Staff Report for Administrative Approval
Hillside Review – Notice of Conditional Approval

Weber County Planning Division

Synopsis

Application Information

Application Request: Consideration and action on a request to approve a Hillside Review for the Mariani residence located on Lot 5 in the Big Sky No. 1 Subdivision.
Applicant: David and Gayle Mariani
File Number: HSR 2016-09

Property Information

Approximate Address: 2337 Panorama Circle Liberty, UT 84310
Project Area: 1.05 acres
Zoning: FV-3
Existing Land Use: Vacant
Proposed Land Use: Single Family Residence
Parcel ID: 22-042-0002
Township, Range, Section: 7N, 1E, 33

Adjacent Land Use

North: Residential **South:** Residential
East: Residential **West:** Residential

Staff Information

Report Presenter: Ronda Kippen
rkippen@co.weber.ut.us
801-399-8768
Report Reviewer: RG

Applicable Ordinances

- Weber County Land Use Code Title 108 (Standards) Chapter 14 (Hillside Development Review)
- Weber County Land Use Code Title 104 (Zones) Chapter 27 (Natural Hazards Overlay District)

Background

It was determined during the building permit review process by the County Engineering Division that due to the potential of a geologic hazard being located on the site, the property would be subject to a Hillside Review. The property owner hired Western GeoLogic and GSH Geotechnical, Inc. to perform the required geologic and geotechnical investigation to determine if there is a geologic hazard located on the site in order to better design the home for safety purposes. Information related to the construction of the dwelling including a site plan, landscape plans, grading plans, the geologic and geotechnical reports, were distributed to the Hillside Review Board for comment. The plans have been reviewed and conditionally approved by all applicable review agencies.

Planning Division Review

The Planning Division Staff has determined that the requirements and standards provided by the Hillside Review Chapter have been met for the excavation and construction of the dwelling. The following submittals were required:

1. Proposed Building Plans including site plan, grading plan and landscape plan (see Exhibit A)
2. Geotechnical and Geologic Investigation Report (see Exhibit B)
3. Utah Pollution Discharge Elimination system (UPDES) Permit with Storm water Pollution Prevention Plan (See Building Permit Application Packet for UPDES and SWPPP)

Weber County Hillside Review Board comments

The Weber County Hillside Review Board, on this particular application, made comments related to the following:

Weber County Engineering Division: The Engineering Division granted approval on August 30, 2016. The approval is subject to the applicant following all recommendations found in the applicable Geotechnical and Geological Investigation Reports and based on the following conditions:

1. Geologic staff must be on site to observe and test during site preparation and earthwork.
2. GSH must review the final grading plans for the project prior to initiation of any construction.
3. Surface drainage at the crest and toe of slopes, as well as on the uphill side of structures shall be diverted to keep from raising groundwater levels.

Subsequent recommendations may be necessary if additional geologic hazards are exposed during the excavation and construction phase of the dwelling.

<u>*Weber Fire District:*</u> The Fire district granted approval on October 19, 2016 subject to the following comments:

1. Provide a temporary address marker at the building site during construction.
2. Fire Access via Driveways: Driveways serving no more than 5 residences shall have a minimum clear width of 16 feet with a minimum of 12 feet of drive-able surface (measured from face of curb to face of curb) and a vertical clearance of 13 foot 6 inches and shall be capable of supporting a 75,000 pound load. Driveways in excess of 150 feet shall be provided with turn-arounds. Driveways exceeding 200 feet in length and less than 20 feet in width shall be provided with turnouts in addition to turnarounds. (See driveways- 2006 Wildland Urban Interface Code used as a reference for residential driveway requirements exceeding 150 feet in length). Roads and driveways shall also comply with City/County standards as applicable. In cases of differing requirements, contact the Fire Marshal for clarification.
3. All roads shall be designed, constructed, surfaced and maintained so as to provide an all-weather driving surface.
4. Fire access roads for this project shall be completed and approved prior to any combustible construction. Temporary roads shall meet the same requirements for height, width and imposed loads as permanent roads.
5. All required fire hydrants and water systems shall be installed, approved and fully functional prior to any combustible construction.

This review does not relieve the owner, contractor and/or developer from compliance with any and all applicable codes and standards. Any change or revision of this plan will render this review void and will require submittal of the new or revised layout for fire department review.

<u>*Weber County Building Inspection Department:*</u> The Building Inspection Department granted approval on October 18, 2016 based on the following conditions:

1. The geologist and geotechnical engineer will need to approve the soils prior to placement of footings.
2. Provide an acknowledgement from the Structural Engineer of the study

<u>*Weber-Morgan Health Department:*</u> The Health Department has reviewed the proposal and has made the following comment:

> "As part of the hillside review process our office has commonly placed the burden on the applicant to show that a code compliant onsite wastewater treatment system may be installed on the property. The parcel has been deemed suitable for the installation of a packed bed media system using a design application rate of 0.35 gallon/day/sq foot with a maximum trench depth of 24 below original grade. The system may also be designed utilizing a drip irrigation drain field post packed bed media treatment system if desired.
>
> No drain field may be installed on sloped in excess of 25%, and excavating to create slopes less than 25% by removal of topsoil may remove all permissible soils and should not be done before submittal and approval of a grading plan to our office.
>
> As part of the hillside review what must be submit to our office is the location of a reasonably sized original and replacement septic drain field utilizing the aforementioned application rate, and the number of bedroom of which the system is being designed. If grading is required to accomplish the required footprint of the original and replacement septic drain field then a grading plan showing initial and post grading will be required.
> Please refer to the Utah Administrative code R317-4 and the Weber-Morgan Health Department Onsite Wastewater System Regulation for all system requirements"

The applicant will need to address and meet all of the Weber-Morgan Health Department concerns prior to receiving approval of a building permit for Lot 5. The Hillside Review approval will be subject to and conditioned upon receiving approval from the Weber-Morgan Health Department.

Weber County Planning Division: The Planning Division staff is recommending approval subject to the applicant complying with all Board requirements and conditions. This approval is also subject to the applicant strictly adhering to the recommendations outlined in the geologic report by Western GeoLogic dated June 9, 2016 and the geotechnical report by GSH Job No. 2104-01N-16 dated July 15, 2016 including the following recommendations:

- All excavation shall be observed by a Western GeoLogic and GSH representative to assess the exposed foundation soils, to evaluate the site and to ensure that the recommendations presented in the Geotechnical and Geological Report have been compiled with.
- Western GeoLogic recommends that proper drainage is maintained to ensure the slope stability is not destabilized.
- Mass movement/landslide deposits must be removed in their entirety from beneath the proposed home and extending a minimum of 10 feet outside the home area. If this is not feasible, GSH must be contacted to provide additional recommendations for foundation support.
- A subdrain system must be installed upslope of the home and near the head of the mass movement deposit soils below the home to reduce the potential for surface water infiltration
- The on-site soils are not appropriate to be used as structural site grading fill; however, they may be used as general grading fill in landscape areas.
- A geotechnical engineer from GSH will need to verify that all mass movement deposit soils, fill material (if encountered) and topsoil/disturbed soils have been completely removed and suitable natural soils encountered prior to the placement of structural site grading fills, floor slabs, foundations, or rigid pavements.
- It is the client's responsibility to ensure that all designers, contractors and subcontractors are aware of these reports and that a representative from Western GeoLogic and GSH will be onsite during construction to ensure that all conditions and recommendations will be implemented.

Planning Division Recommendations

Based on site inspections and review agency comments, the Planning Division Staff has determined that it is necessary to impose additional requirements and conditions as part of approving HSR #2016-09. The recommendation for approval is subject to adherence to all review agencies conditions and based on the following conditions:

1. The geologist and geotechnical engineer will need to approve the soils prior to placement of footings.
2. A signed statement from the Structural Engineer must be provided to the Building Official acknowledging the study.
3. GSH must review the final grading plans for the project prior to initiation of any construction. A letter from GSH approving the final grading plans shall be provided to the Weber County Engineering Division.
4. All site preparation, earthwork and excavation shall be observed by a Western GeoLogic and GSH representative to assess the exposed foundation soils, to evaluate the site and to ensure that the recommendations presented in the Geotechnical and Geological Report have been compiled with.
5. Mass movement/landslide deposits must be removed in their entirety from beneath the proposed home and extending a minimum of 10 feet outside the home area. If this is not feasible, GSH must be contacted to provide additional recommendations for foundation support.
6. A subdrain system must be installed upslope of the home and near the head of the mass movement deposit soils below the home to reduce the potential for surface water infiltration
7. The on-site soils are not appropriate to be used as structural site grading fill; however, they may be used as general grading fill in landscape areas.
8. A geotechnical engineer from GSH will need to verify that all mass movement deposit soils, fill material (if encountered) and topsoil/disturbed soils have been completely removed and suitable natural soils encountered prior to the placement of structural site grading fills, floor slabs, foundations, or rigid pavements.
9. It is the client's responsibility to ensure that all designers, contractors and subcontractors are aware of these reports and that a representative from Western GeoLogic and GSH will be onsite during construction to ensure that all conditions and recommendations will be implemented.
10. All conditions and requirements of the Weber-Morgan Health Department will be addressed prior to receiving an approved building permit.

The recommendation is based on the following findings:

1. The application was submitted and with the required conditions, has been deemed complete.
2. The requirements and standards found in the Hillside Development Review Procedures and Standards Chapter have been met or will be met based on the outlined conditions during the excavation and construction phase

of the dwelling.

3. The Hillside Review Board members reviewed the application individually and have provided their comments.
4. The applicant has met or will meet, as part of the building permit process and/or during the excavation and construction phase of the dwelling, the requirements and conditions set forth by the Hillside Review Board. The Planning Division Staff has determined that the proposed improvements have been sited within the required setbacks for the FV-3 zone.

Administrative Approval

Administrative approval of Lot 5 in the Big Sky No. 1 Subdivision (HR#2016-09), is hereby granted based upon its compliance with the Weber County Land Use Code. This approval is subject to the requirements of applicable review agencies and is based on the recommendations, conditions and findings listed in this staff report.

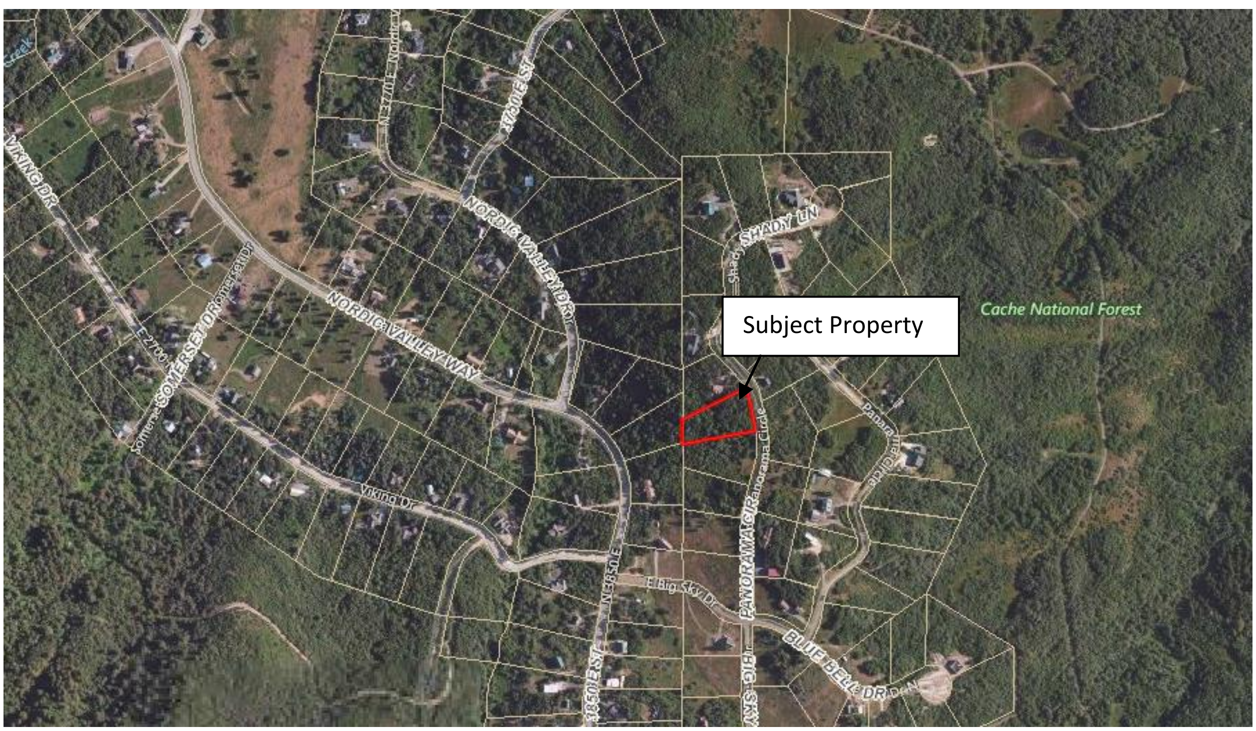
Date of Administrative Approval: ________________________

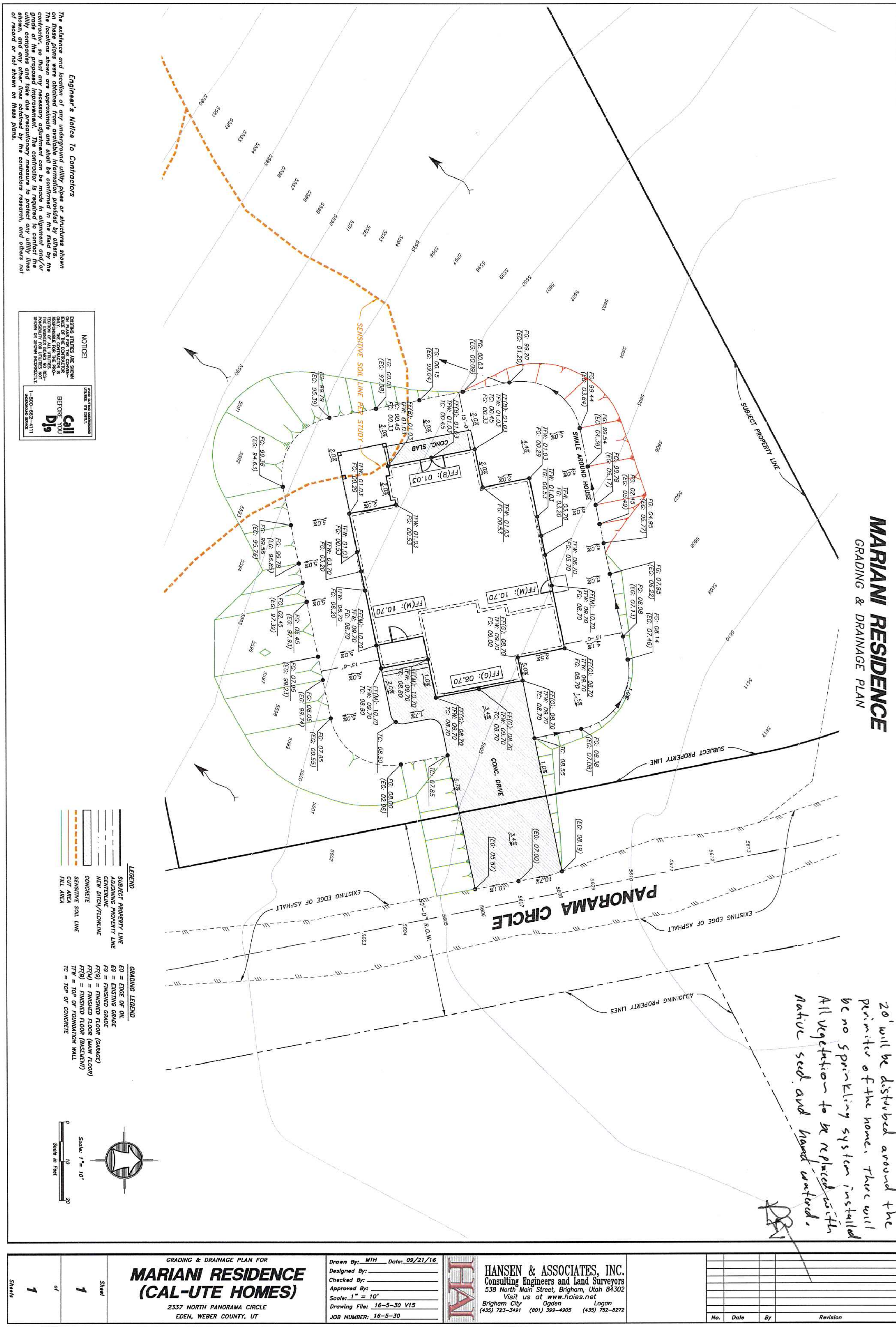
____
Rick Grover
Weber County Planning Director

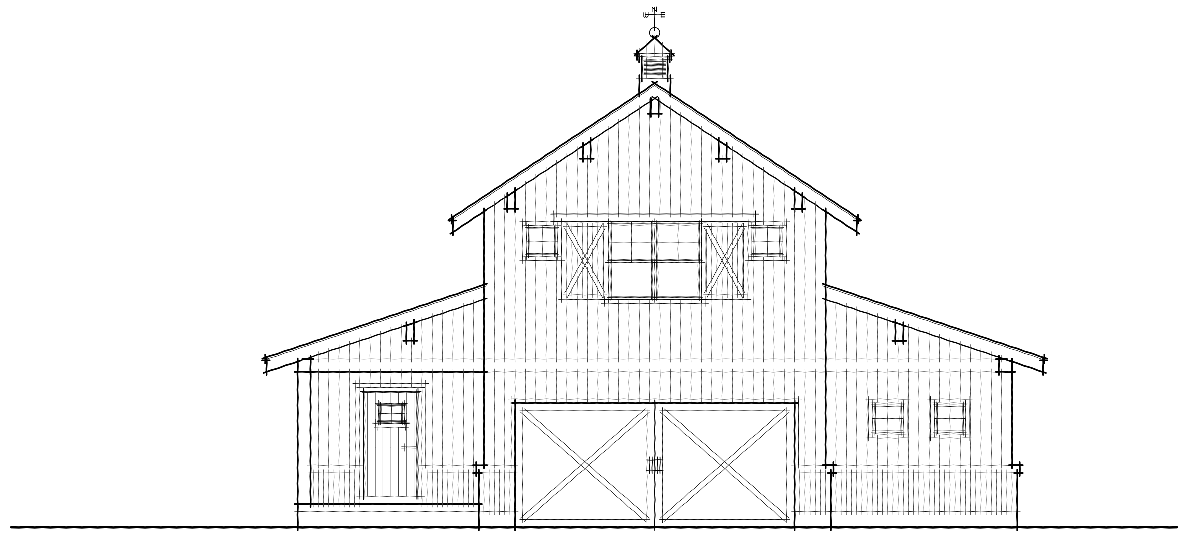
Exhibits

A. Proposed Site and Building Plans
B. Geotechnical and Geologic Investigation Report

Map 1




MARIANI RESIDENCE
GRADING & DRAINAGE PLAN
Engineer's Notice To Contractors
The existence and location of any underground utility pipes or structures shown on these plans were obtained from available information provided by others. The locations shown are approximate and shall be confirmed in the field by the contractor, so that any necessary adjustment can be made in alignment and/or grade of the proposed improvement. The contractor is required to contact the utility companies and take due precautionary measure to protect any utility lines shown, and any other lines obtained by the contractors research, and others not of record or not shown on these plans.
NOTICE!
Call BEFORE YOU Dig
1-800-662-4111
SUBJECT PROPERTY LINE
SENSITIVE SOIL LINE PER STUDY
SWALE AROUND HOUSE
CONC. SLAB
CONC. DRIVE
FF(B): 01.03
FF(M): 10.70
FF(G): 08.70
PANORAMA CIRCLE
EXISTING EDGE OF ASPHALT
ADJOINING PROPERTY LINES
60'-0" R.O.W.
LEGEND
SUBJECT PROPERTY LINE
ADJOINING PROPERTY LINE
CENTERLINE
NEW DITCH/FLOWLINE
CONCRETE
SENSITIVE SOIL LINE
CUT AREA
FILL AREA
GRADING LEGEND
EO = EDGE OF OIL
EG = EXISTING GRADE
FG = FINISHED GRADE
FF(G) = FINISHED FLOOR (GARAGE)
FF(M) = FINISHED FLOOR (MAIN FLOOR)
FF(B) = FINISHED FLOOR (BASEMENT)
TFW = TOP OF FOUNDATION WALL
TC = TOP OF CONCRETE
Scale: 1" = 10'
Scale in Feet
20' will be disturbed around the perimiter of the home. There will be no sprinkling system installed. All vegetation to be replaced with native seed and hand watered.
GRADING & DRAINAGE PLAN FOR
MARIANI RESIDENCE (CAL-UTE HOMES)
2337 NORTH PANORAMA CIRCLE
EDEN, WEBER COUNTY, UT
Drawn By: MTH Date: 09/21/16
Designed By:
Checked By:
Approved By:
Scale: 1" = 10'
Drawing File: 16-5-30 V15
JOB NUMBER: 16-5-30
HANSEN & ASSOCIATES, INC.
Consulting Engineers and Land Surveyors
538 North Main Street, Brigham, Utah 84302
Visit us at www.haies.net
Brigham City (435) 723-3491
Ogden (801) 399-4905
Logan (435) 752-8272
Sheet 1 of 1 Sheets
No. Date By Revision



MARIANI RESIDENCE

AN RML DESIGN PROJECT

Exhibit A-Site & Building Plans

GENERAL NOTES

THE GENERAL CONTRACTOR ASSUMES FULL RESPONSIBILITY TO VERIFY THE CONDITIONS, DIMENSIONS, AND STRUCTURAL DETAILS OF THE BUILDING. THE CONTRACTOR ASSUMES FULL LIABILITY FOR ANY PROBLEMS THAT MAY ARISE DUE TO POSSIBLE ERRORS OR OMISSIONS ON THESE PLANS. USE OF THESE PLANS CONSTITUTES COMPLIANCE WITH THE ABOVE TERMS.

IT IS THE DUTY OF THE GENERAL CONTRACTOR TO DISCOVER ANY POTENTIAL ERRORS, OMISSIONS, OR INCONSISTENCIES IN THESE PLANS AND TO REQUEST A SOLUTION OR CLARIFICATION BEFORE CONSTRUCTION BEGINS ON THIS PROJECT.

WORKMANSHIP THROUGHOUT SHALL BE OF THE BEST QUALITY OF THE TRADE INVOLVED AND THE GENERAL CONTRACTOR SHALL COORDINATE THE WORK OF THE VARIOUS TRADES TO EXPEDITE THE JOB IN A SMOOTH AND CONTINUOUS PROCESS.

UNLESS OTHERWISE NOTED, ALL DETAILS, SECTIONS, AND NOTES SHOWN ON THE CONTRACT DRAWINGS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO SIMILAR CONDITIONS ELSEWHERE.

ALL OMISSIONS OR CONFLICTS BETWEEN THE VARIOUS ELEMENTS OF THE CONTRACT DRAWINGS AND OR SPECIFICATIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH ANY WORK INVOLVED.

ALL CONSTRUCTION SHALL BE IN ACCORDANCE TO THE 2012 INTERNATIONAL RESIDENTIAL CODE

THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND THE SAFETY IN AND AROUND THE JOB SITE AND OF ADJACENT PROPERTIES.

THE GENERAL CONTRACTOR AND/OR OWNER SHALL KEEP LOADS ON THE STRUCTURE WITHIN THE LIMITS OF THE DESIGN BOTH DURING AND AFTER CONSTRUCTION.

COMPLIANCE WITH CODES AND ORDINANCES GOVERNING THE WORK SHALL BE MADE AND ENFORCED BY THE GENERAL CONTRACTOR.

NOTE THAT ALL WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALE.

NOTE THAT ALL PLAN VIEWS TAKE PRECEDENCE OVER ELEVATIONS AND SECTIONS.

ALL MATERIALS, SYSTEMS AND EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS AND THE PROVISIONS OF THIS CODE

ALL INSTALLERS MUST BE APPROVED BY THE MANUFACTURER

PROFESSIONALS

DESIGNER

RML DESIGN

RANDALL M. LEWIS
1436 S. LEGEND HILLS DRIVE
SUITE #320
CLEARFIELD, UTAH, 84015
801-217-3727

ENGINEERS

PRICE ENGINEERING

KYLE PRICE
1436 S. LEGEND HILLS DR. #318
CLEARFIELD, UTAH 84015
801-771-0542

CONTRACTOR

SOLITUDE BUILDERS

CARSON YOUNG
PO BOX 529
EDEN, UTAH 84310
(801) 452-5020

BUILDING INFORMATION

OWNER

DAVE & GAYLE MARIANI

ADDRESS

LOT # 5
BIG SKY ESTATES
WEBER COUNTY, UTAH

SQUARE FOOTAGE

UPPER LEVEL	787 SQ. FT.
MAIN LEVEL	1552 SQ. FT.
TOTAL	2339 SQ. FT.
LOWER LEVEL	1552 SQ. FT.
BONUS ROOM	N/A
GARAGE	710 SQ. FT.

DRAWING INDEX

RML DESIGN
1436 S. LEGEND HILLS DR. #320
CLEARFIELD, UTAH 84015
801. 217. 3727

PROJECT NAME:
MARIANI
RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
BIG SKY ESTATES

COUNTY
WEBER
STATE
UTAH

CLIENT NAME:
DAVE & GAYLE
MARIANI

PLAN NAME:
CUSTOM

ORIGINAL RELEASE:
MAY 17, 2016

REVISION DATES
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX

MARIANI-C-XXX-3-16-B

COVER

A0 | 1

Exhibit A-Site & Building Plans

LIGHT AND VENTILATION NOTES

1. ALL HABITABLE ROOMS SHALL HAVE AN AGGREGATE GLAZING AREA OF NOT LESS THAN 8 PERCENT OF THE FLOOR AREA OF SUCH ROOMS. NATURAL VENTILATION SHALL BE THROUGH WINODWS, DOORS, LOUVERS OR OTHER APPROVED OPENINGS TO THE OUTDOOR AIR. SUCH OPENINGS SHALL BE PROVIDED WITH READY ACCESS OR SHALL OTHERWISE BE READILY CONTROLABLE BY THE BUILDING OCCUPANTS. THE MINIMUM OPENABLE AREA TO THE OUTDOORS SHALL BE 4 PERCENT OF THE FLOOR AREA BEING VENTILATED. 2012 IRC SECTION R303.1
2. THE GLAZED AREAS NEED NOT BE OPENABLE WHERE THE OPENING IS NOT REQUIRED BY SECTION R310 AND AN APPROVED MECHANICAL VENTILATION SYSTEM IS INSTALLED IN ACCORDANCE WITH SECTION M1507. 2012 IRC SECTION R303.1.1
3. THE GLAZED AREAS NEED NOT BE INSTALLED IN ROOMS WHERE EXCEPTION ONE ABOVE IS SATISFIED AND ARTIFICIAL LIGHT IS PROVIDED CAPABLE OF PRODUCING AN AVERAGE ILLUMINATION OF 6 FOOTCANDLES (65 LUX) OVER THE AREA OF THE ROOM AT A HEIGHT OF 30" (762MM) ABOVE THE FLOOR LEVEL. 2012 IRC SECTION R303.1.2
4. BATHROOMS, WATER CLOSET COMPARTMENTS AND OTHER SIMILAR ROOMS SHALL BE PROVIDED WITH AGGREGATE GLAZING AREA IN WINDOW OF NOT LESS THAN THREE SQUARE FEET, ONE-HALF OF WHICH MIUST BE OPENABLE. 2012 IRC SECTION R303.3
5. THE GLAZED AREA SHALL NOT BE REQUIRED WHERE ARTIFICIAL LIGHT AND A MECHANICAL VENTILATION SYSTEM ARE PROVIDED. THE MINIMUM VENTILATION RATES SHALL BE 50 CFM (24 L/S) FOR INTERMITTENT VENTILATION OR 20 CFM (10 L/S) FOR CONTINUOUS VENTILATION. VENTILATION AIR FROM THE SPACE SHALL BE EXHAUSTED DIRECTLY TO THE OUTSIDE. 2012 IRC SECTION R303.3 EXCEPTION
6. ALL INTERIOR AND EXTERIOR STAIRWAYS SHALL BE PROVIDED WITH A MEANS TO ILLUMINATE THE STAIRS, INCLUDING THE LANDINGS AND TREADS. INTERIOR STAIRWAYS SHALL BE PROVIDED WITH AN ARTIFICIAL LIGHT SOURCE LOCATED IN THE IMMEDIATE VICINITY OF EACH LANDING OF THE STAIRWAY. FOR INTERIOR STAIRS THE ARTIFICIAL LIGHT SOURCES SHALL BE CAPABLE OF ILLUMINATING TREADS AND LANDINGS TO LEVELS NOT LESS THAN 1 FOOT-CANDLE (11 LUX) MEASURED AT THE CENTER OF TREADS AND LANDINGS. EXTERIOR STAIRWAYS SHALL BE PROVIDED WITH AN ARTIFICIAL LIGHT SOURCE LOCATED IN THE IMMEDIATE VICINITY OF THE TOP LANDING OF THE STAIRWAY. EXTERIOR STAIRWAYS PROVIDING ACCESS TO A BASEMENT FROM THE OUTSIDE GRADE LEVEL SHALL BE PROVIDED WITH AN ARTIFICIAL LIGHT SOURCE LOCATED IN THE IMMEDIATE VICINITY OF THE BOTTOM LANDING OF THE STAIRWAY. 2012 IRC SECTION R303.7
7. AN ARTIFICIAL LIGHT SOURCE IS NOT REQUIRED AT THE TOP AND BOTTOM LANDING, PROVIDED AN ARTIFICIAL LIGHT SOURCE IS LOCATED DIRECTLY OVER EACH STAIRWAY SECTION. 2012 IRC SECTION R303.7 EXCEPTION
8. WHERE LIGHTING OUTLETS ARE INSTALLED IN INTERIOR STAIRWAYS, THERE SHALL BE A WALL SWITCH AT EACH FLOOR LEVEL TO CONTROL THE LIGHTING OUTLET WHERE THE STAIRWAY HAS SIX OR MORE RISERS. THE ILLUMINATION OF EXTERIOR STAIRWAYS SHALL BE CONTROLLED FROM INSIDE THE DWELLING UNIT. 2012 IRC SECTION 303.7.1

GLASS & GLAZING NOTES

1. 1. SAFETY GLASS (TEMPERED) SHALL BE USED IN ALL HAZARDOUS LOCATIONS. THE FOLLOWING SHALL BE CONSIDERED SPECIFIC HAZARDOUS LOCATIONS FOR THE PURPOSE OF GLAZING: 2012 IRC R308.4
   - GLAZING IN SWINGING DOORS EXCEPT JALOUSIES.
   - GLAZING IN FIXED AND SLIDING PANELS OF SLIDING DOOR ASSEMBLIES AND PANELS IN SLIDING AND BIFOLD CLOSET DOOR ASSEMBLIES.
   - GLAZING IN STORM DOORS.
   - GLAZING IN ALL UNFRAMED SWINGING DOORS.
   - GLAZING IN DOORS AND ENCLOSURES FOR HOT TUBS, WHIRLPOOLS, SAUNAS, STEAM ROOMS, BATHTUBS AND SHOWERS. GLAZING IN ANY PART OF A BUILDING WALL ENCLOSING THESE COMPARTMENTS WHERE THE BOTTOM EXPOSED EDGE OF THE GLAZING IS LESS THAN 60 INCHES (1524 MM) MEASURED VERTICALLY ABOVE ANY STANDING OR WALKING SURFACE.
   - GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL ADJACENT TO A DOOR WHERE THE NEAREST VERTICAL EDGE IS WITHIN A 24-INCH (610 MM) ARC OF THE DOOR IN A CLOSED POSITION AND WHOSE BOTTOM EDGE IS LESS THAN 60 INCHES (1524 MM) ABOVE THE FLOOR OR WALKING SURFACE.
2. GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL, OTHER THAN THOSE LOCATIONS DESCRIBED ABOVE THAT MEETS ALL OF THE FOLLOWING CONDITIONS:
   3.1 EXPOSED AREA OF AN INDIVIDUAL PANE LARGER THAN 9 SQUARE FEET (0.836M2).
   3.2 BOTTOM EDGE LESS THAN 18 INCHES (457 MM) ABOVE THE FLOOR.
   3.3 TOP EDGE MORE THAN 36 INCHES (914 MM) ABOVE THE FLOOR.
   3.4 ONE OR MORE WALKING SURFACES WITHIN 36 INCHES (914 MM) HORIZONTALLY OF THE GLAZING.
3. ALL GLAZING IN RAILINGS REGARDLESS OF AN AREA OF HEIGHT ABOVE A WALKING SURFACE. INCLUDED ARE STRUCTURAL BALUSTER PANELS AND NONSTRUCTURAL INFILL PANELS. 2012 IRC SECTION R308.4.4
4. GLAZING IN WALLS AND FENCES ENCLOSING INDOOR AND OUTDOOR SWIMMING POOLS, HOT TUBS AND SPAS WHERE THE BOTTOM EDGE OF THE GLAZING IS LESS THAN 60 INCHES (1524 MM) ABOVE A WALKING SURFACE AND WITHIN 60 INCHES (1524 MM) HORIZONTALLY OF THE WATER'S EDGE. THIS SHALL APPLY TO SINGLE GLAZING AND TO ALL PANES IN MULTIPLE GLAZING. 2012 IRC SECTON 308.4.5
5. GLAZING ADJACENT TO STAIRWAYS, LANDINGS AND RAMPS WITHIN 36 INCHES (914 MM) HORIZONTALLY OF A WALKING SURFACE WHEN THE EXPOSED SURFACE OF THE GLASS IS LESS THAN 60 INCHES (1524 MM) ABOVE THE PLANE OF THE ADJACENT WALKING SURFACE. 2012 IRC SECTION R308.4.6
6. GLAZING ADJACENT TO STAIRWAYS WITHIN 60 INCHES (1524 MM) HORIZONTALLY OF THE BOTTOM TREAD OF A STAIRWAY IN ANY DIRECTION WHEN THE EXPOSED SURFACE OF THE GLASS IS LESS THAN 60 INCHES (1524 MM) ABOVE THE NOSE OF THE TREAD. 2012 IRC SECTION R308.4.7

FOUNDATION DRAINAGE NOTES

1. DRAINS SHALL BE PROVIDED AROUND ALL CONCRETE OR MASONRY FOUNDATIONS THAT RETAIN EARTH AND ENCLOSE HABITABLE OR USABLE SPACES LOCATED BELOW GRADE. DRAINAGE TILE, GRAVEL, OR CRUSHED STONE DRAINS, PERFORATED PIPE OR OTHER APPROVED SYSTEMS OR MATERIALS SHALL BE INSTALLED AT OR BELOW THE AREA TO BE PROTECTED AND SHALL DISCHARGE BY GRAVITY OR MECHANICAL MEANS INTO AN APPROVED DRAINAGE SYSTEM. GRAVEL OR CRUSHED STONE DRAINS SHALL EXTEND AT LEAST 1 FOOT BEYOND THE OUTSIDE EDGE OF THE FOOTING AND 6 INCHES ABOVE THE FOOTING AND BE COVERED WITH AN APPROVED FILTER MEMBRANE MATERIAL. THE TOP OF THE OPEN JOINTS OF DRAIN TILES SHALL BE PROTECTED WITH STRIPS OF BUILDING PAPER, AND THE DRAINAGE TILES OR PERFORATED PIPE SHALL BE PLACED ON A MINIMUM OF 2 INCHES OF WASHED GRAVEL OR CRUSHED ROCK AT LEAST ONE SIEVE SIZE LARGER THAN THE TILE JOINT OPENING OR THE PERFORATION ON COVERED WITH NOT LESS THAN 6 INCHES OF THE SAME MATERIAL 2012 IRC SECTION R405.1

   A DRAINAGE SYSTEM IS NOT REQUIRED WHEN THE FOUNDATION IS INSTALLED ON WELL-DRAINED GROUND OR SAND-GRAVEL MIXTURE SOILS ACCORDING TO THE UNIFIED SOIL CLASSIFICATION SYSTEM.
   2012 IRC SECTION R405.1 EXCEPTION
2. SURFACE DRAINAGE SHALL BE DIVERTED TO A STORM SEWER CONVEYANCE OR OTHER APPROVED POINT OF COLLECTION THAT DOES NOT CREATE A HAZARD. LOTS SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE SHALL FALL A MINIMUM OF 6 INCHES (152 MM) WITHIN THE FIRST 10 FEET (3048 MM) 2012 IRC SECTION R401.3

PLUMBING NOTES

1. FUEL-FIRED WATER HEATERS SHALL NOT BE INSTALLED IN A ROOM USED AS A STORAGE CLOSET. WATER HEATERS LOCATED IN A BEDROOM OR BATHROOM SHALL BE INSTALLED IN A SEALED ENCLOSURE SO THAT COMBUSTION AIR WILL NOT BE TAKEN FROM THE LIVING SPACE. INSTALLATION OF DIRECT-VENT WATER HEATERS WITHIN AN ENCLOSURE US NOT REQUIRED. 2012 IRC SECTION M 2005.2
2. WHERE A STORAGE TANK-TYPE WATER HEATER OR A HOT WATER STORAGE TANK IS INSTALLED IN A LOCATION WHERE WATER LEAKAGE FROM THE TANK WILL CAUSE DAMAGE, THE TANK SHALL BE INSTALLED IN A GALVANIZED SPEEL PAN HAVING A MATERIAL THICKNESS OF .0236" (.6010MM)(NO. 24 GAGE), OR OTHER PANS APPROVED FOR SUCH USE. LISTED PANS SHALL COMPLY WITH CSA LC3. 2012 IRC SECTION P2801.5
3. NO WATER PIPING DRAINAGE TRAPS SHALL BE PLACED IN WALLS WHICH ARE EXPOSED TO OUTSIDE AIR. THIS INCLUDES, BUT IS NOT LIMITED TO, UNHEATED GARAGES AND ATTIC WALLS.
4. WATER SOFTENER DRAINAGE OUTLETS SHALL BE CONNECTED TO THE BUILDING DRAINAGE SYSTEM THROUGH AIR GAPS.
5. PLUMBING VENTS SHALL TERMINATE AT LEAST 3 FEET ABOVE, 10 FEET AWAY FROM, OR 4 FEET BELOW AN OPENABLE WINDOW, DOOR, OR AIR INTAKE OPENINGS. 2012 IRC SECTION P3103.5
6. IN SEISMIC DESIGN CATEGORIES D0, D1, D2, AND TOWNHOUSES
   IN SEISMIC DESIGN CATEGORY C, WATER HEATERS SHALL BE ANCHORED OR STRAPPED IN THE UPPER ONE-THIRD AND THE LOWER ONE-THIRD OF THE APPLIANCE TO RESIST A HORIZONTAL FORCE EQUAL TO ONE-THIRD OF THE OPERATING WEIGHT OF THE WATER HEATER, ACTING IN ANY HORIZONTAL DIRECTION, OR IN ACCORDANCE WITH THE APPLIANCE MANUFACTURER'S RECOMMENDATIONS. MAINTAIN 4" CLEARANCE ABOVE CONTROLS FOR LOWER STRAP

   2012 IRC SECTIONS P2801.7 & M1307.2
7. BACKFLOW PREVENTERS SHALL NOT BE LOCATED IN AREAS SUBJECT TO FREEZING EXCEPT WHERE THEY CAN BE REMOVED BY MEANS OF UNIONS, OR ARE PROTECTED BY HEAT, INSULATION, OR BOTH. 2012 IRC SECTION P2902.6.2
8. INDIVIDUALLY INSULATE ALL PLUMBING, WATER, AND DRAIN LINES IN ALL AREAS SUBJECT TO FREEZING. EXTERIOR WALLS, ATTICS, CRAWL SPACES, GARAGES, AND EXTERIOR WALLS. WATER SERVICE PIPES SHALL BE INSTALLED NOT LESS THAN 12" DEEP AND NOT LESS THAN 6" BELOW THE FROST LINE. 2012 IRC SECTION P2603.5
9. CONCEALED SLIP JOINT FIXTURE CONNECTIONS SHALL BE PROVIDED WITH AN ACCESS PANEL TO THE UTILITY AREA WHICH HAS A MINIMUM DIMENSION OF 12 INCHES. THE ACCESS PANEL IS NOT REQUIRED WHEN THE JOINTS ARE MADE BY SCREWING, SOLDERING, OR SOLVENT CEMENTING TO MAKE A SOLID CONNECTION.
10. IN LOCALITIES HAVING A WINTER DESIGN TEMPERATURE OF 32°F (0°C) OR LOWER AS SHOWIN IN TABLE R301.2(1) OF THIS CODE, A WATER, SOIL, OR WASTE PIPE SHALL NOT BE INSTALLED OUTSIDE OF A BUILDING, IN EXTERIOR WALLS, IN ATTICS OR CRAWL SPACES, OR IN ANY OTHER PLACE SUBJECTED TO FREEZING TEMPERATURE UNLESS ADEQUATE PROVISION IS MADE TO PROTECT IT FROM FREEZING BY INSULATION OR HEAT OR BOTH. WATER SERVICE PIPE SHALL BE INSTALLED NOT LESS THAN 12 INCHES (305 MM) DEEP AND NOT LESS THAN 6 INCHES (152 MM) BELOW THE FROST LINE.
    2012 IRC SECTION P2603.5
11. OPEN VENT PIPES THAT EXTEND THROUGH A ROOF SHALL BE TERMINATED AT LEAST 6 INCHES (152 MM) ABOVE THE ROOF OR 6 INCHES (152 MM) ABOVE THE ANTICIPATED SNOW ACCUMULATION, WHICHEVER IS GREATER, EXCEPT THAT WHERE A ROOF IS TO BE USED FOR ANY PURPOSE OTHER THAN WEATHER PROTECTION, THE VENT EXTENSION SHALL BE RUN AT LEAST 7 FEET (2134 MM) ABOVE THE ROOF.

    2012 IRC SECTION P3103.1
12. WHERE THE 97.5 PERCENT VALUE FOR OUTSIDE DESIGN TEMPERATURE IS 0 DEGREES FAHRENHEIT (-18 DEGREES CELSIUS) OR LESS, EVERY VENT EXTENSION THROUGH A ROOF OR WALL SHALL BE A MINIMUM OF 3 INCHES (76 MM) IN DIAMETER. ANY INCREASE IN THE SIZE OF THE VENT SHALL BE MADE INSIDE THE STRUCTURE A MINIMUM OF 1 FOOT (305 MM) BELOW THE ROOF OR INSIDE THE WALL.
    2012 IRC SECTION P3103.2

PLUMBING NOTES CONT...

14. THE JUNCTURE OF EACH VENT PIPE WITH THE ROOF LINE SHALL BE MADE WATER TIGHT BY AN APPROVED FLASHING. VENT EXTENSIONS IN WALLS AND SOFFITS SHALL BE MADE WATER TIGHT BY CAULKING.
    2012 IRC SECTION P3103.3
15. VENT TERMINALS SHALL NOT BE USED AS A FLAG POLE OR TO SUPPORT FLAG POLES, TV AERIALS, OR SIMILAR ITEMS, EXCEPT WHEN THE PIPING HAS BEEN ANCHORED IN AN APPROVED MANNER.
    2012 IRC SECTION P3103.4
16. INDIVIDUAL SHOWER AND TUB/SHOWER COMBINATION VALVES SHALL BE EQUIPPED WITH CONTROL VALVES OF THE PRESSURE-BALANCE, THERMOSTATIC-MIXING OR COMBINATION PRESSURE-BALANCE/THERMOSTATIC-MIXING VALVE TYPES WITH A HIGH LIMIT STOP IN ACCORDANCE WITH ASSE 1016 OR CSA B125.1. THE HIGH LIMIT STOP SHALL BE SET TO LIMIT WATER TEMPERATURE TO A MAXIMUM OF 120 DEGREES FAHRENHEIT (49 DEGREES CELSIUS). IN-LINE THERMOSTATIC VALVES SHALL NOT BE USED FOR COMPLIANCE WITH THIS SECTION.
    2012 IRC SECTION P2708.3
17. THE HOT WATER SUPPLIED TO BATHTUBS AND WHIRLPOOL BATHTUBS SHALL BE LIMITED TO A MAXIMUM TEMPERATURE OF 120 DEGREES FAHRENHEIT (49 DEGREES CELSIUS) BY A WATER TEMPERATURE-LIMITING DEVICE THAT CONFORMS TO ASSE 1070 OR CSA B125.3, EXCEPT WHERE SUCH A PROTECTION IS OTHERWISE PROVIDED BY A COMBINATION TUB/SHOWER VALVE IN ACCORDANCE WITH SECTION P2708.3.
    2012 IRC SECTION P2713.3
18. A MEANS FOR CONTROLLING INCREASED PRESSURE CAUSED BY THERMAL EXPANSION SHALL BE PROVIDED WHERE REQUIRED IN ACCORDANCE WITH SECTIONS P2903.4.1 AND P2903.4.2
    2012 IRC SECTION P2903.4
19. FOR WATER SERVICE SYSTEM SIZES UP TO AND INCLUDING 2 INCHES (51 MM), A DEVICE FOR CONTROLLING PRESSURE SHALL BE INSTALLED WHERE, BECAUSE OF THERMAL EXPANSION, THE PRESSURE ON THE DOWNSTREAM SIDE OF A PRESSURE-REDUCING VALVE EXCEEDS THE PRESSURE-REDUCING VALVE SETTING.
    2012 IRC SECTION P2903.4.1
20. WHERE A BACKFLOW PREVENTION DEVICE, CHECK VALVE, OR OTHER DEVICE IS INSTALLED ON A WATER SUPPLY SYSTEM UTILIZING STORAGE WATER HEATING EQUIPMENT SUCH THAT THERMAL EXPANSION CAUSES AN INCREASE IN PRESSURE, A DEVICE FOR CONTROLLING PRESSURE SHALL BE INSTALLED.
    2012 IRC SECTION P2903.4.2
21. FIBER-CEMENT, FIBER-MAT REINFORCED CEMENTITIOUS BACKER UNITS, GLASS MAT GYPSUM BACKERS OR FIBER-REINFORCED GYPSUM BACKERS IN COMPLIANCE WITH ASTM C 1288, C 1325, C1178 OR C 1278, RESPECTIVELY, AND INSTALLED IN ACCORDANCE WITH MANUFACTURERS' RECOMMENDATIONS SHALL BE USED AS BACKERS FOR WALL TILE IN TUB AND SHOWER AREAS AND WALL PANELS IN SHOWER AREAS
    2012 IRC SECTION R702.4.2
22. TRAPS SHALL HAVE A LIQUID SEAL NOT LESS THAN 2 INCHES (51 MM) AND NOT MORE THAN 4 INCHES (102 MM). TRAPS FOR FLOOR DRAINS SHALL BE FITTED WITH A TRAP PRIMER OR SHALL BE OF THE DEEP SEAL DESIGN. TRAP SEAL PRIMER VALVES SHALL CONNECT TO THE TRAP AT A POINT ABOVE THE LEVEL OF THE TRAP SEAL.
    2012 IRC SECTION P3201.2
23. SILLCOCKS, HOSE BIBBS, WALL HYDRANTS AND OTHER OPENINGS WITH A HOSE CONNECTION SHALL BE PROTECTED BY AN ATMOSPHERIC-TYPE OR PRESSURE-TYPE VACUUM BREAKER OR A PERMANENTLY ATTACHED HOSE CONNECTION VACUUM BREAKER.
    2012 IRC SECTION P2902.4.3
24. FIXTURE VALVES, WHEN INSTALLED, SHALL BE LOCATED EITHER AT THE FIXTURE OR AT THE MANIFOLD. IF VALVES ARE INSTALLED AT THE MANIFOLD, THEY SHALL BE LABELED INDICATING THE FIXTURE SERVICED.
    2012 IRC SECTION 2903.8.5
25. VALVES SERVING INDIVIDUAL FIXTURES, APPLIANCES, RISERS AND BRANCHES SHALL BE PROVIDED WITH ACCESS. AN INDIVIDUAL SHUTOFF VALVE SHALL BE REQUIRED ON THE FIXTURE SUPPLY PIPE TO EACH PLUMBING FIXTURE OTHER THAN BATHTUBS AND SHOWERS.
    2012 IRC SECTION P2903.9.3
26. ACCESS PANEL OPENINGS FOR JETTED TUB PUMPS OR MOTORS MUST BE 18" X 18" WHERE EQUIPMENT IS LOCATED MORE THAN TWO FEET FROM ACCESS OPEING AND 12" X 12" IF SUCH EQUIPMENT IS LESS THAN TWO FEET FROM ACCESS OPENING
27. COPPER TYPE PIPE IS REQUIRED FOR WATER SERVICE
28. PROVIDE BACKFLOW PREVENTION DEVICE FOR BASEMENT DRAINAGES
29. WHERE THE FLOOD LEVEL RIMS OF PLUMBING FIXTURES ARE BELOW THE ELEVATION OF THE MANHOLE COVER OF THE NEXT UPSTREAM MANHOLE IN THE PUBLIC SEWER, THE FIXTURES SHALL BE PROTECTED BY A BACKWATER VALVE INSTALLED IN THE BUILDING DRAIN, BRANCH OF THE BUILDING DRAIN OR HORIZONTAL BRANCH SERVING SUCH FIXTURE. PLUMBING FIXTURES HAVING FLOOD LEVEL RIMS ABOVE THE ELEVATION OF THE MANHOLE COVER OF THE NEXT UPSTREAM MANHOLE COVER IN THE PUBLIC SEWER SHALL NOT DISCHARGE THROUGH A BACKWATER VALVE 2012 IRC SECTION P3008.1
30. ALL PLUMBING INSTALLATIONS SHALL COMPLY WITH 2012 IRC

GARAGE FRAMING NOTES

1. THE HEIGHT OF THE FRAMED WALL INDICATED FOR THE GARAGE REFERENCES THE FINISHED MAIN FLOOR AND NOT THE LITERAL HEIGHT OF THE WALL FROM THE FOUNDATION WALL OF THE GARAGE. THE LITERAL WALL WOULD BE TYPICALLY TALLER THAN THE HEIGHT NOTED.

