Board of Adjustment Staff Report

Meeting Date: April 16, 2020 **Agenda Item: 8C**

SPECIAL USE PERMIT CASE NUMBER: WSUP19-0029 (Summit Christian Church)

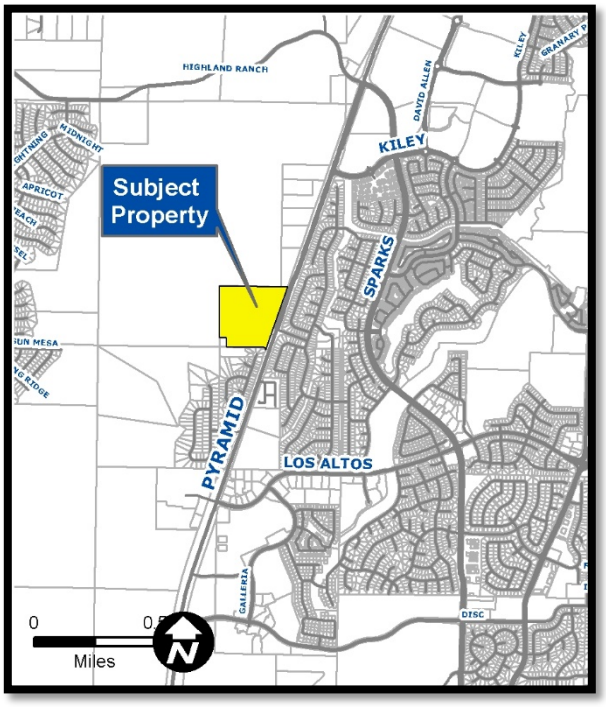
BRIEF SUMMARY OF REQUEST: A special use permit to allow for grading and expansion of religious assembly uses on the property.

STAFF PLANNER: Planner's Name: Julee Olander
Phone Number: 775.328.3627
E-mail: jolander@washoecounty.us

CASE DESCRIPTION

For possible action, hearing, and discussion to approve a special use permit to allow for the expansion of religious assembly uses to include the construction of a 34,225 sq. ft. worship center at 7075 Pyramid Highway. The proposed expansion will also involve grading which includes ±50,000 cubic yards of cuts from the site with ±30,000 cubic yards to be placed on the north end of the site and ±20,000 cubic yards to be exported.

Applicant/Property Owner:	Summit Christian Church
Location:	7075 Pyramid Highway
APN:	083-730-13
Parcel Size:	36.7 acres
Master Plan:	Suburban Residential (SR) & Rural (R)
Regulatory Zone:	Medium Suburban Density (MDS) and General Rural (GR)
Area Plan:	Spanish Springs
Citizen Advisory Board:	Spanish Springs
Development Code:	Authorized in Article 810, Special Use Permits and Article 438, Grading
Commission District:	4 – Commissioner Hartung



STAFF RECOMMENDATION

APPROVE **APPROVE WITH CONDITIONS** **DENY**

POSSIBLE MOTION

I move that, after giving reasoned consideration to the information contained in the staff report and information received during the public hearing, the Washoe County Board of Adjustment approve with conditions Special Use Permit Case Number WSUP19-0029 for Summit Christian Church, having made all four findings in accordance with Washoe County Code Section 110.810.30.

(Motion with Findings on Page 8)

Staff Report Contents

Exhibits Contents

Link to Complete Project Application

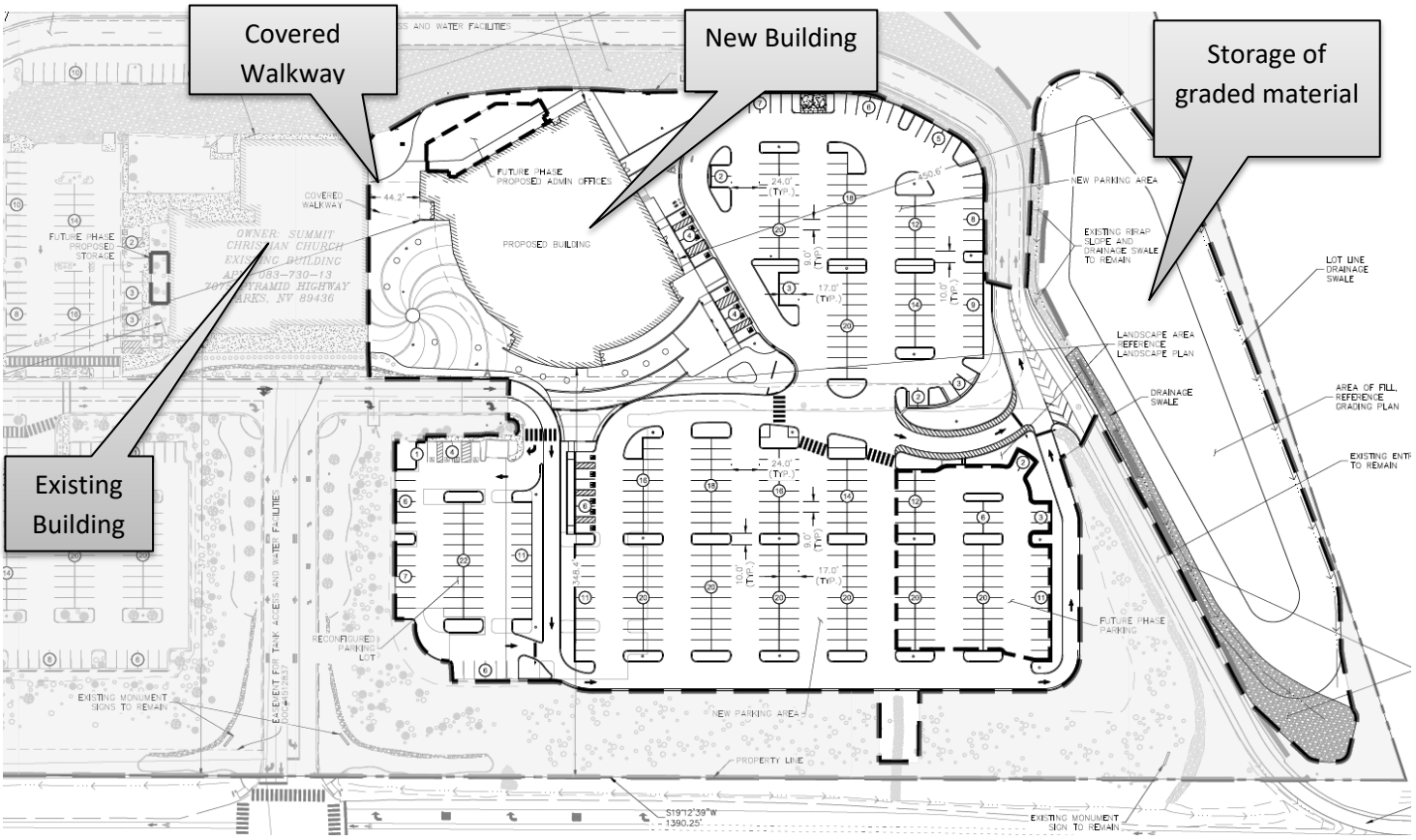
Special Use Permit

The purpose of a special use permit is to allow a method of review to identify any potential harmful impacts on adjacent properties or surrounding areas for uses that may be appropriate within a regulatory zone; and to provide for a procedure whereby such uses might be permitted by further restricting or conditioning them so as to mitigate or eliminate possible adverse impacts. If the Board of Adjustment grants an approval of the special use permit, that approval is subject to conditions of approval. Conditions of approval are requirements that need to be completed during different stages of the proposed project. Those stages are typically:

- Prior to permit issuance (i.e. a grading permit, a building permit, etc.)
- Prior to obtaining a final inspection and/or a certificate of occupancy on a structure
- Prior to the issuance of a business license or other permits/licenses
- Some conditions of approval are referred to as "operational conditions." These conditions must be continually complied with for the life of the business or project.

The conditions of approval for Special Use Permit Case Number WSUP19-0029 are attached to this staff report and will be included with the action order, if approved.

The subject property is designated Medium Suburban Density (MDS) and General Rural (GR). The proposed use of religious assembly which is classified a civic use type is permitted in the Medium Suburban Density (MDS) and General Rural (GR) regulatory zones with a special use permit per WCC Table 110.302.05.2. Therefore, the applicant is seeking approval of this SUP from the Board of Adjustment.



Overall Site Plan

Site Plan

Existing Site

Project Evaluation

The applicant is requesting to construct 34,225 sq. ft. worship center and grade ±50,000 cubic yards from the site with ±30,000 cubic yards to be placed on the north end of the site and ±20,000 cubic yards to be exported. There is a 33,064 sq. ft. existing building on the site that is used as the main worship center, which seats 700 people. This building will be reconfigured after the new worship building is completed and used for meeting spaces and classrooms. A daycare center will continue to use this building Monday through Friday. The new worship building will seat up to 1,500 people. The new building will be connected by a covered walkway to the existing building. Future development based on the overall master plan for the property includes a new 6,464 sq. ft. administrative building and a 645 sq. storage space adjacent to the existing building. This future development is not included as part of this special use permit but is anticipated to be constructed over the next 15 years.

The site currently has 355 parking spaces and 295 spaces and 14 ADA spaces will be added with the proposed expansion, for a total of 664 spaces. Another 74 spaces and will be added with this expansion or when the administrative and storage building are constructed. The site will have a total of 738 spaces when all construction is completed. The Washoe County code requires 1 parking space for 3 seats, plus 1 parking space per 300 sq. ft. of additional public space. The application states that 26,572 sq. ft. of the new 40,689 sq. ft. worship building is public space, which requires 89 parking spaces. The site is required to have 500 parking spaces for the new 1,500 seated worship center and 198 more spaces for the total 59,636 sq. ft. of public space, for a total of 698 required parking spaces.

The site is flat and was previously graded when the existing building on the site was constructed. The area will be graded to prepare the ground for the construction of the new worship center. Approximately 20,000 cubic yards will be removed from the property, while 30,000 cubic yards will be place on the northern portion of the site for the purpose of constructing an earthen berm. The berm will not exceed 6 feet in height and will be approximately 620 feet long and 160 feet wide. The berm will be landscaped with native vegetation, shrubs and trees to blend with the surrounding site.

There is a main entrance to the site at the signalized intersection of Pyramid Highway and Golden View Drive. There are two other access points from Pyramid Highway, one in the northern portion of the site with a dedicated right lane entering the site and in the southern portion of the site with a dedicated right lane exiting the site. The application included a traffic study, which states that the traffic generated by the expansion will have some impact on the street network. The study recommends that the applicant coordinate with the Nevada Department of Transportation (NDOT) and the City of Sparks to adjust the traffic signal timing at Pyramid Highway and Golden View Drive (See Exhibit F, Traffic Study, page 79-97).

Spanish Springs Citizen Advisory Board (SS CAB)

The proposed project was presented by the applicant's representative at the regularly scheduled Citizen Advisory Board meeting on January 8, 2020. Three board members voted in favor of the project and one member voted against the project. The CAB minutes were not available at the time that the staff report was prepared. The discussion on the item including the following topics:

- Traffic
- Graded material location
- Size of building
- Usage hours

Reviewing Agencies

The following agencies received a copy of the project application for review and evaluation.

- Washoe County Community Services Department
  - Planning and Building Division

  - Engineering and Capital Projects Division
  - Parks and Open Spaces
  - Water Management
- Washoe County Health District
  - Environmental Health Services Division
  - Air Quality
- Truckee Meadows Fire Protection District
- City of Sparks
- Sparks Fire Department
- US Forest Service
- Regional Transportation Commission
- Washoe-Storey Conservation District

Comments and/or recommended conditions of approval in response to their evaluation of the project application were received by Washoe County Parks, Engineering and Capital Projects Division, Truckee Meadows Fire District, Washoe-Storey Conservation District and Washoe County Health District (see Exhibits A and B).

Staff Comment on Required Findings

WCC Section 110.810.30, Article 810, *Special Use Permits*, requires that all of the following findings be made to the satisfaction of the Washoe County Board of Adjustment before granting approval of the request. Staff has completed an analysis of the special use permit application and has determined that the proposal is in compliance with the required findings as follows.

1. Consistency. That the proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the Spanish Springs Area Plan.

   Staff Comment: The proposed land use type of religious assembly is consistent with the Policies and Action Programs included in the Spanish Springs Area Plan. Religious assembly is allowed by the Spanish Springs Area Plan with the approval of a special use permit.

2. Improvements. That adequate utilities, roadway improvements, sanitation, water supply, drainage, and other necessary facilities have been provided, the proposed improvements are properly related to existing and proposed roadways, and an adequate public facilities determination has been made in accordance with Division Seven.

   Staff Comment: The existing and planned improvements on the project site will adequately serve the proposed new use. The proposed project was reviewed by relevant agencies and no conditions were received regarding additional required improvements.

3. Site Suitability. That the site is physically suitable for religious assembly, and for the intensity of such a development.

   Staff Comment: The applicant is planning grading improvements to the site, which will make it physically suitable for the construction of a religious assembly structure.

4. Issuance Not Detrimental. That issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area.

Staff Comment: The site is currently vacant and the proposed project is anticipated to have minimal impact to the surrounding area and conditions of approval have been included to mitigate any negative potential impacts.

5. Effect on a Military Installation. Issuance of the permit will not have a detrimental effect on the location, purpose or mission of the military installation.

   Staff Comment: There is no military installation within the area of required notice for this special use permit; therefore, the project will have no effect on a military installation.

Recommendation

After a thorough analysis and review, Special Use Permit Case Number WSUP19-0029 is being recommended for approval with conditions. Staff offers the following motion for the Board's consideration.

Motion

I move that, after giving reasoned consideration to the information contained in the staff report and information received during the public hearing, the Washoe County Board of Adjustment approve with conditions Special Use Permit Case Number WSUP19-0029 for Summit Christian Church, having made all five findings in accordance with Washoe County Code Section 110.810.30:

1. Consistency yards. That the proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the Spanish Springs;
2. Improvements. That adequate utilities, roadway improvements, sanitation, water supply, drainage, and other necessary facilities have been provided, the proposed improvements are properly related to existing and proposed roadways, and an adequate public facilities determination has been made in accordance with Division Seven;
3. Site Suitability. That the site is physically suitable for religious assembly and for the intensity of such a development;
4. Issuance Not Detrimental. That issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area;
5. Effect on a Military Installation. Issuance of the permit will not have a detrimental effect on the location, purpose or mission of the military installation.

Appeal Process

Board of Adjustment action will be effective 10 calendar days after the written decision is filed with the Secretary to the Board of Adjustment and mailed to the applicant, unless the action is appealed to the Washoe County Board of County Commissioners, in which case the outcome of the appeal shall be determined by the Washoe County Board of County Commissioners. Any appeal must be filed in writing with the Planning and Building Division within 10 calendar days from the date the written decision is filed with the Secretary to the Board of Adjustment and mailed to the applicant.

Applicant/Property Owner:	Summit Christian Church 7075 Pyramid Highway Sparks, NV 89436
email:	cwinslow@summitnv.org
Representatives:	Dyer Engineering Consultants 9160 Double Diamond Pkwy. Reno, NV 89521
email:	ljohnson@dyerengineering.com kerry@tdg-inc.com

Conditions of Approval

Special Use Permit Case Number WSUP19-0029

The project approved under Special Use Permit Case Number WSUP19-0029 shall be carried out in accordance with the conditions of approval granted by the Board of Adjustment on April 16, 2020. Conditions of approval are requirements placed on a permit or development by each reviewing agency. These conditions of approval may require submittal of documents, applications, fees, inspections, amendments to plans, and more. These conditions do not relieve the applicant of the obligation to obtain any other approvals and licenses from relevant authorities required under any other act.

Unless otherwise specified, all conditions related to the approval of this special use permit shall be met or financial assurance must be provided to satisfy the conditions of approval prior to issuance of a grading or building permit. The agency responsible for determining compliance with a specific condition shall determine whether the condition must be fully completed or whether the applicant shall be offered the option of providing financial assurance. All agreements, easements, or other documentation required by these conditions shall have a copy filed with the County Engineer and the Planning and Building Division.

Compliance with the conditions of approval related to this special use permit is the responsibility of the applicant, his/her successor in interest, and all owners, assignees, and occupants of the property and their successors in interest. Failure to comply with any of the conditions imposed in the approval of the special use permit may result in the institution of revocation procedures.

Washoe County reserves the right to review and revise the conditions of approval related to this Special Use Permit should it be determined that a subsequent license or permit issued by Washoe County violates the intent of this approval.

For the purpose of conditions imposed by Washoe County, "may" is permissive and "shall" or "must" is mandatory.

Conditions of approval are usually complied with at different stages of the proposed project. Those stages are typically:

- Prior to permit issuance (i.e., grading permits, building permits, etc.).
- Prior to obtaining a final inspection and/or a certificate of occupancy.
- Prior to the issuance of a business license or other permits/licenses.
- Some " conditions of approval" are referred to as "operational conditions." These conditions must be continually complied with for the life of the project or business.

The Washoe County Commission oversees many of the reviewing agencies/departments with the exception of the following agencies.

- **The DISTRICT BOARD OF HEALTH, through the Washoe County Health District, has jurisdiction over all public health matters in the Health District. Any conditions set by the Health District must be appealed to the District Board of Health.**

FOLLOWING ARE CONDITIONS OF APPROVAL REQUIRED BY THE REVIEWING AGENCIES. EACH CONDITION MUST BE MET TO THE SATISFACTION OF THE ISSUING AGENCY.

Washoe County Planning and Building Division

1. The following conditions are requirements of Planning and Building, which shall be responsible for determining compliance with these conditions.

   Contact Name – Julee Olander, (775) 328.3627, jolander@washoecounty.us

   a. The applicant shall attach a copy of the action order approving this project to all permits and applications (including building permits) applied for as part of this special use permit.

   b. The applicant shall demonstrate substantial conformance to the plans approved as part of this special use permit. The Planning and Building Division shall determine compliance with this condition.

   c. The applicant shall submit construction plans, with all information necessary for comprehensive review by Washoe County, and initial building permits shall be issued within two years from the date of approval by Washoe County. The applicant shall complete construction within the time specified by the building permits. Compliance with this condition shall be determined by the Planning and Building Division.

   d. A note shall be placed on all construction drawings and grading plans stating:

      NOTE

      Should any cairn or grave of a Native American be discovered during site development, work shall temporarily be halted at the specific site and the Sheriff's Office as well as the State Historic Preservation Office of the Department of Conservation and Natural Resources shall be immediately notified per NRS 383.170.

   e. The perimeter of construction areas shall be fenced with temporary construction fencing to inhibit unauthorized access during grading activities.

   f. Grading and construction activity shall be limited to the following hours: between 7 a.m. and 7 p.m. during the week; between 9 a.m. and 7 p.m. on Saturday; grading activity is only permitted on Sunday, if a plan is submitted to Washoe County for approval by the Planning and Building Director.

   g. All trash and similar debris within the project area shall be removed.

   h. The business license will be updated to include the new uses.

   i. Earthen berms will not exceed horizontal to vertical slopes of three to one (3:1) or be greater than six (6) feet in height.

   j. Tree and shrubs will be required to be randomly planted in all disturbed area, including the earthen berm and all plantings will be irrigated.

   k. All areas disturbed by grading activities shall be revegetated and/or landscaped and will be landscaped in accordance with Article 110.412, *Landscaping*.

   l. The following **Operational Conditions** shall be required for the life of the project:

      i. This special use permit shall remain in effect until or unless it is revoked or is inactive for one year.

ii. Failure to comply with the Conditions of Approval shall render this approval null and void. Compliance with this condition shall be determined by the Planning and Building Division.

iii. The applicant and any successors shall direct any potential purchaser/operator of the site and/or the special use permit to meet with the Planning and Building Division to review Conditions of Approval prior to the final sale of the site and/or the special use permit. Any subsequent purchaser/operator of the site and/or the special use permit shall notify the Planning and Building Division of the name, address, telephone number, and contact person of the new purchaser/operator within 30 days of the final sale.

Washoe County Engineering and Capital Projects

2. The following conditions are requirements of the Engineering Division, which shall be responsible for determining compliance with these conditions.

   Contact Name – Leo Vesely, P.E., (775) 328-3600, lvesely@washoecounty.us

   a. A complete set of construction improvement drawings, including an on-site grading plan, shall be submitted when applying for a building/grading permit. Grading shall comply with best management practices (BMP's) and shall include detailed plans for grading, site drainage, erosion control (including BMP locations and installation details), slope stabilization, and mosquito abatement. Placement or removal of any excavated materials shall be indicated on the grading plan. Silts shall be controlled on-site and not allowed onto adjacent property.

   b. The developer shall obtain from the Nevada Division of Environmental Protection a Stormwater Discharge Permit and submit a copy to the Engineering Division prior to issuance of a grading permit.

   c. The Truckee Meadows Regional Stormwater Quality Management Program Construction Permit Submittal Checklists and Inspection Fee shall be submitted with the grading permit.

   d. A grading bond of $2,000/acre of disturbed area shall be provided to the Engineering Division prior to any grading.

   e. All grading shall be in accordance with Article 110.438 Grading Standards.

   f. All disturbed areas left undeveloped for more than 30 days shall be treated with a dust palliative. Disturbed areas left undeveloped for more than 45 days shall be revegetated. Specifications for revegetation procedure and seed mix shall be prepared by a licensed landscape architect.

   g. An updated drainage report prepared by a licensed engineer shall be submitted to the Engineering Division for review and approval. The report shall include the locations, points of entry and discharge, flow rates and flood limits of all 5- and 100-year storm flows impacting both the site and offsite areas and the methods for handling those flows. The report shall include all storm drain pipe and ditch sizing calculations and a discussion of and mitigation measures for any impacts on existing offsite drainage facilities and properties.

   h. Any increase in peak stormwater runoff flow rate resulting from the development and based on the 5 year and 100 storm(s) shall be detained onsite.

TRAFFIC AND ROADWAY (COUNTY CODE 110.436)

Contact Name: Mitchell Fink, (775) 328-2050, mfink@washoecounty.us

i. An updated traffic impact report (reflecting 1,500 seats) shall be submitted for review by the Washoe County Engineering Division and NDOT for the project.

j. Provide a copy of NDOT's review comments of the Traffic Impact Report.

k. Regional Road Impact Fees will apply prior to the issuance of Certificate of Occupancy.

Washoe County District Health

3. The following conditions are requirements of the Engineering Division, which shall be responsible for determining compliance with these conditions.

   Contact Name – Mike Wolf, (775) 775.784.7206, mwolf@washoecounty.us

   a. The applicant is required to obtain a dust control permit from AQMD.

Washoe-Storey Conservation District

4. The following conditions are requirements of the Washoe-Storey Conservation District, which shall be responsible for determining compliance with these conditions.

   Contact Name – Jim Shaffer (775) 750-82-72, shafferjam51@gmail.com

   a. The applicant shall work with the Washoe-Storey Conservation District concerning any areas that are revegetated on the site.

State of Nevada Department of Transportation (NDOT)

5. The following conditions are requirements of the State of Nevada Department of Transportation (NDOT), which shall be responsible for determining compliance with these conditions.

   Contact Name – Alex Wolfson, NDOT District II, (775) 834-8365

   a. NDOT requests that the striping for the TWLTL to dedicated left turn pocket be revised to remove the striped median in accordance with Figure 3B-7 of the Manual on Uniform Traffic Control Devices (MUTCD).

   b. NDOT requests that as part of the striping revision, the northbound left turn pocket be extended as close as possible to the 890 feet required by NDOT Access Management standards, while still maintaining the full deceleration length required for the southbound left turn movement to Blue Gem Estates.

   c. Any improvements constructed within NDOT right of way will require an occupancy permit. The NDOT District II Permits Office can be contacted for more information regarding occupancy permits at (775) 834-8330

*** End of Conditions ***

WASHOE COUNTY
COMMUNITY SERVICES DEPARTMENT
Engineering and Capital Projects

1001 EAST 9TH STREET
RENO, NEVADA 89512
PHONE (775) 328-3600
FAX (775) 328.3699

Date: January 7, 2020

To: Julee Olander, Planner

From: Leo Vesely, P.E., Licensed Engineer

Re: Special Use Permit Case **WSUP19-0029 – Summit Christian Church Expansion**
APN 083-730-13

GENERAL PROJECT DISCUSSION

Washoe County Engineering staff has reviewed the above referenced application. The Special Use Permit is to allow for grading and expansion of the Summit Christian Church. The Engineering and Capital Projects Division recommends approval with the following comments and conditions of approval which supplement applicable County Code and are based upon our review of the site and the application prepared by Dyer Engineering Consultants. The County Engineer shall determine compliance with the following conditions of approval.

For questions related to sections below, please see the contact name provided.

GENERAL CONDITIONS
Contact Information: Leo Vesely, P.E. (775) 328-3600

1. A complete set of construction improvement drawings, including an on-site grading plan, shall be submitted when applying for a building/grading permit. Grading shall comply with best management practices (BMP's) and shall include detailed plans for grading, site drainage, erosion control (including BMP locations and installation details), slope stabilization, and mosquito abatement. Placement or removal of any excavated materials shall be indicated on the grading plan. Silts shall be controlled on-site and not allowed onto adjacent property.

2. The developer shall obtain from the Nevada Division of Environmental Protection a Stormwater Discharge Permit and submit a copy to the Engineering Division prior to issuance of a grading permit.

3. The Truckee Meadows Regional Stormwater Quality Management Program Construction Permit Submittal Checklists and Inspection Fee shall be submitted with the grading permit.

4. A grading bond of $2,000/acre of disturbed area shall be provided to the Engineering Division prior to any grading.

5. All grading shall be in accordance with Article 110.438 Grading Standards.

6. All disturbed areas left undeveloped for more than 30 days shall be treated with a dust palliative. Disturbed areas left undeveloped for more than 45 days shall be revegetated. Specifications for revegetation procedure and seed mix shall be prepared by a licensed landscape architect.

DRAINAGE (COUNTY CODE 110.416, 110.420, and 110.421)
Contact Information: Leo Vesely, P.E. (775) 328-3600

1. An updated drainage report prepared by a licensed engineer shall be submitted to the Engineering Division for review and approval. The report shall include the locations, points of entry and discharge, flow rates and flood limits of all 5- and 100-year storm flows impacting both the site and offsite areas and the methods for handling those flows. The report shall include all storm drain pipe and ditch sizing calculations and a discussion of and mitigation measures for any impacts on existing offsite drainage facilities and properties.
2. Any increase in peak stormwater runoff flow rate resulting from the development and based on the 5 year and 100 storm(s) shall be detained onsite.

TRAFFIC AND ROADWAY (COUNTY CODE 110.436)
Contact Information: Mitchell Fink (775) 328-2050

1. An updated traffic impact report (reflecting 1,500 seats) shall be submitted for review by the Washoe County Engineering Division and NDOT for the project.
2. Provide a copy of NDOT's review comments of the Traffic Impact Report.
3. Regional Road Impact Fees will apply prior to the issuance of Certificate of Occupancy.

UTILITIES (County Code 422 & Sewer Ordinance)
Contact Information: Tim Simpson, P.E. (775) 954-4648

1. There are no utility related conditions of approval.

December Agency Review Comments

1-WADMIN19-0022- No Comment

2- WPVAR19-0002- No Comment

3- WPVAR19-0003- No Comment

4- WSUO19-0023- No Comment

5-**WSUP19-0028-Below**

Truckee Meadows Fire Protection District (TMFPD)

1. The following conditions are requirements of the Truckee Meadows Fire Protection District, which shall be responsible for determining compliance with these conditions. Unless otherwise stated, these conditions shall be met prior to the issuance of any building or grading permit or on an ongoing basis as determined by TMFPD.
   Contact Name – Don Coon, 775.326.6077, Dcoon@tmfpd.us

   a. Fire protection of the new structures shall be as required by the current adopted International Fire Code, (*IFC*) International Wildland Urban Interface Code (*IWUIC*) 2012 *Ed,* with amendments and the requirements of the NFPA standard(s). (https://codes.iccsafe.org/content/IWUIC2012 https://codes.iccsafe.org/content/IFC2012

   b. Based on the change of use and the size of the building a fire sprinkler system may be required. Consult with a State of Nevada Licensed Design Professional. *(IFC 102.3 and Table 903.2.1 per the Northern Nevada Amendments to the IFC.*

6-WSUP19-0029- No Comment, we have had multiple meeting and phone conversation.

7-WSUP19-0030—No Comment

From: Fagan, Donna
To: Pelham, Roger; Bronczyk, Christopher; Cahalane, Daniel; Olander, Julee
Subject: FW: December Agency Review Memo
Date: Thursday, December 19, 2019 12:48:54 PM
Attachments: image007.png
image008.png
image009.png
image010.png
image011.png

Comments from Air Quality.

For reference:

Item 1 – WADMIN19-0022
Item 2 – WPVAR19-0002
Item 3 – WPVAR19-0003
Item 4 – WSUP19-0023
Item 5 – WSUP19-0028
Item 6 – WSUP19-0029
Item 7 – WSUP19-0030

Donna Fagan
Planning and Building Division| Community Services Department
dfagan@washoecounty.us | Office: 775.328.3616
1001 E. 9th Street, Reno, NV 89521

From: Wolf, Mike
Sent: Thursday, December 19, 2019 12:38 PM
To: Fagan, Donna
Subject: RE: December Agency Review Memo

Donna

Items 1-5 AQMD has no input.
Item 6 requires the applicant obtain a dust control permit from AQMD
Item 7 may require a dust control permit, the applicant needs to come into AQMD with grading plans for us to make this detemination.

Have a great holiday

Cheers

Michael Wolf, CEM
Permitting and Enforcement Branch Chief | Air Quality Management Division | Washoe County Health District
mwolf@washoecounty.us | O: (775) 784-7206 | 1001 E. Ninth St., Bldg. B, Reno, NV 89512

OurCleanAir.com

WASHOE COUNTY HEALTH DISTRICT
ENHANCING QUALITY OF LIFE

Please consider the environment before printing this e-mail.

From: Fagan, Donna <DFagan@washoecounty.us>
Sent: Thursday, December 19, 2019 12:05 PM
To: Wolf, Mike <MWolf@washoecounty.us>; English, James <JEnglish@washoecounty.us>; Rubio, Wesley S <WRubio@washoecounty.us>; Conti, Christina <cconti@washoecounty.us>
Cc: Coon, Don <DCoon@tmfpd.us>; Health – EHS Front Desk <HealthEHS@washoecounty.us>
Subject: December Agency Review Memo

Mike, Jim, Wes, and Christina,

Please find the attached Agency Review Memo with a case received this month by CSD, Planning and Building.

You've been asked to review the items as indicated below. Click on the highlighted item descriptions for a link to the application.

Mike: Items #2, #3, #4, #6, and #7

Jim/Wes: Items #1 thru #7

Christina: Items #1, #2, #3, #5, and #7

Please send any questions, comments or conditions to the planner for that item.

Thank you,
Donna

Donna Fagan
Planning and Building Division| Community Services Department
dfagan@washoecounty.us | Office: 775.328.3616
1001 E. 9th Street, Reno, NV 89521

WSUP19-0029
EXHIBIT B

Washoe-Storey Conservation District

Bret Tyler Chairmen
Jim Shaffer Treasurer
Cathy Canfield Storey app
Jean Herman Washoe app

1365 Corpotate Blvd.
RenoNV 89502
775 857-8500 ext. 131
nevadaconservation.com

January 6, 2020

Washoe County Community Services Department

C/O Julee Olander, Planner

1001 E Ninth Street, Bldg A

Reno, NV 89512

R: WSUP19-0029 Summit Christian Church

Dear Julee,

In reviewing Summit Christian Church ,the Conservation District has the following comments.

With the western slope between the pad and access drive stabilized with rip rap rock, place 3/4 inch to 1 1/2 inch D size rock in the voids of the slope to reduce any undermining by small animals.

In the slopes seeded for vegetation growth contact the Conservation District regarding the seed mix and monitoring plan.

All drainage swales shall be lined with 4-6 inch rock in the flow line to reduce the negative impacts of down stream sedimentation.

In the construction of the retaining walls, fill voids with smaller rock in the face of the wall for the entire height of the wall to discourage undermining of small animals.

All new private storm drains shall be sumpless to eliminate standing water with its associated public health issues.

The existing detention basin shall be evaluated for maintenance and all vegetation and sediment removed from the basin floor.

The new lighting photometric plan follow the dark skies guidelines.

Thank you for providing us the opportunity to review the project that may have impacts on our natural resources.

Tyler-Shaffer

WASHOE COUNTY
COMMUNITY SERVICES DEPARTMENT
Regional Parks and Open Space

1001 EAST 9TH STREET
RENO, NEVADA 89520-0027
PHONE (775) 328-3600
FAX (775) 328.3699

TO: **Julee Olander, Planner**

FROM: **Sophia Kirschenman, Park Planner**

DATE: **January 7, 2020**

SUBJECT: **Special Use Permit Case Number WSUP19-0029 (Summit Christian Church)**

The Washoe County Regional Parks and Open Space Program (Parks Program) has reviewed and prepared the following comments related to WSUP19-0029:

If approved, this special use permit would allow for the expansion of the Summit Christian Church located on the west side of Pyramid Highway in Spanish Springs. The church is bordered to the north and east by public lands managed by the Bureau of Land Management. The application materials include a preliminary landscaping plan that identifies proposed plant species, including a number of juniper species. Junipers are among the least fire-resistant, ornamental plants as they are easily flammable and burn intensely. Due to the location of this property within the wildland/urban interface and adjacency to federal lands, the Washoe County Parks Program strongly recommends that the applicant consider reducing fire hazard conditions and potential fire risks by selecting fire-resistant plant species for landscaping. The University of Nevada Cooperative Extension's handbook titled "Choosing the Right Plants for Northern Nevada's High Fire Hazard Areas" provides some excellent information about appropriate plants and plants to avoid in this climate. Should the applicant choose to move forward with the plant species included in the application, the Parks Program strongly recommends that any juniper species be situated at least 100' from buildings in order to lower fire risk.

