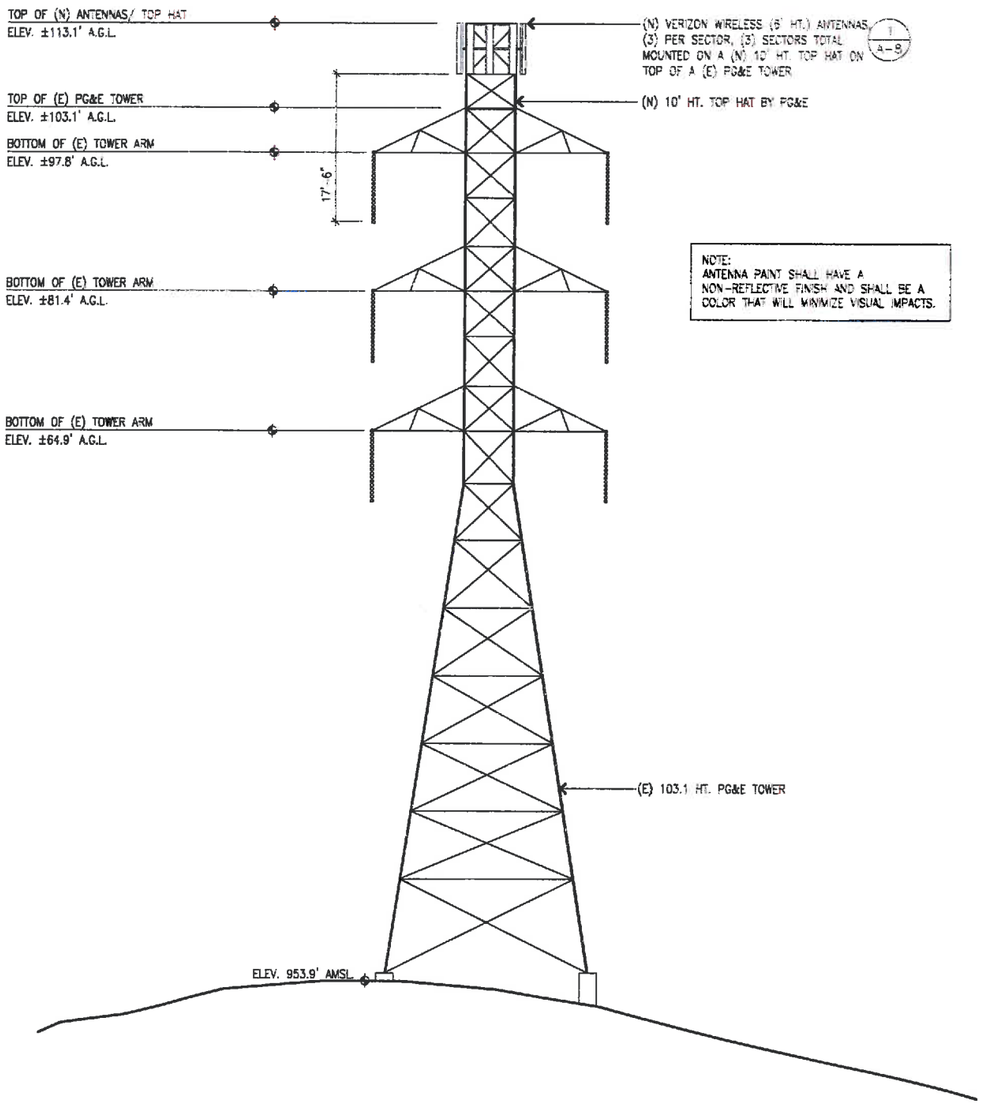
MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
ELEVATION

SHEET NUMBER
A-5

Apr 21, 2010 - 1:09pm jdelejandrino P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-PLNS.dwg



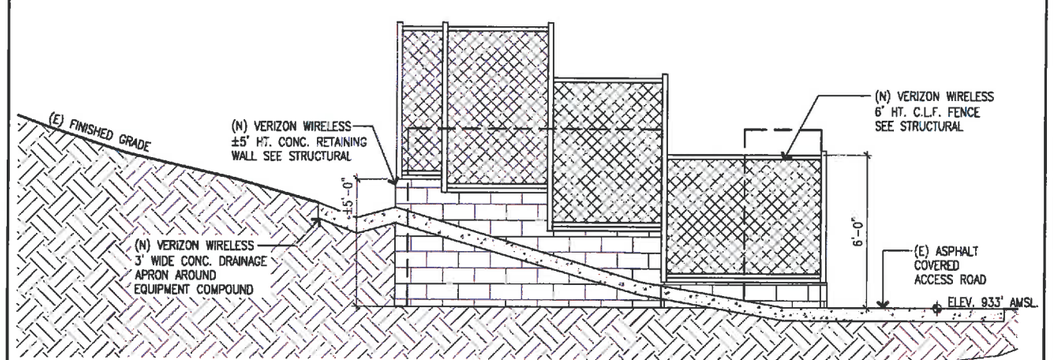
NOTE:
ANTENNA PAINT SHALL HAVE A NON-REFLECTIVE FINISH AND SHALL BE A COLOR THAT WILL MINIMIZE VISUAL IMPACTS.

NORTHWEST ELEVATION AT ANTENNA LOCATION

SCALE 1/8"=1'-0" 0 1' 4' 8' 16 2

NOTE:

1. COLOR OF FENCING AND EQUIPMENT SHALL BLEND WITH THE NATURAL COLOR OF THE DRIED GRASS AS IT APPEARS FOR THE MAJORITY OF THE YEAR.
2. AVERAGE SLOPE IN THE AREA IS 19.8%.



NORTHWEST SECTION-ELEVATION AT EQUIPMENT LOCATION

SCALE 1/8"=1'-0" 0 1' 4' 8' 16 1

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AHJ SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

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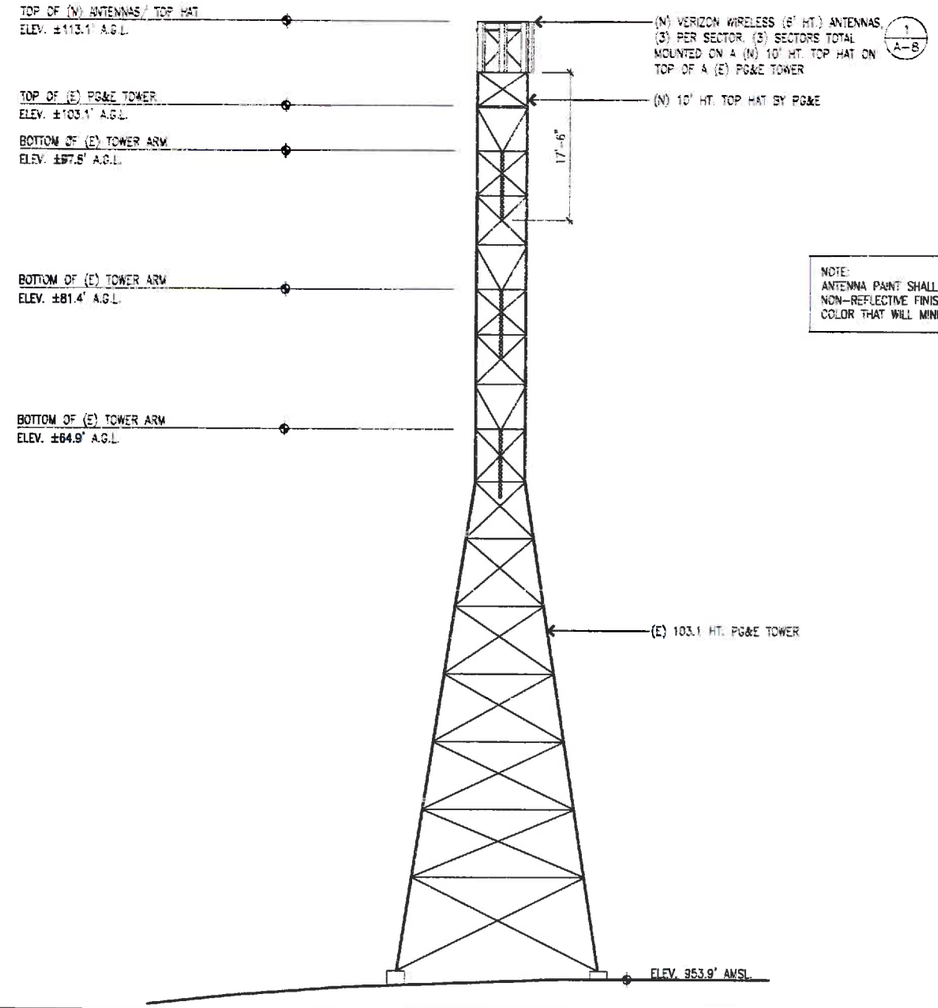
CONTRA COSTA COUNTY

SHEET TITLE
ELEVATION

SHEET NUMBER
A-6

Apr 21, 2010 - 1:09pm jalejandrinoP:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-PLNS.dwg



NOTE:
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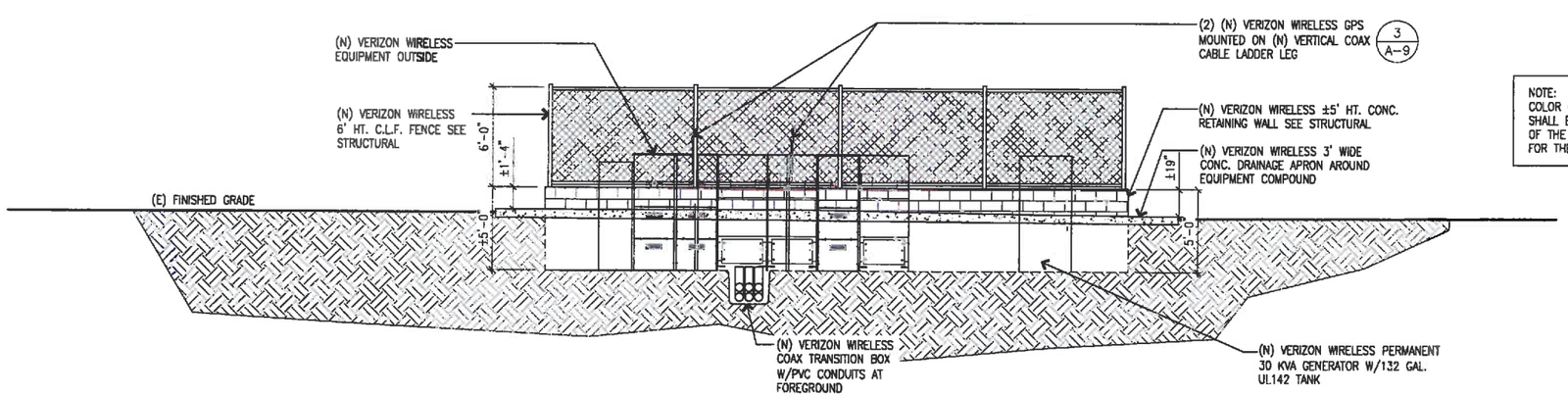
NORTHEAST ELEVATION AT ANTENNA LOCATION

SCALE 1/8"=1'-0" 0 1' 4' 8' 16 | 1



NOTE:
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NORTHEAST SECTION-ELEVATION AT EQUIPMENT LOCATION

SCALE 1/8"=1'-0" 0 1' 4' 8' 16 | 2

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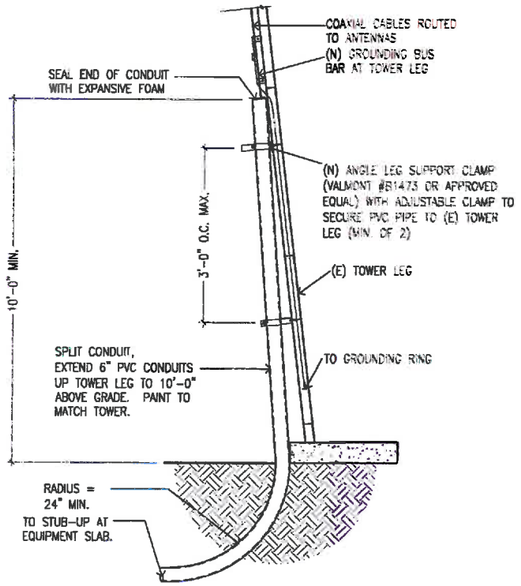
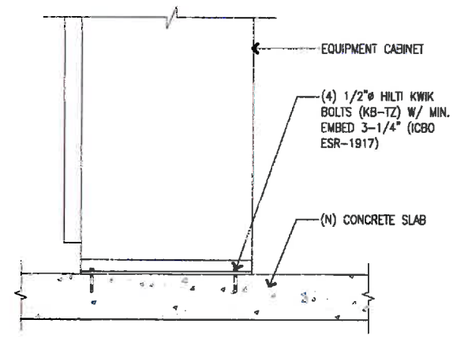
SHEET TITLE
ELEVATION

SHEET NUMBER
A-7

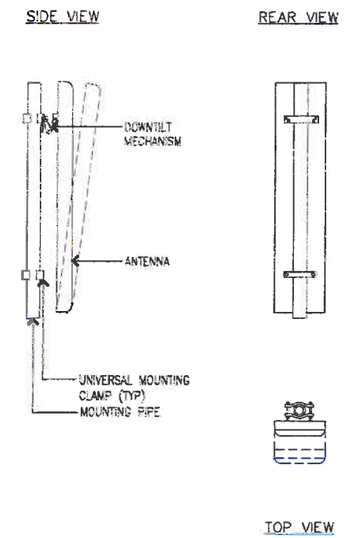
Apr 21, 2010 - 1:09pm jdelajandrina P:_VERIZON\VERIZON ACTIVE_VERIZON SF_MSA Verizon\Project Sites\MSA WIRELESS\123265 Rheem\CDS\123265-PLNS.dwg