   IF NO WALL HEIGHT INDICATION IS GIVEN, IT IS ASSUMED THAT THE TOP OF THE GARAGE WALL IS CONTINUOUS WITH THE TOP OF THE WALL OF THE PORTION OF THE HOUSE CLOSEST TO THE GARAGE.

   THE DESIGNATION AFF. INDICATES ABOVE THE FINISHED MAIN FLOOR.

ELECTRICAL NOTES

1. UNDERGROUND ELECTRICAL SERVICES SHALL BE INSTALLED IN 3 INCH RIGID RISER WITH 3 INCH RIGID ELBOW ATTACHED TO 3 INCH PVC ELECTRICAL DUCT TO WITHIN 1 FOOT OF PEDESTAL AND BURIED A MINIMUM OF 18 INCHES DEEP.
2. OVERHEAD ELECTRICAL SERVICES SHALL BE INSTALLED IN MINIMUM 3 INCH RIGID STEEL ELECTRICAL CONDUIT AT CLEARANCES.
3. PROVIDE AN U-FER GROUND. THERE IS TO BE A METALLIC WATER SERVICE OR A CONCRETE ENCASED ELECTRODE AVAILABLE FOR USE AS A GROUNDING ELECTRODE FOR THE HOUSE. AN ELECTRODE ENCASED BY AT LEAST 2 INCHES (51 MM) OF CONCRETE, LOCATED WITHIN AND NEAR THE BOTTOM OF A CONCRETE FOUNDATION OR FOOTING THAT IS IN DIRECT CONTACT WITH THE EARTH, CONSISTING OF AT LEAST 20 FEET (6069 MM) OF ONE OR MORE BARE OR ZINC-GALVANIZED OR OTHER ELECTRICALLY CONDUCTIVE COATED STEEL REINFORCING BARS OR RODS OF NOT LESS THAN 1/2 INCH (12.7 MM) DIAMETER, OR CONSISTING OF AT LEAST 20 FEET (6069 MM) OF BARE COPPER CONDUCTOR NOT SMALLER THAN NO. 4 SHALL BE CONSIDERED AS A GROUNDING ELECTRODE. REINFORCING BARS SHALL BE PERMITTED TO BE BOUNDED TOGETHER BY THE USUAL TIE WIRES OR OTHER EFFECTIVE MEANS.
   2012 IRC SECTION E3608.1.2
4. ALL BATHROOM RECEPTICLES ARE GFCI PROTECTED.
5. ALL BRANCH CIRCUITS THAT SUPPLY 125 VOLT, SINGLE PHASE 15- AND 20- AMPERE OUTLETS INSTALLED IN DWELLING UNIT BEDROOMS SHALL BE PROTECTED BY COMBINATION TYPE ARC-FAULT CIRCUIT INTERRUPTER(S) 2012 IRC SECTION E3902.12
6. ALL 125 VOLT, SINGLE PHASE, 15- & 20- AMPERE RECEPTACLES SHALL HAVE GROUND-FAULT CIRCUIT-INTERRUPTER PROTECTION FOR PERSONNEL INSTALLED IN THE FOLLOWING LOCATIONS; BATHROOM RECEPTACLES, GARAGE AND ACCESSORY BUILDING RECEPTACLES, OUTDOOR RECEPTACLES, CRAWL SPACE RECEPTACLES, UNFINISHED BASEMENT RECEPTACLES, KITCHEN RECEPTACLES, AND LAUNDRY, UTILITY, AND BAR SINK RECEPTACLES.
   2012 IRC SECTION E3902
7. SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS: IN EACH SLEEPING ROOM, OUTSIDE EACH SEPARATE SLEEPING AREA IN IMMEDIATE VICINITY OF THE BEDROOMS, ON EACH ADDITIONAL STORY OF THE DWELLING INCLUDING BASEMENTS AND CELLARS BUT NOT INCLUDING CRAWLSPACES AND UNINHABITABLE ATTICS. IN DWELLINGS OR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER LEVEL SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL. WHEN MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT THE ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT.
   2012 IRC SECTION R314.3
8. ALL SMOKE ALARMS SHALL BE LISTED IN ACCORDANCE WITH UL 217 AND INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THIS CODE AND THE HOUSEHOLD FIRE WARNING EQUIPMENT PROVISIONS OF NFPA 72.
   2012 IRC SECTION R314.1
9. UTAH STATE AMENDMENT REQUIRES CARBON MONOXIDE DETECTORS ON EACH HABITABLE LEVEL OF DWELLING EQUIPPED WITH FUEL BURNING APPLIANCES. CARBON MONOXIDE DETECTORS ARE TO BE COMBINATION UNITS WIRED IN SERIES W/ SMOKE DETECTORS. THEY WILL BE HARD WIRED WITH BATTERY BACK UP.
   STATE AMENDMENT
10. ALL ELECTRICAL RECEPTACLES AND SWITCHES SHALL BE AT LEAST 18 INCHES ABOVE THE FLOOR IN THE GARAGE, OR IN ANY ROOM WITH ACCESS ONLY FROM THE GARAGE.
11. A CLEAR WORK AREA AT LEAST 36 INCHES DEEP & 30 INCHES WIDE SHALL EXIST IN FRONT OF THE POWER PANEL.
    2012 IRC SECTION E3405.2
12. APPLIANCES HAVING AN IGNITION SOURCE SHALL BE ELEVATED SUCH THAT THE SOURCE OF IGNITION IS NOT LESS THAN 18 INCHES ABOVE THE FLOOR IN GARAGES.
    2012 IRC SECTION M1307.3
13. WALL SCONCE LIGHTS ARE TO BE A MINIMUM OF 84" ABOVE FINISHED FLOOR LEVEL
14. IN THE KITCHEN, PANTRY, BREAKFAST ROOM, DINING ROOM, OR SIMILAR AREA OF A DWELLING UNIT, THE TWO OR MORE 20-AMPRE SMALL-APPLIANCE BRANCH CIRCUITS REQUIRED BY SECTION E3703.2 SHALL SERVE ALL WALL AND FLOOR RECEPTACLE OUTLETS COVERED BY SECTIONS E3901.2 AND E3901.4 AND THOSE RECEPTACLE OUTLETS PROVIDED FOR REFRIGERATION APPLIANCES.

    IN ADDITION TO THE REQUIRED RECEPTACLES SPECIFIED BY SECTIONS E3901.1 AND E3901.2, SWITCHED RECEPTACLES SUPPLIED FROM A GENERAL-PURPOSE BRANCH CIRCUIT AS DEFINED IN SECTION E3903.2, EXCEPTION 1 SHALL BE PERMITTED.

    THE RECEPTACLE OUTLET FOR REFRIGERATION APPLIANCES SHALL BE PERMITTED TO BE SUPPLIED FROM AN INDIVIDUAL BRANCH CIRCUIT RATED AT 15 AMPERES OR GREATER.

    THE TWO OR MORE SMALL-APPLIANCE BRANCH CIRCUITS SPECIFIED IN SECTION E3901.3 SHALL SERVE NO OTHER OUTLETS
    2012 IRC SECTION E3901.3

    INSIDE OR OUTSIDE OF A DWELLING SHALL BE LISTED TAMPER RESISTANT
    2012 IRC SECTION E4002.14
15. ENSURE SMOKE AND CARBON MONOXIDE DETECTORS RECIEVE POWER FROM A BEDROOM CIRCUIT.
16. A RECEPTACLE OUTLET SHALL BE INSTALLED AT EACH WALL COUNTERTOP 12 INCHES (305 MM) OR WIDER. RECEPTACLE OUTLETS SHALL BE INSTALLED SO THAT NO POINT ALONG THE WALL LINE IS MORE THAN 24 INCHES (610 MM), MEASURED HORIZONTALLY FROM A RECEPTACLE OUTLET IN THAT SPACE.

    RECEPTACLE OUTLETS SHALL NOT BE REQUIRED ON A WALL DIRECTLY BEHIND A RANGE, COUNTER-MOUNTED COOKING UNIT OR SINK IN THE INSTALLATION DESCRIBED IN FIGURE E3901.4.1
    2012 IRC SECTION E3901.4.1

ELECTRICAL NOTES CONT...

17. AT LEAST ONE RECEPTACLE OUTLET SHALL BE INSTALLED AT EACH ISLAND COUNTERTOP SPACE WITH A LONG DIMENSION OF 24 INCHES (610 MM) OR GREATER AND A SHORT DIMENSION OF 12 INCHES (305 MM) OR GREATER. 2012 IRC SECTION E3901.4.2
18. RECEPTACLE OUTLETS SHALL BE LOCATED NOT MORE THAN 20 INCHES (1016 MM) ABOVE THE COUNTERTOP. RECEPTACLE OUTLETS SHALL NOT BE INSTALLED IN A FACE-UP POSITION IN THE WORK SURFACES OR COUNTERTOPS. RECEPTACLE OUTLETS RENDERED NOT READILY ACCESSIBLE BY APPLIANCES FASTENED IN PLACE, APPLIANCE GARAGES, SINKS OR RANGETOPS AS ADDRESSED IN EXCEPTION TO SECTION E3801.4.1, OR APPLIANCES OCCUPYING DEDICATED SPACE SHALL NOT BE CONSIDERED AS THESE REQUIRED OUTLETS.

    RECEPTACLE OUTLETS SHALL BE PERMITTED TO BE MOUNTED NOT MORE THAN 12 INCHES (305 MM) BELOW THE COUNTERTOP. IN CONSTRUCTION DESIGNED FOR THE PHYSICALLY IMPAIRED AND FOR ISLAND AND PENINSULAR COUNTERTOPS WHERE THE COUNTERTOP IS FLAT ACROSS ITS ENTIRE SURFACE AND THERE ARE NO MEANS TO MOUNT A RECEPTACLE WITHIN 20 INCHES (457 MM) ABOVE THE COUNTERTOP, SUCH AS IN AN OVERHEAD CABINET. RECEPTACLES MOUNTED BELOW THE COUNTERTOP IN ACCORDANCE WITH THIS EXCEPTION SHALL NOT BE LOCATED WHERE THE COUNTERTOP EXTENDS MORE THAN 6 INCHES (152 MM) BEYOND ITS SUPPORT BASE.
    2012 IRC SECTION E3901.4.5.
19. CORD-CONNECTED LIMINAIRES, CHAIN-, CABLE-, OR CORD-SUSPENDED LIMINAIRES, LIGHTING TRACK, PENDANTS, AND CEILING-SUSPENDED (PADDLE) FANS SHALL NOT HAVE ANY PARTS LOCATED WITHIN A ZONE MEASURED 3 FEET (914 MM) HORIZONTALLY AND 8 FEET (2438 MM) VERTICALLY FROM THE TOP OF A BATHTUB RIM OR SHOWER STALL THRESHOLD. THIS ZONE IS ALL ENCOMPASSING AND INCLUDES THE ZONE DIRECTLY OVER THE TUB OR SHOWER. LUMINAIRES LOCATED IN THIS ZONE SHALL BE LISTED FOR DAMP LOCATIONS AND WHERE SUBJECT TO SHOWER SPRAY, SHALL BE LISTED FOR WET LOCATIONS.
20. PROVIDE BUBBLE COVERINGS ON ALL EXTERIOR OUTLETS.
21. ALL 125-VOLT, 15 AND 20 AMP RECEPTACLES INSTALLED INSIDE OR OUTSIDE OF A DWELLING SHALL BE LISTED AS TAMPER RESISTANT RECEPTACLES. 2012 IRC SECTION E4002.14
22. ALL ELECTRICAL INSTALLATIONS SHALL COMPLY WITH THE 2012 IRC & 2011 NEC
23. WHERE TWO OR MORE NON-METALLIC SHEATHED CABLES (ROMEX) ARE INSTALLED TOGETHER IN THE SAME PLACE WITHOUT MAINTAINING SPACE BETWEEN THEM AND WHERE THE OPENING THEY ARE INSTALLED IN IS FILLED WITH CAULKING, FOAM INSULATION, OR OTHER TYPES OF INSULATION, THE CONDUCTORS MUST BE DERATED
    2012 IRC SECTION E3705.4.4

MECHANICAL NOTES

1. CLOTHES DRYERS SHALL BE EXHAUSTED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. DRYER EXHAUST SYSTEMS SHALL BE INDEPENDENT OF ALL OTHER SYSTEMS AND SHALL CONVEY THE MOISTURE AND ANY PRODUCTS OF COMBUSTION TO THE OUTSIDE OF THE BUILDING.
   2012 IRC SECTION G2439.1(614.1)
2. THE MAXIMUM ALLOWABLE EXHAUST DUCT LENGTH SHALL BE DETERMINED BY ONE OF THE METHOSD SPECIFIED IN SECTION G2439.5.5.1 OR G2439.5.5.2.

   THE MAXIMUM LENGTH OF OF THE EXHAUST DUCT SHALL BE 35 FT (10668 MM) FROM THE CONNECTION TO THE TRANSITION DUCT FROM THE DRYER TO THE OUTER TERMINAL. WHERE FITTINGS ARE USED, THE MAXIMUM LENGTH OF THE EXAUST DUCT SHALL BE REDUCED IN ACCORDANCE WITH TABLE G2439.5.5.1.

   THE MAXIMUM LENGTH OF THE EXHAUST DUCT SHALL BE DETERMINED BY THE DRYER MANUFACTURER'S INSTALLATION INSTRUCTIONS. THE CODE OFFICIAL SHALL BE PROVIDED WITH A COPY OF THE INSTALLATION INSTRUCTIONS FOR THE MAKE AND MODEL OF THE DRYER. WHERE THE EXHAUST DUCT IS TO BE CONCEALED, THE INSTALLATION INSTRUCTIONS SHALL BE PROVIDED TO THE CODE OFFICIAL PRIOR TO THE CONCEALMENT INSPECTION. IN THE ABSENCE OF FITTING EQUIVALENT LENGTH CALCULATIONS FROM THE CLOTHES DRYER MANUFACTURER, TABLE G2439.5.5.1 SHALL BE USED.
3. APPLIANCES HAVING AN IGNITION SOURCE SHALL BE ELEVATED SUCH THAT THE SOURCE OF IGNITION IS NOT LESS THAN 18 INCHES (457 MM) ABOVE THE FLOOR IN GARAGES. FOR THE PURPOSE OF THIS SECTION, ROOMS OR SPACES THAT ARE NOT PART OF THE LIVING SPACE OF A DWELLING UNIT AND THAT COMMUNICATE WITH A PRIVATE GARAGE THROUGH OPENINGS SHALL BE CONSIDERED TO BE PART OF THE GARAGE.
   2012 IRC SECTION M1307.3
4. APPLIANCES SHALL NOT BE INSTALLED IN A LOCATION SUBJECT TO VEHICLE DAMAGE EXCEPT WHERE PROTECTED BY APPROVED BARRIERS.
   2012 IRC SECTION M1307.3.1
5. AIR FOR COMBUSTION, VENTILATION AND DILUTION OF FLUE GASES FOR APPLIANCES INSTALLED IN BUILDINGS SHALL BE PROVIDED BY APPLICATION OF ONE OF THE METHODS PRESCRIBED IN SECTIONS G2407.5 THROUGH G2407.9. WHERE THE REQUIREMENTS OF SECTIONS G 2407.5 ARE NOT MET, OUTDOOR AIR SHALL BE INTRODUCED IN ACCORDANCE WITH ONE OF THE METHODS PRESCRIBED IN SECTIONS G2407.6 THROUGH G2407.9. DIRECT-VENT APPLIANCES, GAS APPLIANCES OF OTHER THAN NATURAL DRAFT DESIGN AND VENTED GAS APPLIANCES OTHER THAN CATAGORY 1 SHALL BE PROVIDED WITH COMBUSTION, VENTILATION, AND DILUTION AIR IN ACCORDANCE WITH THE APPLIANCE MANUFACTURER'S INSTRUCTIONS.
   2012 IRC SECTION G2407.1
6. THE REQUIRED VOLUME OF AIR SHALL BE DETERMINED IN ACCORDANCE WITH SECTION G2407.5.1 OR G2407.5.2, EXCEPT THAT WHERE THE AIR INFILTRATION RATE IS KNOWN TO BE LESS TAN 0.40 AIR CHANGES PER HOUR (ACH), SECTION G2407.5.2 SHALL BE USED. THE TOTAL REQUIRED VOLUME SHALL BE THE SUM OF THE REQUIRED VOLUME CALCULATED FOR ALL APPLIANCES LOCATED WITHIN THE SPACE. ROOMS COMMUNICATING DIRECTLY WITH THE SPACE IN WHICH THE APPLIANCES ARE INSTALLED THROUGH OPENINGS NOT FURNISHED WITH DOORS, AND THROUGH COMBUSTION AIR OPENINGS SIZED AND LOCATED IN ACCORDANCE WITH SECTION G2407.5.3, ARE CONSIDERED TO BE PART OF THE REQUIRED VOLUME.
   2012 IRC SECTION G2407.5 (304.5)

MECHANICAL NOTES CONT...

7. A LEVEL WORKING SPACE AT LEAST 30 INCHES DEEP AND 30 INCHES WIDE (762 MM BY 762 MM) SHALL BE PROVIDED IN FRONT OF THE CONTROL SIDE TO SERVICE AN APPLIANCE. INSTALLATION OF ROOM HEATERS SHALL BE PERMITTED WITH AT LEAST AND 18-INCH (457 MM) WORKING SPACE. A PLATFORM SHALL NOT BE REQUIRED FOR ROOM HEATERS.
   2012 IRC SECTION M1305.1
8. APPLIANCES INSTALLED IN A COMPARTMENT, ALCOVE, BASEMENT, OR SIMILAR SPACE SHALL BE ACCESSED BY AN OPENING OR DOOR AND AN UNOBSTRUCTED PASSAGEWAY MEASURING NOT LESS THAN 24 INCHES WIDE AND LARGE ENOUGH TO ALLOW REMOVAL OF THE LARGEST APPLIANCE IN THE SPACE PROVIDED, THAT A LEVEL SERVICE SPACE OF NOT LESS THAN 30 INCHES DEEP AND HEIGHT OF THE APPLIANCE, BUT NOT LESS THAN 30 INCHES IS PRESENT AT THE FRONT OR SERVICE SIDE OF THE APPLIANCE WITH THE DOOR OPEN
   2012 IRC SECTION M1305.1.2
9. ATTICS CONTAINING APPLIANCES REQUIRING ACCESS SHALL HAVE WITH AN OPENING AND A CLEAR UNOBSTRUCTED PASSAGEWAY LARGE ENOUGH TO ALLOW REMOVAL OF THE LARGEST APPLIANCE, BUT NOT LESS THAN 30 INCHES (762 MM) HIGH AND 22 INCHES (559 MM) WIDE AND NOT MORE THAN 20 FEET (6096 MM) LONG WHEN MEASURED ALONG THE CENTERLINE OF THE PASSAGEWAY FROM THE OPENING TO THE APPLIANCE. THE PASSAGEWAY SHALL HAVE CONTINUOUS SOLID FLOORING IN ACCORDANCE WITH CHAPTER 5 NOT LESS THAN 24 INCHES (610 MM) WIDE. A LEVEL SERVICE SPACE AT LEAST 30 INCHES (762 MM) DEEP AND 30 INCHES (762 MM) WIDE SHALL BE PRESENT ALONG ALL SIDES OF THE APPLIANCE WHERE ACCESS IS REQUIRED. THE CLEAR ACCESS OPENING DIMENSIONS SHALL BE A MINIMUM OF 20 INCHES BY 30 INCHES (508 MM BY 762 MM), WHERE SUCH DIMENSIONS ARE LARGE ENOUGH TO ALLOW REMOVAL OF THE LARGEST APPLIANCE.

   THE PASSAGEWAY AND LEVEL SERVICE SPACE ARE NOT REQUIRED WHERE THE APPLIANCE CAN BE SERVICED AND REMOVED THROUGH THE REQUIRED OPENING.
   2012 IRC SECTION M1305.1.3
10. FUEL-BURNING APPLIANCES SHALL BE VENTED TO THE OUTSIDE IN ACCORDANCE WITH THEIR LISTING AND LABEL AND MANUFACTURER'S INSTALLATION INSTRUCTIONS EXCEPT APPLIANCES LISTED AND LABELED FOR UN-VENTED USE. VENTING SYSTEMS SHALL CONSIST OF APPROVED CHIMNEYS OR VENTS, OR VENTING ASSEMBLIES THAT ARE INTEGRAL PARTS OF LABELED APPLIANCES.
    2012 IRC SECTION M1801.1
11. ONE PERMANENT OPENING, COMMENCING WITHIN 12 INCHES (305 MM) OF THE TOP OF THE ENCLOSURE, SHALL BE PROVIDED. THE APPLIANCE SHALL HAVE CLEARANCES OF AT LEAST 1 INCH (25 MM) FROM THE SIDES AND BACK AND 6 INCHES (152 MM) FROM THE FRONT OF THE APPLIANCE. THE OPENINGS SHALL DIRECTLY COMMUNICATE WITH THE OUTDOORS OR THROUGH A VERTICAL OR HORIZONTAL DUCT TO THE OUTDOORS, OR SPACES THAT FREELY COMMUNICATE WITH THE OUTDOORS (SEE FIGURE G2407.6.2) AND SHALL HAVE A MINIMUM FREE AREA OF 1 SQUARE INCH PER 3,000 BTU/H (734 MM2/KW) OF THE TOTAL INPUT RATING OF ALL APPLIANCES LOCATED IN THE ENCLOSURE AND NOT LESS THAN THE SUM OF THE AREAS OF ALL VENT CONNECTORS IN THE SPACE.
    2012 IRC SECTION G2407.6.2 (304.6.2)
12. A CLOSED VESSEL IN WHICH WATER IS HEATED BY THE COMBUSTION OF FUELS OR ELECTRICITY AND IS WITHDRAWN FOR USE EXTERNALLY TO THE SYSTEM AT PRESSURES NOT EXCEEDING 160 PSIG (100 KPA (GAGE)), INCLUDING THE APPARATUS BY WHICH HEAT IS GENERATED AND ALL CONTROLS AND DEVICES NECESSARY TO PREVENT WATER TEMPERATURES FROM EXCEEDING 210 DEGREES FAHRENHEIT (99 DEGREES CELSIUS).
    UTAH STATE AMMENDMENT R202
13. INSURE THAT THE GAS LOGS AND EACH GAS APPLIANCE SHALL HAVE A SHUT OFF VALVE WITHIN 6 FEET OF THE APPLIANCE
    2012 IRC SECTION G2420.5.1
14. BATHROOM EXHAUST FAN DUCTS MUST NOW CONTINUE AND DISCHARGE DIRECTLY OUTSIDE THE STRUCTURE. CLOSE PROXIMITY TO ATTIC VENTS OR TO SOFFIT AREAS ARE SPECIFICALLY PROHIBITED. ALL EXHAUST DUCTS MUST NOW CONNECT TO AN OPENING WITH PROPER SCREEN FOR TERMINATIONS IN WALL AREAS OR TO AN APPROVED THROUGH THE ROOF DISCHARGE FITTING INSTALLED AS NOT TO BE BLOCKED OR STOPPED BY SNOW OR ICE.
15. APPLIANCES SHALL NOT BE INSTALLED IN A LOCATION SUBJECT TO VEHICLE DAMAGE EXCEPT WHERE PROTECTED BY APPROVED BARRIERS.
    2012 IRC SECTION M1307.3.1
16. WHEN THE WINTER DESIGN TEMPERATURE IN TABLE R301.2(1) IS BELOW 60°F (16°C), EVERY DWELLING UNIT SHALL BE PROVIDED WITH HEATING FACILITIES CAPABLE OF MANTAINING A MINIMUM ROOM TEMPERATURE OF 68°F (20°C) AT A POINT 3 FEET (914 MM) ABOVE THE FLOOR AND 2 FEET (610 MM) FROM EXTERIOR WALLS IN ALL HABITABLE ROOMS AT THE DESIGN TEMPERATURE
    2012 IRC SECTION R303.9
17. CONDENSATE FROM ALL COOLING COILS OR EVAPORATORS SHALL BE CONVEYED FROM THE DRAIN PAN OUTLET TO AN APROVED PLACE OF DISPOSAl. CONDENSATE SHALL NOT DISCHARGE INTO A STREET, ALLEY, OR OTHER AREAS SO AS TO CAUSE A NUISANCE.
    2012 IRC SECTION M1411.3
18. IN ADDITION TO THE REQUIREMENTS OF SECTION M1411.3, A SECONDARY DRAIN OR AUXILLIARY DRAIN PAN SHALL BE REQUIRED FOR EACH COOLING OR EVAPORATOR COIL WHERE DAMAGE TO ANY BUILDING COMPONENTS WILL OCCUR AS A RESULT OF OVERFLOW FROM THE EQUIPMENT DRAIN PAN OR STOPPAGE IN THE CONDENSATE DRAIN PIPING. SUCH PIPING SHALL MAINTAIN A MINIMUM HORIZONTAL SLOPE IN THE DIRECTION OF DISCHARGE OF NOT LESS THAN 1/8 UNIT VERTICAL IN 12 UNITS HORIZONTAL (1 PERCENT SLOPE). DRAIN PIPING SHALL BE A MINIMUM OF 3/4 INCH (19 MM) NOMINAL PIPE SIZE.
    2012 IRC SECTION M1411.3.1
19. PROVIDE 100 SQUARE INCHES OF MAKE UP AIR FOR CLOTHES DRYERS LOCATD WITHIN CLOSETS OR COMPARTMENTS.
    2012 IRC SECTION G2439.4
20. A PERMANENT CERTIFICATE SHALL BE POSTED ON OR IN THE ELECTRICAL DISTRIBUTION PANEL. THE CERTIFICATE SHALL BE COMPLETED BY THE BUILDER OR REGISTERED DESIGN PROFESSIONAL. THE CERTIFICATE SHALL LIST THE PREDOMINANT R-VALUES OF INSULATION INSTALLED IN OR ON CEILING/ROOF, WALLS, FOUNDATION (SLAB, BASEMENT WALL, CRAWLSPACE WALL AND/OR FLOOR) AND DUCTS OUTSIDE ~~CONDITIONED SPACES. THE CERTIFICATE SHALL ALSO LIST~~ EFFICIENCY OF HEATING, COOLING, AND SERVICE WATER HEATING EQUIPMENT.
21. ALL MECHANICAL INSTALLATIONS SHALL COMPLY WITH THE 2012 IRC & IFGC

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GENERAL NOTES

SCALE: NTS

RML DESIGN

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ATTENTION

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PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
BIG SKY ESTATES
COUNTY
WEBER
STATE
UTAH

CLIENT NAME:
DAVE & GAYLE MARIANI

PLAN NAME:
CUSTOM

ORIGINAL RELEASE:
MAY 17, 2016

REVISION DATES
XX/XX/XXXX
XX/XX/XXXX
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MARIANI-C-XXX-3-16-B

GENERAL NOTES

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Exhibit A-Site & Building Plans

EXCAVATION FOUNDATION NOTES

1. SLOPES FOR PERMANENT FILLS SHALL NOT BE STEEPER THAN 2 HORIZONTAL TO 1 VERTICAL

2. ALL ORGANIC MATERIALS SUCH AS RUBBISH, ETC. SHALL BE REMOVED FROM BENEATH LOCATIONS OF PROPOSED FOOTINGS, CONCRETE SLABS, AND ASPHALT PAVING.

3. ALL FOOTINGS SHALL BEAR ON NATURAL UNDISTURBED SOIL UNLESS APPROVED BY ENGINEER

4. ALL EXTERIOR FOOTINGS SHALL BE PLACED AT LEAST 12 INCHES (305 MM) BELOW THE UNDISTURBED GROUND SURFACE. WHERE APPLICABLE, THE DEPTH OF FOOTINGS SHALL ALSO CONFORM TO SECTIONS R403.1.4.1 THROUGH R403.1.4.2
2012 IRC SECTION R403.1.4
4.1. EXCEPT WHERE OTHERWISE PROTECTED FROM FROST, FOUNDATION WALLS, PIERS AND OTHER PERMANENT SUPPORTS OF BUILDINGS AND STRUCTURES SHALL BE PROTECTED FROM FOST BY ONE OF MORE OF THE FOLLOWING METHODS
4.1.1. EXTENDED BELOW THE FROST LINE SPECIFIED BY THE LOCAL JURISDICTION
4.1.2. CONSTRUCTING IN ACCORDANCE WITH SECTION R403.3
4.1.3. COSTRUCTING IN ACCORDANCE WITH ASCE 32: OR
4.1.4. ERECTED ON SOLID ROCK
2012 IRC SECTION R403.1.4.1

5. FINISH GRADING SHALL BE DONE AS TO PROVIDE POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS

6. A MINIMUM SLOPE OF FIVE PERCENT SHALL BE MAINTAINED FOR THE FIRST TEN FEET WITH TWO PERCENT THEREAFTER TO PROVIDE DRAINAGE AREA

7. IF SOIL IS TO BE PLACED OVER THE CURB, GUTTER, AND SIDEWALK TO ALLOW DRIVING OF EQUIPMENT OVER THE CONCRETE WITHOUT BREAKING IT, AT LEAST A 4 INCH IN DIAMETER PIPE IS TO BE PLACED IN THE GUTTER TO ALLOW FOR DRAINAGE OF SURFACE WATER.

8. THE TOP OF ALL FOOTINGS SUPPORTING WOOD SHALL EXTEND AT LEAST 6 INCHES ABOVE THE SURROUNDING SOIL

9. PROVIDE A VAPOR RETARDER 6 MIL PLY-ETHYLENE OR APPROVED VAPOR RETARDER WITH JOINTS LAPPED NOT LESS THAN 6 INCHES UNDER ALL CONCRETE SLABS EXCEPT FOR GARAGES, UTILITY BUILDINGS, AND OTHER UNHEATED BUILDINGS.

10. SHOW COMPACTION ON ALL BACKFILLED AREAS. ALL DIRT RAMPS OVER SIDEWALKS ARE TO BE OF ROAD BASE MATERIAL.

11. EXCEPT WHERE REQUIRED BY SECTION R406.2 TO BE WATERPROOFED, FOUNDATION WALLS THAT RETAIN EARTH AND ENCLOSE INTERIOR SPACES AND FLOORS BELOW GRADE SHALL BE DAMPPROOFED FROM THE TOP OF THE FOOTING TO THE FINISHED GRADE. MASONRY WALLS SHALL HAVE NOT LESS THAN 3/8 INCH (9.5 MM) PORTLAND CEMENT PARGING APPLIED TO THE EXTERIOR OF THE WALL. THE PARGING SHALL BE DAMPPROOFED IN ACCORDANCE WITH ONE OF THE FOLLOWING:
- BITUMINOUS COATING
- 3 POUNDS PER SQUARE YARD (1.63 KG/M2) OF ACRYLIC MODIFIED CEMENT.
- 1/8 INCH (3.2 MM) COAT OF SURFACE-BONDING CEMENT COMPLYING WITH ASTM C 887
- ANY MATERIAL PERMITTED FOR WATERPROOFING IN SECTION R406.2
- OTHER APPROVED METHODS OR MATERIALS

PARGING OF UNIT MASONRY WALLS IS NOT REQUIRED WHERE A MATERIAL IS APPROVED FOR DIRECT APPLICATION TO THE MASONRY.
2012 IRC SECTION R406.1

12. FILL MATERIAL SHALL BE FREE OF VEGETATION AND FOREIGN MATERIAL. THE FILL SHALL BE COMPACTED TO ASSURE UNIFORM SUPPORT OF THE SLAB, AND EXCEPT WHERE APPROVED, THE FILL DEPTHS SHALL NOT EXCEED 24 INCHES (610 MM) FOR CLEAN SAND OR GRAVEL AND 8 INCHES (203 MM) FOR EARTH.
2012 IRC SECTION R506.2.1

13. A 4 INCH THICK (102 MM) BASE COURSE CONSISTING OF CLEAN GRADED SAND, GRAVEL, CRUSHED STONE, OR CRUSHED BLAST-FURNACE SLAG PASSING A 2 INCH (51 MM) SIEVE SHALL BE PLACED ON THE PREPARED SUB-GRADE WHEN THE SLAB IS BELOW GRADE.
2012 IRC SECTION R506.2.2

14. PROVIDE AN U-FER GROUND. THERE IS TO BE A METALLIC WATER SERVICE OR A CONCRETE ENCASED ELECTRODE AVAILABLE FOR USE AS A GROUNDING ELECTRODE FOR THE HOUSE. AN ELECTRODE ENCASED BY AT LEAST 2 INCHES (41 MM) OF CONCRETE, LOCATED WITHIN AND NEAR THE BOTTOM OF A CONCRETE FOUNDATION OR FOOTING THAT IS IN DIRECT CONTACT WITH THE EARTH, CONSISTING OF AT LEAST 20 FEET (6069 MM) OF ONE OR MORE BARE OR ZINC-GALVANIZED OR OTHER ELECTRICALLY CONDUCTIVE COATED STEEL REINFORCING BARS OR RODS OF NOT LESS THAN 1/2 INCH (12.7 MM) DIAMETER, OR CONSISTING OF AT LEAST 20 FEET (6069 MM) OF BARE COPPER CONDUCTOR NOT SMALLER THAN NO. 4 SHALL BE CONSIDERED AS A GROUNDING ELECTRODE. REINFORCING BARS SHALL BE PERMITTED TO BE BOUNDED TOGETHER BY THE USUAL TIE WIRES OR OTHER EFFECTIVE MEANS.

15. DIRT CAN'T BE PLACED OVER THE SIDEWALK OR GUTTER. IF THAT NEEDS TO BE DONE, FIND OTHER MEASURES TO ACCOMPLISH WHAT YOU NEED.

HOME THEATRE NOTE

1. THE GLAZED AREAS NEED NOT BE OPENABLE WHERE THE OPENING IS NOT REQUIRED BY SECTION R310 AND AN APPROVED MECHANICAL VENTILATION SYSTEM IS PROVIDED CAPABLE OF PRODUCING 0.35 AIR CHANGE PER HOUR IN THE ROOM OR A WHOLE HOUSE MECHANICAL VENTILATION SYSTEM IS INSTALLED CAPABLE OF SUPPLYING OUTDOOR VENTILATION AIR OF 15 CUBIC FEET PER MINUTE (CFMX7.09L/S) PER OCCUPANT COMPUTED ON THE BASIS OF TWO OCCUPANTS FOR THE FIRST BEDROOM AND ONE OCCUPANT FOR EACH ADDITIONAL BEDROOM.

2. THE GLAZED AREAS NEED NOT BE PROVIDED IN ROOMS WHERE EXCEPTION 1 ABOVE IS SATISFIED AND ARTIFICIAL LIGHT IS PROVIDED CAPABLE OF PRODUCING AN AVERAGE ILLUMINATION OF 6 FOOTCANDLES (6.46 LUX) OVER THE AREA OF THE ROOM AT A HEIGHT OF 30 INCHES (762 MM) ABOVE THE FLOOR LEVEL

FLASHING NOTES

1. APPROVED CORROSION-RESISTANT FLASHING SHALL BE APPLIED SHINGLE-FASHION IN SUCH A MANNER TO PREVENT ENTRY OF WATER INTO THE WALL CAVITY OR PENETRATION OF WATER TO THE BUILDING STRUCTURAL FRAMING COMPONENTS. THE FLASHING SHALL EXTEND TO THE SURFACE OF THE EXTERIOR WALL FINISH. APPROVED CORROSION-RESISTANT FLASHINGS SHALL BE INSTALLED AT ALL OF THE FOLLOWING LOCATIONS:
1.1. EXTERIOR WINDOW AND DOOR OPENINGS. FLASHING AT EXTERIOR WINDOW AND DOOR OPENINGS SHALL EXTEND TO THE SURFACE OF THE EXTERIOR WALL FINISH OR TO THE WATER-RESISTIVE BARRIER FOR SUBSEQUENT DRAINAGE
1.2. AT THE INTERSECTION OF CHIMNEYS OR OTHER MASONRY CONSTRUCTION WITH FRAME OR STUCCO WALLS, WITH PROJECTING LIPS ON BOTH SIDES UNDER STUCCO COPINGS.
1.3. UNDER AND AT THE ENDS OF MASONRY, WOOD OR METAL COPINGS AND SILLS.
1.4. CONTINUOUSLY ABOVE ALL PROJECTING WOOD TRIM.
1.5. WHERE EXTERIOR PORCHES, DECKS, OR STAIRS ATTACH TO A WALL OR FLOOR ASSEMBLY OF WOOD-FRAME CONSTRUCTION.
1.6. AT WALL AND ROOF INTERSECTIONS.
1.7. AT BUILT-IN GUTTERS.
2012 IRC SECTION R703.8

2. FLASH AND CAULK ALL EXTERIOR WINDOWS AND DOORS AS PER MANUFACTURER'S INSTRUCTIONS
3. SILL PLATES TO BE MADE OF REDWOOD OR PRESSURE TREATED WOOD.

EGRESS & EXIT NOTES

1. THERE SHALL BE A FLOOR OR LANDING ON EACH SIDE OF EACH EXTERIOR DOOR. THE FLOOR OR LANDING AT THE EXTERIOR DOOR SHALL NOT BE MORE THAN 1.5 INCHES (38 MM) LOWER THAN THE TOP OF THE THRESHOLD. THE LANDING SHALL BE PERMITTED TO HAVE A SLOPE NOT TO EXCEED 0.25 UNITS VERTICAL TO 12 UNITS HORIZONTAL (2-PERCENT).

WHERE A STAIRWAY OF TWO OR FEWER RISERS IS LOCATED ON THE EXTERIOR SIDE OF A DOOR, OTHER THAN THE REQUIRED EXIT DOOR, A LANDING IS NOT REQUIRED FOR THE EXTERIOR SIDE OF THE DOOR PROVIDED THE DOOR, OTHER THAN AN EXTERIOR STORM OR SCREEN DOOR DOES NOT SWING OVER THE STAIRWAY.

THE EXTERIOR LANDING AT AN EXTERIOR DOORWAY SHALL NOT BE MORE THAN 7-3/4 INCHES (196 MM) BELOW THE TOP OF THE THRESHOLD, PROVIDED THE DOOR, OTHER THAN AN EXTERIOR STORM OR SCREEN DOOR DOES NOT SWING OVER THE LANDING.

THE HEIGHT OF FLOORS AT EXTERIOR DOORS OTHER THAN THE EXIT DOOR REQUIRED BY SECTION R311.4.1 SHALL NOT BE MORE THAN 7-3/4 INCHES (186 MM) LOWER THAN THE TOP OF THE THRESHOLD.

THE WIDTH OF EACH LANDING SHALL NOT BE LESS THAN THE DOOR SERVED. EVERY LANDING SHALL HAVE A MINIMUM DIMENSION OF 36 INCHES (914 MM) MEASURED IN THE DIRECTION OF TRAVEL.

2. BASEMENTS, HABITABLE ATTICS AND EVERY SLEEPING ROOM SHALL HAVE AT LEAST ONE OPENABLE EMERGENCY ESCAPE AND RESCUE WINDOW OR EXTERIOR DOOR OPENING FOR EMERGENCY ESCAPE AND RESCUE. WHERE OPENINGS ARE PROVIDED AS A MEANS OF ESCAPE AND RESCUE THEY SHALL HAVE A SILL HEIGHT OF NOT MORE THAN 44 INCHES ABOVE THE FLOOR WHERE A DOOR OPENING HAVING A THRESHOLD BELOW THE ADJACENT GROUND ELEVATION SERVES AS AN EMERGENCY ESCAPE AND RESCUE OPENING AND IS PROVIDED WITH A BULKHEAD ENCLOSURE, THE BULKHEAD ENCLOSURE SHALL COMPLY WITH IRC SECTION R310.3. THE NET CLEAR OPENING DIMENSIONS REQUIRED BY THIS SECTION SHALL BE OBTAINED BY THE NORMAL OPERATION OF THE WINDOW OR DOOR OPENING FROM INSIDE. ESCAPE AND RESCUE WINDOW OPENINGS WITH A FINISHED SILL HEIGHT BELOW THE ADJACENT GROUND ELEVATION SHALL BE PROVIDED WITH A WINDOW WELL IN ACCORDANCE WITH IRC SECTION R310.2
- THE MINIMUM NET CLEAR OPENING SHALL BE 5.7 SQ. FT.
- THE MINIMUM NET CLEAR OPENING HEIGHT SHALL BE 24 INCHES.
- THE MINIMUM NET CLEAR OPENING WIDTH SHALL BE 20 INCHES.
- THE EMERGENCY AND ESCAPE AND RESCUE OPENINGS SHALL BE OPERATIONAL FROM THE INSIDE OF THE ROOM WITHOUT THE USE OF KEYS, TOOLS, OR SPECIAL KNOWLEDGE.
2012 IRC SECTION R310.1

3. WINDOW WELLS REQUIRED FOR EMERGENCY ESCAPE AND RESCUE SHALL HAVE HORIZONTAL DIMENSIONS THAT ALLOW THE DOOR OR WINDOW OF THE EMERGENCY ESCAPE AND RESCUE OPENING TO BE FULLY OPENED. THE HORIZONTAL DIMENSIONS OF THE WINDOW WELL SHALL PROVIDE A MINIMUM NET CLEAR AREA OF 9 SQUARE FEET WITH A MINIMUM HORIZONTAL PROJECTION AND WIDTH OF 36 INCHES.

THE LADDER OR STEPS REQUIRED BY SECTION R310.2.1 SHALL BE PERMITTED TO ENCROACH A MAXIMUM OF 6 INCHES INTO THE REQUIRED DIMENSIONS OF THE WINDOW WELL.
2012 IRC SECTION R310.2

4. WINDOW WELLS WITH A VERTICAL DEPTH GREATER THAN 44 INCHES BELOW THE ADJACENT GROUND LEVEL SHALL BE EQUIPPED WITH A PERMANENTLY AFFIXED LADDER OR STEPS USEABLE WITH THE WINDOW IN THE FULLY-OPENED POSITION. LADDERS OR STEPS REQUIRED BY THIS SECTION SHALL NOT BE REQUIRED TO COMPLY WITH SECTIONS R314 AND R315. LADDERS OR RUNGS SHALL HAVE AND INSIDE WIDTH OF AT LEAST 12 INCHES, SHALL PROJECT AT LEAST 3 INCHES FROM THE WALL, AND SHALL BE SPACED NOT MORE THAN 18 INCHES O.C. VERTICALLY TO THE FULL HEIGHT OF THE WINDOW WELL.
2012 IRC SECTION R310.2.1

5. HALLWAYS SHALL NOT HAVE LESS THAN 36 INCHES FINISHED WIDTH.
2012 IRC SECTION R311.6

6. BASEMENTS, HABITABLE ATTICS AND EVERY SLEEPING ROOM SHALL HAVE AT LEAST ONE OPERABLE EMERGENCY ESCAPE AND RESCUE OPENING. WHERE BASEMENTS CONTAIN ONE OR MORE SLEEPING ROOMS, EMERGENCY EGRESS AND RESCUE OPENINGS SHALL BE REQUIRED IN EACH SLEEPING ROOM. WHERE EMERGENCY ESCAPES AND RESCUE OPENINGS ARE PROVIDED THEY SHALL HAVE A SILL HEIGHT OF NOT MORE THAN 44 INCHES (1118 MM) MEASURED FROM THE FINISHED FLOOR TO THE BOTTOM OF THE CLEAR OPENING.
2012 IRC SECTION 310.1

OCCUPANCY SEPARATION NOTES

1. THE ONE HOUR OCCUPANCY SEPARATION BETWEEN THE R3 (RESIDENCE) AND THE U (ATTACHED GARAGE OR CARPORT) MAY BE LIMITED TO MATERIALS APPROVED FOR ONE HOUR FIRE RESISTIVE CONSTRUCTION ON THE GARAGE OR CARPORT SIDE.

2. PROVIDE 5/8 INCH TYPE X GYPSUM BOARD ON ALL WALLS AND CEILING OF GARAGE

3. IF LIVING SPACE IS ABOVE THE GARAGE, PROVIDE 5/8 INCH GYPSUM BOARD ON CEILING OF GARAGE.

4. A SELF CLOSING TIGHT FITTING SOLID WOOD DOOR 1-3/8 INCHES IN THICKNESS WILL BE PERMITTED IN LIEU OF A 20 MINUTE FIRE ASSEMBLY BETWEEN THE R3 AND THE U OCCUPANCIES.

5. OPENINGS FROM A PRIVATE GARAGE DIRECTLY INTO A ROOM USED FOR SLEEPING PURPOSES SHALL NOT BE PERMITTED. OTHER OPENINGS BETWEEN THE GARAGE AND RESIDENCE SHALL BE EQUIPPED WITH 20-MINUTE FIRE-RATED DOORS.
2012 IRC SECTION R302.5.1

6. THE GARAGE SHALL BE SEPARATED FROM THE RESIDENCE AND ITS ATTIC AREA BY INSTALLATION OF MATERIALS APPROVED FOR ONE-HOUR FIRE RESISTIVE CONSTRUCTION APPLIED TO THE GARAGE SIDE WHERE THE SEPARATION IS A FLOOR-CEILING ASSEMBLY. THE STRUCTURE SUPPORTING THE SEPARATION SHALL ALSO BE PROTECTED BY INSTALLATION OF MATERIALS APPROVED FOR ONE-HOUR FIRE RESISTANCE.
REFER TO TABLE R302.6

7. ATTIC DOORS LOCATED IN GARAGES SHALL BE OF 1 HOUR FIRE RESISTIVE CONSTRUCTION, BE HINGED, AND HAVE A POSITIVE LATCH. THE ATTIC DOOR SHALL BE SELF CLOSING.