STATE OF NEVADA
DEPARTMENT OF TRANSPORTATION
1263 S. Stewart Street
Carson City, Nevada 89712

STEVE SISOLAK
Governor

KRISTINA L. SWALLOW, P.E., *Director*

March 30, 2020

Solaegui Engineers, Ltd.
715 H Street
Sparks, NV 89431
Attention: Paul Solaegui, PE – Traffic Engineer

RE: Summit Christian Church Expansion – Traffic Analysis (March 2020)

Dear Mr. Solaegui,

The Nevada Department of Transportation (NDOT) has reviewed the traffic analysis prepared by Solaegui Engineers (dated 3/17/20) for the above referenced project. Upon review, NDOT has the following comments and corresponding revision requests:

1. In the Pyramid Highway/Golden View Drive Intersection section (page 13), the report states “there is a center two-way left turn lane (TWLTL) that exists south of the northbound left turn pocket which provides additional storage/deceleration length during Sunday services”. The TWLTL that exists south of the SR-445 transitions to a striped median before transitioning to a dedicated left turn pocket. This is problematic as striped medians are not supposed to be encroached upon by vehicles and not all motorists treat this condition the same.

    a. NDOT requests that the striping for the TWLTL to dedicated left turn pocket be revised to remove the striped median in accordance with Figure 3B-7 of the Manual on Uniform Traffic Control Devices (MUTCD).
    b. NDOT requests that as part of the striping revision, the northbound left turn pocket be extended as close as possible to the 890 feet required by NDOT Access Management standards, while still maintaining the full deceleration length required for the southbound left turn movement to Blue Gem Estates.

2. NDOT concurs with the recommendation that dual northbound left turn pockets not be required for this expansion.

3. Any improvements constructed within NDOT right of way will require an occupancy permit. The NDOT District II Permits Office can be contacted for more information regarding occupancy permits at (775) 834-8330.

WSUP19-0029
EXHIBIT B

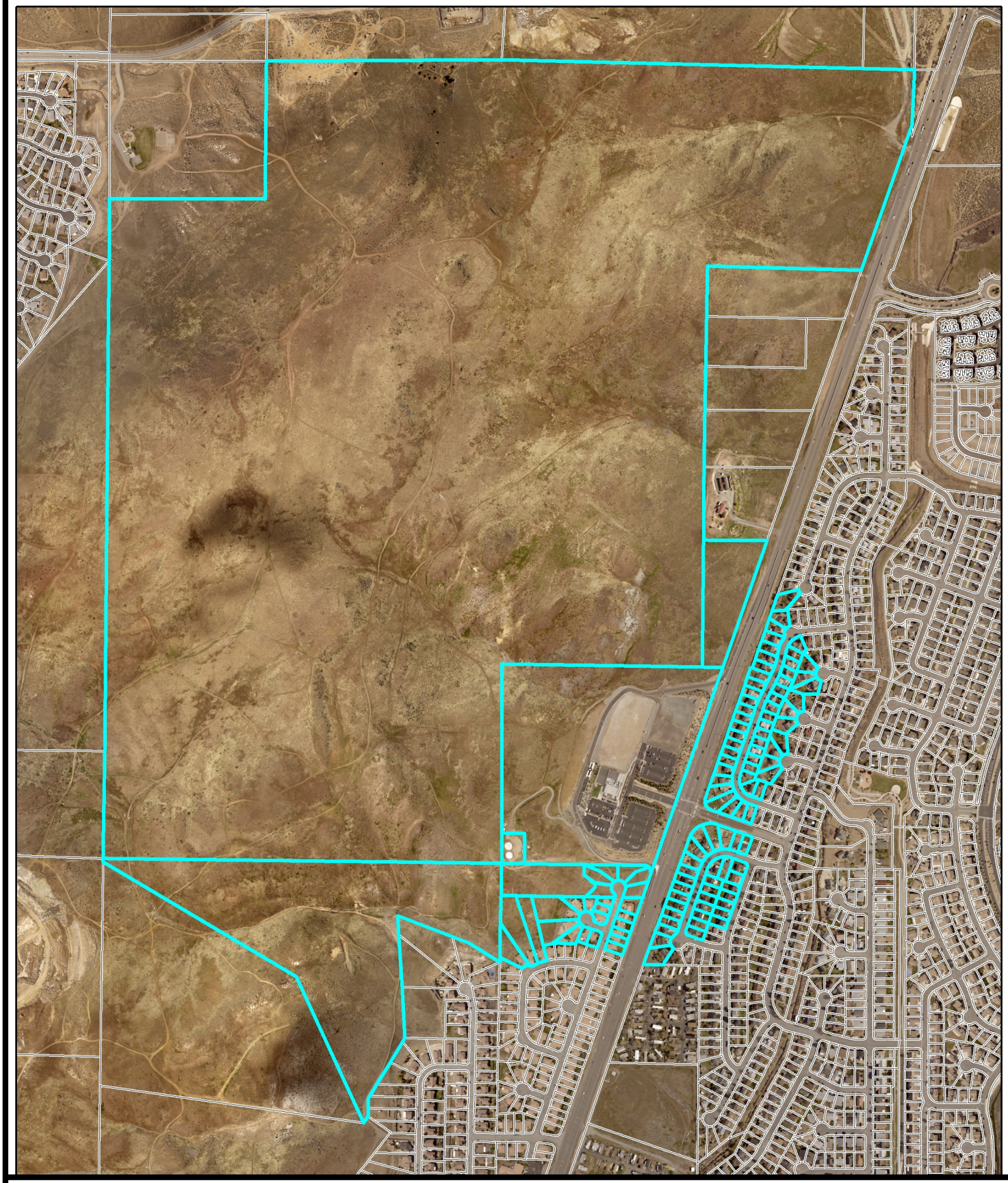
NDOT reserves the right to incorporate further changes and/or comments as the special use permit process progresses. If you have any questions, please feel free to contact Alex Wolfson at (775) 834-8365.

Sincerely,

Tara Smaltz, PE
Engineering Services Manager
NDOT District II

TMS:alw

Cc: Julee Olander – Washoe County Planning
Mike Fuess, PE, PTOE – NDOT District Engineer
Hoang Hong, PE – NDOT Traffic Operations
Alex Wolfson, PE – NDOT Traffic Engineering
Marlene Revera – NDOT Administration
File



WSUP19-0029
Summit Christian Church

Noticing Map- 500 feet from site

0 250 500 750
Feet

Community Services Department

WASHOE COUNTY
NEVADA

1001 E Ninth St
Reno, Nevada 89512-2845

Source: Planning and Building Division

Date: 12/17/2019

WSUP19-0029
EXHIBIT C

Summit Christian Church

Phase 4.0 Worship Center

Washoe County - Special Use Permit

December 16th, 2019

SUMMIT CHRISTIAN CHURCH

DYER ENGINEERING CONSULTANTS

9160 Double Diamond Parkway
Reno, NV 89521
(775) 852-1440
www.dyerengineering.com

WSUP19-0026
EXHIBIT D

December 16, 2019

Planning Department
Washoe County
1001 East Ninth Street
Reno, Nevada 89512

RE: Summit Christian Church Phase 4.0 Worship Center

To Whom It May Concern:

Dyer Engineering Consultants is pleased to submit a Special Use Permit (SUP) request on behalf of Summit Christian Church. The enclosed Washoe County applications and supporting materials are meant to provide Planning and Engineering staff and the Board of Adjustment ample detail to approve site grading and a religious assembly use located at 7075 Pyramid Way, Sparks, Nevada (APN 083-730-13). Summit Christian Church and the affiliated Summit Ridge Christian Preschool and Daycare center are growing, which is evidence of their valued contribution to the local community. With this positive expansion comes need for additional facilities that accommodate activities and operations such as worship, office and administration, childcare and education, parking, and enclosed storage. Phase 4.0 is outlined in this SUP - it is anchored on a new 40,689-square foot two-story worship center building with seating for 1,500 plus a smaller 33,06 square foot administrative office building to the rear (to be built at a later date) phased parking, and a reconfiguration of the existing church building for expanded family use that also accommodates 645 square feet of interior storage. As designed, this 15-year buildout is the full realization of a master planned vision for the Summit Christian Church complex.

Summit Christian Church received previous SUP approvals (beginning in January 2001 with SW011-027) with 52 conditions that were either completed or have expired. In the previous land use cases the County Board of Adjustment approved a SUP by making the following findings:

a) *Consistency. The proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the applicable area plan;*

The parcel is 36.7-acres with split Master Plan and Zoning designations. Development on the site is clustered on less than half of the total site area and lies entirely within the Medium Density Suburban (MDS) zone which is consistent with its Master Plan Suburban Residential (SR) designation (refer to the land use maps provided). This

portion of the site is flatter and has been identified in the Spanish Springs Development Suitability Map.

The church has had no issues with land use conflicts over the past two decades and will continue to be a good transition between the conserved open space lands to the west and the adjacent single-family residences present on GR to the north, MDS/GR to the south, and HDS to the east (across Pyramid Way).

Master plan policies that support this development project are identified below:

- LUT.4.1 Maintain a balanced distribution of land use patterns to:
  - Provide opportunities for a variety of land uses, facilities and services that serve present and future population;
  - Promote integrated communities with opportunities for employment, housing, schools, park civic facilities, and services essential to the daily life of residents
- LUT.21.2 Nonresidential development shall be compatible with the nearby neighborhoods, service and facility capacities, and the surrounding environment
- SS.1.1.1 A minimum 25-foot buffer should be provided between all property lines and rights-of-way along all arterial streets. No fences, walls, or structures shall be permitted in these areas. Development designs shall be encouraged to maintain a compatible landscaping theme for buffers areas throughout the planning area.

b) Improvements. There are or will be adequate services and infrastructure to support the proposed development;

The proposed expansion ties right into existing utilities and infrastructure already present on site and that have been sized for this buildout. Summit Christian Church is already served by Waste Management, NV Energy, Truckee Meadows Water Authority, and the Truckee Meadows Water Reclamation Facility (via City of Sparks Sanitary Sewer). Generated demand from the proposed expansion is anticipated to be minimal given that the site facilities fit within a larger shared use development:

<u>Hours of Operation</u>

- Church Office: Monday thru Thursday 9:00am – 4:30pm
- Church Services: Saturday at 5:00pm, Sunday at 9:00am/10:30am/12:00pm
- Church Facility: Sunday 7:00am-5:00pm, Monday thru Friday 6:00am-9:30pm, and Saturday 7:00am-7:00pm

<u>Employees & Student Enrollment</u>

85 Summit Christian Church Staff
30 Summit Ridge Preschool and Daycare Staff
121 Preschool/Pre-Kindergarten/Daycare Students
180 Anchor Point Before & After School Care Students

Congregation

Easter weekend attracts 4,000 attendees versus a typical weekend attendance of 2,200
Christmas Eve attracts 4,800 attendees over a four-day period

c) *Site Suitability. The site is physically suitable for the type of development and for the intensity of development;*

Phase 4.0 development can only occur at this location since it will be an integral part of the Summit Christian Church complex (refer to Site Photographs). Site hydrology, geology, or soils pose no hazards or constraints on the project as designed. This is confirmed in the Dyer Engineering Consultants and CFA Hydrology Reports, and in the Black Eagle Consulting geotechnical study included with this application.

From an architectural and site planning perspective the parcel is large and could accommodate varied layouts, however the creation of a clustered church complex or campus perched upon the hill allows for physical distance from rights-of-way and adjacent residential properties. This isolation and elevation take advantage of the surrounding inspiring mountain views and the expansive Spanish Springs Valley below to invite deeper reflection and contemplation in one's religious participation.

Considerable attention has been paid to transportation at this parcel. The buildings are surrounded by parking not visible from Pyramid Way because of site topography and matured landscaping. Circulation analysis was conducted by Solaegui Engineers (report included with this application) and proactively, Summit Christian Church has instituted a comprehensive transportation management plan including mitigation like restricted one-way circulation through the site, adding a NDOT deceleration lane and contributing to the signalized intersection at Pyramid Way, instituting volunteer attendants to direct parking cars, and also by providing sufficient off-street parking to meet project need. Based on a parking ratio of 1 stall per 3 auditorium seats it is anticipated that the new 1,500 seat worship center will generate need for 295 stalls. Future phasing of the administrative office building will require 74 more spaces at the site, thus bringing the total expansion to 369 spaces. As shown on the attached Preliminary Site Plan, all parking can be accommodated and with the existing parking lot at Summit Christian Church the site will have a total of 738 off-street parking spaces after buildout of Phase 4.0. Note, the northeast portion of the parking lot will remain unpaved until such time as the administration building gets constructed in Phase 4.0 thus necessitating paving and striping of its 77 stalls.

d) *Issuance Not Detrimental: The issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area; and*

Summit Christian Church serves its community and the public at large through its long tradition of service and charity. The issuance of a building permit will not be beneficial,

injurious, to adjacent properties. Site operations primarily occur indoors - with the exception being use of the playground located behind the family building and occasional use of the proposed outdoor space wedged between the existing building and the new worship center.

As shown on the building elevations and in the attached renderings the design demonstrates use of desert colors and materials that complement the parcel's mountain backdrop and that elevate the architectural quality and aesthetic conditions currently present in the immediate landscape. Exterior lighting has also been designed for Washoe County residential adjacency standards and all parking lot and all exterior wall mount fixtures meet dark sky requirements (refer to the Photometric Plan included with this application). The proposed "Worship Center" wall signage has also been included on the elevations and meets Washoe County Land Development Code standards.

e) *Effect on a Military Installation: Issuance of the permit will not have a detrimental effect on the location, purpose or mission of the military installation.*

This finding is not applicable since there are currently no military installations in the site vicinity.

Thank you for taking time to review the Summit Christian Church Special Use Permit application. I appreciate your time and consideration. Should you have any questions or be in need of additional information, please feel free to contact me at (510) 993-4034 or via email at kerry@tdg-inc.com.

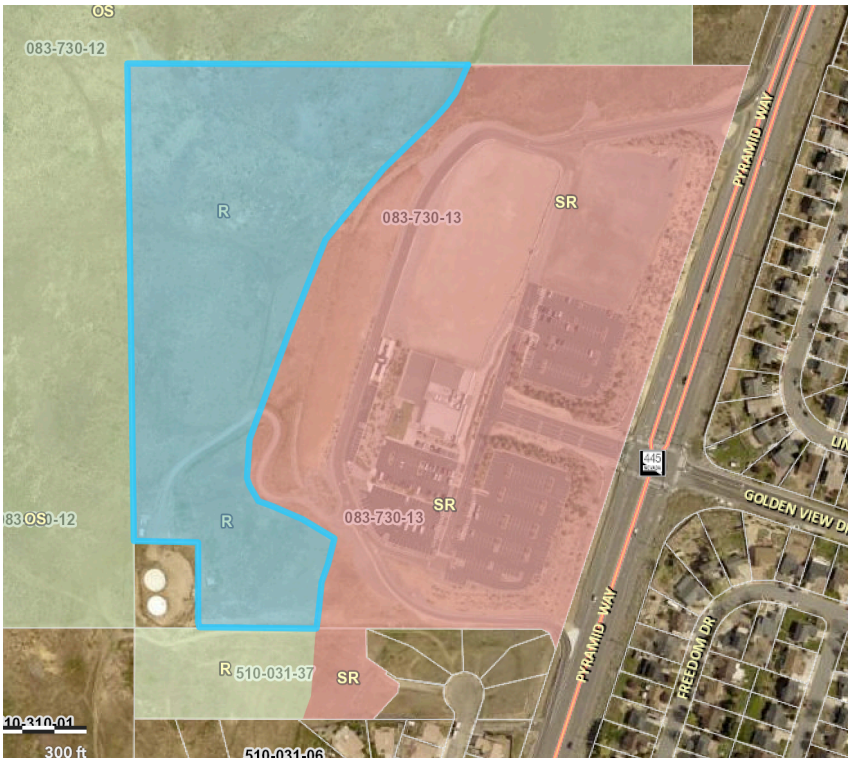
Sincerely,

Kerry Rohrmeier, PhD AICP

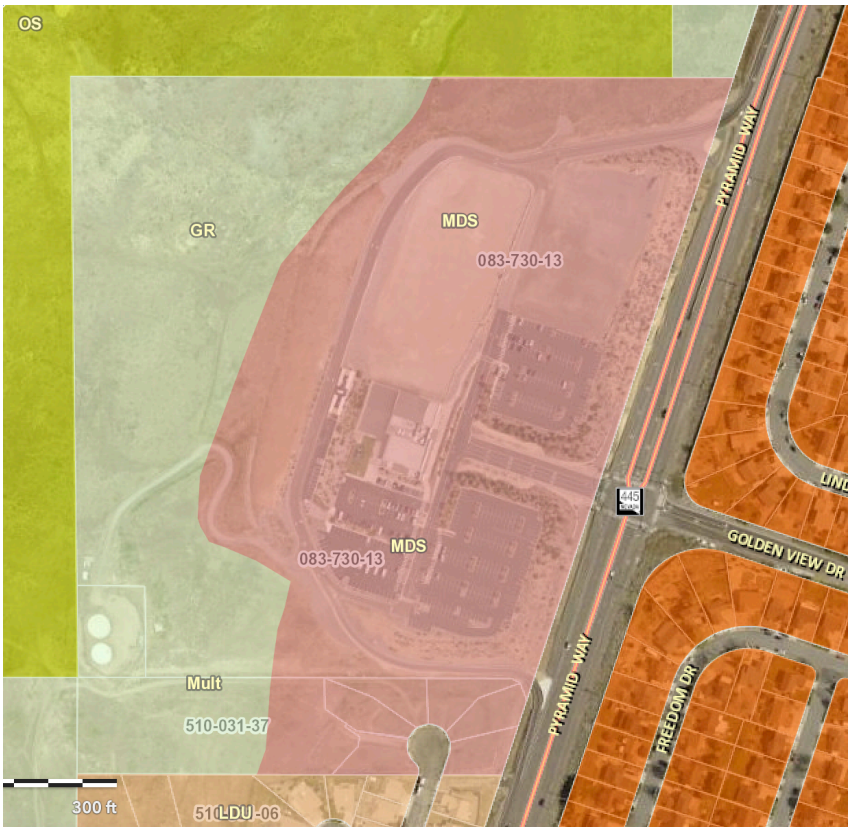
Enclosure

Fees
Owner Affidavit
General Development Application
Special Use Permit Application
Property Tax Proof
Slope Map
Preliminary Site Plan
Preliminary Grading Plan
Preliminary Utility Plan
Cross Sections
Preliminary Landscape Plan
Preliminary Irrigation Plan
Conceptual Building Elevations
Conceptual Building Floorplan
Preliminary Photometric Plan
Dyer Preliminary Hydrology Letter and CFA Report
Black Eagle Consulting Preliminary Geotechnical Report
Solaegui Engineers Traffic Impact Report

Master Plan – Suburban Residential



Zoning – Medium Density Suburban



Photographs of existing Summit Christian Church and Summit Ridge facilities. Image 1 (top) is the existing 700 seat auditorium. Image 2 (right) is the Summit Ridge Preschool and Daycare Center Playground. Image 3 (bottom) is a concrete pad and the exposed dirt area to be developed with Phase 4.0 as the new - worship center.

Renderings of the new worship center building. Images 1 and 2 (left) show the stage and audience vantages. Images 3 and 4 (below) are spaces to socialize.

PHASE 4 LANDSCAPE DATA

PROPERTY SITE AREA = 36.7 ACRES (1,599,044 SQ FT)
ZONING: GENERAL COMMERCIAL

AREA SUBJECT TO CONSTRUCTION APPROX. 435,835 SQ FT (8.07 ACRES)
REQUIRED LANDSCAPE AREA = 87,169 SQ FT (20%)

PROVIDED LANDSCAPE AREAS AS AS SHOWN:
- WORSHIP CENTER & PARKING EXPANSION ORNAMENTAL LANDSCAPE AREA = 56,209 SQ FT
- EXISTING ORNAMENTAL LANDSCAPING = 84,260 SQ FT
- REVEGETATION AREA = 60,924 SQ FT

TREES REQUIRED = 38

- 38 = 1 TREE PER 10 PARKING SPACES (383 SPACES PROVIDED)

TREES PROVIDED = 38 MIN

SHRUBS REQUIRED = SHRUBS SUFFICIENT TO REACH COVERAGE REQUIREMENT PER WASHOE COUNTY CODE

NEW ORNAMENTAL LANDSCAPE

EXISTING ORNAMENTAL LANDSCAPE TO REMAIN

REVEGETATION

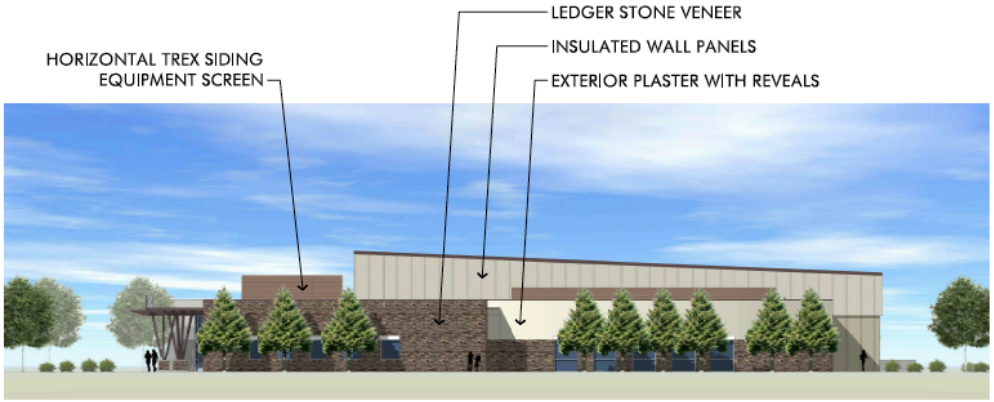
FUTURE PROJECT SITE

PLANT LEGEND

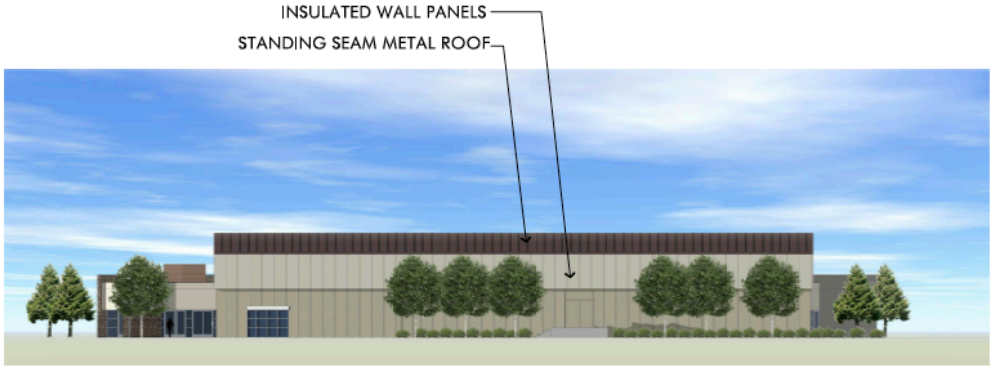
SYM.	QNT.	BOTANICAL NAME/COMMON NAME	MIN. SIZE
		DECIDUOUS TREES	
	--	ACER PLATANOIDES/NORWAY MAPLE	2-½" CAL.
	--	MALUS 'IOENSIS/PRAIRIE ROSE CRAB	2-½" CAL.
	--	PLATANUS ACERIFOLIA 'BLOODGOOD'/BLOODGOOD LONDON PLANE	2-½" CAL.
	--	PRUNUS VIRGINIANA 'CANADA RED'/CANADA RED CHOKECHERRY	2-½" CAL.
	--	PYRUS CALLERYANA 'REDSPIRE'/REDSPIRE PEAR	2-½" CAL.
		EVERGREEN TREES	MIN. SIZE
	--	CALOCEDRUS DECURRENS/INCENSE CEDAR	6' HT.
	--	PICEA PUNGENS 'HOOPSII'/HOOPSII BLUE SPRUCE	6' HT.
	--	PINUS NIGRA/AUSTRIAN PINE	6' HT.
		COLUMNAR JUNIPERS (INCLUDED IN SHRUB COUNT)	
	--	JUNIPERUS CHINENSIS 'BLUE POINT'/BLUE POINT JUNIPER	6' HT.
	--	JUNIPERUS CHINENSIS 'SPARTAN'/SPARTAN JUNIPER	6' HT.
	--	JUNIPERUS SCOPULORUM 'MOONGLOW'/MOONGLOW JUNIPER	6' HT.
	--	JUNIPERUS SCOPULORUM 'WICHITA BLUE'/WICHITA BLUE JUNIPER	6' HT.
		SHRUBS & ORNAMENTAL GRASSES	MIN. SIZE
	--	BERBERIS THUNBERGII 'ATROPURPUREA'/RED-LEAF BARBERRY	5 GAL.
	--	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'/FEATHER REED GRASS	1 GAL.
	--	CORNUS SERICEA 'ISANTI'/ISANTI RED-OSIER DOGWOOD	5 GAL.
	--	CORNUS STOLONIFERA/REDTWIG DOGWOOD	5 GAL.
	--	COTONEASTER MICROPHYLLUS/EVERGREEN COTONEASTER	5 GAL.
	--	EUONYMUS ALATUS 'COMPACTA'/DWARF BURNING BUSH	5 GAL.
	--	EUONYMUS FORTUNEI/EVERGREEN EUONYMUS	5 GAL.
	--	EUONYMUS FORTUNEI 'EMERALD AND GOLD'/E&G EUONYMUS	5 GAL.
	--	EUONYMUS KIAUTSCHOVICUS 'MANHATTAN'/MANHATTAN EUONYMUS	5 GAL.
	--	FORSYTHIA X INTERMEDIA/FORSYTHIA	5 GAL.
	--	JUNIPERUS CHINENSIS 'SEA GREEN'/S.G. JUNIPER	5 GAL.
	--	JUNIPERUS SABINA 'TAMARISCIFOLIA'/TAMARIX JUNIPER	5 GAL.
	--	PANICUM VIRGATUM/SWITCH GRASS	1 GAL.
	--	PEROVSKIA ATRIPLICIFOLIA/RUSSIAN SAGE	1 GAL.
	--	PHOTINIA X INTERMEDIA/PHOTINIA	5 GAL.
	--	PINUS MUGO MUGO/MUGHO PINE	5 GAL.
	--	PRUNUS CISTENA/DWARF PURPLE-LEAF PLUM	5 GAL.
	--	RHUS AROMATICA 'GRO-LOW/GRO-LOW FRAGRANT SUMAC	5 GAL.
	--	ROSA X 'NOARE'/RED GROUNDCOVER ROSE	3 GAL.
	--	ROSA X 'RADRAZZ'/KNOCK OUT ROSE	3 GAL.

WSUP19-0026
EXHIBIT D

SOUTH ELEVATION



EAST ELEVATION



NORTH ELEVATION

WEST ELEVATION

WSUP19-0026
EXHIBIT D

Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Building staff at 775.328.6100.

Project Information	**Staff Assigned Case No.:**
Project Name: Summit Christian Church Phase 4.0 Worship Center	
Project Description: Special Use Permit for Religious Assembly in MDS and GR zones and for Grading	
Project Address: 7075 Pyramid Highway, Sparks, NV 89436	
Project Area (acres or square feet): New development = 8.1-acres. Existing development = 21.5-acres	
Project Location (with point of reference to major cross streets **AND** area locator): The western corners of Golden View Way and Pyramid Highway	

Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
083-730-13	36.7-acres		

Indicate any previous Washoe County approvals associated with this application:
Case No.(s). SW011-027, SW02-006 (Amendment to SW0011-027)

Applicant Information (attach additional sheets if necessary)

Property Owner:	**Professional Consultant:**
Name: Summit Christian Church	Name: Dyer Engineering Consultants
Address: 7075 Pyramid Highway	Address: 9160 Double Diamond Pkwy
Sparks, NV Zip: 89436	Reno, NV Zip: 89521
Phone: 775-424-5683x106 Fax:	Phone: 775-420-4549 Fax:
Email: cwinslow@summitnv.org	Email: ljohnson@dyerengineering.com
Cell: 775-745-8520 Other:	Cell: 775-342-5171 Other:
Contact Person: Christopher Winslow	Contact Person: Lonnie J. Johnson, PE
Applicant/Developer:	**Other Persons to be Contacted:**
Name: Summit Christian Church	Name: Dyer Engineering
Address: 7075 Pyramid Highway	Address: 9160 Double Diamond Pkwy
Sparks, NV Zip: 89436	Reno, NV Zip: 89521
Phone: 775-424-5683x106 Fax:	Phone: 510-993-4034 Fax:
Email: cwinslow@summitnv.org	Email: kerry@tdg-inc.com
Cell: Other:	Cell: 510-993-4034 Other:
Contact Person: Christopher Winslow	Contact Person: Kerry Rohrmeier, Planner

For Office Use Only

Date Received: Initial:	Planning Area:
County Commission District:	Master Plan Designation(s):
CAB(s):	Regulatory Zoning(s):

Special Use Permit Application
Supplemental Information

(All required information may be separately attached)

1. What is the project being requested?

An expansion of Summit Christian Church to include a new 40,689-sq ft two story worship center, a new administrative 33,064-sq ft office building and 369 parking spaces along with a reconfiguration of the existing church to be a family center with an additional 645-square feet of enclosed storage to be developed over the next 15 years.

2. Provide a site plan with all existing and proposed structures (e.g. new structures, roadway improvements, utilities, sanitation, water supply, drainage, parking, signs, etc.)

This application includes a Preliminary Site Plan, Colored Slope Map, Preliminary Grading Plan, Preliminary Utility Plan, Cross Sections, Landscape and Irrigation Plans, Building Elevations and Floorplans, and a Photometric Plan.

3. What is the intended phasing schedule for the construction and completion of the project?

It will take 15 years to accomplish full buildout. Construction of the new two-story worship center along with reconfiguration of the existing Summit Church Building and parking scheduled next. Followed by construction of an administrative/office building behind the worship center, paved parking at the northeast corner of the existing surface lot, and the enclosed storage addition to the south side of the family center building.

4. What physical characteristics of your location and/or premises are especially suited to deal with the impacts and the intensity of your proposed use?

This is an expansion of an existing development which was master planned to include the Worship Center. The northeastern portion of the parcel within the MDS zone is well suited to this development in part because it has been previously graded (refer to the Colored Slope Map) and also because this area has been identified on the Spanish Springs Development Suitability Map. Site topography is such that steeper slopes are protected by the GR zoning designation, and yet the flatter areas are still elevated above neighboring residences to the east. (across Pyramid Highway). Further, the adjacent housing to the north and south is a significant distance from any Summit Church building far exceeding the 25' requirement in the Spanish Springs Plan.

5. What are the anticipated beneficial aspects or affects your project will have on adjacent properties and the community?

Summit Christian Church takes an active and important role in the local community. As such the Church has offered its facilities for use in emergency situations given it has ample multipurpose rooms, a kitchen/coffee bar, spaces geared for children and a playground.

6. What are the anticipated negative impacts or affect your project will have on adjacent properties? How will you mitigate these impacts?

Negative impacts have been mitigated. The building is set way back from the streetfront, the site has matured landscaping, all slopes will be stabilized, most grading will be covered by structure or paving, and the worship center building will hide the proposed retaining wall.

7. Provide specific information on landscaping, parking, type of signs and lighting, and all other code requirements pertinent to the type of use being purposed. Show and indicate these requirements on submitted drawings with the application.

Parking, lighting, landscaping, and wall signage are included on the plans and have been designed pursuant to the Washoe Count Land Development Code

8. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that apply to the area subject to the special use permit request? (If so, please attach a copy.)

❑ Yes	■ No

9. Utilities:

a. Sewer Service	Through the City of Sparks to the Truckee Meadows Water Reclamation Facility
b. Electrical Service	NV Energy
c. Telephone Service	ATT
d. LPG or Natural Gas Service	NV Energy
e. Solid Waste Disposal Service	Waste Management
f. Cable Television Service	Charter or AT&T
g. Water Service	Truckee Meadows Water Authority

For most uses, Washoe County Code, Chapter 110, Article 422, Water and Sewer Resource Requirements, requires the dedication of water rights to Washoe County. Please indicate the type and quantity of water rights you have available should dedication be required.

h. Permit #		acre-feet per year	
i. Certificate #		acre-feet per year	
j. Surface Claim #		acre-feet per year	
k. Other #		acre-feet per year	

Title of those rights (as filed with the State Engineer in the Division of Water Resources of the Department of Conservation and Natural Resources).

The site is currently served by the Truckee Meadows Water Authority and will continue to be served with expansion.

10. Community Services (provided and nearest facility):

a. Fire Station	Sparks Fire Station is slightly closer than Truckee Meadows Fire Station 46
b. Health Care Facility	Northern Nevada Medical Center
c. Elementary School	Miguel Sepulveda Elementary School
d. Middle School	Sky Ranch Middle School
e. High School	Edward Reed High School
f. Parks	Wedekind Regional Park
g. Library	Spanish Springs Library
h. Citifare Bus Stop	Rock Boulevard at York Way

Special Use Permit Application
for Grading
Supplemental Information

(All required information may be separately attached)

1. What is the purpose of the grading?

Land disturbing activities are required to prepare this site for development including cuts and fills and retaining walls not more than 6' in height.

2. How many cubic yards of material are you proposing to excavate on site?

Parking, lighting, landscaping, and wall signage are included on the plans and have been designed pursuant to the Washoe Count Land Development Code

3. How many square feet of surface of the property are you disturbing?

New development extends 8.1-acres and is an expansion to the existing 21.5-acres.

4. How many cubic yards of material are you exporting or importing? If none, how are you managing to balance the work on-site?

About 50,000 cubic yards will be cut from the site. 30,000 cubic yards will be placed on the north end of the parcel and shaped into a naturally appearing mound that is stabilized with revegation. The remaining 20,000 cubic yards will be exported from the site.

5. Is it possible to develop your property without surpassing the grading thresholds requiring a Special Use Permit? (Explain fully your answer.)

It is not possible to develop the property without surpassing a Washoe County SUP threshold due to site topography. To respect the natural environment much of the parcel will continue to be left in a natural state that has been conserved through GR zoning. Development, both new and existing, has been clustered toward the MDS portion of the site to make the building complex compatible and easily accessible.

6. Has any portion of the grading shown on the plan been done previously? (If yes, explain the circumstances, the year the work was done, and who completed the work.)

As shown on the slope map there is an existing flat pad area which was always intended for buildout of this phase of development (specifically the worship center and administration/office buildings). This pad stems from previous initial site preparations, however as the project nears construction these flattened dirt areas must be refined to finished floor elevations as specified in Black Eagle Consulting's Preliminary Geotechnical Report and on the Preliminary Grading Plan.

7. Have you shown all areas on your site plan that are proposed to be disturbed by grading? (If no, explain your answer.)

Yes

8. Can the disturbed area be seen from off-site? If yes, from which directions and which properties or roadways?

Disturbed areas should not be noticeable from the right of way or neighboring properties. The mounded material on the north end of the property will fit in with site topography and the worship center will completely screen the retaining wall behind it.

9. Could neighboring properties also be served by the proposed access/grading requested (i.e. if you are creating a driveway, would it be used for access to additional neighboring properties)?