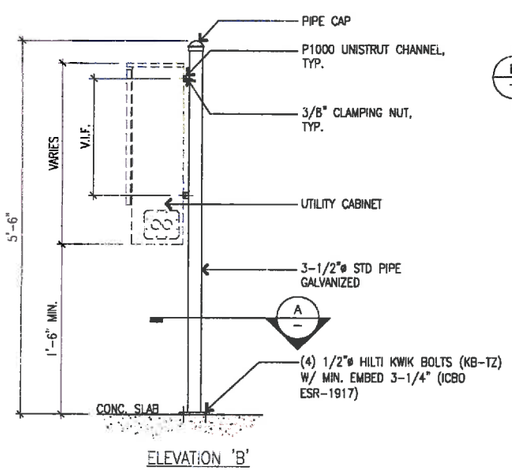
COAX RISER @ TOWER LEG — SCALE NOT TO SCALE — 5

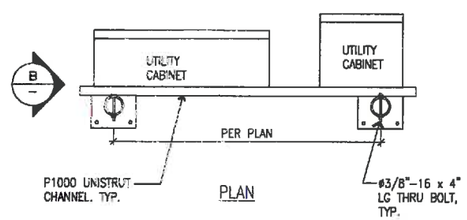


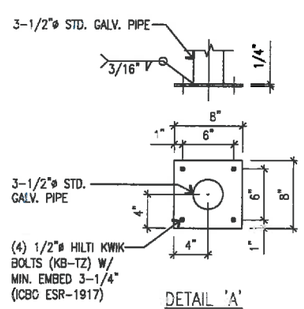
CABINET ANCHORAGE — SCALE NOT TO SCALE — 3



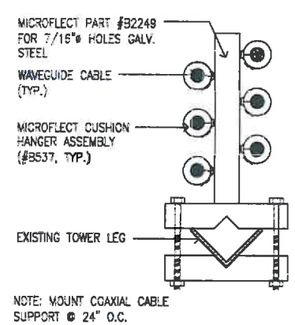
ANTENNA DETAIL — SCALE NOT TO SCALE — 1







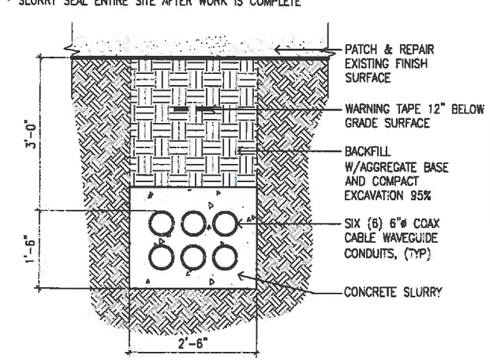
UTILITY H-FRAME DETAIL — SCALE NOT TO SCALE — 6



NOTE: MOUNT COAXIAL CABLE SUPPORT @ 24" O.C.

CABLE SUPPORT CLAMP — SCALE NOT TO SCALE — 4

* ALL HARDSCAPE SHALL BE SAWCUT PRIOR TO EXCAVATION
* AC REPLACEMENT, 1ST LIFT 3/4" MIX, RELATIVE COMPACTION 95%, NO MORE THAN 3" PLACED AT ANY ONE TIME. 2ND LIFT, 1/2" FINE, NO MORE THAN 1-1/2" LIFT.
* SLURRY SEAL ENTIRE SITE AFTER WORK IS COMPLETE



VERIFY 'VERIZON' SPECIFIC SITE REQUIREMENTS TO CONFIRM QUANTITY AND SIZE OF CABLE CONDUITS

CABLE TRENCH DETAIL — SCALE NOT TO SCALE — 2

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Phone (925) 244-3890

AHJ SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

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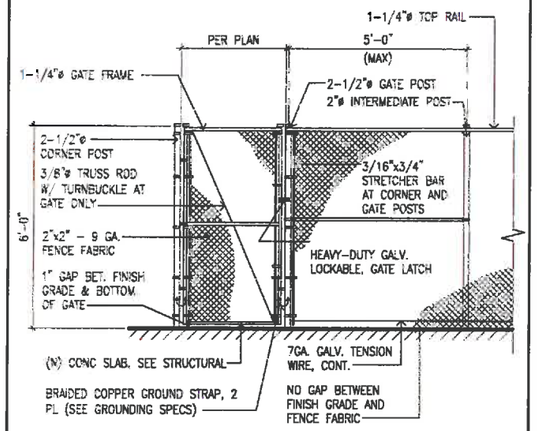
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

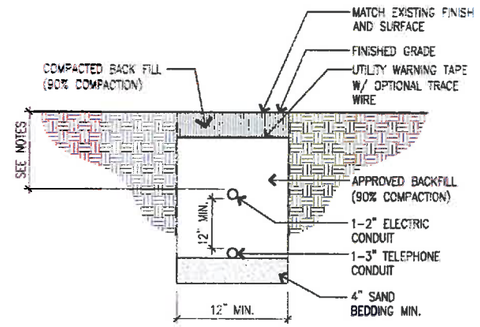
SHEET TITLE
DETAILS

SHEET NUMBER
A-8

Apr 21, 2010 -- 1:09pm jdelejandrina P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-PLNS.dwg



CHAIN LINK GATE DETAIL — SCALE NOT TO SCALE — 4



TRENCHING NOTES:

1) MINIMUM COVERAGE OF DUCT ON PRIVATE PROPERTY 18" OR AS SPECIFIED BY PERMITTING AGENT.

2) MINIMUM COVERAGE OF DUCT IN PUBLIC R/W: 24" OR AS SPECIFIED BY PERMITTING AGENT.

3) MINIMUM 12" SEPARATION IN JOINT TRENCH BETWEEN POWER AND TELCO, OR AS SPECIFIED BY PERMITTING AGENT (VERTICAL SEPARATION UNLESS PREVIOUSLY APPROVED DUE TO SPECIFIC SITE CONDITIONS.)

4) PULL BOXES- MINIMUM 17"W X 30"L

5) SPLICE BOXES- MINIMUM 30"W X 48"L

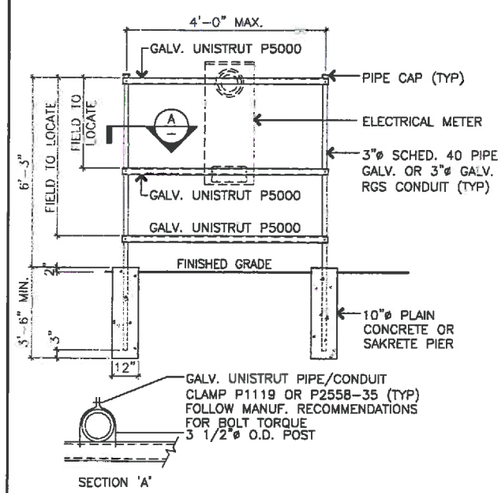
6) ALL CONDUIT TO ENTER ENDS OF BOXES (NOT SIDES) AND BE MORTARED SWEPT INTO BOTTOM LIKE POWER). CONDUITS TO BE CUT FLUSH WITH THE INSIDE FACE OF BOX.

7) BASES ARE REQUIRED ON ALL SPLICE BOXES. SPLICE BOXES ARE TO BE EQUIPPED WITH CABLE RACKS AND PULLING EYES.

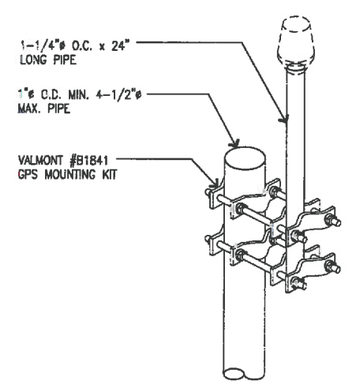
8) USE TRAFFIC RATED BOXES. BASES AND LIDS ON ALL PULL OR SPLICE BOXES THAT ARE SUBJECT TO VEHICULAR TRAFFIC.

9) INSTALL TRU-TAPE & PULL ROPE IN TELCO CONDUIT.

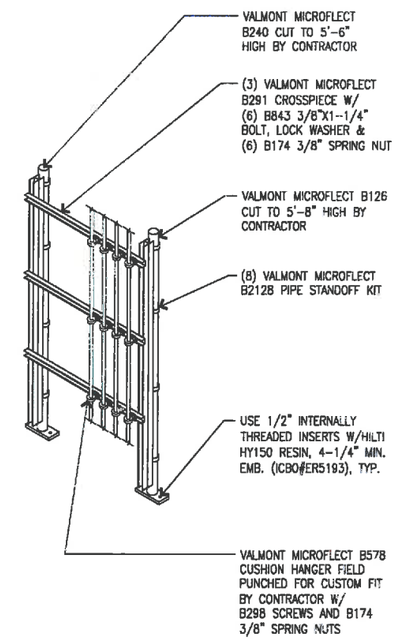
UTILITY TRENCH — SCALE NOT TO SCALE — 2



H-FRAME DETAIL — SCALE NOT TO SCALE — 5



GPS ANTENNA — SCALE NOT TO SCALE — 3



CABLE SUPPORT MOUNT — SCALE NOT TO SCALE — 1

NOT USED — SCALE NOT TO SCALE — 6

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AHJ SEAL

PROJECT NO: 123265

DRAWN BY: MIF

CHECKED BY: RZ

CAD FILE: 123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
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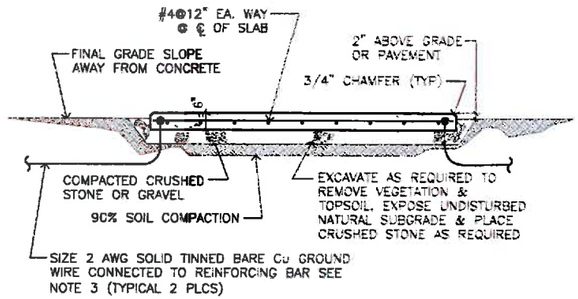
CONTRA COSTA COUNTY

SHEET TITLE
DETAILS

SHEET NUMBER
A-9

Apr 21, 2010 - 1:10pm jdelejandrina P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CD'S\123265-PLNS.dwg



CAST IN PLACE CONCRETE PAD | SCALE NOT TO SCALE | 3

NORTHSTAR BATTERY COMPANY

Northstar Battery Lead and Acid weights per 12 Volt Battery

Battery Type	Electrolyte Weight Avg	Electrolyte Weight Max	Electrolyte Volume Average	Electrolyte Volume Maximum	Acid Weight Avg	Acid Weight Max	Acid Volume Average	Acid Volume Maximum	Lead Weight Avg	Lead Weight Max	Lead Oxide Weight Avg	Lead Oxide Weight Max
NSB100(NSB12-180)	2.8	5.7	2.0	0.5	1.1	2.4	0.8	0.2	9.1	20.2	3.6	7.6
NSB75(NSB12-330)	4.3	9.4	3.2	0.9	1.8	4.0	1.4	0.4	16.3	33.0	5.2	11.5
NSB75(NSB12-370)	4.3	9.6	3.3	0.9	1.8	4.0	1.4	0.4	15.0	33.0	5.8	12.9
NSB80(NSB12-370)	5.2	12.5	4.7	1.2	2.6	6.7	2.6	0.8	20.1	44.2	8.0	17.6
NSB100(NSB12-420)	5.1	17.8	8.2	1.8	3.4	7.5	2.6	0.7	25.8	58.1	11.0	24.2
NSB60FT	2.6	5.3	2.0	0.6	1.0	2.2	0.8	0.2	7.2	15.9	3.3	7.2
NSB80FT	3.7	8.1	2.8	0.7	1.8	3.4	1.2	0.3	10.5	24.1	4.7	10.4
NSB90FT	5.3	11.5	4.0	1.1	2.2	4.8	1.7	0.4	16.0	35.2	7.4	16.4
NSB100FT	5.3	13.8	4.7	1.2	2.6	6.1	2.0	0.5	18.1	39.8	8.0	17.7
NSB110FT	5.8	18.0	5.2	1.4	2.8	5.3	2.2	0.6	18.5	40.8	9.1	20.1
NSB145FT	8.0	13.8	5.8	1.8	3.8	8.3	3.0	0.8	25.7	56.6	12.0	26.5
NSB170FT	10.4	22.8	7.8	2.08	4.4	9.7	3.3	0.9	26.7	63.2	14.4	31.8

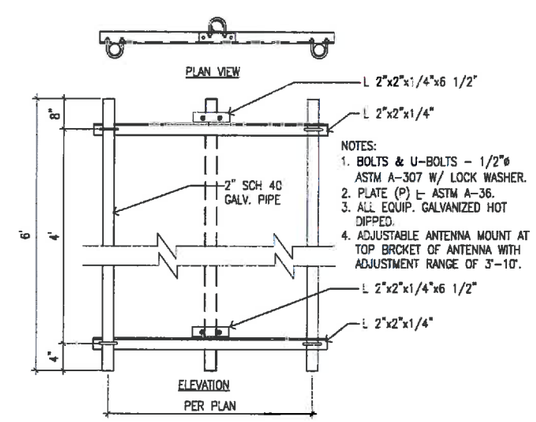
All weights and volumes are for 12V monoblocks

BATTERY INFORMATION

BATTERY MODEL	TOTAL UNIT	ELECTROLYTE PER UNIT	TOTAL ELECTROLYTE
NORTHSTAR NSB170FT	24	2.08 GAL.	49.92 GAL.