8. MEMBRANE PENETRATIONS SHALL COMPLY WITH SECTION R317.3.1. WHERE WALLS ARE REQUIRED TO HAVE A FIRE-RESISTANCE RATING, RECESSED FIXTURES SHALL BE SON INSTALLED SUCH THAT THE REQUIRED FIRE RESISTANCE WILL NOT BE REDUCED.
EXCEPTION:
8.1. MEMBRANE PENETRATIONS OF MAXIMUM 2-HOUR FIRE-RESISTANCE-RATED WALLS AND PARTITIONS BY STEEL ELECTRICAL BOXES THAT DO NOT EXCEED 16 SQUARE INCHES IN AREA PROVIDED THE AGGREGATE AREA OF THE OPENINGS THROUGH THE MEMBRANE DOES NOT EXCEED 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF WALL AREA. THE ANNULAR SPACE BETWEEN THE WALL MEMBRANE AND THE BOX SHALL NOT EXCEED 1/8 INCH. SUCH BOXES ON OPPOSITE SIDES OF THE WALL SHALL BE SEPARATED AS FOLLOWS:
8.1.1. BY A HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES EXCEPT AT WALLS OR PARTITIONS CONSTRUCTED USING PARALLEL ROWS OF STUDS OR STAGGERED STUDS.
8.1.2. BY A HORIZONTAL DISTANCE OF NOT LESS THAN THE DEPTH OF THE WALL CAVITY WHEN THE WALL CAVITY IS FILLED WITH CELLULOSE LOOSE-FILL, ROCKWOOL OR SLAG MINERAL WOOL INSULATION.
8.1.3. BY SOLID FIRE BLOCKING IN ACCORDANCE WITH SECTION R602.8.1
8.1.4. BY PROTECTING BOTH BOXES WITH LISTED PUTTY PADS, OR
8.1.5. BY OTHER LISTED MATERIALS AND METHODS
2012 IRC SECTION R302.4.2

9. PLUMBING PENETRATIONS THROUGH GARAGE FIRE WALL MUST BE MADE WITH METAL PIPING. THIS INCLUDES WASTE LINES, VACUUM LINES, ETC. AN APPROVED FIRE STOP MATERIAL MUST BE USED.

10. GARAGES BENEATH HABITABLE ROOMS SHALL BE SEPARATED FROM ALL HABITABLE ROOMS ROOMS ABOVE BY NOT LESS THAN 5/8" INCH (15.9 MM) TYPE X GYPSUM BOARD OR EQUIVALENT. WHERE THE SEPARATION IS A FLOOR-CEILINGG ASSEMBLY, THE STRUCTURE SUPPORTING THE SEPARATION SHALL ALSO BE PROTECTED BY NOT LESS THAN 1/2" (12.77 MM) GYPSUM BOARD OR EQUIVALENT. REFER TO TABLE R302.6

INSULATION NOTES

1. THE THICKNESS OF BLOWN IN OR SPRAYED ROOF/CEILING INSULATION (FIBERGLASS OR CELLULOSE) SHALL BE WRITTEN IN INCHES (MM) ON MARKERS THAT ARE INSTALLED AT LEAST ONE FOR EVERY 300 SQ. FT. (28 SQ. M.) THROUGHOUT THE ATTIC SPACE. THE MARKERS SHALL BE AFFIXED TO THE TRUSSES OR JOISTS AND MARKED WITH THE MINIMUM INITIAL INSTALLED THICKNESS WITH NUMBERS A MINIMUM OF 1" (25 MM) HIGH. EACH MARKER SHALL FACE THE ATTIC ACCESS OPENING.

CRAWL SPACES

1. THE UNDER-FLOOR SPACE BETWEEN THE BOTTOM OF THE FLOOR JOISTS AND THE EARTH UNDER ANY BUILDING (EXCEPT SPACE OCCUPIED BY A BASEMENT) SHALL HAVE VENTILATION OPENINGS THROUGH FOUNDATION WALLS OR EXTERIOR WALLS. THE MINIMUM NET AREA OF VENTILATION OPENINGS SHALL NOT BE LESS THAN 1 SQUARE FOOT (0.0929 METERS SQUARE) FOR EACH 150 SQUARE FEET (14 METERS SQUARE) OF UNDER-FLOOR SPACE AREA, UNLESS THE GROUND SURFACE IS COVERED BY A CLASS 1 VAPOR RETARDER MATERIAL. WHEN A CLASS 1 VAPOR RETARDER MATERIAL IS USED, THE MINIMUM NET AREA OF VENTILATION OPENINGS SHALL NOT BE LESS THAN 1 SQUARE FOOT (0.0929 METERS SQUARE) FOR EACH 1500 SQUARE FEET (140 METERS SQUARE) OF UNDER-FLOOR SPACE AREA. ONE SUCH VENTILATION OPENING SHALL BE WITHIN 3 FEET (914 MM) OF EACH CORNER OF THE BUILDING.
2012 IRC SECTION R408.1

2. ACCESS SHALL BE PROVIDED TO ALL UNDER-FLOOR SPACES. ACCESS OPENINGS THROUGH THE FLOOR SHALL BE A MINIMUM OF 18" BY 24" (457 MM BY 610 MM). OPENINGS THROUGH A PERIMETER WALL SHALL BE NOT LESS THAN 16" BY 24" (407 MM BY 610 MM). WHEN ANY PORTION OF THE THROUGH-WALL ACCESS IS BELOW GRADE, AN AREAWAY NOT LESS THAN 16" BY 24" (407 MM BY 610 MM) SHALL BE PROVIDED. THE BOTTOM OF THE AREAWAY SHALL BE BELOW THE THRESHOLD OF THE ACCESS OPENING. THROUGH WALL ACCESS OPENINGS SHALL NOT BE LOCATED UNDER A DOOR TO THE RESIDENCE. SEE SECTION M1305.1.4 FOR ACCESS REQUIREMENTS WHERE MECHANICAL EQUIPMENT IS LOCATED UNDER FLOORS. 2012 IRC SECTION R408.4

FIRE SAFETY NOTES

1. ENCLOSED ACCESSIBLE SPACE UNDER STAIRS SHALL HAVE WALLS, UNDER STAIR SURFACE AND ANY SOFFITS PROTECTED ON THE ENCLOSED SIDE WITH 5/8 INCH (13MM) GYPSUM BOARD

2. SMOKE ALARMS SHALL BE INSTALLED IN THE FOLLOWING LOCATIONS: EACH SLEEPING ROOM, OUTSIDE EACH SEPARATE SLEEPING AREA IN THE IMMEDIATE VICINITY OF THE BEDROOMS, AND ON EACH ADDITIONAL STORY OF THE DWELLING, INCLUDING BASEMENTS AND HABITABLE ATTICS BUT NOT INCLUDING CRAWL SPACES AND UNINHABITABLE ATTICS. IN DWELLINGS OR DWELLING UNITS WITH SPLIT LEVELS AND WITHOUT AN INTERVENING DOOR BETWEEN THE ADJACENT LEVELS, A SMOKE ALARM INSTALLED ON THE UPPER FLOOR SHALL SUFFICE FOR THE ADJACENT LOWER LEVEL PROVIDED THAT THE LOWER LEVEL IS LESS THAN ONE FULL STORY BELOW THE UPPER LEVEL.

WHEN MORE THAN ONE SMOKE ALARM IS REQUIRED TO BE INSTALLED WITHIN AN INDIVIDUAL DWELLING UNIT THE ALARM DEVICES SHALL BE INTERCONNECTED IN SUCH A MANNER THAT THE ACTUATION OF ONE ALARM WILL ACTIVATE ALL OF THE ALARMS IN THE INDIVIDUAL UNIT. 2012 IRC SECTION R314.3

3. REQUIRED SMOKE DETECTORS SHALL RECEIVE THEIR PRIMARY POWER FROM THE BUILDING WIRING AND SHALL BE EQUIPPED WITH A BATTERY BACKUP. ALL DETECTORS SHALL BE WIRED "IN SERIES" SO THAT THE ALARM IS AUDIBLE IN ALL SLEEPING AREAS.

4. PROTECT ENCLOSED USABLE SPACE UNDER STAIRS WITH 5/8 INCH GYPSUM BOARD.

5. FIREBLOCKING SHALL BE PROVIDED TO CUT OFF ALL CONCEALED DRAFT OPENINGS (BOTH VERTICAL AND HORIZONTAL) AND TO FORM AN EFFECTIVE FIRE BARRIER BETWEEN STORIES, AND BETWEEN A TOP STORY AND THE ROOF SPACE. FIREBLOCKING SHALL BE PROVIDED IN WOOD-FRAME CONSTRUCTION IN THE FOLLOWING LOCATIONS.

- IN CONCEALED SPACES OF STUD WALLS AND PARTITIONS, INCLUDING FURRED SPACES AND PARALLEL ROWS OF STUDS OR STAGGERED STUDS; AS FOLLOWS:
a. VERTICALLY AT THE CEILING AND FLOOR LEVELS
b. HORIZONTALLY AT INTERVALS NOT EXCEEDING 10 FEET (3048 MM).
c. AT ALL INTERCONNECTIONS BETWEEN CONCEALED VERTICAL AND HORIZONTAL SPACES SUCH AS OCCUR AT SOFFITS, DROP CEILINGS AND COVE CEILINGS.
d. IN CONCEALED SPACES BETWEEN STAIR STRINGERS AT THE TOP AND BOTTOM OF THE RUN. ENCLOSED SPACES UNDER STAIRS SHALL COMPLY WITH SECTION R311.2.2
e. AT OPENINGS AROUND VENTS, PIPES, DUCTS, CABLES AND WIRES AT CEILING AND FLOOR LEVEL, WITH AN APPROVED MATERIAL TO RESIST THE FREE PASSAGE OF FLAME AND PRODUCTS OF COMBUSTION.
f. FOR THE FIREBLOCKING OF CHIMNEYS AND FIREPLACES, SEE SECTION R1003.19.
g. FIREBLOCKING OF CORNICES OF A TWO-FAMILY DWELLING IS REQUIRED AT THE LINE OF DWELLING UNIT SEPARATION.

EXTERIOR FINISH NOTES

1. EXTERIOR WALL FINISHES MUST BE LISTED, LABELED, AND INSTALLED AS PER MANUFACTURER'S INSTALLATION INSTRUCTION GUIDE. ALL INSTALLERS MUST BE APPROVED BY THE MANUFACTURER.

BATHROOM NOTES

1. BATHTUB AND SHOWER FLOORS AND WALLS ABOVE BATHTUBS WITH INSTALLED SHOWER HEADS AND IN SHOWER COMPARTMENTS SHALL BE FINISHED WITH A NONABSORBENT SURFACE. SUCH WALL SURFACES SHALL EXTEND TO A HEIGHT OF NOT LESS THAN 6 FEET (1829 MM) ABOVE THE FLOOR 2012 SECTION IRC307.2

WINDOW NOTES

1. ALL U-FACTORS SHALL BE DETERMINED BY TESTING IN ACCORDANCE WITH NFRC 100 AND LABELED AS SUCH BY THE MANUFACTURER. PER IECC SECTION 102.1.3

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GENERAL NOTES

SCALE: NTS

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PROJECT NAME:
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MARIANI-C-XXX-3-16-B

GENERAL NOTES

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Exhibit A-Site & Building Plans

NOTE:

LOT SHALL BE GRADED TO DRAIN SURFACE WATER AWAY FROM CONCRETE WALLS. THE GRADE AWAY FROM THE FOUNDATION SHALL FALL A MINIMUM OF 6" WITHIN THE FIRST 10 FEET. (5%)

NOTE:

DUST, MUD, AND EROSION SHALL BE CONTROLLED BY WHATEVER MEANS NECESSARY, AND THE ROADWAY SHALL BE KEPT FREE OF MUD AND DEBRIS AT ALL TIMES

BUILDER-OWNER SHALL REPLACE ANY CURB& GUTTER ALONG THE FRONTAGE OF THIS PROJECT, THAT IS FOUND TO BE DEFECTIVE, AS DIRECTED BY CITY INSPECTOR.

A PROFESSIONAL ENGINEERCURRENTLY LISCENSED IN UTAH, SHALL INSPECT AND APPROVE ANY RETAINING WALLS THAT ARE HIGHER THAN 4', ONCE CONSTRUCTED

NOTE:

*ALL STORM WATER AND DIRT WILL BE KEPT ON SITE DURING CONSTRUCTION UNTIL FINAL LANDSCAPING IS DONE.

*GENERAL CONTRACTOR WILL BE HELD RESPONSIBLE FOR DIRT/MUD ON SITE DURING BAD WEATHER AND FOR CLEANING UP AFTER SUBCONTRACTORS

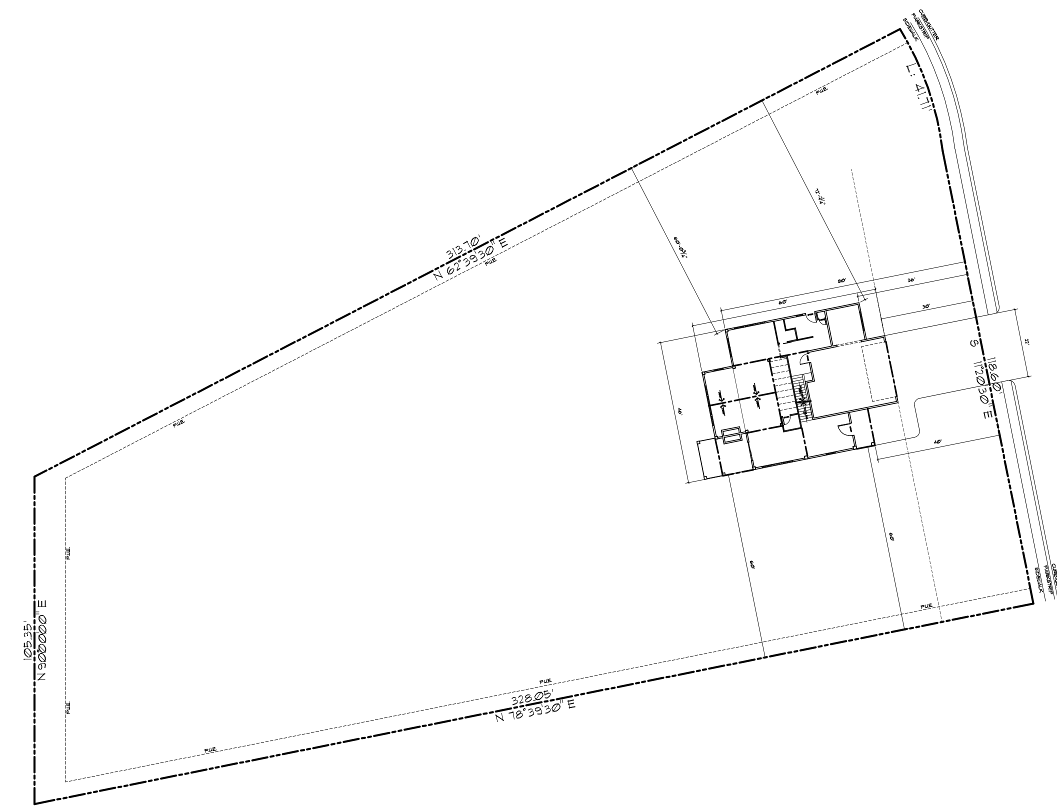
*STREET, CURB AND GUTTER, WILL BE INSPECTED AND CLEANED OF ALL MUD AND DIRT AT THE END OF EVERY DAY.

*GRAVEL BAGS TO BE PLACED AND MAINTAINED AROUND ANY STORM DRAIN INLET ADJACENT TO OR IMMEDIATELY DOWNSTREAM FROM SITE DURING CONSTRUCTION.

*BERMS AND SWAILES MAY BE REQUIRED ALONG PROPERTY LINES TO PREVENT STORM WATER FLOW ONTO ADJACENT LOTS. FINAL GRADING TO BLEND WITH ADJACENT LOTS.

*DRAINAGE ALONG REAR DRAINAGE EASEMENT MUST BE MAINTAINED AFTER LANDSCAPING TO ALLOW FLOW FROM SURROUNDING LOTS TO CROSS THE LOT AS SHOWN ON SUBDIVISION GRADING PLAN.

*A LINED CONCRETE WASHOUT AREA MUST BE PROVIDED AT THE SITE FOR ALL CONCRETE WORK. WASHOUT INTO THE FOUNDATION OR ON THE GROUND IS PROHIBITED.



SITE PLAN

SCALE: 1" = 40'

RML DESIGN

1436 S. LEGEND HILLS DR. #320
CLEARFIELD, UTAH 84015
801. 217. 3727

ATTENTION

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PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
BIG SKY ESTATES

COUNTY
MORGAN
STATE
UTAH

CLIENT NAME:
DAVE & GAYLE MARIANI

PLAN NAME:
CUSTOM

ORIGINAL RELEASE:
MAY 17, 2016

REVISION DATES
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX

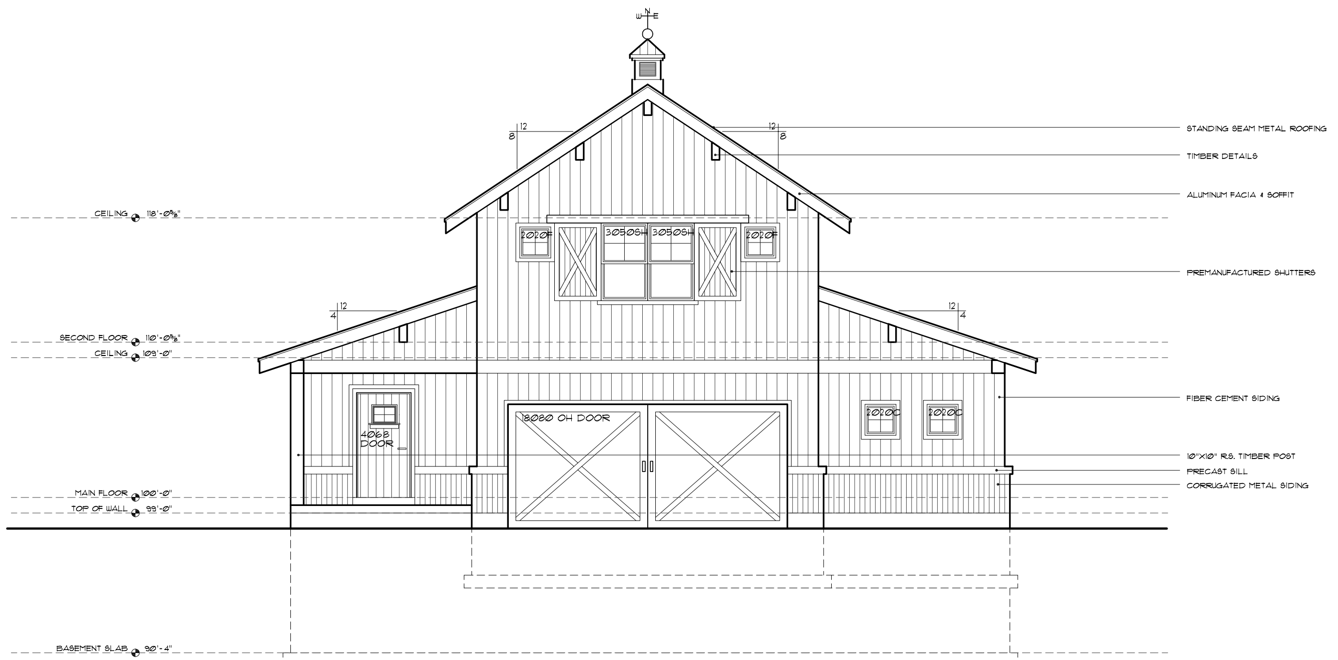
MARIANI-C-XXX-2-16-C

SITE PLAN

A1 | 1

PAGE 4 OF 25

Exhibit A-Site & Building Plans



A FRONT ELEVATION

SCALE: 1/8" = 1'-0"

RML DESIGN

1436 S. LEGEND HILLS DR. #320
CLEARFIELD, UTAH 84[illegible]
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PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
BIG SKY ESTATES
COUNTY
WEBER
STATE
UTAH

CLIENT NAME:
DAVE & GAYLE MARIANI

PLAN NAME:
CUSTOM

ORIGINAL RELEASE:
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XX/XX/XXXX
XX/XX/XXXX

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FRONT
REAR
ELEVATIONS

A2 | 1

PAGE 5 OF 25

Exhibit A-Site & Building Plans

A REAR ELEVATION

SCALE: 1/8" = 1'-0"

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WEBER
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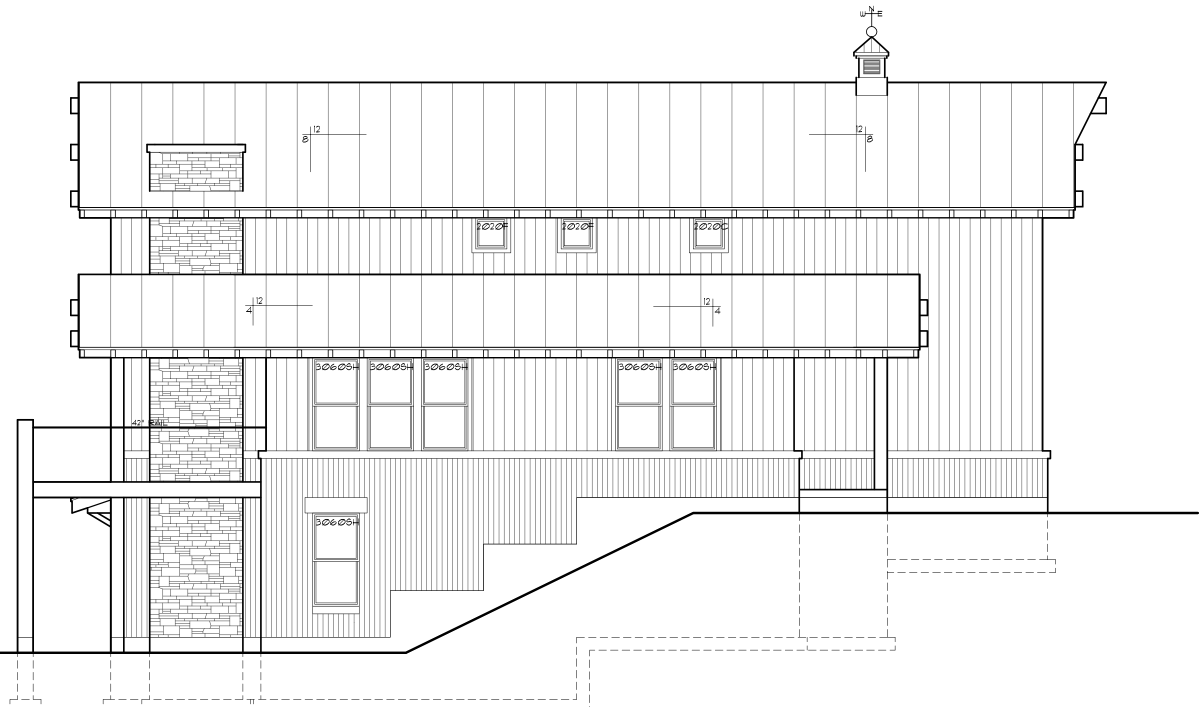
REAR ELEVATION

A2 | 2



A LEFT SIDE ELEVATION

SCALE: 1/8" = 1'-0"

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PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
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COUNTY
WEBER
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UTAH

CLIENT NAME:
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PLAN NAME:
CUSTOM

ORIGINAL RELEASE:
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LEFT ELEVATION

A2 | 3

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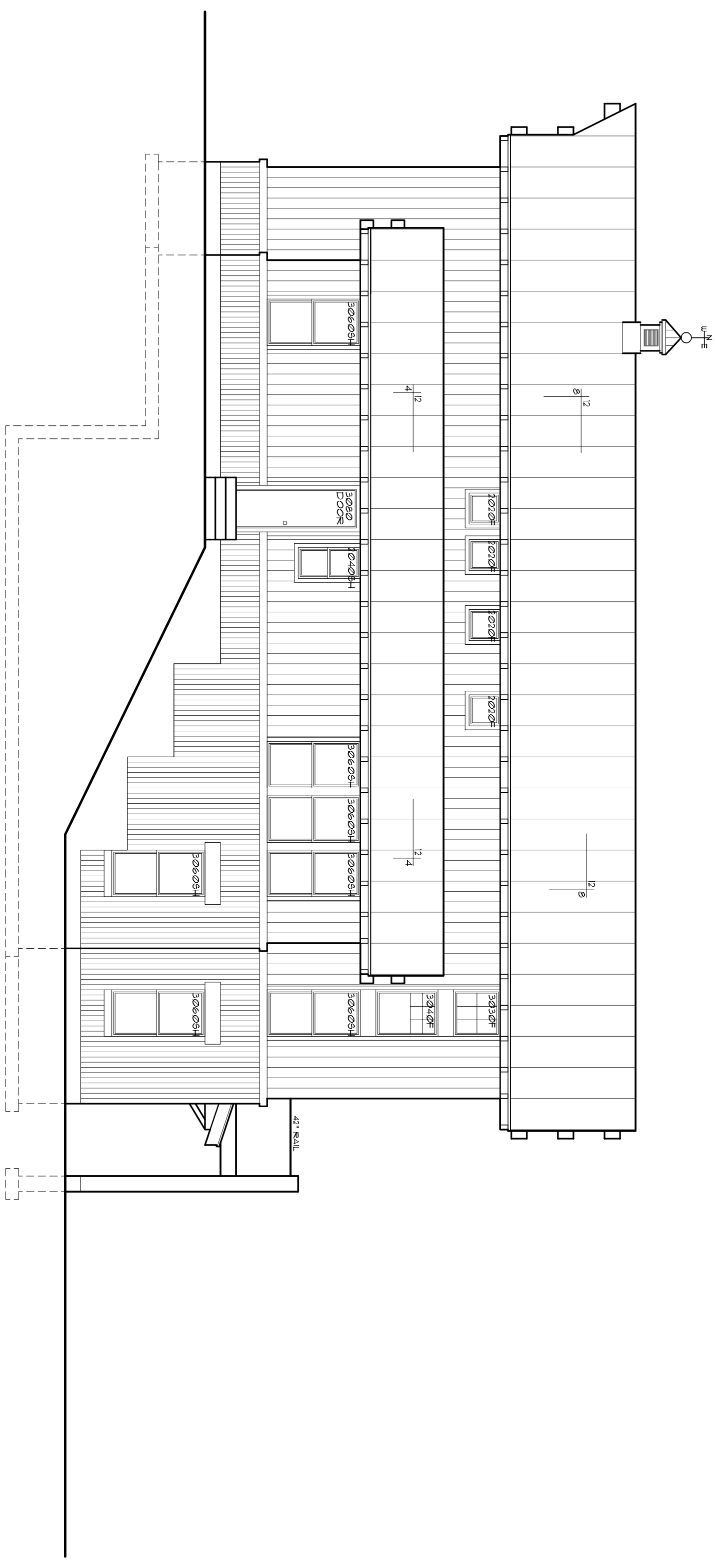
A

RIGHT SIDE ELEVATION

SCALE: 1/8" = 1'-0"



D E S I G N

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PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
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COUNTY
WEBER
STATE
UTAH

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DAVE & GAYLE MARIANI

PLAN NAME:
CUSTOM

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XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX

RIGHT ELEVATION

A2 | 4

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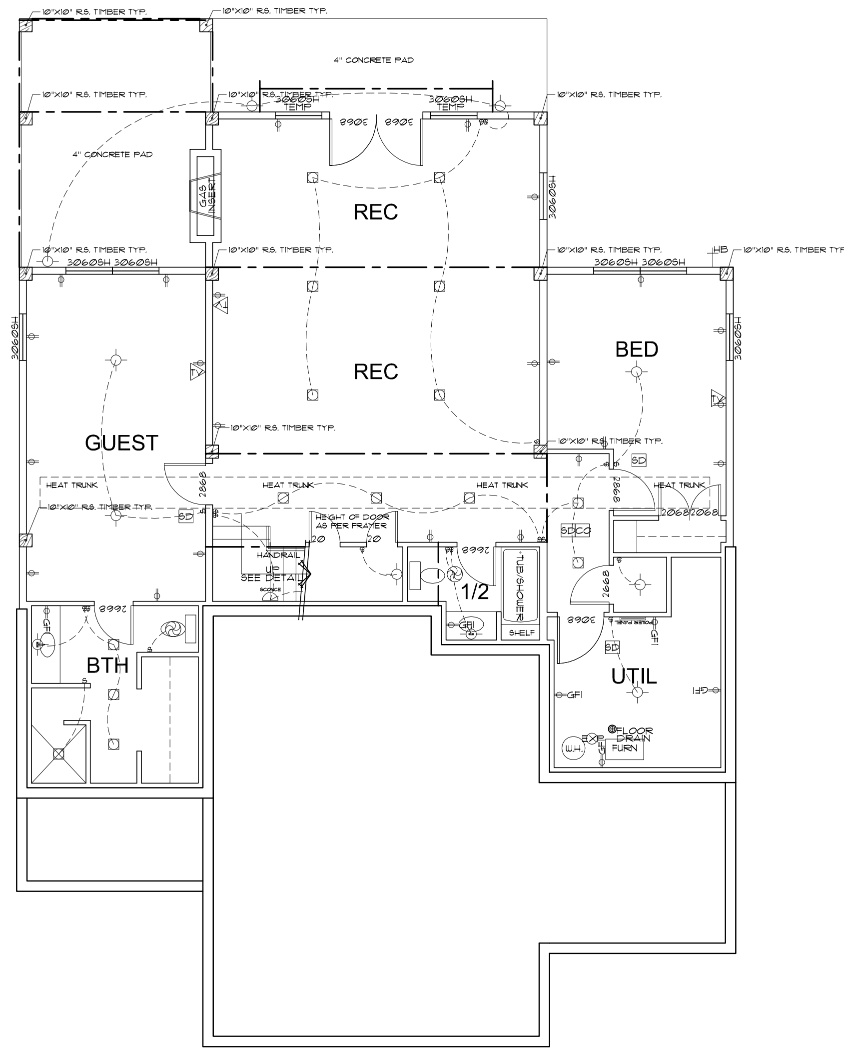

ELECTRICAL SCHEDULE

	CEILING MOUNTED INCANDESCENT
	WALL MOUNTED INCANDESCENT
P.C.	INCANDESCENT PULL CORD LIGHT
	SMALL APERATURE RECESSED LIGHT
	LARGE APERATURE RECESSED LIGHT
	EXTERIOR RATED FLOOD LIGHT
SCONCE	SCONCE AS PER OWNER
	FLOURESCENT LIGHT
	FLOOR HALL OR STAIR LIGHT
	TRACK LIGHTS
	CEILING FAN W/ LIGHT
	CEILING FAN
	EXHAUST FAN
	EXHAUST FAN W/ LIGHT
	EXHAUST FAN W/ HEATER
SD	SMOKE DETECTOR W/BATT BACKUP
CO	CARBON MONOXIDE DETECTOR
	110 VOLT DUPLEX OUTLET
220	220 VOLT OUTLET
GFI	110 VOLT GROUND FAULT INTERRUPTER
WPGFI	110 VOLT WATERPROOF GFI OUTLET
	PHONE JACK
	TELEVISION CABLE JACK
	MULTI-MEDIA OUTLET (CAT 5E WIRING W/ 4 PORT OUTLET)
S	NORMAL SWITCH

WINDOW TYPE NOTE
ALL SLIDERS AND SINGLE HUNG WINDOWS ARE ASSUMED TO OPEN 50% UNLESS OTHERWISE INDICATED
KEY TO TYPE
SH - SINGLE HUNG S- SLIDER
C- CASEMENT F - FIXED
AW - AWNING

SHEETROCK NOTE
BECAUSE OF THE STYLE AND SPECIFIC ARCHITECTURE DO NOT USE ANY ROUNDED CORNERS IN THE FINISH OF ANY OF THE SHEETROCK IN THIS PROJECT UNLESS SPECIFICALLY INSTRUCTED BY THE HOMEOWNER. UNLESS OTHERWISE INSTRUCTED, USE ONLY SHARP CORNER TRIM IN THE COMPLETION OF THE SHEETROCK OF THIS PROJECT.

A BASEMENT FLOOR PLAN
SCALE: 1/8" = 1'-0"

RML DESIGN
1436 S. LEGEND HILLS DR. #320
CLEARFIELD, UTAH 84...
801. 217. 3727

PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
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BIG SKY ESTATES
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BASEMENT FLOOR PLAN

A3 | 1

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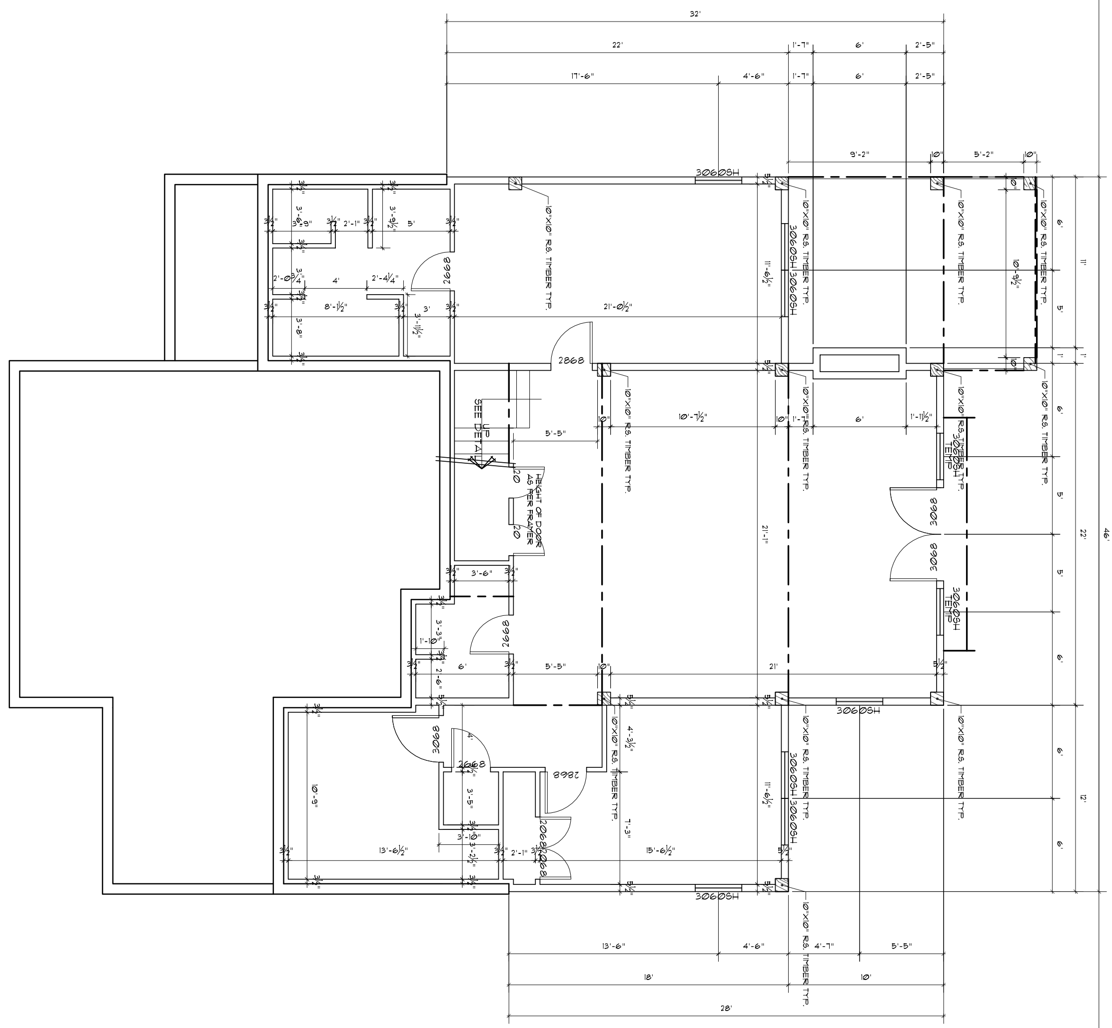
A

BASEMENT WALL FRAMING PLAN

SCALE: 1/8" = 1'-0"



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ATTENTION

PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
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SUBDIVISION
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COUNTY
WEBER
STATE
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CUSTOM

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BASEMENT WALL FRAMING PLAN

A3 | 2

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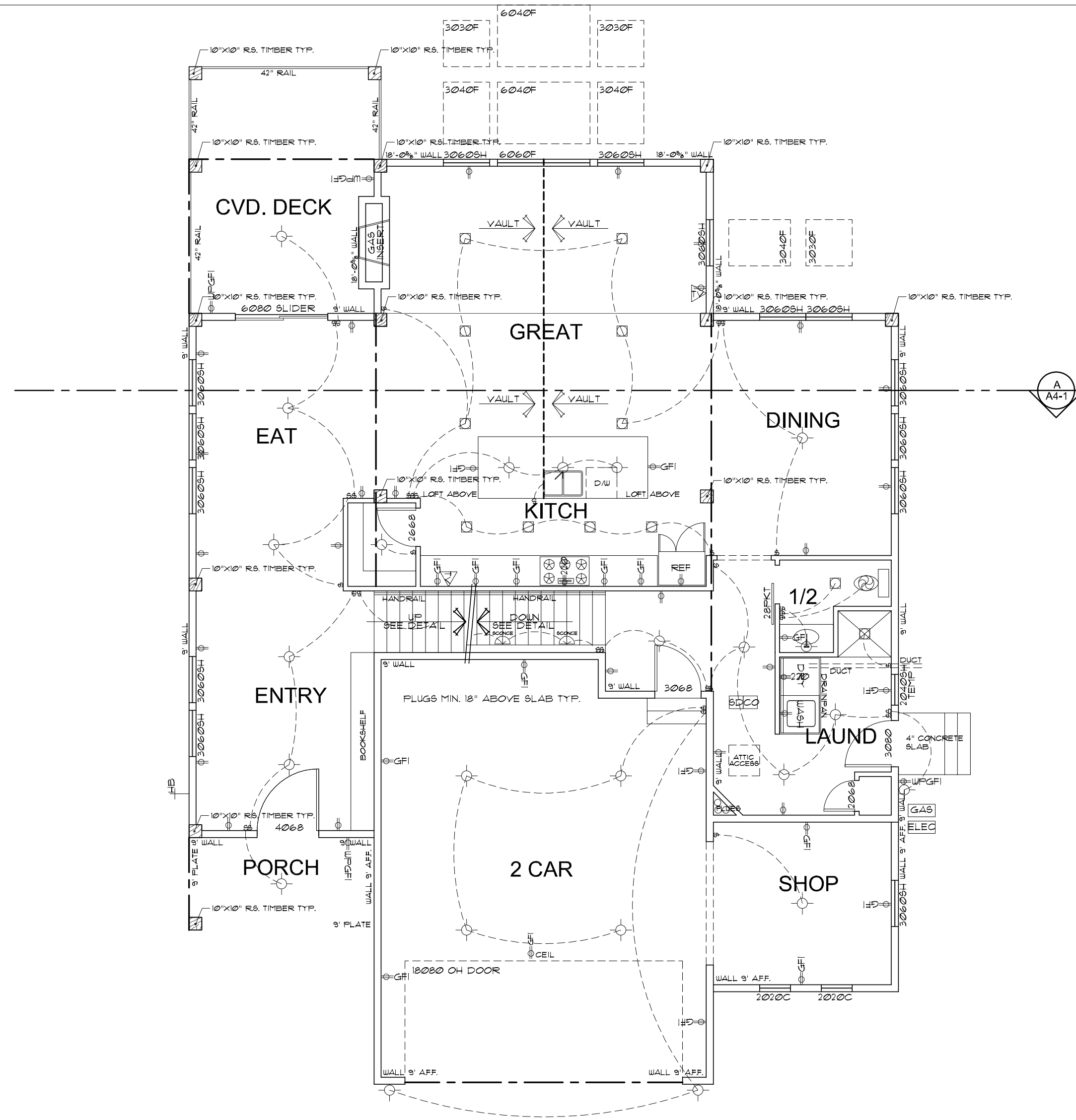
Exhibit A-Site & Building Plans



A MAIN FLOOR PLAN

SCALE: 1/8" = 1'-0"

ELECTRICAL SCHEDULE

	CEILING MOUNTED INCANDESCENT
	WALL MOUNTED INCANDESCENT
P.C.	INCANDESCENT PULL CORD LIGHT
	SMALL APERATURE RECESSED LIGHT
	LARGE APERATURE RECESSED LIGHT
	EXTERIOR RATED FLOOD LIGHT
SCONCE	SCONCE AS PER OWNER
	FLOURESCENT LIGHT
	FLOOR HALL OR STAIR LIGHT
	TRACK LIGHTS
	CEILING FAN W/ LIGHT
	CEILING FAN
	EXHAUST FAN
	EXHAUST FAN W/ LIGHT
	EXHAUST FAN W/ HEATER
SD	SMOKE DETECTOR W/BATT BACKUP
CO	CARBON MONOXIDE DETECTOR
	110 VOLT DUPLEX OUTLET
220	220 VOLT OUTLET
GFI	110 VOLT GROUND FAULT INTERRUPTER
WPGFI	110 VOLT WATERPROOF GFI OUTLET
P	PHONE JACK
TV	TELEVISION CABLE JACK
M	MULTI-MEDIA OUTLET (CAT 5E WIRING W/ 4 PORT OUTLET)
S	NORMAL SWITCH

WINDOW TYPE NOTE

ALL SLIDERS AND SINGLE HUNG WINDOWS ARE ASSUMED TO OPEN 50% UNLESS OTHERWISE INDICATED

KEY TO TYPE
SH - SINGLE HUNG S- SLIDER
C- CASEMENT F - FIXED
AW - AWNING

SHEETROCK NOTE

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PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
LOT #
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SUBDIVISION
BIG SKY ESTATES
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WEBER
STATE
UTAH

CLIENT NAME:
DAVE & GAYLE MARIANI

PLAN NAME:
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XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX

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MAIN FLOOR PLAN

A3 | 3

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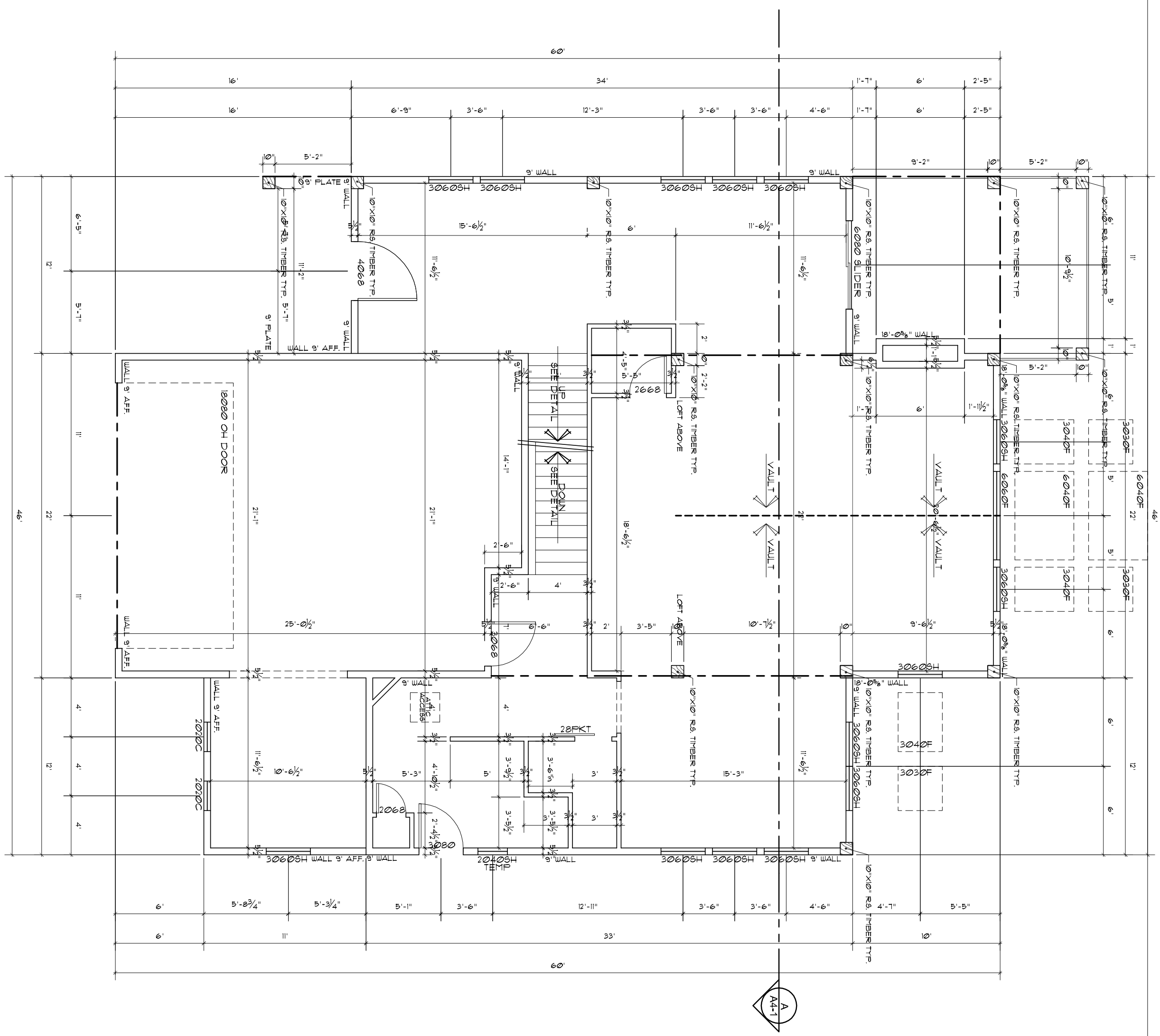
MAIN FLOOR WALL FRAMING PLAN

A

SCALE: 1/8" = 1'-0"



RML DESIGN

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ATTENTION

PROJECT NAME:
MARIANI
RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
BIG SKY ESTATES
COUNTY
WEBER
STATE
UTAH

CLIENT NAME:
DAVE & GAYLE
MARIANI

PLAN NAME:
CUSTOM

ORIGINAL RELEASE:
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MAIN FLOOR
WALL FRAMING
PLAN

A3|4

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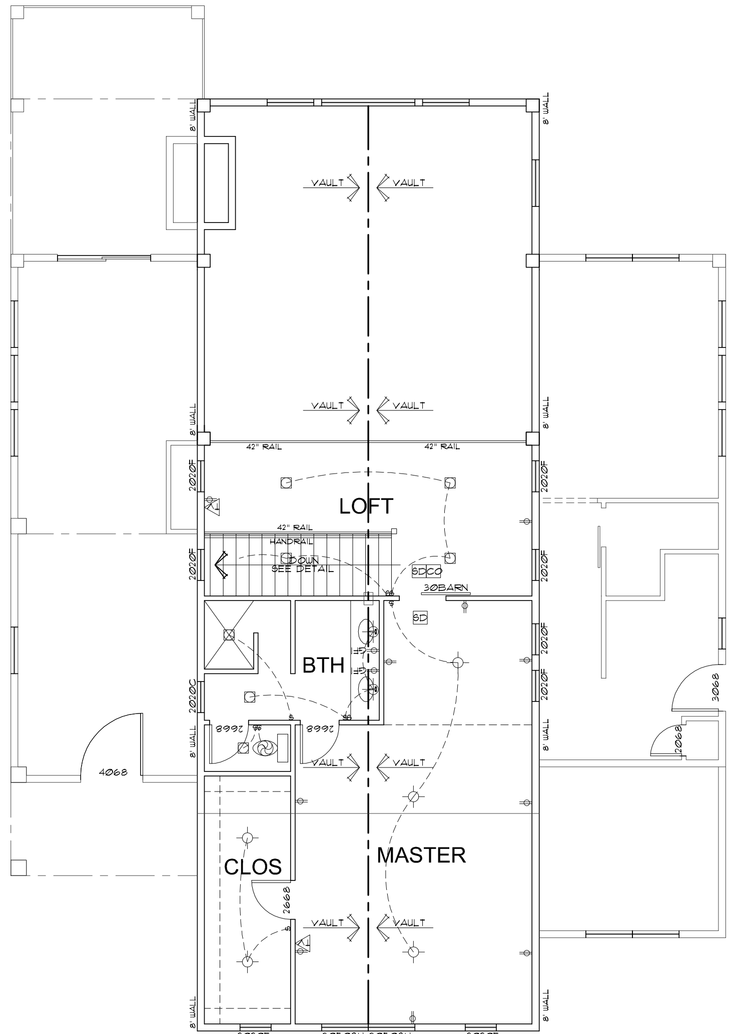
Exhibit A-Site & Building Plans



A UPPER FLOOR PLAN

SCALE: 1/8" = 1'-0"

ELECTRICAL SCHEDULE

	CEILING MOUNTED INCANDESCENT
	WALL MOUNTED INCANDESCENT
P.C.	INCANDESCENT PULL CORD LIGHT
	SMALL APERATURE RECESSED LIGHT
	LARGE APERATURE RECESSED LIGHT
	EXTERIOR RATED FLOOD LIGHT
SCONCE	SCONCE AS PER OWNER
	FLOURESCENT LIGHT
	FLOOR HALL OR STAIR LIGHT
	TRACK LIGHTS
	CEILING FAN W/ LIGHT
	CEILING FAN
	EXHAUST FAN
	EXHAUST FAN W/ LIGHT
	EXHAUST FAN W/ HEATER
SD	SMOKE DETECTOR W/BATT BACKUP
CO	CARBON MONOXIDE DETECTOR
	110 VOLT DUPLEX OUTLET
220	220 VOLT OUTLET
GFI	110 VOLT GROUND FAULT INTERRUPTER
WPGFI	110 VOLT WATERPROOF GFI OUTLET
P	PHONE JACK
TV	TELEVISION CABLE JACK
M	MULTI-MEDIA OUTLET (CAT 5E WIRING W/ 4 PORT OUTLET)
S	NORMAL SWITCH

SHEETROCK NOTE

BECAUSE OF THE STYLE AND SPECIFIC ARCHITECTURE DO NOT USE ANY ROUNDED CORNERS IN THE FINISH OF ANY OF THE SHEETROCK IN THIS PROJECT UNLESS SPECIFICALLY INSTRUCTED BY THE HOMEOWNER. UNLESS OTHERWISE INSTRUCTED, USE ONLY SHARP CORNER TRIM IN THE COMPLETION OF THE SHEETROCK OF THIS PROJECT.