The Summit Christian Church development has improved downhill drainage conditions by directing stormwater into detention basins allowing for greater infiltration than what would flow downhill toward existing residences if left in a purely natural state. This improvement isn't shared directly with neighbors but it does help the immediate vicinity.

10. What is the slope (horizontal/vertical) of the cut and fill areas proposed to be? What methods will be used to prevent erosion until the revegetation is established?

Cut and fill areas as designed to be have slopes no greater than 3:1. All slopes will be contoured for a natural appearance then stabilized for public safety and seeded for native vegetation growth.

11. Are you planning any berms?

Yes x	No	If yes, how tall is the berm at its highest? 10'

12. If your property slopes and you are leveling a pad for a building, are retaining walls going to be required? If so, how high will the walls be and what is their construction (i.e. rockery, concrete, timber, manufactured block)?

Yes, an engineered retaining wall is proposed but will not exceed 6' in height.

13. What are you proposing for visual mitigation of the work?

The site is currently served by the Truckee Meadows Water Authority and will continue to be served with expansion.

14. Will the grading proposed require removal of any trees? If so, what species, how many and of what size?

No

15. What type of revegetation seed mix are you planning to use and how many pounds per acre do you intend to broadcast? Will you use mulch and, if so, what type?

The contractor will employ site BMPs including a seed mix sufficient to meet or surpass year one coverage in twelve months time.

16. How are you providing temporary irrigation to the disturbed area?

BMP strongly encourage that the contractor seed and plant in Fall as vegetation is best established just prior to a wet season in their first year. The contractor must comply with revegetation requirements specified in the Washoe County code.

17. Have you reviewed the revegetation plan with the Washoe Storey Conservation District? If yes, have you incorporated their suggestions?

Corridination with the Washoe Storey Conservation District will take place concurrent with the planning process.

18. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that may prohibit the requested grading?

Yes	No x	If yes, please attach a copy.

Property Owner Affidavit

Applicant Name: Summit Christian Church

The receipt of this application at the time of submittal does not guarantee the application complies with all requirements of the Washoe County Development Code, the Washoe County Master Plan or the applicable area plan, the applicable regulatory zoning, or that the application is deemed complete and will be processed.

STATE OF NEVADA)
)
COUNTY OF WASHOE)

I, CHRISTOPHER WINSLOW,
(please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true, and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Building.

(A separate Affidavit must be provided by each property owner named in the title report.)

Assessor Parcel Number(s): 083-730-13

Printed Name CHRISTOPHER WINSLOW

Signed [signature]

Address 70756 PYRAMID WAY, SPARKS NV 89436

Subscribed and sworn to before me this 18 day of November, 2019.

[signature]
Notary Public in and for said county and state Washoe, Nevada

My commission expires: 9-1-2023

(Notary Stamp)

RUTH A. FAIGIN
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 15-2899-2 - Expires September 01, 2023

*Owner refers to the following: (Please mark appropriate box.)

- ☐ Owner
- ☑ Corporate Officer/Partner (Provide copy of record document indicating authority to sign.)
- ☐ Power of Attorney (Provide copy of Power of Attorney.)
- ☐ Owner Agent (Provide notarized letter from property owner giving legal authority to agent.)
- ☐ Property Agent (Provide copy of record document indicating authority to sign.)
- ☐ Letter from Government Agency with Stewardship

WSUP19-0026
EXHIBIT D

Washoe County Treasurer
Tammi Davis

Washoe County Treasurer
P.O. Box 30039, Reno, NV 89520-3039
ph: (775) 328-2510 fax: (775) 328-2500
Email: tax@washoecounty.us

Account Detail

Back to Account Detail | Change of Address | Print this Page

CollectionCart

	Items	Total	
Collection Cart	0	$0.00	Checkout View

Pay Online

No payment due for this account.

Washoe County Parcel Information

Parcel ID	Status	Last Update
08373013	Active	12/12/2019 2:07:59 AM

Current Owner:
SUMMIT CHRISTIAN CHURCH

7075 PYRAMID WAY
SPARKS, NV 89436

SITUS:
7075 PYRAMID WAY
WASHOE COUNTY NV

Taxing District
4000

Geo CD:

Legal Description

Township 20 Section 16 Lot A-1 Block Range 20 SubdivisionName _UNSPECIFIED

Tax Bill (Click on desired tax year for due dates and further details)

Tax Year	Net Tax	Total Paid	Penalty/Fees	Interest	Balance Due
2019	$112.03	$112.03	$0.00	$0.00	$0.00
2018	$80.07	$80.07	$0.00	$0.00	$0.00
2017	$118.10	$118.10	$0.00	$0.00	$0.00
2016	$72.48	$72.48	$0.00	$0.00	$0.00
2015	$141.35	$141.35	$0.00	$0.00	$0.00
				Total	$0.00

Disclaimer

- ALERTS: If your real property taxes are delinquent, the search results displayed may not reflect the correct amount owing. Please contact our office for the current amount due.
- For your convenience, online payment is available on this site. E-check payments are accepted without a fee. However, a service fee does apply for online credit card payments. See Payment Information for details.

Pay By Check

Please make checks payable to:
WASHOE COUNTY TREASURER

Mailing Address:
P.O. Box 30039
Reno, NV 89520-3039

Overnight Address:
1001 E. Ninth St., Ste D140
Reno, NV 89512-2845

Payment Information

Special Assessment District

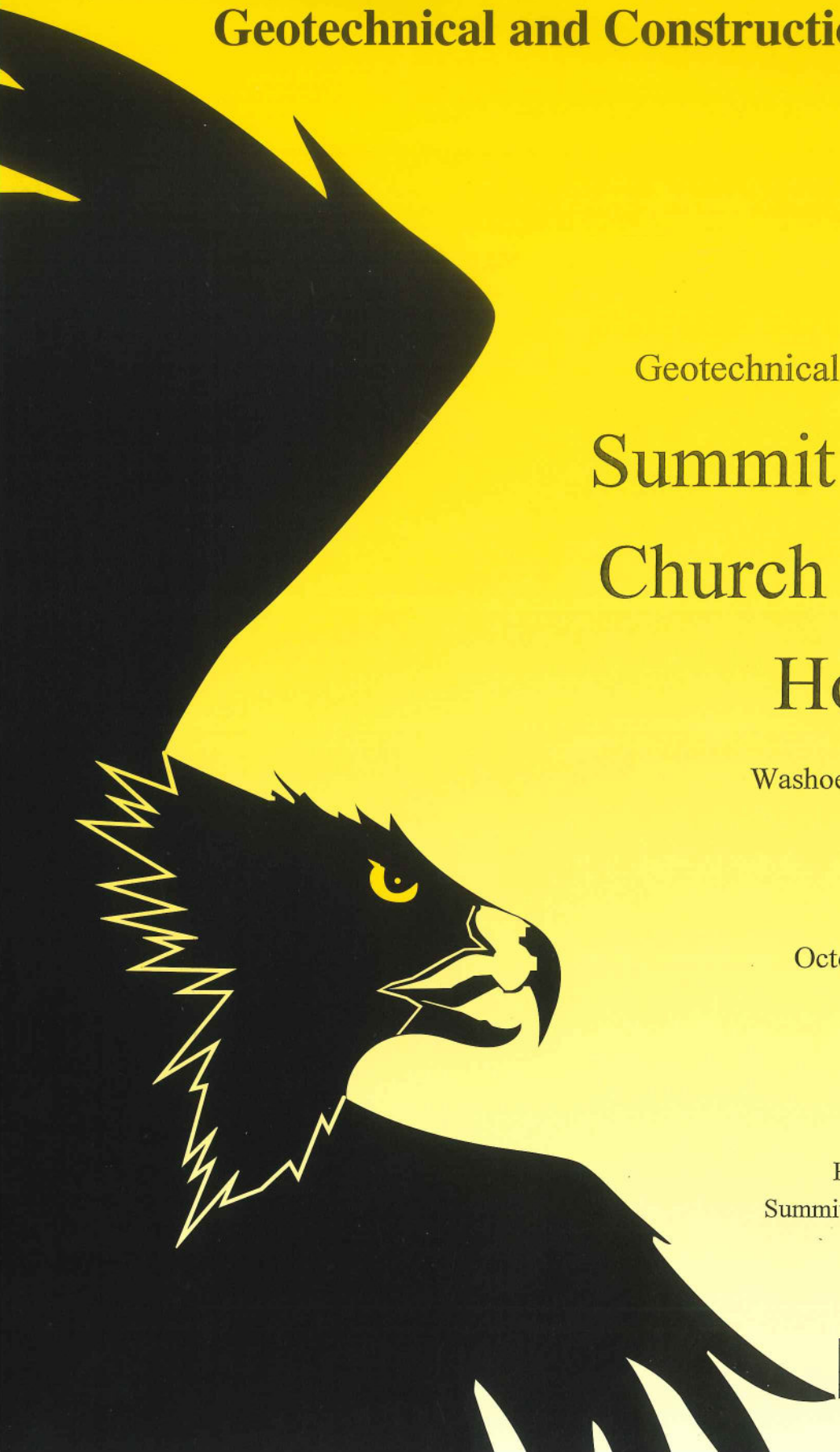
Installment Date Information

Assessment Information

WSUP19-0026
EXHIBIT D

Black Eagle Consulting, Inc.

Geotechnical and Construction Services



Geotechnical Investigation Update

Summit Christian Church Mountain House

Washoe County, Nevada

October 16, 2018

Prepared for
Summit Christian Church

Black Eagle Consulting, Inc.
Geotechnical & Construction Services

Mr. Chris Winslow
Summit Christian Church
7075 Pyramid Highway
Sparks, NV 89436

Project No.: 0412-02-4
October 16, 2018

RE: Geotechnical Investigation Update
Summit Christian Church Mountain House
Washoe County, Nevada

Dear Mr. Winslow:

Black Eagle Consulting, Inc. (BEC) is pleased to present this update to our geotechnical investigation for the new building project to be located at the Summit Christian Church titled *Geotechnical Investigation, Summit 2.0, 7075 Pyramid Highway, Washoe County, Nevada*, dated June 19, 2014 (BEC, 2014). The June 2014 report was for a new worship center building as well as an accessway (including acceleration and deceleration lanes within Pyramid Highway) and a parking lot addition within the southern limits of the church property. The access driveways and southern parking lot have been constructed as part of a previous phase. During this previous construction phase, the area to host the new building as well as the parking area located east of the existing building were mass excavated. This geotechnical investigation update is related to the design and construction of the proposed new worship center building, the parking lot north of the building, and other associated exterior improvements.

The 2014 BEC geotechnical investigation report is enclosed as Appendix A (2014 Geotechnical Investigation Report) and completes this geotechnical investigation update report for the proposed new building project at the Summit Christian Church.

Project Description

The proposed project will involve the design and construction of a building addition and associated improvements north of the existing building. The building will include an approximately 23,500-square-foot, single-story auditorium portion as well as minor areas for administration, a lobby, and a café that will be located in a 1- to 2-story portion of the building within the eastern limits. The auditorium will have a large clear span with roof loads supported by exterior building columns. The building will

Summit Christian Church Existing and Future Improvements

Black Eagle Consulting, Inc.
Geotechnical & Construction Services
1345 Capital Boulevard, Suite A
Reno, Nevada 89502-7140
Tel: 775/359-6600 Fax: 775/359-7766
Email: mail@blackeagleconsulting.com

have a Portland cement concrete (PCC) slab-on-grade floor. Structural load information was not available at the time of this report. The auditorium portion of the building will likely have a sloped/stepped floor.

The area between the existing building and new building will include various exterior improvements such as shade structures, architectural monuments/towers, walking suspension bridges, PCC walking patios/paths, landscape areas, and pond/water features.

A final grading plan was not available for the project at the time of this report. A preliminary finished floor elevation of 4,593.5 feet above mean sea level is being considered, and this finished floor elevation will require minimal cuts and fills (less than 3 feet) from the existing ground surface within the mass excavated building pad area. The parking lot and other exterior improvements will also be at or near the existing ground surface (after the mass excavation that occurred in an earlier phase).

Site Conditions

As noted earlier, the project site was mass excavated as part of the earlier construction phase. It is our understanding the mass excavation occurred sometime in 2015 to 2016 as part of the access driveways and parking lot improvements project. The pad extends from the existing building to the northern access drive and is located below the western access drive. The mass excavation included cuts on the order of 10 feet. The southern limit of the pad hosts a temporary PCC pad and a tent structure. The western slope between the pad and the access drive includes rip-rap protection. The pad is relatively flat, with a minor drainage slope to the east.

Site Conditions – Mass Excavated Pad Looking Southwest

Subsurface Materials Conditions Update

The proposed building area is underlain by altered volcanic bedrock of the Alta Formation extending to depths of at least 51.5 feet (maximum depth of boring exploration associated with our June 2014 geotechnical investigation) below the ground surface that existed prior to mass excavation. The mass excavation essentially removed a minor surficial fill layer and the upper portion of the altered bedrock. With this, the current project site (mass excavated pad) exhibits altered volcanic bedrock through at least 40 feet below the pad grade. The altered bedrock generally exhibits characteristics of fat clays with extremely high plasticity fines. Based on our experience with the bedrock in the area, including within the Summit Christian Church, the altered bedrock is

generally expansive and is severely expansive locally. The sporadic distribution (both horizontally and vertically) of severely expansive altered bedrock presents very high risks to the performance of the proposed improvements.

Updated Geotechnical Design and Construction Recommendations

All recommendations and design parameters presented in our June 2014 geotechnical report remain applicable for the proposed worship center building and associated improvements except as updated/amended below.

Seismic Design Criteria

The 2012 *International Building Code* ([*IBC*] International Code Council [ICC], 2012) is the presently adopted code by Washoe County and remains applicable for the project. Based on our experience with some recent projects, the local governing agency will likely adopt the 2018 *IBC* (ICC, 2018) in the near future. If the project design is to follow the 2018 *IBC*, the following shall be applicable.

Similar to the 2012 *IBC*, the 2018 *IBC* requires a detailed soils evaluation to a depth of 100 feet to develop appropriate soils criteria. However, the code states that a Site Class D may be used as a default value when the soil properties are not known in sufficient detail to determine the soil profile type. The Site Class D soil profile is for stiff soils with a shear velocity between 600 and 1,200 feet per second, or with an N (Standard Penetration Test) value between 15 and 50, or an undrained shear strength between 1,000 and 2,000 pounds per square foot. Based on our experience, soils borings, and the geology consisting of altered bedrock at the Summit Christian Church site, it is our opinion that the default Site Class D is appropriate. The 2018 *IBC* seismic design loads are based on the American Society of Civil Engineers (ASCE) 7-16 Standards titled *Minimum Design Loads and Associated Criteria for Buildings and Other Structures* (ASCE, 2017). With the assumed Site Class D, the recommended seismic design criteria using the 2018 *IBC* are presented in Table 1 (Seismic Design Criteria Using 2018 *International Building Code*). It is noted that for Site Class D and the site location, the determination of site coefficient (F_v) as well as site-adjusted and design spectral response values at long periods (S_{M1} and S_{D1}, respectively) follows an exception provided under Section 11.4.8 of ASCE 7-16 for Site Class D to alleviate detailed, site-specific ground motion hazard analyses for the project. The assumption related to this exception is shown in the footnote, and additional discussion is provided below Table 1.

TABLE 1 - SEISMIC DESIGN CRITERIA USING 2018 *INTERNATIONAL BUILDING CODE* (ASCE, 2018)	
Approximate Latitude	39.5960
Approximate Longitude	-119.7405
Spectral Response at Short Periods, S_s, percent of gravity	138.5
Spectral Response at 1-Second Period, S_1, percent of gravity	48.2
Site Class	D
Site Coefficient F_a, decimal	1.0
Site Coefficient F_v, decimal	1.818*
Site Adjusted Spectral Response at Short Periods, S_{MS}, percent of gravity	138.5
Site Adjusted Spectral Response at Long Periods, S_{M1}, percent of gravity	87.6*
Design Spectral Response at Short Periods, S_{DS}, percent of gravity	92.3
Design Spectral Response at Long Periods, S_{D1}, percent of gravity	58.4*
*These values assume the use of seismic response coefficient (C_s) to calculate seismic base shear is determined by the structural engineer in accordance with Section 11.4.8 (Exception Note 2 for Site Class D) and Section 12.8.1 of ASCE 7-16 (ASCE, 2017).	

As noted earlier and in Table 1, the determination of site coefficient (F_v) as well as site-adjusted and design spectral response values at long periods (S_{M1} and S_{D1}, respectively) assumes the seismic response coefficient (C_s) for the structure/structural elements will be calculated by the structural engineer in accordance with Exception Note 2 of Section 11.4.8 of ASCE 7-16 for Site Class D and then following Section 12.8.1 of ASCE 7-16 (ASCE, 2017). The equation to calculate C_s shall be selected based on the fundamental period of the structure (T) in seconds. It is emphasized that this assumption requires the seismic response coefficient calculated from Section 12.8.1 of ASCE 7-16 be increased by 50 percent when the fundamental period of the structure is greater than 1.5 times the short period for the site (T_s). The short period, T_s, for the site is equal to S_{D1}/S_{DS}, or 0.422 seconds, based on the parameters provided in Table 1. In general, the fundamental periods of typical single-story to mid-rise structures are expected to be significantly lower than the above-discussed criteria needing a 50 percent increase in seismic response coefficient and associated seismic loads. If the proposed structure requires the use of increased seismic loads in the structural design due to the assumption noted earlier (and therefore the associated, significant project cost increase), the need for site-specific ground motion procedures for seismic design provided in Chapter 21 of ASCE 7-16 shall be evaluated. If requested, BEC can provide site-specific ground motion analyses/evaluation services as a separate scope of work, which may require additional field exploration along with detailed analyses.

Geotechnical Recommendations for Building Foundations and Floor Slab

As noted above, the mass excavated site exhibits altered volcanic bedrock extending to at least 40 feet below the existing pad grade. This altered bedrock is generally expansive everywhere and can be wildly expansive locally. More importantly, unlike clay soils, the expansive behavior of altered bedrock is unpredictable and will not be uniform. The June 2014 geotechnical report (Appendix A) provides extensive discussion on the expansive characteristics of altered bedrock and the past experience with the existing church building, which showed excessive structural movement even with substantial over-excavation and moisture conditioning beneath footings. With the unpredictable and possible locally severe expansion in altered bedrock in the proposed improvement areas, the more rigorous foundation design and PCC slab-on-grade support alternate discussed in the June 2014 geotechnical report remains applicable. We recommend PCC drilled piers with belled bottoms and grade beam foundations for the proposed building. A post-tensioned PCC floor slab or conventional floor slab underlain by a geogrid reinforced structural fill mat section (refer to the June 2014 report) is recommended for the building floor slab. The structural fill for the geogrid reinforced mat section shall include imported material.

Exterior Improvements and Other Geotechnical Considerations

Various exterior structural improvements are proposed between the existing building and new building. The foundations of the shade structures and improvements in the area shall also be founded on PCC drilled piers to limit the potential vertical movement and associated structural distress. The expansive bedrock must be over-excavated through the depths provided in the June 2014 report beneath exterior slabs/pavements and backfilled with structural fill. In areas prone to subsurface moisture intrusion (e.g., areas near water features, irrigated lawns, and areas near the toe of the slope), additional depths of structural fill separation should be considered for adequate performance.

Based on the architectural displays for the project, the landscape features for the project are expected to include water features such as ponds and water courses. Migration of water from these landscape features into subgrade and foundation soils will cause additional expansive movements to the improvements. Landscape design with elimination of water features and lawn areas is recommended. If it is necessary to incorporate these landscape features, the church shall be aware of the associated risk. As a minimum, the ponds and other water holding features must be properly lined with a geomembrane product to minimize water seepage into subsurface soils.

No irrigated lawn should be located on the upslope area between the building and the western road.

Codes and Standards

The codes and standards referenced in the 2014 geotechnical investigation report shall be updated to the following that are currently applicable:

- 2018 *IBC* (ICC, 2018), where necessary
- *Standard Specifications for Public Works Construction* (2016)

Closing

With the exception of the above-described updates, all recommendations and limitations contained in the attached geotechnical report (BEC, 2014; Appendix A) remain applicable.

The recommendations presented in this update and the original report are based on the assumption that sufficient field testing and construction review will be provided during all phases of construction. We should review the final plans and specifications to check for conformance with the intent of our recommendations. Prior to construction, a pre-job conference should be scheduled to include, but not be limited to, the owner, architect, civil engineer, general contractor, earthwork and materials subcontractors, building official, and engineer. The conference will allow parties to review the project plans, specifications, and recommendations presented in this report and discuss applicable material quality and mix design requirements. All quality control reports should be submitted to and reviewed by the engineer.

During construction, we should have the opportunity to provide sufficient on-site observation of preparation and grading, over-excavation, fill placement, foundation installation, and paving. These observations would allow us to verify that the geotechnical conditions are as anticipated and that the contractor's work is in conformance with the approved plans and specifications.

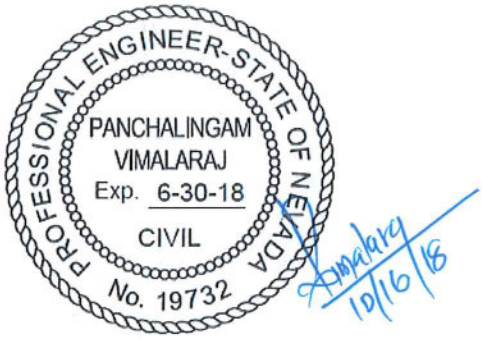
This report has been prepared in accordance with generally accepted geotechnical practices. The analyses and recommendations submitted are based upon field exploration performed at the locations presented in our original geotechnical report. This report does not reflect soils or groundwater variations that may become evident during construction of the proposed improvements, at which time re-evaluation of the recommendations may be necessary.

The client shall be responsible for distribution of this geotechnical investigation to all designers and contractors whose work is related to geotechnical factors. In the event of changes in the design, location, or ownership of the project from the time of this report, recommendations should be reviewed and possibly modified by the geotechnical engineer. If the geotechnical engineer is not accorded the privilege of making this recommended review, he can assume no responsibility for misinterpretation or misapplication of his recommendations or their validity in the event changes have been made in the original design concept without his prior review. The geotechnical engineer makes no other warranties, either express or implied, as to the professional advice provided under the terms of this agreement and included in this report.

We appreciate being of service to you on this project. If you have any questions or require any additional information, please do not hesitate to contact us.

Sincerely,

Black Eagle Consulting, Inc.



Vimal P. Vimalaraj, P.E.
Engineering Division Manager

PV:LJJ:cjr

Attachment: Appendix A – 2014 Geotechnical Investigation Report

Copies to: Addressee (3 copies and PDF via email)

References

American Society of Civil Engineers (ASCE), 2017, *Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, ASCE Standard ASCE/SEI 7-16.

ASCE, 2018, *ASCE 7 Hazard Tool* at https://asce7hazardtool.online, ASCE/SEI 7-16 seismic load values, accessed August 2018.

Black Eagle Consulting, Inc. (BEC), 2014, *Geotechnical Investigation, Summit 2.0, 7075 Pyramid Highway, Washoe County, Nevada,* Private Consultants Report dated June 19, 2014.

International Code Council (ICC), 2012, *International Building Code (IBC)*.

ICC, 2018, *IBC*.

Standard Specifications for Public Works Construction, 2016 (Washoe County, Sparks-Reno, Carson City, Yerington, Nevada).

Mr. Steve Bond
Summit Christian Church
7075 Pyramid Highway
Sparks, Nevada 89436

June 19, 2014
Project No.: 0412-02-1

L

RE: Geotechnical Investigation
Summit 2.0
Washoe County, Nevada

Dear Mr. Bond:

Black Eagle Consulting, Inc. (BEC) is pleased to present the results of our geotechnical investigation for the above-referenced project. Our investigation consisted of research, field exploration, laboratory testing, and engineering analysis to allow formulation of geotechnical conclusions and recommendations for design and construction of this facility.

The project will involve the design and construction of a new worship center building for Summit Christian Church. The proposed building will be a one-story structure with an approximate total of 54,900 square feet (sf). The building will most likely be a concrete masonry unit (CMU) structure with a Portland cement concrete (PCC) floor slab. The new worship center will be located north of the existing building and the project may include the expansion of the existing building towards the west, into the cut slope. Access road improvements will include asphalt concrete paved entrance and exit roads (north and south of the developed church facilities within the parcel, respectively) to connect the church parking lot to southbound Pyramid Highway. In addition, southbound Pyramid Highway will be widened to include an approximate 600-foot-long deceleration lane and an approximate 1,300-foot-long acceleration lane to facilitate access to and from the church. The acceleration and deceleration lanes will extend from the proposed entrance and exit roads and will be located within the Nevada Department of Transportation's (NDOT's) right-of-way for the Pyramid Highway.

The entire Summit Christian Church facility is underlain at shallow depth by altered volcanic rock, of the Alta Formation. This material is generally expansive everywhere and can be wildly expansive locally, but unpredictably so. Past experience has shown that shallow foundations, even with substantial over-excavation and moisture conditioning beneath footings, are inadequate to prevent excessive structural movement in this area. It is our recommendation that the proposed new worship center and any addition to the west, be supported on drilled shaft foundations designed to resist the uplift forces of the expansive bedrock. In addition, the concrete floor should consist of a post-tension slab-on-ground or, at least, a geogrid reinforced fill mat. Other alternates are discussed, but they are likely too impractical or of significantly higher risk for foundation movement.

Black Eagle Consulting, Inc.
Geotechnical & Construction Services
1345 Capital Boulevard, Suite A
Reno, Nevada 89502-7140
Tel: 775/359-6600 Fax: 775/359-7766
Email: mail@blackeagleconsulting.com

Mr. Steve Bond
Summit Christian Church
7075 Pyramid Highway
Sparks, Nevada 89436

June 19, 2014
Project No.: 0412-02-1

L

We appreciate having the opportunity to work with you on this project. If you have any questions regarding the content of the attached report, please do not hesitate to contact me.

Sincerely,

Black Eagle Consulting, Inc.

6.19.14

Dal Hunter, Ph.D. P.E.
Senior Consultant

Copies to: Addressee (2 copies and PDF via email)

DH:kad

Table of Contents

Table of Contents

Introduction

Presented herein are the results of the Black Eagle Consulting, Inc.'s (BEC's) geotechnical investigation, laboratory testing, and associated geotechnical design recommendations for the proposed Summit 2.0 project to be located at 7075 Pyramid Highway in Washoe County, Nevada. These recommendations are based on surface and subsurface conditions encountered in our explorations, and on details of the proposed project as described in this report. The objectives of this study were to:

1. Determine general soil, bedrock, and ground water conditions pertaining to design and construction of the proposed worship center building and access roads.

2. Determine subgrade soil and ground water conditions associated with the proposed deceleration and acceleration lanes on Nevada State Route 443 (the Pyramid Highway).

3. Provide recommendations for design and construction of the project, as related to these geotechnical conditions.

The area covered by this report is shown on Plate 1 (Plot Plan). Our investigation included field exploration, laboratory testing, and engineering analysis to determine the physical and mechanical properties of the various on-site materials. Results of our field exploration and testing programs are included in this report and, along with our experience on previous phases, form the basis for all conclusions and recommendations.

The services described above were conducted in accordance with the BEC Professional Geotechnical Agreement dated February 21, 2014, which was signed by Mr. Christopher Winslow of Summit Christian Church.

Project Description

The proposed worship center and access road expansion site lies on a trapezoidal-shaped parcel of approximately 30 acres located at 7075 Pyramid Highway in Washoe County, Nevada. The site is entirely contained in the southeast quarter of Section 16, Township 20 North, Range 20 East, Mount Diablo Meridian. The parcel is bordered to the north and west by undeveloped land, to the south by a residential neighborhood, and to the east by the Pyramid Highway. The site presently hosts the first phase of the site development, which includes a 33,000±-square-foot (sf) sanctuary building (constructed in two stages) with associated parking lots and drives. Access to the site is obtained from the Pyramid Highway via the existing paved asphalt concrete driveway to the church (western extension of Golden View Drive).

Structure/Development Information

The overall project will involve the construction of a one-story worship center building, new access roads, acceleration/deceleration lanes on the Pyramid Highway, and other associated improvements. Improvements to the Pyramid Highway will lie within the Nevada Department of Transportation (NDOT) right-of-way and must adhere to NDOT design and construction standards.

The proposed worship center building will be located north of the existing church and will be connected to the existing building. The new facility will be a tall one-story structure with an approximate total of 54,900 sf. The building will most likely be a concrete masonry unit (CMU) structure with a Portland cement concrete (PCC) floor slab. The sanctuary floor will be both sloping and stepped. A clear span of 170 feet is planned for the sanctuary, with side columns on 30-foot centers loaded to 100 to 150 kips dead plus real live loads. Outside the sanctuary, column loads of 60 to 70 kips are anticipated, probably on 25-foot centers. Perimeter wall loads will be around 2 kips per lineal foot with roof loads mostly carried by the columns.

We are recommending that foundation support for the proposed building be provided by cast-in-place drilled shafts and grade beams to counter the uplift forces from highly expansive altered bedrock at this site (refer to Geotechnical Design Recommendations). The floor slab would, ideally, be post-tensioned to minimize deformation and cracking from differential uplift. Due to cost constraints, other, higher risk, foundation and floor alternates are presented, but none are inexpensive. Because of the steep slopes surrounding the property, free-standing retaining walls will likely be required along the west and possibly north sides of the new building.

Grading Concepts

Finished floor elevation will match the existing building at 4,993.5 feet above mean sea level. Grading to this elevation will require cuts in the range of 6 to 20 feet or more, depending on actual existing ground elevation. Acceleration/deceleration lanes will primarily be in cut, while site access drives will require both minor cuts and fills. The acceleration/deceleration lane will infringe on existing 2H:1V (horizontal to vertical) cut slopes in some areas, particularly south of the entrance. Widening of the highway will require increasing the lower section of the slope to 1.5H:1V in these areas.

Site Conditions

Existing Improvements

The site currently hosts a 33,000-sf, two-story, sanctuary building that was built in two phases. The initial building was constructed in 2001 with a contiguous addition in 2004. The proposed worship center will adjoin the existing building on its north side. Paved parking facilities are situated to the west, south, east, and northeast of the existing building. Two Washoe County Utilities Division water tanks are located toward the southwest corner of the property. The tanks are accessed by an unimproved road that extends from the southwest corner of the existing paved parking facilities.

Proposed Addition Site

The location proposed for the worship center is currently a graded gravel parking area, which sits approximately 6 to 20 feet above the planned finished floor grade of the structure. An existing gravel access road lies just inside the northern property line. An unimproved pathway following the natural topography of the slope runs along the southern portion of the property, the proposed route of the future access drive. Both existing roadways follow the toes of the respective slopes that extend from parking facilities.

Topography

Previous development phases have created a level building pad using excess material from the original grading. The future building lies in an area previously filled for the existing gravel surfaced overflow parking lot. Clay soils appear to have been stripped from the surface, prior to fill operations.

The undisturbed native slopes along the north, west, and south borders of the site range from about 10 to 30 percent. A well-defined, natural drainage course is located at the north end of the site and will be within the vicinity of a proposed retaining wall.

Vegetation

The undisturbed portions of the site are sparsely vegetated with native shrubs, predominately sagebrush, rabbit brush, and grasses. Modest landscaping is present around the development, including a small lawn on the west side of the original building. Drip line irrigation is used for most landscaping, with sprinklers on the lawn.

Exploration

Drilling

The worship center site was explored on March 20 and 21, 2014 by drilling 6 test borings. The borings were drilled using 6-inch-outside-diameter (O.D.), 3¼-inch-inside-diameter (I.D.), hollow-stem augers and a truck-mounted CME 55 soils sampling drill rig. The maximum depth of exploration was 51.5 feet below the existing ground surface. The locations of the test borings are shown on Plate 1.

Exploration Drilling

The fill and bedrock materials (all native soils appear to have been removed during previous grading operations) were sampled in-place every 2 to 5 feet by use of a standard, 2-inch O.D., split-spoon sampler driven by a 140-pound automatic drive hammer with a 30-inch stroke. The number of blows to drive the sampler the final 12 inches of an 18-inch penetration (Standard Penetration Test [SPT] - American Society for Testing and Materials [ASTM] D 1586) into undisturbed soil is an indication of the density and consistency of the material.

A 3½-inch O.D., split-spoon sampler (ASTM D 3550) was also used to sample materials containing gravel or where approximate in-place densities of subsurface materials were required. Sampling methods used were similar to the SPT but also included the use of 2½-inch-diameter, 6-inch-long, brass sampling tubes placed inside the split-spoon sampler. Because of the larger diameter of the sampler, blowcounts are typically higher than those obtained with the SPT and should not be directly equated to SPT blowcounts. The logs indicate the type of sampler used for each sample.

Due to the relatively small diameter of the samplers, the maximum particle size that could be obtained was approximately 1.25 inches with the SPT tubes and 2.5 inches with the Modified California tubes. The final logs do not, therefore, adequately represent the actual quantity or presence of cobbles or boulders, particularly in the highly altered but variable volcanic rock.

Test Pits

The Summit 2.0 acceleration/deceleration lanes and access road locations were explored on March 13, 2014 by excavating 12 test pits using a CAT® 430 D rubber tire backhoe. Locations of the test pits are shown on Plate 1. The maximum depth of exploration was 12 feet below the existing ground surface. Bulk samples for index testing were collected from the trench wall sides at specific depths in each soil horizon. Pocket penetrometer testing was performed in exposed, fine-grained soil strata to evaluate in-place, unconfined compressive strength for evaluating trench stability. The test pits were backfilled immediately after exploration. Backfill was loosely placed and the area re-graded to the extent possible with equipment on hand.