BATTERY INFORMATION | SCALE NOT TO SCALE | 1

NOT USED | SCALE NOT TO SCALE | 4



NOTES:
1. BOLTS & U-BOLTS – 1/2"ø ASTM A-307 W/ LOCK WASHER.
2. PLATE (P) ⊢ ASTM A-36.
3. ALL EQUIP. GALVANIZED HOT DIPPED.
4. ADJUSTABLE ANTENNA MOUNT AT TOP BRCKET OF ANTENNA WITH ADJUSTMENT RANGE OF 3'-10'.

ANTENNA MOUNT | SCALE NOT TO SCALE | 2

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AGE SEAL

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Apr 21, 2010 - 1:10pm jdelejandrina P:_VERIZON\VERIZON ACTIVE_VERIZON SF_MSA Verizon\Project Sites\MSA WIRELESS\123265 Rheem\CDS\123265-PLNS.dwg

GENERAL NOTES

1. ALL CONSTRUCTION AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND CBC-07 SPECIFICATIONS.
2. THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE JOB SITE, AND SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES AND CONDITIONS OF ALL WORK AND MATERIALS INCLUDING THOSE FURNISHED BY SUB-CONTRACTORS. ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE STRUCTURAL ENGINEER IMMEDIATELY AND BE RESOLVED BEFORE PROCEEDING WITH THE WORK.
3. STRUCTURAL DRAWINGS SHALL WORK IN CONJUNCTION WITH ARCHITECTURAL MECHANICAL, AND ELECTRICAL DRAWINGS.
4. DESIGN, MATERIALS, EQUIPMENT AND PRODUCTS OTHER THAN THOSE DESCRIBED OR INDICATED ON THE DRAWINGS MAY BE CONSIDERED FOR USE PROVIDED PRIOR APPROVAL IS OBTAINED FROM THE STRUCTURAL ENGINEER.
5. ALL CONDITIONS SHOWN OR NOTED AS EXISTING ARE BASED ON BEST INFORMATION AVAILABLE AT THE TIME OF PREPARATION OF THESE DRAWINGS. NO WARRANTY IS IMPLIED TO THEIR ACCURACY. CONTRACTOR SHALL FIELD VERIFY ALL CONDITIONS. SHOULD CONDITIONS BECOME APPARENT WHICH DIFFER FROM THE CONDITIONS SHOWN, THEY SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF STRUCTURAL ENGINEER. STRUCTURAL ENGINEER WILL THEN PREPARE ADDITIONAL DRAWINGS AS MAY BE NEEDED TO ACCOMODATE THE CONDITIONS AS BROUGHT TO THEIR ATTENTION.
6. MECHANICAL EQUIPMENT MUST BE FIRMLY ATTACHED TO THE STRUCTURE. ISOLATORS, FASTENERS AND ANY OTHER ELEMENT PROVIDING STABILITY FOR MECHANICAL EQUIPMENT SHALL BE CAPABLE OF TRANSMITTING CODE REQUIRED LOADS, BUT IN NO EVENT LESS THAN A SHEAR LOAD EQUIVALENT TO 0.45 TIMES THE OPERATING WEIGHT OF EQUIPMENT.
7. DESIGN, MATERIALS, EQUIPMENT AND PRODUCTS OTHER THAN THOSE DESCRIBED OR INDICATED ON THE DRAWINGS MAY BE CONSIDERED FOR USE PROVIDED PRIOR APPROVAL IS OBTAINED FROM THE STRUCTURAL ENGINEER.
8. DESIGN CODE: 2007 CBC

   A. WIND DESIGN:
   - BASIC WIND SPEED = 85.0 MPH
   - WIND IMPORTANCE FACTOR, I = 1.0
   - OCCUPANCY CATEGORY = II
   - WIND EXPOSURE = C

   B. SEISMIC DESIGN:
   - SEISMIC IMPORTANCE FACTOR, I = 1.0
   - OCCUPANCY CATEGORY = II
   - MAPPED SPECTRAL RESPONSE ACCELERATIONS. Ss = 1.5 g, S1 = 0.6 g
   - SITE CLASS = D
   - SPECTRAL RESPONSE COEFFICIENTS, Sds = 1.0, Sd1 = 0.6
   - SEISMIC DESIGN CATEGORY = D
9. WATERPROOFING SEE ARCHITECTURAL DRAWINGS.
10. THE FOUNDATION DESIGN IS BASED ON CBC-07 TABLE 1804A.2. ALLOWABLE SOIL BEARING VALUE IS 1500 PSF.

STRUCTURAL STEEL

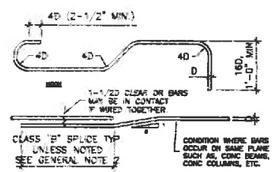
1. ALL STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING:
   - A. ASTM A-572, GRADE 50 : ALL SHAPES
   - B. ASTM A-307 : ALL BOLTS, UNO.
   - C. ASTM A-36 : ANGLES, CHANNELS, PLATES AND MISC.
   - D. ASTM A-500, GRADE B : ALL TUBES.
2. FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE STANDARD PRACTICE OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION LATEST EDITION.
3. ALL STEEL FABRICATTION SHALL BE PERFORMED IN A SHOP APPROVED BY THE CITY BUILDING DEPARTMENT.
4. OPENINGS SHALL NOT BE PLACED IN STEEL MEMBERS UNLESS SPECIFICALLY DETAILED.
5. ALL WELDING SHALL BE PERFORMED BY WELDERS HAVING CURRENT WELDING CERTIFICATE. WELDING SHALL BE PERFORMED USING ELECTRIC ARC PROCESS IN ACCORDANCE WITH THE APPLICABLE PORTION OF THE CODE FOR "ARC AND GAS WELDING IN BUILDING CONSTRUCTION" OF THE AMERICAN WELDING SOCIETY AS AMENDED TO DATE.
6. ALL WELDING FOR BUILDINGS SHALL BE IN STRICT CONFORMANCE WITH AWS CODE AS AMENDED TO DATE.
7. A WELDING PROCEDURE SPECIFICATION (WPS) PER AWS CODE. SHALL BE DEVELOPED BY THE FABRICATOR/ERECTOR AND APPROVED BY THE ENGINEER OF RECORD. THE WPS SHALL INCLUDE THE WELDING PARAMETERS RECOMMENDED BY THE ELECTRODE MANUFACTURER.
8. FIELD WELDING IS DESIGNED FOR FULL STRESSES. CONTINUOUS INSPECTION IS REQUIRED FOR MOMENT CONNECTION.
9. ALL EXPOSED STRUCTURAL STEEL AND MISC. METAL SHALL BE HOT-DIP GALVANIED AFTER FABRICATION.

CONCRETE BLOCK MASONRY

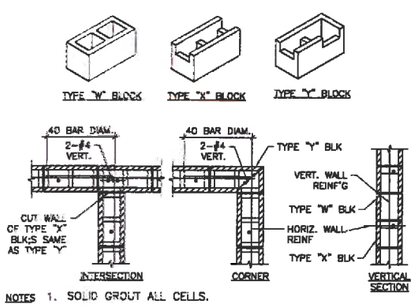
1. MASONRY UNITS FOR HOLLOW UNIT MASONRY SHALL BE GRADE "N" CONCRETE BLOCKS CONFORMING TO ASTM C-90. CONSTRUCTION SHALL COMPLY WITH SECTION 2104 OF CBC AND LOCAL CODES. MASONRY SHALL BE LAID IN STRAIGHT UNIFORM COURSES IN RUNNING BOND. JOINTS SHALL BE TOOLED CONCAVE AND BE UNIFORM IN SIZE. TIE INTERSECTING WALLS BY OVERLAPPING UNITS IN ALTERNATE COURSES. ROUGHEN AND CLEAN CONCRETE BEARING SURFACES FOR THE PLACEMENT OF THE FIRST COURSE. VERTICAL HEAD JOINTS SHALL BE FILLED SOLID AND SHOVED TIGHTLY TO PROVIDE BOND TO BOTH BLOCKS.
2. MORTAR SHALL BE FRESHLY PREPARED AND UNIFORMLY MIXED OF 1 PART PORTLAND CEMENT, 1/2 MAXIMUM TO 1/4 MINIMUM PARTS LIME PUTTY OR HYDRATED LIME, AND 3 PARTS SAND.
3. GROUT SHALL BE FLUID CONSISTENCY AND MIXED IN RATIO OF 1 PART CEMENT AND 3 PARTS SAND FOR GROUT SPACES LESS THAN 4" IN ANY DIRECTION. FOR SPACES GREATER THAN 4" THE RATIO IS TO BE 1 PART CEMENT, 2 PARTS SAND AND 2 PARTS PEA GRAVEL. AGGREGATE AND SAND SHALL CONFORM TO ASTM C-144. SOLID GROUT ALL CELLS IN RETAINING WALLS, ALL CELLS BELOW FLOOR GRADE, AND ALL REINFORCED CELLS; OTHERWISE ALL CELLS SHALL NOT BE GROUTED, UNLESS NOTED ON PLANS.
4. USE CARE TO PREVENT MORTAR AND GROUT SPILLAGE ON THE FACE OF THE MASONRY. CLEAN SUCH SPILLAGE IMMEDIATELY. REPAIR ANY DAMAGES OR INTERSTICES BETWEEN BLOCK AND REMOVE STAINS AT THE COMPLETION OF WORK.
5. SPLICE ALL BARS IN MASONRY WITH A MINIMUM OF 48 BAR DIAMETER LAPS (2'-0" MINIMUM).
6. ALL ISOLATED BOLTS EMBEDDED IN MASONRY SHALL BE GROUTED SOLIDLY IN PLACE WITH NOT LESS THAN 2" OF GROUT SURROUNDING THE BOLT.
7. SEAL RETAINING FACE OF WALL AND FOOTING WITH 2 COATS OF HENRY'S 502 ASPHALTIC MASTIC.

CONST. MATERIALS SPEC.

1. ALL CONCRETE SHALL BE MIN. f'c = 2500 PSI.
2. CMU BLOCK SHALL BE MIN. f'm = 1500 PSI. 8"x8"x16"
3. ALL STEEL SHALL BE GRADE 60. fy = 60,000 PSI, Fs = 24,000 PSI
4. MORTAR = 1800 PSI, GROUT = 2000 PSI



REINF. BENDING DETAIL



NOTES
1. SOLID GROUT ALL CELLS.
2. VERTICAL REINFORCING TO BE AT ℄ OF WALL UNLESS NOTED OTHERWISE.
3. ALSO SEE GENERAL MASONRY NOTES.