WINDOW TYPE NOTE

ALL SLIDERS AND SINGLE HUNG WINDOWS ARE ASSUMED TO OPEN 50% UNLESS OTHERWISE INDICATED

KEY TO TYPE

SH - SINGLE HUNG S- SLIDER
C- CASEMENT F - FIXED
AW - AWNING

RML DESIGN

1436 S. LEGEND HILLS DR. #320
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801. 217. 3727

PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
BIG SKY ESTATES
COUNTY
WEBER
STATE
UTAH

CLIENT NAME:
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PLAN NAME:
CUSTOM

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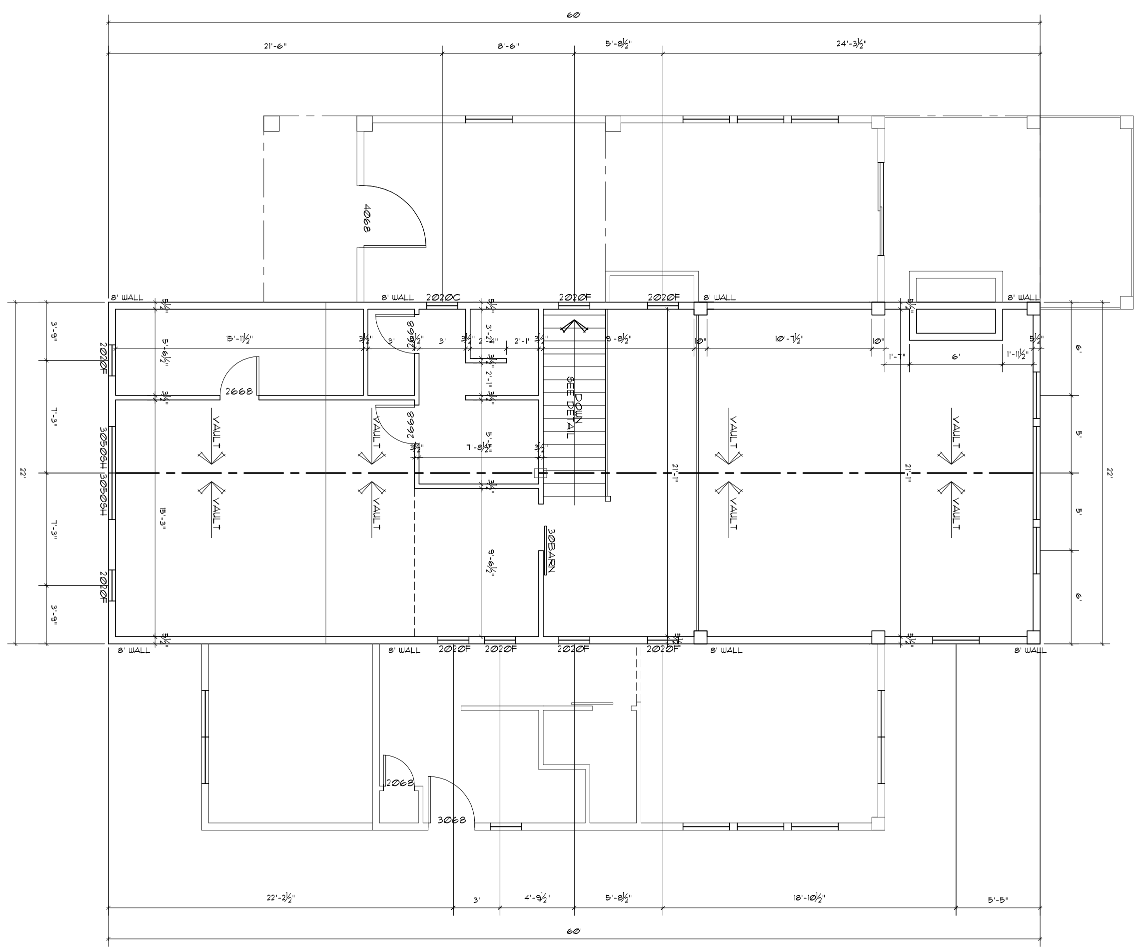
UPPER FLOOR PLAN

A3 | 5

Exhibit A-Site & Building Plans

UPPER FLOOR WALL FRAMING PLAN

SCALE: 1/8" = 1'-0"



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PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
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SUBDIVISION
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COUNTY
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STATE
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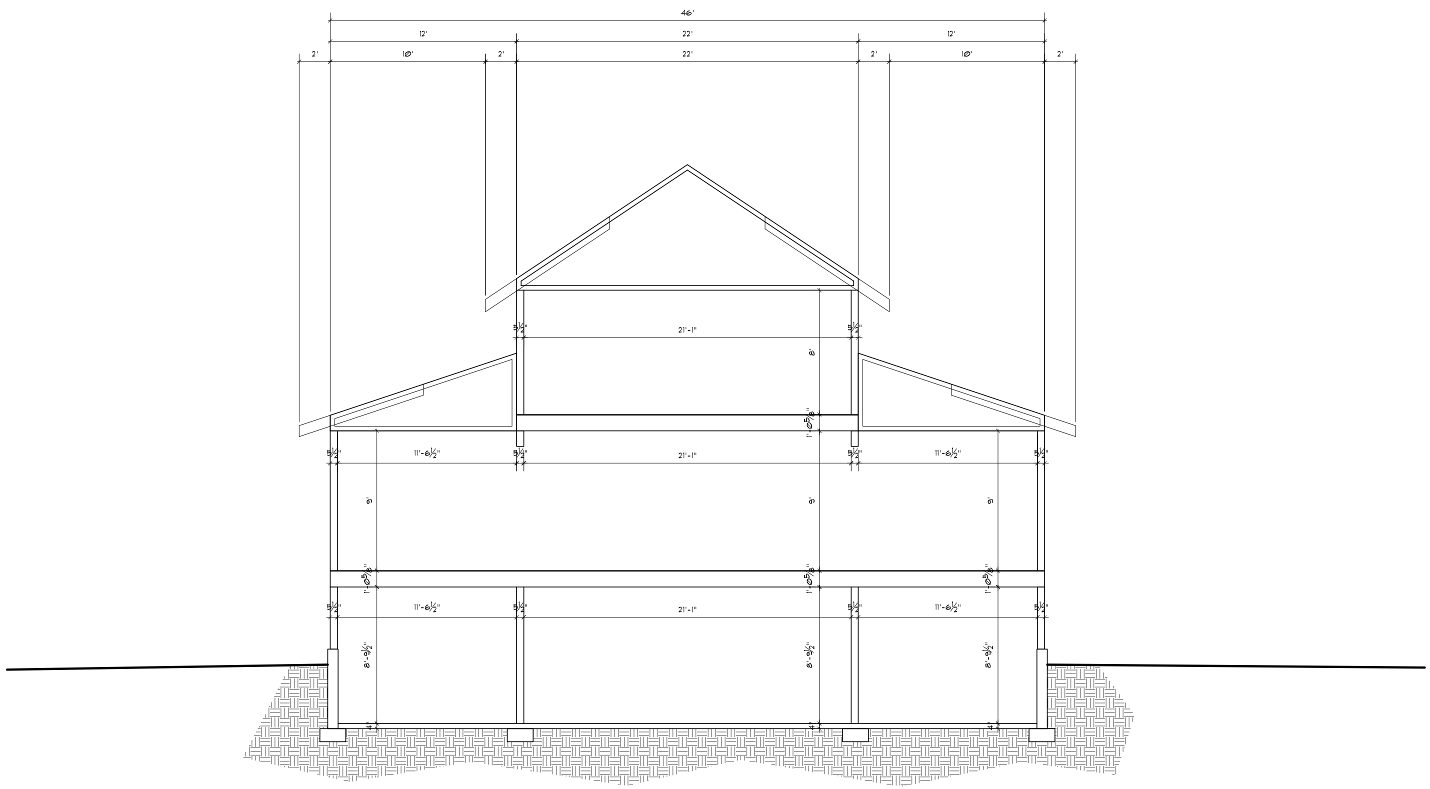
UPPER FLOOR WALL FRAMING PLAN

A3 | 6

PAGE 14 OF 25

Exhibit A-Site & Building Plans



A HOUSE SECTION 1
SCALE: 1/8" = 1'-0"

RML DESIGN
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CLEARFIELD, UTAH 84[illegible]
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HOUSE SECTIONS

A4 | 1

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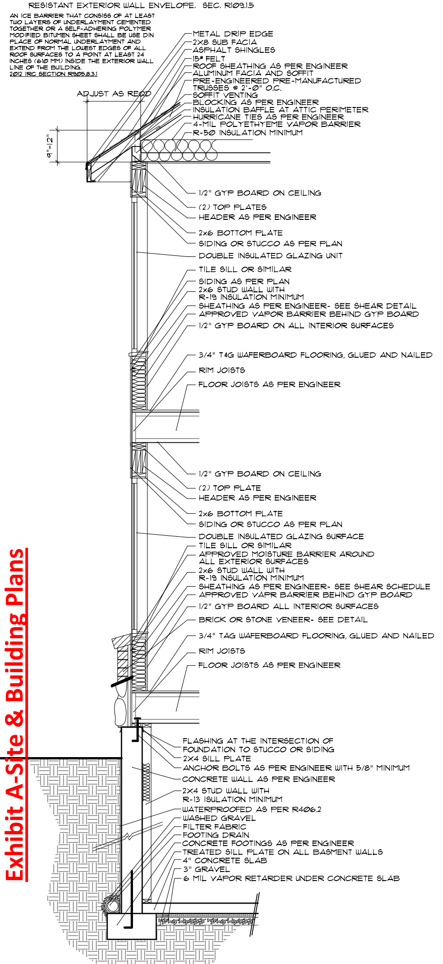
Exhibit A-Site & Building Plans

FLASHING NOTES

1. APPROVED CORROSION-RESISTANT FLASHING SHALL BE APPLIED SHINGLE-FASHION IN A MANNER TO PREVENT ENTRY OF WATER INTO THE WALL CAVITY OR PENETRATION OF WATER TO THE BUILDING STRUCTURAL FRAMING COMPONENTS. SELF-ADHERED MEMBRANES USED AS FLASHING SHALL COMPLY WITH AAMA 711. THE FLASHING SHALL EXTEND TO THE SURFACE OF THE EXTERIOR WALL FINISH. 2012 IRC SECTION R703.8
2. APPROVED CORROSION-RESISTANT FLASHINGS SHALL BE INSTALLED AT EXTERIOR WINDOW AND DOOR OPENINGS, THE INTERSECTION OF CHIMNEYS OR OTHER MASONRY CONSTRUCTION WITH FRAME OR STUCCO WALLS WITH PROJECTING LIPS ON BOTH SIDES UNDER STUCCO COPINGS, UNDER AND AT THE ENDS OF MASONRY, WOOD OR METAL COPINGS AND SILLS, CONTINUOUSLY ABOVE ALL PROJECTING WOOD TRIM, WHERE EXTERIOR PORCHES, DECKS OR STAIRS ATTACH TO A WALL OR FLOOR ASSEMBLY OF WOOD-FRAME CONSTRUCTION, AT WALL AND ROOF INTERSECTIONS, AND AT BUILT-IN GUTTERS. 2012 IRC SECTION R703.8.1-R703.8.7
3. FLASHING AT EXTERIOR WINDOW AND DOOR OPENINGS SHALL EXTEND TO THE SURFACE OF THE EXTERIOR WALL FINISH OR TO THE WATER-RESISTIVE BARRIOR FOR SUBSEQUENT DRAINAGE. FLASHING AT EXTERIOR WINDOW AND DOOR OPENINGS SHALL BE INSTALLED IN ACCORDANCE WITH ONE OR MORE OF THE FOLLOWING: THE FENESTRATION MANUFACTURER'S INSTALLATION AND FLASHING INSTRUCTIONS OR THE FLASHING MANUFACTURER'S INSTRUCTIONS. 2012 IRC SECTION R703.8.1.1- R703.8.1.3
4. PROVIDE 9 INCH FLASHING AROUND ALL WINDOWS AND DOORS WITH SILL PLATE FLASHING
5. THE STATE OF UTAH REQUIRES THAT AN INSPECTION OF THE WEATHER RESISTIVE BARRIER AND FLASHING BE MADE IN ORDER TO PREVENT WATER FROM ENTERING THE WEATHER RESISTANT EXTERIOR WALL ENVELOPE. SEC. R109.1.5



A — WALL SECTION

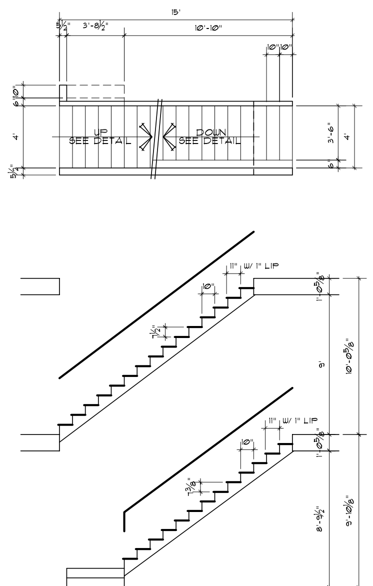
SCALE: 1/8" = 1'-0"

HANDRAIL NOTES

1. HANDRAIL HEIGHT, MEASURED VERTICALLY FROM THE SLOPED PLANE ADJOINING THE TREAD NOSING, OR FINISH SURFACE OF RAMP SLOPE, SHALL BE NOT LESS THAN 34 INCHES (864 MM) AND NOT MORE THAN 38 INCHES (965MM). 2012 IRC R311.7.8.1
2. HANDRAILS FOR STAIRWAYS SHALL BE CONTINUOUS FOR THE FULL LENGTH OF THE FLIGHT, FROM A POINT DIRECTLY ABOVE THE TOP RISER OF THE FLIGHT TO A POINT DIRECTLY ABOVE THE LOWEST RISER OF THE FLIGHT. HANDRAIL ENDS SHALL BE RETURNED OR SHALL TERMINATE IN NEWEL POSTS OR SAFETY TERMINALS. HANDRAILS ADJACENT TO A WALL SHALL HAVE A SPACE OF NOT LESS THAN 1 ½ INCH (38MM) BETWEEN THE WALL AND THE HANDRAILS. 2012 IRC R3117.8.2
3. HANDRAILS SHALL COMPLY WITH TYPE 1 GRIP-SIZE. HANDRAILS WITH CIRCULAR CROSS SECTION SHALL HAVE AN OUTSIDE DIAMETER OF AT LEAST 1¼ INCHES (32MM) AND NOT GREATER THAN 2 INCHES (51MM). IF THE HANDRAIL IS NOT CIRCULAR, IT SHALL HAVE A PERIMETER DIMENSION OF AT LEAST 4 INCHES (102MM) AND NOT GREATER THAN 6¼ INCHES (160MM) WITH A MAXIMUM CROSS SECTION OF DIMENSION OF 2¼ INCHES (57MM). EDGES SHALL HAVE A MINIMUM RADIUS OF 0.01 INCH (0.25MM). 2012 IRC R311.7.8.3.1
4. THE USE OF A VOLUTE, TURNOUT OR STARTING EASING SHALL BE ALLOWED OVER THE LOWEST TREAT.

GUARDRAIL NOTES

1. GUARDS SHALL BE LOCATED ALONG OPEN-SIDED WALKING SURFACES, INCLUDING STAIRS, RAMPS AND LANDINGS, THAT ARE LOCATED MORE THAN 30 INCHES (762MM) MEASURED VERTICALLY TO THE FLOOR OR GRADE BELOW AT ANY POINT WITHIN 36 INCHES (914MM) HORIZONTALLY TO THE EDGE OF THE OPEN SIDE. INSECT SCREENING SHALL NOT BE CONSIDERED AS A GUARD. 2012 IRC R312.1.1
2. OPEN SIDES OF STAIRS WITH A TOTAL RISE OF MORE THAN 30 INCHES ABOVE FLOOR OR GRADE BELOW SHALL HAVE GUARDS NOT LESS THAN 34 INCHES IN HEIGHT MEASURED VERTICALLY FROM THE NOSING OF THE TREADS.
3. REQUIRED GUARDS SHALL NOT HAVE OPENINGS FROM THE WALKING SURFACE TO THE REQUIRED GUARD HEIGHT WHICH ALLOW PASSAGE OF A SPHERE 4 INCHES (102MM) IN DIAMETER. 2012 IRC R312.1.3
4. REQUIRED GUARDS SHALL NOT BE CONSTRUCTED WITH HORIZONTAL FLOOR AREAS, BALCONIES, AND PORCHES, SHALL HAVE INTERMEDIATE RAILS OR OTHER ORNAMENTAL PATTERNS THAT RESULTS IN A LADDER EFFECT.

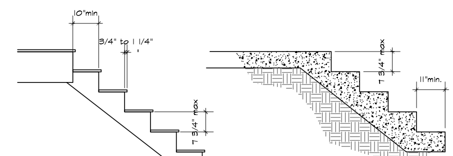


B — STAIR PLAN AND SECTION

SCALE: 1/8" = 1'-0"

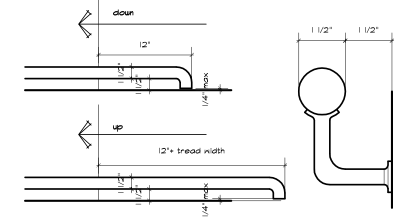
STAIRWAY AND RAILING NOTES

1. STAIRWAY SHALL HAVE 4 INCH MINIMUM AND 8 INCH MAXIMUM RISER HEIGHT AND A 9 INCH TREAD DEPTH.
2. WINDERS IN WINDING STAIRWAYS SHALL HAVE THE REQUIRED WIDTH OF RUN (9 INCHES) AT A POINT 12 INCHES FROM THE SIDE OF THE STAIRWAY WHERE THE TREADS ARE NARROWER, BUT IN NO CASE SHALL ANY WIDTH BE LESS THAN 6 INCHES AT ANY POINT.
3. EVERY STAIRWAY LANDING SHALL HAVE A DIMENSION MEASURED IN THE DIRECTION OF TRAVEL EQUAL TO THE WIDTH OF THE STAIRWAY
4. STAIRWAYS WITH MORE THAN 3 RISERS SHALL HAVE AT LEAST 1 HANDRAIL
5. HANDRAILS SHALL BE PLACED NOT LESS THAN 34 INCHES AND NO MORE THAN 36 INCHES ABOVE THE NOSING OF THE TREADS AND SHALL BE CONTINUOUS THE FULL LENGTH OF THE STAIRS.
6. STAIRWAYS MORE THAN 30 INCHES ABOVE GRADE OF FLOOR WHICH HAVE OPEN SIDE OR SIDES SHALL BE PROTECTED BY A GUARDRAIL, 36 INCHES HIGH ON THE OPEN SIDE OR SIDES.
7. THE TRIANGLE OPENINGS FORMED BY THE RISER TREAD AND BOTTOM ELEMENT OF A GUARDRAIL AT THE OPEN SIDE OF A STAIRWAY MAY BE OF SUCH SIZE THAT A SPHERE 4 INCHES IN DIAMETER CAN NOT PASS THROUGH.
8. EVERY STAIRWAY SHALL HAVE A HEADROOM CLEARANCE OF NOT LESS THAN 6-FEET-8-INCHES SUCH CLEARANCE SHALL BE MEASURED IN A VERTICAL PLANE PARALLEL AND TANGENT TO THE STAIRWAY TREAD NOSING TO THE SOFFIT ABOVE AT ALL POINTS.
9. STAIRWAYS SHALL HAVE A MINIMUM WIDTH OF 36 INCHES.
10. ENCLOSED USABLE SPACE UNDER STAIRWAYS SHALL HAVE THE WALLS AND SOFFIT PROTECTED ON THE ENCLOSED SIDE AS REQUIRED FOR 1 HOUR FIRE RESISTIVE CONSTRUCTION.
11. THE MAXIMUM RISER HEIGHT SHALL BE 7-¾ INCHES (203 MM) AND THE MINIMUM TREAD DEPTH SHALL BE 10 INCHES (254 MM) (9 INCHES (229 MM) BY STATE AMENDMENT). THE RISER HEIGHT SHALL BE MEASURED VERTICALLY BETWEEN LEADING EDGES OF THE ADJACENT TREADS. THE TREAD DEPTH SHALL BE MEASURED HORIZONTALLY BETWEEN THE VERTICAL PLANES OF THE FOREMOST PROJECTION OF ADJACENT TREADS AND AT A RIGHT ANGLE TO THE TREADS LEADING EDGE. THE WALKING SURFACE OF TREADS AND LANDINGS OF A STAIRWAY SHALL BE SLOPED NO STEEPER THAN ONE UNIT VERTICAL IN 48 UNITS HORIZONTAL (2 PERCENT). THE GREATEST RISER HEIGHT WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN 8/8 INCH (9.5 MM). THE GREATEST TREAD DEPTH WITHIN ANY FLIGHT OF STAIRS SHALL NOT EXCEED THE SMALLEST BY MORE THAN 3/8 INCH (9.5 MM).
2012 IRC SECTION R311.5.3.1, R311.5.2



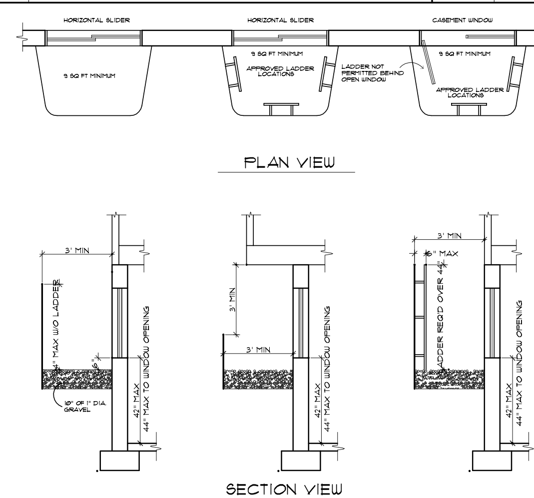
C — STAIR TREAD DETAIL

NTS



D — RAILING TERMINATION DETAIL

NTS



ESCAPE OR RESCUE WINDOW WITH A FINISH SILL HEIGHT BELOW THE ADJACENT GROUND ELEVATION SHALL HAVE A WINDOW WELL AND SHALL COMPLY WITH THE FOLLOWING:

1. THE CLEAR DIMENSIONS SHALL ALLOW THE WINDOW TO BE FULLY OPENED AND PROVIDE A MINIMUM ACCESSIBLE NET CLEAR OPENING OF 9 SQ FT, WITH A MINIMUM DIMENSION OF 36 INCHES.
2. WINDOW WELLS WITH A VERTICAL DEPTH OF MORE THAN 44 INCHES SHALL BE EQUIPED WITH AN APPROVED PERMANENTLY AFFIXED LADDER OR STAIRS THAT ARE ACCESSIBLE WITH THE WINDOW IN THE FULLY OPEN POSITION. THE LADDER OR STAIRS SHALL NOT ENCROACH INTO THE REQUIRED DIMESMIONS OF THE WINDOW WELL BY MORE THAN 6 INCHES.

E — WINDOW WELL DETAIL

NTS

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CUSTOM

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SECTIONS AND DETAILS

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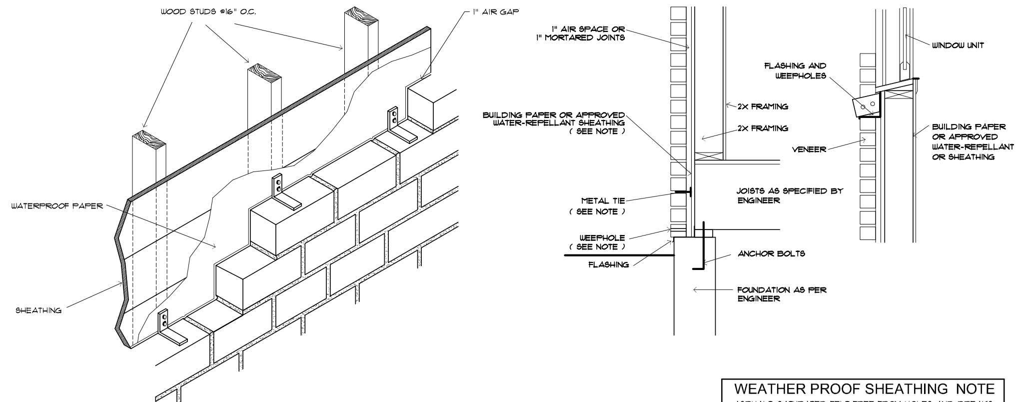


METAL TIE NOTE

1. THE VENEER TIES SHALL BE 22 GA. GALVANIZED STEEL BRACKETS
2. TIES SPACED 16" O.C. HORIZ. AND NOT MORE THAN 18" VERT.
3. TIE WIRES LAPPED AT LEAST 2" ON EA. END.
4. STEEL BRACKETS ATTACHED TO STUDS W/ 8d GALVANIZED NAILS.
5. A MAXIMUM DISTANCE OF 1" SHALL EXIST BETWEEN THE SHEATHING AND MASONRY

WEEPHOLE AND FLASHING NOTE

1. WEEPHOLES SHALL BE PROVIDED IN THE OUTSIDE WYTHE OF THE MASONRY WALLS AT A MAXIMUM SPACING OF 33" ON CENTER. WEEPHOLES SHALL NOT BE LESS THA 3/16" INCH IN DIAMETER. WEEPHOLES SHALL BE LOCATED IMMEDIATELY ABOVE THE FLASHING
2. FLASHING SHALL BE LOCATED BENEATH THE FIRST COURSE OF MASONRY ABOVE FINISHED GROUND LEVEL ABOVE THE FOUNDATION WALL OR SLAB AND AT OTHER POINTS OF SUPPORT, INCLUDING STRUCTURAL FLOORS SHELF ANGLES AND LINTELS WHEN MASONRY VENEERS ARE IN ACCORDANCE WITH SECTION R703.7

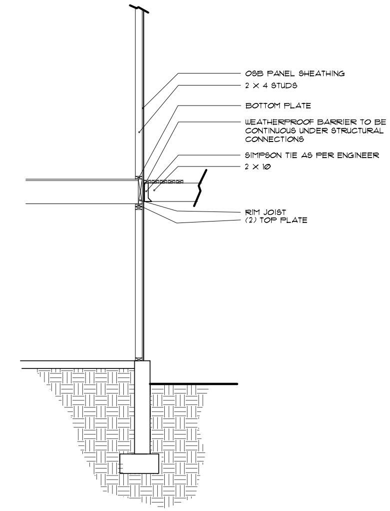
WEATHER PROOF SHEATHING NOTE

ASPHALT-SATURATED FELT FREE FROM HOLES AND BREAKS WEIGHING NOT LESS THAN 14 POUNDS PER 100 SQUARE FEET AND COMPLYING WITH ASTM D 226 OR OTHER APPROVED WEATHER-RESISTANT MATERIAL SHALL BE APPLIED OVER LOCATED IMMEDIATELY ABOVE THE FLASHING STUDS OR SHEATHING OF ALL EXTERIOR WALLS AS REQUIRED BY TABLE R703.4. SUCH FLET OR MATERIAL SHALL BE APPLIED HORIZONTALLY, WITH THE UPPER LAYER LAPPED OVER THE LOWER LAYER NOT LESS THAN 2 INCHES. WHERE JOINTS OCCUR, FELT SHALL BE LAPPED NOT LESS THAN 6 INCHES.

ABOVE DOES NOT APPLY IF

1. IN DETACHED ACCESSORY BUILDINGS
2. UNDER PANEL SIDING WITH SHIPLAP JOINTS
3. UNDER EXTEIOR WALL FINISH MATERIALS IN TABLE R703.4
4. UNDER PAPERBACKED STUCCO LATH

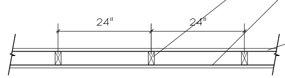
A — MASONRY VENEER ANCHORING DETAIL
NTS



B — CONT. WEATHERPROOFING DETAIL
NTS

Exhibit A-Site & Building Plans

FIRE RESISTANCE RATINGS - ANSI/UL 263



WOOD STUDS - NORM 2x4 IN. SPACED 24 IN. OC. EFFECTIVELY FIRE STOPPED

GYPSUM BOARD - 5/8 IN. THICK, 24 TO 54 IN. WIDE. GYPSUM BOARDS NAILED TO STUDS AND BEARING PLATES 7 IN. OC WITH 6d CEMENT COATED NAILS 1-7/8 IN. LONG, 0.095 IN. SHANK DIAM. AND 1/4 IN. DIAM. HEAD. WHEN USED IN WIDTHS OTHER THAN 48 IN., GYPSUM PANELS TO BE INSTALLED HORIZONTALLY.

UNITED STATES GYPSUM CO. - TYPES AR, FRX-G, IP-AR, IP-X1, SCX, SHX, OR WRX.

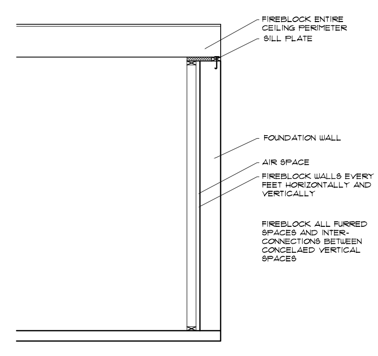
JOINTS AND NAILHEADS - WALLBOARD JOINTS COVERED WITH PAPER TAPE AND JOINT COMPUND. NAILHEADS COVERED WITH JOINT COMPUND. AS AN ALTERNATE, NOM 3/32 IN. THICK GYPSUM VENEER PLASTER MAY BE APPLIED TO THE ENTIRE SURFACE OF CLASSIFIED VENER BASEBOARD. JOINTS REINFORCED. WHEN SQUARE-EDGE GYPSUM BOARD IS USED, TREAMENT OF JOINTS IS OPTIONAL.

STEEL CORNER FASTENERS - (OPTIONAL, NOT SHOWN) - FOR USE AT WALL CORNERS. CHANNEL SHAPED, 2 IN. LONG BY 1 IN. HIGH ON THE STACK SIDE WITH TWO 1/8 IN. WIDE CLEATS PROTRUDING INTO THE 5/8 IN. WIDE CHANNEL. FABRICATED FROM 24 GAUGE GALV. STEEL. FASTENERS APPLIED ONLY TO THE END OR CUT EDGE (NOT ALONG TAPERED EDGES) OF THE WALLBOARD, NO GREATER THAN 2 IN. FROM CORNRER OF WALBOARD, MAX SPACING 16 IN. OC. NAILED TO ADJACENT STUD THROUGH TAB USING ONE NO. 6d CEMENT COATED NAIL PER FASENER. CORNERS OF WALLBOARD SHALL BE NAILED TO TOP AND BOTTOM PLATE USING NO. 6d CEMENT COATED NAILS.

BATTS AND BLANKETS* - (OPTIONAL, NOT SHOWN) - MINERAL WOOL INSULATION PLACED IN STUD CAVITIES.

*BEARING THE UL CLASSIFICATION MARKING.

C — UL FIRE RESISTANCE RATINGS
NTS



E — FIREBLOCKING DETAIL
NTS

F — XXX
NTS

D E S I G N

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SECTIONS
AND
DETAILS

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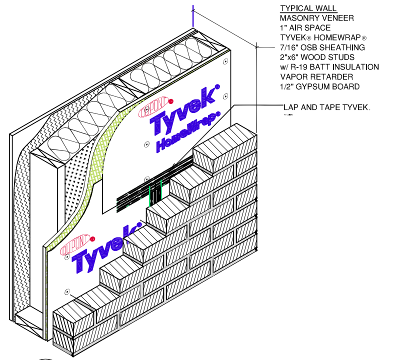
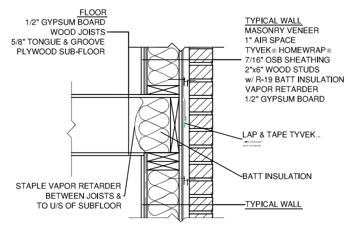


TYPICAL WALL ISOMETRIC
RESIDENTIAL WOOD FRAME STRUCTURE w/ MASONRY VENEER (HEATING CLIMATE)

GENERAL NOTES
*SEAL ALL TYVEK® JOINTS AND PENETRATIONS WITH APPROVED TAPE. (ex. DUPONT CONTRACTOR TAPE)
*FASTEN TYVEK® TO SHEATHING WITH LARGE HEAD NAILS OR USE NAILS WITH LARGE PLASTIC WASHER HEADS. (ex. DUPONT WRAPCAPS)
*SEAL OR GASKET BRICK TIES AT THE FACE OF TYVEK ®
*LOCAL LAWS, ZONING, AND BUILDING CODES VARY AND THEREFORE GOVERNS OVER MATERIAL SELECTION AND DETAILING SHOWN BELOW.



FLOOR/ WALL INTERFACE DETAIL
RESIDENTIAL WOOD FRAME STRUCTURE w/ MASONRY VENEER (HEATING CLIMATE)

GENERAL NOTES
*SEAL ALL TYVEK® JOINTS AND PENETRATIONS WITH APPROVED TAPE. (ex. DUPONT CONTRACTOR TAPE)
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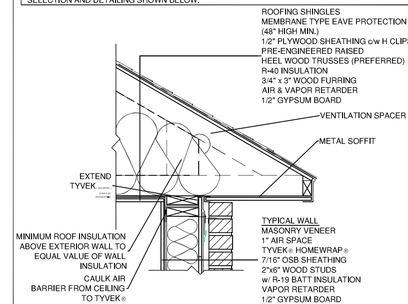

ROOF/ WALL INTERFACE DETAIL
RESIDENTIAL WOOD FRAME STRUCTURE w/ MASONRY VENEER (HEATING CLIMATE)

GENERAL NOTES
*SEAL ALL TYVEK® JOINTS AND PENETRATIONS WITH APPROVED TAPE. (ex. DUPONT CONTRACTOR TAPE)
*FASTEN TYVEK® TO SHEATHING WITH LARGE HEAD NAILS OR USE NAILS WITH LARGE PLASTIC WASHER HEADS. (ex. DUPONT WRAPCAPS)
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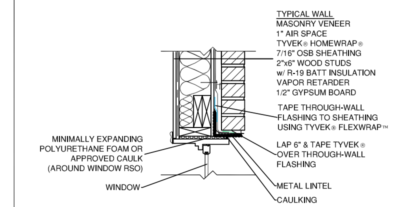
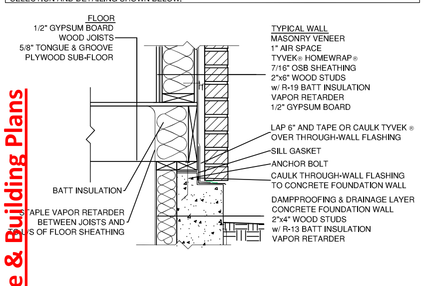
*LOCAL LAWS, ZONING, AND BUILDING CODES VARY AND THEREFORE GOVERNS OVER MATERIAL SELECTION AND DETAILING SHOWN BELOW.



WINDOW HEAD DETAIL
RESIDENTIAL WOOD FRAME STRUCTURE w/ MASONRY VENEER (HEATING CLIMATE)

GENERAL NOTES
*SEAL ALL TYVEK® JOINTS AND PENETRATIONS WITH APPROVED TAPE. (ex. DUPONT CONTRACTOR TAPE)
*FASTEN TYVEK® TO SHEATHING WITH LARGE HEAD NAILS OR USE NAILS WITH LARGE PLASTIC WASHER HEADS. (ex. DUPONT WRAPCAPS)
*SEAL OR GASKET BRICK TIES AT THE FACE OF TYVEK ®
*LOCAL LAWS, ZONING, AND BUILDING CODES VARY AND THEREFORE GOVERNS OVER MATERIAL SELECTION AND DETAILING SHOWN BELOW.



BASE OF WALL DETAIL
RESIDENTIAL WOOD FRAME STRUCTURE w/ MASONRY VENEER (HEATING CLIMATE)

GENERAL NOTES
*SEAL ALL TYVEK® JOINTS AND PENETRATIONS WITH APPROVED TAPE. (ex. DUPONT CONTRACTOR TAPE)
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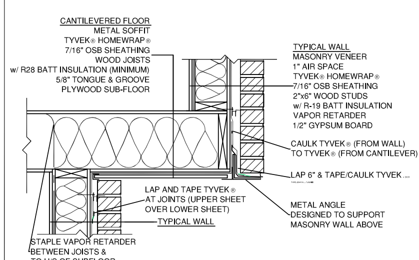
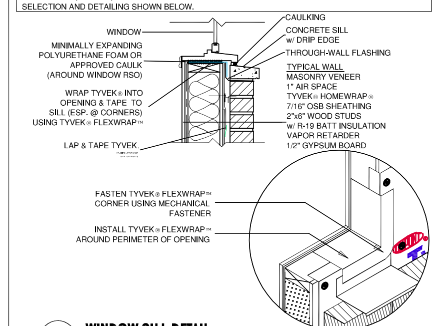


CANTILEVERED FLOOR DETAIL
RESIDENTIAL WOOD FRAME STRUCTURE w/ MASONRY VENEER (HEATING CLIMATE)

GENERAL NOTES
*SEAL ALL TYVEK® JOINTS AND PENETRATIONS WITH APPROVED TAPE. (ex. DUPONT CONTRACTOR TAPE)
*FASTEN TYVEK® TO SHEATHING WITH LARGE HEAD NAILS OR USE NAILS WITH LARGE PLASTIC WASHER HEADS. (ex. DUPONT WRAPCAPS)
*SEAL OR GASKET BRICK TIES AT THE FACE OF TYVEK ®
*LOCAL LAWS, ZONING, AND BUILDING CODES VARY AND THEREFORE GOVERNS OVER MATERIAL SELECTION AND DETAILING SHOWN BELOW.



WINDOW SILL DETAIL
RESIDENTIAL WOOD FRAME STRUCTURE w/ MASONRY VENEER (HEATING CLIMATE)

GENERAL NOTES
*SEAL ALL TYVEK® JOINTS AND PENETRATIONS WITH APPROVED TAPE. (ex. DUPONT CONTRACTOR TAPE)
*FASTEN TYVEK® TO SHEATHING WITH LARGE HEAD NAILS OR USE NAILS WITH LARGE PLASTIC WASHER HEADS. (ex. DUPONT WRAPCAPS)
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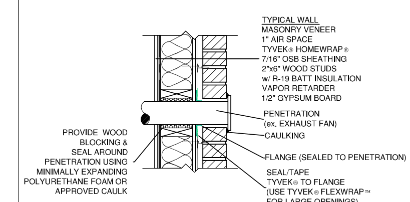
*LOCAL LAWS, ZONING, AND BUILDING CODES VARY AND THEREFORE GOVERNS OVER MATERIAL SELECTION AND DETAILING SHOWN BELOW.



WALL PENETRATION DETAIL
RESIDENTIAL WOOD FRAME STRUCTURE w/ MASONRY VENEER (HEATING CLIMATE)

A TYVEK DETAILS
SCALE: NTS

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SECTIONS AND DETAILS

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ALL FOUNDATION WALLS ARE FND8 U.N.O.	
ALL CONTINUOUS FOUNDATION WALL FOOTINGS ARE FC20 U.N.O.	
ALL CONTINUOUS INTERIOR FOOTINGS ARE FC18 U.N.O.	

30"	MINIMUM FROST DEPTH
6"	MINIMUM FINISH GRADE TO TOP OF FOUND.

FOOTING SCHEDULE

SPEC	CONTINUOUS SECTION SIZE		REINFORCEMENT	
	DEPTH	WIDTH	CONTINUOUSE	TRAVERSE
FC18	10"	18"	(2) #4	NONE
FC20	10"	20"	(2) #4	NONE

SPEC	SPOT SIZE, 10" DEPTH		REINFORCMENT	
	LENGTH	WIDTH	LONGWISE	SHORTWISE
FS36	36"	36"	(4) #4	(4) #4

NOTES

1. PROVIDE REINF. STEEL 3" FROM BOTTOM OF FOOTINGS.
2. PROVIDE CONT. BENT STEEL AROUND CORNERS AND LAP WALL STEEL 24" MIN.
3. PROVIDE A 24" MIN. LAP FOR ALL STEEL.
4. FOOTINGS NEED NOT BE CONTINUOUS THRU FOUNDATION STEPS U.N.O.
5. SCHEDULE SHOWN APPLICABLE TO APPLIED PLAN ONLY.
6. FOOTINGS SUPPORTING CONCRETE FOUNDATION WALLS: PROVIDE "HOOKED" VERTICAL REINFORCEMENT EMBEDDED IN FOOTING 6" AND EXTENDING OUT OF FOOTING 24" TO LAP FOUNDATION WALL REINFORCEMENT. VERTICAL EMBEDDED REINFORCEMENT TO MATCH FOUNDATION WALL VERTICAL SPACING SPECIFICATION

PIER SCHEDULE

SPEC	CONTINUOUS SECTION SIZE		REINFORCMENT	
	DIA.	SQUARE OPTION	VERTICAL	TIES
P12	12"	12" X 12" MIN.	(4) #4	#3 @ 12" O.C.

1. EMBED VERTICAL REINFORCMENT INTO PIER FOOTING 5" MIN.
2. ALL VERTICAL REINFORCMENT WITH TIES: TIES SHALL WRAP THE OUTSIDE OF VERTICAL REINFORCEMENT ONCE AND WITH EACH END WRAPPING WITH A 270 DEGREE BEND AND TERMINATING ON THE SAME VERTICAL BAR.

FOUNDATION WALL SCHEDULE

SPEC — DESCRIPTION

FND8 — 8" THICK CONTINUOUS (TYPICAL U.N.O.)

HEIGHTS	REINFORCMENT (O.C.)		OPENING LINTELS	
	VERTICAL	HORIZONTAL	MAX SPAN	MIN DEPTH
2'-0"	#4 @ 32"	(2) #4	2'-0"	6"
3'-0"	#4 @ 32"	(3) #4	2'-0"	6"
4'-0"	#4 @ 24"	(4) #4	3'-0"	6"
6'-0"	#4 @ 24"	(5) #4	3'-0"	6"
8'-0"	#4 @ 24"	(6) #4	6'-0"	12"
9'-0"	#4 @ 16"	(7) #4	6'-0"	12"

NOTES

1. PROVIDE REINF. STEEL WITHIN 4" OF TOP & BOTTOM OF WALL AND WITHIN 2" OF OPENINGS.
2. PROVIDE (2) #4 ABOVE OPENINGS, AND (1) #4 EACH SIDE AND BELOW.
3. PROVIDE 3" OF MIN. CONC. COVER FOR ALL REINF. STEEL.
4. PROVIDE CONT. BENT STEEL AROUND CORNERS AND LAP WALL STEEL PER SCHEDULE (#4 – 18" MIN, #5 – 20" MIN.)
5. PROVIDE A 24" MIN. LAP FOR ANY STEEL IF NOT NOTED.
6. ALL STEEL IS CENTERED WITHIN THE WALL THICKNESS U.N.O. OR ON DETAILING
7. EMBEDDED PIPES SHOULD HAVE A MAX. DIA. OF 2-1/2"
8. DO NOT BACKFILL FOUNDATION WALL UNTIL CONC. FLOOR SLAB IS IN PLACE AND CURED FOR 7 OR MORE DAYS.
9. SCHEDULE SHOWN APPLICABLE TO APPLIED PLAN ONLY.