Test Pit Exploration

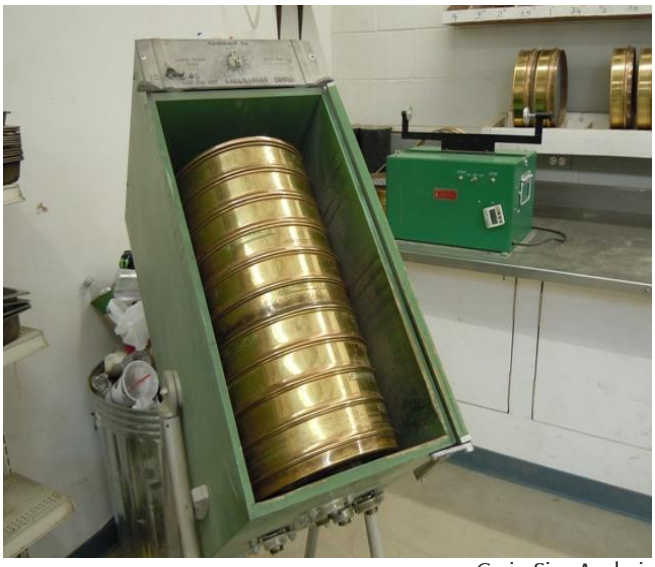
Material Classification

Materials were identified and logged in the field in accordance with ASTM D 2488 by a registered engineer or a technician with a bachelor's degree in geotechnical engineering. During drilling and test pitting, representative bulk samples were placed in sealed plastic bags and returned to our Reno, Nevada laboratory for testing. Additional soil classification was subsequently performed in accordance with ASTM 2487 (Unified Soil Classification System [USCS]) upon completion of laboratory testing as described in the **Laboratory Testing** section. Logs of the test pits (borings) are presented as Plate 2 (Exploration Logs), and a USCS chart has been included as Plate 3 (Graphic Soils Classification Chart).

The altered bedrock present at this site is difficult to classify since the material is often chemically weathered to soil-like consistency in specific locations and can be vastly different a few feet or even inches away.

Laboratory Testing

All soils testing performed in the BEC soils laboratory is conducted in general accordance with the standards and methodologies described in Volume 4.08 of the ASTM Standards.



Grain Size Analysis

Index Tests

Samples of each significant material type were analyzed to determine their in-situ moisture content (ASTM D 2216), grain size distribution (ASTM D 422), and plasticity index (ASTM D 4318). The results of these tests are shown on Plate 4 (Index Test Results). Test results were used to classify the material according to ASTM D 2487 and to verify field logs, which were then updated as appropriate. Classification in this manner provides an indication of the materials' mechanical properties and can be correlated with standard penetration testing and published charts (Bowles, 1996; Naval Facilities Engineering Command [NAVFAC], 1986a and b) to evaluate bearing capacity, lateral earth pressures, and settlement potential.

R-Value Tests

Resistance value testing (R-Value) (ASTM D 2844) was performed on representative samples of subgrade soil in areas of the proposed acceleration and deceleration lanes along the Pyramid Highway. R-value testing is a measure of subgrade strength and expansion potential and is used in design of flexible pavements. Results of the R-value tests are shown on Plate 5 (R-Value Test Results).

Expansion Index Tests

Expansion index (EI) testing was performed on two representative samples of the altered volcanic rock obtained from our borings. Testing was conducted in accordance with ASTM D4829 and provides an indication of the expansion potential of the specific sample, at in-place moisture. Expansion index test results are presented as Plate 6 (Laboratory Test Data Summary Table).

Chemical Tests

Chemical testing was performed on representative samples of site foundation soils in a 1993 report (SEA, Inc., 1993) to evaluate the site materials' potential to corrode steel and PCC in contact with the ground. The samples were tested for soluble sulfates. Since gypsum ($CaSO_4 \cdot 2H_2O$) is common in altered volcanic rock and has been observed in earlier test pits, soluble sulfate could sporadically affect concrete.

Geologic and General Soil Conditions

The site has been mapped by the Nevada Bureau of Mines and Geology (NBMG) (Bell and Bonham, 1987) as located in Quaternary alluvial fan deposits of the Pyramid Lake Highway. The unit is described as *gray, volcanic, sandy, pebble to cobble gravel.* These deposits are derived from altered volcanic rocks of the Alta Formation in the mountain range separating Sun Valley and Spanish Springs Valley.

The materials encountered during our exploration generally matched the description provided by the NBMG. Altered bedrock lies at shallow depths in the western (upper) portions of the site, overlain by alluvial fan deposits closer to the Pyramid Highway. The near surface soils, where present, exhibit a well-developed and characteristic argillic horizon (expansive fat clay) that is typically 4 to 5 feet thick or more in this area. This horizon was formed by in-place chemical weathering of the underlying alluvial fan and volcanic rock.

The fat clay is described as moist, brown, slightly moist to moist, firm to very stiff, with 57 to 90 percent high-plasticity fines, 10 to 32 percent fine to coarse sand, and 0 to 11 percent subangular to angular gravel up to 3 inches in diameter. Other coarse-grained material that overlies the altered bedrock is described as brown to dark brown, slightly moist to moist, loose to very dense, with 15 to 40 percent non-plastic to medium plasticity fines, 30 to 50 percent fine to coarse sand, and 10 to 50 percent rounded to angular gravel up to 3 inches in diameter.

An 8- to 18-inch fill layer was encountered along the shoulder of the existing Pyramid Highway south of the church. This fill is described as dark grayish-brown, moist, medium dense, with 10 percent non-plastic fines, 30 to 50 percent fine to coarse sand, and 40 to 60 percent rounded to angular gravel up to 3 inches in diameter. The cleaner, non-plastic gravel (test pits TP-04 and TP-06) may also be fill since it lacks the characteristic clay component of native materials.

The surfacing encountered within the existing parking area of the future worship center is an approximate 3- to 6-inch-thick layer of gravel and recycled asphalt pavement. The gravel overlies fill 2.5 to 5 feet or more in depth that is described as gray to brown, slightly moist to moist, very dense, with 15 to 25 percent non-plastic to low plasticity fines, 35 to 50 percent fine to coarse sand, and 30 to 50 percent

angular gravel up to 1 inch in diameter. The fill likely represents selected excess site materials from previous grading and appears to be of good quality.

The altered bedrock is described as brown, gray, orange, and white with pockets of purple, tan, rust, and yellow coloring, slightly moist, medium dense to very dense (very stiff to hard), with 20 to 80 percent medium to high plasticity fines, 20 to 73 percent fine to coarse sand, and 0 to 50 percent subangular to angular gravel up to 3 inches in diameter. The bedrock is often so chemically weathered that it is difficult to distinguish from clay-rich soils. This geologic unit (Alta Formation) consists of andesitic volcanic rock which has been altered by hydrothermal activity, similar to what is currently present at Steamboat in South Reno or Yellowstone National Park. The mechanical properties of the altered rock are highly variable and unpredictable over distances of a few feet, vertically and horizontally. Where the alteration is to montmorillonite clay, the material is extremely expansive.

Cobbles and boulders were encountered both in the units overlying the altered bedrock, as well as core stones within the altered rock itself. The cobbles and boulders observed had maximum diameters of up to 2 feet and account for up to 20 percent of the total soil mass.

Ground water was not encountered during exploration and is expected to lie at a depth that will not affect design or construction of this project.

Geologic Hazards

Seismicity

Much of the Western United States is a region of moderate to intense seismicity related to movement of crustal masses (plate tectonics). By far, the most active regions, outside of Alaska, are in the vicinity of the San Andreas Fault system of western California. Other seismically active areas include the Wasatch Front in Salt Lake City, Utah, which forms the eastern boundary of the Basin and Range physiographic province, and the eastern front of the Sierra Nevada Mountains, which is the western margin of the province. The Reno-Sparks area lies along the eastern base of the Sierra Nevadas, within the western extreme of the Basin and Range. It must be recognized that there are probably few regions in the United States not underlain at some depth by older bedrock faults. Even areas within the interior of North America have a history of strong seismic activity.

The Truckee Meadows lies within an area with a high potential for strong earthquake shaking. Seismicity within the Reno-Sparks area is considered about average for the western Basin and Range Province (Ryall and Douglas, 1976). It is generally accepted that a maximum credible earthquake in this area would be in the range of magnitude 7 to 7.5 along the frontal fault system of the Eastern Sierra Nevadas. The most active segment of this fault system in the Reno area is located at the base of the mountains near Thomas Creek, Whites Creek, and Mt. Rose Highway, about 10 miles southwest of the project.

Faults

An earthquake hazards map is not available for the project area. The published geologic hazards map (Bell and Bonham, 1987) shows three northeast-trending faults on the site. The three faults were trenched on this parcel during a 1993 investigation (SEA, Inc.) to expose the subsurface features. All three of the faults were identified in the subsurface as clearly visible shear zones. The morphology of the faults demonstrated that they were much older than Holocene, as evidenced by the well-developed argillic horizon overlying the scarps and lack of any evidence that the fault trace extends to the surface. No evidence of disruption or of movement was noted in the argillic horizon overlying the fault zones. It is generally accepted that even the most rudimentary, argillic horizon in this climate typically takes 11,000 years to develop. Well-developed argillic layers, such as those present here, are at least 50,000

years old. The United States Geological Survey (USGS, 2011), database shows these faults as less than 1.6 million years, the oldest of their categories. For these reasons the faults are thought to be much older than Holocene and are considered only potentially active, at most.

The Nevada Earthquake Safety Council (NESC, 1998) has developed and adopted the criteria for evaluation of Quaternary age earthquake faults. *Holocene Active Faults* are defined as those with evidence of movement within the past 10,000 years (Holocene time). Those faults with evidence of displacement during the last 130,000 years are termed *Late Quaternary Active Faults*. A *Quaternary Active Fault* is one that has moved within the last 1.6 million years. An *Inactive Fault* is a fault *without recognized activity within Quaternary time* (last 1.6 million years). Holocene Active Faults normally require that occupied structures be set back a minimum of 50 feet (100-foot-wide zone) from the ground surface fault trace. An *Occupied Structure* is considered *a building, as defined by the International Building Code, which is expected to have a human occupancy rate of more than 2,000 hours per year.*

The setback from Quaternary Active Faults is left to the judgment of the geologist/engineer; however, no *Critical Facility* is permitted to be placed over the trace of a Late Quaternary Active Fault. A *Critical Facility* is defined as *a building or structure that is considered critical to the function of the community or the project under consideration. Examples include, but are not limited to, hospitals, fire stations, emergency management operations centers, and schools.*

Based on the previously discussed findings there are no requirements for building setback from these potentially active faults. No faults were observed in the exposed cuts made during original grading, such that the faults lie either east or west of the existing building and its proposed additions.

Recurrence intervals for Nevada earthquakes along faults that have been studied are estimated to be in the range of 6,000 to 18,000 years in western Nevada (Bell, 1984). The very active eastern boundary faults of the Sierra Nevada Mountains may have a shorter recurrence interval of 1,000 to 2,000 years.

Ground Motion and Liquefaction

Mapping by the USGS (2013a) indicates that there is a 2 percent probability that a *bedrock* ground acceleration of 0.54g will be exceeded in any 50-year interval. No amplification of ground motion would be expected during an earthquake due to shallow bedrock.

Because the site area is underlain by dense granular and cohesive soils over bedrock, liquefaction is not possible.

Flood Plains

The Federal Emergency Management Agency (FEMA) has identified the site as lying in unshaded Zone X, or outside the limits of a 500-year flood plain (FEMA, 2009).

Other Geologic Hazards

A moderate potential for dust generation is present if grading is performed in dry weather. Expansive clay soils are present across undisturbed areas of the site and are underlain by highly expansive but unpredictable altered volcanic rock. No other geologic hazards were identified.

Discussion and Recommendations

General Information

The entire Summit Christian Church facility lies in an area underlain at shallow depth by altered volcanic rock, of the Alta Formation. This material is generally expansive everywhere and can be wildly expansive locally, but unpredictably so. This expansive potential is exacerbated by the need to cut down to match existing finished floor elevations. Expansive bedrock will be exposed that had been previously buried at depths that preserve a relatively dry but uniform moisture content. By exposing these materials to any source of water (ex: precipitation, runoff, irrigation, or broken pipe, typically) extreme levels of expansion can occur, resulting in serious distress to overlying improvements.

Past experience has shown that shallow foundations, even with substantial over-excavation and moisture conditioning beneath footings, are inadequate to prevent excessive structural movement in this area. Existing buildings have exhibited over 4 inches of uplift (heave) along west wall footings, decreasing eastward to about one inch, with greater depth to bedrock. It is our recommendation that the proposed new worship center be supported on drilled shaft foundations designed to resist the uplift forces of the expansive bedrock. In addition the concrete floor should consist of a post-tension slab-on-ground designed to tolerate high edge lift.

The recommendations provided herein, and particularly under **Geotechnical Design Recommendations, Civil Engineering and Construction Recommendations,** and **Quality Control**, are intended to minimize risks of structural distress related to consolidation or expansion of native soils, altered rock and/or structural fills. These recommendations, along with proper design and construction of the structure and associated improvements, work together as a system to improve overall performance. If any aspect of this system is ignored or poorly implemented, the performance of the project will suffer. Sufficient quality control should be performed to verify that the recommendations presented in this report are followed.

Structural areas referred to in this report include all areas of buildings, concrete slabs, asphalt pavements, as well as pads for any minor structures. The term engineer, as presented below, pertains to the civil or geological engineer that has prepared the

geotechnical engineering report for the project or who serves as a qualified geotechnical professional on behalf of the owner.

All compaction requirements presented in this report are relative to ASTM D 1557. For the purposes of this project:

- Fine-grained soils are defined as those with more than 40 percent by weight passing the number 200 sieve, and a plastic index lower than 15.
- Clay soils are defined as those with more than 30 percent passing the number 200 sieve, and a plastic index greater than 15.
- Granular soils are those not defined by the above criteria.

Any evaluation of the site for the presence of surface or subsurface hazardous substances is beyond the scope of this investigation. When suspected hazardous substances are encountered during routine geotechnical investigations, they are noted in the exploration logs and immediately reported to the client. No such substances were revealed during our exploration.

Geotechnical Design Recommendations

Seismic Design Parameters

The 2012 *International Building Code* (*IBC*, International Code Council [ICC], 2012), adopted by Washoe County, requires a detailed soils evaluation to a depth of 100 feet to develop appropriate soils criteria. However, the code states that a Site Class D may be used as a default value when the soil properties are not known in sufficient detail to determine the soil profile type. The Site Class D soil profile is for stiff soils with a shear velocity between 600 and 1,200 feet per second (fps), or with an N value (SPT) between 15 and 50 or an undrained shear strength between 1,000 and 2,000 pounds per square foot (psf). Based on the average R-Value and the geology at the Summit Christian Church, it is our opinion that the default Site Class D is appropriate. With that assumption, the recommended seismic design criteria are presented in Table 1 (Seismic Design Criteria Using 2012 *International Building Code*).

TABLE 1 - SEISMIC DESIGN CRITERIA USING 2012 *INTERNATIONAL BUILDING CODE* (USGS, 2013b)	
Approximate Latitude	39.596
Approximate Longitude	-119.7405
Spectral Response at Short Periods, S_s, percent of gravity	146.5
Spectral Response at 1-Second Period, S_1, percent of gravity	49.2
Site Class	D
Site Coefficient F_a, decimal	1.00
Site Coefficient F_v, decimal	1.50
Site Adjusted Spectral Response at Short Periods, S_{MS}, percent of gravity	146.5
Site Adjusted Spectral Response at Long Periods, S_{M1}, percent of gravity	74.2
Design Spectral Response at Short Periods, S_{DS}, percent of gravity	97.7
Design Spectral Response at Long Periods, S_{D1}, percent of gravity	49.4

Past experience has shown that shallow foundations, even with substantial over-excavation and replacement beneath footings, are inadequate to prevent excessive structural movement in this area. Both existing buildings have exhibited over 4 inches of upward vertical movement along west wall footings, decreasing eastward to about one inch, with greater depth to bedrock. Our extensive exploration for the proposed project indicates expansive bedrock under the entire new building footprint. It is our recommendation that the proposed new worship center be supported on drilled shafts (pier and grade beam) foundations designed to resist the uplift forces of the expansive bedrock. A two-story building would clearly decrease foundation and floor slab costs for this site. Several alternate mitigation approaches are presented in order of increasing risk.

Foundation Design Alternates

Pier and Grade Beam Foundations (Recommended Alternate)

Black Eagle Consulting, Inc. will provide an addendum letter with geotechnical shaft design parameters once structural loads, both vertical and lateral are available. In terms of controlling uplift potential it would be best to space the shafts as widely as practical to increase their downward load. The use of belled shafts, while somewhat more specialized (costly) than straight shafts, will allow soil overburden to be included in the uplift resistance calculations thereby significantly reducing the required depth of

drilling. Grade beams must be separated from the ground surface by a minimum 6-inch void, which can be filled with void forms or compressible foam.

For preliminary structural and cost evaluation, an 18-inch-diameter 20-foot-deep drilled shaft with a 3.5-foot-diameter bell at the bottom could support a compressive load of 120 kips or more in these materials. The bottom of the bell would need to be cleaned of loose material to provide end bearing. For a free-head condition, the ground line shaft could handle a 20-kip lateral load with a 50-kip-foot moment with lateral deflection of one inch or less. For a fixed-head condition the lateral load could exceed the structural capacity of a 2-foot-diameter shaft with little ground line deflection. For pier and grade beam foundations the shafts are generally between the fixed and free-head condition. Actual analysis would be complicated and could justify just using the conservative free-head condition for design, if it provides adequate lateral resistance.

Shaft design will require close coordination and several iterations with the structural engineer to arrive at a practical spacing and diameter that controls potential uplift movements.

Spread Footings and Conventional Slab-on-Grade with Pre-Saturation

Foundation movement at the site occurs when altered bedrock gains moisture from precipitation and/or landscape irrigation. After two to three years the material has normally absorbed all the water it can and additional foundation movement becomes minimal. Below the first few feet, bedrock has not generally experienced much moisture over the last 10,000 years. Grading cuts to depth generally just lower the pad into material with higher remaining expansion potential.

One possible solution to this problem would be to uniformly pre-saturate the subsurface materials to a considerable depth. This could be done just beneath the footings, with the building still incorporating a post-tensioned slab-on-ground floor or it could be done under the entire footprint so that a conventional concrete slab-on-grade could be used. We anticipate that this alternate would still be very costly and would carry some risk that the saturation will not be thorough enough. There can be no guarantee that the water will penetrate everywhere it needs to, however, the probability seems reasonably high.

To properly pre-saturate the site, 6- to 8-inch-diameter borings would need to be advanced on approximate 5-foot centers to depths of 25 feet. Each boring would be backfilled with compacted drain rock and filled with water about 70 times (1.3 million

gallons or more) to allow saturation of the subsurface areas between each drill site. If this system is even to be considered, a pilot test program should be run with a number of boreholes, primarily to determine how long the process would take. Slow permeability rate material could take months or even years to complete saturation.

Foundation recommendations for a site mitigated in this manner are provided below.

Individual column footings and continuous wall footings underlain by at least 3 feet of structural fill and properly saturated native materials can be designed for a net maximum allowable bearing pressure of 3,000 psf and should have minimum footing widths of 24 and 12 inches, respectively. The net allowable bearing pressure is the pressure at the base of the footing in excess of the adjacent overburden pressure. This allowable bearing value should be used for dead plus ordinary live loads. Ordinary live loads are that portion of the design live load which will be present during the majority of the life of the structure. Design live loads are loads which are produced by the use and occupancy of the building, such as by moveable objects, including people or equipment, as well as snow loads. This bearing value may be increased by one-third for total loads. Total loads are defined as the maximum load imposed by the required combinations of dead load, design live loads, snow loads, and wind or seismic loads.

With this allowable bearing pressure, total foundation settlement of approximately ¾-inch should be anticipated. Some foundation heave is still possible but should be less than what has been experienced in previous phases. Differential settlement between footings with similar loads, dimensions, and base elevations should not exceed about ½ inch. The majority of the anticipated movement will occur during the construction period as loads are applied.

Lateral loads, such as wind or seismic, may be resisted by passive soil pressure and friction on the bottom of the footing. The recommended coefficient of base friction is 0.40 and has been reduced by a factor of 1.5 on the ultimate soil strength. Design values for active and passive equivalent fluid pressures are 38 and 405 pounds per square foot per foot of depth, respectively. These design values are based on spread footings bearing on and backfilled with structural fill. All exterior footings should be placed a minimum two feet below adjacent finish grade for frost protection.

If loose, soft, wet, or disturbed materials are encountered at the foundation subgrade, these soils should be removed to expose undisturbed altered rock and the resulting over-excavation backfilled with compacted structural fill. The base of all excavations should be dry and free of loose soils at the time of concrete placement.

Spread Footings with Aggregate Piers (Not Recommended)

Perimeter grade beam and isolated interior footings could be supported on a series of aggregate piers. Aggregate piers are constructed by boring a 3-foot diameter hole at designed intervals along the footings and backfilling the borings with compacted drain rock. Uplift is resisted by placing a steel plate at the bottom of the boring and attaching the plate to the grade beam with steel tendons. Such piers could generally support approximately 4000 psf or more and would need to be spaced accordingly for the grade beams and column footings. Between the piers, the grade beam would need to be isolated from native materials by void forms or compressible foam. In addition, some water would need to be pumped down to the bottom of the aggregate piers to fully saturate bearing materials prior to placement of structural loads. We anticipate the column depths in the range of 20 to 25 feet would be required. A post-tensioned slab-on-ground floor would still be preferred. It is our understanding that aggregate piers have not been used to resist expansive materials such that no real performance records are available. Given the cost of uplift-resistant aggregate piers reportedly approach that of drilled shafts, the risks do not seem worthy.

Spread Footings with Vertical Moisture Barriers (Not Recommended)

Some success has been documented by placing vertical moisture barriers in trenches around the outside perimeter of standard spread footings. This technique has been used in clay soils which have far more uniform and predictable expansive properties than the altered bedrock at this site. The vertical barriers do not prevent or even reduce the amount of foundation movement that would occur without the barrier. Rather the longer path for water migration provides for more uniform moisture distribution and, therefore, less differential movement. It is not known how effective this method would be in the altered rock, where expansion often occurs in localized zones, as opposed to uniformly throughout the soils profile in clay. This alternate was considered but rejected.

Post-Tensioned Floor Slab Design Parameters

Any remaining near-surface clay soils will be fully removed by the anticipated site grading to reach design elevation and match the finished floor of existing buildings. The building will bear directly in altered bedrock under the entire footprint with none of the isolating effect of the alluvium that underlies much of the existing buildings. As such site conditions are extremely severe for conventional slab-on-grade concrete floors, a post-tensioned slab-on-ground floor system is strongly preferred but is probably not practical because of the complex floor shape. Nevertheless, Table 2 (Post-Tensioned Floor Slab Design Parameters) provides the recommended post-

tensioned floor slab design criteria. Design parameters were determined in accordance with those procedures recommended by the Post-Tensioning Institute (2004), however these procedures have been developed for clay soils, not expansive bedrock, so that geotechnical judgment is heavily involved.

TABLE 2 - POST-TENSIONED FLOOR SLAB DESIGN PARAMETERS	
Design Parameter	Value
Type of Clay	Smectite (Montmorillonite)
Moisture Distance - Edge Lift Condition	8.0 Feet
Moisture Distance - Center Lift Condition	9.0 Feet
Recommended Differential Movement - Edge Lift Condition, yME	4.6 Inches
Recommended Differential Movement - Center Lift Condition, yMC	-2.0 Inch

Documented edge lift movements on the two previous structures have exceeded 4.5 inches such that these values are by no means overly conservative. It must be recognized that post-tensioned floor slabs do not prevent all differential movement but rather spread the movement over a larger area making it less noticeable. Some consideration should be given to structural connection between the post-tensioned slab and the perimeter grade beams.

Lateral loads, such as wind or seismic, may be resisted by passive soil pressure and friction between the floor slab and underlying aggregate base. The recommended coefficient of base friction is 0.40 and has been reduced by a factor of 1.5 on the ultimate soil strength. The interior floor will require a moisture barrier system. Installation shall conform to the specifications provided for a Class B vapor restraint (ASTM E 1745-97). The vapor barrier shall consist of placing a 10-mil-thick StegoRap® vapor barrier or approved equal directly on a properly prepared subgrade surface. A 4-inch-thick layer of aggregate base shall be placed over the vapor barrier and be compacted with a vibratory plate. This configuration is common practice in the arid climate of Northern Nevada.

As an alternate, a 4-inch-thick layer of aggregate base can be placed on a properly prepared subgrade and covered by the moisture barrier, with the concrete placed directly on the vapor barrier, per American Concrete Institute (ACI, 2008) standards. For this case, however, the aggregate base will need to be densified to 95 percent relative compaction and the slab shall be wet-cured for a minimum of 7 days. This

alternative requires significant effort by the floor slab contractor and is not common practice in this area.

Geogrid Mat Alternate

One alternative to the post-tensioned slab solution would be to place the floor slab on a mat of structural fill reinforced with geo-grid. For this alternate the pad would be over-excavated to a depth of 3 feet below proposed subgrade (bottom of aggregate base). The surface at the excavation would be soaked, compacted, and smoothed prior to placement of a geo-grid such as Tensar TX-140S®. Three layers of geo-grid should be included in the backfill with the final layer of grid 12 inches below the aggregate base section. The purpose of the geo-grid is to create a stable mass that would help dissipate uplift of the underlying altered rock and decrease differential movement that could result in severe cracking of the floor slab.

The higher quality (not altered to clay) material from mass excavation should be selectively stockpiled for backfill with the geogrid. If the good material is not stockpiled or is unavailable, imported structural fill will be required (Table 13 - Guideline Specification for Imported Structural Fill).

Retaining Wall Design Parameters

Rigid retaining walls are not recommended for this site due to the expansive subsurface materials. Rockery walls are the most tolerant of foundation movement and are often the least expensive retaining system anyway. The maximum height of any single rockery wall shall be 8 feet in areas of fill and 10 feet in areas of cut. Walls may be terraced for greater retained heights. All terraced walls shall be constructed so that the back face of the lower wall is separated from the front face of the upper wall by a horizontal distance no less than 1.25 times the height of the lower wall to prevent surcharging of the lower wall; the end result is a slope of approximately 1.25H:1V. No improvements shall extend over rockery wall backfill to prevent distress from differential settlement.

Large block segmented walls such as Ultra-Block or Redi-Rock should perform adequately but have the potential to develop some gaps related to foundation movement. One other downside is that cut areas must be over-cut to allow for geogrid reinforcement of backfill behind walls taller than about 5 feet to accommodate much wider gravity walls.

All rockery or segmented retaining walls must be fully drained, largely to prevent staining from water that would daylight on the wall face. Because the altered bedrock disintegrates with moisture, a geotextile, such as Mirafi®140N, is required to separate drain rock from these materials. A geotextile should also be placed at the top of the drain rock, behind the wall, to separate the drain rock from overlying backfill.

Table 3 (Lateral Earth Pressure Values [Equivalent Fluid Density]) provides design parameters for fully drained retaining walls with vertical back faces, horizontal or sloping backfill, and no surcharge loads next to the top of the wall.

TABLE 3 - LATERAL EARTH PRESSURE VALUES (EQUIVALENT FLUID DENSITY), pcf

Retained Slope	Static		Dynamic	
	Active*	Passive**	Active*	Passive**
Level	35	220	46	220
2.5H:1V	44	450	77	450

*For walls that are free to yield at least 0.2 percent of the wall height.
**The values presented have been reduced from the ultimate passive resistance values by 67 and 50 percent to limit deflection under static and dynamic conditions, respectively.

Lateral loads will be resisted by friction along the base of retaining wall footings and by passive resistance against buried foundation walls. Foundation wall footings, cast directly on properly compacted structural fill, may be designed using a coefficient of base friction of 0.40. This factor has been reduced by a factor of 1.5 on the ultimate soil strength.

Portland Cement Concrete Mix Design Parameters

Soluble sulfate is known to be present on this site from earlier testing (SEA, Inc., 1993) and from observed gypsum in test pits.

TABLE 4 - SULFATE EXPOSURE CLASS*				
			Water-Soluble Sulfate (SO_4) in Soil, Percent by Weight	**Dissolved Sulfate (SO_4) in Water, ppm**
S Sulfate	Not Applicable	S0	$SO_4 < 0.10$	$SO_4 < 150$
	Moderate	S1	$0.10 \leq SO_4 < 0.20$	$150 \leq SO_4 < 1,500$ Seawater
	Severe	S2	$0.20 \leq SO_4 \leq 2.00$	$1,500 \leq SO_4 \leq 10,000$
	Very Severe	S3	$SO_4 > 2.00$	$SO_4 > 10,000$
*From Table 4.2.1 Exposure Categories and Classes. ACI 318, *Buildings Code and Comments.*				

Concrete in contact with the site foundation soils should be designed for Class S1 Sulfate exposure. Therefore, Type II cement can be used for all concrete work. Concrete mix designs for this project shall incorporate a minimum 28-day unconfined compressive strength of 4000 pounds per square inch (psi) and a maximum water to cement ratio of 0.50.

Portland Cement Concrete Rigid Pavement and Floor Slabs

The structural section for exterior concrete shall be a minimum of 4 inches of 4,000 psi concrete overlying 6 inches of Type 2, Class B, aggregate base (*Standard Specification for Public Works Construction [SSPWC],* 2012). Concrete driveways should use at least 6 inches of concrete. Valley gutters shall include at least 6 inches of fibermesh concrete (4,000 psi). All exterior concrete flatwork should be underlain by 2.5 feet of structural fill, per Table 10 (Required Thickness of Structural Fill Between Expansive Materials and Improvements). Refer to Portland Cement Concrete Flatwork for aggregate base requirements.

Interior concrete slab-on-grade floors will require a moisture barrier system. Installation shall conform to the specifications provided for a Class B vapor restraint (ASTM E 1745-97). The vapor barrier shall consist of placing a 15-mil-thick StegoRap® vapor barrier or approved equal directly on a properly prepared subgrade surface. A 4-inch-thick layer of aggregate base shall be placed over the vapor barrier and compacted with a vibratory plate.

Private Asphalt Concrete Pavement Design

Paved areas subject to truck traffic shall consist of 4 inches of asphalt concrete underlain by 6 inches of Type 2, Class B, aggregate base (SSPWC, 2012). Paved areas restricted to automobile parking can consist of 3 inches of asphalt concrete underlain by 6 inches of aggregate base. All structural sections should be underlain by, at least, 2 feet of structural fill, per Table 10.

Pyramid Highway Acceleration and Deceleration Lanes

The Pyramid Highway lies within NDOT right-of-way and must adhere to their design and construction standards. In general, NDOT requires a pavement structural section design but the new section must match the existing section if it exceeds the design. In this case, the Pyramid Highway is a major thoroughfare with daily, two-way traffic in the range of 30,000 to 40,000 vehicles per day (NDOT, 2001). Only a very small percentage of this traffic and a few trucks will enter and exit the church over a 20 year design life, such that matching the existing section would seem excessive. The design structural section is presented below.

Design Equivalent Single Axle Load (ESAL)

We understand that no traffic study has been conducted for Summit Christian Church over the last 10 years. As a consequence, we based our pavement evaluation on assumed traffic generation taken from the *Trip Generation Manual* (Institute of Transportation Engineers, 2007). The *Trip Generation Manual* provides average trips for weekdays, Saturdays, and Sundays for churches based on the total square footage of the buildings. We have selected a conservative median rather than average values, as summarized below in Table 5 (Daily Two-Way Trip Generation Summary per 1,000 Square Feet [Church]).

TABLE 5 - DAILY TWO-WAY TRIP GENERATION SUMMARY PER 1,000 SQUARE FEET (CHURCH)			
Day	**Average**	**Median**	**Design Value (Vehicles per Day)**
Weekdays	9.11	17.28	17.3
Saturday	10.37	29.6	29.6
Sunday	36.63	66.3	66.3
Average Daily Two-Way Traffic		$= \frac{(5).(17.3)+29.6+66.3}{7}$ = 26 Vehicles per Day (vpd) per 1,000 sf	
Total Two-Way Vehicles per Day		$= (26 \frac{\text{Vehicles per Day}}{1{,}000 \text{ sf}}).(33{,}000+51{,}060 \text{ sf})$ = 2,186 vpd	

Our traffic assumptions for calculation of the 20-year design equivalent single-axle load ($ESAL_{20}$) are summarized below in Table 6 (Design Data - Pyramid Highway Deceleration/Acceleration $ESAL_{20}$)

TABLE 6 - DESIGN DATA – PYRAMID HIGHWAY DECELERATION/ACCELERATION $ESAL_{20}$							
2015 Average Daily Traffic[1]	**Assumed Truck Percentage**	**Assumed Average Truck Factor**	**Percent Trucks in Design Lane**	**Design Life (Years)**	**Average Annual Growth (%)**	**20-Year Growth Factor**	**Design $ESAL_{20}$**
2,186	2	0.52	50	20	2	24.30	50,411
[1] Two-way							

General Design Criteria

The general parameters necessary for design of flexible pavements were obtained from the 1997 *NDOT Pavement Structural Design and Policy Manual*. Table 7 (General Design Parameters) presents the values used in our analysis:

TABLE 7 - GENERAL DESIGN PARAMETERS		
Flexible Pavement Design Parameters	**Value**	**Notes**
Reliability	80%	US Highways
Standard Deviation	0.45	
Initial Serviceability Index	4.5	
Terminal Serviceability Index	2.5	
Resilient Modulus, M_R – Base (psi[1])	26,500	
Drainage Coefficient, m_i	1.0	
Structural Layer Coefficients, a_i	**Value**	**Notes**
PBS[2] – Open Graded	0.0	
PBS – Dense Graded	0.35	Type 2, 2C, and 3
Aggregate Base	0.1	Type 1, Class B
[1] psi = pounds per square inch.		
[2] PBS = Plant Mix Bituminous Surface.		

Subgrade Strength

Black Eagle Consulting, Inc. conducted two R-Value tests on samples collected along the deceleration/acceleration alignment. The results of the testing range from 12 for the thick surface clay to 17 for the clayey sand with gravel alluvium. For design purposes, an R-value of 17 was selected. Clay soils (R-Value of 12) require over-excavation and replacement to mitigate expansion potential (refer to Site Preparation and Table 10).

The design R-value was converted to the roadbed resilient modulus (M_{rr}) using an equation for the best fit line derived from Figure 6.2 of the NDOT *Pavement Structural Design and Policy Manual* (NDOT, 1997).

Design R-Value: $R_v = 17$

$$\text{Log } M = (.0143R_v) + \log (17.43)$$

$$\text{Log } M = 1.4129 \qquad M_p = 10^{\log M} \qquad M_p = 30.507 \text{ (in Mpa)}$$

$$M_{rr} = M_p * 145.03 \qquad M_{rr} = 4{,}424 \text{ (in psi)}$$

Flexible Pavement Design

Our analysis utilized the American Association of State Highway and Transportation Officials (AASHTO) design methodology (AASHTO, 1993), and the NDOT *Pavement*

Structural Design and Policy Manual (NDOT, 1997). The calculations, including all assumptions made, are presented in MathCad format in Appendix A (Flexible Pavement Design Calculations). The recommended structural section is summarized below in Table 8 (Structural Sections – Pyramid Highway).