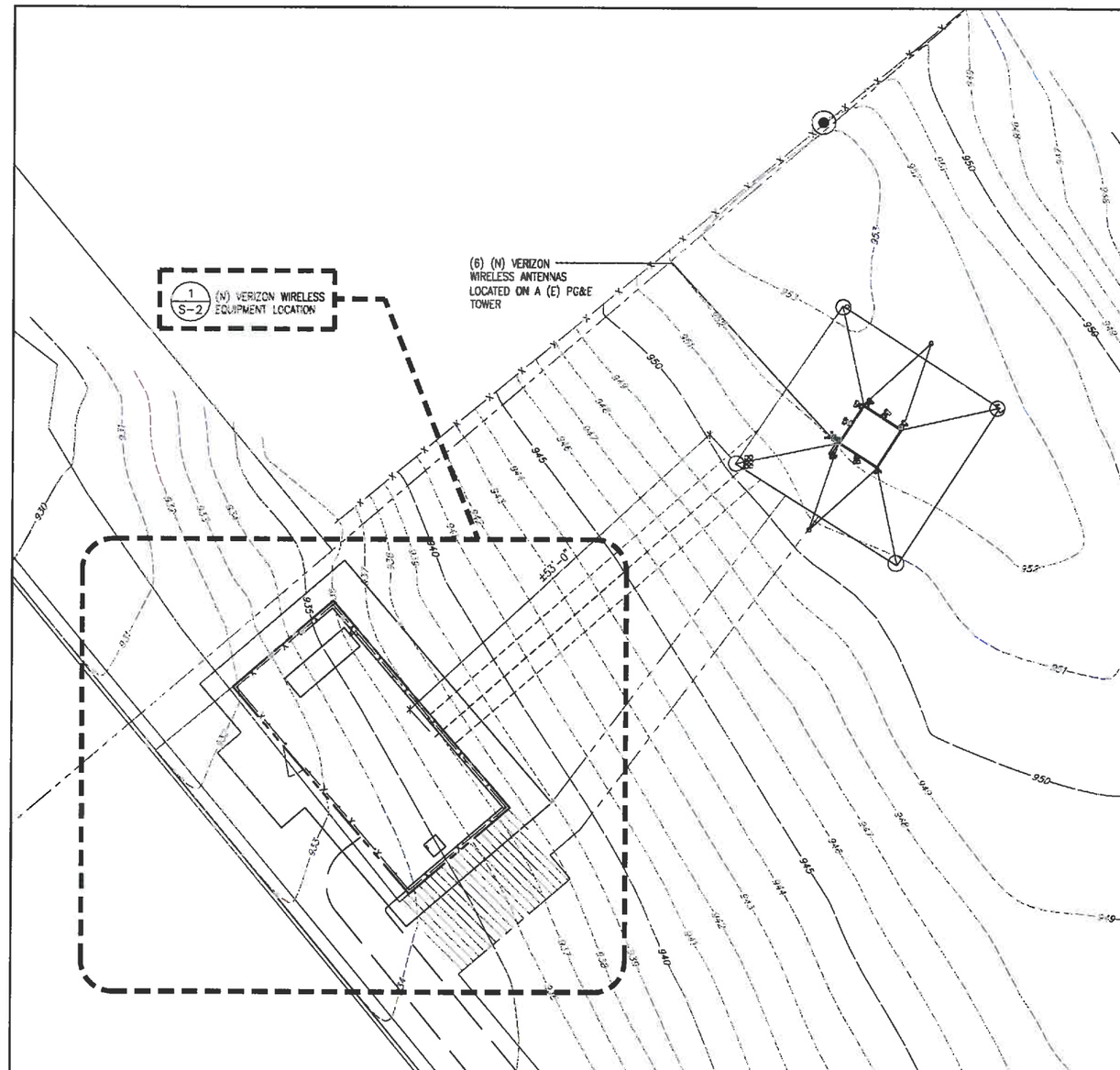
CONC. BLOCK DETAIL

CONCRETE

1. ALL POURED-IN-PLACE CONCRETE SHALL HAVE AN ULTIMATE COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS. UNLESS OTHERWISE NOTED. CEMENT TO BE TYPE II FROM TESTED STOCK PER ASTM C-150.
2. CONCRETE FORM TOLERANCES SHALL BE WITHIN THE STANDARDS SET BY THE AMERICAN CONCRETE INSTITUTE.
3. ALL REINFORCING STEEL, ANCHOR BOLTS, DOWELS AND OTHER INSERTS SHALL BE SECURED IN POSITION AND INSPECTED BY THE LOCAL BUILDING DEPARTMENT INSPECTOR PRIOR TO THE POURING OF ANY CONCRETE.
4. NO PIPES OR DUCTS SHALL BE PLACED IN STRUCTURAL CONCRETE UNLESS SPECIFICALLY DETAILED. REFER TO ARCHITECTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR LOCATIONS.
5. FORM EXPOSED CORNERS OF COLUMNS, BEAMS, WALLS, ETC. WITH 3/4 INCH CHAMFERS UNLESS DETAILED OTHERWISE.
6. PROVIDE LIGHT BROOM FINISH ON ALL EXPOSED CONCRETE UNLESS NOTED OTHERWISE.

REINFORCING STEEL

1. REINFORCING STEEL SHALL CONFORM TO ASTM A-615 GRADE 60 U.O.N.
2. BARS SHALL BE CLEAN OF MUD, OIL OR OTHER COATINGS LIKELY TO IMPAIR BONDING.
3. ALL REINFORCING SHALL BE SECURED IN PLACE PRIOR TO PLACING CONCRETE OR GROUTING MASONRY.
4. REINFORCING STEEL SHALL BE SPLICED AS SHOWN OR NOTED. SPLICES AT OTHER LOCATIONS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER. ALL VERTICAL WALL REINFORCEMENT SHALL BE CONTINUOUS BETWEEN SPLICE LOCATIONS SHOWN IN THE DETAILS.



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ARE SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

5	06/23/09	100% ZONING
4	06/10/09	100% ZONING
3	03/30/09	100% ZONING
2	03/25/09	95% ZONING
1	02/24/09	90% ZONING
0	01/13/09	50% ZONING

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MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
SITE KEY PLAN
STRUCTURAL NOTES

SHEET NUMBER
S-1

STRUCTURAL NOTES

SITE KEY PLAN

SCALE 1/8"=1'-0" 0 1' 4' 8' 16

1

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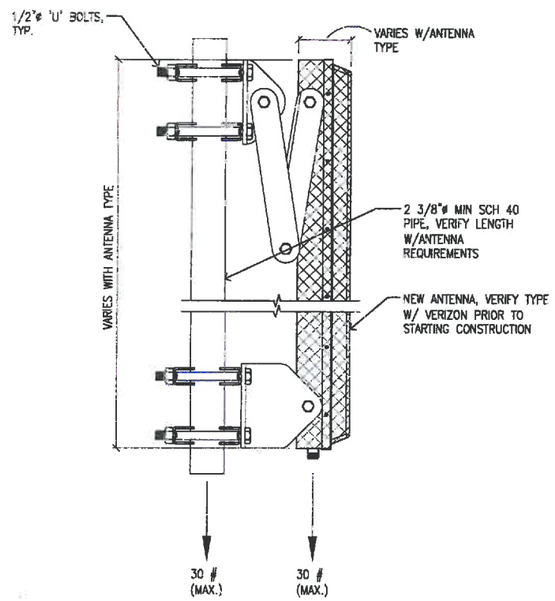
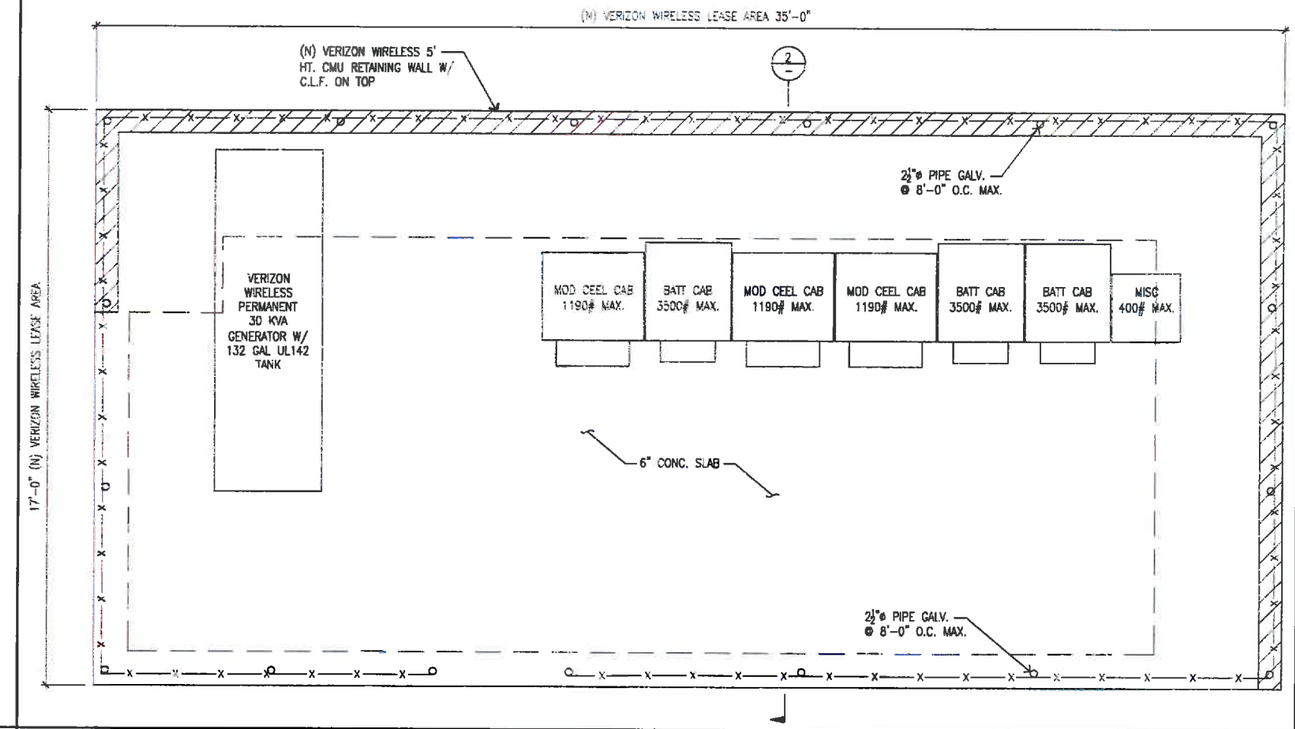
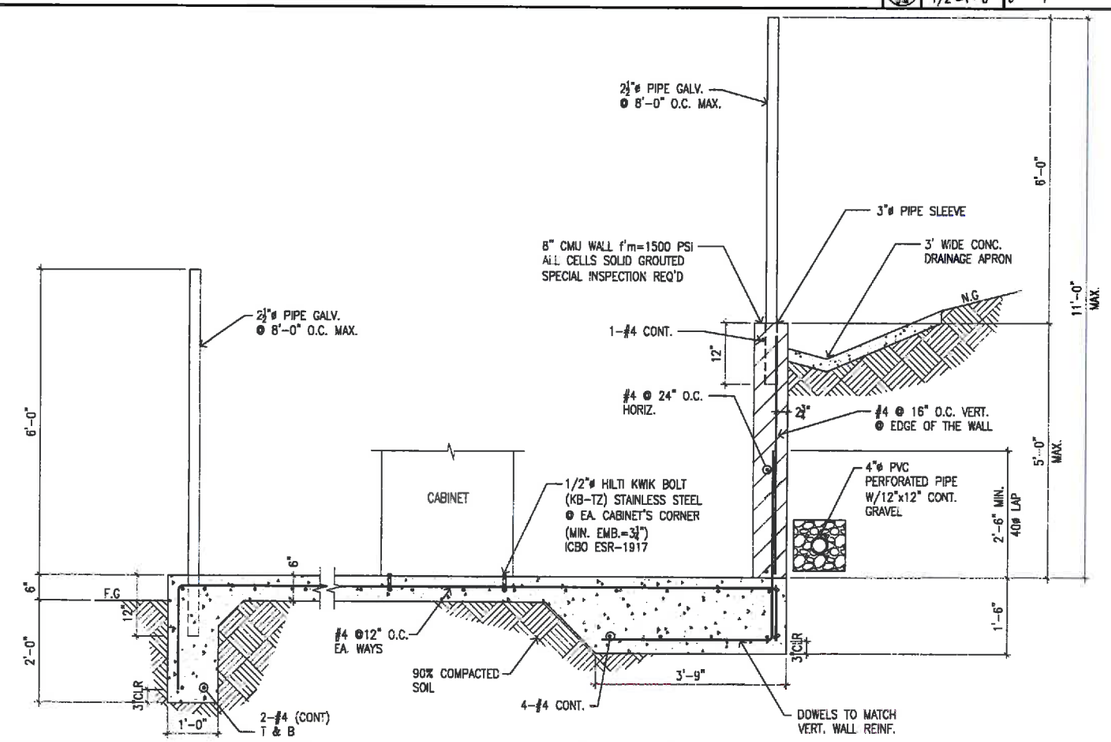


ANTENNA MOUNTING | SCALE N.T.S | 3



EQUIPMENT SUPPORT FOUNDATION PLAN | SCALE 1/2"=1'-0" | 1



SECTION | SCALE N.T.S | 2

NOT USED | SCALE N.T.S | 4

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AHJ SEAL

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CAD FILE: 123265

SUBMITTALS

5	06/25/09	100% ZONING
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2	03/25/09	95% ZONING
1	02/24/09	90% ZONING
0	01/13/09	50% ZONING

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CONTRA COSTA COUNTY

SHEET TITLE
EQUIPMENT SUPPORT PLAN AND SECTION

SHEET NUMBER
S-2

Apr 21, 2010 - 1:17pm jdelejandring\$_VERIZON\VERIZON ACTIVE_VERIZON SF_MSA Verizon\Project Sites\MSA WIRELESS\123265 Rheem\CDS\123265-STRUCTURE.dwg

ELECTRICAL NOTES

A. ALL WORKS AND MATERIALS SHALL BE IN FULL ACCORDANCE WITH THE LATEST RULES AND REGULATIONS OF THE CALIFORNIA ADMINISTRATIVE CODE, PART III, "BASIC ELECTRICAL REGULATIONS", THE NATIONAL ELECTRICAL CODE (EDITION ENFORCED BY LOCAL AUTHORITY), AND ALL APPLICABLE STATE AND LOCAL LAWS AND REGULATIONS. NOTHING IN THESE PLANS OR SPECIFICATIONS SHALL BE CONSTRUCTED AS TO PERMIT WORK NOT CONFORMING TO THE MOST STRINGENT OF THESE CODES. SHOULD CHANGES BE NECESSARY IN THE DRAWINGS OR THE SPECIFICATIONS TO MAKE THE WORK COMPLY WITH THESE REQUIREMENTS, THE CONTRACTOR SHALL IMMEDIATELY (SPECIALLY BEFORE BIDDING SUBMITTAL) NOTIFY THE ENGINEER IN WRITING AND CEASE WORK ON PARTS OF THE CONTRACT WHICH ARE AFFECTED.

B. THE CONTRACTOR SHALL MAKE A SITE VISITATION PRIOR TO BIDDING AND CONSTRUCTION TO VERIFY ALL EXISTING CONDITIONS AND SHALL TO NOTIFY THE ENGINEER IMMEDIATELY UPON DISCOVERY OF ANY DISCREPANCIES. THE CONTRACTOR ASSUMES ALL LIABILITY FOR FAILURE TO COMPLY WITH THIS PROVISION.

C. FOR FAILURE TO COMPLY WITH THIS PROVISION. THE EXTENT OF THE WORK IS INDICATED BY THE DRAWINGS, SCHEDULES, AND THIS SPECIFICATION AND IS SUBJECT TO THE TERMS AND CONDITIONS OF THE CONTACT. THE WORK SHALL CONSIST OF FURNISHING ALL LABORS, EQUIPMENTS, MATERIALS AND SUPPLIES NECESSARY FOR A COMPLETE AND OPERATIONAL ELECTRICAL SYSTEM. THE WORK SHALL ALSO INCLUDE THE COMPLETION OF ALL ITEMS OF ELECTRICAL WORK NOT MENTIONED OR SHOWN WHICH ARE NECESSARY FOR SUCCESSFUL OPERATION OF ALL SYSTEMS.