ANCHOR BOLTS & HOLDOWNS

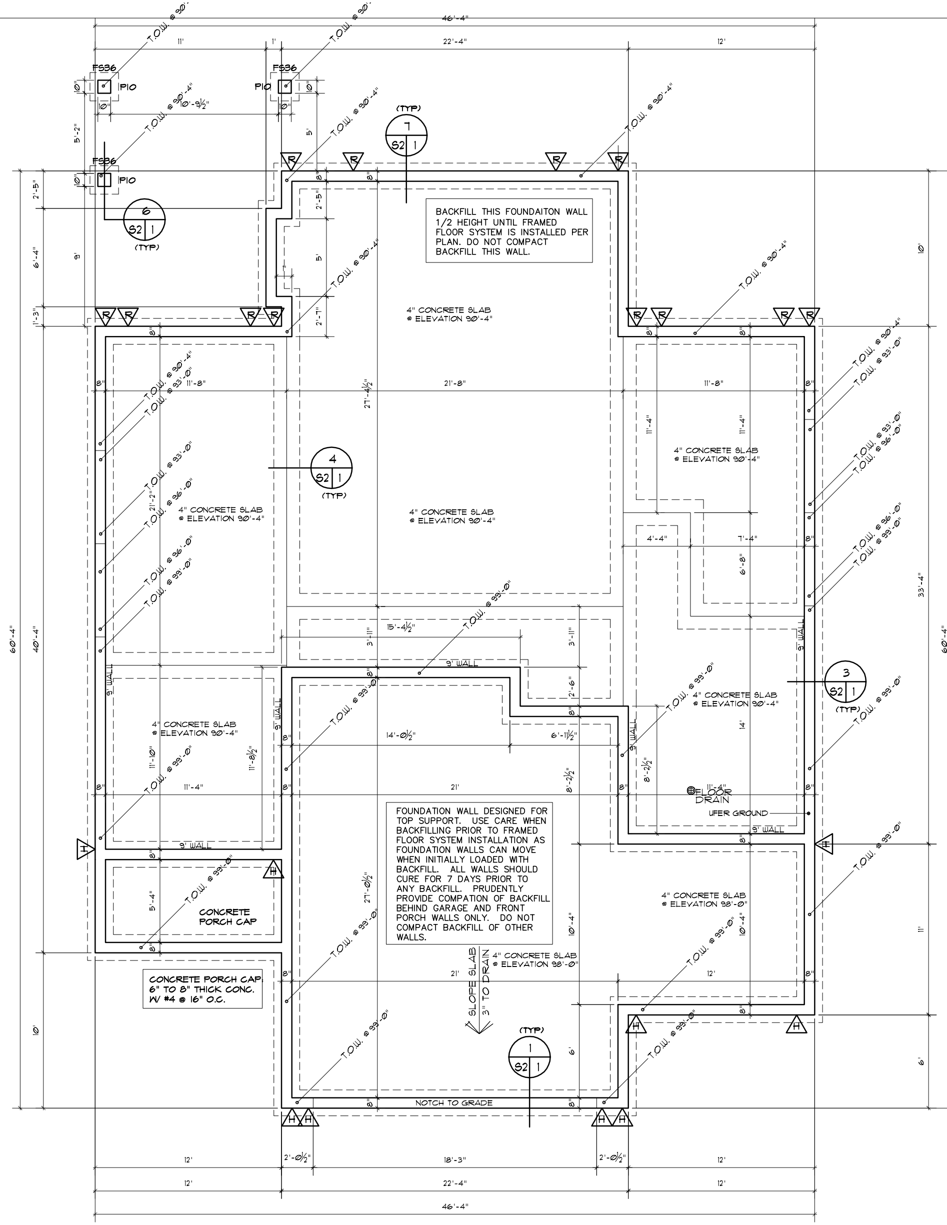
ANCHOR BOLTS U.N.O:

1/2" DIA. X 10" L A307 "J" BOLTS @ 32" O.C. U.N.O. PROVIDE AN EMBEDMENT OF 7" PROVIDE (2) A.B. MIN. PER WALL W/ (1) EA. FOUND. WALL END MIN. (2 PER CORNER). PROVIDE 3" X 3" X 1/4" (MIN.) PLATE WASHERS EA. BOLT. WASHERS W/ 1-3/4" LONG SLOTTED HOLES ARE PERMITTED IF IT IS TOPPED WITH A SECOND STANDARD WASHER.

HOLDOWN CAST IN STRAPS OR POST INSTALLED TIES:

H — SIMPSON #LSTHD14(RJ) CAST IN PLACE. (9 TYP.)

R — SIMPSON #HTT5 (ALTERNATIVE TO STRAP ABOVE) W/ 5/8" DIA THREADED ROD EMBEDDED & EPOXIED 8" DEEP INTO TOP OF CONCRETE FOUNDATION. (12 TYP.)



FOOTING/ FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

SEE SHEET S2/3 FOR CONCRETE & REINFORCEMENT SPECIFICATIONS, AND SOIL DESIGN ASSUMPTIONS

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FOOTING FOUNDATION PLAN

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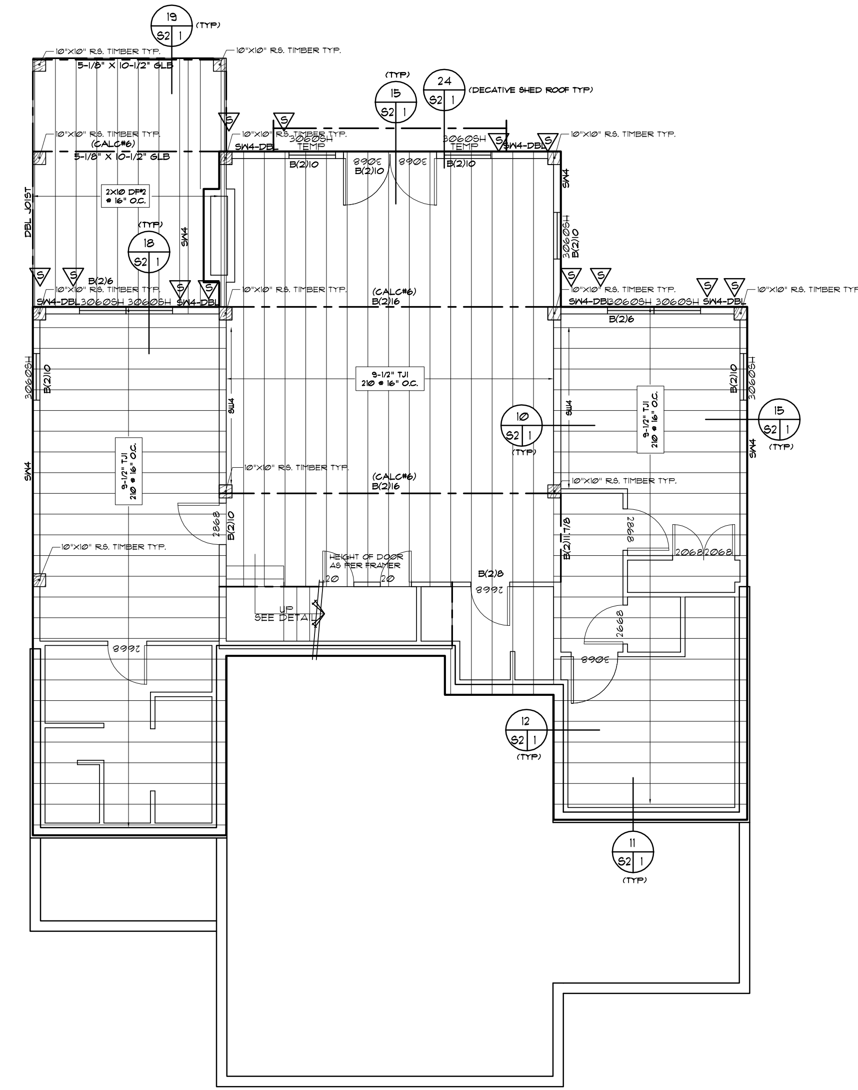
Exhibit A-Site & Building Plans



VERTICAL FRAMING STRAP. LOWER STUDS OR FLOOR BEAM OR CANTILEVERED RIM TO UPPER STUDS. SIMPSON #MST48. (12 TYP.)

SEE SHEET S2/3 FOR WOOD FRAMING SPECS AND NOTES. SW#: SHEAR WALL. SEE SHEET S2/3.

BEAM SCHEDULE EX

SEE NOTES 1,2,3,4,5

DESIGNATION (SEE PLAN)	BEAM DESCRIPTION	END TRIMMER QTY. U.N.O.	TYPE U.N.O.
MIN. BEAM OR HEADER U.N.O.	(2) 2 X 10 DF#2	1	2X4
B(2)5.1/2	(2) 1-3/4" X 5-1/2" LVL	1	2X4
B(2)6	(2) 2 X 6 DF/HF#2	1	2X4
B(2)7.1/4	(2) 1-3/4" X 7-1/4" LVL	1	2X4
B(3)7.1/4	(3) 1-3/4" X 7-1/4" LVL	1	2X4
B(2)8	(2) 2 X 8 DF/HF#2	1	2X4
B(3)8	(3) 2 X 8 DF/HF#2	1	2X6
B(2)9.1/2	(2) 1-3/4" X 9-1/2" LVL	3	2X4
B(3)9.1/2	(3) 1-3/4" X 9-1/2" LVL	3	2X6
B(2)10	(2) 2X10" DF/HF #2	1	2X4
B(3)10	(3) 2 X 10 DF/HF#2	1	2X4
B(1)11.7/8	(1) 1-3/4" X 11-7/8" LVL	2	2X4
B(2)11.7/8	(2) 1-3/4" X 11-7/8" LVL	3	2X4
B(3)11.7/8	(3) 1-3/4" X 11-7/8" LVL	4	2X6
B(4)11.7/8	(4) 1-3/4" X 11-7/8" LVL	5	2X6
B(2)12	(2) 2 X 12 DF/HF#2	1	2X4
B(3)12	(3) 2 X 12 DF/HF#2	1	2X6
B(2)14	(2) 1-3/4" X 14" LVL	4	2X4
B(3)14	(3) 1-3/4" X 14" LVL	4	2X6
B(2)16	(2) 1-3/4" X 16" LVL	4	2X4
B(3)16	(3) 1-3/4" X 16" LVL	5	2X6
B(2)18	(2) 1-3/4" X 18" LVL	5	2X4
B(3)18	(3) 1-3/4" X 18" LVL	5	2X6
B(3.5)7.1/4	3-1/2" X 7-1/4" X-BEAM	1	2X4
B(3.5)9.-1/2	3-1/2" X 9-1/2" X-BEAM	1	2X4
B(3.5)11.7/8	3-1/2" X 11-7/8" X-BEAM	2	2X4
B(3.5)14	3-1/2" X 14" X-BEAM	2	2X4
B(3.5)16	3-1/2" X 16" X-BEAM	3	2X4
B(3.5)18	3-1/2" X 18" X-BEAM	4	2X4
B(5.5)7.1/4	5-1/2" X 7-1/4" X-BEAM	1	2X6
B(5.5)9.-1/2	5-1/2" X 9-1/2" X-BEAM	2	2X6
B(5.5)11.7/8	5-1/2" X 11-7/8" X-BEAM	2	2X6
B(5.5)14	5-1/2" X 14" X-BEAM	3	2X6
B(5.5)16	5-1/2" X 16" X-BEAM	3	2X6
B(5.5)18	5-1/2" X 18" X-BEAM	4	2X6
GLB	WOOD GLULAM BEAM.	SEE PLAN	
W#X##	STEEL WIDE FLANGE BEAM	SEE PLAN	

1. JOIN **MULTIPLE PIECE BEAMS** W/ (2) 16D @ 12" O.C.
2. PROVIDE METAL **FRAMING CONNECTORS** (I.E. SIMPSON #CB) TO TIE BEAMS GREATER THAN 6'-0" TO POSTS OR TRIMMERS.
3. **LVL** IS LAMINATED VENEER LUMBER, I.E., MICROLAM, VERSALAM. MIINIMUM LVL SPEC PROVIDE 1.9E AND 2600 PSI F'b OR BTR.
4. **GLB** IS GLULAM BEAM. PROVIDE 24F-V4 SPEC U.N.O.
5. ALL STEEL BEAMS TO MEET ASTM A992 OR $F_y = 50$ ksi, $F_u = 65$ ksi CRITERIA.
6. **X-BEAM** IS ROSBORO X-BEAM BRAND GLULAM BEAMS OR EQUIV.

A — MAIN FLOOR FRAMING PLAN

SCALE: 1/8" = 1'-0"

rml DESIGN

1436 S. LEGEND HILLS DR. #320
CLEARFIELD, UTAH 84015
801. 217. 3727

ATTENTION

PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
BIG SKY ESTATES
COUNTY
WEBER
STATE
UTAH

CLIENT NAME:
DAVE & GAYLE MARIANI

PLAN NAME:
CUSTOM

ORIGINAL RELEASE:
MAY 17, 2016

REVISION DATES
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX

MARIANI-C-XXX-3-16-AE

MAIN FLOOR FLOOR FRAMING PLAN

S1 | 2

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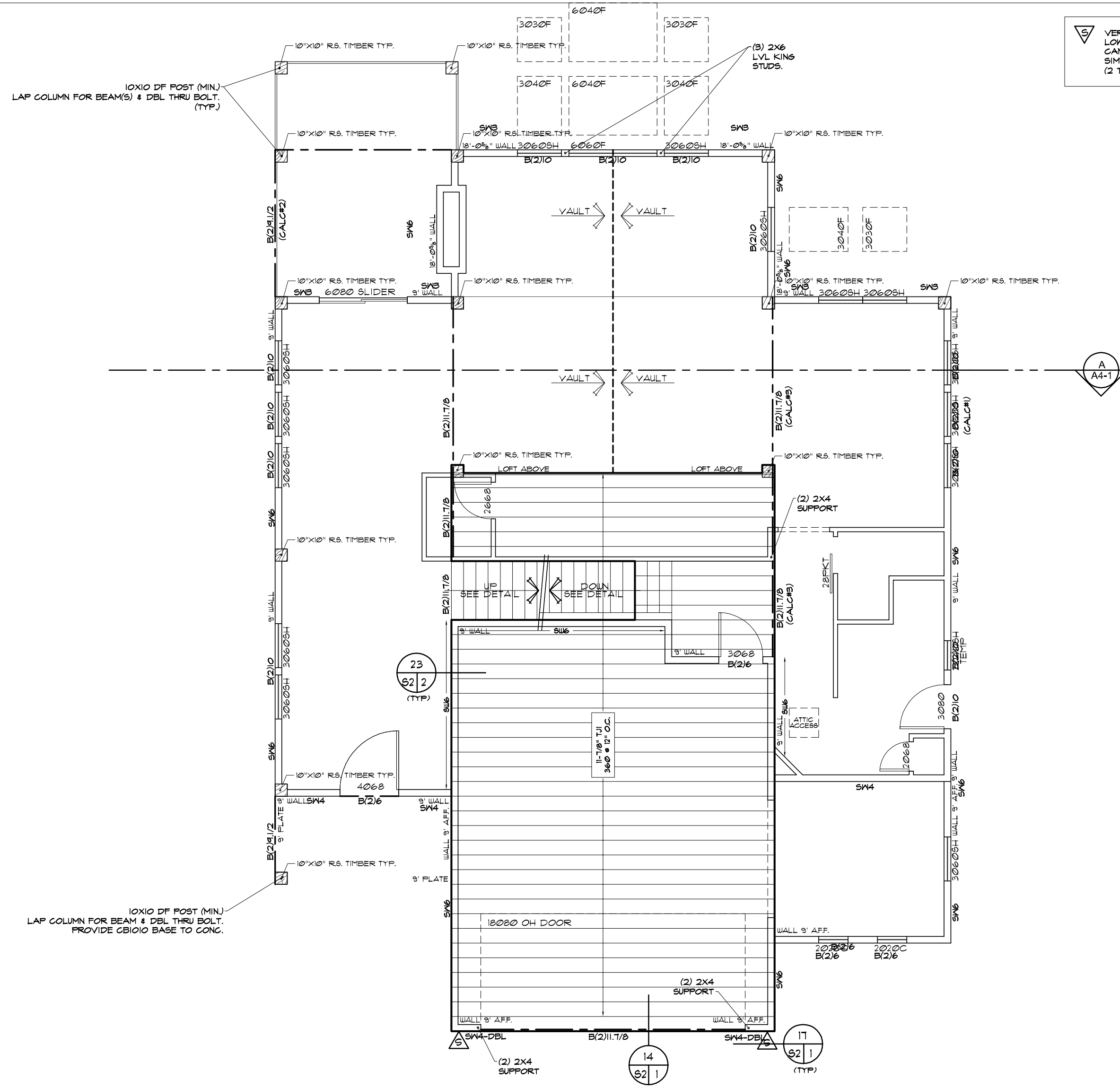
Exhibit A-Site & Building Plans



VERTICAL FRAMING STRAP. LOWER STUDS OR FLOOR BEAM OR CANTILEVERED RIM TO UPPER STUDS. SIMPSON #CS16 COIL W/ 16" LAP. (2 TYP.)

SEE SHEET S2/3 FOR WOOD FRAMING SPECS AND NOTES.

SW#: SHEAR WALL. SEE SHEET S2/3.

BEAM SCHEDULE EX

SEE NOTES 1,2,3,4,5

DESIGNATION (SEE PLAN)	BEAM DESCRIPTION	END TRIMMER QTY. U.N.O.	TYPE U.N.O.
MIN. BEAM OR HEADER U.N.O.	(2) 2 X 10 DF#2	1	2X4
B(2)5.1/2	(2) 1-3/4" X 5-1/2" LVL	1	2X4
B(2)6	(2) 2 X 6 DF/HF#2	1	2X4
B(2)7.1/4	(2) 1-3/4" X 7-1/4" LVL	1	2X4
B(3)7.1/4	(3) 1-3/4" X 7-1/4" LVL	1	2X4
B(2)8	(2) 2 X 8 DF/HF#2	1	2X4
B(3)8	(3) 2 X 8 DF/HF#2	1	2X6
B(2)9.1/2	(2) 1-3/4" X 9-1/2" LVL	3	2X4
B(3)9.1/2	(3) 1-3/4" X 9-1/2" LVL	3	2X6
B(2)10	(2) 2X10" DF/HF #2	1	2X4
B(3)10	(3) 2 X 10 DF/HF#2	1	2X4
B(1)11.7/8	(1) 1-3/4" X 11-7/8" LVL	2	2X4
B(2)11.7/8	(2) 1-3/4" X 11-7/8" LVL	3	2X4
B(3)11.7/8	(3) 1-3/4" X 11-7/8" LVL	4	2X6
B(4)11.7/8	(4) 1-3/4" X 11-7/8" LVL	5	2X6
B(2)12	(2) 2 X 12 DF/HF#2	1	2X4
B(3)12	(3) 2 X 12 DF/HF#2	1	2X6
B(2)14	(2) 1-3/4" X 14" LVL	4	2X4
B(3)14	(3) 1-3/4" X 14" LVL	4	2X6
B(2)16	(2) 1-3/4" X 16" LVL	4	2X4
B(3)16	(3) 1-3/4" X 16" LVL	5	2X6
B(2)18	(2) 1-3/4" X 18" LVL	5	2X4
B(3)18	(3) 1-3/4" X 18" LVL	5	2X6
B(3.5)7.1/4	3-1/2" X 7-1/4" X-BEAM	1	2X4
B(3.5)9.-1/2	3-1/2" X 9-1/2" X-BEAM	1	2X4
B(3.5)11.7/8	3-1/2" X 11-7/8" X-BEAM	2	2X4
B(3.5)14	3-1/2" X 14" X-BEAM	2	2X4
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B(5.5)16	5-1/2" X 16" X-BEAM	3	2X6
B(5.5)18	5-1/2" X 18" X-BEAM	4	2X6
GLB	WOOD GLULAM BEAM.	SEE PLAN	
W#X##	STEEL WIDE FLANGE BEAM	SEE PLAN	

1. JOIN **MULTIPLE PIECE BEAMS** W/ (2) 16D @ 12" O.C.
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4. **GLB** IS GLULAM BEAM. PROVIDE 24F–V4 SPEC U.N.O.
5. ALL STEEL BEAMS TO MEET ASTM A992 OR Fy = 50 ksi, Fu = 65 ksi CRITERIA.
6. **X–BEAM** IS ROSBORO X–BEAM BRAND GLULAM BEAMS OR EQUIV.

A UPPER FLOOR FRAMING PLAN

SCALE: 1/8" = 1'-0"

RML DESIGN
1436 S. LEGEND HILLS DR. #320
CLEARFIELD, UTAH 840
801. 217. 3727

PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
BIG SKY ESTATES
COUNTY
WEBER
STATE
UTAH

CLIENT NAME:
DAVE & GAYLE MARIANI

PLAN NAME:
CUSTOM

ORIGINAL RELEASE:
MAY 17, 2016

REVISION DATES
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX

MARIANI-C-XXX-3-16-AE

UPPER FLOOR FLOOR FRAMING PLAN

S1 | 3

BEAM SCHEDULE EX		SEE NOTES 1,2,3,4,5	
DESIGNATION (SEE PLAN)	BEAM DESCRIPTION	END TRIMMER QTY. U.N.O.	TYPE U.N.O.
MIN. BEAM OR HEADER U.N.O.	(2) 2 X 10 DF#2	1	2X4
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B(3)7.1/4	(3) 1-3/4" X 7-1/4" LVL	1	2X4
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B(3)8	(3) 2 X 8 DF/HF#2	1	2X6
B(2)9.1/2	(2) 1-3/4" X 9-1/2" LVL	3	2X4
B(3)9.1/2	(3) 1-3/4" X 9-1/2" LVL	3	2X6
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B(3)10	(3) 2 X 10 DF/HF#2	1	2X4
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B(3)11.7/8	(3) 1-3/4" X 11-7/8" LVL	4	2X6
B(4)11.7/8	(4) 1-3/4" X 11-7/8" LVL	5	2X6
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GLB	WOOD GLULAM BEAM.	SEE PLAN	
W#X##	STEEL WIDE FLANGE BEAM	SEE PLAN	

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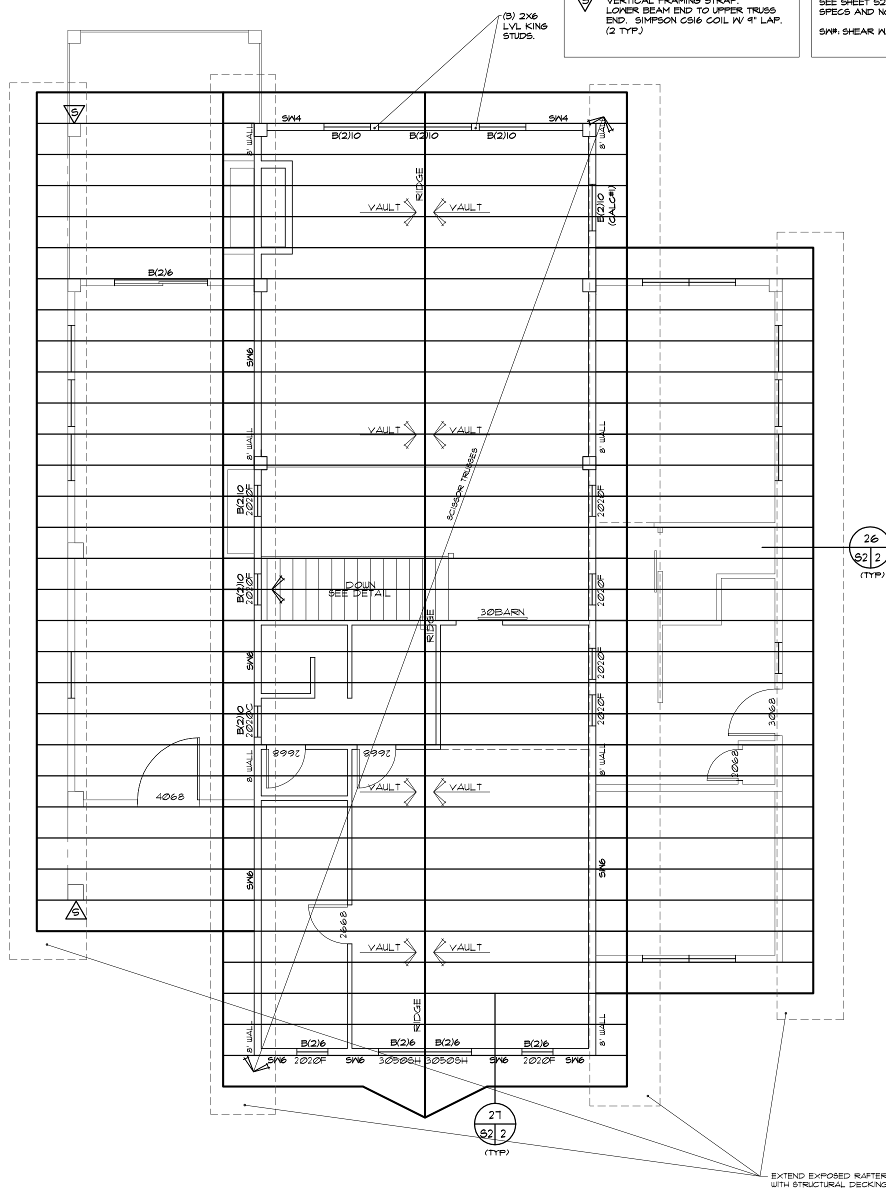

VERTICAL FRAMING STRAP. LOWER BEAM END TO UPPER TRUSS END. SIMPSON CS16 COIL W/ 9" LAP. (2 TYP.)

SEE SHEET S2/3 FOR WOOD FRAMING SPECS AND NOTES.

SW#: SHEAR WALL. SEE SHEET S2/3.

OVERBUILD FRAMING:

SHELL:
2X4 @ 24" O.C. (MIN.)
SHELL VERT SUPPORT:
2X4 @ 48" O.C. (MIN.)
VERT PLATES:
2X6 ACROSS TRUSSES.

FACE NAIL VERT ALONG SIDE SHELL & PLATES W/ (4) 16D EA. CONNECTION OR PROVIDE A35 CLIP. FACE NAIL PLATES TO TRUSSE W/ (2) 16D EA TRUSS MIN.

SEE DETAIL 25, SHEET S2/2.

ATTIC VENTILATION / INSULATION CHART

SQUARE FOOTAGE OF ROOF = 2896
SOFFIT VENTING: YES
REQUIRED VENTING = 1/300 OR 9.65 SQ. FEET
THIS AMOUT TO BE CREATED BY GABLE VENTS OR TURTLE STYLE ROOF VENTS.

SHOW INULATION BAFFLES IN THE ATTTIC AT THE EXTERIOR PERIMETER ON THE CROSS-SECTION

PROVIDE INSULATION DEPTH MARKERS EVERY 300 SQUARE FEET OF ATTIC AREAS

A ROOF FRAMING PLAN

SCALE: 1/8" = 1'-0"

RML DESIGN

1436 S. LEGEND HILLS DR. #320
CLEARFIELD, UTAH 84015
801. 217. 3727

ATTENTION

PROJECT NAME:
MARIANI RESIDENCE

LOCATION INFO:
LOT #
5
SUBDIVISION
BIG SKY ESTATES
COUNTY
WEBER
STATE
UTAH

CLIENT NAME:
DAVE & GAYLE MARIANI

PLAN NAME:
CUSTOM

ORIGINAL RELEASE:
MAY 17, 2016

REVISION DATES
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX
XX/XX/XXXX

MARIANI-C-XXX-3-16-AE

ROOF FRAMING PLAN

S1 | 4

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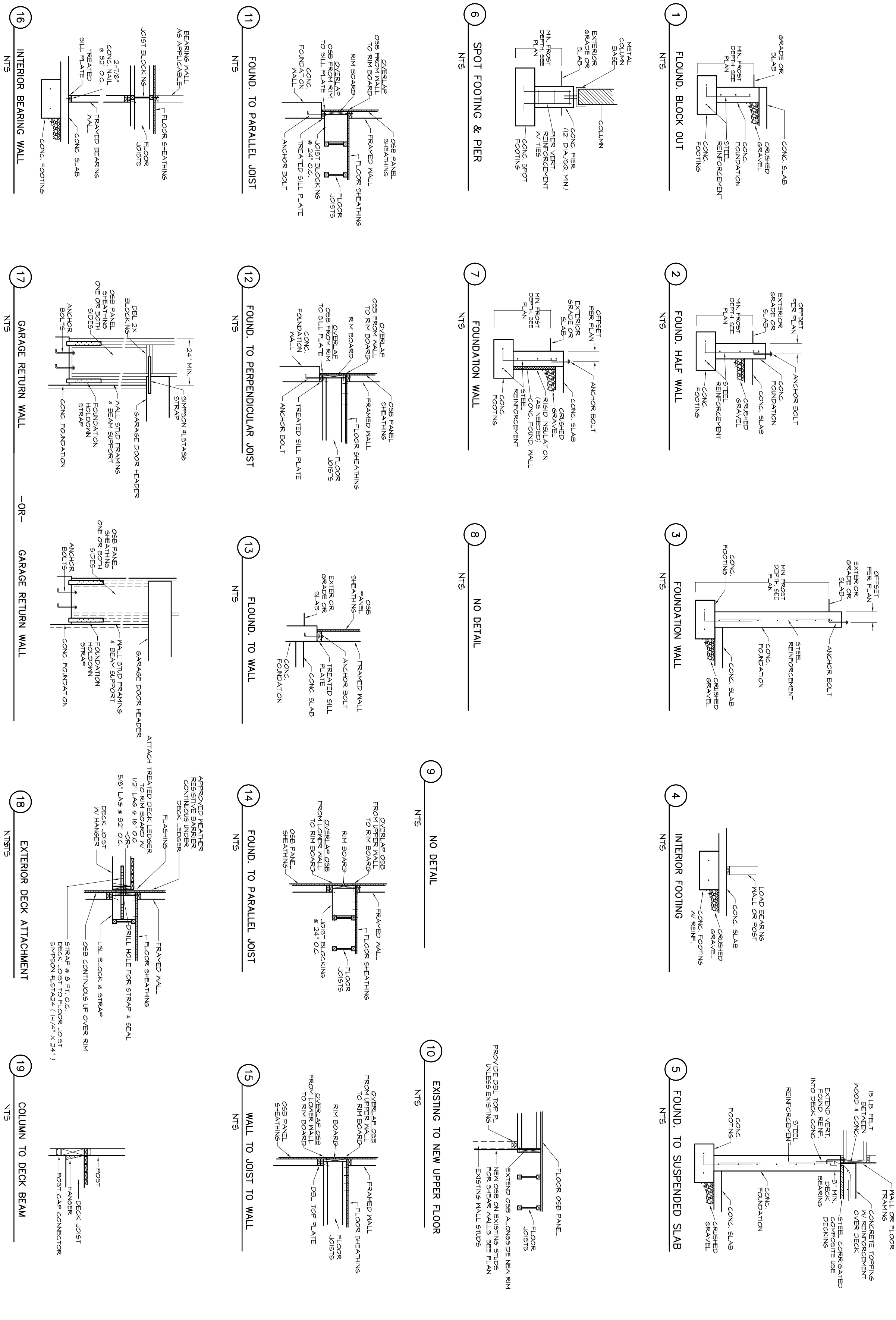


S2/1

STRUCTURAL FRAMING DETAILS

PROJECT: RML MARIANI CUSTOM EDEN
DAVE MARIANI

ADDRESS: 2337 PANORAMA CIRCLE
BIG SKY ESTATES
EDEN, UT

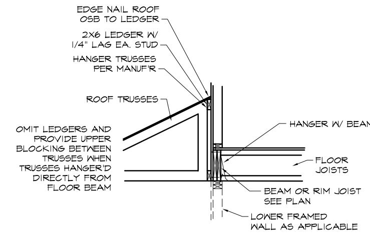
Date / Revision
05/10/16

PRICE ENGINEERING INC.
STRUCTURAL • CIVIL
O: (801) 771-0542
M: (801) 791-6274
price.engineer@gmail.com

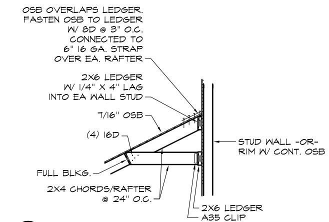
20 NO DETAIL
NTS

21 NO DETAIL
NTS

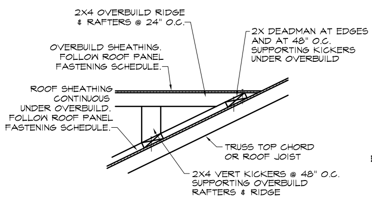
22 NO DETAIL
NTS



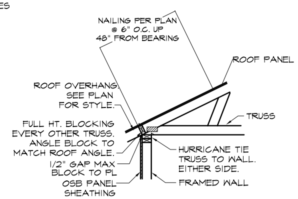
23 ATTIC TRUSS TO FLOOR
NTS



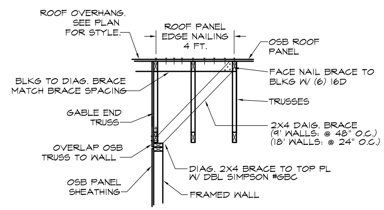
24 PORCH ROOF OVERHANG
NTS



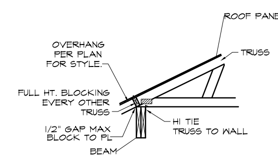
25 ROOF OVERBUILD
NTS



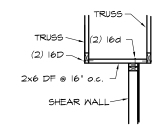
26 WALL TO TRUSS
NTS



27 WALL TO GABLE TRUSS
NTS



28 BEAM TO TRUSS
NTS



29 WALL TO TRUSS
NTS

PRICE ENGINEERING INC.
STRUCTURAL • CIVIL
O: (801) 771-0542
M: (801) 791-6274
price.engineer@gmail.com

Date / Revision
05/10/16

STRUCTURAL FRAMING DETAILS

PROJECT: RML MARIANI CUSTOM EDEN
DAVE MARIANI

ADDRESS: 2337 PANORAMA CIRCLE
BIG SKY ESTATES
EDEN, UT

S2/2

Exhibit A-Site & Building Plans

SOILS AND EXCAVATION NOTES

UNIFIED SOIL CLASSIFICATION: NO SOILS REPORT PROVIDED.
DESIGN SOIL BEARING PRESSURE: 1500 PSF (ASSUMED).

1. ALL DESIGN IS BASED ON STABLE SOIL CHARACTERISTICS. GEOTECHNICAL HAZARDS FOUND ON OR AROUND THE SITE OR SOILS FOUND AT THE SITE WHILE EXCAVATION OCCURS WHICH DIFFERS FROM THOSE ASSUMED SHOULD BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND ENGINEER.

2. ALL FOOTINGS SHALL BEAR ON UNDISTURBED SOIL OR UNIFORM CRUSHED GRAVEL. SOFT AREAS DEEPER THAN 2' AND ANY ON SITE OR OTHER GEOTECHNICAL HAZARDS SHALL BE INVESTIGATED AND APPROVED BY A LICENSED GEOTECHNICAL ENGINEER.

3. DO NOT BACKFILL FOUNDATION WALLS UNTIL THE CONCRETE FLOOR SLAB IS IN PLACE AND HAS CURED A MINIMUM OF 7 DAYS.

CONCRETE SPECS & DETAILING

ELEMENT	(F'c) MINIMUM	(F'c) RECOMMENED	W/C RATIO
FOOTINGS	2500 PSI	3000 PSI	.50
WALLS	2500 PSI	3500 PSI	.50
SUSP. SLABS	2500 PSI	3500 PSI	.45
SLABS	3500 PSI	4000 PSI	.45

1. (F'c) STRENGTH BASED ON 28 DAY CURE TIME
2. PORTLAND TYPE I/II CEMENT.
3. 25% MAXIMUM CLASS "C" OR "F" FLY ASH BE WEIGHT
4. 3/4" MAX AGGREGATE SIZE
5. 4" MAXIMUM SLUMP
6. ADMIXTURES ACCEPTABLE EXCLUDING CALCIUM CHLORIDE

STEEL REINFORCEMENT DETAILING & SPECIFICATIONS

NON-WELDABLE (ALL U.N.O.)	ASTM A 615 GRADE 60
WELDABLE	ASTM A 706 GRADE 60 LOW ALLOY
WELDED WIRE FABRIC	ASTM A 185

REINFORCEMENT CONCRETE COVER (MIN.)	INCHES
EXPOSED TO EARTH (NOT FORMED)	3"
EXPOSED TO EARTH OR WEATHER (FORMED)	2"
NOT EXPOSED TO EARTH OR WEATHER	1-1/2"

REINFORCEMENT (REBAR) LAP SCHEDULE

SIZE	MINIMUM LAP FOR CONTINUOUS REBAR, U.N.O.
#3	12"
#4	18"
#5	20"
#6	24"

1. CONTRACTOR RESPONSIBLE FOR FORMWORK AND SHORING.
2. REINFORCMENT SUPPORT PER ACI 315
3. ROUGHEN CONSTRUCTION JOINT SURFACES TO 1/4" AMPLITUDE OR MORE
4. BEND REINFORCEMENT COLD ONCE
5. BEND RADII AND HOOK LENGTHS TO COMFORM TO ACI 318.
6. PROVIDE CONTINUOUS CORNER BARS AT WALL AND FOOTING CORNDERS LONG ENOUGH TO MEET REQUIRED LAP LENGTHES.

CONCRETE PLACEMENT & CONSTRUCTION SPECS

1. VIBRATE AND CONSOLIDATE CONCRETE DURING PLACEMENT AS NEEDED TO LIMIT VOIDS AND SEPARATING OF MATERIAL INGREDIENTS.
2. WHEN PLACING CONCRETE IN HOT OR COLD WEATHER, PROVIDE PROTECTION FROM FREEZING OR ACCELERATED DRYING.
3. CONCRETE SLAB CONTROL JOINT DEPTH SHALL BE 1/3 THE SLAB THICKNESS MIN. AND SPACED NO MORE THE 30 TIMES THE SLAB THICKNESS OR PER SCHEDULE BELOW, BUT NOT MORE THAN 1.25 TIMES ANY SLAB EDGE LENGTH.

SLAB THICKNESS	JOINT DEPTH MIN	SPACING MAX
3-1/2"	1-1/4"	8'-0"
4"	1-1/2"	10'-0"
5"	1-3/4"	12'-0"
6"	2"	15'-0"

FROST DEPTH, GRADING, DRAINAGE

SEE PLAN	MINIMUM FROST DEPTH
SEE PLAN	MINIMUM FINISH GRADE TO TOP OF FOUND.

NOTES:

1. FROST DEPTH IS THE REQUIRED DEPTH OF THE UNHEATED SIDE OF THE FOUNDATION AND FOOTING, FROM ANY SURFACE OF THE ADJACENT FINISH GRADE TO THE BOTTOM OF FOOTING.
2. FINISH GRADE SHALL SLOPE DOWN AWAY FROM HOME FOUNDATIONS AT LEAST 6" OF DROP THE FIRST 10 FEET OF HORIZONTAL DISTANCE.
3. DOWNSPOUTS SHALL EXTEND OUT AWAY FROM THE FOUNDATION AT LEAST 5 FEET OR INTO AN APPROVED DRAINAGE SYSTEM OR ON SITE PIPING.
4. ALL LOT DRAINAGE SHOULD BE GRADED TO DRAIN TO APPROVED AREAS, SWALES, OR DRAINAGE SYSTEMS., PER THE REQUIREMENTS OF THE GOVERNING CITY OR COUNTY.

SHEAR WALL SCHEDULE

DESIGNATION (SEE PLAN)	OSB PANEL QTY.	8D SPACING EDGE O.C.	STUD SIZE & QTY. INSIDE EDGES ONLY. (SEE DIAGRAM BELOW)
SW6	(1) SIDE	6"	(1) 2X
SW4	(1) SIDE	4"	DBL 2X OR (1) 4X
SW3	(1) SIDE	3"	DBL 2X OR (1) 4X
SW2	(1) SIDE	2"	(1) 4X
SW4-DBL	BOTH SIDES	4"	DBL 2X OR (1) 4X

SHEAR WALL FRAMING SPECS:

1. PROVIDE 7/16" THICK APA STAMPED EXPOSURE 1 OSB SHEATHING OR BTR. PROVIDE STUDS @ 16" O.C. MAXIMUM.

2. FASTEN ALL WALL PANELS W/ 8D NAILING @ 12" O.C. EXCEPT ON PANEL EDGES. SEE ABOVE FOR PANELS EDGE FASTENING SPECS.

3. BLOCK ALL WALL PANEL (OSB) EDGES. OVERLAP PANELS OVER TOP AND BOTTOM PLATES.

4. FASTEN SILL PLATES TO WOOD FLOORS W/ 16D @ 4" O.C. STAGGERED.

5. FASTEN ALL DBL 2X STUD MEMBERS TOGETHER WITH 16D @ 6" O.C. STAGGERED.

6. TOP PLATES ARE CONTINUOUS WITH A 12" OVERLAP MIN. OR PROVIDE SIMPSON 16 GA. CS16 STRAPPING WITH A 12" MIN. LAP.

SHEAR WALL DIAGRAM

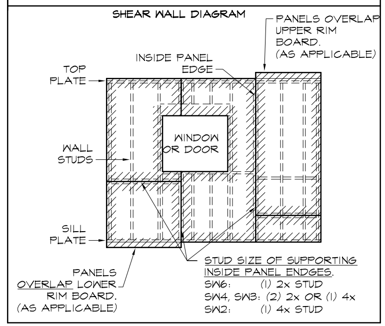


TABLE OF EQUIVALENT FASTENERS

NAIL SIZE	NAIL SPACING	STAPLE SPACING 14 GA.	STAPLE SPACING 15 GA.	STAPLE SPACING 16 GA.	NOTES
8D	12"	12"	10"	8"	ALL STAPLES PROVIDE 1-1/2" PENETRATION
	10"	10"	8"	6-1/2"	
	6"	6"	5"	4"	
	4"	4"	3-1/2"	2-1/2"	
	3"	3"	2-1/2"	1-1/2"	
10D	12"	9-1/2"	8"	6-1/2"	
	10"	8"	7"	5-1/2"	
	6"	5"	4"	3-1/2"	
	4"	3"	2-1/2"	2"	
	3"	2-1/2"	2"	1-1/2"	

FRAMING NAILING SCHEDULE U.N.O.

	CONNECTION DESCRIPTION	NAILING	NOTES
1	JOIST TO TOP PLATE OR BEAM	(2) 16D	TOENAIL
2	BLOCKING (BLKG) TO SILL OR BEAM	16D @ 4"O.C.	TOENAIL
3	SILL TO JOIST, RJ, BLKG, BEAM THRU FLOOR	16D @ 4" O.C.	FACE NAIL
4	TOP OR SILL PLATE TO STUD	(2) 16D	FACE NAIL
5	BUILT UP (MULTIPLE) STUDS / COLUMNS	16D @ 16" O.C.	FACE NAIL
6	DBL. TOP PLATE LAP	16D @ 4" O.C.	FACE NAIL
7	DBL. TOP PLATE INTERSECTION LAP	(2) 16D	FACE NAIL
8	HEADERS, BEAMS, GIRDERS MULTIPL/BUILT UP	(2) 16D @ 16"	FACE NAIL
9	OSB PANELS TO 2X WALL FRAMING	8D @ 6" / 12"	EDGE/INT.

ALL FASTENERS WHICH ARE TO BE INSTALLED IN PRESERVATIVE TREATED WOOD SHALL MEET THE REQUIREMENTS OF IBC 2304.9.5.

ROOF PANEL SCHEDULE SEE NOTES 1,2,3

ROOF DESIGN SNOW LOAD	PANEL THICKNESS
UP TO 40 PSF	7/16"
UP TO 70 PSF	1/2"
UP TO 130 PSF	5/8"

FOR ROOF SNOW LOAD SEE DESIGN CRITERIA THIS SHEET.

ROOF PANEL FASTENING TABLE

NAILING SPEC WHERE PANEL MEETS MEMBER, I.E. TRUSS, JOIST, BLOCK. (SEE DIAGRAM BELOW)	10D O.C. NAILING PANEL EDGE	10D O.C. NAILING PANEL FIELD
6/12	6"	12"
6/6	6"	6"
3/3	3"	3"

NOTES (TYP.)

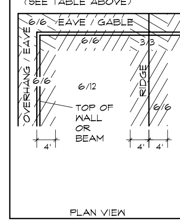
1. ALL ROOF PLANELS SHALL BE APA STAMPED, EXPOSURE 1, & RATED AS FOLLOWS:

THICKNESS	SPAN RATING
7/16"	24/16
1/2"	32/16
5/8"	40/20

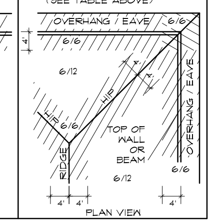
2. PROVIDE EDGE NAILING APPROX. 1/2" FROM PANEL EDGES W/ INSIDE EDGES SHARING INSIDE ROOF TRUSS, JOISTS & BEAMS. PROVIDE EDGE NAILING ALONG ALL BLOCKING.

3. PROVIDE A MAX. JOIST OR TRUSS SPACING OF 24" O.C.

GABLE END ROOF NAILING SCHEDULE (SEE TABLE ABOVE)



HIP ROOF NAILING SCHEDULE (SEE TABLE ABOVE)



ROOF TRUSS & JOIST NOTES

TRUSSES (PRE-MANUFER'D)	1. ENGINEERING FOR TRUSSES IS PROVIDED BY THE MANUFACTURER. 3. PROVIDE METAL MANUFACTURED HURRICANE TIES AT ALL TRUSS BEARING LOCATIONS, H2.5 MIN, U.N.O. (SEE PLAN) 4. PROVIDE FULL HIEGHT BLOCKING AT TRUSS BEARING LOCATIONS EVERY OTHER TRUSS SPACING MINIMUM. 5. THESE PLANS HAVE BEEN ENGINEERED BASED ON THE ROOF FRAMING PLANS PROVIDED. TRUSS LAYOUTS DIFFERING FROM THE ROOF FRAMING PLANS SHOULD BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER. 6. THE TRUSS PACKAGE DESIGN SHALL BE SUBMITTED TO THE BUILDING OFFICIAL AS A DEFERRED SUBMITTAL PER IBC 2303.4. PRIOR TO PACKAGE SUBMITTAL, IT SHALL BE REVIEWED BY THE ENGINEER OF RECORD AND STAMPED FOR GENERAL CONFORMANCE.
ROOF JOISTS	1. PROVIDE SIMPSON VPA CONNECTORS AT ALL JOIST BEARING LOCATIONS. 2. PROVIDE FULL HIEGHT BLOCKING EVERY OTHER JOIST.

FLOOR SHEATHING NOTES

FLOOR SHEATHING U.N.O.:

1. PROVIDE 23/32" 'APA' STAMPED, EXPOSURE 1, T&G OSB PANELS FASTEN WITH 10D COMMON OR GALVANIZED NAILS @ 6"/ 12" EDGE / FIELD O.C.
2. PROVIDE CONTINUOUS GLUE JOIST TO PANELS.

WALL STUD HEIGHTS & LOAD BLOCKING

FRAMED WALL STUD HEIGHTS SEE NOTES 1,2
(HEIGHTS ARE UNSUPPORTED CLEAR SPANS)

WALL STUDS MAX. HEIGHT	NOMINAL DF SIZE	VERT. O.C SPACING	LATERAL SUPPORT
UP TO 10'	2 X 4	16"	NONE
UP TO 12'	2 X 4	12"	OSB, PLYWOOD, OR GLUED GYPSUM BOARD
UP TO 14'	2 X 6	16"	
UP TO 16'	2 X 6	12"	
UP TO 18'	2 X 6	8"	
UP TO 17'	1-1/2"x5-1/2"*	16"	
UP TO 18'	1-1/2"x5-1/2"*	12"	
UP TO 20'	1-1/2"x7-1/4"*	16"	

*TJI TIMBERSTRAND LSL STUDS. CONTACT ENGINEER FOR OTHER BRANDS OR CONFIGURATIONS.

NOTES (TYP.)

1. PLAN WALL SPECS, DIMENSIONS AND SCALES GOVERN WALL SIZING.

2. SEE MINIMUM NAILING SCHEDULE TABLE WHEN USING WALL STUD HT. TABLE.

3. PROVIDE 2X DF OR BTR. SQUASH BLOCKING UNDER ALL POINTS LOADS TRANSFERRED THROUGH WALLS FROM BEAMS AND GIRDER TRUSSES SUPPORTED BY MORE THEN (1) TRIMMER (SEE BEAM SCHEDULE) AND WHEN NOT LOCATED ALONG EXTERIOR WALLS WHEN RIM JOISTS ARE NOT PROVIDED.