TABLE 8 - STRUCTURAL SECTIONS – PYRAMID HIGHWAY

Alternate Section	Open Graded Thicknesses (inches)	PBS[1] (inches)	Type 1, Aggregate Class B Base Thickness (inches)	Minimum Over-Excavation of Clay Subgrade[2]
Calculated	3/4	3.26 3.36	12.36 12.0	2.0 Feet Minimum
Recommended Minimum	3/4	5.0	8.0	2.0 Feet Minimum

[1] PBS = Plant Mix Bituminous Surface

[2] Where present; requires field evaluation of subgrade.

Expansive clay soil is present along about half of the alignment but appears to be localized or sporadic. Where present, clay soils must be over-excavated an additional 2 feet to protect the structural section from expansive pressure. The over-excavation should be backfilled with non-expansive structural fill meeting NDOT requirements for select borrow and must have a minimum R-Value of 45 (NDOT, 2001; Section 203.02.05). Aggregate base and decomposed granitic sand easily meet these specifications. A geotextile meeting the specifications of Table 10 should be placed between the 12-inch aggregate base section and the structural fill.

Project Materials

The following materials should be specified for NDOT right-of-way on this project:

TABLE 9 - SPECIFIED MATERIAL			
Open Grade	3/8-inch - PG64-28NV		
PBS	Type 2 - PG64-28NV		
Aggregate Base	Type 1, Class B		
Non-Woven Geotextile			
Property	**Test Method**	**Units**	**Requirement**
Survivability	AASHTO M288	Not Applicable	Class 2
Permittivity	ASTM D4491	Sec^{-1}	≥ 0.5
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve No.	100 ≤ AOS ≤ 60
Ultraviolet Stability at 500 hrs.	ASTM D4355	% Strength Retained	≥ 50
AASHTO = American Association of State Highway and Transportation Officials ASTM = American Society for Testing and Materials			

All materials should be placed in accordance with NDOT *Standard Specifications for Road and Bridge Construction* (2001) with the geotextile directly under the 12-inch aggregate base section.

Pavement Drainage Design Parameters

Pavement design is mostly a function of heavy truck traffic and subgrade strength. Inherent in the selection of design subgrade strength is the assumption that the subgrade will not become saturated. Subgrade strength drops dramatically when moisture increases even slightly more than the selected design value. This is essentially true for any material other than clean sands and gravels and is more critical in fine-grained and clay soils than in granular soils. Soils at this site are considered to be of high moisture sensitivity. If irrigated, landscaping is to be placed adjacent to the pavement section, we recommend that edge drains be constructed directly behind the curb, or along the edge of the asphalt where curbs and gutters are not used. This recommendation includes both center median and edge or back face of curb/sidewalk areas with irrigated landscaping and is particularly important where irrigated grades slope toward the street section. If proper drainage is not provided, increased maintenance costs and premature pavement (subgrade) failure will result.

The edge drain shall extend at least 12 inches below the street subgrade and can consist of either a narrow trench backfilled with Class B or C drain rock or a synthetic

edge drain product such as Mirafi® Miradrain G100N or approved equal. Drain rock shall be separated from native soil backfill by a geotextile such as Mirafi®140N or equal. In cohesionless soils the fabric shall also be placed on the upslope side, between the native soils and the drain rock/backfill. The edge drain shall be tied into the storm drain or drain rock backfill around the storm drain. In some cases utility trenches located behind the street could be utilized as edge drains, if designed and constructed with that intent.

Slope Stability

Stability of cut and filled surfaces involves two separate aspects. The first concerns global slope stability related to mass wasting, landslides, or the en masse downward movement of soil or rock. Global stability of cut and fill slopes is dependent upon shear strength, unit weight, moisture content, and slope angle. The *IBC* (ICC, 2012) adopted by Washoe County allows cut and fill slopes up to 2H:1V in the type of materials present at this site. The exploration and testing program conducted during this investigation confirms 2H:1V slopes will be stable everywhere. Slopes up to 1.5H:1V will be globally stable in the granular alluvial materials south of the entrance. Even the clay soils would be stable at this configuration as long as they are drained to avoid possible saturation. Widening of the Pyramid Highway will require that lower sections of some 2H:1V cut slopes be steepened to 1.5H:1V south of the entrance drive. If slopes steeper than 1.5H:1V are necessary, site-specific exploration testing and slope stability analysis will be needed. Slopes as steep as 1H:1V may be possible.

The second aspect relates to erosional stability and is discussed in the Slope Stability and Erosion Control section.

Civil Engineering and Construction Recommendations

Site Preparation

All vegetation shall be stripped and grubbed from structural areas and removed from the site. A stripping depth of 0.2 feet is anticipated along the acceleration/deceleration lanes and access roads, with minor grubbing elsewhere.

The test pits were excavated by backhoe at the approximate locations shown on the site plan. Locations were determined in the field by approximate means. All test pits were backfilled upon completion of the field portion of our study. The backfill was compacted to the extent possible with equipment on hand. However, the backfill was

not compacted to the requirements presented herein under **Mass Grading**. If structures, concrete flatwork, pavement, utilities, or other improvements are to be located in the vicinity of any of the test pits, the backfill should be removed and recompacted in accordance with the requirements contained in the soils report. Failure to properly compact backfill could result in excessive settlement of improvements located over test pits.

Surficial clay soils and altered bedrock on this site will exhibit severe shrink-swell with changes in moisture content. Clay soils are common, but sporadic along the Pyramid Highway and site access roads and must be identified during grading. Proposed grading within the building pad will fully remove any remaining surficial clay (and existing fill) but will expose even more problematic expansive bedrock. Failure to recognize and properly mitigate expansive materials will result in damage to improvements. Clay and altered bedrock shall be separated from improvements by structural fill in order to decrease potential shrink-swell movements. The minimum separation is presented in Table 10.

TABLE 10 - REQUIRED THICKNESS OF STRUCTURAL FILL BETWEEN EXPANSIVE MATERIALS AND IMPROVEMENTS

Improvement	Minimum Separation
Footings	Not Applicable[1]
Floor Slabs	Not Applicable[2]
Exterior Concrete Slabs, including curbs, gutters, sidewalk	2.5 feet[3]
Asphalt Pavements	2.0 feet[3]

[1] Deep foundation recommended; see discussion under **Foundation Design Alternates**.
[2] Post-tensioned slab recommended; see discussions under **Foundation Design Alternates** and **Post-Tensioned Floor Slab Design Parameters**.
[3] Excludes aggregate base section.

The required separation may be achieved by any combination of site filling or over-excavation and replacement. Depending on final design elevations, considerable over-excavation could be required.

Expansive materials to be left in place and covered with fill shall be moisture-conditioned to 2 to 4 percent over optimum for a minimum depth of 12 inches. This moisture level will significantly decrease the magnitude of shrink-swell movements in the upper foot of clay. The high moisture content must be maintained by periodic surface wetting, or other methods, until the surface is covered by at least one lift of fill.

If allowed to dry out, subsequent expansion of clay soils beneath foundations and floor slabs could significantly exceed the design criteria set forth previously.

V-ditches along the Pyramid Highway will need to be relocated for the acceleration/deceleration lanes. Existing v-ditches, which are to be abandoned and are located in structural areas, will require over-excavation to remove organic material and soft, wet, fine-grained soils. The over-excavation shall extend to a depth of at least one to three feet below the ditch bottom, unless granular soils are encountered at shallower depth. The width of over-excavation will be dependent upon the extent of soft, wet soils that cannot be compacted. Ditch bottoms may require stabilization in accordance with later recommendations. Backfill should consist of structural fill meeting NDOT specifications for select borrow.

All areas to receive structural fill or structural loading shall be densified to, at least, 90 percent relative compaction. Where less than 70 percent passes the ¾-inch sieve, soils are too coarse for standard density testing techniques. In this case, as will generally occur here, a proof-rolling of a minimum five single passes with a minimum 10-ton roller in mass grading, or five complete passes with hand compactors in footing trenches is recommended. This alternate has proved to provide adequate project performance, as long as all other geotechnical recommendations are closely followed. In all cases, the final surface shall be smooth, firm, and exhibit no signs of deflection.

If wet weather construction is anticipated, surface soils, particularly clays and highly altered rock, may be well above optimum moisture and impossible to compact. In some situations, moisture conditioning may be possible by scarifying the top 12 inches of subgrade and allowing it to air dry to near-optimum moisture, prior to compaction. Where this procedure is ineffective or where construction schedules preclude delays, mechanical stabilization will be necessary. Mechanical stabilization may be achieved by over-excavation and/or placement of an initial 12- to 18-inch-thick lift of 12-inch-minus, 3-inch-plus, well graded, angular rock fill. The more angular and well graded the rock is, the more effective it will be. This fill shall be densified with large equipment, such as a self-propelled sheeps-foot or a large loader, until no further deflection is noted. Additional lifts of rock may be necessary to achieve adequate stability. The use of a separator geotextile will prevent mud from pumping up between the rocks, thereby increasing rock-to-rock contact and decreasing the required thickness of stabilizing fill. The separator geotextile shall meet or exceed the following minimum properties presented in Table 11 (Minimum Required Properties for Separator Geotextile).

TABLE 11 - MINIMUM REQUIRED PROPERTIES FOR SEPARATOR GEOTEXTILE	
Trapezoid Strength (ASTM D 4533)	80 x 80 lbs.
Puncture Strength (ASTM D 4833)	500 lbs.
Grab Tensile Strength/Elongation (ASTM D 4632)	200 x 200 @ 50 %

As an alternate to rock fill, a geotextile/gravel system may be used for stabilization. Aggregate base (*SSPWC*, 2012), Class C or D drain rock (*SSPWC*, 2012), or pit run gravels shall be placed above the geotextile. Regardless of which alternate is selected, a test section is recommended to determine the required thickness of stabilization.

Trenching and Excavation

The lower areas of the site should easily be trenched with conventional excavators. Trenching will become more difficult upslope and/or with greater depths to the presence of the highly variable altered volcanic rock. Some hoe ram and rock-bucket work should be anticipated in trenching, particularly approaching the building pad, but anywhere below the surface clay and alluvium at this site.

Temporary trenches with near-vertical sidewalls should be stable to a depth of approximately 4 feet. Temporary trenches are defined as those that will be open for less than 48 hours. Excavations to greater depths will require shoring or laying back of sidewalls to maintain adequate stability. Regulations contained in Part 1926, Subpart P, of Title 29 of the Code of Federal Regulations (CFR, 2010) require that temporary sidewall slopes be no greater than those presented in Table 12 (Maximum Allowable Temporary Slopes).

TABLE 12 - MAXIMUM ALLOWABLE TEMPORARY SLOPES	
Soil or Rock Type	**Maximum Allowable Slopes[1] for Deep Excavations less than 20 Feet Deep[2]**
Stable Rock	Vertical (90 degrees)
Type A[3]	3H:4V (53 degrees)
Type B	1H:1V (45 degrees)
Type C	3H:2V (34 degrees)
Notes:	
1. Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.	
2. Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.	
3. A short-term (open 24 hours or less) maximum allowable slope of 1H:2V (63 degrees) is allowed in excavation in Type A soils that are 12 feet or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet in depth shall be 3H:4V (53 degrees).	

The State of Nevada, Department of Industrial Relations, Division of Occupational Safety and Health Administration (OSHA), has adopted and strictly enforces these regulations, including the classification system and the maximum slopes. In general, Type A soils are cohesive, non-fissured soils, with an unconfined compressive strength of 1.5 tons per square foot (tsf) or greater. Type B are cohesive soils with an unconfined compressive strength between 0.5 and 1.5 tsf. Type C soils have an unconfined compressive strength below 0.5 tsf. Numerous additional factors and exclusions are included in the formal definitions. The client, owner, design engineer, and contractor shall refer to Appendix A and B of Subpart P of the previously referenced Federal Register for complete definitions and requirements on sloping and benching of trench sidewalls. Appendices C through F of Subpart P apply to requirements and methodologies for shoring.

On the basis of our exploration, the site materials are predominately Type A clays or bedrock with the properties of Type A clay. Any area in question shall be considered Type C, unless specifically examined by the engineer during construction. All trenching shall be performed and stabilized in accordance with local, state, and OSHA standards.

Mass Grading

The proposed building site will require significant cuts to achieve design grade so that the finished floor can match existing structures. The excavation will be entirely in altered bedrock of the Alta Formation. The Alta Formation can range from extremely

hard bedrock that requires blasting, to soft clay where it has been severely altered by hydrothermal activity. Our borings were advanced by a powerful auger drill rig with some, but not excessive, effort. No zones of drilling refusal were encountered. Blow counts from the drilling were high but did not indicate fresh, hard bedrock. We anticipate that the excavation can be made with large bulldozers but that locally hard rock requiring a hoe ram or even blasting could be present. Excavations for the previous buildings did not require these techniques.

Native clay soils shall be placed as fill only in nonstructural areas. Native granular soils will be suitable for structural fill, provided particles larger than 4 inches are removed. Field testing of the auger cuttings suggests that much of the rock will not be suitable for structural fill without careful segregation and selective stockpiling. It is likely that sufficient material can be segregated for the minor structural fill needs on this project.

Oversized rock can be placed in the bottom of nonstructural fills, if any, or on slopes. In non-structural fills, oversized rocks must be scattered in such a manner as to preclude development of voids between the particles (nesting). On-site rock will not be suitable for rip-rap since it decomposes with moisture.

If imported structural fill is required on this project, we recommend it satisfy the specifications presented in Table 13.

TABLE 13 - GUIDELINE SPECIFICATION FOR IMPORTED STRUCTURAL FILL

Sieve Size	**Percent by Weight Passing**	
4 Inch	100	
3/4 Inch	70 – 100	
No. 40	15 – 60	
No. 200	5 – 25	
Percent Passing No. 200 Sieve	**Maximum Liquid Limit**	**Maximum Plastic Index**
5 – 10	50	20
11 – 20	40	15
21 – 25	35	10

These recommendations are intended as guidelines to specify a readily available, prequalified material. Adjustments to the recommended limits can be provided to allow the use of other granular, non-expansive material. Any such adjustments must be made and approved by the engineer, in writing, prior to importing fill to the site.

Any fill placed on hillsides steeper than 5H:1V shall be keyed into existing materials in equipment wide benches. The maximum vertical separation between benches shall be 8 feet.

Any structural fill within the building area shall be placed in maximum 8-inch-thick (loose) lifts, each densified to, at least, 95 percent relative compaction. All other structural fill shall be densified to a minimum 90 percent relative compaction. Nonstructural fill shall be densified to, at least, 85 percent relative compaction to minimize consolidation and erosion. This is particularly important for yard areas since soil consolidation can cause water to pond in the drainage swales. Loose yard fill also allows water to infiltrate the backfill rather than flowing to the swale. Both of these conditions can contribute to foundation moisture (refer to Site Drainage).

Commonly, the site materials will have greater than 30 percent retained on the ¾-inch sieve, such that standard density testing is not valid. These materials will be treated as rock fills with a maximum lift thickness and maximum particle size of 12 inches. A proof-rolling program of at least five single passes of a minimum CAT® 815 roller or approved equal in mass grading or at least five complete passes with hand compactors in footing trenches is recommended. If a CAT® 825 or larger compactor is used, it could be possible to increase both lift thickness and particle size to a maximum of 18 inches.

Properly constructed rock fills have a long history of excellent performance in northern Nevada. For this project, the maximum particle size contained in rock fill placed during mass grading to within 4 feet of finished subgrade elevation should be 18 inches with a maximum lift height of 18 inches. Within 4 feet of subgrade elevations, the rock fill should exhibit a maximum particle size of 12 inches, and a maximum lift height of 12 inches. As an alternate, the owner may wish to restrict the maximum particle size to 6 inches in the upper 2 feet to facilitate fine grading and trenching. Acceptance of this rock fill is based upon observation of particle size, lift thickness, moisture content, and applied compactive effort. Compaction must continue to the satisfaction of the engineer. In all cases, the finished surface shall be firm and show no signs of deflection.

Grading shall not be performed with or on frozen soils.

Utility Trench Backfill

Maximum particle size in trench backfill shall be 4 inches. Bedding and initial backfill 12 inches over the pipe will require import and shall conform to the requirements of the utility having jurisdiction. Bedding and initial backfill shall be densified to at least 90 percent relative compaction. Native granular soil will provide adequate final backfill as long as oversized particles are excluded, and shall be placed in maximum 8-inch-thick loose lifts that are compacted to a minimum of 90 percent relative compaction in all structural areas.

When drain rock is used as trench backfill, it shall be considered a rock backfill (greater than 30 percent retained on the ¾-inch sieve) and shall be placed in maximum 12-inch-thick loose lifts, with each lift densified by at least five complete passes with approved compaction equipment and until no deflection is observed. A separator geotextile, such as Mirafi® 140N, shall be placed between the drain rock and any native soil backfill.

Rockery Walls

All rockery walls shall be constructed by a qualified and experienced contractor in a battered configuration. Walls may be terraced in areas for greater retained heights (refer to Retaining Wall Design Parameters) provided the offset recommendations discussed previously are satisfied. If rockery walls retain fill slopes, the fill shall be overbuilt and then cut back to the back of wall construction. Native bedrock is unsuitable for reuse in rockery walls.

Subsidence and Shrinkage

Where the native clay soil is to remain in place, subsidence of about 0.1 foot should be anticipated from construction traffic. Subsidence of granular alluvial or altered bedrock soils exposed in cut should be negligible. Granular alluvial soils excavated and recompacted in structural fills should experience quantity shrinkage of approximately 10 percent, including removal of oversized particles. In other words, one cubic yard (cy) of excavated granular alluvium will generate about 0.9 cy of structural fill at 90 percent relative compaction. Altered bedrock will be highly variable in shrinkage properties but there should be a sufficient quantity of usable material so that quantities are not an issue.

Slope Stability and Erosion Control

As noted previously in the Slope Stability section, there are two aspects to slope stability. The first relates to overall global stability of the slope with respect to mass failure. The second aspect of stability involves erosion potential and is dependent on numerous factors involving grain size distribution, cohesion, moisture content, slope angle, and the velocity of the water or wind on the ground surface. Washoe County requires erosion control of cut and fill slopes 5H:1V or steeper. Slopes between 2.5H:1V and 5H:1V could be stabilized by hydroseeding but altered bedrock slopes do not readily support vegetation. Top soil, turf reinforcement mats and temporary irrigation may be needed. Slopes steeper than 2.5H:1V may require mechanical stabilization on this site since the altered rock decomposes with moisture. The County may accept other methods of stabilization on slopes steeper than 2.5H:1V if it can be shown that the altered rock is stable.

The bottom of existing 2H:1V slopes along the Pyramid Highway will be steepened to 1.5H:1V in order to accommodate the new lanes, specifically the acceleration lane. The Nevada Department of Transportation prefers to avoid rip-rap of slopes that comprise roadside V-ditches because of maintenance issues. Slopes of 1.5H:1V can be stabilized with a heavy turf reinforcement mat, such as Propex Landlok® 450, topsoil, seeding, and temporary irrigation. Slopes steeper than 1.5H:1V would require rip-rap in most cases. Final slope stabilities should be designed by a landscape architect with their design taking precedence over our recommendations.

Dust potential at this site will be moderate during dry periods. Temporary (during construction) and permanent (after construction) erosion control will be required for all disturbed areas. The contractor shall prevent dust from being generated during construction in compliance with all applicable city, county, state, and federal regulations. The contractor shall submit an acceptable dust control plan to the Washoe County District Health Department prior to starting site preparation or earthwork. Project specifications should include an indemnification by the contractor of the owner and engineer for any dust generation during the construction period. The owner will be responsible for mitigation of dust after accepting the project.

In order to minimize erosion and downstream impacts to sedimentation from this site, best management practices with respect to storm water discharge shall be implemented at this site.

Site Drainage

Surface Drainage

Adequate surface drainage shall be provided so moisture is directed away from the structure. A system of roof drains and downspouts is recommended to collect roof drainage and direct it well away from the foundations unless pavement extends to the walls. If roof runoff is allowed directly over paver stones, especially where they will be subjected to vehicle loading, rutting of the paver stone system could be experienced due to saturation of the subgrade materials.

If planters are to be located adjacent to foundation areas, they shall be lined and sloped to drain away from the foundation to improve foundation performance. Raised planters bearing directly on pavement would be preferred. Planters are defined as localized landscaped and irrigated areas lying within 10 feet of the building perimeter and confined by decorative structures such as rock, wood, or brick.

The ponding of water on finish grade or at the edge of pavements shall be prevented by grading the site in accordance with *IBC* (ICC, 2012) requirements.

Portland Cement Concrete Flatwork

All concrete slabs shall be directly underlain Type 2, Class B, aggregate base (*SSPWC*, 2012). The thickness of base material shall be 6 inches beneath curb and gutters, 4 inches beneath sidewalks and 4 inches beneath floor slabs and private flatwork. Aggregate base courses shall be densified to at least 95 percent relative compaction. All exterior concrete flatwork should be underlain by 2.5 feet of structural fill, per Table 10.

The Reno/Sparks area is a region with exceptionally low relative humidity. As a consequence, concrete flatwork is prone to excessive shrinking and curling. Concrete mix proportions and construction techniques, including the addition of water and improper curing, can adversely affect the finished quality of concrete and result in cracking, curling, and spalling of slabs. We recommend that all placement and curing be performed in accordance with procedures outlined by the ACI (2008) and this report. Special considerations shall be given to concrete placed and cured during hot or cold weather temperatures, or low humidity conditions.

Proper control joints and reinforcement shall be provided for conventional floor slabs to minimize any damage resulting from shrinkage as discussed below. In particular, crack-control joints shall be installed on maximum 10-foot-centers and shall be

installed to a minimum depth of 25 percent of the slab thickness. Saw-cuts, zip strips, and/or trowel joints are acceptable; however, saw-cut joints must be installed as soon as initial set allows and prior to the development of internal stresses that will result in a random crack pattern. If trowel joints are used, they will need to be grouted over prior to installation of floor coverings.

Rolls of welded wire mesh (WWM) are not recommended for use since vertically centered placement of rolled WWM within a floor slab is difficult to achieve. All reinforcing steel and WWM shall be centered in the floor slab through the use of concrete dobies or approved equivalent. Reinforcement recommendations provided by the project structural engineer will supersede those presented here.

The base layer that overlies the moisture barrier membrane shall remain compacted and a uniform thickness maintained during the concrete pour, as its intended purpose is to facilitate even curing of the concrete and to minimize curling of the slab. Extra attention shall be given during construction to ensure that rebar reinforcement and equipment do not damage the integrity of the vapor barrier. Care must be taken so that concrete discharge does not scour the base material from the vapor barrier. This can be accomplished by maintaining the discharge hose in the concrete and allowing the concrete to flow out over the base layer.

Private Asphalt Concrete

All asphalt pavement shall be directly underlain by Type 2, Class B, aggregate base (*SSPWC*, 2012). All aggregate base beneath asphalt pavements shall be densified to, at least, 95 percent relative compaction. All structural sections should be underlain by, at least, 2 feet of structural fill, per Table 10.

Asphalt concrete pavements have been designed for a standard 20-year life expectancy with the design assumptions presented under **Private Asphalt Concrete Pavement Design**. Due to the local climate and available construction aggregates, a 20-year performance life requires diligent maintenance. Between 15 and 20 years after initial construction (average 17 years), major rehabilitation (structural overlay or reconstruction) is often necessary if maintenance has been lax. To achieve maximum performance life, maintenance must include regular crack sealing, seal coats, and patching as needed. Crack filling is commonly necessary every year or at least every other year. Seal coats, typically with a Type II slurry seal, are generally needed every 3 to 6 years, depending on surface wear. Failure to provide thorough maintenance will significantly reduce pavement design life and performance.

Pyramid Highway Improvements

All construction within the NDOT right-of-way shall conform to NDOT specifications with respect to materials, placement and inspection/testing requirements.

Anticipated Construction Problems

Depending on the season of construction soft, wet, surface material may make it difficult for construction equipment to travel and operate. Some difficulty will also be encountered in mass grading and trenching due to the presence of altered bedrock of variable hardness.

Quality Control

All plans and specifications should be reviewed for conformance with this geotechnical report and approved by the engineer prior to submitting them to the building department for review.

The recommendations presented in this report are based on the assumption that sufficient field testing and construction review will be provided during all phases of construction. We should review the final plans and specifications to check for conformance with the intent of our recommendations. Prior to construction, a pre-job conference should be scheduled to include, but not be limited to, the owner, architect, civil engineer, the general contractor, earthwork and materials subcontractors, building official, and engineer. The conference will allow parties to review the project plans, specifications, and recommendations presented in this report and discuss applicable material quality and mix design requirements. All quality control reports should be submitted to and reviewed by the engineer.

During construction, we should have the opportunity to provide sufficient on-site observation of preparation and grading, over-excavation, fill placement, foundation installation, and paving. These observations would allow us to verify that the geotechnical conditions are as anticipated and that the contractor's work is in conformance with the approved plans and specifications.

Standard Limitations Clause

This report has been prepared in accordance with generally accepted geotechnical practices. The analyses and recommendations submitted are based on field exploration performed at the locations shown on Plate 1 of this report. This report does not reflect soils variations that may become evident during the construction period, at which time re-evaluation of the recommendations may be necessary. We recommend our firm be retained to perform construction observation in all phases of the project related to geotechnical factors to ensure compliance with our recommendations. The owner shall be responsible for distributing this geotechnical investigation to all designers and contractors whose work is related to geotechnical factors.

Equilibrium water level readings were made on the date shown on Plate 2 of this report. Fluctuations in the water table may occur due to rainfall, temperature, seasonal runoff or adjacent irrigation practices. Construction planning should be based on assumptions of possible variations in the water table.

This report has been produced to provide information allowing the architect or engineer to design the project. The owner is responsible for distributing this report to all designers and contractors whose work is affected by geotechnical aspects. In the event there are changes in the design, location, or ownership of the project from the time this report is issued, recommendations should be reviewed and possibly modified by the engineer. If the engineer is not granted the opportunity to make this recommended review, he or she can assume no responsibility for misinterpretation or misapplication of his or her recommendations or their validity in the event changes have been made in the original design concept without his or her prior review. The engineer makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of this agreement and included in this report.

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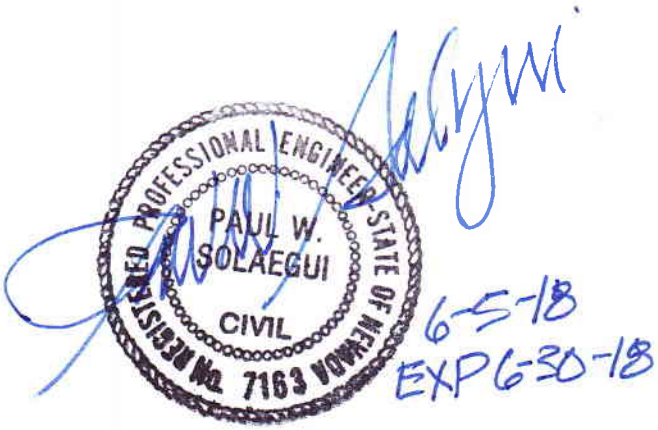
SUMMIT CHRISTIAN CHURCH EXPANSION

TRAFFIC ANALYSIS

JUNE 2018



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715 H Street
Sparks, Nevada 89431
(775) 358-1004

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EXECUTIVE SUMMARY

Summit Christian Church is located in the City of Sparks, Nevada. The project site is located west of Pyramid Highway opposite Golden View Drive. The expansion will occur in two phases north of the existing building. The purpose of this study is to address the project expansion's impact upon the adjacent street network. The Pyramid Highway intersections with Los Altos Parkway, Golden View Drive, and Sparks Boulevard/Highland Ranch Parkway have been identified for peak hour capacity analysis for the existing, existing plus phase 1, 2021 base, and 2021 base plus phase 1 and 2 scenarios. The peak hour analysis is for the standard weekday AM and PM peak hours and the Sunday AM peak hour. Phase 1 is anticipated to build out in one year and phase 2 is anticipated to build out by 2021.

Summit Christian Church currently includes a single building containing a chapel with ±1,000 seats. The proposed expansion will include the construction of a new church building with additional parking lots and the repurposing of the existing church building. The phase 1 expansion will include a net increase of 300 seats and the phase 2 expansion will include 500 additional seats. Phase 1 is expected to generate 183 total weekday trips, 9 weekday AM peak hour trips, 8 weekday PM peak hour trips, 555 total Sunday trips, and 183 Sunday AM peak hour trips. Phase 2 is expected to generate 305 total weekday trips, 14 weekday AM peak hour trips, 14 weekday PM peak hour trips, 925 total Sunday trips, and 305 Sunday AM peak hour trips.

Traffic generated by the expanded Summit Christian Church will have some impact on the adjacent street network. The following recommendations are made to mitigate project traffic impacts.

It is recommended that any required signing, striping, or traffic control improvements comply with Nevada Department of Transportation (NDOT) and City of Sparks requirements.

It is recommended that traffic signal timing adjustments at the Highway/Golden View Drive intersection continue to be coordinated with City of Sparks staff during Sunday special events.

INTRODUCTION

STUDY AREA

Summit Christian Church is located in the City of Sparks, Nevada. The project site is located west of Pyramid Highway opposite Golden View Drive. The approximate location of the project site is shown in Figure 1. The expansion will occur in two phases north of the existing building. The purpose of this study is to address the project expansion's impact upon the adjacent street network. The Pyramid Highway intersections with Los Altos Parkway, Golden View Drive, and Sparks Boulevard/Highland Ranch Parkway have been identified for peak hour capacity analysis for the existing, existing plus phase 1, 2021 base, and 2021 base plus phase 1 and 2 scenarios. The peak hour analysis is for the standard weekday AM and PM peak hours and the Sunday AM peak hour. Phase 1 is anticipated to build out in one year and phase 2 is anticipated to build out by 2021.

EXISTING AND PROPOSED LAND USES

Summit Christian Church currently includes a single building containing a chapel with ±1,000 seats and associated parking lots and access roadways. Adjacent properties generally consist of residential dwelling units to the south and east and undeveloped land to the north and west. The proposed expansion will include the construction of a new church building with additional parking lots and the repurposing of the existing church building. The phase 1 expansion will include a net increase of 300 seats and phase 2 expansion will include 500 additional seats.

EXISTING AND PROPOSED ROADWAYS AND INTERSECTIONS

Pyramid Highway is a four-lane roadway with two through lanes in each direction in the vicinity of the key intersections. The speed limit is posted for 55 miles per hour in the vicinity of the site. Roadway improvements generally include bicycle lanes and paved shoulders with white striped edge lines on both sides of the roadway. The roadway contains raised center medians north and south of Los Altos Parkway and north of Sparks Boulevard and striped left turn lanes north and south of at Golden View Drive and south of Sparks Boulevard. A center barrier rail exists between Golden View Drive and Sparks Boulevard.

Los Altos Parkway is a four-lane roadway with two through lanes in each direction east and west of Pyramid Highway. The speed limit is posted for 35 miles per hour east of Pyramid Highway. Roadway improvements include curb, gutter, sidewalk, and bike lanes on both sides of the street and a raised center median. Median openings with left turn pockets exist at major intersections.

Golden View Drive is a two-lane roadway with one through lane in each direction east of Pyramid Highway. The speed limit is posted for 25 miles per hour. Roadway improvements include curb and gutter on both sides of the streets and a striped centerline. The main access roadway for the church exists west of Pyramid Highway opposite Golden View Drive. The main access roadway contains one ingress lane and three egress lanes. Roadway improvements include curb and gutter on both sides of the streets and a striped centerline.

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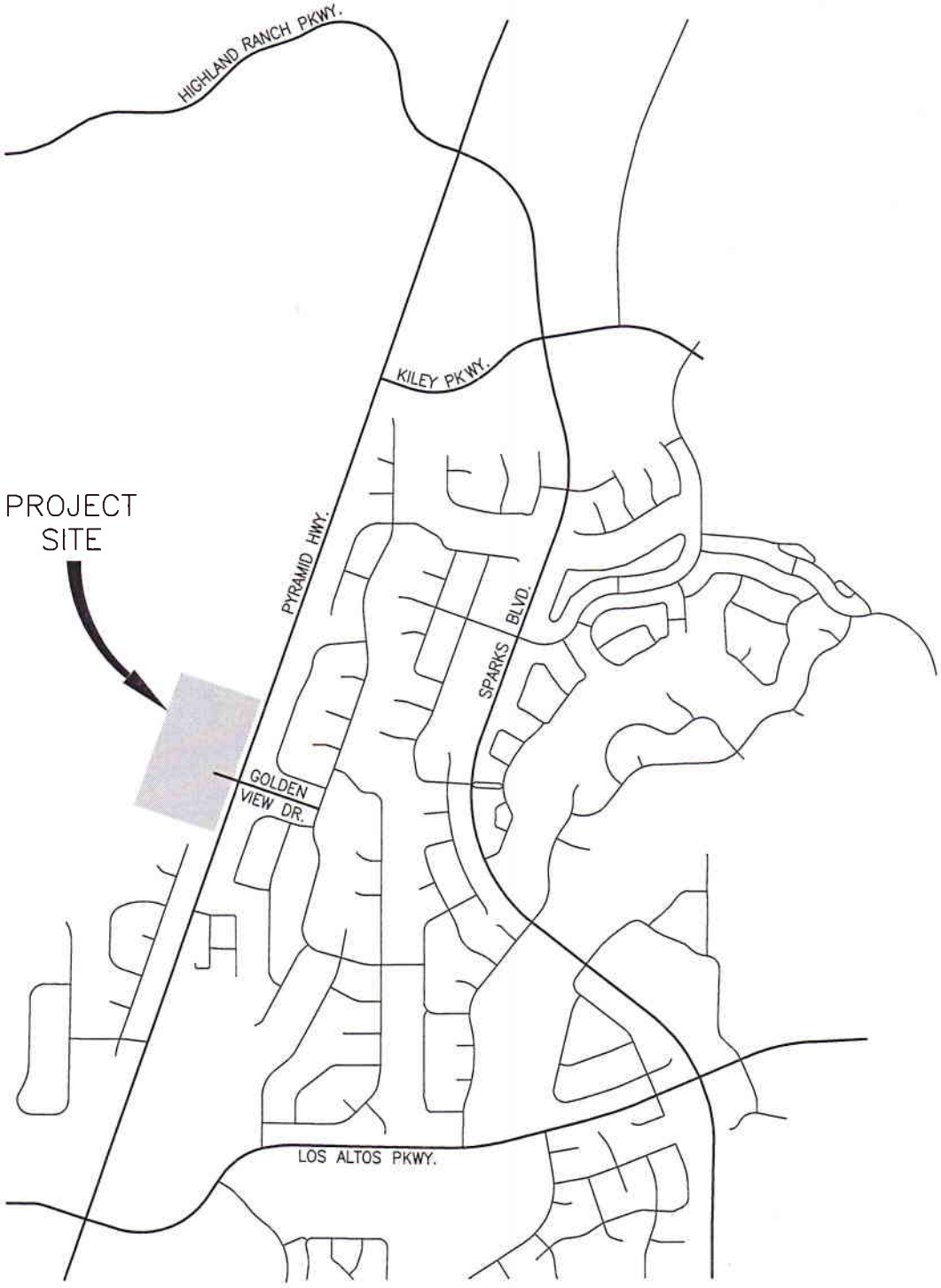

SUMMIT CHRISTIAN CHURCH EXPANSION

VICINITY MAP
FIGURE 1

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Sparks Boulevard is a four-lane roadway with two through lanes in each direction east of Pyramid Highway. The speed limit is posted for 40 miles per hour. Roadway improvements include curb, gutter, sidewalk, and bike lanes on both sides of the street and a raised center median. Median openings with left turn pockets exist at major intersections.