D. THE DRAWINGS INDICATE DIGRAMMATICALLY THE DESIRED LOCATIONS OR ARRANGEMENTS OF THE CONDUIT RUNS, OUTLETS, EQUIPMENTS, ETC. AND SHALL BE FOLLOWED IN EXECUTING THE WORK SO AS TO SECURE THE BEST POSSIBLE INSTALLATION IN THE AVAILABLE SPACE LIMITATIONS.

E. FEEDER AND BRANCH CIRCUITS RUN IN NON-METALLIC CONDUIT SHALL INCLUDE A CODE SIZED GROUNDING CONDUCTOR HAVING GREEN INSULATION. THE GROUND CONDUCTOR SHALL BE PROPERLY CONNECTED TO MAINTAIN ELECTRICAL CONTINUITY.

F. CONTRACTOR SHALL CHECK RESISTANCE BETWEEN BUILDING GROUND (ELECTRODES CONNECTED TO MAINTAIN ELECTRICAL CONTINUITY. CONTRACTOR SHALL CHECK RESISTANCE BETWEEN BUILDING GROUND (ELECTRODES AND COLD WATER PIPING) AND TELEPHONE EQUIPMENT. MAXIMUM RESISTANCE SHALL NOT EXCEED 5 OHMS.

G. UTILITY SERVICE REQUIREMENTS ARE SHOWN ON THE DRAWINGS BASED ON INFORMATION AVAILABLE AT THE TIME AND ARE NOT GUARANTEED.

H. THE CONTRACTOR SHALL VERIFY THE EXACT METHOD AND REQUIREMENTS OF SERVICE BY UTILITY COMPANIES DURING BIDDING AND INCLUDE ALL COSTS FOR A COMPLETE SYSTEM IN THE BID.

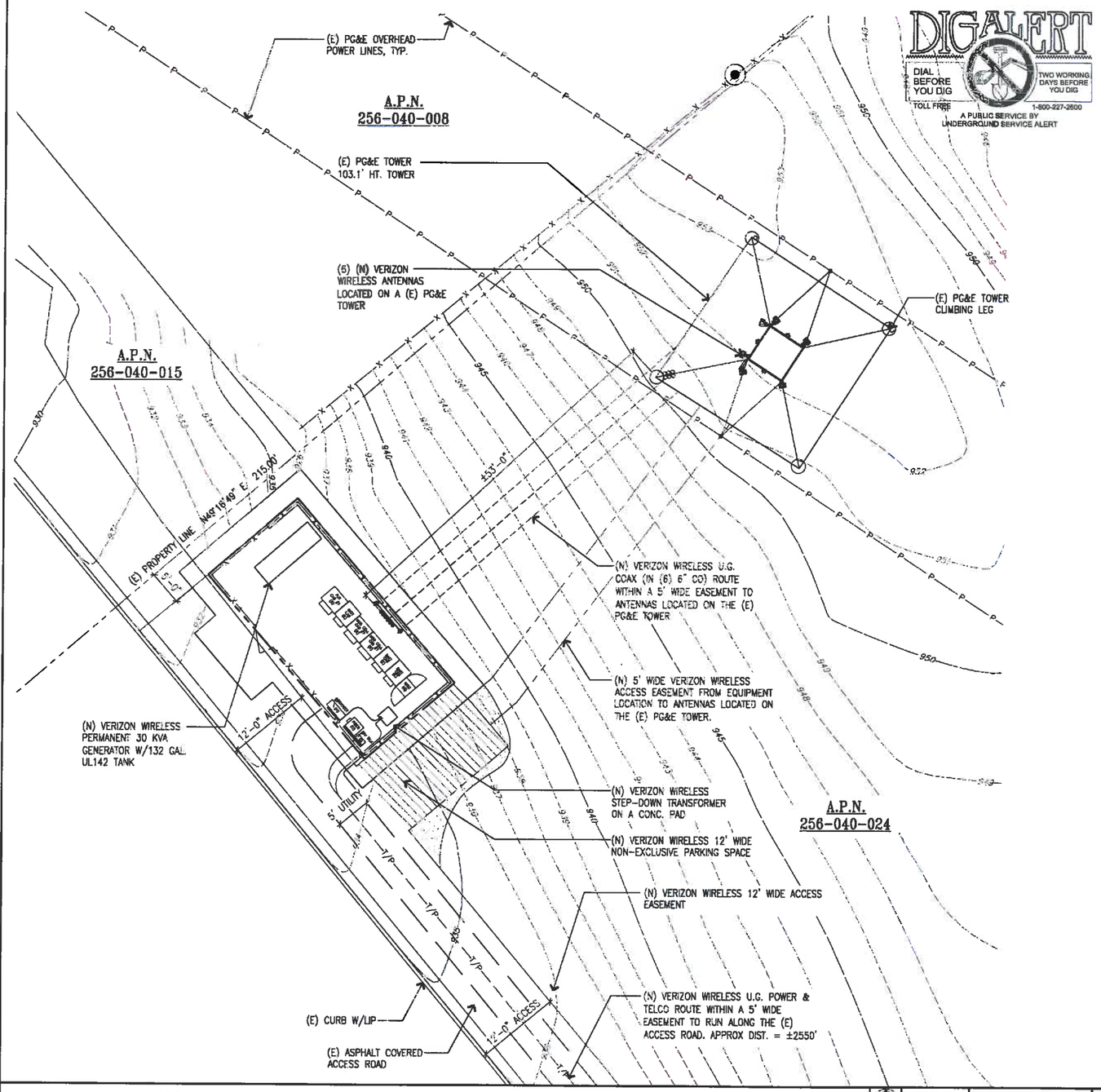
I. PVC SCHEDULE 40 MAY BE USED AS PERMITTED BY CODE IN LIEU OF RIGID STEEL CONDUIT FOR UNDERGROUND APPLICATIONS ONLY. INSTALL A CODE SIZED INSULATED CONDUCTOR (GREEN) GROUND WIRE IN NON-METALLIC CONDUITS. USE RIGID STEEL ELBOWS.

SYMBOLS	DESCRIPTION
	DUPLEX RECEPTACLE: 20A-125V-2P, 2W GROUNDING TYPE.
GFI	DUPLEX RECEPTACLE: 20A-125V-2P, 2W GROUND FAULT INTERUPTION TYPE.
S	TOGGLE SWITCH, 20A-125V. FLUSH MOUNT AT +48" OR AS NOTED SUBSCRIPT AT SYMBOL INDICATES THE FOLLOWING: 2 - DOUBLE POLE, 3 - THREE WAY, 4 - FOUR WAY, K - KEY, P - PILOT LIGHT, t - MANUAL TIME SWITCH, A, B, C, D, FIXTURES CONTROLLED & QUANTITY OF SWITCHES.
	MD: MAIN DISTRIBUTION PANEL
	LIGHTING AND APPLIANCE PANEL
P	CONDUIT RUN CONCEALED BELOW FLOOR OR GRADE FOR POWER
	CONDUIT RUN CONCEALED ABOVE CEILING OR WALLS
C	CONDUIT ONLY CONCEALED IN EQUIPMENT BY EQUIPMENT CONTRACTOR. WIRING TO BE DONE BY ELECTRICAL CONTRACTOR.
	CONDUIT RUN CONCEALED BELOW FLOOR OR GRADE, 3/4" MINIMUM
T	TELEPHONE CONDUIT 3/4" MINIMUM
	CONDUIT STUB-UP
	CONDUIT STUB-DOWN
	HOMERUN TO PANEL, HATCH MARKS INDICATE NUMBER OF #12 WIRES IN CODE SIZE CONDUITS.
C.O.	CONDUIT ONLY
W.P.	WEATHER PROOF
J	JUNCTION BOX
V OR KWH	METER.
	CIRCUIT BREAKER

NOTE:
POWER AND TELCO CONNECTIONS ARE PRELIMINARY AND SUBJECT TO FIELD VERIFICATION BY LOCAL UTILITY COMPANIES.

ABBREVIATIONS

AWG	AMERICAN WIRE GAUGE	PCS	PERSONAL COMMUNICATION SYSTEM	RBS	RADIO BASE STATION
BCW	BARE COPPER WIRE	PTS	POWER TRANSFER SWITCH	–	RIGID GALVANIZED STEEL
DWG	DRAWING	PVC	RIGID (SCH. 40) POLYVINYL CHLORIDE CONDUIT	RWY	RACEWAY
EMT	ELECTRICAL METALLIC TUBING	IMC	INTERMEDIATE METALLIC CONDUIT	TYP	TYPICAL
–	–	MGB	MASTER GROUND BAR	BTS	BASE TRANSCEIVER STATION
IGR	INTERIOR GROUND RING (HALO)				



ABBREVIATION ELECTRICAL NOTES & SYMBOLS | 2 | UTILITY SITE PLAN

SCALE 1/8"=1'-0" 0 1' 4' 8' 16 | 1

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AHE SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

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CONTRA COSTA COUNTY

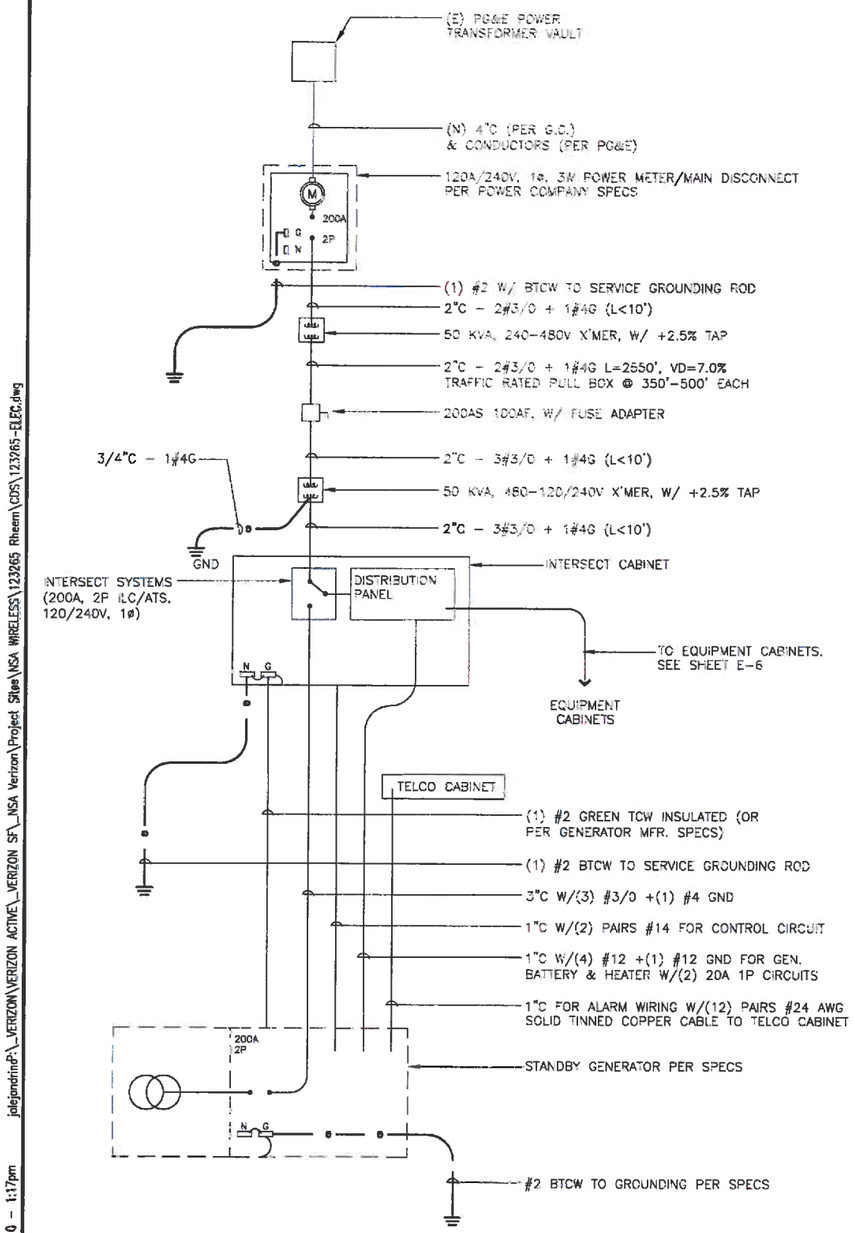
SHEET TITLE
UTILITY SITE PLAN
ABBREVIATION
NOTES & SYMBOLS

SHEET NUMBER
E-1

Apr 21, 2010 - 1:25pm jolejandrino P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-ELEC.dwg

NOTES:

1. SERVICE POWER SHALL BE 200AMP, 120/240V, 1ø, 4W
2. UTILITY RECEPTACLE IS A GFCI DUPLEX OUTLET INSTALLED IN THE DEAD FRONT OF THE PPC.
3. FOR COMPLETE INTERNAL WIRING AND ARRANGEMENTS REFER TO VENDOR PRINTS BY PPC MFR., U.L. LISTED.
4. PROVIDE A MIN. 36" WORK CLEARANCE IN FRONT OF PANELS/SERVICE EQUIP.
5. ALL BREAKERS IN THE PANEL ARE RATED 10,000 RMS SYMMETRICAL AMPS.
6. ALL WIRING SHALL BE RATED FOR 75°
7. CONDUIT REQUIREMENTS (TYP., U.N.O.): UNDERGROUND: PVC (SCHED. 40 OR 80) INDOOR: EMT (RGS IN TRAFFIC AREAS) OUTDOOR (ABOVE GRADE): EMT W/F OR RGS IN TRAFFIC.