DESIGN CRITERIA

GOVERNING CODE: 2012 IBC, ASCE 7, RISK CATEGORY II

1. LIVE LOADS:
   - SLEEPING AREAS 30 PSF
   - DECKS 60 PSF
   - BALCONIES 100 PSF
   - OTHER AREAS 40 PSF
2. SNOW LOAD:
   - GROUND Pg 85 PSF
   - ROOF Ps 55 PSF + DRIFT
   - Pf: 55 PSF
   - Cs: 1.0 Ce: 0.9
   - Ct: 1.0 I: 1.0
3. WIND:
   - DESIGN SPEED: 90 MPH 3 SEC. GUST
   - EXPOSURE: C
4. SEISMIC:
   - SDC D
   - SITE CLASS D (ASSUMED)
   - Sds: 74%
   - Sm1: 55%
   - R: 6.5
5. SOIL BEARING: ALLOWABLE PRESSURE ON NATIVE SOIL: 1500 PSF (ASSUMED)
6. DEAD LOADS:
   - ROOF 15 PSF (ASPHALT SHINGLES)
   - FLOOR 15 PSF (INCL. THIN TILE)
   - WALL 10 PSF (STUCCO, SIDING)
   - WALL 45 PSF (VENEER: BRICK,STONE)
   - CONCRETE 145 PCF (FTGS, FOUND, ETC)

BEAM SCHEDULE EX SEE NOTES 1,2,3,4,5

DESIGNATION (SEE PLAN)	BEAM DESCRIPTION	END TRIMMER QTY. U.N.O.	TYPE U.N.O.
MIN. BEAM OR HEADER U.N.O.	(2) 2 X 10 DF#2	1	2X4
B(2)5.1/2	(2) 1-3/4" X 5-1/2" LVL	1	2X4
B(2)6	(2) 2 X 6 DF/HF#2	1	2X4
B(2)7.1/4	(2) 1-3/4" X 7-1/4" LVL	1	2X4
B(3)7.1/4	(3) 1-3/4" X 7-1/4" LVL	1	2X4
B(2)8	(2) 2 X 8 DF/HF#2	1	2X4
B(3)8	(3) 2 X 8 DF/HF#2	1	2X6
B(2)9.1/2	(2) 1-3/4" X 9-1/2" LVL	3	2X4
B(3)9.1/2	(3) 1-3/4" X 9-1/2" LVL	3	2X6
B(2)10	(2) 2X10" DF/HF #2	1	2X4
B(3)10	(3) 2 X 10 DF/HF#2	1	2X4
B(1)11.7/8	(1) 1-3/4" X 11-7/8" LVL	2	2X4
B(2)11.7/8	(2) 1-3/4" X 11-7/8" LVL	3	2X4
B(3)11.7/8	(3) 1-3/4" X 11-7/8" LVL	4	2X6
B(4)11.7/8	(4) 1-3/4" X 11-7/8" LVL	5	2X6
B(2)12	(2) 2 X 12 DF/HF#2	1	2X4
B(3)12	(3) 2 X 12 DF/HF#2	1	2X6
B(2)14	(2) 1-3/4" X 14" LVL	4	2X4
B(3)14	(3) 1-3/4" X 14" LVL	4	2X6
B(2)16	(2) 1-3/4" X 16" LVL	4	2X4
B(3)16	(3) 1-3/4" X 16" LVL	5	2X6
B(2)18	(2) 1-3/4" X 18" LVL	5	2X4
B(3)18	(3) 1-3/4" X 18" LVL	5	2X6
B(3.5)7.1/4	3-1/2" X 7-1/4" X-BEAM	1	2X4
B(3.5)9.-1/2	3-1/2" X 9-1/2" X-BEAM	1	2X4
B(3.5)11.7/8	3-1/2" X 11-7/8" X-BEAM	2	2X4
B(3.5)14	3-1/2" X 14" X-BEAM	2	2X4
B(3.5)16	3-1/2" X 16" X-BEAM	3	2X4
B(3.5)18	3-1/2" X 18" X-BEAM	4	2X4
B(5.5)7.1/4	5-1/2" X 7-1/4" X-BEAM	1	2X6
B(5.5)9.-1/2	5-1/2" X 9-1/2" X-BEAM	2	2X6
B(5.5)11.7/8	5-1/2" X 11-7/8" X-BEAM	2	2X6
B(5.5)14	5-1/2" X 14" X-BEAM	3	2X6
B(5.5)16	5-1/2" X 16" X-BEAM	3	2X6
B(5.5)18	5-1/2" X 18" X-BEAM	4	2X6
GLB	WOOD GLULAM BEAM.	SEE PLAN	
W*X**	STEEL WIDE FLANGE BEAM	SEE PLAN	

1. JOIN **MULTIPLE PIECE BEAMS** W/ (2) 16D @ 12" O.C.
2. PROVIDE METAL **FRAMING CONNECTORS** (I.E. SIMPSON #CB) TO TIE BEAMS GREATER THAN 6'-0" TO POSTS OR TRIMMERS.
3. **LVL** IS LAMINATED VENEER LUMBER, I.E., MICROLAM, VERSALAM. MIINIMUM LVL SPEC PROVIDE 1.9E AND 2600 PSI F'b OR BTR.
4. **GLB** IS GLULAM BEAM. PROVIDE 24F-V4 SPEC U.N.O.
5. ALL STEEL BEAMS TO MEET ASTM A992 OR Fy = 50 ksi, Fu = 65 ksi CRITERIA.
6. **X-BEAM** IS ROSBORO X-BEAM BRAND GLULAM BEAMS OR EQUIV.

PRICE ENGINEERING INC.
STRUCTURAL • CIVIL
O: (801) 771-0542
M: (801) 791-6274
price.engineer@gmail.com

Date / Revision
05/10/16

STRUCTURAL SCHEDULES & NOTES

PROJECT: RML MARIANI CUSTOM EDEN
DAVE MARIANI

ADDRESS: 2337 PANORAMA CIRCLE
BIG SKY ESTATES
EDEN, UT

S2/3

REPORT

GEOLOGIC HAZARDS EVALUATION

LOT 5 BIG SKY ESTATES NO. 1

2337 NORTH PANORAMA CIRCLE

LIBERTY, WEBER COUNTY, UTAH

Prepared for

Gayle Mariani
PO Box 1202
Eden, Utah 84310

June 9, 2016

Prepared by

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June 9, 2016

Gayle Mariani
PO Box 1202
Eden, Utah 84310

SUBJECT: Geologic Hazards Evaluation
Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

Dear Ms. Mariani:

This report presents results of an engineering geology and geologic hazards review and evaluation conducted by Western GeoLogic, LLC (Western GeoLogic) for Lot 5 in the Big Sky Estates No. 1 Subdivision at 2337 North Panorama Circle in Liberty, Weber County, Utah (Figure 1 – Project Location). The site is at the margin of northwestern Ogden Valley at the eastern base of the Wasatch Range in the NW1/4 Section 33, Township 7 North, Range 1 East (Salt Lake Base Line and Meridian; Figure 1). Elevation of the site ranges from about 5,546 feet to 5,614 feet above sea level. It is our understanding that the current intended site use is for development of one residential home in the south-central part of the site.

PURPOSE AND SCOPE

The purpose and scope of this investigation is to identify and interpret geologic conditions at the site to identify potential risk from geologic hazards to the Project. This investigation is intended to: (1) provide geologic information and assessment of geologic conditions at the site; (2) identify potential geologic hazards that may be present and qualitatively assess their risk to the intended site use; and (3) provide recommendations for additional site- and hazard-specific studies or mitigation measures, as may be needed based on our findings. Such recommendations could require further multi-disciplinary evaluations, and/or may need design criteria that are beyond our professional scope.

The following services were performed in accordance with the above stated purpose and scope:

- A site reconnaissance conducted by an experienced certified engineering geologist to assess the site setting and look for adverse geologic conditions;
- Excavation and logging of three test pits on April 28, 2016 to evaluate subsurface conditions at the property;

- Review of readily-available geologic maps, reports, and air photos; and

- Evaluation of available data and preparation of this report, which presents the results of our study.

The engineering geology section of this report has been prepared in accordance with current generally accepted professional engineering geologic principles and practice in Utah, and meets specifications provided in Chapter 27 of the Weber County Land Use Code.

HYDROLOGY

The U.S. Geological Survey (USGS) topographic map of the Huntsville Quadrangle shows the site is at the western margin of Ogden Valley between Pole Canyon and Coal Hollow Creeks, and is on southwest- to east-facing slopes slightly below a hilltop overlooking the southern end of Nordic Valley to the west (Figure 1). Pole Canyon Creek flows to the north about 560 feet west of the property. Nordic Valley Ski Area is about 0.8 miles to the northwest. No active drainages are shown crossing the site on Figure 1, and no springs or seeps were observed at the site or are shown in the site area on Figure 1.

The site is the western margin of Ogden Valley about 1.3 miles northwest of the north arm of Pineview Reservoir. The valley bottom to the east is dominated by unconsolidated lacustrine and alluvial basin-fill deposits, whereas slopes in the site area are mainly in weathered Tertiary-age tuffaceous bedrock and landslide colluvium from a complex series of overlapping failures since Late Pleistocene time. The Utah Division of Water Rights Well Driller Database shows one water well about 1,500 feet southwest of the property that has a reported depth to static groundwater of 50 feet, but no site-specific groundwater information was available and no groundwater was encountered in the boring conducted by GSH at the property to its explored depth of 29 feet. Given all the above, we anticipate the depth to the shallow aquifer at the Project is somewhere between 50 and 100 feet. However, groundwater depths at the site likely vary seasonally from snowmelt runoff and annually from climatic fluctuations. Such variations would be typical for an alpine environment. Perched conditions above less-permeable, clay-rich bedrock layers may also be present in the subsurface that could cause locally shallower groundwater levels.

Avery (1994) indicates groundwater in Ogden Valley occurs under perched, confined, and unconfined conditions in the valley fill to depths of 750 feet or more. A well-stratified lacustrine silt layer forms a leaky confining bed in the upper part of the valley-fill aquifer. The aquifer below the confining beds is the principal aquifer, which is in primarily fluvial and alluvial-fan deposits. The principal aquifer is recharged from precipitation, seepage from surface water, and subsurface inflow from bedrock into valley fill along the valley margins (Avery, 1994). The confined aquifer is typically overlain by a shallow, unconfined aquifer recharged from surface flow and upward leakage. Groundwater flow is generally from the valley margins into the valley fill, and then toward the head of Ogden Canyon (Avery, 1994). Based on topography, we expect groundwater flow at the site to be to the west toward Pole Canyon Creek, and then regionally to the north.

GEOLOGY

Surficial Geology

The site is located on the northwestern margin of Ogden Valley, a sediment-filled intermontane valley within the Wasatch Range, a major north-south trending mountain range marking the eastern boundary of the Basin and Range physiographic province (Stokes; 1977, 1986). Surficial geology of the site is shown on unpublished, 1:24,000-scale, Utah Geological Survey (UGS) mapping from 2014 (Figure 2). The 2014 mapping is part of an ongoing surficial geologic mapping project for Ogden Valley that will be, in part, incorporated into an optimized update of Coogan and King (2001). The unpublished mapping was provided for this report since it represents the most-recent geologic information available for the area, although it will be replaced by the official optimized map.

Figure 2 shows the site in bedrock of the Norwood Formation (unit Tn, Figure 2). Descriptions of geologic units within 0.5 miles of the site from the adjoining Snow Basin Quadrangle (King and others, 2008) are as follows:

> ***Qaf – Alluvial-fan deposits, undivided (Holocene and Pleistocene).*** *Mostly sand, silt, and gravel that is poorly bedded and poorly sorted; includes debris flows, particularly in drainages and at drainage mouths (fan heads); generally less than 60 feet (18 m) thick. Mapped where fan age uncertain or for composite fans where portions of fans with different ages cannot be shown separately at map scale.*
>
> ***Qaf1, Qafy – Younger alluvial-fan deposits (Holocene and uppermost Pleistocene) -*** *Mostly sand, silt, and gravel that is poorly bedded and poorly sorted; includes debris flows, particularly in drainages and at drainage mouths (fan heads); generally less than 40 feet (12 m) thick. Near late Pleistocene Lake Bonneville, deposits with suffixes 1 and y are younger than Lake Bonneville (mostly Holocene), are active, and impinge on present-day drainages like the Weber River and Cottonwood Creek; Qafy fans may be partly older than Qaf1 fans, and may be as old as uppermost Pleistocene Provo shoreline.*
>
> ***Qmdf – Debris- and mud-flow deposits (Holocene and uppermost Pleistocene).*** *Poorly sorted, clay- to boulder-sized material, typically with distinct natural lateral levees, channels, and lack of vegetation; older deposits can be vegetated; 0 to 40 feet (0-12 m) thick.*
>
> ***Qms, Qms1, Qmsy, Qmso – Landslide and slump deposits (Holocene and Pleistocene).*** *Poorly sorted clay- to boulder-sized material; locally includes flow deposits; generally characterized by hummocky topography, main and internal scarps, and chaotic bedding in displaced blocks; composition depends on local sources; morphology becomes more subdued with time and amount of water in deposits; Qms may be in contact with Qms when two different slide/slumps abut; locally, unit involved in slide/slump is shown in parentheses where a nearly intact block is visible; Qms and Qmso queried (?) where bedrock block may be in place;*

thickness highly variable, boreholes in Rogers (1986) show thicknesses of about 20 to 30 feet (6-9 m) on small slides/flows. Qms without suffix is mapped where age uncertain (though likely Holocene and/or upper Pleistocene), where portions of slide/slump complexes have different ages but cannot be shown separately at map scale, or where boundaries between slides/slumps of different ages are not distinct. Estimated time of emplacement indicated by relative age number and letter suffixes with: 1 - likely emplaced in the last 80 to 150 years, mostly historical; y - post- Lake Bonneville in age and mostly pre-historic; and o – likely emplaced before Lake Bonneville transgression. Suffixes y (as well as 1) and o indicate probable Holocene and Pleistocene ages, respectively. Qmso typically mapped where rumpled morphology typical of mass movements has been diminished and/or younger surficial deposits cover or cut Qmso. These older deposits are as unstable as other landslides and slumps, and are easily reactivated with the addition of water, be it irrigation or septic tank drain fields.

Qmc – Landslide and slump, and colluvial deposits, undivided (Holocene and Pleistocene). *Mapped where landslides and slumps are difficult to distinguish from colluvium (slopewash and soil creep) and where mapping separate, small, intermingled areas of slides and slumps, and colluvial deposits is not possible at map scale; locally includes talus and debris flows; typically mapped where landslides and slumps are thin ("shallow"); also mapped where the blocky or rumpled morphology that is characteristic of landslides and slumps has been diminished ("smoothed") by slopewash and soil creep; composition depends on local sources; 0 to 40 feet (0-12 m) thick. These deposits are as unstable as other landslides and slumps units (Qms).*

Qac – Alluvium and colluvium (Holocene and Pleistocene). *Includes stream and fan alluvium, colluvium, and, locally, mass-movement deposits; 0 to 20 feet (0-6 m) thick.*

Qls – Lake Bonneville sand (upper Pleistocene). *Mostly sand with some silt and gravel deposited nearshore in Morgan Valley; typically less than 20 feet (6 m) thick, but thicker in "bench" east of Cottonwood Creek in southeast corner of Snow Basin quadrangle.*

Qafp, Qafb, Qafo – Older alluvial-fan deposits (upper and middle(?) Pleistocene). *Incised fans of mostly sand, silt, and gravel that is poorly bedded and poorly sorted; includes debris flows, particularly in drainages and at drainage mouths (fan heads); generally less than 60 feet (18 m) thick. Fans labeled Qafp and Qafb are graded to the Provo (and slightly lower) and Bonneville shorelines of late Pleistocene Lake Bonneville, respectively. Near Lake Bonneville, unit Qafo is older than (above and typically incised/eroded at) the Bonneville shoreline; upstream unit Qafo is topographically higher than fans graded to the Bonneville shoreline (Qafb). Elsewhere relative-age letters only apply to local drainages. Like Qa and Qat suffixes, ages are partly based on heights above present drainages (table 1), in this case heights at drainage-eroded edge of fan, with Qafp about 35 to 45 feet (10 to 12 m) above, Qafb 50 to 75 feet (15-23 m) above, and Qafo about 70 to 110 feet (20-35 m) above present drainages. Dates presented in Sullivan and Nelson (1992) imply*

Qafo to southeast in Morgan quadrangle considerably predates Lake Bonneville and is middle Pleistocene in age (300-600 ka). This means these older fans could be related to Pokes Point lake cycle (at about 200 ka, after McCoy, 1987) (Kansan continental glaciation?, 300-400 ka) and/or pre Pokes Point (Nebraskan continental glaciation?, >500 ka); however, the Bonneville shoreline is obscure on this fan.

Tn – Norwood Formation (lower Oligocene and upper Eocene) *- Typically light-gray to light brown, altered tuff (claystone), tuffaceous siltstone, sandstone, and conglomerate; locally colored light shades of red and green; variable calcareous cement and zeolitization, that is less common to south of Snow Basin quadrangle; zeolite marker beds mapped as an aid to recognizing geologic structure; locally includes landslides and slumps that are too small to show at map scale.*

Upper Norwood Formation, as exposed on east margin of Snow Basin quadrangle and to east in Durst Mountain quadrangle, contains interbedded claystone (tuffaceous beds), fine- to coarse-grained sandstone, gray granule to small pebble conglomerate, with chert and carbonate clasts, as well as conglomerate interbeds with quartzite pebble clasts like those in unit Tcg; interbedded with more extensive quartzite-clast conglomerate, some mapped as Tcg, to east in Durst Mountain quadrangle (see Coogan and King, 2006); north of Wasatch Formation (Tw) knob on Snow Basin-Durst Mountain quadrangle boundary, the Norwood contains intermittent quartzite gravel (quartzite-richest exposures mapped as Tcg?); also, gravel-rich beds containing mostly chert and carbonate clasts are common north of the knob, and with quartzite-bearing beds, are involved in multiple landslides that obscure bedding and structure; these variations and disruptions make it difficult to map a consistent Tcg-Tn contact (see also unit Tcg description above and in Coogan and King, 2006); based on outcrop pattern, dip, and topography, Norwood is at least 7000 feet (2135 m) thick in Snow Basin quadrangle; it thins to the south, so is about 5000 feet (1525 m) thick north of Morgan, and only about 1500 feet (460 m) thick east of East Canyon Creek in the type area in Porterville quadrangle (Eardley, 1944) (not 2500+ feet [800+ m] inferred by Bryant and others, 1989, p. K6).

Zeolite beds mapped in the Norwood indicate a generally east-dipping homocline with minor faulting. A broad, north-south-oriented, doubly plunging syncline is superimposed on the homocline but the east limb of the syncline and companion anticline are obscured by landslide complexes. The common fold limb may dip steeply to the west. Also the zeolite beds become obscure to the east, due to the increased abundance of clastic sediment, making the zeolite beds thinner and less pure, and therefore less distinct. Norwood generally considered younger than the Fowkes Formation, but not well dated due to alteration. Corrected Norwood K-Ar ages are 38.4 Ma (sanidine) from Norwood type area (Evernden and others, 1964) and 39.3 Ma (biotite) from farther south in East Canyon (Mann, 1974), while Fowkes $_{40}Ar/_{39}Ar$ *ages are 40.41 Ma and 38.78 Ma on biotite and hornblende, respectively, from Utah to east near Wyoming (Coogan and King, unpublished). To north in southern Cache Valley, basal part of unit similar to Fowkes and Norwood ("resting" on Wasatch and less than 600 feet [180 m] or about 1200 feet [260 m] thick) dated at 44.2 + 1.7 Ma* *and 48.6 + 1.3 Ma K-Ar on hornblende and biotite, respectively (Smith, 1997; King and Solomon, 2008); though the biotite date is suspect, its age is similar to older dates on the Fowkes Formation in Wyoming, which are: 47.94 + 0.17 Ma ($_{40}Ar/_{39}Ar$, sanidine) at the northeast end of the Crawford Mountains (Smith and others, 2008, p. 67), south of the Fowkes type area (see Oriel and Tracey, 1970); 49.1 Ma (biotite; recalculated; dated in 1977, but decay constant not reported, so may not need to be recalculated), reported as 47.9 + 1.9 Ma by Nelson (1979) and likely from near the base of the Fowkes near Evanston, Wyoming (Nelson, 1973); and 48.9 Ma K-Ar (hornblende; recalculated) from the Fowkes type area near Leefe, Wyoming (47.7 + 1.5 Ma, Oriel and Tracey, 1970). The Norwood is different in the southern Peterson and Morgan quadrangles, near the type area (see Eardley, 1944), where it contains extensive unaltered tuff (hence the name Norwood Tuff), has cut-and-fill structures (fluvial), and includes volcanic-clast conglomerate; in the Morgan quadrangle, it also contains local limestone and silica-cemented rocks. Unit referred to here as Norwood Formation, rather than Norwood Tuff, because the type area includes only part of the formation (see thickness in following paragraph), the Norwood contains many lithologies, and this emphasizes that it is not tuffaceous away from the type area.*

Citations in the above unit descriptions are provided in King and others (2008).

Figure 2 shows several strike and dip measurements in Norwood Formation in the site area. Those shown in black where measured by the UGS, whereas those in purple are from U.S. Geological Survey (USGS) data (Jon King, Utah Geological Survey, verbal communication, February 29, 2016). The nearest measurement is about 750 feet south of the property and shows a strike/dip of N46°W 40° NE. Several additional measurements are to the east and southeast that show generally northwest-trending strikes and dips generally between about 27 to 46 degrees to the northeast. Norwood Formation bedrock in the area has average dips of about 30 to 45 degrees, although this unit has local depositional variations that may produce lower and higher dips within a relatively short distance (Jon King, Utah Geological Survey, verbal communication, February 29, 2016).

Seismotectonic Setting

The property is located at the western margin of Ogden Valley, a roughly 40-square mile back valley described by Gilbert (1928) as a structural trough similar to Cache and Morgan Valleys to the north and south, respectively. The back valleys of the northern Wasatch Range are in a transition zone between the Basin and Range and Middle Rocky Mountains provinces (Stokes, 1977, 1986). The Basin and Range is characterized by a series of generally north-trending elongate mountain ranges, separated by predominately alluvial and lacustrine sediment-filled valleys and typically bounded on one or both sides by major normal faults (Stewart, 1978). The boundary between the Basin and Range and Middle Rocky Mountains provinces is the prominent, west-facing escarpment along the Wasatch fault zone at the base of the Wasatch Range. Late Cenozoic normal faulting, a characteristic of the Basin and Range, began between about 17 and 10 million years ago in the Nevada (Stewart, 1980) and Utah (Anderson, 1989) portions of the province. The faulting is a result of a roughly east-west directed, regional extensional stress regime that has continued to the present (Zoback and Zoback, 1989; Zoback, 1989). The back valleys are morphologically similar to valleys in the Basin and Range, but exhibit less structural relief (Sullivan and others 1988).

Ogden Valley occupies a structural trough created by up to 2,000 feet of vertical displacement on normal faults bounding the east and west sides of the valley. The Ogden Valley southwestern margin fault and North Fork fault (Black and others, 2003) are shown on Figure 2 trending northwestward about 1,100 feet to the southwest and 4,150 feet to the northeast, respectively. The most recent movement on these faults is pre-Holocene (Sullivan and others, 1986). The faults are concealed where mantled by Late Pleistocene and Holocene surficial deposits (Figure 2, dashed and dotted bold lines). Norwood Formation mapped in the site area (Figure 2, unit Tn) likely represents an in-place faulted block preserved between the faults (Jon King, Utah Geological Survey, verbal communication, February 29, 2016).

The site is also situated near the central portion of the Intermountain Seismic Belt (ISB). The ISB is a north-south-trending zone of historical seismicity along the eastern margin of the Basin and Range province which extends for approximately 900 miles from northern Arizona to northwestern Montana (Sbar and others, 1972; Smith and Sbar, 1974). At least 16 earthquakes of magnitude 6.0 or greater have occurred within the ISB since 1850, with the largest of these events the M_S 7.5 1959 Hebgen Lake, Montana earthquake. However, none of these events have occurred along the Wasatch fault zone or other known late Quaternary faults in the region (Arabasz and others, 1992; Smith and Arabasz, 1991). The closest of these events to the site was the 1934 Hansel Valley (M_S 6.6) event north of the Great Salt Lake and south of the town of Snowville.

Lake Bonneville History

Lakes occupied nearly 100 basins in the western United States during late-Quaternary time, the largest of which was Lake Bonneville in northwestern Utah. The Bonneville basin consists of several topographically closed basins created by regional extension in the Basin and Range (Gwynn, 1980; Miller, 1990), and has been an area of internal drainage for much of the past 15 million years. Lake Bonneville consisted of numerous topographically closed basins, including the Salt Lake and Cache Valleys (Oviatt and others, 1992). Portions of Ogden Valley were inundated by Lake Bonneville at its highstand. Sediments from Lake Bonneville are not mapped at the site, but are shown at lower elevations to the east and northeast on Figure 2.

Timing of events related to the transgression and regression of Lake Bonneville is indicated by calendar age estimates of significant radiocarbon dates in the Bonneville Basin (Oviatt, 2015). Approximately 30,000 years ago, Lake Bonneville began a slow transgression (rise) to its highest level of 5,160 to 5,200 feet above mean sea level. The lake rise eventually slowed as water levels approached an external basin threshold in northern Cache Valley at Red Rock Pass near Zenda, Idaho. Lake Bonneville reached the Red Rock Pass threshold and occupied its highest shoreline, termed the Bonneville beach, around 18,000 years ago. During the transgression and highstand, major drainages that emanate from within the Wasatch Range (such as the Weber River) formed large deltaic complexes in the lake at their canyon mouths. Headward erosion of the Snake River-Bonneville basin drainage divide then caused a catastrophic incision of the threshold and the lake level lowered by roughly 360 feet in fewer than two months (Jarrett and Malde, 1987; O'Conner, 1993). The Project is above the elevation for the lake highstand.

Following the Bonneville flood, the lake stabilized and formed a lower shoreline referred to as the Provo shoreline between about 16,500 and 15,000 years ago. Climatic factors then caused the lake to regress rapidly from the Provo shoreline, and by about 13,000 years ago the lake had eventually dropped below historic levels of Great Salt Lake. Oviatt and others (1992) deem this low stage the end of the Bonneville lake cycle. Great Salt Lake then experienced a brief transgression around 11,600 years ago to the Gilbert level at about 4,250 feet before receding to and remaining within about 20 feet of its historic average level (Lund, 1990). Drainages that fed Lake Bonneville began downcutting through stranded deltaic complexes and near-shore deposits as the lake receded.

SITE CHARACTERIZATION

Empirical Observations

On April 28, 2016, Mr. Bill D. Black of Western GeoLogic conducted a reconnaissance of the property. Weather at the time of the site reconnaissance was partly cloudy with temperatures in the 50's (°F). The site is at the western margin of Ogden Valley on heavily vegetated southwest-facing slopes slightly overlooking the upper (southern) part of Nordic Valley to the west. Pole Canyon Creek is in the valley bottom west of the site. Native vegetation appeared to consist of heavy oak brush and mature trees. No active streams or springs are mapped crossing the site or were observed, and no bedrock outcrops were evident at the site or in adjacent slopes.

Air Photo Observations

High-resolution orthophotography from 2012 and 1-meter bare earth DEM LIDAR from 2011 available from the Utah AGRC (Figures 3A and 3B) were reviewed to obtain information about the geomorphology of the site area. Several bedrock lineaments (presumably contacts between subunits in the Norwood Formation) are evident of Figures 3A and 3B that are obscured across the Project by what appears to be a small landslide. The landslide head is slightly north of the proposed home; the failure then widens and descends downslope to the southwest to about 85-90 feet southwest of the home. A slight bulge is evident on both the 2012 aerial photo and 2011 LIDAR image in the toe area (Figures 3A and 3B). We note that this bulge is not evident on the surveyed topography on Figure 3C, which may be just an anomaly of the surveying methodology. Morphology of the landslide appears subdued or obscured, suggesting it may be an older feature (possibly latest Pleistocene to early Holocene in age). No evidence of other geologic hazards were observed on the air photos in the site area.

Subsurface Investigation

Three test pits were excavated at the property in April 2016 to evaluate subsurface conditions. Test pit locations are shown on Figures 3A-3C, and were measured using a hand-held GPS unit and trend and distance methods from known points. The test pits were logged at a scale of 1 inch equals 5 feet (1:60). Excavation was complicated in test pit 2 by dense bedrock, but no other complications were encountered. The test pit exposures were digitally photographed at five-foot intervals to document subsurface conditions. The photos are not provided herein, but are available on request.

Test pit 1 (Figure 4A) exposed a sequence of weathered Norwood Formation consisting of tuffaceous sandstone overlain by claystone and conglomerate (units 1-3, respectively). The contact between units 2 and 3 showed a strike/dip of N46°W 26° NE, which is similar to regional strike and dips. Units 1-3 in test pit 1 are in turn overlain by a shallow landslide and surficial alluvium and colluvium. The soil profile (A horizon and a well-developed Bt vertisol) suggests the landslide is likely early Holocene in age or older.

Test pit 2 (Figure 4B) exposed fractured and sheared sandstone bedrock (units 1 and 2) overlain by landslide colluvium (unit 3). Bedding in unit 1 near 9 feet horizontal (Figure 3B) showed a strike/dip of N50°W 30° NE, which suggests only a few degrees of backtilting and horizontal rotation. Many of the shears appeared to die out slightly above the trench floor, although several showed down-to-the-southwest displacements of up to several feet and continued below the test pit bottom. Trend of the shears ranged between N63° W to N76° W, generally similar to topographic contour trends.

Test pit 3 (Figure 4C) on the lateral margin of the slide (Figures 3A-C) exposed landslide colluvium overlying what we infer is in-place bedrock. The contact between units 1 and 2 (Figure 4C) showed a strike/dip of N40°W 26° NE, which is also similar to regional strike and dip measurements.

Cross Section

Figure 5 shows a cross section across the slope through the proposed home location at a scale of 1 inch equals 25 feet with no vertical exaggeration. The profile location is shown on Figure 3C (A-A', in blue). Units and contacts are inferred based on the subsurface data discussed above and our review of the log for the GSH boring in the northeastern part of the site (which is not reproduced herein). We use an overall dip of 26 degrees for contacts within the Norwood Formation, similar to the measurements in test pits 1 and 3. The profile trend generally matches the bedrock dip direction. We anticipate that the landslide exposed in the test pits likely originated as a shallow rotational slump in near-surface weathered claystone and sandstone bedrock in the area of test pit 1, and then propagated downslope as a translational block/slab failure through the underlying sandstone (Figure 5). The landslide does not appear to have caused a substantial amount of deformation, suggesting that it may not have moved very far and likely has a shallow failure plane that is only about 10-15 feet deep in the area of the proposed home (Figure 5). Given its failure mechanism, we would anticipate a slight bulge at the toe from thrusting, which is confirmed by the aerial photo and LIDAR image (Figures 3A-B). However, the surveyed topography shows no slope inflection in the toe area, and the slope also shows very little overall variance (Figure 5). This may be just an anomaly of the surveying (such as a lack of frequent and closely spaced data points).

GEOLOGIC HAZARDS

Assessment of potential geologic hazards and the resulting risks imposed is critical in determining the suitability of the site for development. Table 1 below shows a summary of the geologic hazards reviewed at the site, as well as a relative (qualitative) assessment of risk to the Project for each hazard. A "high" hazard rating (H) indicates a hazard is present at the site (whether currently or in the geologic past) that is likely to pose significant risk and/or may require further study or mitigation techniques. A "moderate" hazard rating (M) indicates a hazard that poses an equivocal risk. Moderate-risk hazards may also require further studies or mitigation. A "low" hazard rating (L) indicates the hazard is not present, poses little or no risk, and/or is not likely to significantly impact the Project. Low-risk hazards typically require no additional studies or mitigation. We note that these hazard ratings represent a conservative assessment for the entire site and risk may vary in some areas. Careful selection of development areas can minimize risk by avoiding known hazard areas.

Table 1. *Geologic hazards summary for Lot 5 Big Sky Estates No. 1.*

Hazard	H	M	L	...Hazard Rating
Earthquake Ground Shaking	X			
Surface Fault Rupture			X	
Liquefaction and Lateral-spread Ground Failure			X	
Tectonic Deformation			X	
Seismic Seiche and Storm Surge			X	
Stream Flooding			X	
Shallow Groundwater			X	
Landslides and Slope Failures	X			
Debris Flows and Floods			X	
Rock Fall			X	
Problem Soil		X		

Earthquake Ground Shaking

Ground shaking refers to the ground surface acceleration caused by seismic waves generated during an earthquake. Strong ground motion is likely to present a significant risk during moderate to large earthquakes located within a 60 mile radius of the project area (Boore and others, 1993). Seismic sources include mapped active faults, as well as a random or "floating" earthquake source on faults not evident at the surface. Mapped active faults within this distance include the East and West Cache fault zones; the Brigham City, Weber, Salt Lake, and Provo segments of the Wasatch fault zone; the East Great Salt Lake fault zone; the Morgan fault; the West Valley fault zone; the Oquirrh fault zone; and the Bear River fault zone (Black and others, 2003).

The extent of property damage and loss of life due to ground shaking depends on factors such as: (1) proximity of the earthquake and strength of seismic waves at the surface (horizontal motions are the most damaging); (2) amplitude, duration, and frequency of ground motions; (3) nature of foundation materials; and (4) building design (Costa and Baker, 1981). Based on 2012 IBC provisions, a site class of D (stiff soil), and a risk category of II, USGS calculated uniform-hazard and deterministic ground motion values with a 2% chance of exceedance in 50 years are as follows:

Table 2. *Seismic hazards summary for Lot 5 Big Sky Estates No. 1. (Home Location: 41.301155° N, -111.853500° W)*

S_S	*0.992 g*
S_1	*0.343 g*
S_{MS} (F_a x S_S)	*1.095 g*
S_{M1} (F_v x S_1)	*0.588 g*
S_{DS} (2/3 x S_{MS})	*0.730 g*
S_{D1} (2/3 x S_{M1})	*0.392 g*
Site Coefficient, F_a	= *1.103*
Site Coefficient, F_v	= *1.713*

Although we present the values for site class D above, a site class of B (rock) or C (very stiff soil or soft rock) may be more appropriate if the home is founded in the underlying bedrock. However, the values do not show a significant difference. Given the above information, earthquake ground shaking poses a high risk to the site. The hazard from earthquake ground shaking can be adequately mitigated by design and construction of homes in accordance with appropriate building codes. The Project structural and/or geotechnical engineer, in conjunction with the developer, should confirm and evaluate the seismic ground-shaking hazard and provide appropriate seismic design parameters as needed.

Surface Fault Rupture

Movement along faults at depth generates earthquakes. During earthquakes larger than Richter magnitude 6.5, ruptures along normal faults in the intermountain region generally propagate to the surface (Smith and Arabasz, 1991) as one side of the fault is uplifted and the other side down dropped. The resulting fault scarp has a near-vertical slope. The surface rupture may be expressed as a large singular rupture or several smaller ruptures in a broad zone. Ground displacement from surface fault rupture can cause significant damage or even collapse to structures located on an active fault.

The nearest active fault to the site is the Weber segment of the WFZ about four miles to the west, and no evidence of active surface faulting is mapped or was evident at the site. Based on this, the hazard from surface faulting is rated as low.

Liquefaction and Lateral-spread Ground Failure

Liquefaction occurs when saturated, loose, cohesionless, soils lose their support capabilities during a seismic event because of the development of excessive pore pressure.

Earthquake-induced liquefaction can present a significant risk to structures from bearing-capacity failures to structural footings and foundations, and can damage structures and roadway embankments by triggering lateral spread landslides. Earthquakes of Richter magnitude 5 are generally regarded as the lower threshold for liquefaction. Liquefaction potential at the site is a combination of expected seismic (earthquake ground shaking) accelerations, groundwater conditions, and presence of susceptible soils.

No soils likely susceptible to liquefaction were observed in the test pit exposures at the site or were evident in the boring conducted by GSH. Based on this, the hazard from liquefaction and lateral spreading is rated as low.

Tectonic Deformation

Tectonic deformation refers to subsidence from warping, lowering, and tilting of a valley floor that accompanies surface-faulting earthquakes on normal faults. Large-scale tectonic subsidence may accompany earthquakes along large normal faults (Lund, 1990). Tectonic subsidence is believed to mainly impact those areas immediately adjacent to the downthrown side of a normal fault. No active faults are mapped in the site area. Based on this, the risk from tectonic subsidence is rated as low.

Seismic Seiche and Storm Surge

Earthquake-induced seiche presents a risk to structures within the wave-oscillation zone along the edges of large bodies of water, such as the Great Salt Lake. Given the elevation of the subject property and distance from large bodies of water, the risk to the subject property from seismic seiches is rated as low.

Stream Flooding

Stream flooding may be caused by direct precipitation, melting snow, or a combination of both. In much of Utah, floods are most common in April through June during spring snowmelt. High flows may be sustained from a few days to several weeks, and the potential for flooding depends on a variety of factors such as surface hydrology, site grading and drainage, and runoff.

No active drainages are mapped crossing the site or were evident. Given this, the risk from stream flooding is low. Site hydrology and runoff should be addressed in the civil engineering design and grading plan for the Project.

Shallow Groundwater

No springs or seeps are shown on the topographic map for the site or were reported or observed, and no groundwater was encountered in the boring conducted by GSH. Given this, the depth to static groundwater is likely greater than 50 feet. Based on the above, we rate the risk from shallow groundwater as low. However, proper site drainage should maintained so that groundwater does not pose a future risk of slope instability. It is also possible that groundwater levels may fluctuate seasonally and following snowmelt or rainstorms, and may be perched locally over less permeable bedrock layers. We note that some water was observing seeping along contact between units 2 and 3 in test pit 1 from recent rainfall. Unit 2 would be such an impermeable bedrock layer (claystone).

Landslides and Slope Failures
Slope stability hazards such as landslides, slumps, and other mass movements can develop along moderate to steep slopes where a slope has been disturbed, the head of a slope loaded, or where increased groundwater pore pressures result in driving forces within the slope exceeding restraining forces. Slopes exhibiting prior failures, and also deposits from large landslides, are particularly vulnerable to instability and reactivation.

A portion of the site, and particularly the area of the proposed home, is on what appears to be an older (late Pleistocene to early Holocene) landslide that is likely shallow and involved both shallow rotational and translational movement. Deformation from and colluvial deposits of the landslide are exposed in all the test pits at the site, although the low degree of deformation suggests it did not move very far. However, given the above we rate the risk from landsliding as high. We recommend stability of the slopes be evaluated in a geotechnical engineering evaluation prior to building based on site specific data and subsurface information included in this report. Recommendations for reducing the risk from landsliding should be provided if factors of safety are determined to be unsuitable. The stability evaluation should take into account possible perched groundwater and fluctuating seasonal levels. Care should also be taken that site grading does not destabilize slopes in this area without prior geotechnical analysis and grading plans, and that proper drainage is maintained.

Debris Flows
Debris flow hazards are typically associated with unconsolidated alluvial fan deposits at the mouths of large range-front drainages, such as those along the Wasatch Front. Debris flows have historically significant damage in the Wasatch Front area. The site is not in any mapped alluvial-fan deposits, and no evidence of debris-flow channels, levees, or other debris-flow features was observed. Based on the above, we rate the hazard from debris flows at the site as low.

Rock Fall
No bedrock outcrops were observed at the site or in higher slopes that could present a source area for rock fall clasts. Based on the above, we rate the hazard from rock falls as low.

Swelling and Collapsible Soils
Surficial soils that contain certain clays can swell or collapse when wet. Given the subsurface soil conditions observed at the site, it is possible that clayey interbeds may be present in the subsurface that could pose a moderate risk from problem soils. A geotechnical engineering evaluation should therefore be performed to address soil conditions and provide specific recommendations for site grading, subgrade preparation, and footing and foundation design.

CONCLUSIONS AND RECOMMENDATIONS

Geologic hazards posing a high relative risk to the site are earthquake ground shaking and landslides. Problem soils also pose a moderate-risk hazard. The following recommendations are provided with regard to the geologic characterizations in this report:

- ***Excavation Inspection*** – To reduce the risk from landsliding, we recommend that the home be founded on underlying undeformed bedrock and that the foundation excavation be inspected by a licensed engineering geologist to confirm that no deformation is present, as well as to recognize any differing conditions that could affect the performance of the planned structure.

- ***Geotechnical Investigation*** - A design-level geotechnical engineering study should be conducted prior to construction to: (1) address soil conditions at the site for use in foundation design, site grading, and drainage; (2) provide recommendations regarding building design to reduce risk from seismic acceleration; and (3) evaluate stability of slopes at the site, including providing recommendations for reducing the risk of landsliding if the factors of safety are deemed unsuitable, based on the geologic characterizations provided in this report and site-specific geotechnical data. The stability evaluation should account for possible perched groundwater and seasonal fluctuations. It is our understanding that GSH is in the process of preparing a geotechnical report for the site. Our report should be provided to them to assist with their evaluation.

- ***Excavation Backfill Considerations*** - The test pits may be in areas where structures could subsequently be placed. However, backfill may not have been replaced in the test pits in compacted layers. The fill could settle with time and upon saturation. Should structures be located over an excavated area, no footings or structure should be founded over the excavations unless the backfill has been removed and replaced with structural fill, if the fill is to support a structure.

- ***Availability of Report*** - The report should be made available to architects, building contractors, and in the event of a future property sale, real estate agents and potential buyers. This report should be referenced for information on technical data only as interpreted from observations and not as a warranty of conditions throughout the site. The report should be submitted in its entirety, or referenced appropriately, as part of any document submittal to a government agency responsible for planning decisions or geologic review. Incomplete submittals void the professional seals and signatures we provide herein. Although this report and the data herein are the property of the client, the report format is the intellectual property of Western Geologic and should not be copied, used, or modified without express permission of the authors.

LIMITATIONS

This investigation was performed at the request of the Client using the methods and procedures consistent with good commercial and customary practice designed to conform to acceptable industry standards. The analysis and recommendations submitted in this report are based upon the data obtained from site-specific observations and compilation of known geologic information. This information and the conclusions of this report should not be interpolated to adjacent properties without additional site-specific information. In the event that any changes are later made in the location of the proposed site, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or approved in writing by the engineering geologist.

This report has been prepared by the staff of Western GeoLogic for the Client under the professional supervision of the principal and/or senior staff whose seal(s) and signatures appear hereon. Neither Western GeoLogic, nor any staff member assigned to this investigation has any interest or contemplated interest, financial or otherwise, in the subject or surrounding properties, or in any entity which owns, leases, or occupies the subject or surrounding properties or which may be responsible for environmental issues identified during the course of this investigation, and has no personal bias with respect to the parties involved.

The information contained in this report has received appropriate technical review and approval. The conclusions represent professional judgment and are founded upon the findings of the investigations identified in the report and the interpretation of such data based on our experience and expertise according to the existing standard of care. No other warranty or limitation exists, either expressed or implied.

The investigation was prepared in accordance with the approved scope of work outlined in our proposal for the use and benefit of the Client; its successors, and assignees. It is based, in part, upon documents, writings, and information owned, possessed, or secured by the Client. Neither this report, nor any information contained herein shall be used or relied upon for any purpose by any other person or entity without the express written permission of the Client. This report is not for the use or benefit of, nor may it be relied upon by any other person or entity, for any purpose without the advance written consent of Western GeoLogic.

In expressing the opinions stated in this report, Western GeoLogic has exercised the degree of skill and care ordinarily exercised by a reasonable prudent environmental professional in the same community and in the same time frame given the same or similar facts and circumstances. Documentation and data provided by the Client, designated representatives of the Client or other interested third parties, or from the public domain, and referred to in the preparation of this assessment, have been used and referenced with the understanding that Western GeoLogic assumes no responsibility or liability for their accuracy. The independent conclusions represent our professional judgment based on information and data available to us during the course of this assignment. Factual information regarding operations, conditions, and test data provided by the Client or their representative has been assumed to be correct and complete. The conclusions presented are based on the data provided, observations, and conditions that existed at the time of the field exploration.

It has been a pleasure working with you on this project. Should you have any questions, please call.

Sincerely,
Western GeoLogic, LLC

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ATTACHMENTS

Figure 1. Location Map (8.5"x11")
Figure 2. Geologic Map (8.5"x11")
Figure 3A. 2012 Air Photo (8.5"x11")
Figure 3B. 2011 LIDAR Image (8.5"x11")
Figure 3C. Site Plan (8.5"x11")
Figure 4A-C. Test Pit Logs (three 8.5"x11" sheets)
Figure 5. Cross Section (11"x17")

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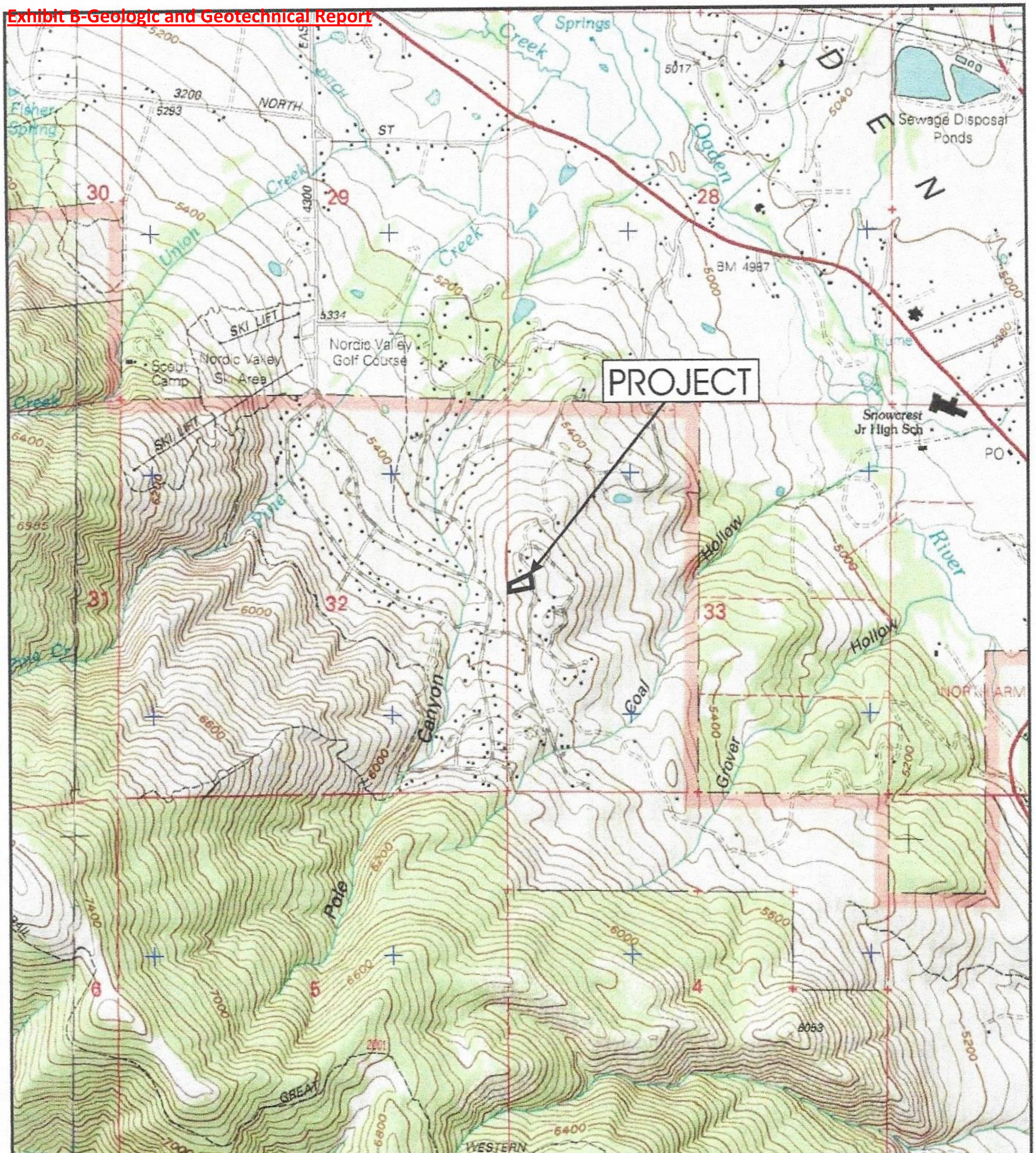


Source: U.S. Geological Survey 7.5 Minute Series Topographic Maps, Utah - Huntsville, 1998;
Project location SW1/4, Section 33, T7N, R1E (SLBM); about 5,525 to 5,615 feet elevation (ASL).