Highland Ranch Parkway is a two-lane roadway with one through lane in each direction west of Pyramid Highway. The speed limit is posted for 45 miles per hour. Roadway improvements include paved and graded shoulders with white striped edgelines and a yellow striped centerline.

The Pyramid Highway/Los Altos Parkway intersection is a signalized four-leg intersection with protected phasing for all left turn movements. The north and south approaches each contain dual left turn lanes, two through lanes, and one right turn lane. The east approach contains dual left turn lanes, one through lane, and one free right turn lane with a northbound acceleration lane. The west approach contains dual left turn lanes, one through lane, and one right turn lane. The intersection contains raised corner islands with pedestrian ramps in all quadrants and pedestrian crosswalks across all approaches.

The Pyramid Highway/Golden View Drive intersection is a signalized four-leg intersection with protected phasing for the northbound and southbound left turn movements. The north and south approaches each contain one left turn lane, two through lanes, and one right turn lane. The west approach contains one left turn lane, one through lane, and one right turn lane. The east approach contains one left turn lane and one shared through-right turn lane. The intersection contains pedestrian ramps in all quadrants and pedestrian crosswalks across all approaches.

The Pyramid Highway/Sparks Boulevard/Highland Ranch Parkway intersection is a signalized four-leg intersection with protected phasing for all left turn movements. The north approach contains dual left turn lanes, two through lanes, and one right turn lane. The south approach contains one left turn lane, two through lanes, and one right turn lane. The east approach contains dual left turn lanes, one through lane, and one free right turn lane with a northbound acceleration lane. The west approach contains one left turn lane and one shared through-right turn lane with a southbound acceleration lane. The intersection contains raised corner islands with pedestrian ramps in all quadrants and pedestrian crosswalks across all approaches.

TRIP GENERATION

In order to assess the magnitude of traffic impacts of the proposed expansion on the adjacent street network, trip generation rates and peak hours had to be determined. Trip generation rates were obtained from the *Ninth Edition of ITE Trip Generation* (2012) for Land Use 560 "Church". Trip generation was calculated for a typical weekday and the weekday peak hours occurring between 7:00 AM and 9:00 AM and 4:00 PM and 6:00 PM which correspond to the peak hours of adjacent street traffic. Trip generation was also calculated for a typical Sunday and the Sunday peak hour occurring between 9:45 AM and 10:45 AM which corresponds to the peak hour of the church.

The proposed church expansion will include the construction of a new church building and the repurposing of the existing building. Phase 1 will include a 300 seat expansion and the phase 2 expansion will include 500 additional seats. Table 1 shows a summary of the weekday and Sunday average daily traffic (ADT) and peak hour volumes generated by phases 1 and 2.

TABLE 1
TRIP GENERATION

	WEEKDAY					SUNDAY		
ITE LAND USE	ADT	AM IN	AM OUT	PM IN	PM OUT	ADT	AM IN	AM OUT
Phase 1 - Church (300 Seats)	183	6	3	4	4	555	91	92
Phase 2 - Church (500 Seats)	305	9	5	7	7	925	152	153
Phase 1 and 2	488	15	8	11	11	1480	243	245

TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of the project traffic to the key intersections was based on existing peak hour traffic patterns. The anticipated trip distribution is shown on Figure 2. The project trips were subsequently assigned to the key intersections based on this trip distribution. Figure 3A shows the phase 1 trip assignment at the key intersections and Figure 3B shows the phase 2 trip assignment.

EXISTING AND PROJECTED TRAFFIC VOLUMES

Figure 4 shows the existing traffic volumes at the key intersections and accesses for the weekday and Sunday peak hours. The existing weekday peak hour traffic volumes at the Pyramid Highway/Sparks Boulevard/Highland Ranch Parkway intersection were obtained from traffic counts conducted in September of 2017. The peak hour traffic volumes at the remaining intersections were obtained from traffic counts conducted in April of 2018. Figure 5 shows the existing plus phase 1 traffic volumes at the key intersections during the weekday and Sunday peak hours. The existing plus phase 1 traffic volumes were obtained by adding the project trips shown on Figure 3A to the existing traffic volumes shown on Figure 4. Figure 6 shows the 2021 base traffic volumes at the key intersections during the weekday and Sunday peak hours. The 2021 base traffic volumes were estimated by applying a 2.4% average annual growth rate to the existing traffic volumes. The growth rate was derived from 3-year historic traffic count data obtained from the Nevada Department of Transportation's *2016 Annual Traffic Report* for count stations on Pyramid Highway, Sparks Boulevard, and Highland Ranch Parkway. Figure 7 shows the 2021 base plus phase 1 and 2 traffic volumes at the key intersections during the weekday and Sunday peak hours. The 2021 base plus phase 1 and 2 traffic volumes were obtained by adding the project trips shown on Figures 3A and 3B to the 2021 base traffic volumes shown on Figure 6.

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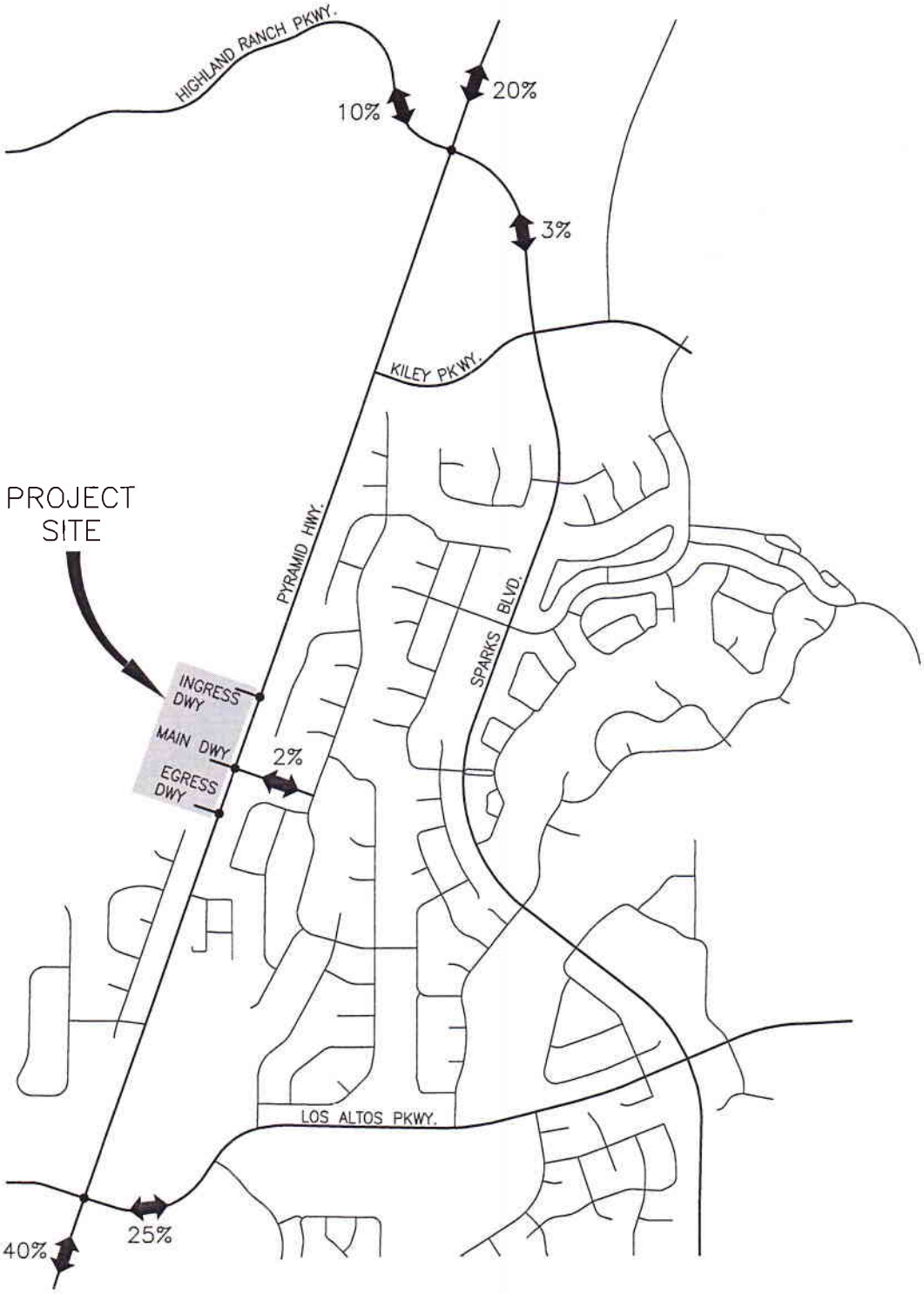

SUMMIT CHRISTIAN CHURCH EXPANSION

TRIP DISTRIBUTION
FIGURE 2

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LEGEND
– WEEKDAY AM PEAK HOUR
(–) WEEKDAY PM PEAK HOUR
[–] SUNDAY AM PEAK HOUR

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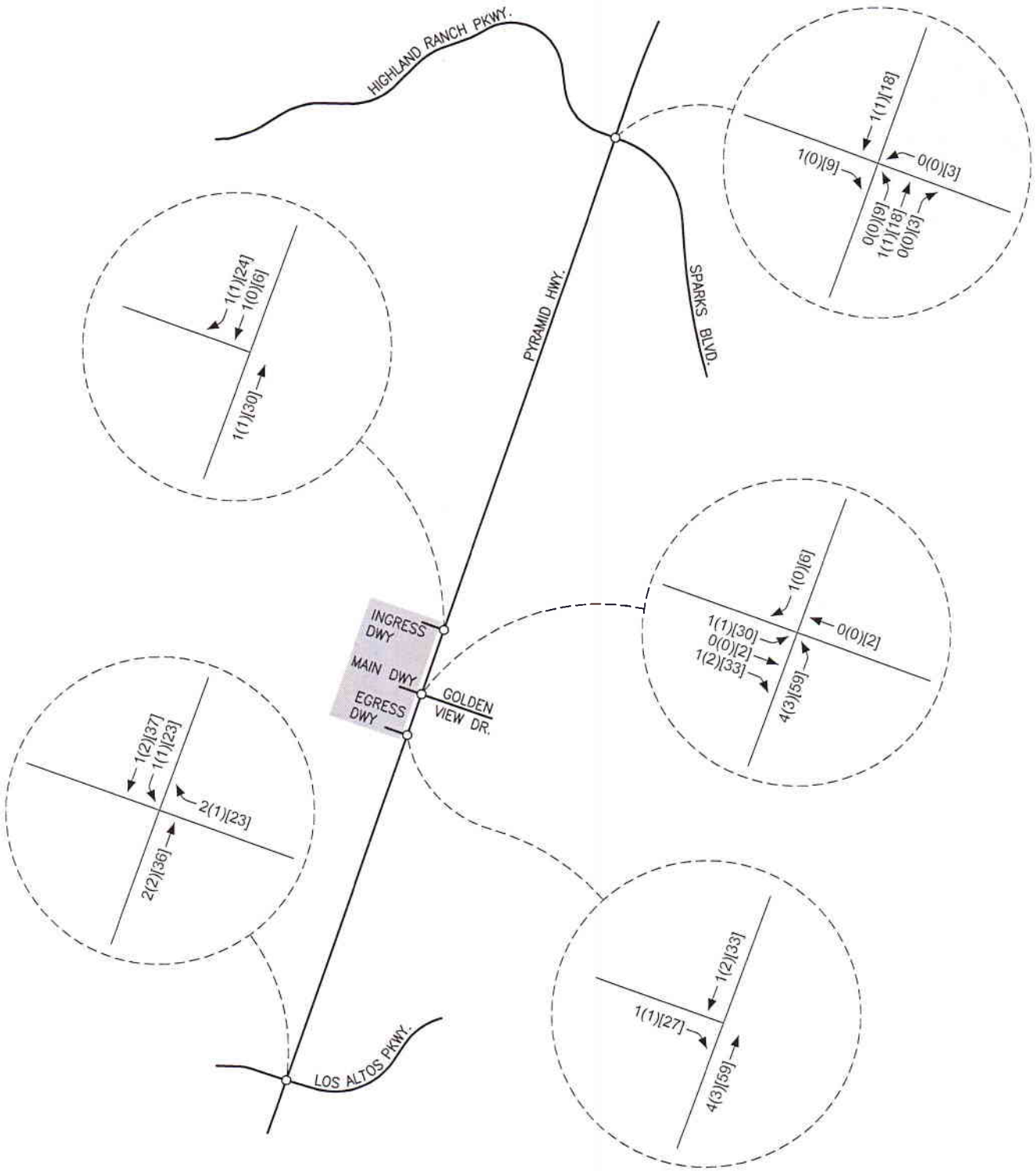

SUMMIT CHRISTIAN CHURCH EXPANSION

PHASE 1 TRIP ASSIGNMENT
FIGURE 3A

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LEGEND
– WEEKDAY AM PEAK HOUR
(–) WEEKDAY PM PEAK HOUR
[–] SUNDAY AM PEAK HOUR

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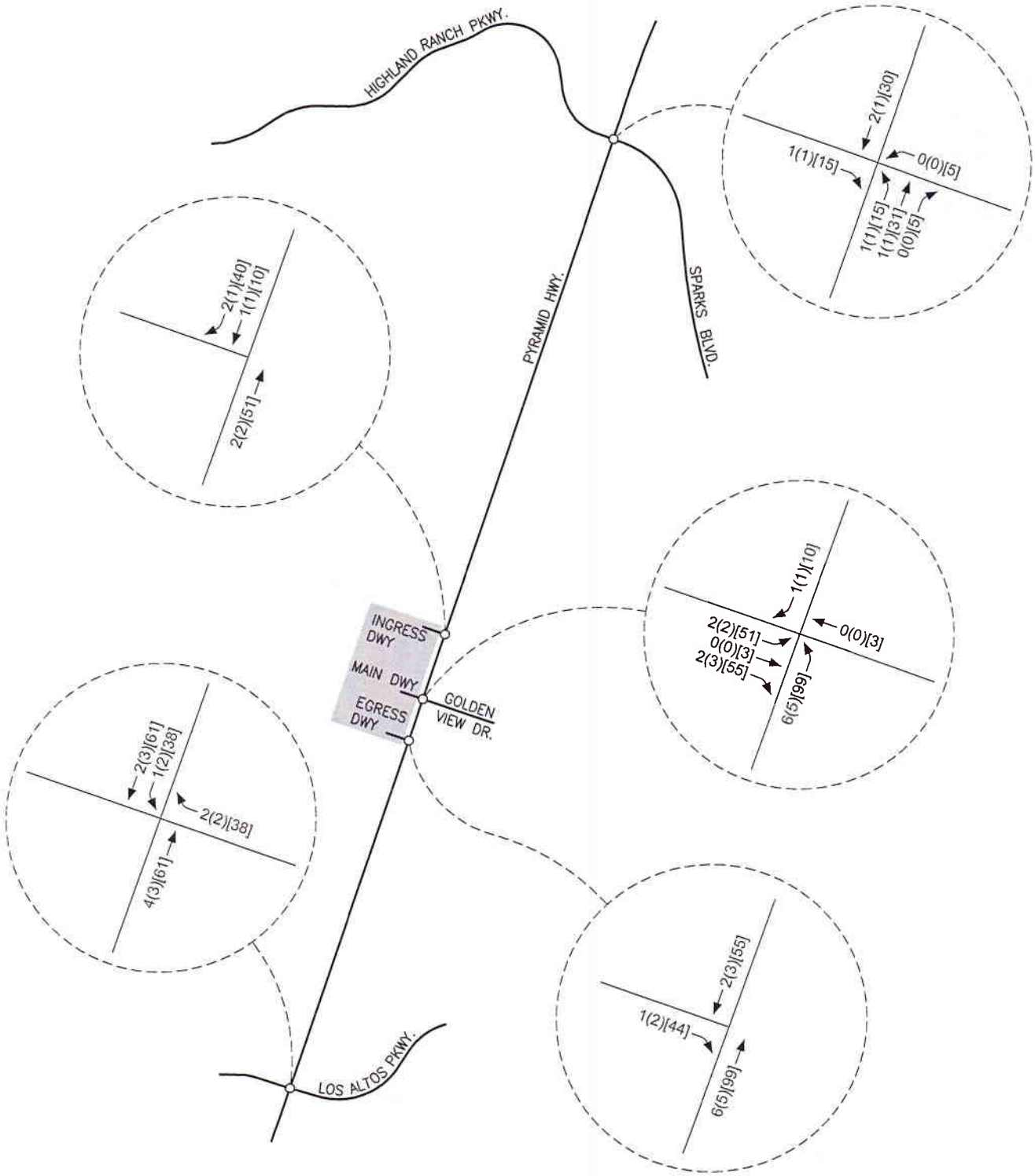

SUMMIT CHRISTIAN CHURCH EXPANSION

PHASE 2 TRIP ASSIGNMENT
FIGURE 3B

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LEGEND
– WEEKDAY AM PEAK HOUR
(–) WEEKDAY PM PEAK HOUR
[–] SUNDAY AM PEAK HOUR

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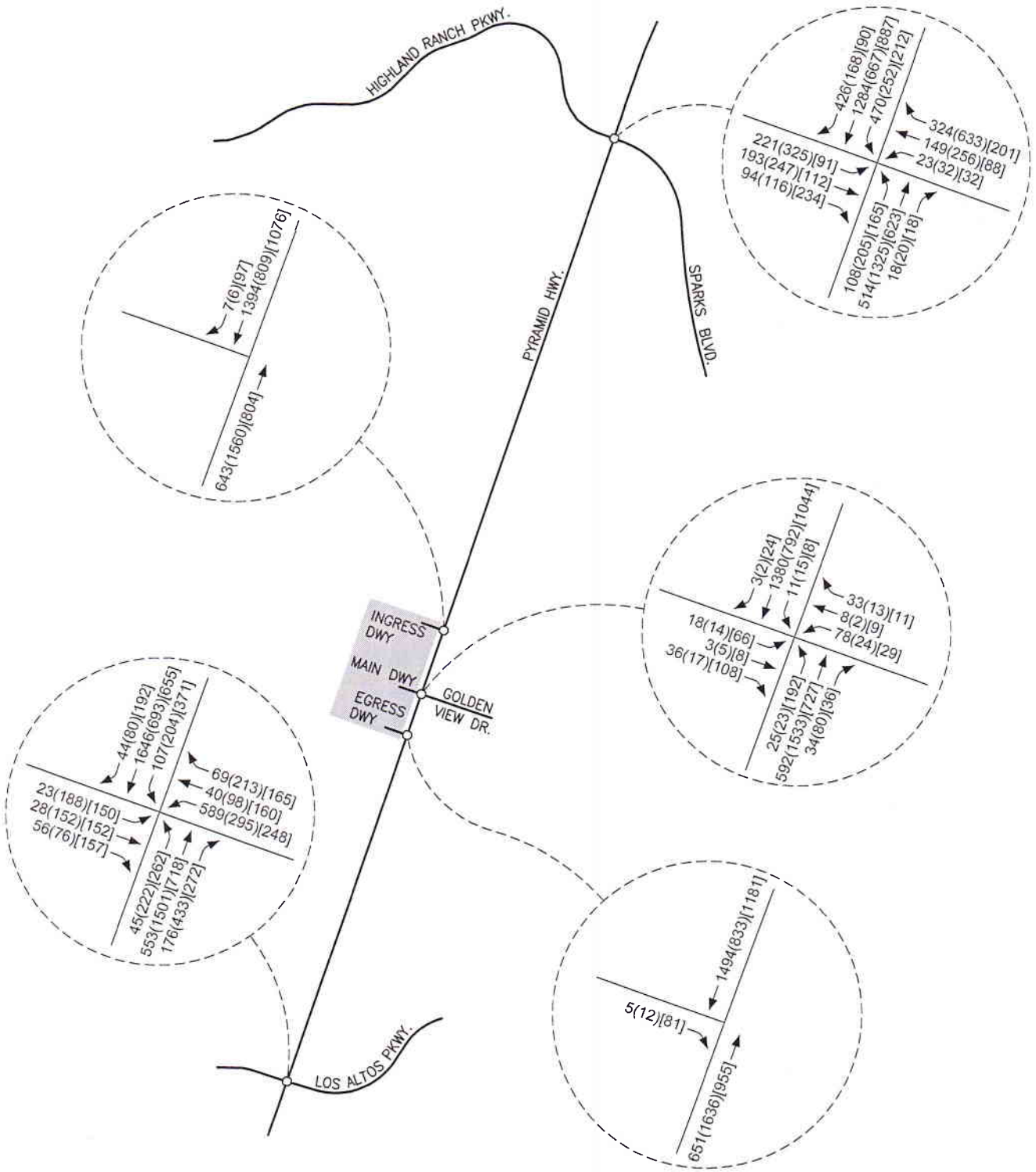

SUMMIT CHRISTIAN CHURCH EXPANSION

EXISTING TRAFFIC VOLUMES
FIGURE 4

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LEGEND
– WEEKDAY AM PEAK HOUR
(–) WEEKDAY PM PEAK HOUR
[–] SUNDAY AM PEAK HOUR

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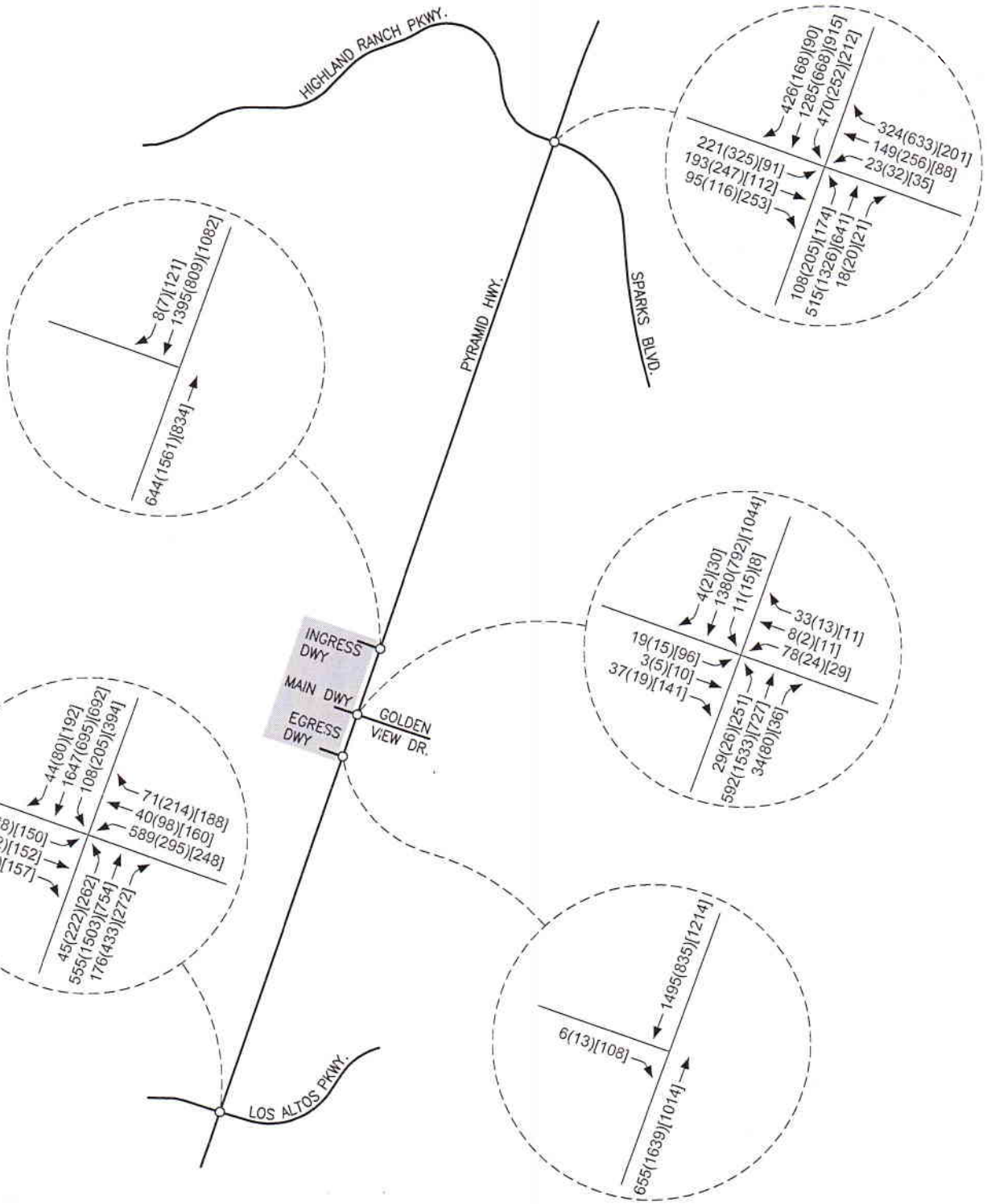

SUMMIT CHRISTIAN CHURCH EXPANSION
EXISTING PLUS PHASE 1 TRAFFIC VOLUMES
FIGURE 5

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LEGEND
– WEEKDAY AM PEAK HOUR
(–) WEEKDAY PM PEAK HOUR
[–] SUNDAY AM PEAK HOUR

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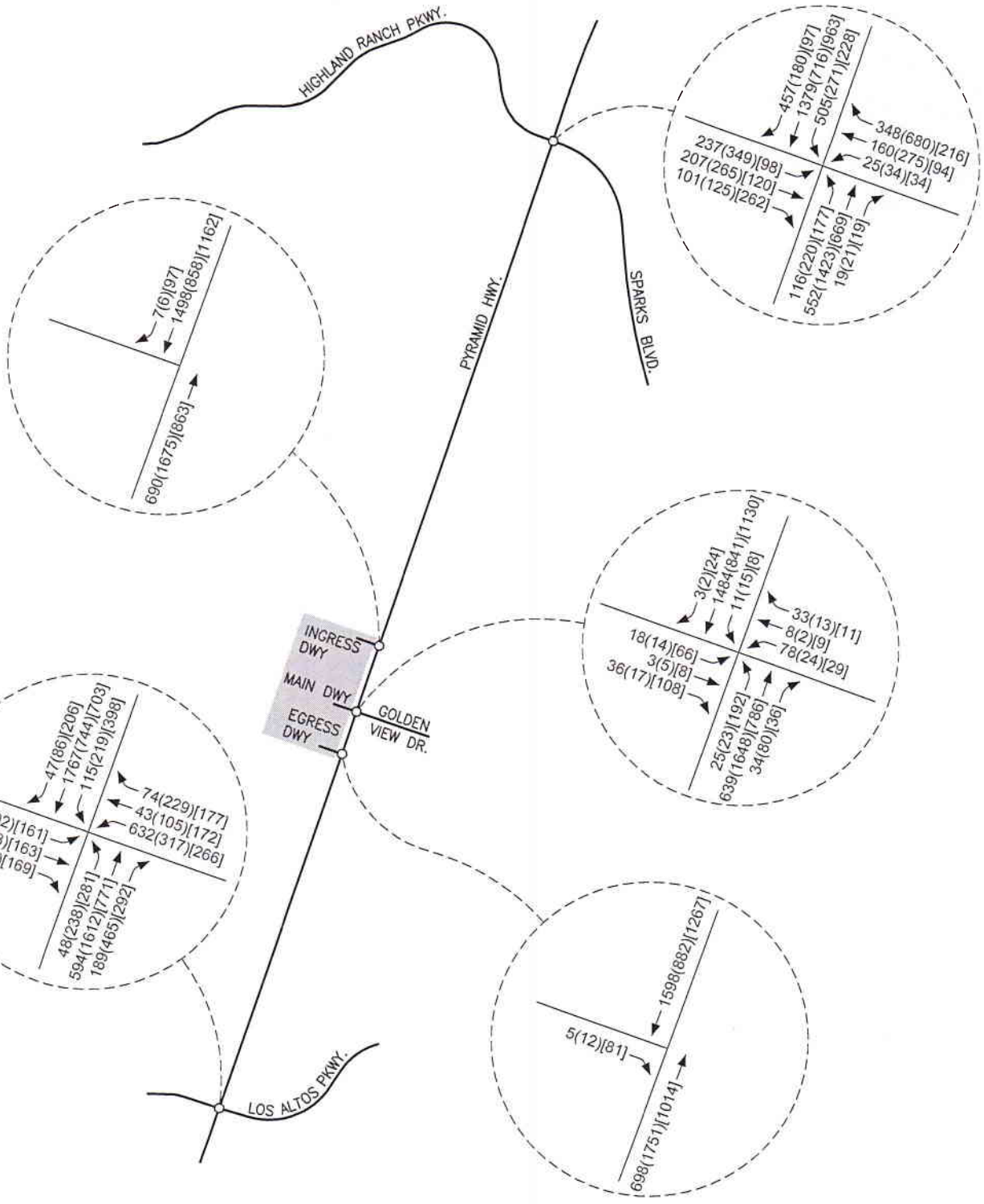

SUMMIT CHRISTIAN CHURCH EXPANSION

2021 BASE TRAFFIC VOLUMES
FIGURE 6

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LEGEND
– WEEKDAY AM PEAK HOUR
(–) WEEKDAY PM PEAK HOUR
[–] SUNDAY AM PEAK HOUR

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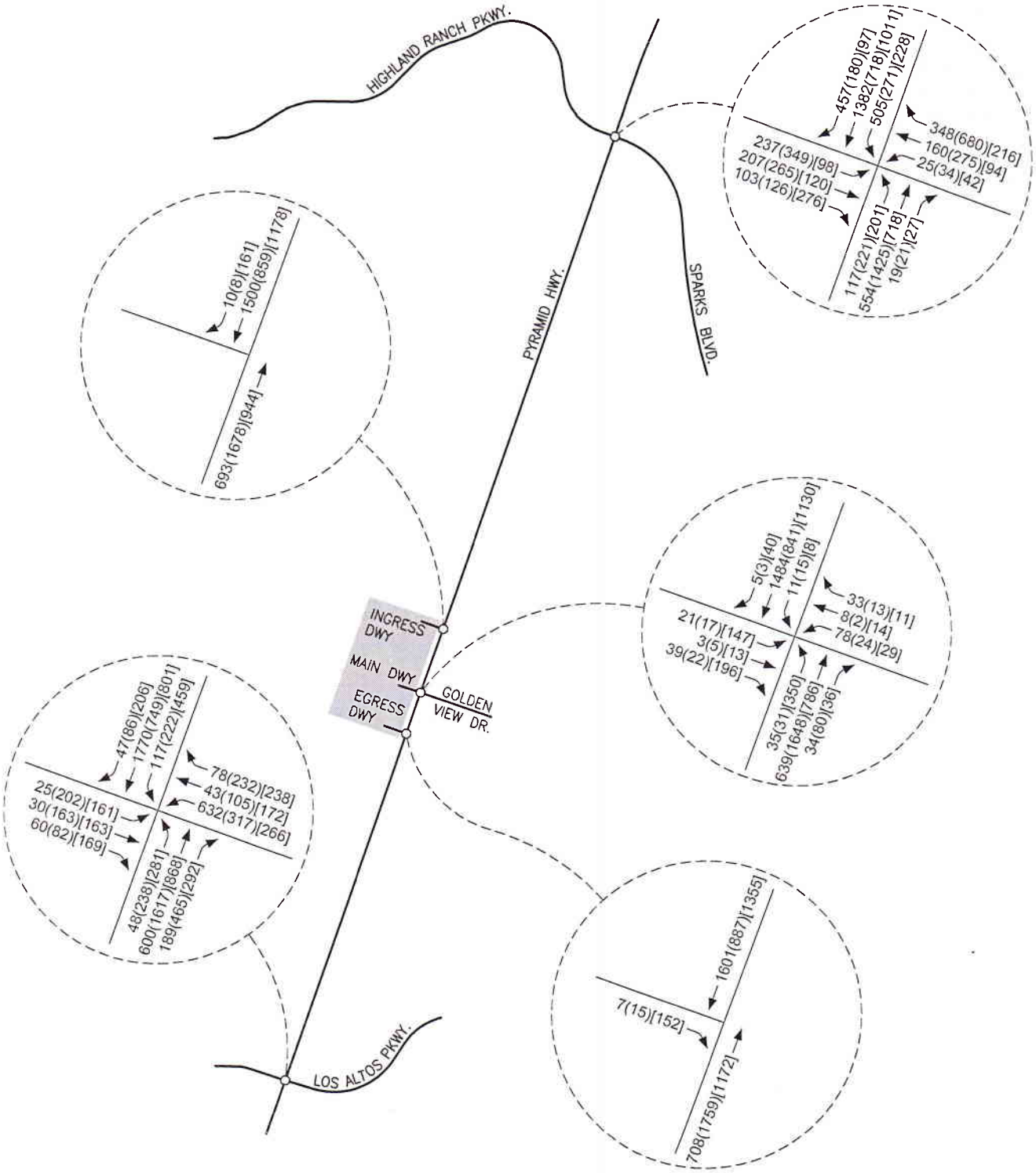

SUMMIT CHRISTIAN CHURCH EXPANSION

2021 BASE PLUS PHASE 1 AND 2 TRAFFIC VOLUMES

FIGURE 7

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INTERSECTION CAPACITY ANALYSIS

The key intersections were analyzed for capacity based on procedures presented in the *Highway Capacity Manual (6th Edition)*, prepared by the Transportation Research Board, for signalized intersections using the latest version of the Highway Capacity Software.

The result of capacity analysis is a level of service (LOS) rating for each signalized intersection. Level of service is a qualitative measure of traffic operating conditions where a letter grade "A" through "F", corresponding to progressively worsening traffic operation, is assigned to the signalized intersection.

Level of service for signalized intersections is stated in terms of the average control delay per vehicle for a peak 15 minute analysis period. The level of service criteria for signalized intersections is shown in Table 2.