SINGLE LINE DIAGRAM

SCALE: NOT TO SCALE | 4

POWER & TELEPHONE GENERAL NOTES

1. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR FINAL AND EXACT WORK/MATERIALS REQUIREMENTS AND CONSTRUCT TO UTILITY COMPANY ENGINEERING PLANS AND SPECIFICATIONS ONLY.
2. CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT, PULL WIRES, CABLE, PULLBOXES, CONCRETE ENCASEMENT OF CONDUIT (IF REQUIRED), TRANSFORMER PAD, BARRIERS, POLE RISERS, TRENCHING, BACKFILL, AND INCLUDE ANY UTILITY COMPANY REQUIREMENTS IN SCOPE OF WORK.
3. UTILITY CONTACTS

TELEPHONE COMPANY:		POWER COMPANY:	
COMPANY NAME:	SBC	COMPANY NAME:	PG&E
ADDRESS:		ADDRESS:	
CITY, STATE, ZIP:		CITY, STATE, ZIP:	
PHONE NUMBER:		PHONE NUMBER:	
CONTACT:		CONTACT:	

* INDICATES CONTINUOUS LOAD TAKEN AT 125%

** REDUNDANT SYSTEM ONLY ONE UNIT WILL OPERATE AT A TIME.

ELECTRICAL NOTES

1. ALL BREAKERS 10,000 A.I.C.
2. ALL 20 AMP CIRCUITS #12 THHN
3. ALL 30 AMP CIRCUITS #10 THHN
4. ALL 40 AMP CIRCUITS #8 THHN
5. ALL 60 AMP CIRCUITS #6 THHN
6. ALL ELECTRICAL WORK IS SURFACE MOUNTED IN EMT CONDUIT

NOTE:
POWER AND TELCO CONNECTIONS ARE PRELIMINARY AND SUBJECT TO FIELD VERIFICATION BY LOCAL UTILITY COMPANIES.

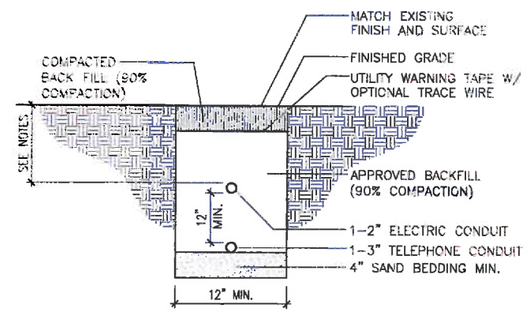
PANEL "PP" – 120/240V 1ø 3W | L1 | L2 | 200A MAIN BREAKER – 42 KAIC

DESCRIPTION	C/B	NO.	VA	VA	NO.	C/B	DESCRIPTION
RADIO EQUIPMENT #1	100/2	1	3800		2	60/2	SURGE SUPPRESSOR (INTERNAL)
		3		3800	4		
RADIO EQUIPMENT #2	100/2	5	3100 10		6	20/1	SPARE
		7	–	3100 750	8	20/1	WORK LIGHTS
RADIO EQUIPMENT (FUTURE)	80/2	9	3100 –		10	20/1	GFCI RECEPTACLE (INTERNAL)
		11		3100 100	12	20/1	VENT FAN (INTERNAL)
BATTERY INTERNAL HAVC	20/2	13	600 500		14	20/2	BATTERY HVAC
		15		600 600	16		
EXHAUST FAN	20/1	17	1858 540		18	20/1	RECEPTACLE
LOAD PHASE			13486	12150			
TOTAL CONNECTED LOAD			(2406VA x1.25) + 23240VA = 26248VA/240 = 109 AMPS				

1. UTILITY POINTS OF SERVICE AND WORK / MATERIALS SHOWN ARE BASED UPON PRELIMINARY INFORMATION PROVIDED BY THE UTILITY COMPANIES AND ARE FOR BID PURPOSES ONLY.
2. CONTRACTOR SHALL COORDINATE WITH UTILITY COMPANY FOR FINAL AND EXACT WORK / MATERIALS REQUIREMENTS AND CONSTRUCT TO UTILITY COMPANY ENGINEERING PLANS AND SPECIFICATIONS ONLY. CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUIT, PULL ROPES, CABLES, PULL BOXES, CONCRETE ENCASEMENT OF CONDUIT (IF REQUIRED), TRANSFORMER PAD, BARRIERS, POLE RISERS, TRENCHING, BACKFILL, PAY ALL UTILITY COMPANY FEES AND INCLUDE ALL REQUIREMENTS IN SCOPE OF WORK.
3. UTILITY CONTACTS FOR THIS PROJECT SHALL BE AS FOLLOWS:

PANEL SCHEDULE

SCALE: NOT TO SCALE | 2



TRENCHING NOTES:

1) MINIMUM COVERAGE OF DUCT ON PRIVATE PROPERTY 18" OR AS SPECIFIED BY PERMITTING AGENT.

2) MINIMUM COVERAGE OF DUCT IN PUBLIC R/W: 24" OR AS SPECIFIED BY PERMITTING AGENT.

3) MINIMUM 12" SEPARATION IN JOINT TRENCH BETWEEN POWER AND TELCO, OR AS SPECIFIED BY PERMITTING AGENT (VERTICAL SEPARATION UNLESS PREVIOUSLY APPROVED DUE TO SPECIFIC SITE CONDITIONS.)

4) PULL BOXES– MINIMUM 17"W X 30"L

5) SPLICE BOXES– MINIMUM 30"W X 48"L

6) ALL CONDUIT TO ENTER ENDS OF BOXES (NOT SIDES) AND BE MORTARED SWEPT INTO BOTTOM LIKE POWER). CONDUITS TO BE CUT FLUSH WITH THE INSIDE FACE OF BOX.

7) BASES ARE REQUIRED ON ALL SPLICE BOXES. SPLICE BOXES ARE TO BE EQUIPPED WITH CABLE RACKS AND PULLING EYES.

8) USE TRAFFIC RATED BOXES. BASES AND LIDS ON ALL PULL OR SPLICE BOXES THAT ARE SUBJECT TO VEHICULAR TRAFFIC.

9) INSTALL TRU–TAPE & PULL ROPE IN TELCO CONDUIT.

TRENCHING DETAIL

SCALE: NOT TO SCALE | 3

GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND ALL APPLICABLE LOCAL CODES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.
3. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
4. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY APPROVED DEUTSCH CONNECTORS
5. SERVICE TO EQUIPMENT SHELTER SHALL BE 120/240V, 1ø, 3W, 200A
6. ALL GROUND CONNECTIONS BELOW GRADE SHALL BE ATTACHED USING APPROVED DEUTSCH CONNECTORS.
7. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR & EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
8. ALL EXOTHERMIC CONNECTIONS TO THE GROUND RODS SHALL START AT THE TOP & HAVE A VERTICAL SEPARATION OF 6" FOR EVERY ADDITIONAL CONNECTION.
9. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
10. ALL EXTERIOR GROUND CONDUCTORS SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
11. GROUND RODS SHALL BE COPPER CLAD STEEL, 5/8"ø 10–FT LONG AND SHALL BE DRIVEN VERTICALLY WITH THEIR TOPS 30" BELOW FINAL GRADE.
12. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
13. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
14. MAXIMUM RESISTANCE OF THE COMPLETED GROUND SYSTEM SHALL NOT EXCEED 5 OHMS. TESTING SHALL BE PERFORMED IN ACCORDANCE WITH PROJECT SPECIFICATION FOR FACILITY GROUNDING, USING FALL OF POTENTIAL METHOD. GENERAL CONTRACTOR TO CONFIRM WITH CONSTRUCTION MANAGER PRIOR TO TEST. TEST MAY BE COMPLETED BY VERIZON WIRELESS VENDOR.

GROUNDING NOTES

SCALE: NOT TO SCALE | 1

verizon wireless
2785 MITCHELL DRIVE
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415.503.1363 fax 949.251.1120
Santa Ana San Diego San Francisco

NSA Wireless, Inc.
Site Acquisition * Planning * Construction Management * Site Modification
2800 Crow Canyon Place, Ste. 400
San Ramon, CA 94583
Fax: (925) 215-0632
Phone: (925) 244-3890

ARE SEAL

PROJECT NO:	123265
DRAWN BY:	MIT
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO VERIZON WIRELESS IS STRICTLY PROHIBITED.

SITE
123265
RHEEM VALLEY
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

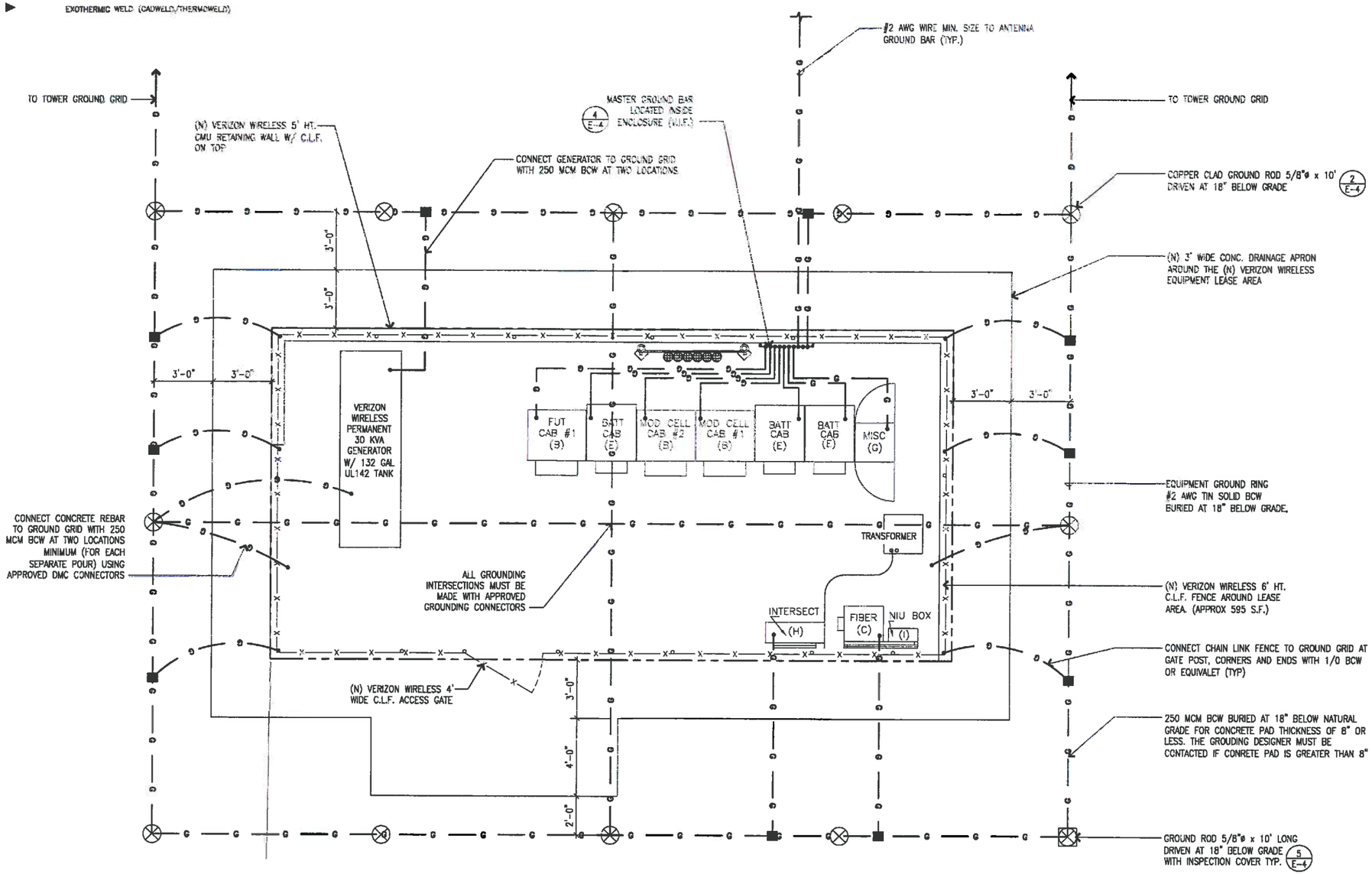
SHEET TITLE
SINGLE LINE DIAGRAM NOTES & DETAILS

SHEET NUMBER
E–2

Apr 21, 2010 – 1:17pm jdelpandrino P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-ELEC.dwg

GROUNDING SYMBOLS

- 5/8"ø x 10' LONG COPPER-CLAD GROUND ROD
- GROUND ROD W/INSPECTION COVER
- MECHANICAL CONNECTION
- COMPRESSION TYPE CONNECTION
- GROUNDING WIRE
- EXOTHERMIC WELD (CADWELD/THERMOWELD)



EQUIPMENT GROUNDING PLAN

SCALE 1/2"=1'-0" 0 1' 4'

1

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Phone: (925) 244-1890

ARE SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	50% CONSTRUCTION

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RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