N
W E
S

0 1000 2000 feet

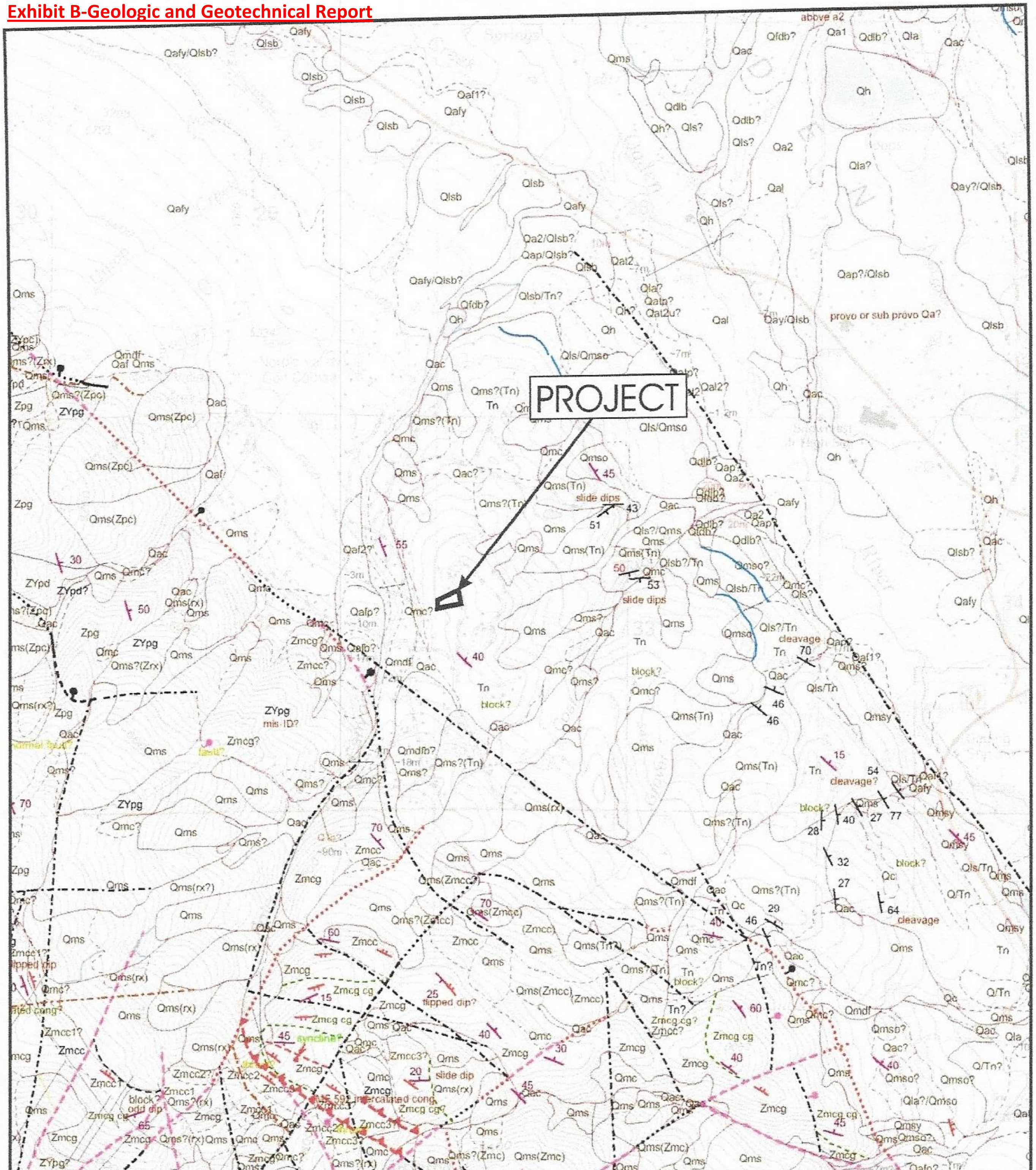
Scale 1:24,000
(1 inch = 2000 feet)

LOCATION MAP

GEOLOGIC HAZARDS EVALUATION

Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

FIGURE 1



Source: 2014 unpublished Utah Geological Survey mapping; see text for description of nearby surficial geologic units.

GEOLOGIC MAP

GEOLOGIC HAZARDS EVALUATION

Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

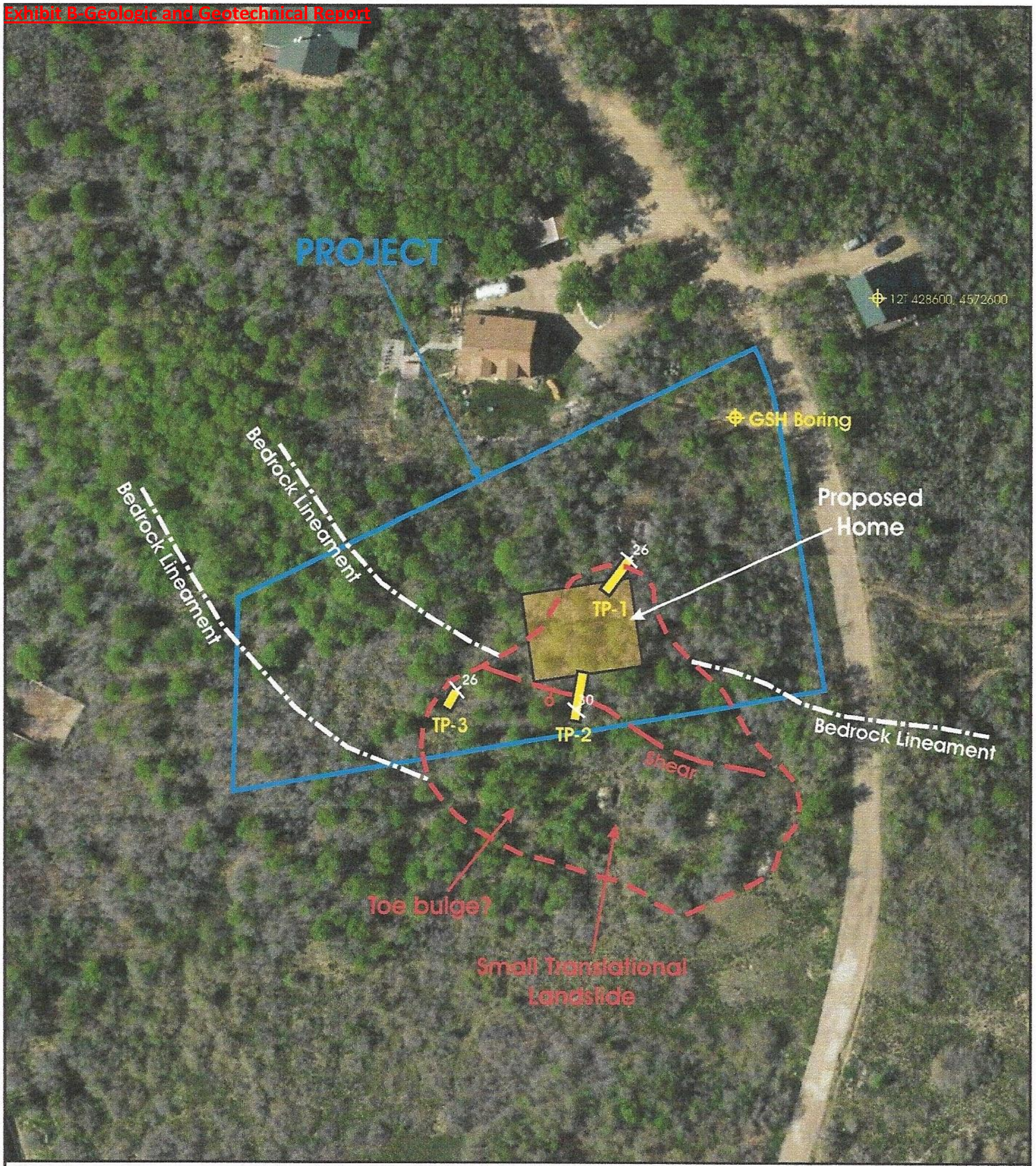
FIGURE 2

WESTERN GEOLOGIC

N
W E
S

0 1000 2000 feet

Scale 1:24,000
(1 inch = 2000 feet)



Source: Utah AGRC, 2012 High-Resolution Orthophoto, 6-inch resolution.

WESTERN GEOLOGIC

N W E S

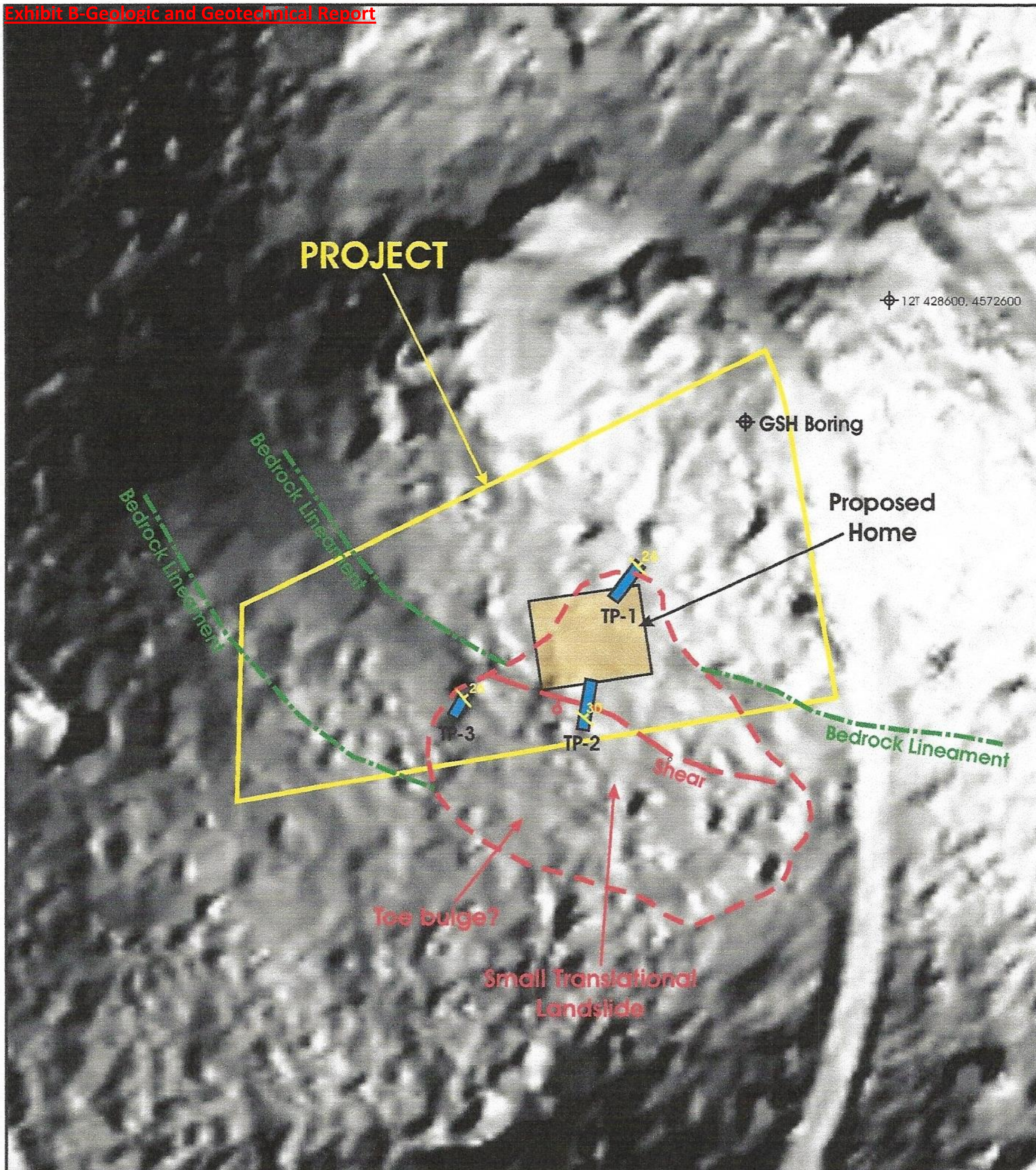
0 40 80 feet

Scale 1:960
(1 inch = 80 feet)

2012 AERIAL PHOTO

GEOLOGIC HAZARDS EVALUATION
Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

FIGURE 3A



Source: Utah AGRC, 2011 LIDAR Bare Earth DEM.

WESTERN GEOLOGIC

N W E S

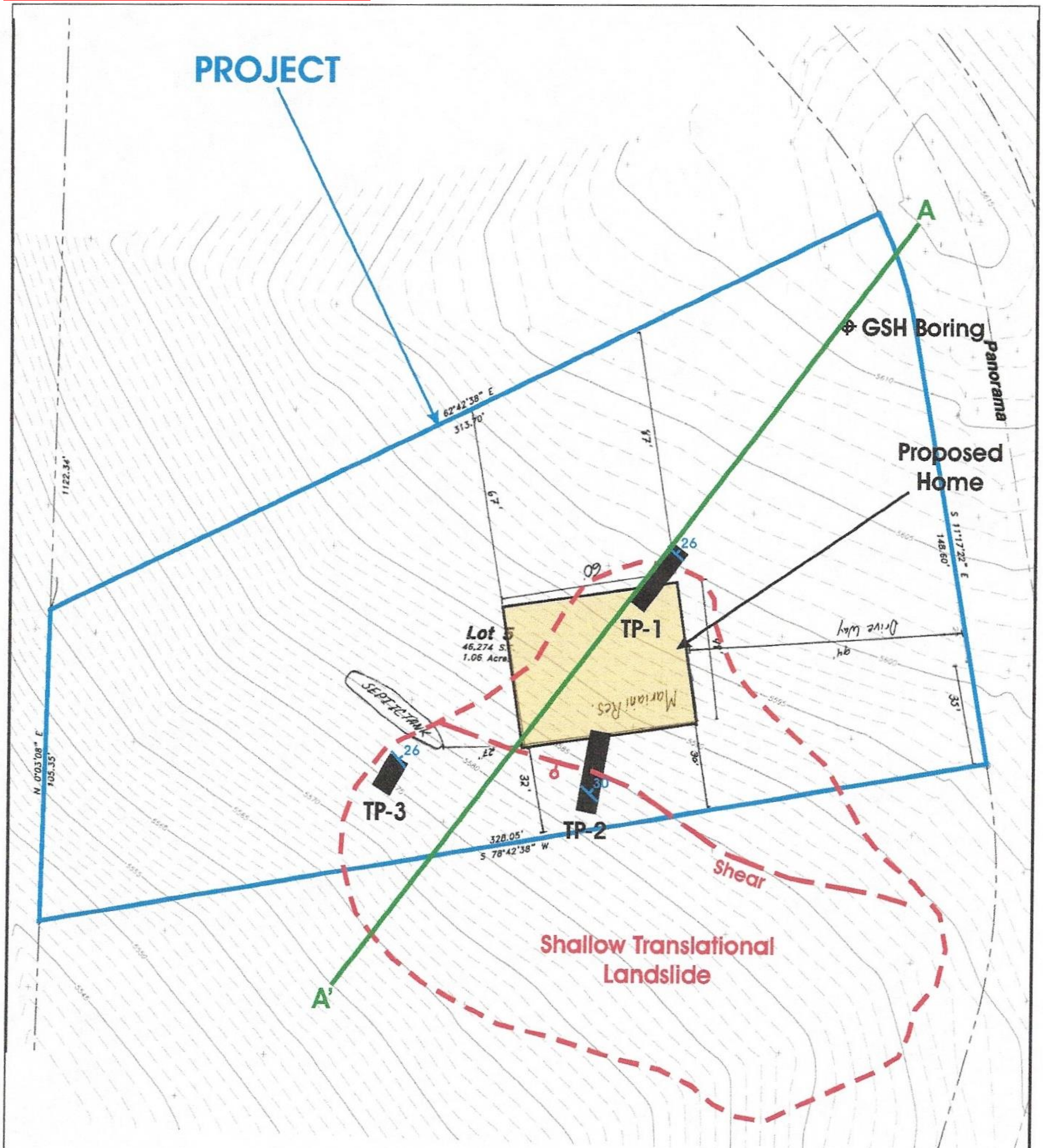
0 40 80 feet

Scale 1:960
(1 inch = 80 feet)

2011 LIDAR IMAGE

GEOLOGIC HAZARDS EVALUATION
Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

FIGURE 3B



WESTERN GeoLogic

N W E S

0 25 50 feet

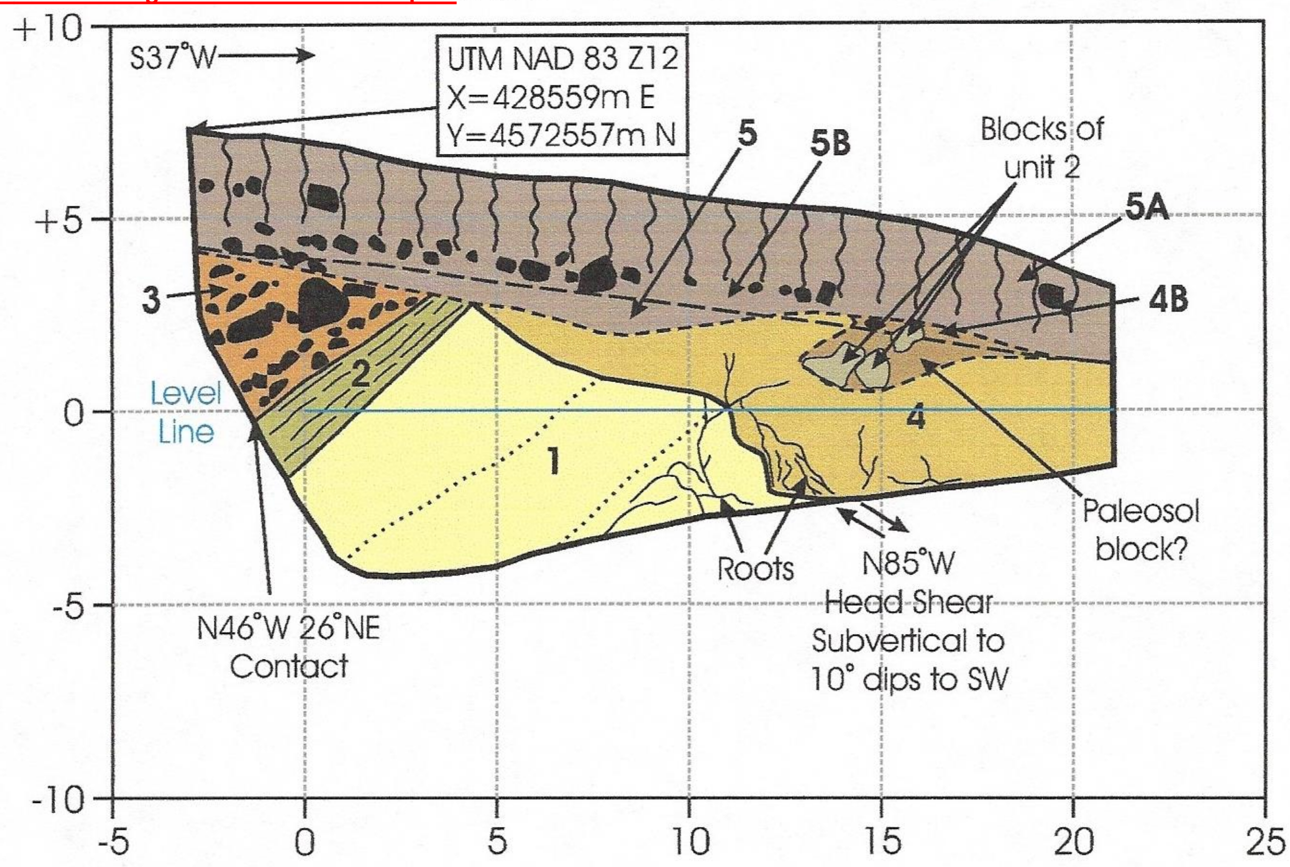
Scale 1:600
(1 inch = 50 feet)

SITE PLAN

GEOLOGIC HAZARDS EVALUATION

Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

FIGURE 3C



UNIT DESCRIPTIONS

Unit 1. *Tertiary Norwood Formation* - Carbonate-enriched tuffaceous sandstone; slightly fractured, pale-brown, high density, well to poorly bedded, with zones of pale-olive brown clay and iron oxide along cleavage fractures.

Unit 2. *Tertiary Norwood Formation* - Olive, reddish-olive, well bedded, moist, moderate density, fat clay (CH).

Unit 3. *Tertiary Norwood Formation* - Weathered tuffaceous conglomerate comprised of reddish-brown, moderate density, clayey sandy gravel to gravelly sand (GW/SW) with subangular cobbles and boulders.

Unit 4. *Late Pleistocene to early Holocene landslide* - Low to moderate density, olive to orange, lean to fat clay (CL/CH) with blocks of tuffaceous sandstone and possibly paleosol A horizon; generally massive, but with weak, slope parallel, iron-oxide stringers in places.

4B. Bt vertisol formed in unit 4.

Unit 5. *Holocene alluvium and colluvium* - reddish-, orange-, and very-dark-brown, low to moderate density, massive, root-penetrated, clayey sand to sandy clay (SC/CL) with cobbles and trace boulders; likely mixed slope wash and colluvium from up-slope erosion.

5B. Bt vertisol formed in unit 5.

5A. Organic-rich modern A-horizon soil formed in unit 5.

WESTERN GEOLOGIC

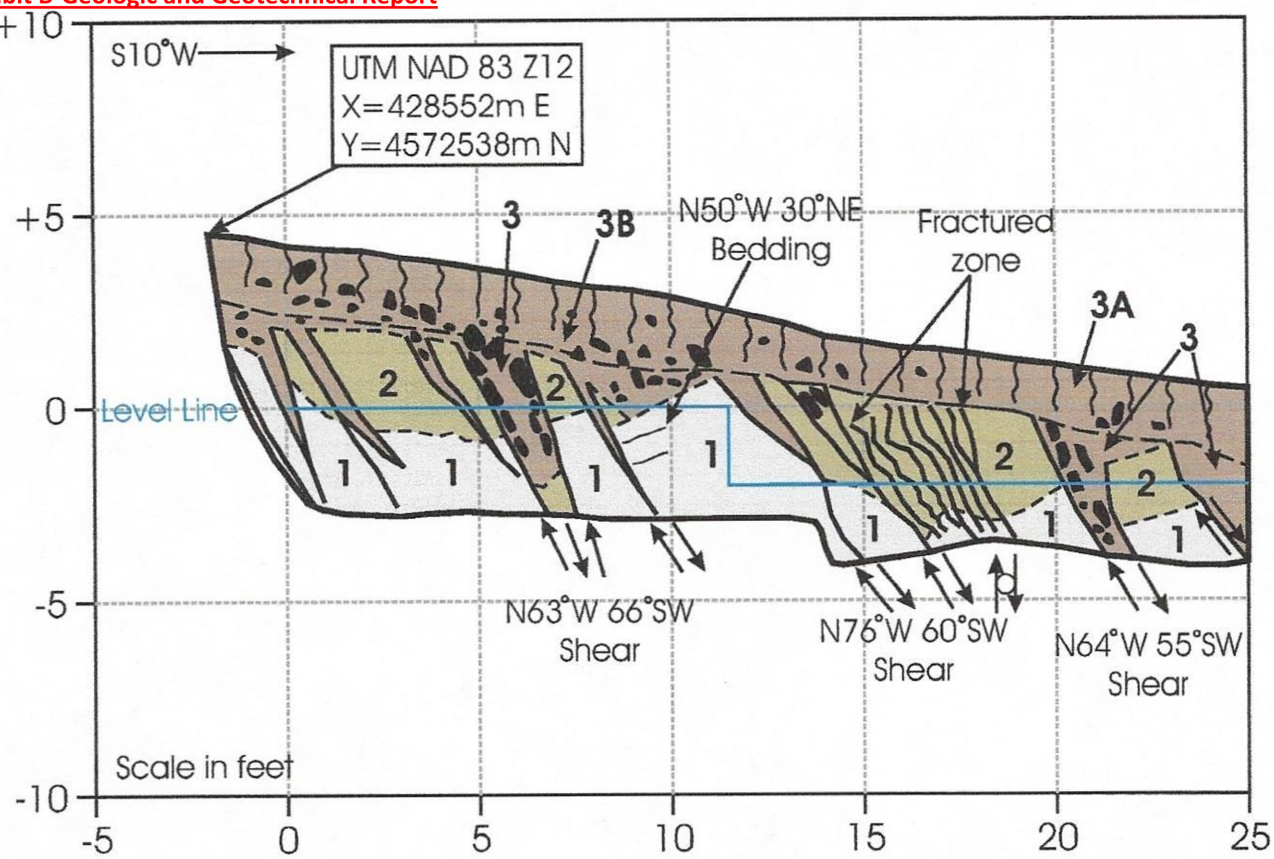
SCALE: 1 inch = 5 feet
(no vertical exaggeration)
East Wall Logged, North to South

Logged by Bill D. Black, P.G.
on April 28, 2016
Reviewed by
Craig V. Nelson, P.G.

TEST PIT 1 LOG

GEOLOGIC HAZARDS EVALUATION
Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

FIGURE 4A



UNIT DESCRIPTIONS

Unit 1. *Tertiary Norwood Formation* - Fractured, very dense, pale-gray, carbonate-enriched, well-bedded tuffaceous sandstone.

Unit 2. *Tertiary Norwood Formation* - Fractured, very dense, olive-gray, well-bedded tuffaceous sandstone with iron-oxide staining along cleavage faces.

Unit 3. *Late Pleistocene to early Holocene landslide* - Brown to dark brown, low to moderate density, massive, root-penetrated, clayey sand to sandy clay (SC/CL) with gravel, cobbles, and trace boulders.

3B. Bt vertisol horizon formed in unit 3.

3A. Organic-rich modern A horizon formed in unit 3.

WESTERN GEOLOGIC

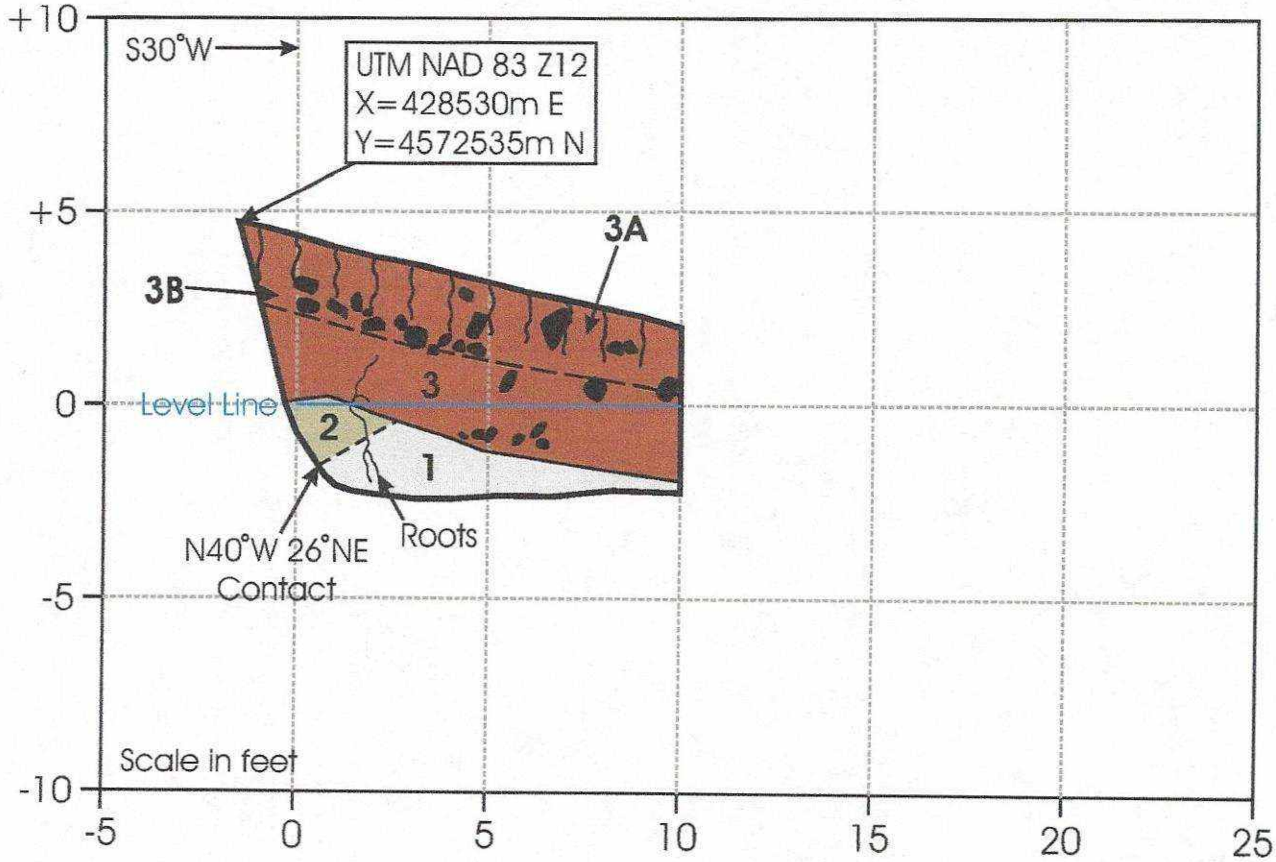
SCALE: 1 inch = 5 feet
(no vertical exaggeration)
East Wall Logged, North to South

Logged by Bill D. Black, P.G.
on April 28, 2016
Reviewed by
Craig V. Nelson, P.G.

TEST PIT 2 LOG

GEOLOGIC HAZARDS EVALUATION
Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

FIGURE 4B



UNIT DESCRIPTIONS

Unit 1. *Tertiary Norwood Formation* - Fractured, very dense, pale-gray, carbonate-enriched, well-bedded tuffaceous sandstone.

Unit 2. *Tertiary Norwood Formation* - Fractured, very dense, olive-gray, well-bedded tuffaceous sandstone with iron-oxide staining along cleavage faces.

Unit 3. *Late Pleistocene to early Holocene landslide* - Brown to dark brown, low to moderate density, massive, root-penetrated, clayey sand to sandy clay (SC/CL) with gravel, cobbles, and trace boulders.

3B. Bt vertisol horizon formed in unit 3.

3A. Organic-rich modern A horizon formed in unit 3.

SCALE: 1 inch = 5 feet
(no vertical exaggeration)
East Wall Logged, North to South

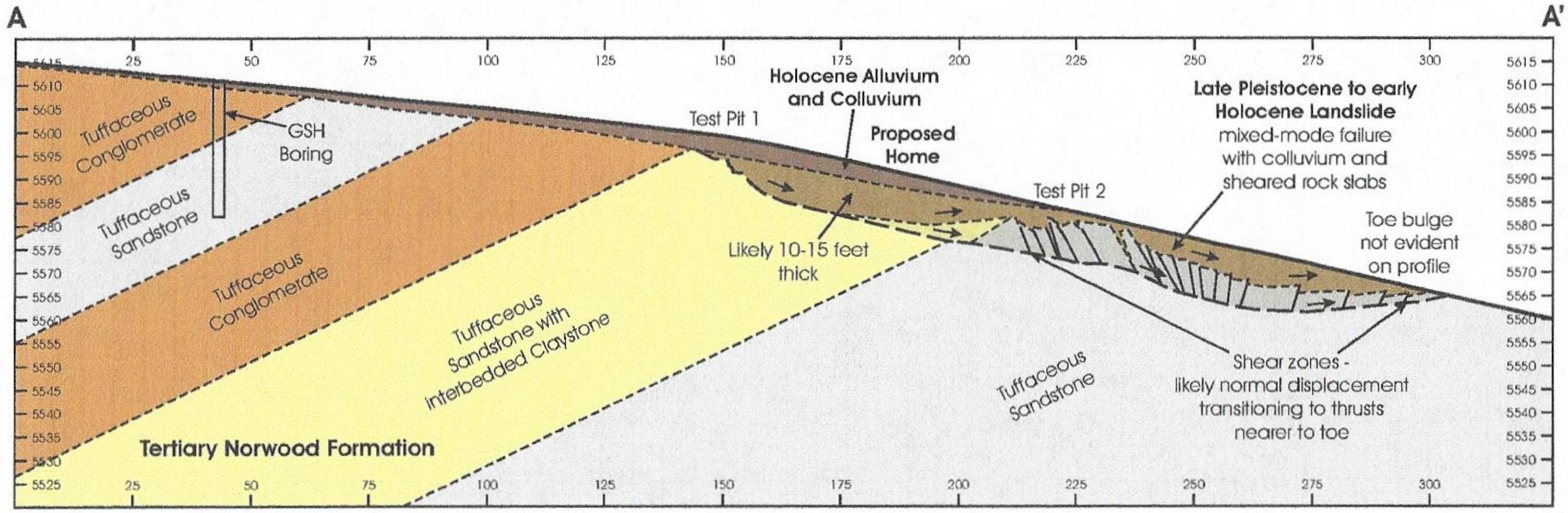
Logged by Bill D. Black, P.G.
on April 28, 2016
Reviewed by
Craig V. Nelson, P.G.

WESTERN GEOLOGIC

TEST PIT 3 LOG

GEOLOGIC HAZARDS EVALUATION
Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

FIGURE 4C



SCALE: 1 inch = 25 feet
No vertical exaggeration
Contacts based on subsurface data and are inferred in unexplored areas and at depth

WESTERN GEOLOGIC

CROSS SECTION

GEOLOGIC HAZARDS EVALUATION
Lot 5 Big Sky Estates No. 1
2337 North Panorama Circle
Liberty, Weber County, Utah

FIGURE 5

REPORT
GEOTECHNICAL STUDY
LOT 5 BIG SKY ESTATES
2337 PANORAMA CIRCLE
NEAR LIBERTY, WEBER COUNTY, UTAH

Submitted To:

Mr. and Mrs. Dave and Gayle Mariani
P.O. Box 1202
Eden, Utah

Submitted By:

GSH Geotechnical, Inc.
1596 West 2650 South
Ogden, Utah 84401

July 15, 2016

Job No. 2104-01N-16

GSH

July 15, 2016
Job No. 2104-01N-16

Mr. and Mrs. Dave and Gayle Mariani
P.O. Box 1202
Eden, Utah 84310

Re: Report
Geotechnical Study
Lot 5 Big Sky Estates
2337 Panorama Circle
Near Liberty, Weber County, Utah
(41.3012° N; 111.8535° W)

1. INTRODUCTION

1.1 GENERAL

This report presents the results of our geotechnical study performed for Lot 5 Big Sky Estates located at 2337 Panorama Circle near Liberty in Weber County, Utah. The general location of the site with respect to major roadways, as of 2014, is presented on Figure 1, Vicinity Map. A more detailed layout of the site showing the proposed improvements is presented on Figure 2, Site Plan. The locations of the test pits excavated and boring drilled in conjunction with this study are also presented on Figure 2.

1.2 OBJECTIVES AND SCOPE

The objectives and scope of our study were planned in discussions between Mr. and Mrs. Dave and Gayle Mariani and Mr. Andrew Harris of GSH Geotechnical, Inc. (GSH).

In general, the objectives of this study were to:

1. Define and evaluate the subsurface soil and groundwater conditions across the site.

2. Provide appropriate foundation, earthwork, and slope stability recommendations as well as geoseismic information to be utilized in the design and construction of the proposed home.

In accomplishing these objectives, our scope has included the following:

1. A field program consisting of the excavating, logging, and sampling of 3 test pits and 1 boring.

2. A laboratory testing program.

3. An office program consisting of the correlation of available data, engineering analyses, and the preparation of this summary report.

1.3 AUTHORIZATION

Authorization was provided by returning a signed copy of our Professional Services Agreement No. 16-0235N dated February 14, 2016.

1.4 PROFESSIONAL STATEMENTS

Supporting data upon which our recommendations are based are presented in subsequent sections of this report. Recommendations presented herein are governed by the physical properties of the soils encountered in the exploration test pits/boring, projected groundwater conditions, and the layout and design data discussed in Section 2, Proposed Construction, of this report. If subsurface conditions other than those described in this report are encountered and/or if design and layout changes are implemented, GSH must be informed so that our recommendations can be reviewed and amended, if necessary.

Our professional services have been performed, our findings developed, and our recommendations prepared in accordance with generally accepted engineering principles and practices in this area at this time.

2. PROPOSED CONSTRUCTION

The proposed project consists of constructing a single-family residence on Lot 5 Big Sky Estates near Liberty in Weber County, Utah. Construction will likely consist of reinforced concrete footings and basement/crawlspace foundation walls supporting 1 to 2 wood-framed levels above grade. Projected maximum column and wall loads are on the order of 10 to 25 kips and 1 to 3 kips per lineal foot, respectively.

Site development will require a moderate amount of earthwork in the form of site grading. We estimate in general that maximum cuts and fills to achieve design grades will be on the order of 2 to 8 feet. Larger cuts and fills may be required in isolated areas.

3. INVESTIGATIONS

3.1 FIELD PROGRAM

In order to define and evaluate the subsurface soil and groundwater conditions at the site, 1 boring was drilled to a depth of about 29.0 feet below existing grade. The boring was drilled using a truck-mounted drill rig equipped with hollow-stem augers, mud rotary, and coring. Additionally, 3 test pits were excavated to depths of about 7.0 to 11.0 feet below existing grade. The test pits were excavated using a track-mounted excavator. Test pit and boring locations are presented on Figure 2.

The field portion of our study was under the direct control and continual supervision of an experienced member of our geotechnical staff. During the course of the excavating and drilling operations, a continuous log of the subsurface soil conditions encountered was maintained. In addition, samples of the typical soils encountered were obtained and placed in sealed bags and plastic containers for subsequent laboratory testing and examination. The soils were classified in the field based upon visual and textural examination. These classifications have been supplemented by subsequent inspection and testing in our laboratory. Detailed graphical representation of the subsurface conditions encountered is presented on Figure 3A, Boring Log, and on Figures 4A through 4C, Test Pit Log. Soils were classified in accordance with the nomenclature described on Figure 5, Key to Boring Log (USCS) and on Figure 6, Key to Test Pit Log (USCS).

A 3.0-inch outside diameter, 2.42-inch inside diameter drive sampler (Dames & Moore) and a 2.0-inch outside diameter, 1.38-inch inside diameter drive sampler (SPT) were utilized in the subsurface soil sampling at select locations within the boring. The blow counts recorded on the boring logs were those required to drive the sampler 12 inches with a 140-pound hammer dropping 30 inches.

A 2.42-inch inside diameter thin-wall drive sampler was utilized in the subsurface sampling of the test pits at the site.

Following completion of drilling and excavation operations, one and one-quarter-inch diameter slotted PVC pipe was installed in boring B-1 and test pit TP-2 in order to provide a means of monitoring the groundwater fluctuations. The boring was backfilled with auger cuttings. Following completion of excavating and logging, each test pit was backfilled. Although an effort was made to compact the backfill with the trackhoe, backfill was not placed in uniform lifts and compacted to a specific density. Consequently, the backfill soils must be considered as non-engineered and settlement of the backfill with time is likely to occur.

3.2 LABORATORY TESTING

3.2.1 General

In order to provide data necessary for our engineering analyses, a laboratory testing program was performed. The program included moisture, density, Atterberg limits, partial gradations, consolidation, direct shear, and residual direct shear tests. The following paragraphs describe the tests and summarize the test data.

3.2.2 Moisture and Density

To provide index parameters and to correlate other test data, moisture and density tests were performed on selected samples. The results of these tests are presented on the boring log, Figure 3A, and on the test pit logs, Figure 4A through 4C.

3.2.3 Atterberg Limit Tests

To aid in classifying the soils, Atterberg limit tests were performed on samples of the fine-grained cohesive soils. Results of the test are tabulated on the following table:

Boring/ Test Pit No.	Depth (feet)	Liquid Limit (percent)	Plastic Limit (percent)	Plasticity Index (percent)	Soil Classification
B-1	2.5	25	17	8	SC
B-1	10.0	21	11	10	GC
B-1	19.0	33	22	11	SC
TP-2	2.5	Non-Plastic	Non-Plastic	Non-Plastic	SM
TP-3	3.0	72	38	34	MH

3.2.4 Partial Gradation Tests

To aid in classifying the granular soils, partial gradation tests were performed. Results of the tests are tabulated below:

Boring/ Test Pit No.	Depth (feet)	Percent Passing No. 200 Sieve	Soil Classification
B-1	2.5	28	SC
B-1	10.0	14	GC
B-1	19.0	23	SC
TP-1	4.0	30	SC
TP-2	2.5	25	SM
TP-3	3.0	74	MH

3.2.5 Consolidation Tests

To provide data necessary for our settlement analyses, consolidation tests were performed on each of 2 representative samples of the fine grained soils encountered at the site. Based upon data obtained from the consolidation tests, the silty clay/clayey silt soils are moderately over-consolidated and will exhibit moderate strength and compressibility characteristics under the anticipated loadings. Detailed results of the test are maintained within our files and can be transmitted, at the client's request.

3.2.6 Laboratory Direct Shear Test

To determine the shear strength of the soils encountered at the site, a laboratory direct shear test was performed on a sample of the site soils. The results of the test are tabulated below:

Test Pit/Boring No.	Depth (feet)	Soil Type	In-Situ Moisture Content (percent)	Dry Density (pcf)	Internal Friction Angle (degrees)	Apparent Cohesion (psf)
TP-1	4.0	SC	27	79	28	605
TP-3	6.0	MH	28	74	28	350

GSH

3.2.7 Laboratory Residual Direct Shear Test

To determine the residual shear strength of the soils encountered at the site, a laboratory residual direct shear test was performed on a sample of the site soils. The results of the test are tabulated on below:

Test Pit/Boring No.	Depth (feet)	Soil Type	In-Situ Moisture Content (percent)	Dry Density (pcf)	Internal Friction Angle (degrees)	Apparent Cohesion (psf)
TP-1	4.0	SC	27	79	16	275

4. SITE CONDITIONS

4.1 GEOLOGIC SETTING

A geologic hazards reconnaissance study[1] dated June 9, 2016 was prepared for the subject property by Western Geologic, LLC, and a copy of that report is included in the attached Appendix.

4.2 SURFACE

The subject property is a vacant, irregularly-shaped lot located at 2337 Panorama Circle near Liberty in Weber County, Utah. The topography of the site slopes downward to the west/southwest at grades of about 10H:1V (Horizontal:Vertical) to about 4H:1V (Horizontal:Vertical) with an overall change in elevation of about 145 feet across the site. Vegetation at the site consists primarily of native weeds, grasses, brush, and numerous mature trees, particularly over the slope area. The site is bordered on the north by residential development, on the west and south by undeveloped property, and on the east by Panorama Road followed by residential development.

4.3 SUBSURFACE SOIL

Subsurface conditions encountered at the test pit and boring locations varied slightly across the site. Topsoil and disturbed soils were observed in the upper 3 to 12 inches at the test pit and boring locations. Non-engineered fill extending about 1.0 foot below existing site grades was encountered at boring B-1. In test pit TP-3 and boring B-1, natural soils were observed beneath the non-engineered fill and topsoil/disturbed soils to the full depth penetrated, about 7.0 to 29.0 feet below surrounding grades and consisted of silty clay with varying fine to coarse sand content, fine sandy silt, fine to coarse sand with varying amounts of silt, weathered bedrock (weathered sandstone/claystone/siltstone), and occasional mixture of these soils. In test pits TP-1

[1] "Report, Geologic Hazards Evaluation, Lot 5 Big Sky Estates No.1, 2337 North Panorama Circle, Liberty, Weber County, Utah," Western Geologic, LLC, June 9, 2016.

and TP-2, mass movement soil deposits were encountered below the topsoil and disturbed soils extending to the full depth explored of about 10.0 to 11.0 feet below surrounding site grades. The mass movement deposits were comprised of a mixture of silty sand, clayey silt, silty clay, and degraded/weathered sandstone/siltstone.

The natural granular soils encountered were medium dense to very dense, slightly moist to moist, reddish-brown to brown to gray in color, and will generally exhibit moderately high strength and low compressibility characteristics under the anticipated vertical loading.

The natural silt/clay soils encountered were medium stiff to hard, slightly moist to moist, brown to gray in color, and will generally exhibit moderate strength and compressibility characteristics under the anticipated vertical loading.

For a more detailed description of the subsurface soils encountered, please refer to Figure 3A, Boring Log, and Figures 4A through 4C, Test Pit Log. The lines designating the interface between soil types on the test pit and boring logs generally represent approximate boundaries. In-situ, the transition between soil types may be gradual.

4.4 GROUNDWATER

Groundwater was not encountered in the test pits or boring at the time of our field exploration; however, water resulting from recent precipitation was observed seeping into the test pits at about 2 to 4 feet below existing site grades. Seasonal and longer-term groundwater fluctuations of 1 to 2 feet shall be anticipated. The highest seasonal levels will generally occur during the late spring and summer months. Landscape irrigation on this and surrounding areas may also create additional seasonal groundwater fluctuations. The limitations of landscape irrigation at the site are discussed further in Section 5.9, Site Irrigation, and measures to reduce infiltration of surface water at the site are discussed further in Section 5.8, Subdrains. The contractor must be prepared to dewater excavations as needed.

5. DISCUSSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF FINDINGS

The results of our analyses indicate that the proposed structure may be supported upon conventional spread and/or continuous wall foundations established upon a minimum of 2 feet of granular structural fill extending to suitable natural soils. Under no circumstance should the proposed structure or associated structural fill be placed directly on mass movement/landslide deposits noted at the site. Mass movement/landslide deposits must be removed in their entirety from beneath the proposed home and extending a minimum of 10 feet outside the home area.

The most significant geotechnical aspects of the site are:

1. The surficial non-engineered fills encountered at boring B-1;
2. The proximity of the proposed structure to mass movement soil deposits; and

3. Maintaining stability of the slope at the property.

Mass movement/landslide deposits must be removed in their entirety from beneath the proposed home and extending a minimum of 10 feet outside the home area. If this is not feasible, GSH must be contacted to provide additional recommendations for foundation support.

A subdrain system must be installed upslope of the home and near the head of the mass movement deposit soils below the home to reduce the potential for surface water infiltration, as discussed further within this report.

The on-site soils are not appropriate to be used as structural site grading fill, however, they may be used as general grading fill in landscape areas.

A geotechnical engineer from GSH will need to verify that all mass movement deposit soils, fill material (if encountered) and topsoil/disturbed soils have been completely removed and suitable natural soils encountered prior to the placement of structural site grading fills, floor slabs, foundations, or rigid pavements.