TABLE 2
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SEC)
A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

Table 3 shows a summary of the level of service and delay results at the key intersections for the existing and existing plus phase 1 scenarios. The intersection capacity worksheets are included in the Appendix.

TABLE 3
INTERSECTION LEVEL OF SERVICE AND DELAY RESULTS
EXSTING AND EXISTING PLUS PHASE 1 SCENARIOS

	EXISTING			EXISTING + PHASE 1		
INTERSECTION	WEEKDAY AM	WEEKDAY PM	SUNDAY AM	WEEKDAY AM	WEEKDAY PM	SUNDAY AM
Pyramid/Los Altos	D36.4	D38.8	C34.5	D36.4	D38.9	C34.5
Pyramid/Sparks/Highland Ranch	C34.4	D47.7	C28.2	C34.4	D47.7	C28.4
Pyramid/Golden View	B17.4	B17.0	C27.9	B17.4	B17.1	C28.7

Table 4 shows a summary of the intersection level of service and delay results for the 2021 base and 2021 base plus Phase 1 and 2 scenarios. The intersection capacity worksheets are included in the Appendix.

TABLE 4
INTERSECTION LEVEL OF SERVICE AND DELAY RESULTS
2021 BASE AND 2021 BASE PLUS PHASE 1 AND 2 SCENARIOS

	2021 BASE			2021 BASE + PHASE 1 AND 2		
INTERSECTION	WEEKDAY AM	WEEKDAY PM	SUNDAY AM	WEEKDAY AM	WEEKDAY PM	SUNDAY AM
Pyramid/Los Altos	D44.4	D44.1	D35.3	D44.6	D44.4	D36.2
Pyramid/Sparks/Highland Ranch	D37.2	D54.6	C28.9	D37.3	D54.6	C29.5
Pyramid/Golden View	B18.0	B18.3	C30.2	B18.2	B18.5	C33.8

Pyramid Highway/Los Altos Parkway Intersection

The Pyramid Highway/Los Altos Parkway intersection was analyzed as a signalized four-leg intersection with the existing approach lanes and phasing for all scenarios. The intersection currently operates at LOS D with a delay of 36.4 seconds per vehicle during the weekday AM peak hour, LOS D with a delay of 38.8 seconds per vehicle during the weekday PM peak hour, and LOS C with a delay of 34.5 seconds per vehicle during the Sunday AM peak hour. For the existing plus phase 1 traffic volumes the intersection continues to operate at the same levels of service during the weekday AM, weekday PM, and Sunday AM peak hours with either no or slight increases in delay. For the 2021 base traffic volumes the intersection operates at LOS D with a delay of 44.4 seconds per vehicle during the weekday AM peak hour, LOS D with a delay of 44.1 seconds per vehicle during the weekday PM peak hour, and LOS D with a delay of 35.3 seconds per vehicle during the Sunday AM peak hour. For the 2021 base plus phase 1 and 2 traffic volumes the intersection continues to operate a LOS D during the weekday AM, weekday PM, and Sunday AM peak hours with slight increases in delay.

The project will add traffic to the southbound left turn movement at the Pyramid Highway/Los Altos Parkway intersection. Storage and deceleration requirements were subsequently reviewed for the southbound left turn lane. NDOT's *Access Management System and Standards* (2017 Edition) indicate that storage length should be based on the 95th percentile queue length obtained from operational analysis. The operational analysis for the 2021 base plus phase 1 and 2 traffic volumes indicates a 95th percentile queue length of ±250 feet for the left turn movement. The access management standards also indicate that 515 feet of deceleration length is required for the left turn lane based on the 55 mile per hour speed limit on Pyramid Highway for a total pocket length of 765 feet. The existing southbound left turn lane is approximately 775 feet long which will accommodate the buildout traffic volumes.

Pyramid Highway/Sparks Boulevard/Highland Ranch Parkway Intersection

The Pyramid Highway/Sparks Boulevard/Highland Ranch Parkway intersection was analyzed as a signalized four-leg intersection with the existing approach lanes and phasing for all scenarios. The intersection currently operates at LOS C with a delay of 34.4 seconds per vehicle during the weekday AM peak hour, LOS D with a delay of 47.7 seconds per vehicle during the weekday PM peak hour, and LOS C with a delay of 28.2 seconds per vehicle during the Sunday AM peak hour. For the existing plus phase 1 traffic volumes the intersection continues to operate at the same levels of service during the weekday AM, weekday PM, and Sunday AM peak hours with either no or slight increases in delay. For the 2021 base traffic volumes the intersection operates at LOS D with a delay of 37.2 seconds per vehicle during the weekday AM peak hour, LOS D with a delay of 54.6 seconds per vehicle during the weekday PM peak hour, and LOS C with a delay of 28.9 seconds per vehicle during the Sunday AM peak hour. For the 2021 base plus phase 1 and 2 traffic volumes the intersection continues to operate a LOS D during the weekday AM, weekday PM, and Sunday AM peak hours with either no or slight increases in delay.

The project will add traffic to the northbound left turn movement at the Pyramid Highway/Sparks Boulevard/Highland Ranch Parkway intersection. Storage and deceleration requirements were subsequently reviewed for the northbound left turn lane. NDOT's *Access Management System and Standards* (2017 Edition) indicate that storage length should be based on the 95th percentile queue length obtained from operational analysis. The operational analysis for the 2021 base plus phase 1 and 2 traffic volumes indicates a 95th percentile queue length of ±300 feet for the left turn movement. The access management standards also indicate that 515 feet of deceleration length is required for the left turn pocket based on the 55 mile per hour speed limit on Pyramid Highway for a total length of 815 feet. The existing northbound left turn lane is approximately 825 feet long which will accommodate the buildout traffic volumes.

Pyramid Highway/Golden View Drive Intersection

The Pyramid Highway/Golden View Drive intersection was analyzed as a signalized four-leg intersection with the existing approach lanes and phasing for all scenarios. The intersection currently operates at LOS B with a delay of 17.4 seconds per vehicle during the weekday AM peak hour, LOS B with a delay of 17.0 seconds per vehicle during the weekday PM peak hour, and LOS C with a delay of 27.9 seconds per vehicle during the Sunday AM peak hour. For the existing plus phase 1 traffic volumes the intersection operates at LOS B with a delay of 17.4 seconds per vehicle during the weekday AM peak hour, LOS B with a delay of 17.1 seconds per vehicle during the weekday PM peak hour, and LOS C with a delay of 28.7 seconds per vehicle during the Sunday AM peak hour. For the 2021 base traffic volumes the intersection operates at LOS B with a delay of 18.0 seconds per vehicle during the weekday AM peak hour, LOS B with a delay of 18.3 seconds per vehicle during the weekday PM peak hour, and LOS C with a delay of 30.2 seconds per vehicle during the Sunday AM peak hour. For the 2021 base plus phase 1 and 2 traffic volumes the intersection operates at LOS B with a delay of 18.2 seconds per vehicle during the weekday AM peak hour, LOS B with a delay of 18.5 seconds per vehicle during the weekday PM peak hour, and LOS C with a delay of 33.8 seconds per vehicle during the Sunday AM peak hour.

The project will add traffic to the northbound left turn movement at the Pyramid Highway/Golden View Drive intersection. Storage and deceleration requirements were subsequently reviewed for the northbound left turn lane. NDOT's *Access Management System and Standards* (2017 Edition) indicate that storage length should be based on the 95th percentile queue length obtained from operational analysis. The operational analysis for the 2021 base plus phase 1 and 2 traffic volumes indicates a 95th percentile queue length of ±50 feet for the left turn movement during the weekday AM and PM peak hours and ±370 feet during the Sunday peak hour. The access management standards also indicate that 515 feet of deceleration length is required for the left turn pocket based on the 55 mile per hour speed limit on Pyramid Highway for a total length of 565 feet during the weekday AM and PM peak hours and 885 feet during the Sunday peak hour. The existing northbound left turn lane is approximately 600 feet long which will accommodate the buildout traffic volumes during the weekday AM and PM peak hours but not during the Sunday peak hour.

The 2021 base plus phase 1 and 2 traffic volumes indicate that the northbound left turn movement will serve 350 vehicles during the Sunday peak hour. This Sunday left turn volume exceeds the 300 vehicle per hour rule-of-thumb threshold for dual left turn lanes. However, dual left turn lanes are not recommended due to 1) the intersection operates a satisfactory Sunday LOS C operation with a single northbound left turn lane, 2) a center two-way left turn lane exists south of the northbound left turn pocket which provides additional storage/deceleration length during Sunday services, and 3) the 350 vehicle per hour left turn volume is only anticipated during one or two hours of a typical week. In addition, it is our understanding that church personnel currently work with City of Sparks staff to provide alternate traffic signal timing at the intersection during special Sunday events. It is recommended that traffic signal timing adjustments at the Highway/Golden View Drive intersection continue to be coordinated with City of Sparks staff during the special events.

TRAFFIC CRASH REVIEW

The Pyramid Highway intersections with Los Altos Parkway, Golden View Drive, and Sparks Boulevard/Highland Ranch Parkway were identified for traffic crash review. Traffic crash data was obtained from Nevada Department of Transportation Traffic Safety Engineering for the September 1, 2014 to September 1, 2017 study period. The traffic crash data is included in the Appendix. The crash data is discussed below for each intersection.

Pyramid Highway/Los Altos Parkway Intersection

A total of 60 crashes occurred at the Pyramid Highway/Los Altos Parkway intersection during the three-year period with no fatalities reported. The crash type was 33 rear end crashes, 13 angle crashes, 10 non-collisions, 2 sideswipe-overtaking crashes, 1 rear-rear crash, and 1 sideswipe-meeting crash. Based on weekday PM peak hour traffic volumes, the intersection currently experiences 1.3188 accidents per million vehicles entering the intersection. The project is anticipated to increase the occurrence of accidents by 0.0770 accidents per year.

Pyramid Highway/Sparks Boulevard/Highland Ranch Parkway Intersection

A total of 39 crashes occurred at the Pyramid Highway/Sparks Boulevard/Highland Ranch Parkway intersection during the three-year period with no fatalities reported. The crash type was 24 rear end crashes, 11 angle crashes, 2 sideswipe-overtaking crashes, 1 head-on crash, and 1 non-collision. Based on weekday PM peak hour traffic volumes, the intersection currently experiences 0.8388 accidents per million vehicles entering the intersection. The project is anticipated to increase the occurrence of accidents by 0.0184 accidents per year.

Pyramid Highway/Golden View Drive Intersection

A total of 11 crashes occurred at the Pyramid Highway/Golden View Drive intersection during the three-year period with no fatalities reported. The crash type was 7 rear end crashes, 2 non-collisions, 1 angle crash, and 1 head-on crash. Based on weekday PM peak hour traffic volumes, the intersection currently experiences 0.3986 accidents per million vehicles entering the intersection. The project is anticipated to increase the occurrence of accidents by 0.0247 accidents per year.

SITE PLAN REVIEW

A copy of the site plan for the Summit Christian Church Expansion is included in this submittal. The site plan indicates that project access will be provided from Pyramid Highway at the existing main access roadway aligning with Golden View Drive, the existing right-in only access at the project's north boundary, and the existing right-out only access at the project's south boundary. Approximately 30% of the total entering Sunday peak hour traffic utilizes the right-in only access and approximately 31% of the total exiting Sunday peak hour traffic utilizes the right-out only access. It is anticipated that the increased traffic generated by the proposed expansion will utilize the project accesses at these same percentages. The site plan also indicates that additional parking lots will be constructed on the north side of the project site. The existing project access roadways and the existing and proposed parking lots and aisles are anticipated to provide good access and internal circulation.

RECOMMENDATIONS

Traffic generated by the expanded Summit Christian Church will have some impact on the adjacent street network. The following recommendations are made to mitigate project traffic impacts.

It is recommended that any required signing, striping, or traffic control improvements comply with Nevada Department of Transportation (NDOT) and City of Sparks requirements.

It is recommended that traffic signal timing adjustments at the Highway/Golden View Drive intersection continue to be coordinated with City of Sparks staff during Sunday special events.

HORIZONTAL TREX SIDING EQUIPMENT SCREEN

EXTERIOR PLASTER WITH REVEALS

INSULATED WALL PANELS

LEDGER STONE VENEER

TUBE STEEL "TREE" COLUMNS WITH UPLIGHT

ENTRY COURTYARD

ALUMINUM STOREFRONT WINDOW SYSTEM WITH LOW E HIGH PERFORMANCE GLAZING

SOUTH ELEVATION

INSULATED WALL PANELS

EXTERIOR PLASTER WITH REVEALS

COURTYARD BEYOND

WEST ELEVATION

TERRY D. JACOBSON REGISTERED No. 4430 ARCHITECT STATE OF NEVADA

NORTH

SUMMIT CHRISTIAN CHURCH
PHASE 4.0 WORSHIP CENTER

7075 PYRAMID HIGHWAY
SPARKS, NEVADA 89434

J7·Architecture
Creating space. Inspiring people.
20361 Irvine Avenue, Studio B2
Newport Beach, California 92660
949/759-8587 FAX 949/759-9381

BUILDING ELEVATIONS W/ FUTURE OFFICE

REV.	DESCRIPTION	DATE

PROJECT NO.:	19-07
DATE:	12-12-19
SCALE:	1/8"=1'-0"
SHEET NO.:	7

WSUP19-0026
EXHIBIT D

SOUTH ELEVATION

EAST ELEVATION

NORTH ELEVATION

WEST ELEVATION

NORTH

SUMMIT CHRISTIAN CHURCH
PHASE 4.0 WORSHIP CENTER
7075 PYRAMID HIGHWAY
SPARKS, NEVADA 89434

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Newport Beach, California 92660
949/759-8587 FAX 949/759-9381

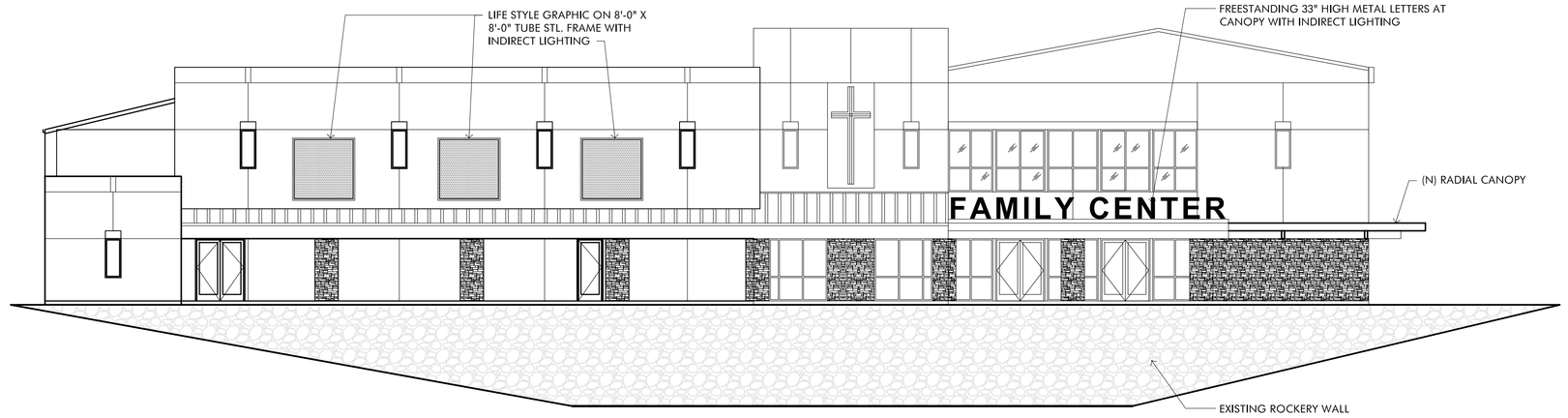
BUILDING
ELEVATIONS

REV.	DESCRIPTION	DATE

PROJECT NO.:	19-07
DATE:	12-12-19
SCALE:	1/8"=1'-0"
SHEET NO.:	6

WSUP19-0026
EXHIBIT D

WSUP19-0026
EXHIBIT D



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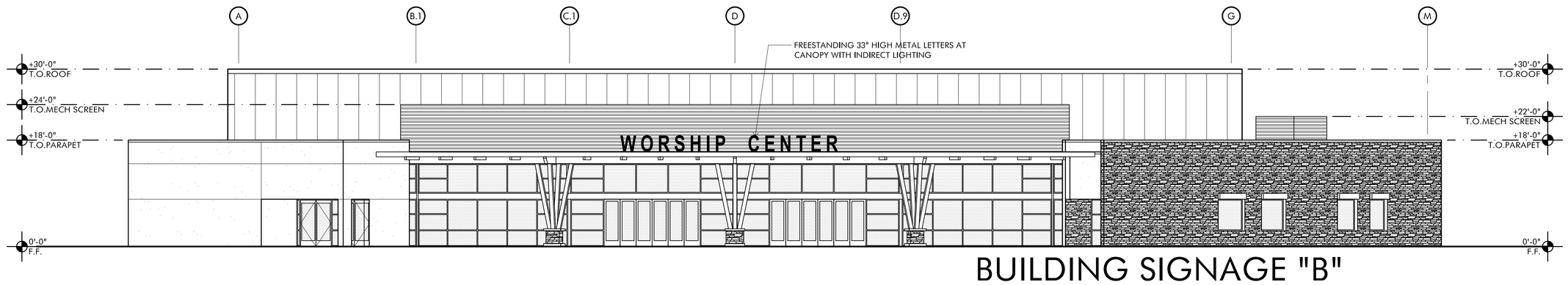

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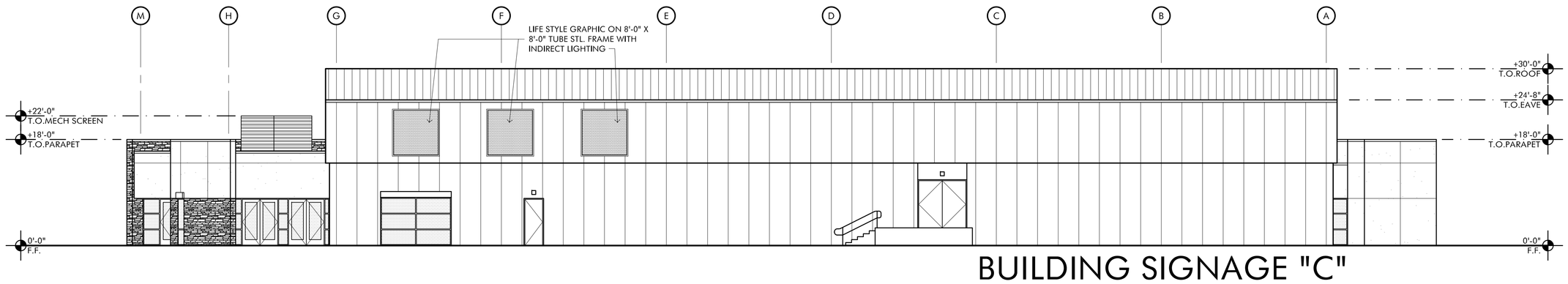
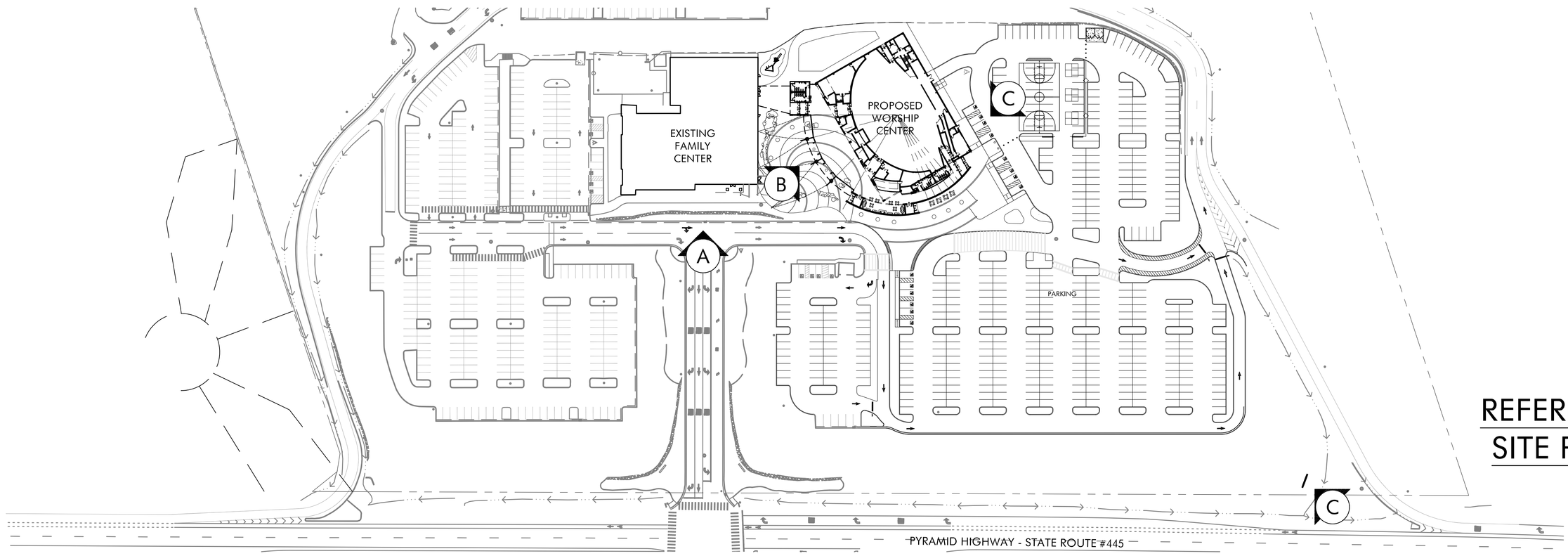


BUILDING SIGNAGE "C"



REFERENCE SITE PLAN

NORTH

SUMMIT CHRISTIAN CHURCH
PHASE 4.0 WORSHIP CENTER

7075 PYRAMID HIGHWAY
SPARKS, NEVADA 89434

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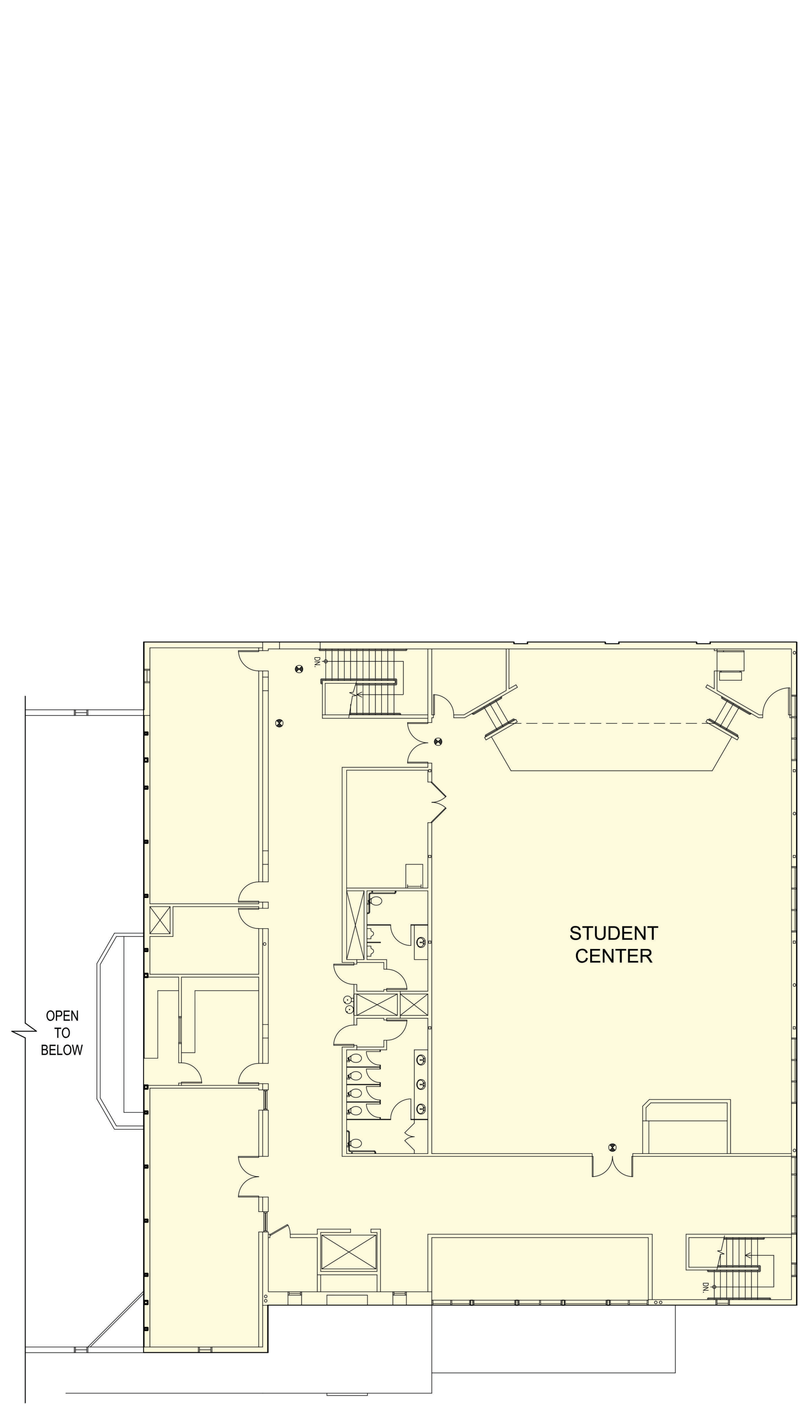
Newport Beach, California 92660
949/759-8587 FAX 949/759-9381

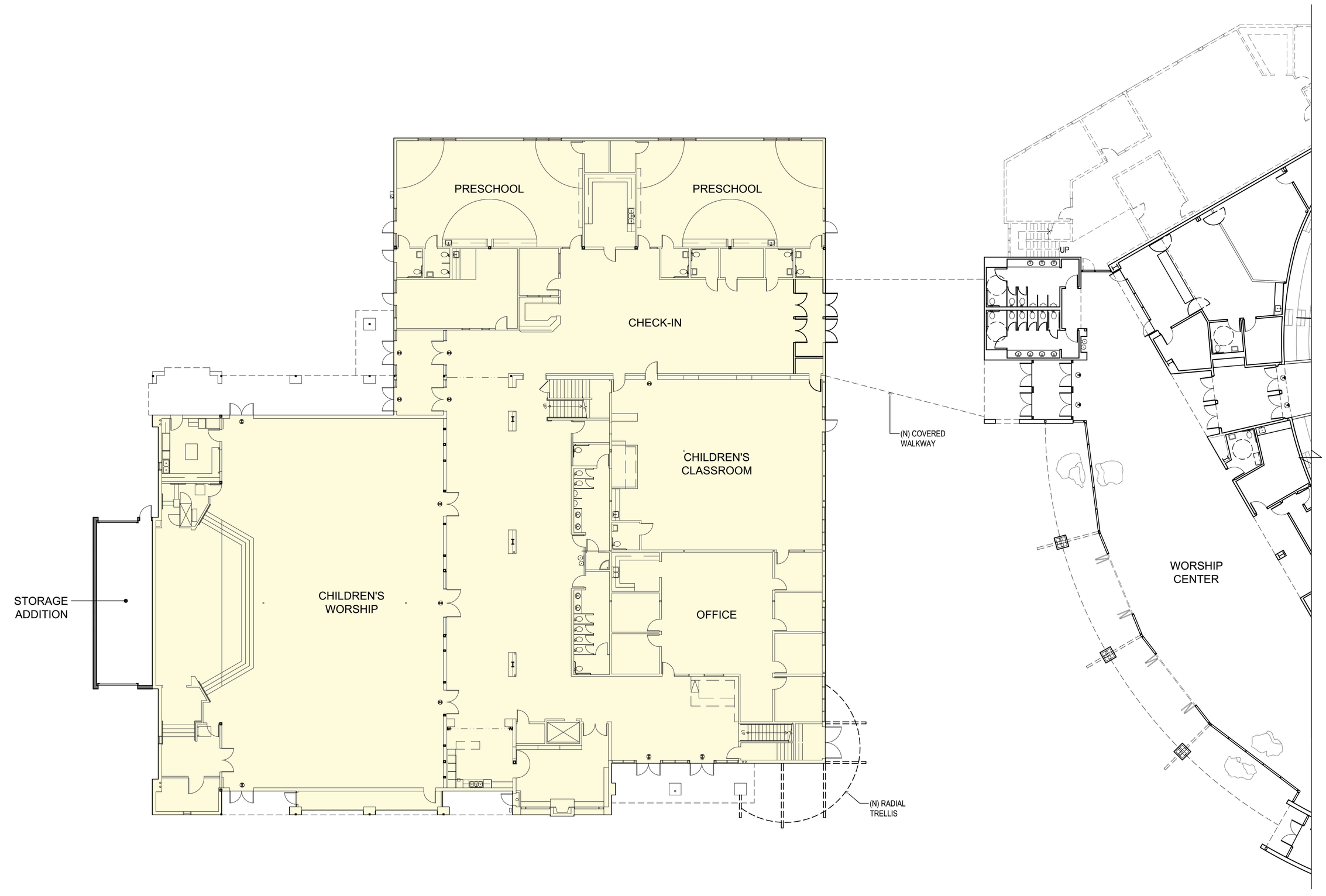
SIGNAGE PROGRAM

REV.	DESCRIPTION	DATE

PROJECT NO.:	19-07
DATE:	12-12-19
SCALE:	1"=40'-0"
SHEET NO.:	1



SECOND FLOOR



FIRST FLOOR

SUMMIT CHRISTIAN CHURCH
PHASE 4.0 WORSHIP CENTER

7075 PYRAMID HIGHWAY
SPARKS, NEVADA 89434

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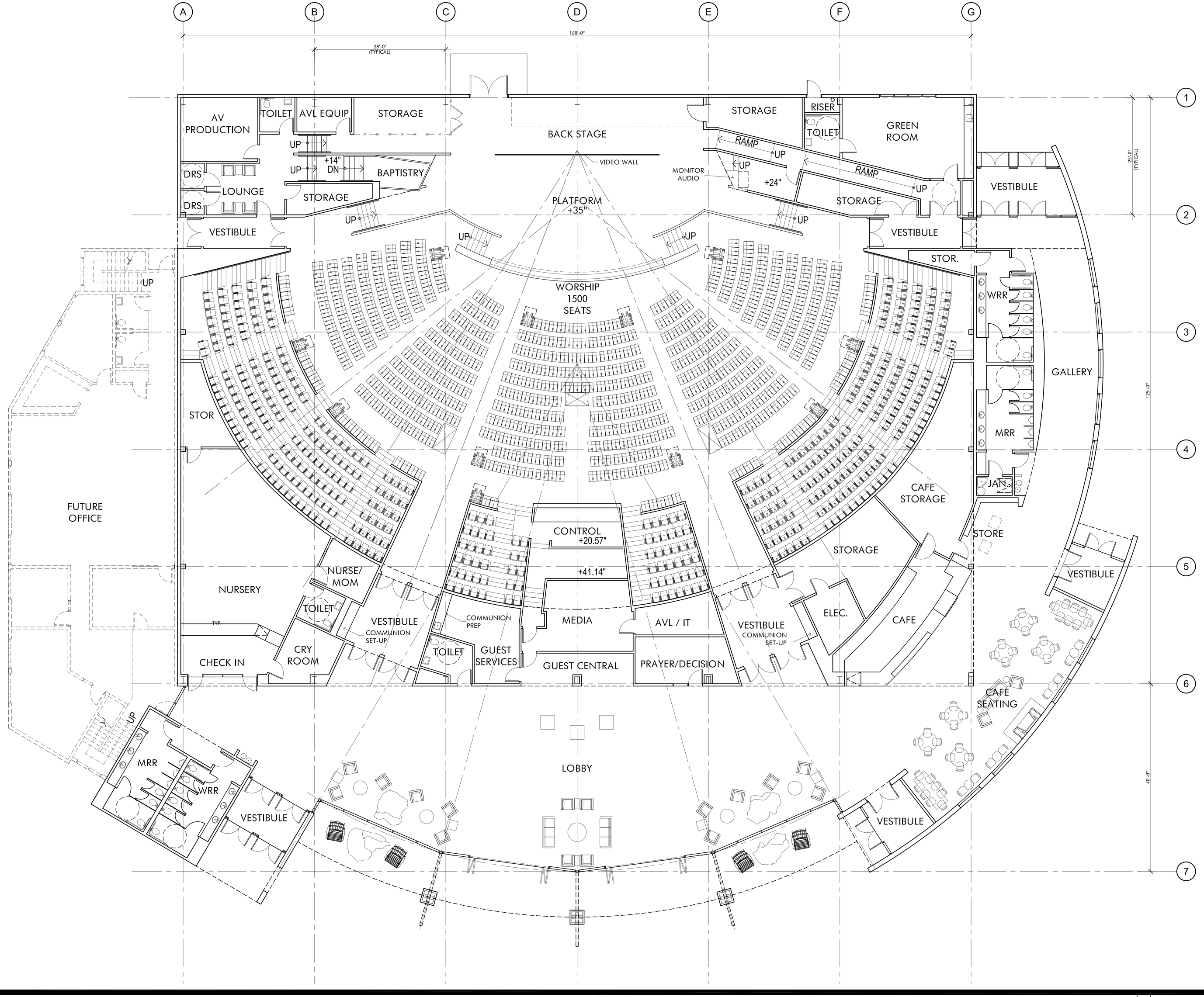
20361 Irvine Avenue, Studio B2
Newport Beach, California 92660
949/759-8587 FAX 949/759-9381

FAMILY CENTER
EXISTING FLOOR PLANS

REV.	DESCRIPTION	DATE

PROJECT NO.:	19-07
DATE:	08-16-19
SCALE:	1/8"=1'-0"
SHEET NO.:	5

WSUP19-0026
EXHIBIT D



TERRY D. JACOBSON
REGISTERED
No. 4430
ARCHITECT
STATE OF NEVADA

SUMMIT CHRISTIAN CHURCH
PHASE 4.0 WORSHIP CENTER

7075 PYRAMID HIGHWAY
SPARKS, NEVADA 89434

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Newport Beach, California 92660
949/759-8587 FAX 949/759-9381