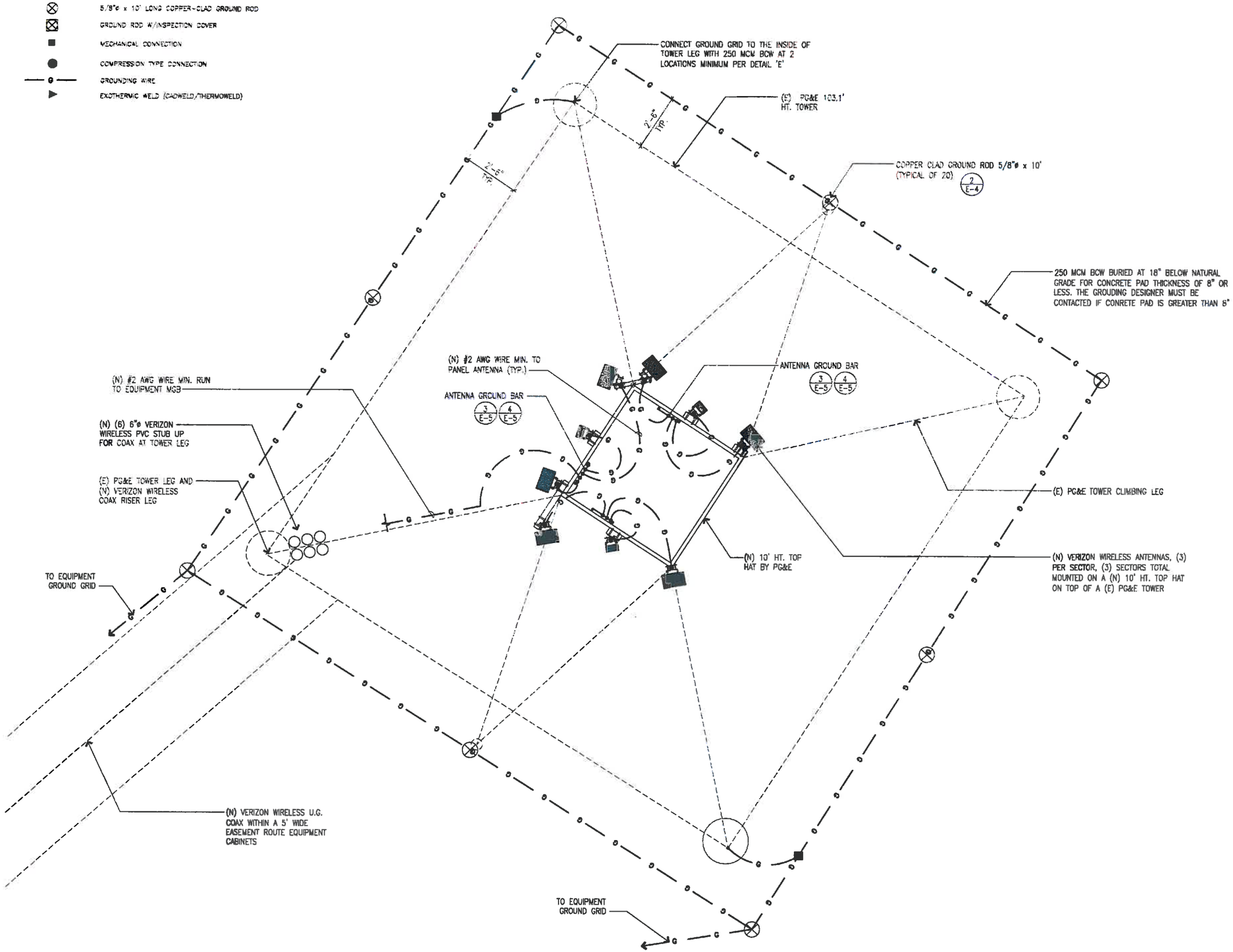
SHEET TITLE
EQUIPMENT GROUNDING PLAN

SHEET NUMBER
E-3

Apr 21, 2010 - 1:17pm jolejondrino P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-ELEC.dwg

GROUNDING SYMBOLS

- 5/8"ø x 10' LONG COPPER-CLAD GROUND ROD
- GROUND ROD W/INSPECTION COVER
- MECHANICAL CONNECTION
- COMPRESSION TYPE CONNECTION
- GROUNDING WIRE
- EXOTHERMIC WELD (CADWELD/THERMOWELD)



ANTENNA GROUNDING PLAN

SCALE 1/2"=1'-0" 0 1' 4'

1

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2785 MITCHELL DRIVE
WALNUT CREEK, CA 94598

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ARE SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

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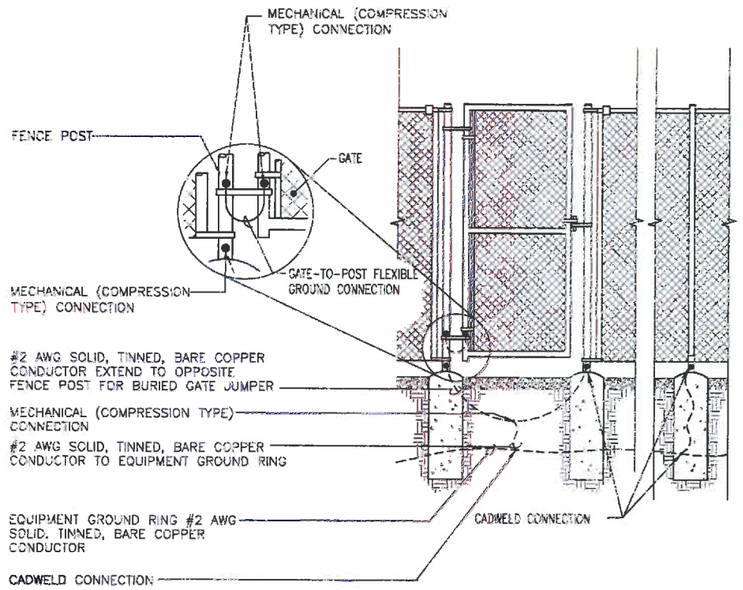
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

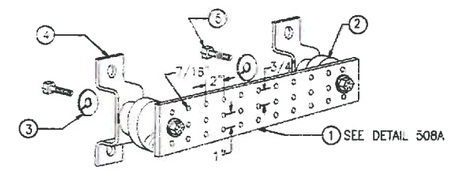
SHEET TITLE
ATENNA GROUNDING PLAN

SHEET NUMBER
E-4

Apr 21, 2010 - 1:17pm jdeljondrinP:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-ELEC.dwg



FENCE GROUNDING 6



LEGEND

1– GALVANIZED GROUND BAR, 4"x1/4"x20", HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION. (ACTUAL GROUND BAR SIZE WILL VARY BASED ON NUMBER OF GROUND CONNECTIONS)

2– INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061–4 OR EQUAL

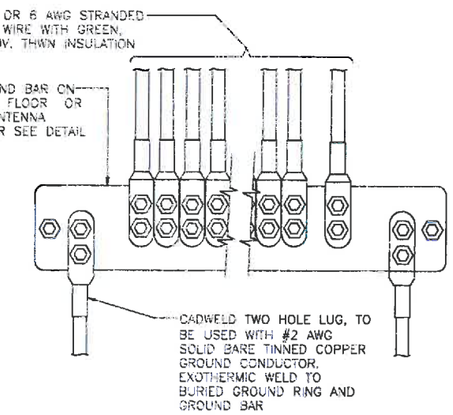
3– 5/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015–8 OR EQUAL

4– WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A–6056 OR EQUAL

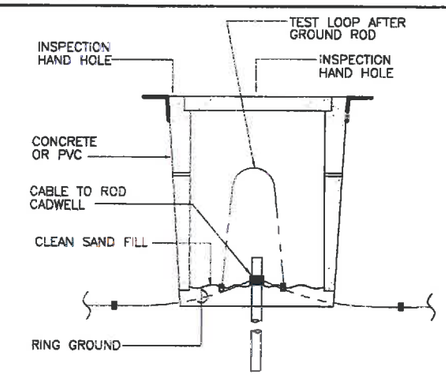
5– 3/8" STAINLESS BOLTS, LOCKS, FLATS & NUTS ARE TO BE USED.

6– INSULATORS SHALL BE ELIMINATED WHEN BONDING DIRECTLY TO TOWER/MONOPOLE STRUCTURE. CONNECTION TO TOWER/MONOPOLE STRUCTURE SHALL BE PER MANUFACTURERS RECOMMENDATIONS.

GROUND BAR DETAIL 4

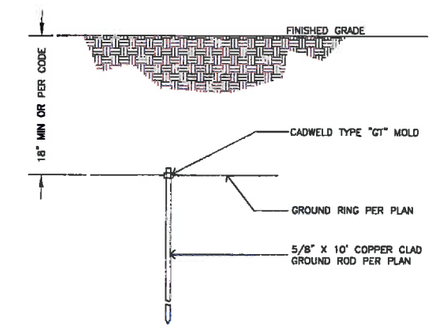


GROUND WIRE TO GROUND BAR 1



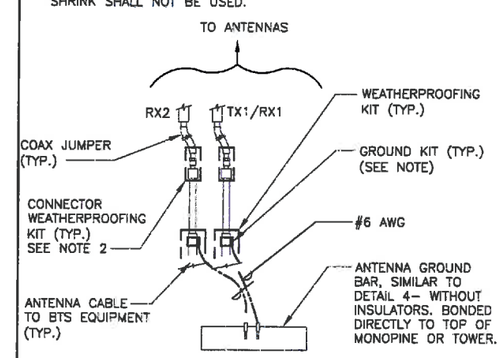
NOTES:
1. INSPECTION HAND HOLE MAY BE CONCRETE OR PVC AND SHALL BE A MINIMUM OF 8" IN WIDTH /DIAMETER.
2. GROUND ROD SHALL BE MINIMUM 18" BELOW GRADE OR PER CODE (WHICH EVER IS GREATHER).

GRD. ROD W/ INSPECTION COVER 5



GROUND ROD 2

NOTES:
1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO–PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.



GROUNDING BAR CONNECTION 3

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WALNUT CREEK, CA 94598

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AME SEAL

PROJECT NO: 123265
DRAWN BY: MIF
CHECKED BY: RZ
CAD FILE: 123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

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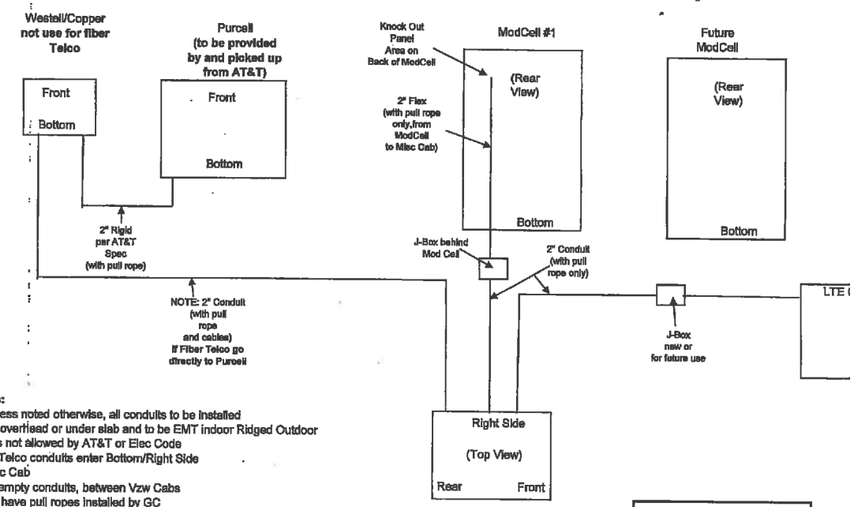
SITE
123265
RHEEM VALLEY
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
GROUNDING DETAILS

SHEET NUMBER
E–5

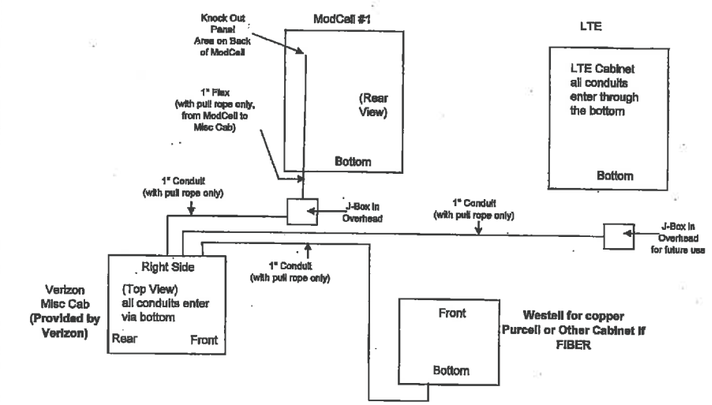
Apr 21, 2010 – 1:17pm jdelpondrinoP:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265–ELEC.dwg



Notes:
1: Unless noted otherwise, all conduits to be installed in the overhead or under slab and to be EMT indoor Ridged Outdoor unless not allowed by AT&T or Elec Code
2: All Telco conduits enter Bottom/Right Side of Misc Cab
3: All empty conduits, between Vzw Cabs are to have pull ropes installed by GC
4: Leave slack in Flex conduits so the (2) back panels on the ModCells can be removed
5: If your use LB's for 2" Flex on back of ModCells, use short LB's, with a nipple to Mod-Cell otherwise you will block back panel removal

Telco Conduit Hookup
Original: 3/14/07
Rev 12-21-09

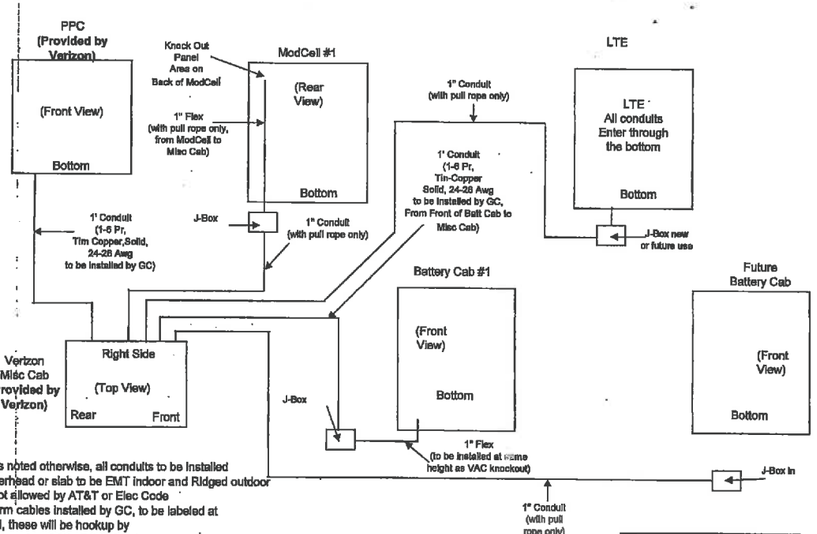
NTS
Sheet 1 of 4



Notes:
1: Unless noted otherwise, all conduits to be installed in the to be EMT for Indoor and Ridged outdoor unless not allowed by AT&T or Elec Code
2: All VDC conduits enter Bottom/Right Side of Misc Cab and None to the LTE.
3: All empty conduits, between Vzw Cabs are to have pull ropes installed by GC
4: Leave slack in Flex conduits so the (2) back panels on the ModCells can be removed