In the following sections, detailed discussions pertaining to earthwork, foundations, lateral pressure and resistance, floor slabs, slope stability, and the geoseismic setting of the site are provided.

5.2 EARTHWORK

5.2.1 Site Preparation

Initial site preparation will consist of the removal of surface vegetation, topsoil, and other deleterious materials from beneath an area extending out at least 3 feet from the perimeter of the proposed building, pavements, and exterior flatwork areas.

Additional site preparation will consist of the removal of existing non-engineered fills (if encountered) from an area extending out at least 3 feet from the perimeter of residential structures and 1 foot beyond rigid pavements. Mass movement/landslide deposits must be removed in their entirety from beneath the proposed home and extending a minimum of 10 feet outside the home area.

Non-engineered fills/disturbed soil may remain in asphalt pavement and sidewalk areas as long as they are free of deleterious materials and properly prepared. Below rigid pavements non-engineered fills/disturbed soils must be removed. Additionally, the surface of any existing engineered fills must be prepared prior to placing additional site grading fills.

Proper preparation shall consist of scarifying, moisture conditioning, and re-compacting the upper 12 inches to the requirements for structural fill. As an option to proper preparation and recompaction, the upper 12 inches of non-engineered fill (where encountered) may be removed and replaced with granular subbase over unfrozen proofrolled subgrade. Even with proper preparation, pavements established overlying non-engineered fills may encounter some long-term movements unless the non-engineered fills are completely removed.

It must be noted that from a handling and compaction standpoint, onsite soils containing high amounts of fines (silts and clays) are inherently more difficult to rework and are very sensitive to changes in moisture content requiring very close moisture control during placement and compaction. This will be very difficult, if not impossible, during wet and cold periods of the year. Additionally, the onsite soils are likely above optimum moisture content for compacting at present and would require some drying prior to recompacting.

Subsequent to stripping and prior to the placement of structural site grading fill, pavements, driveway, and parking slabs on grade, the prepared subgrade must be proofrolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If excessively soft or loose soils are encountered, they must be removed to a maximum depth of 2 feet and replaced with structural fill. Beneath footings, all loose and disturbed soils must be totally removed. Fill soils must be handled as described above.

Surface vegetation, debris, and other deleterious materials shall generally be removed from the site. Topsoil, although unsuitable for utilization as structural fill, may be stockpiled for subsequent landscaping purposes.

A representative of GSH must verify that suitable natural soils and/or proper preparation of existing fills have been encountered/met prior to placing site grading fills, footings, slabs, and pavements.

5.2.2 Excavations

For granular (cohesionless) soils, construction excavations above the water table, not exceeding 4 feet, shall be no steeper than one-half horizontal to one vertical (0.5H:1V). For excavations up to 10 feet, in granular soils and above the water table, the slopes shall be no steeper than one horizontal to one vertical (1H:1V). Excavations encountering saturated cohesionless soils will be very difficult and will require very flat sideslopes and/or shoring, bracing and dewatering. Excavations deeper than 10 feet are not anticipated at the site.

Temporary excavations up to 10 feet deep in fine-grained cohesive soils (if encountered), above or below the water table, may be constructed with sideslopes no steeper than one-half horizontal to one vertical (0.5H:1V).

To reduce disturbance of the natural soils during excavation, it is recommended that smooth edge buckets/blades be utilized.

All excavations must be inspected periodically by qualified personnel. If any signs of instability or excessive sloughing are noted, immediate remedial action must be initiated.

5.2.3 Structural Fill

Structural fill will be required as site grading fill, as backfill over foundations and utilities, and possibly as replacement fill beneath some footings. All structural fill must be free of sod, rubbish, construction debris, frozen soil, and other deleterious materials.

Structural site grading fill is defined as fill placed over fairly large open areas to raise the overall site grade. The maximum particle size within structural site grading fill should generally not exceed 4 inches; although, occasional particles up to 6 to 8 inches may be incorporated provided that they do not result in "honeycombing" or preclude the obtainment of the desired degree of compaction. In confined areas, the maximum particle size should generally be restricted to 2.5 inches.

Only granular soils are recommended in confined areas such as utility trenches, below footings, etc. Generally, we recommend that all imported granular structural fill consist of a well-graded mixture of sands and gravels with no more than 20 percent fines (material passing the No. 200 sieve) and less than 30 percent retained on the 3/4 inch sieve. The plasticity index of import fine-grained soil shall not exceed 18 percent.

To stabilize soft subgrade conditions or where structural fill is required to be placed closer than 1.0 foot above the water table at the time of construction, a mixture of coarse gravels and cobbles and/or 1.5- to 2.0-inch gravel (stabilizing fill) should be utilized. It may also help to utilize a stabilization fabric, such as Mirafi 600X or equivalent, placed on the native ground if 1.5- to 2.0-inch gravel is used as stabilizing fill.

On-site soils are not recommended as structural fill but may be used as non-structural grading fill in landscape areas. Non-structural site grading fill is defined as all fill material not designated as structural fill and may consist of any cohesive or granular soils not containing excessive amounts of degradable material.

5.2.4 Fill Placement and Compaction

All structural fill shall be placed in lifts not exceeding 8 inches in loose thickness. Structural fills shall be compacted in accordance with the percent of the maximum dry density as determined by the ASTM[2] D-1557 (AASHTO[3] T-180) compaction criteria in accordance with the table on the following page.

2 American Society for Testing and Materials
3 American Association of State Highway and Transportation Officials

Location	Total Fill Thickness (feet)	Minimum Percentage of Maximum Dry Density
Beneath an area extending at least 5 feet beyond the perimeter of the structure	0 to 10	95
Site Grading Fills outside area defined above	0 to 5	90
Site Grading Fills outside area defined above	5 to 10	95
Trench Backfill	--	96
Pavement granular base/subbase	--	96

Structural fills greater than 10 feet thick are not anticipated at the site.

Subsequent to stripping and prior to the placement of structural site grading fill, the subgrade shall be prepared as discussed in Section 5.2.1, Site Preparation, of this report. In confined areas, subgrade preparation shall consist of the removal of all loose or disturbed soils.

If utilized for stabilizing fill, coarse gravel and cobble mixtures should be end-dumped, spread to a maximum loose lift thickness of 15 inches, and compacted by dropping a backhoe bucket onto the surface continuously at least twice. As an alternative, the fill may be compacted by passing moderately heavy construction equipment or large self-propelled compaction equipment at least twice. Subsequent fill material placed over the coarse gravels and cobbles shall be adequately compacted so that the "fines" are "worked into" the voids in the underlying coarser gravels and cobbles.

5.2.5 Utility Trenches

All utility trench backfill material below structurally loaded facilities (flatwork, floor slabs, roads, etc.) shall be placed at the same density requirements established for structural fill. If the surface of the backfill becomes disturbed during the course of construction, the backfill shall be proofrolled and/or properly compacted prior to the construction of any exterior flatwork over a backfilled trench. Proofrolling may be performed by passing moderately loaded rubber tire-mounted construction equipment uniformly over the surface at least twice. If excessively loose or soft areas are encountered during proofrolling, they must be removed (to a maximum depth of 2 feet below design finish grade) and replaced with structural fill.

Most utility companies and City-County governments are now requiring that Type A-1-a/A-1-b (AASHTO Designation – basically granular soils with limited fines) soils be used as backfill over utilities. These organizations are also requiring that in public roadways the backfill over major utilities be compacted over the full depth of fill to at least 96 percent of the maximum dry density as determined by the AASHTO T-180 (ASTM D-1557) method of compaction. We recommend that as the major utilities continue onto the site that these compaction specifications are followed.

Natural or imported silt/clay soils are not recommended for use as trench backfill, particularly in structurally loaded areas.

5.3 SLOPE STABILITY

5.3.1 Parameters

The properties of the soils at this site were estimated using the results of our laboratory testing, published correlations, and our experience with similar soils. Accordingly, we estimated the following parameters for use in the stability analyses:

Material	Internal Friction Angle (degrees)	Apparent Cohesion (psf)	Saturated Unit Weight (pcf)
Colluvium	28	250	115
Bedrock	29	400	120
Landslide	16	200	115

For the seismic analysis, a peak horizontal ground acceleration of 0.292 using IBC 2012 guidelines and adjusted for Site Class effects (for Site Class D soils) was obtained for site (grid) locations of 41.3012 degrees latitude (north) and 111.8535 degrees longitude (west). To model sustained accelerations at the site, one-half of this value is typically used. Accordingly, a value of 0.146 was used as the pseudostatic coefficient in the seismic analyses.

5.3.2 Stability Analyses

We evaluated the global stability of the existing slope using the computer program *SLIDE*. This program uses a limit equilibrium (Simplified Bishop) method for calculating factors of safety against sliding on an assumed failure surface and evaluates numerous potential failure surfaces, with the most critical failure surface identified as the one yielding the lowest factor of safety of those evaluated. We analyzed the following configuration based on cross-sections provided in the referenced geologic study (see geological study in appendix for cross-section information and location):

- Slopes between 10H:1V (Horizontal:Vertical) to 4H:1V (Horizontal:Vertical) with an overall change in elevation of about 145 feet across the site. To simulate the load imposed on the slope by the proposed home, a load of 1,500 psf was modeled over the proposed building area. In addition, a phreatic surface was included in our analyses to account for potential seasonal perched water and effluent water from the proposed on-site septic system.

Typically, the required minimum factors of safety are 1.5 for static conditions and 1.0 for seismic (pseudostatic) conditions. The results of our analyses indicate that the existing slope configurations analyzed will meet both these requirements provided our recommendations are followed (see Figures 7 and 8).

Slope movements or even failure can occur if the slope soils are undermined or become saturated. Groundwater was not encountered during the course of our field investigation; however saturation of the slope soils can adversely affect the stability of the slope. Measures must be implemented to reduce the potential for saturation of the soils at the site. Surface drainage at the bottom and top of the slope should be directed to prevent ponding at the toe or crest of the slope, and a cut-off drain on the slope above the home and at the head of the landslide deposit below the home is recommended to reduce the potential for infiltration of surface water at the site, as discussed further in Section 5.8, Subdrains. Landscape irrigation on this and surrounding areas may also create additional seasonal groundwater fluctuations. The limitations of landscape irrigation at the site are discussed further in Section 5.9, Site Irrigation. The property owner and the owner's representatives should be made aware of the risks should these or other conditions occur that could saturate or erode/undermine the slope soils.

Changes to the grading at the site and any retaining walls must be properly engineered to maintain stability of the slopes. GSH must review the final grading plans for the project prior to initiation of any construction.

5.4 SPREAD AND CONTINUOUS WALL FOUNDATIONS

5.4.1 Design Data

The proposed structure may be supported upon conventional spread and continuous wall foundations established upon a minimum of 2 feet of structural fill extending to suitable natural soils. For design, the following parameters are provided:

Minimum Recommended Depth of Embedment for Frost Protection	- 30 inches
Minimum Recommended Depth of Embedment for Non-frost Conditions	- 15 inches
Recommended Minimum Width for Continuous Wall Footings	- 16 inches
Minimum Recommended Width for Isolated Spread Footings	- 24 inches

Recommended Net Bearing Pressure for Real Load Conditions	- 1,500 pounds per square foot
Bearing Pressure Increase for Seismic Loading	- 50 percent

The term "net bearing pressure" refers to the pressure imposed by the portion of the structure located above lowest adjacent final grade. Therefore, the weight of the footing and backfill to lowest adjacent final grade need not be considered. Real loads are defined as the total of all dead plus frequently applied live loads. Total load includes all dead and live loads, including seismic and wind.

5.4.2 Installation

Footings shall not be installed upon mass movement soil deposits, soft or disturbed soils, non-engineered fill, construction debris, frozen soil, or within ponded water. If the granular structural fill upon which the footings are to be established becomes disturbed, it shall be recompacted to the requirements for structural fill or be removed and replaced with structural fill.

The width of structural fill, where placed below footings, shall extend laterally at least 6 inches beyond the edges of the footings in all directions for each foot of fill thickness beneath the footings. For example, if the width of the footing is 2 feet and the thickness of the structural fill beneath the footing is 2.0 feet, the width of the structural fill at the base of the footing excavation would be a total of 4.0 feet, centered below the footing.

5.4.3 Settlements

Maximum settlements of foundations designed and installed in accordance with recommendations presented herein and supporting maximum anticipated loads as discussed in Section 2, Proposed Construction, are anticipated to be 1 inch or less.

Approximately 40 percent of the quoted settlement should occur during construction.

5.5 LATERAL RESISTANCE

Lateral loads imposed upon foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the foundations and the supporting soils. In determining frictional resistance, a coefficient of 0.40 should be utilized for foundations placed over granular structural fill. Passive resistance provided by properly placed and compacted granular structural fill above the water table may be considered equivalent to a fluid with a density of 300 pounds per cubic foot. Below the water table, this granular soil should be considered equivalent to a fluid with a density of 150 pounds per cubic foot.

A combination of passive earth resistance and friction may be utilized provided that the friction component of the total is divided by 1.5.

5.6 LATERAL PRESSURES

The lateral pressure parameters, as presented within this section, are for backfills which will consist of drained granular soil placed and compacted in accordance with the recommendations presented herein. The lateral pressures imposed upon subgrade facilities will, therefore, be basically dependent upon the relative rigidity and movement of the backfilled structure. For active walls, such as retaining walls which can move outward (away from the backfill), granular backfill may be considered equivalent to a fluid with a density of 35 pounds per cubic foot in computing lateral pressures. For more rigid walls (moderately yielding), generally not exceeding 8 feet in height, granular backfill may be considered equivalent to a fluid with a density of 45 pounds per cubic foot. The above values assume that the surface of the soils slope behind the wall is no steeper than 4 horizontal to 1 vertical and that the granular fill within 3 feet of the wall will be compacted with hand-operated compacting equipment.

For seismic loading, a uniform pressure shall be added. The uniform pressures based on different wall heights are provided in the following table:

Wall Height (feet)	Seismic Loading Active Case (psf)	Seismic Loading Moderately Yielding (psf)
4	25	55
6	40	85
8	55	115

5.7 FLOOR SLABS

Floor slabs may be established upon a minimum of 2 feet of structural fill extending to suitable natural soils. Under no circumstances shall floor slabs be established over mass movement deposit soils, non-engineered fills, loose or disturbed soils, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. In order to provide a capillary break and facilitate curing of the concrete, it is recommended that floor slabs be directly underlain by 4 inches of “free-draining” fill, such as “pea” gravel or three-quarters- to one-inch minus clean gap-graded gravel.

Settlement of lightly loaded floor slabs (average uniform pressure of 100 to 150 pounds per square foot or less) is anticipated to be less than 1/4 inch.

The tops of all floor slabs in habitable areas must be established at least 4 feet above the highest anticipated normal water level or 1.5 feet above the maximum groundwater level controlled by land drains.

5.8 SUBDRAINS

5.8.1 General

We recommend that the perimeter foundation subdrains and a cutoff drain above the home and near the head of the mass movement deposit soils be installed as indicated below.

5.8.2 Foundation Subdrains

Foundation subdrains should consist of a 4-inch diameter perforated or slotted plastic or PVC pipe enclosed in clean gravel. The invert of a subdrain should be at least 2 feet below the top of the lowest adjacent floor slab. The gravel portion of the drain should extend 2 inches laterally and below the perforated pipe and at least 1 foot above the top of the lowest adjacent floor slab. The gravel zone must be installed immediately adjacent to the perimeter footings and the foundation walls. To reduce the possibility of plugging, the gravel must be wrapped with a geotextile, such as Mirafi 140N or equivalent. Above the subdrain, a minimum 4-inch-wide zone of "free-draining" sand/gravel should be placed adjacent to the foundation walls and extend to within 2 feet of final grade. The upper 2 feet of soils should consist of a compacted clayey cap to reduce surface water infiltration into the drain. As an alternative to the zone of permeable sand/gravel, a prefabricated "drainage board," such as Miradrain or equivalent, may be placed adjacent to the exterior below-grade walls. Prior to the installation of the footing subdrain, the below-grade walls should be dampproofed. The slope of the subdrain should be at least 0.3 percent. The gravel placed around the drain pipe should be clean 0.75-inch to 1.0-inch minus gap-graded gravel and/or "pea" gravel. The foundation subdrains can be discharged into the area subdrains, storm drains, or other suitable down-gradient location.

We recommend final site grading slope away from the structures at a minimum 2 percent for hard surfaces (pavement) and 5 percent for soil surfaces within the first 10 feet from the structures.

5.8.3 Cutoff Drain

To reduce potential infiltration of surface water and groundwater into the subsurface soils at the site, a cutoff drain should be installed upslope of the home and near the head of the mass movement deposit soils below the home. Final location of the required cutoff drains must be reviewed by GSH prior to construction. The drain should consist of a perforated 4-inch minimum diameter pipe wrapped in fabric and placed near the bottom of a minimum 24 inch wide trench excavated to a depth of at least 15 feet below existing grade or to competent bedrock and lined in filter fabric. The pipe should daylight at one or both ends of the drain and discharge to an appropriate drainage device or area. Clean gravel up to 2 inches in maximum size, with less than 10 percent passing the No. 4 sieve and less than 5 percent passing the No. 200 sieve, should be placed around the drain pipe. A fabric, such as Mirafi 140N or equivalent, should be placed between the clean gravel and the adjacent soils. A zone of clean gravel wrapped in fabric at least 24 inches wide should also extend above the drain, to within 2 feet of the ground surface, with fabric placed over the top of the gravel. The upper 2 feet of soils should consist of a compacted clayey cap to reduce surface water infiltration into the drain.

5.9 SITE IRRIGATION

Proper site drainage is important to maintaining slope stability at the site. Saturation of soils at the site may result in slope movement or failure. Therefore, we recommend that no irrigation lines should be placed on the slope. Landscaping at the site should be planned to utilize drought resistant plants that require minimal watering. Plants or lawn may be placed on the slope, with plants watered using direct drip systems targeted only for each plant, and any lawn areas watered using sprinklers placed in a manner such that watering is a minimum of 30 feet back from the crest of the slope. Overwatering should be strictly avoided. The surface of the site should be graded to prevent the accumulation or ponding of surface water at the site. The property owner and the owner's representatives should be made aware of the risks should these or other conditions occur that could saturate or erode/undermine the slope soils.

To reduce the potential for saturation of the site soils, overwatering at the site should be strictly avoided. Watering at the site should be limited to a maximum equivalent rainfall of 0.5 inches per week. Irrigation at the site should be strictly avoided during periods of natural precipitation.

5.10 GEOSEISMIC SETTING

5.10.1 General

Utah municipalities have adopted the International Building Code (IBC) 2012. The IBC 2012 code determines the seismic hazard for a site based upon 2008 mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available based on latitude and longitude coordinates (grid points).

The structure must be designed in accordance with the procedure presented in Section 1613, Earthquake Loads, of the IBC 2012 edition.

5.10.2 Faulting

Based upon our review of available literature, no active faults are known to pass through the site. The nearest active fault is the Wasatch Fault Zone Weber Section, approximately 4.0 miles west of the site.

5.10.3 Soil Class

For dynamic structural analysis, the Site Class D – Stiff Soil Profile as defined in Chapter 20 of ASCE 7 (per Section 1613.3.2, Site Class Definitions, of IBC 2012) can be utilized.

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5.10.4 Ground Motions

The IBC 2012 code is based on 2008 USGS mapping, which provides values of short and long period accelerations for the Site Class B boundary for the Maximum Considered Earthquake (MCE). This Site Class B boundary represents average bedrock values for the Western United States and must be corrected for local soil conditions. The following table summarizes the peak ground and short and long period accelerations for the MCE event and incorporates the appropriate soil amplification factor for a Site Class D soil profile. Based on the site latitude and longitude (41.3012 degrees north and -111.8535 degrees west, respectively), the values for this site are tabulated below:

Spectral Acceleration Value, T	Site Class B Boundary [mapped values] (% g)	Site Coefficient	Site Class D [adjusted for site class effects] (% g)	Design Values (% g)
Peak Ground Acceleration	39.7	F_a = 1.103	43.8	29.2
0.2 Seconds (Short Period Acceleration)	S_S = 99.2	F_a = 1.103	S_{MS} = 109.4	S_{DS} = 72.9
1.0 Second (Long Period Acceleration)	S_1 = 34.8	F_v = 1.704	S_{M1} = 59.3	S_{D1} = 39.5

5.10.5 Liquefaction

The site is located in an area that has been identified by the Utah Geologic Survey as having "very low" liquefaction potential. Liquefaction is defined as the condition when saturated, loose, finer-grained sand-type soils lose their support capabilities because of excessive pore water pressure which develops during a seismic event. Clay soils, even if saturated, will generally not liquefy.

Liquefaction of the site soils is not anticipated during the design seismic event due to the unsaturated nature of the site soils.

5.11 SITE OBSERVATIONS

As stated previously, prior to placement of foundations, floor slabs, pavements, and site grading fills, a geotechnical engineer from GSH must verify that all mass movement deposit soils, non-engineered fill materials, topsoil, and disturbed soils have been removed and/or properly prepared and suitable subgrade conditions encountered. Additionally, GSH must observe fill placement and verify in-place moisture content and density of fill materials placed at the site.

GSH

5.12 CLOSURE

If you have any questions or would like to discuss these items further, please feel free to contact us at (801) 393-2012.

Respectfully submitted,

GSH Geotechnical, Inc.

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AMH/ADS:mmh

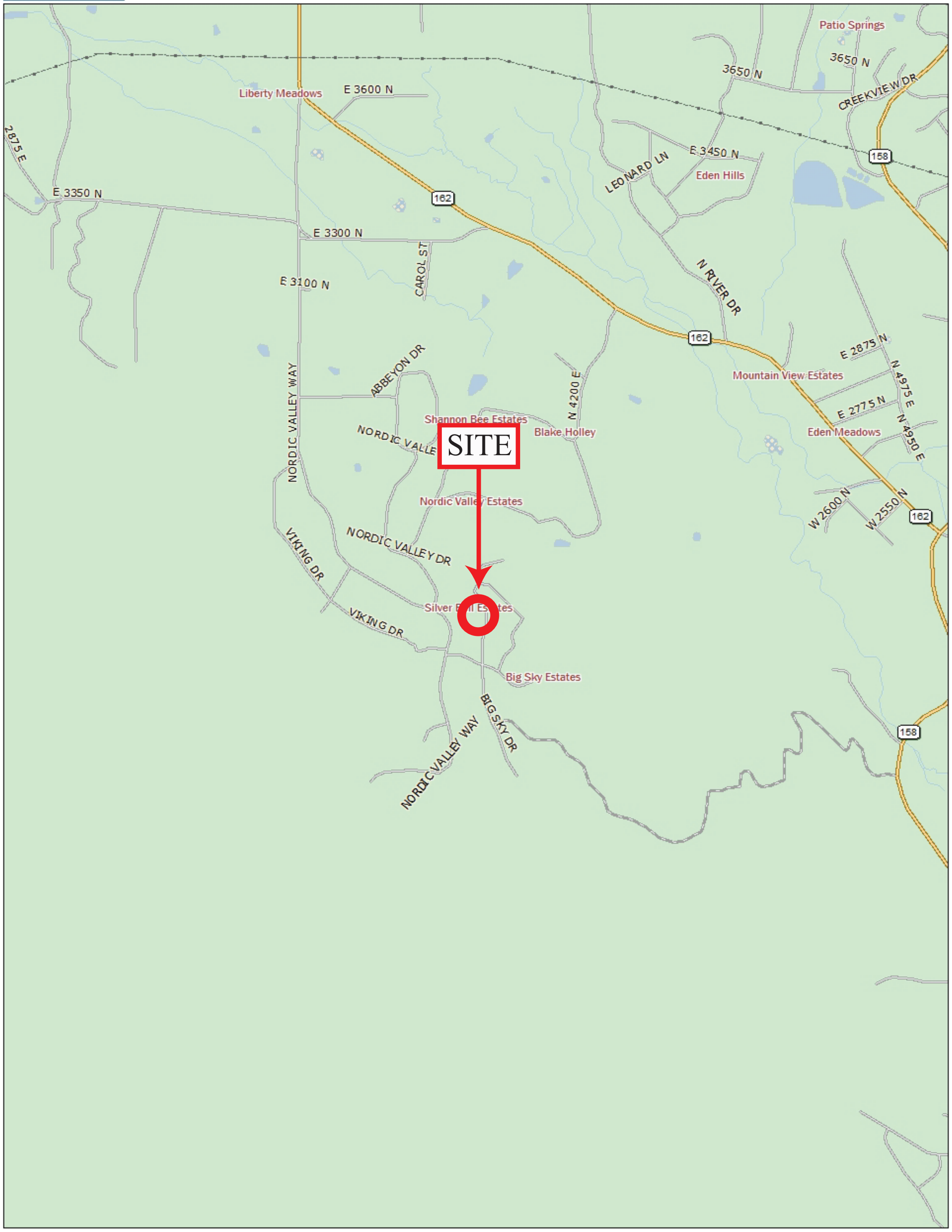
Encl.	Figure	1,	Vicinity Map
	Figure	2,	Site Plan
	Figures	3A	Boring Log
	Figures	4A	through 4C, Test Pit Logs
	Figure	5,	Key to Boring Log (USCS)
	Figure	6,	Key to Test Pit Log (USCS)
	Figures	7	and 8, Stability Results
	Appendix,		Geologic Hazards Reconnaissance Study

Addressee (email)

Exhibit B-Geologic and Geotechnical Report

DAVE AND GAYLE MARIANI
JOB NO. 2104-01N-16

DeLorme Street Atlas USA® 2014



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MN (11.5° E)

0 800 1600 2400 3200 4000 ft

Data Zoom 13-0

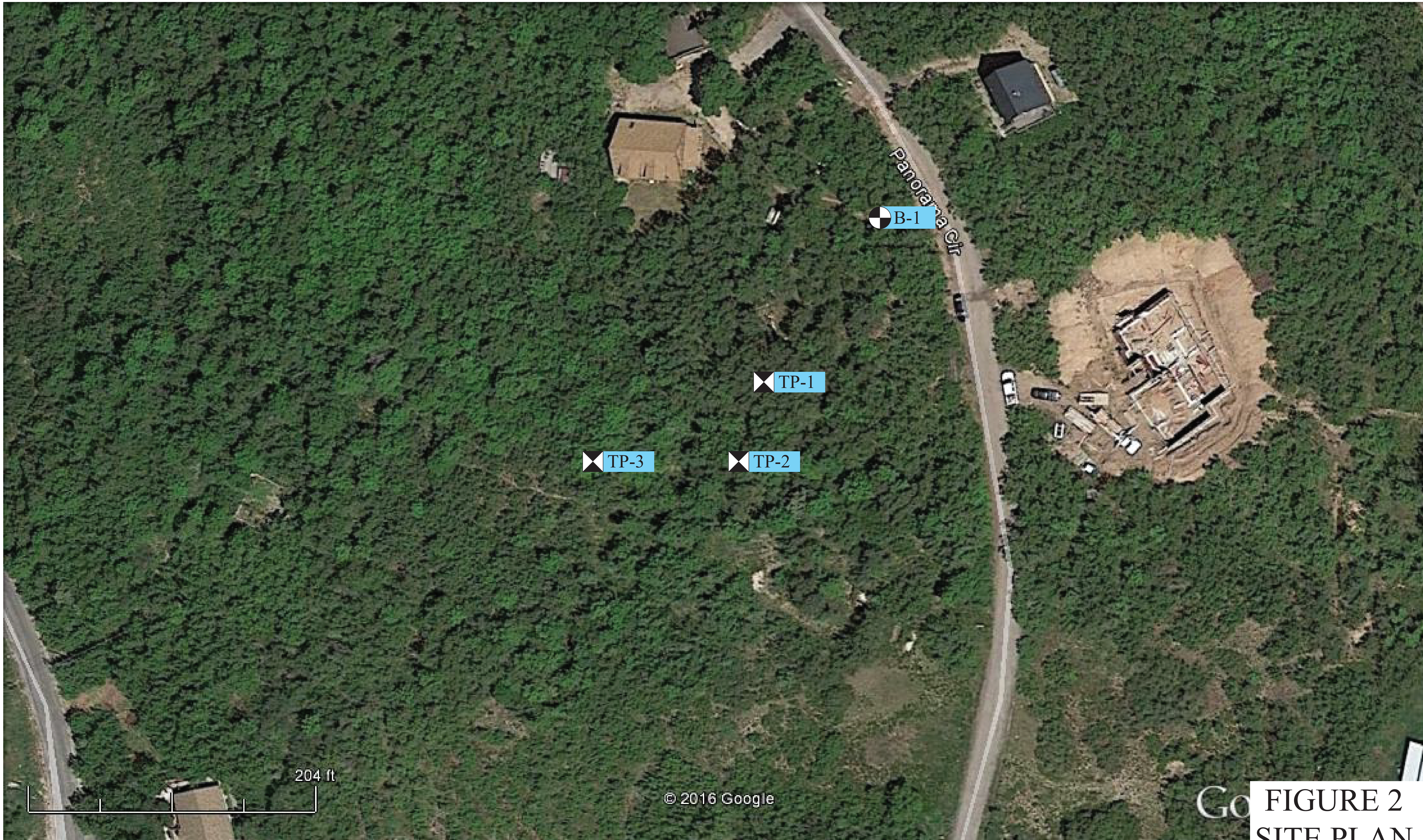
FIGURE 1

VICINITY MAP

GSH

REFERENCE:
DELORME STREET ATLAS

DAVE AND GAYLE MARIANI
JOB NO. 2104-01N-16



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ADAPTED FROM AERIAL PHOTOGRAPH
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IMAGERY DATE: JUNE 16, 2015

FIGURE 2
SITE PLAN

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BORING LOG

BORING: B-1

CLIENT: Dave and Gayle Mariani | PROJECT NUMBER: 2104-01N-16

PROJECT: Lot 5 Big Sky Estates | DATE STARTED: 4/27/16 | DATE FINISHED: 4/29/16

LOCATION: 2337 Oanorama Circle, Near Liberty, Weber County, Utah | GSH FIELD REP.: CM/RG

DRILLING METHOD/EQUIPMENT: 3-3/4" ID Hollow-Stem Auger | HAMMER: Automatic | WEIGHT: 140 lbs | DROP: 30"

GROUNDWATER DEPTH: Not Encountered (4/29/16) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface									
	SM/SC FILL	SILTY/CLAYEY FINE TO COARSE SAND, FILL with some fine gravel; major roots (topsoil) to 12"; brown	0								slightly moist medium dense
	SC	CLAYEY FINE TO COARSE SAND with some fine gravel; brown									
				41		8		28	25	8	
			5	67		8	127				dense
		grades light gray		50/4"							very dense
	GC	CLAYEY FINE GRAVEL with fine to coarse sand; reddish-brown to gray									slightly moist dense
			10	54		10		14	21	10	
	SC	CLAYEY FINE TO COARSE SAND reddish-brown		50/2"							moist very dense
			15	50/12"		15		23	33	11	
	BR	SILTSTONE/SANDSTONE BEDROCK highly fractureed; highly weathered; brownish-gray									
			20								
			25								

See Subsurface Conditions section in the report for additional information.

FIGURE 3A

GSH

BORING LOG

BORING: B-1

CLIENT: Dave and Gayle Mariani | PROJECT NUMBER: 2104-01N-16

PROJECT: Lot 5 Big Sky Estates | DATE STARTED: 4/27/16 | DATE FINISHED: 4/29/16

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
			25								
		End of Exploration at 29.0' No groundwater encountered at time of drilling Installed 1.25" diameter slotted PVC pipe to 19.0'	30								
			35								
			40								
			45								
			50								

See Subsurface Conditions section in the report for additional information.

FIGURE 3A
(continued)

GSH

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-1

CLIENT: Dave and Gayle Mariani | PROJECT NUMBER: 2104-01N-16

PROJECT: Lot 5 Big Sky Estates | DATE STARTED: 4/29/16 | DATE FINISHED: 4/29/16

LOCATION: 2337 Oanorama Circle, Near Liberty, Weber County, Utah | GSH FIELD REP.: HRW

EXCAVATING METHOD/EQUIPMENT: JCB 214S - Backhoe

GROUNDWATER DEPTH: Not Encountered (4/29/16) | ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL	SILTY CLAY with some fine sand; major roots (topsoil) to 6"; brown								moist medium stiff
	SC	CLAYEY FINE TO COARSE SAND brown			19		30			moist medium dense
			5							
										dense
			10							
		End of Exploration at 11.0' No significant sidewall caving No groundwater encountered at time of excavation								
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4A

GSH

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-2

CLIENT: Dave and Gayle Mariani — PROJECT NUMBER: 2104-01N-16

PROJECT: Lot 5 Big Sky Estates — DATE STARTED: 4/29/16 — DATE FINISHED: 4/29/16

LOCATION: 2337 Oanorama Circle, Near Liberty, Weber County, Utah — GSH FIELD REP.: HRW

EXCAVATING METHOD/EQUIPMENT: JCB 214S - Backhoe

GROUNDWATER DEPTH: Not Encountered (4/29/16) — ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface								
	CL	SILTY CLAY with some fine sand; major roots (topsoil) to 8"; brown	0							moist very stiff
	SM/ML	WEATHERED SILTSTONE/FINE SANDSTONE light gray		◣			25	NP	NP	slightly moist hard
			5							
				◣						
		grades claystone		◣						
		End of Exploration at 10.0' No significant sidewall caving No groundwater encountered at time of excavation	10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4B

GSH

TEST PIT LOG

Page: 1 of 1

TEST PIT: TP-3

CLIENT: Dave and Gayle Mariani — PROJECT NUMBER: 2104-01N-16

PROJECT: Lot 5 Big Sky Estates — DATE STARTED: 4/29/16 — DATE FINISHED: 4/29/16

LOCATION: 2337 Oanorama Circle, Near Liberty, Weber County, Utah — GSH FIELD REP.: HRW

EXCAVATING METHOD/EQUIPMENT: JCB 214S - Backhoe

GROUNDWATER DEPTH: Not Encountered (4/29/16) — ELEVATION: ---

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
		Ground Surface	0							
	CL	SILTY CLAY with some fine sand; major roots (topsoil) to 8"; brown								moist stiff very stiff
	MH	SILSTONE BEDROCK light gray		◣			74	72	34	slightly moist hard
			5	◣						
		End of Exploration at 7.0' No significant sidewall caving No groundwater encountered at time of excavation								
			10							
			15							
			20							
			25							

See Subsurface Conditions section in the report for additional information.

FIGURE 4C

CLIENT: Dave and Gayle Mariani
PROJECT: Lot 5 Big Sky Estates
PROJECT NUMBER: 2104-01N-16

KEY TO BORING LOG

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	BLOW COUNT	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫

COLUMN DESCRIPTIONS

① **Water Level:** Depth to measured groundwater table. See symbol below.

② **USCS:** (Unified Soil Classification System) Description of soils encountered; typical symbols are explained below.

③ **Description:** Description of material encountered; may include color, moisture, grain size, density/consistency,

④ **Depth (ft.):** Depth in feet below the ground surface.

⑤ **Blow Count:** Number of blows to advance sampler 12" beyond first 6", using a 140-lb hammer with 30" drop.

⑥ **Sample Symbol:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

⑦ **Moisture (%):** Water content of soil sample measured in laboratory; expressed as percentage of dryweight of

⑧ **Dry Density (pcf):** The density of a soil measured in laboratory; expressed in pounds per cubic foot.

⑨ **% Passing 200:** Fines content of soils sample passing a No. 200 sieve; expressed as a percentage.

⑩ **Liquid Limit (%):** Water content at which a soil changes from plastic to liquid behavior.

⑪ **Plasticity Index (%):** Range of water content at which a soil exhibits plastic properties.

⑫ **Remarks:** Comments and observations regarding drilling or sampling made by driller or field personnel. May include other field and laboratory test results using the following abbreviations:

CEMENTATION:	MODIFIERS:	MOISTURE CONTENT (FIELD TEST):
Weakly: Crumbles or breaks with handling or slight finger pressure.	**Trace** <5%	**Dry:** Absence of moisture, dusty, dry to the touch.
Moderately: Crumbles or breaks with considerable finger pressure.	**Some** 5-12%	**Moist:** Damp but no visible water.
Strongly: Will not crumble or break with finger pressure.	**With** > 12%	**Saturated:** Visible water, usually soil below water table.

Descriptions and stratum lines are interpretive; field descriptions may have been modified to reflect lab test results. Descriptions on the logs apply only at the specific boring locations and at the time the borings were advanced; they are not warranted to be representative of subsurface conditions at other locations or times.

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS SYMBOLS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS More than 50% of material is larger than No. 200 sieve size.	**GRAVELS** More than 50% of coarse fraction retained on No. 4 sieve.	**CLEAN 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 WITH FINES (appreciable amount of fines)	GM	Silty Gravels, Gravel-Sand-Silt Mixtures
			GC	Clayey Gravels, Gravel-Sand-Clay Mixtures
	SANDS More than 50% of coarse fraction passing through No. 4 sieve.	**CLEAN SANDS** (little or no fines)	SW	Well-Graded Sands, Gravelly Sands, Little or No Fines
			SP	Poorly-Graded Sands, Gravelly Sands, Little or No Fines
		SANDS WITH FINES (appreciable amount of fines)	SM	Silty Sands, Sand-Silt Mixtures
			SC	Clayey Sands, Sand-Clay Mixtures
FINE-GRAINED SOILS More than 50% of material is smaller than No. 200 sieve size.	**SILTS AND CLAYS** Liquid Limit less than 50%		ML	Inorganic Silts and Very Fine Sands, Rock Flour, Silty or Clayey Fine Sands or 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 Organic Silty Clays o f Low Plasticity
	SILTS AND CLAYS Liquid Limit greater than 50%		MH	Inorganic Silts, Micacious or Diatomacious Fine Sand or Silty Soils
			CH	Inorganic Clays of High Plasticity, Fat Clays
			OH	Organic Silts and Organic Clays of Medium to High Plasticity
HIGHLY ORGANIC SOILS			PT	Peat, Humus, Swamp Soils with High Organic Contents

Note: Dual Symbols are used to indicate borderline soil classifications.

STRATIFICATION:

DESCRIPTION	THICKNESS
Seam	up to 1/8"
Layer	1/8" to 12"

Occasional:
One or less per 6" of thickness
Numerous;
More than one per 6" of thickness

TYPICAL SAMPLER GRAPHIC SYMBOLS

- Bulk/Bag Sample
- Standard Penetration Split Spoon Sampler
- Rock Core
- No Recovery
- 3.25" OD, 2.42" ID D&M Sampler
- 3.0" OD, 2.42" ID D&M Sampler
- California Sampler
- Thin Wall

WATER SYMBOL

Water Level

FIGURE 5

GSH

CLIENT: Dave and Gayle Mariani
PROJECT: Lot 5 Big Sky Estates
PROJECT NUMBER: 2104-01N-16

KEY TO TEST PIT LOG

WATER LEVEL	USCS	DESCRIPTION	DEPTH (FT.)	SAMPLE SYMBOL	MOISTURE (%)	DRY DENSITY (PCF)	% PASSING 200	LIQUID LIMIT (%)	PLASTICITY INDEX	REMARKS
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪

COLUMN DESCRIPTIONS

① **Water Level:** Depth to measured groundwater table. See symbol below.

② **USCS:** (Unified Soil Classification System) Description of soils encountered; typical symbols are explained below.

③ **Description:** Description of material encountered; may include color, moisture, grain size, density/consistency,

④ **Depth (ft.):** Depth in feet below the ground surface.

⑤ **Sample Symbol:** Type of soil sample collected at depth interval shown; sampler symbols are explained below.

⑥ **Moisture (%):** Water content of soil sample measured in laboratory; expressed as percentage of dryweight of

⑦ **Dry Density (pcf):** The density of a soil measured in laboratory; expressed in pounds per cubic foot.

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- California Sampler
- Thin Wall

WATER SYMBOL

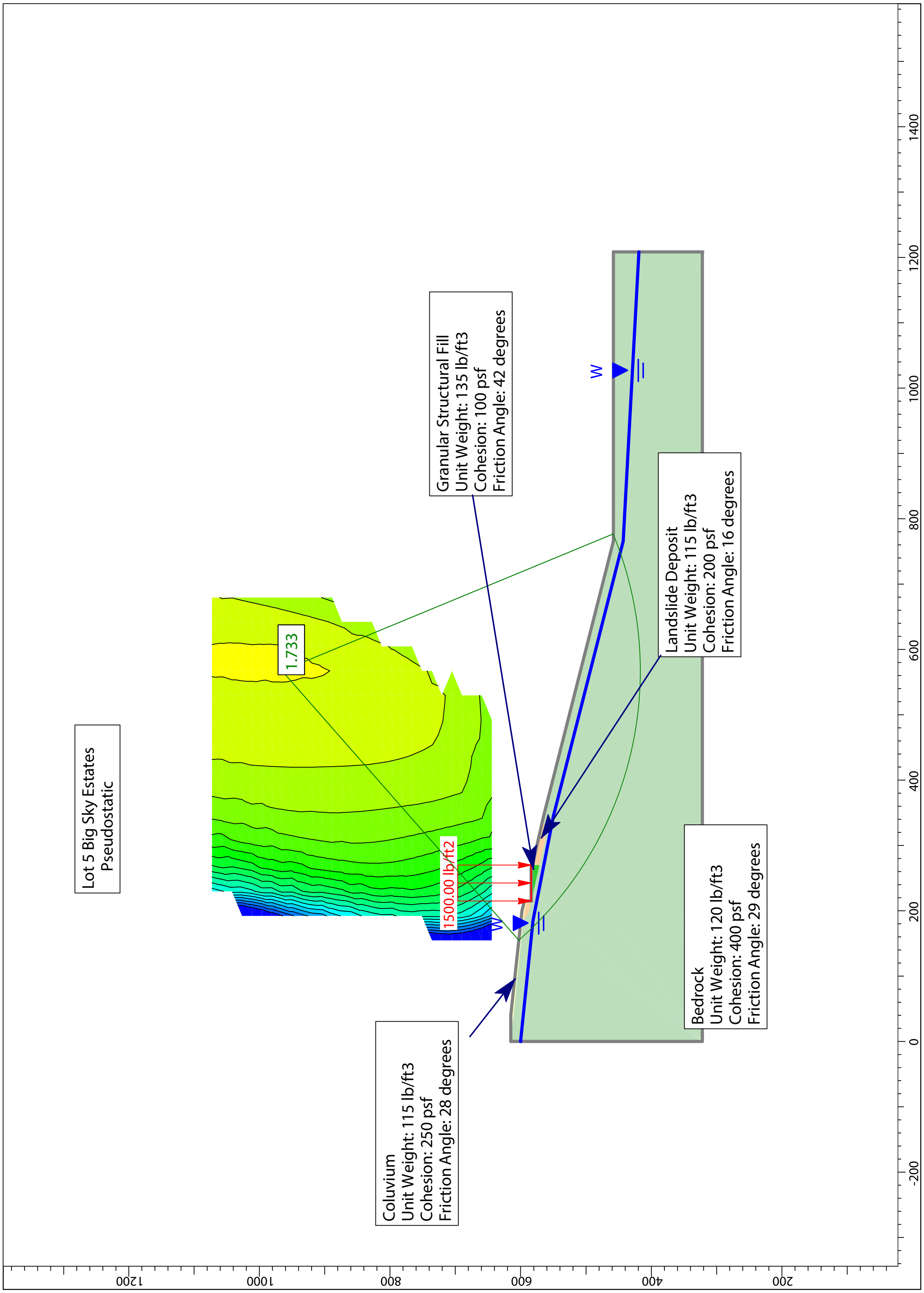
Water Level

FIGURE 6

GSH

STABILITY RESULTS

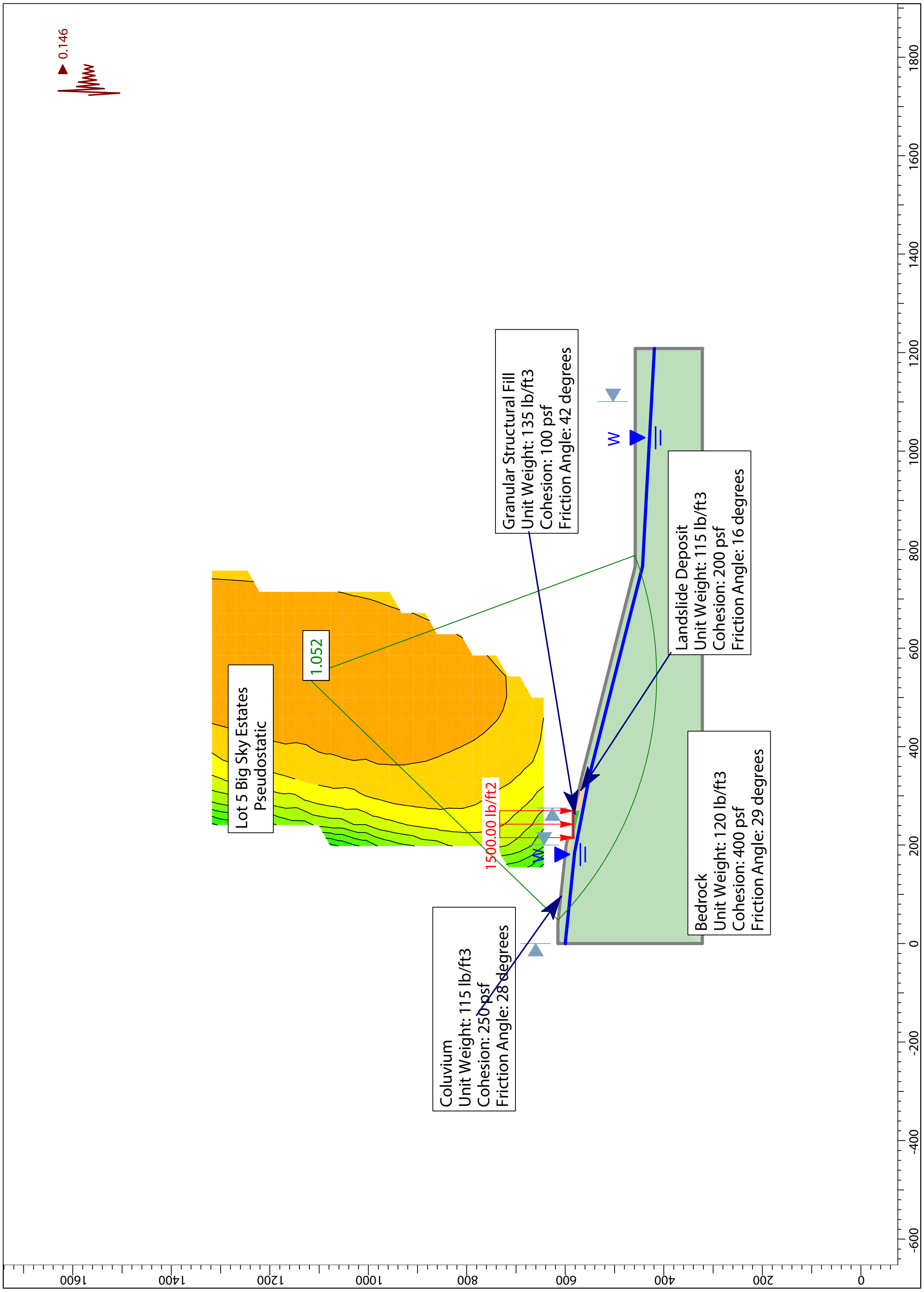
LOT 5 BIG SKY ESTATES



PROJECT NO.: 2104-01N-16	GSH	**FIGURE NO.:** 7

STABILITY RESULTS

LOT 5 BIG SKY ESTATES



PROJECT NO.: 2104-01N-16	GSH	FIGURE NO.: 8