VDC Conduit Hookup
Original: 3/14/07
Rev 12-21-09

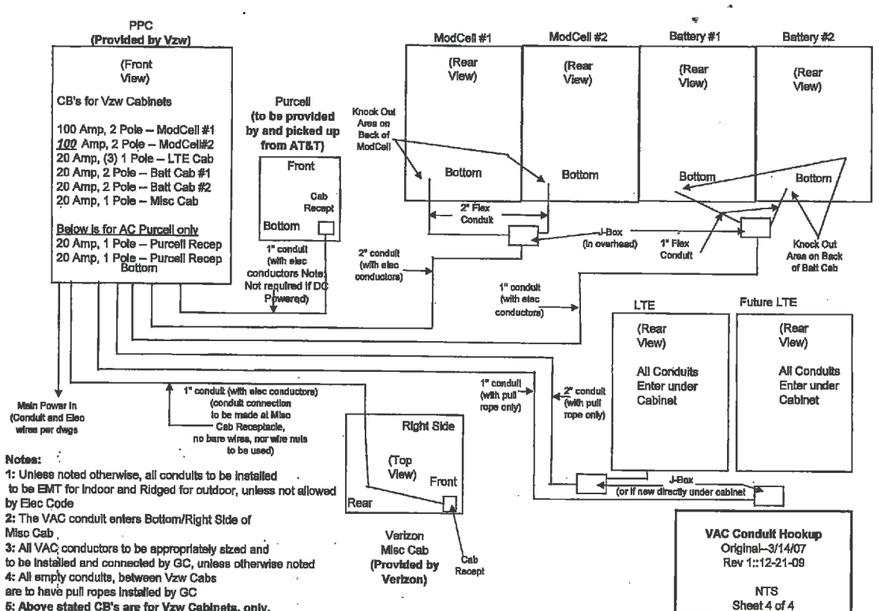
NTS
Sheet 3 of 4



Notes:
1: Unless noted otherwise, all conduits to be installed in the overhead or slab to be EMT indoor and Ridged outdoor unless not allowed by AT&T or Elec Code
2: All alarm cables installed by GC, to be labeled at each end, these will be hookup by others, **except in PPC--GC to hookup**
3: All alarm conduits enter Bottom/Right Side of Misc Cab
4: Leave slack in Flex conduits so the (2) back panels on the ModCells can be removed
5: All empty conduits, between Vzw Cabs are to have pull ropes installed by GC

Alarm Conduit Hookup
Original: 3/14/07
Rev 12-21-097

NTS
Sheet 2 of 4



Notes:
1: Unless noted otherwise, all conduits to be installed to be EMT for Indoor and Ridged for outdoor, unless not allowed by Elec Code
2: The VAC conduit enters Bottom/Right Side of Misc Cab
3: All VAC conductors to be appropriately sized and to be installed and connected by GC, unless otherwise noted
4: All empty conduits, between Vzw Cabs are to have pull ropes installed by GC
5: **Above stated CB's are for Vzw Cabinets, only, not any other, to be installed electrical items**

VAC Conduit Hookup
Original--3/14/07
Rev 1::12-21-09

NTS
Sheet 4 of 4

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Fax: (925) 355-0672
Phone: (925) 264-3598

AHJ SEAL

PROJECT NO:	123265
DRAWN BY:	MIF
CHECKED BY:	RZ
CAD FILE:	123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	80% CONSTRUCTION

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SITE
123265
RHEEM VALLEY
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

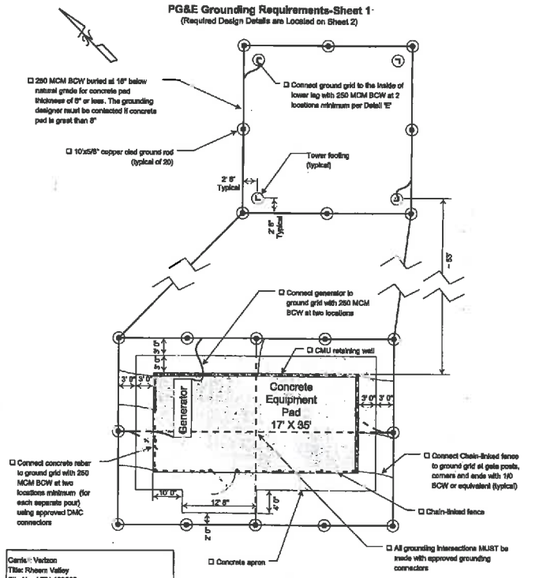
SHEET TITLE
ELECTRICAL DETAILS

SHEET NUMBER
E-6

Apr 21, 2010 - 1:18pm jdejandrina P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265--ELEC.dwg

PG&E Grounding Requirements-Sheet 1

(Required Design Details are Located on Sheet 2)



Carrier: Verizon Title: Rheem Valley Site No.: VZN-123265 Co-Location: None Line Name: Contra Costa-Moraga #1 & 2 230 kV Tower No.: 24/111 Tower SAP No.: 40746301			
Drawn By: Greg Chang Phone: (925) 866-5515	SIZE D	PG&E Proj Mgr: Sean Randall Phone: (415) 515-6849	DWG NO VZN-123265 REV 0
Approved By: Marcia Eblen	From Dwg Dated 6/26/09	Issue Date: 9/14/09	SHEET 1 of 2

Pacific Gas and Electric Company

Report Date: 9/14/09
Revision: 0

High Voltage Transmission Tower Cell Site Datasheet

Site Information

Company:	Verizon		
Site name:	Rheem Valley	Site number:	VZN-123265
Site address:	Rheem Blvd. at Moraga Rd., Moraga		
PG&E Contact:	Greg Chang	Phone:	(925) 866-5515

Soil Data

Soil Model:	Horizontal 2 layer		
	Top	37.0 Ohm-meters	11.3 Feet
	Bottom	22.7 Ohm-meters	Infinite thickness

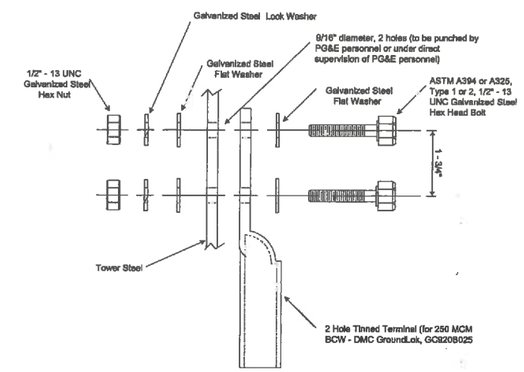
GPR Information

Grid Area	4,020	Ft^2
Grid Resistance	0.6	Ohms
Ground Fault Duty	17,964	Amps $_{RMS}$
X/R Ratio	8.2	
Voltage $_{(Line-Line)}$	230	kV $_{RMS}$
DC Offset	1.68	
GPR $_{RMS}$	10,359	Volts $_{RMS}$
GPR Peak Symmetrical	14,650	Volts (Peak Symmetrical)
GPR Peak with DC Offset	24,647	Volts (Peak Asymmetrical)

Greg Chang
PG&E Representative

9/14/2009
Date

'DETAIL E'
Tower Ground Connection Detail



Note s:

1. Tower steel to be drilled/punched by PG&E Tower Contract crew.
2. Clean area on tower leg where connector is to be bolted with a wire brush. Use Penetrox "A" or equivalent, as a coating between connector and tower leg.
3. All bolting material per ASTM A 394 or A325, Type 1 or 2. Bolts to be torqued to 480 in/lbs.
4. After installation and torquing, 'center punch' the bolt threads in at least one location at the Hex Nut interface.

Title: Tower Ground Connection			
Drawn By: Greg Chang	SIZE J	Revision Date: 7/19/05	DWG NO Tower Ground Connection - Detail 'E' REV 3
Approved By: Marcia Eblen, PE	SCALE Not To Scale		SHEET 1 of 1

The following design details MUST BE incorporated into the final engineering and construction drawings for the cell site ground grid. Where conflicts arises between these details and cell vendor generic details, these details SHALL prevail.

REQUIRED DESIGN DETAILS:

☐_____1. All grounding connections and grid intersections SHALL be made using approved 'DMC GroundLok System' compression components. Carrier to supply 250 MCM BCW pigtail with DMC 2-hole NEMA connector. Final connection to the tower legs SHALL be made per detail 'E'.

☐_____2. Ground grid safety calculations are based on the ground grid conductors being at 18" below natural grade with a concrete equipment pad of no more than 8" thick. Any pad thickness greater than 8" MUST be verified as acceptable by the grounding designer.

☐_____3. All above ground metallic equipment SHALL be located fully within (3'-0" minimum) the concrete pad (including open doors and panels). Cable trays and conduits running outside the concrete pad MUST be non-metallic.

☐_____4. All concrete SHALL contain #4 rebar with a 1'-0" maximum grid spacing. All rebar intersections MUST be securely tied together. If concrete is poured in separate sections, each section must be connected to ground grid with 2-250 kcmil BCW or equivalent.

☐_____5. Coax ground MUST be connected to the ground grid with 2-250 kcmil BCW or equivalent. If more than one ground bus is used, all ground buses must be either connected together or connected to ground grid separately with #2 BCW or larger.

☐_____6. All fences MUST be of non-conductive material.

☐_____7. Electric meter MUST be located fully within the boundary of the fenced equipment area. Any exception to this MUST be cleared through Marcia Eblen prior to construction (925) 866-5304 prior to construction. Special service requirements may be required to isolate ground grid from other customer neutral wires.

☐_____8. Meter ground rod MUST be attached to the cell site ground grid with a 250 kcmil BCW or equivalent.

☐_____9. Ground grid backfill material (at least 6") covering the 250 MCM BCW MUST be clean loamy material (or conductive material) and be free of rocks and foreign material.

☐_____10. If drilling is required to achieve ground rod depth, a minimum 2" hole is required. The hole MUST be backfilled with bentonite (or equivalent) material.

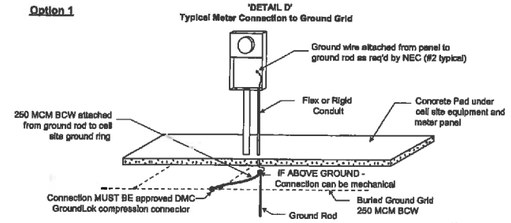
☐_____11. For safety reasons, the ground grid MUST be completely installed (fully covered), the concrete pad MUST be completed before the ground grid is attached to the tower legs. Do not allow the ground pigtails to come into contact with tower until the final connection is ready to be made.

☐_____12. Concrete pad size or any dimension stated on sheet 1 can not be changed without prior authorization from the grounding designer.

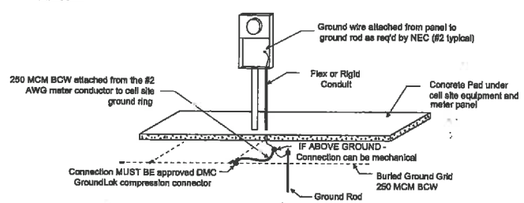
Carrier: Verizon Title: Rheem Valley Site No.: VZN-123265 Co-Location: None Line Name: Contra Costa-Moraga #1 & 2 230 kV Tower No.: 24/111 Tower SAP No.: 40746301			
Drawn By: Greg Chang Phone: (925) 866-5515	SIZE D	PG&E Proj Mgr: Sean Randall Phone: (415) 515-6849	DWG NO VZN-123265 REV 0
Approved By: Marcia Eblen	From Dwg Dated 6/26/09	Issue Date: 9/14/09	SHEET 2 of 2

Option 1

'DETAIL D'
Typical Meter Connection to Ground Grid



Option 2



Title: Typical Grounding Connection from Cell Site to Meter			
Drawn By: HJE Revision Drawn By: Greg Chang	SIZE J	Revision Date: 7/19/05	DWG NO Meter Connection - Detail 'D' REV 2
Approved By: Marcia Eblen, PE	SCALE Not To Scale		SHEET 1 of 1

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ARE SEAL

PROJECT NO: 123265
DRAWN BY: MIF
CHECKED BY: RZ
CAD FILE: 123265

SUBMITTALS

2	04/21/10	100% CONSTRUCTION
1	04/01/10	90% CONSTRUCTION
0	03/02/10	60% CONSTRUCTION

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SITE
123265
RHEEM VALLEY
RHEEM BLVD. & MORAGA RD.
MORAGA, CA 94556
CONTRA COSTA COUNTY

SHEET TITLE
PG&E GROUNDING REQUIREMENTS

SHEET NUMBER
E-7

Apr 21, 2010 - 1:18pm jdelejandrine P:_VERIZON\VERIZON ACTIVE_VERIZON SF_NSA Verizon\Project Sites\NSA WIRELESS\123265 Rheem\CDS\123265-ELEC.dwg