FIRST FLOOR PLAN

REV.	DESCRIPTION	DATE

PROJECT NO.:	19-07
DATE:	08-16-19
SCALE:	1/8"=1'-0"
SHEET NO.:	3

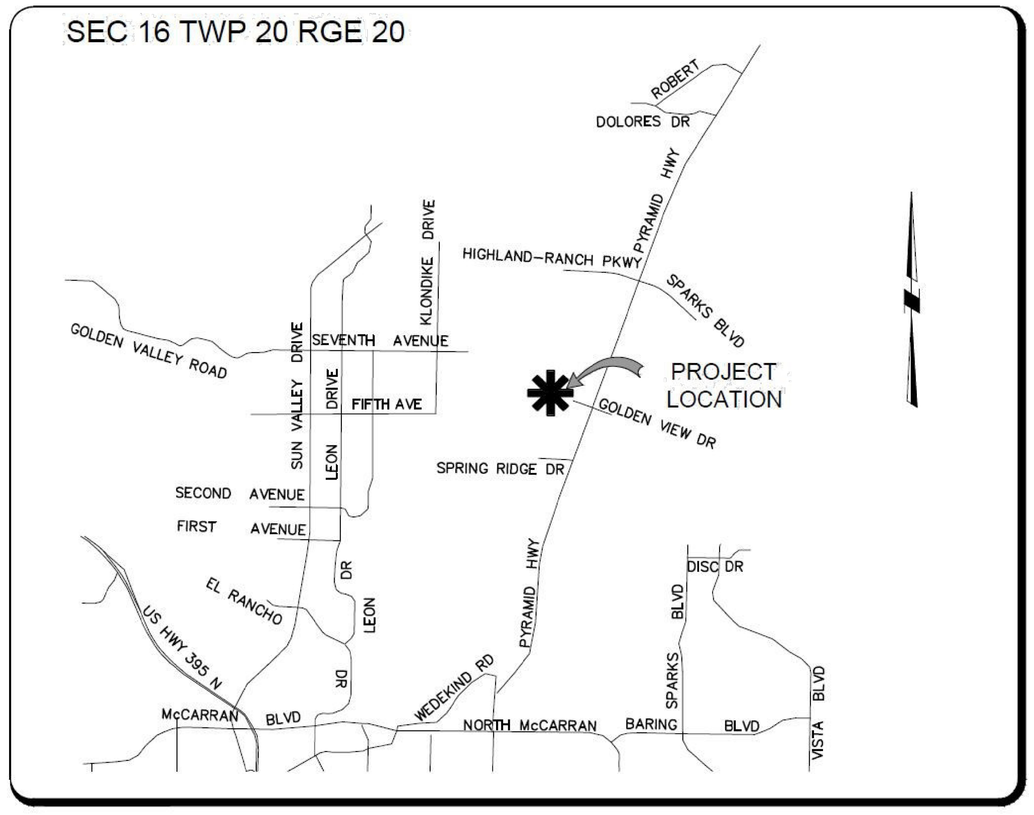
WSUP19-0026
EXHIBIT D

SPECIAL USE PERMIT APPLICATION

SUMMIT CHRISTIAN CHURCH - PHASE 4.0

WASHOE COUNTY, NEVADA

APN: 083-730-13



VICINITY MAP

NOT TO SCALE

SHEET INDEX		
NO.	ID	SHEET TITLE
1	C-1	TITLE SHEET
2	C-2	PRELIMINARY SITE PLAN
3	C-3	PRELIMINARY UTILITY PLAN
4	C-4	EXISTING CONDITIONS SLOPE MAP
5	C-5	PRELIMINARY GRADING PLAN
6	C-6	CROSS SECTIONS
7	C-7	EXISTING AND SITEWIDE LANDSCAPE SUMMARY
8	L1	PRELIMINARY LANDSCAPE PLAN (COLOR)
9	L1	PRELIMINARY LANDSCAPE PLAN
10	L2	PRELIMINARY IRRIGATION PLAN
11	E1.2	SITE LIGHTING & PHOTOMETRIC PLAN

O□ NER/PRO□EC□ LOCA□ION

SUMMIT CHRISTIAN CHURCH
7075 PYRAMID WAY
SPARKS, NV 89436
PHONE: (775) 424-5683

ARCHI□EC□

TERRY JACOBSON
J7 ARCHITECTURE
20361 IRVINE AVE, SUITE B-2
NEWPORT BEACH, CA 92660
PHONE: (949) 759-8587

CI□IL ENGINEER

LONNIE JOHNSON, P.E.
DYER ENGINEERING CONSULTANTS, INC.
9160 DOUBLE DIAMOND PARKWAY
RENO, NEVADA 89521
PHONE: (775) 852-1440

LANDSCAPE ARCHI□EC□

RYAN HANSEN, PLA ASLA
LA STUDIOS NEVADA
1552 C STREET
SPARKS, NV 89431
PHONE: (775) 323-2223

A□□RE□IA□IONS

ABAN	ABANDON
ABC	AGGREGATE BASE COURSE
AC	ASPHALT CONCRETE
ADD	ADDITIONAL
ADJ	ADJACENT
APPROX	APPROXIMATE
APPR	APPROVED
ARV	AIR RELEASE VALVE
AWWA	AMERICAN WATER WORKS ASSOCIATION
BC	BEGIN CURVE
BCR	BEGIN CURB RETURN
BFC	BACK FACE OF CURB
BLDG	BUILDING
BM	BENCH MARK BOT BOTTOM
BSW	BACK OF SIDEWALK
BVC	BEGIN VERTICAL CURVE
CB	CATCH BASIN
CI	CAST IRON
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
CONC	CONCRETE
CONN	CONNECTION
CONT	CONTINUOUS
COORD	COORDINATE
CTR	CENTER
CU	CUBIC
CU IN	CUBIC INCH
CU YD	CUBIC YARD
CULV	CULVERT
DBL	DOUBLE
DEP	DEPRESSED
DTL	DETAIL
DI	DROP INLET
DIA	DIAMETER
DW	DOMESTIC WATER
DWG	DRAWING
E	EASTING
EX OR EXIST	EXISTING
EA	EACH
EC	END CURVE
ECR	END CURB RETURN
ECC	ECCENTRIC
EL	ELEVATION
ELEC	ELECTRIC
ENGR	ENGINEER
EVC	END OF VERTICAL CURVE
EW	EACH WAY
EXP	JT EXPANSION JOINT
FES	FLARED END SECTION
FFC	FRONT FACE OF CURB
FG	FINISH GRADE
FH	FIRE HYDRANT
FIG	FIGURE
FL	FLOWLINE
FPS	FEET PER SECOND
FT	FOOT OR FEET
G	GAS
GAL	GALLON
GALV	GALVANIZED
GB	GRADE BREAK
GPD	GALLONS PER DAY
HORIZ	HORIZONTAL
HP	HORSEPOWER
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCH
INV	INVERT
IRR	IRRIGATION
KW	KILOWATT
L	LENGTH
LAT	LATERAL
LB	POUNDS
LB/CU FT	POUNDS PER CUBIC FOOT
LONG	LONGITUDINAL
LT	LEFT
MDD	MAX MAXIMUM DRY DENSITY
MECH	MECHANICAL
MFR	MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MPH	MILES PER HOUR
N	NORTHING
NDP	NO DIRECT PAYMENT
NTS	NOT TO SCALE
OC	ON CENTER
OG	ORIGINAL GROUND
OHSA	OCCUPATIONSL SAFETY AND HEALTH ADMINISTRATION
OZ	OUNCE
PC	POINT OF CURVE
PCC	PORTLAND CEMENT CONCRETE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PRC	POINT OF REVERSE CURVE
PREFAB	PREFABRICATED
PROP	PROPERTY
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PUE	PUBLIC UTILITY EASEMENT
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
R	RADIUS
RCB	REINFORCED CONCRETE BOX CULVERT
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
REF	REFERENCE OR REFER
REINF	REINFORCED
REQD	REQUIRED
RT	RIGHT
RW OR ROW	RIGHT-OF-WAY
SCH	SCHEDULE
SD	STORM DRAIN
SECT	SECTION
SF	SQUARE FOOT
SI	SQUARE INCH
SSE	SANITARY SEWER EASEMENT
STA	STATION
SIM	SIMILAR
SPEC	SPECIFICATIONS
SQ	SQUARE
SS	SANITARY SEWER
SSCO	SANITARY SEWER CLEAN OUT
SSPWC	STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION
STD	STANDARD
SYMM	SYMMETRICAL
TAN	TANGENT
TB	THRUST BLOCK
TC	TOP OF CURB
TC-DEP	TOP OF CURB - DEPRESSED
TECH	TECHNICAL
TEL	TELEPHONE
TEMP	TEMPERATURE
TMWA	TRUCKEE MEADOWS WATER AUTHORITY
TW	TOP OF WALL
TYP	TYPICAL
V	VELOCITY
VC	VERTICAL CURVE
VERT	VERTICAL
VG	VALLEY GUTTER
W	WATER

□ASIS OF □EARING

□HE □ASIS OF □EARINGS FOR □HIS S□R□E□ IS □HE NE□ADA S□A□E PLANE COORDINA□E S□S□EM□□ ES□ □ONE □□0□□GRO□ND□NAD □□□□□ HARN□MODIFIED □□ A MEAN COM□INA□ION FAC□OR OF 0.□□□□0□□000□

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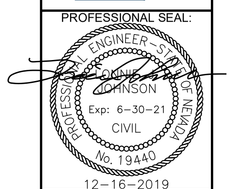
PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy, Ste. A
Reno, Nevada 89521 Phone: 1-775-852-1440

PROFESSIONAL SEAL:



12-16-2019

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SUMMIT CHRISTIAN CHURCH - PHASE 4.0
SPECIAL USE PERMIT APPLICATION
TITLE SHEET
7075 PYRAMID WAY
SPARKS, NV 89436

WASHOE NEVADA

DESIGNED BY:	LI
DRAWN BY:	RC
CHECKED BY:	----
DATE:	12-16-2019
JOB NO.	SCC-PH419

SHEET NO.
C-1
1 OF 11

V:\Projects\Summit Church\02 -Phase 4 - Final Design\04-CAD\Plan Sheets\SUP\SCC-PH419-SUP-TS.dwg DEC 12/13/2019 8:36 AM

WSUP19-0026
EXHIBIT D

GRAPHIC SCALE

60 0 30 60 120

1 inch = 60 ft.

LEGEND

EXISTING SITE

PHASE 4.0 DEVELOPMENT LIMITS

PARKING REQUIRED	
1500 SEATS/3	500
26,572 SF PUBLIC SPACE/300	89
TOTAL REQUIRED	589
ADA REQUIRED	
2% OF 738	15

PARKING PROVIDED	
EXISTING	
STANDARD	346
ADA	9
PROPOSED	
STANDARD	
PHASE 4.0	295
FUTURE PHASE	74
TOTAL	369
ADA	14
PHASE 4.0 TOTAL	664
TOTAL WITH FUTURE PHASE	738
TOTAL ADA	23

PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

N0°01'26"E 1117.48'
PROPERTY LINE
EASEMENT FOR TANK ACCESS AND WATER FACILITIES DOC#4512837
N88°23'05"W 150.60'
TMWA APN: 083-730-09 7005 PYRAMID WAY
N0°11'02"E 200.00'
UNDEVELOPED AREA
623.1'
683.6'
PROPERTY LINE
S89°08'05"E 1462.59'
EXISTING DEVELOPED SITE LIMITS
EXISTING DETENTION BASIN TO REMAIN
EXISTING LOOP ROAD TO REMAIN
EXISTING RIPRAP SLOPE TO REMAIN
671.3'
EASEMENT FOR TANK ACCESS AND WATER FACILITIES DOC#4512837
GRADING LIMITS
20.0' EASEMENT PER DOC#1006947
N89°06'58" 805.6'
PROPERTY LINE
FUTURE PHASE PROPOSED ADMIN OFFICES
COVERED WALKWAY
44.2'
PROPOSED BUILDING
FUTURE PHASE PROPOSED STORAGE
OWNER: SUMMIT CHRISTIAN CHURCH EXISTING BUILDING APN: 083-730-13 7075 PYRAMID HIGHWAY SPARKS, NV 89436
668.7'
432.1'
650.6'
NEW PARKING AREA
EXISTING RIRAP SLOPE AND DRAINAGE SWALE TO REMAIN
LOT LINE DRAINAGE SWALE
LANDSCAPE AREA REFERENCE LANDSCAPE PLAN
DRAINAGE SWALE
AREA OF FILL, REFERENCE GRADING PLAN
EXISTING ENTRY ROAD TO REMAIN
24.0' (TYP.)
17.0' (TYP.)
10.0' (TYP.)
348.4'
370.7'
RECONFIGURED PARKING LOT
EASEMENT FOR TANK ACCESS AND WATER FACILITIES DOC#4512837
FUTURE PHASE PARKING
PROPOSED SWALE WITH RIPRAP LINING AND DISSIPATOR
EXISTING EXIT ROAD TO REMAIN
N61°41'14"W 22.89'
N19°49'48"W 39.47'
EXISTING PARKING AREA
EXISTING MONUMENT SIGNS TO REMAIN
NEW PARKING AREA
PROPERTY LINE
S19°12'39"W 1390.25'
EXISTING MONUMENT SIGN TO REMAIN
EXISTING DECELERATION LANE TO REMAIN (PUBLIC-NDOT)
EXISTING ACCELERATION LANE TO REMAIN (PUBLIC-NDOT)
PYRAMID HIGHWAY (NDOT RIGHT-OF-WAY)
GOLDEN VIEW DR (PUBLIC)
ROBERT S & ERIN D MYRICK APN: 083-391-09
EDUARDO MUNOZ APN: 083-391-08
RICARDO FLORES APN: 083-574-12
ANDRES BARRIOS APN: 083-574-11
MANUEL ARRELLANO-TORRES APN: 083-574-03
NICOLE MEDRANO APN: 083-574-02

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy, Ste. A
Reno, Nevada 89521 Phone: 1-775-852-1440

PROFESSIONAL SEAL:
ENGINEER - STATE OF NEVADA
CHRISTOPHER D. JOHNSON
Exp: 6-30-21
CIVIL
No. 19440
12-16-2019

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SUMMIT CHRISTIAN CHURCH - PHASE 4.0
SPECIAL USE PERMIT APPLICATION
PRELIMINARY SITE PLAN
7075 PYRAMID WAY
SPARKS, NV 89436
WASHOE NEVADA

DESIGNED BY:	LJ
DRAWN BY:	RC
CHECKED BY:	----
DATE:	12-16-2019
JOB NO.	SCC-PH419

SHEET NO.
C-2
2 OF 11

WSUP19-0028
EXHIBIT D

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EXHIBIT D

PYRAMID HIGHWAY - STATE ROUTE #445
(PUBLIC)

S19°12'39"W
1390.25'

EASEMENT FOR TANK ACCESS AND WATER FACILITIES DOC#4512837

SUMMIT CHRISTIAN CHURCH
EXISTING BUILDING
APN: 083-730-13
7075 PYRAMID HIGHWAY
SPARKS, NV 89436

PROPOSED BUILDING
FF = 4593.50
083-730-13
7075 PYRAMID HIGHWAY
SPARKS, NV 89436

EXISTING RIPRAP SLOPE PROTECTION TO REMAIN
EXISTING CATCH BASIN TO REMAIN
EXISTING STORM DRAIN OUTLET TO REMAIN
EXISTING GAS SERVICE
EXISTING STORM DRAIN
EXISTING 8" WATER MAIN
EXISTING ELECTRICAL SWITCH AND TRANSFORMER
EXISTING 8" SANITARY SEWER MAIN TO REMAIN
EXISTING SANITARY SEWER MANHOLE TO REMAIN
PROPOSED 4" GAS SERVICE
PROPOSED 6" FIRE WATER SERVICE
PROPOSED FIRE HYDRANT
PROPOSED ELECTRICAL SERVICE
PROPOSED 8" WATER MAIN EXTENSION
PROPOSED CATCH BASIN
PROPOSED STORM DRAIN OUTLET
PROPOSED 12" STORM DRAIN
PROPOSED 15" STORM DRAIN
PROPOSED 18" STORM DRAIN
PROPOSED STORM DRAIN CLEAN OUT
PROPOSED 6" SANITARY SEWER
PROPOSED SANITARY SEWER CLEAN OUT
PROPOSED 1500 GAL. GREASE INTERCEPTOR
PROPOSED 4" SANITARY SEWER
PROPOSED TRENCH DRAIN
PROPOSED 2" GAS SERVICE
DRY STAND PIPE FOR FIRE DEPARTMENT
PROPOSED 6" FIRE SERVICE STUB TO FIRE PIT
FIRE DEPARTMENT CONNECTION & WALL MOUNT SHUT OFF (VERTICAL DCDA IN RISER ROOM)

EXISTING SS AS PER "PROPOSED SANITARY SEWER EXTENSION FOR HILLSBOROUGH SUBDIVISION SECTION 4 & 16 T20N,R20E,MDM" BY: SEA INCORPORATED DATED SEPT. 1992

S89°08'05"E
1462.59'

PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

GRAPHIC SCALE
1 inch = 20 ft.
20 0 10 20 40

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SHEET NO.	C-3
	3 OF 11

DESIGNED BY:	LJ
DRAWN BY:	RC
CHECKED BY:	----
DATE:	12-16-2019
JOB NO.	SCC-PH419

SUMMIT CHRISTIAN CHURCH - PHASE 4.0
SPECIAL USE PERMIT APPLICATION
PRELIMINARY UTILITY PLAN
7075 PYRAMID WAY
SPARKS, NV 89436
WASHOE NEVADA

REVISIONS

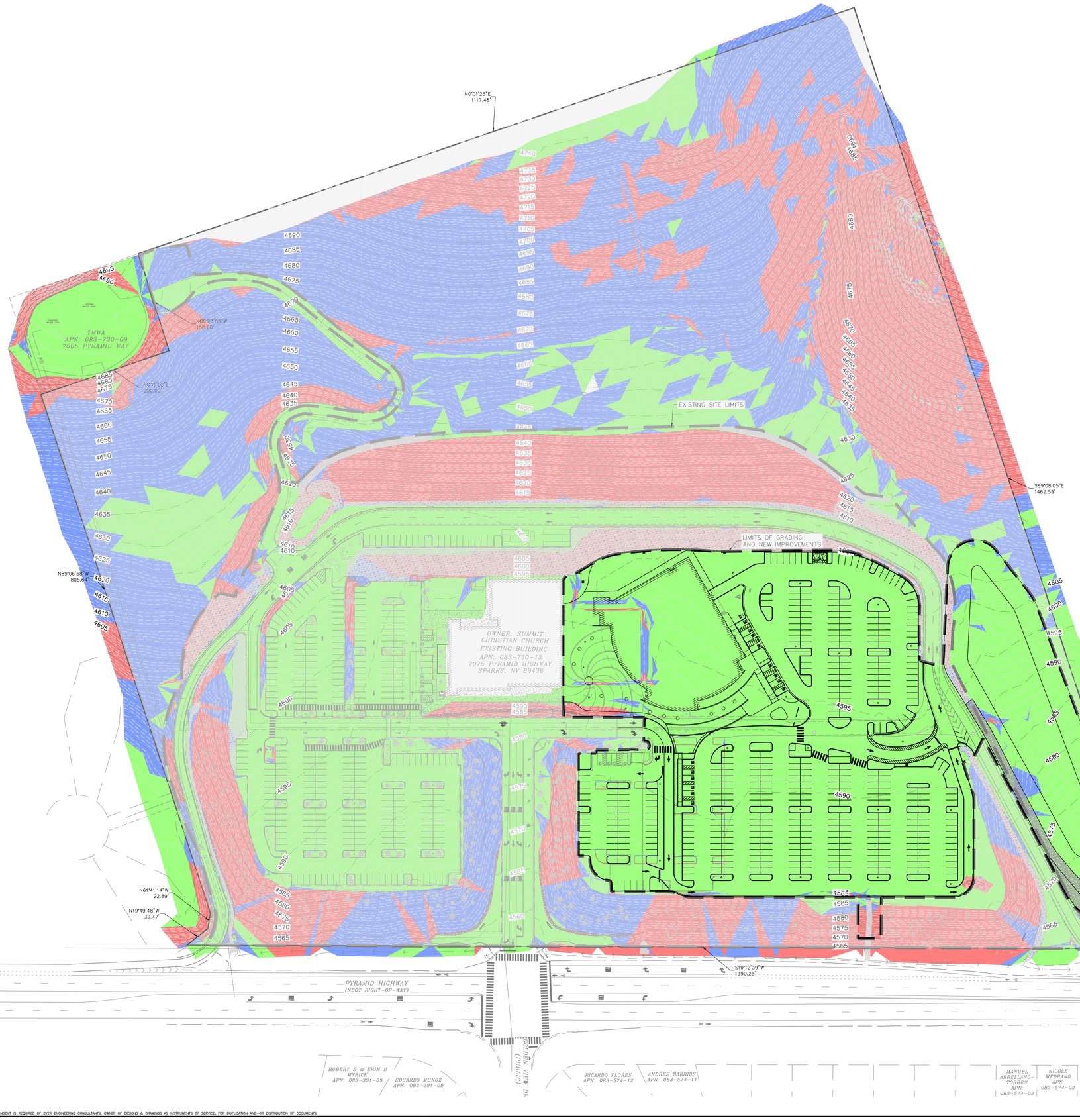
NO.	DATE	INITIALS	DESCRIPTION

PROFESSIONAL SEAL:
PROFESSIONAL ENGINEER - STATE OF NEVADA
No. 13440
CIVIL
Exp: 6-30-21
LUKE JAMES CARLSON
12-16-2019

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy, Ste. A
Reno, Nevada 89521 Phone: 1-775-852-1440

WSUP19-0026
EXHIBIT D

GRAPHIC SCALE
60 0 30 60 120
1 inch = 60 ft.



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12-16-2019

SLOPE LEGEND

- 0-14%
- 15-29%
- 30% OR GREATER
- EXISTING SITE
- PHASE 4.0 DEVELOPMENT LIMITS

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy, Ste. A
Reno, Nevada 89521 Phone: 1-775-852-1440

PROFESSIONAL SEAL:
ENGINEER - STATE OF NEVADA
ROBERT C. JOHNSON
Exp: 6-30-21
CIVIL
No. 19440
12-16-2019

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

NEVADA
WASHOE

SUMMIT CHRISTIAN CHURCH - PHASE 4.0
SPECIAL USE PERMIT APPLICATION
EXISTING CONDITIONS SLOPE MAP
7075 PYRAMID WAY
SPARKS, NV 89436

DESIGNED BY:	LI
DRAWN BY:	RC
CHECKED BY:	----
DATE:	12-16-2019
JOB NO.	SCC-PH419

SHEET NO.
C-4
4 OF 11

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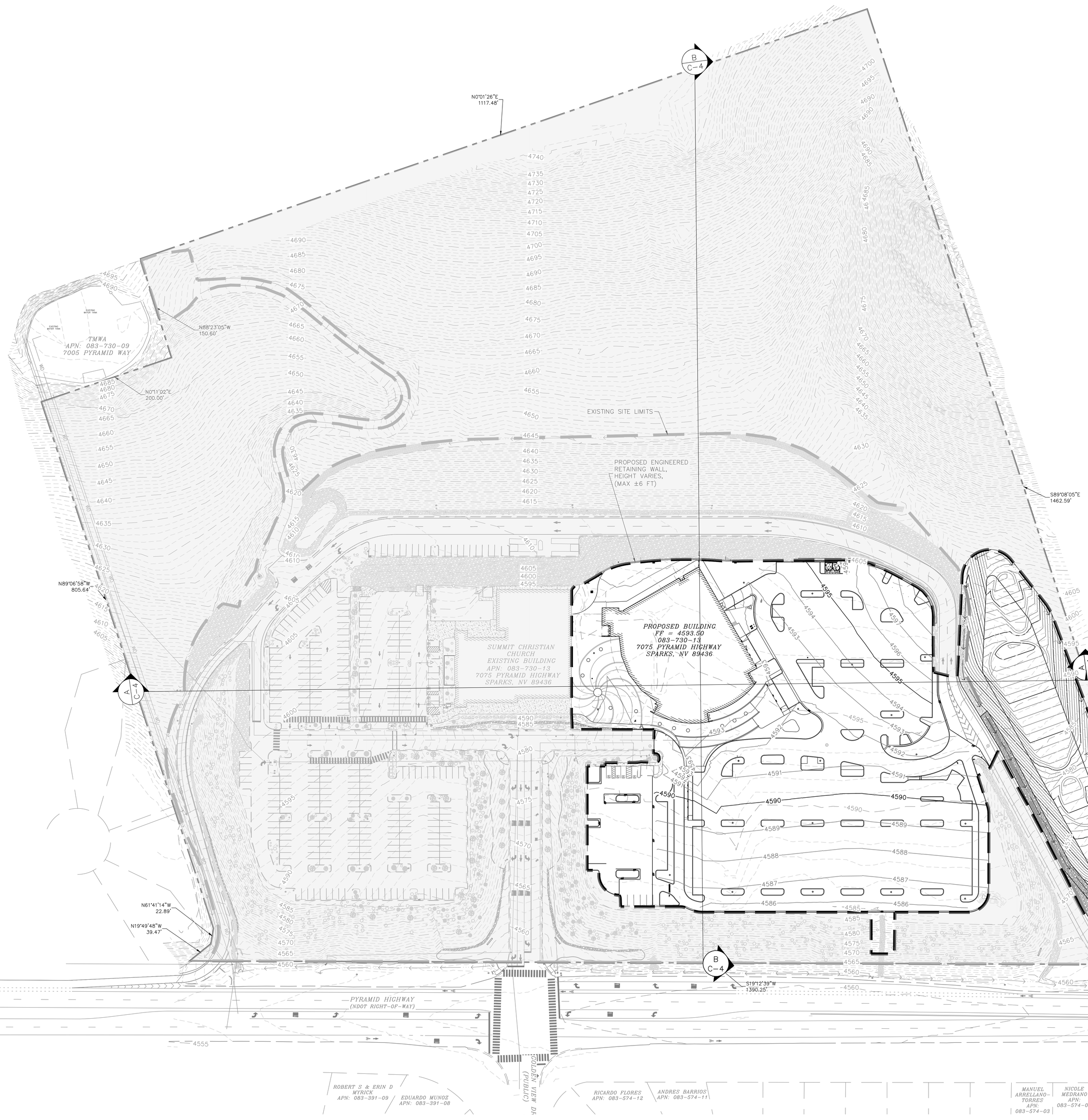
GRAPHIC SCALE

30 0 15 30 60

1 inch = 30 ft.



LEGEND

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- SAWCUT LIMITS
- EXISTING SITE
- PHASE 4.0 DEVELOPMENT LIMITS

DISTURBED SURFACE AREA: ±8.1 ACRES
QUANTITIES OF EXCAVATION: ±30,000 CY FILL

PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy, Ste. A
Reno, Nevada 89521 Phone: 1-775-852-1440

WSUP19-0026
EXHIBIT D

PROFESSIONAL SEAL:

PROFESSIONAL ENGINEER - STATE OF NEVADA
ERIC L. DYER JOHNSON
Exp: 6-30-21
CIVIL
No. 19440

12-16-2019

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

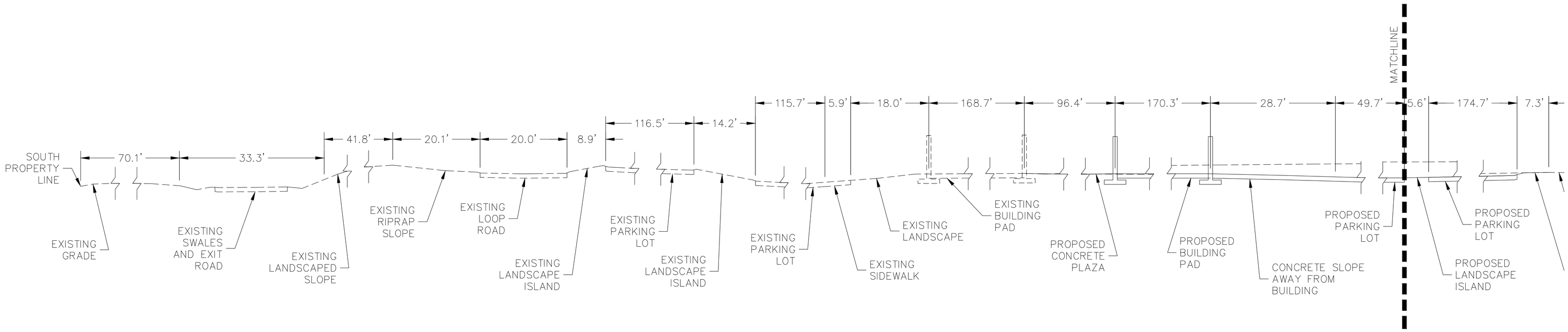
SUMMIT CHRISTIAN CHURCH - PHASE 4.0
SPECIAL USE PERMIT APPLICATION
PRELIMINARY GRADING PLAN
7075 PYRAMID WAY
SPARKS, NV 89436

WASHOE NEVADA

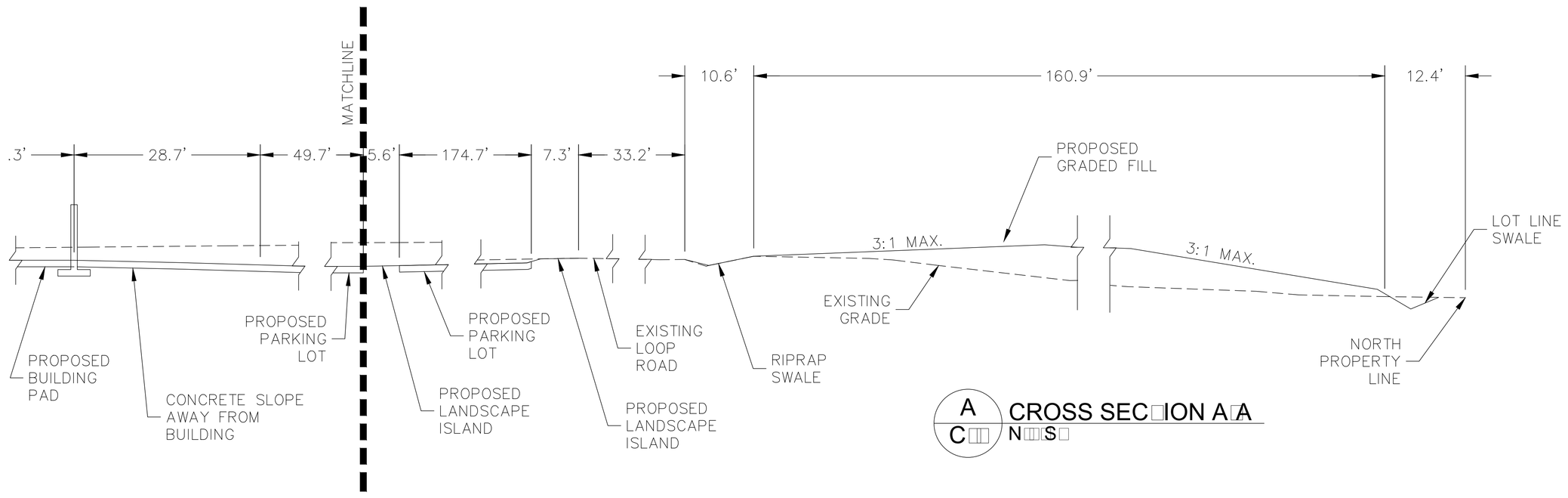
DESIGNED BY:	LJ
DRAWN BY:	RC
CHECKED BY:	----
DATE:	12-16-2019
JOB NO.	SCC-PH419

SHEET NO.
C-5
5 OF 11

V:\Projects\Summit Church\02 -Phase 4 - Final Design\04-CAD\Plan Sheets\SUP\SCC-PH419-grad-SUP.dwg DEC 12/13/2019 8:39 AM



A CROSS SECTION A-A
CONCRETE



PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

GRAPHIC SCALE
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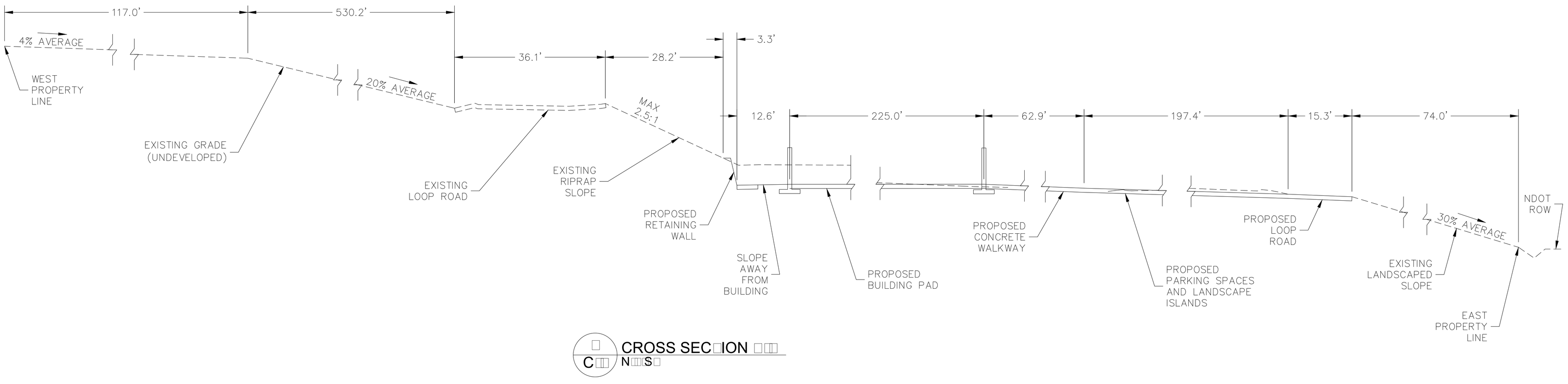
1 inch = 10 ft.



C CROSS SECTION
CONCRETE

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy, Ste. A
Reno, Nevada 89521 Phone: 1-775-852-1440

PROFESSIONAL SEAL:
ENGINEER - STATE OF NEVADA
JOHN D. JOHNSON
Exp: 6-30-21
CIVIL
No. 19440
12-16-2019

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SUMMIT CHRISTIAN CHURCH - PHASE 4.0
SPECIAL USE PERMIT APPLICATION
CROSS SECTIONS
7075 PYRAMID WAY
SPARKS, NV 89436
WASHOE
NEVADA

DESIGNED BY:	LJ
DRAWN BY:	RC
CHECKED BY:	---
DATE:	12-16-2019
JOB NO.	SCC-PH419

SHEET NO.
C-6
6 OF 11

WSUP19-0026
EXHIBIT D

V:\Projects\Summit Church\02 -Phase 4 - Final Design\04-CAD\Plan Sheets\SUP\SCC-PH419-SUP-SP.dwg DEC 12/13/2019 8:57 AM

GRAPHIC SCALE

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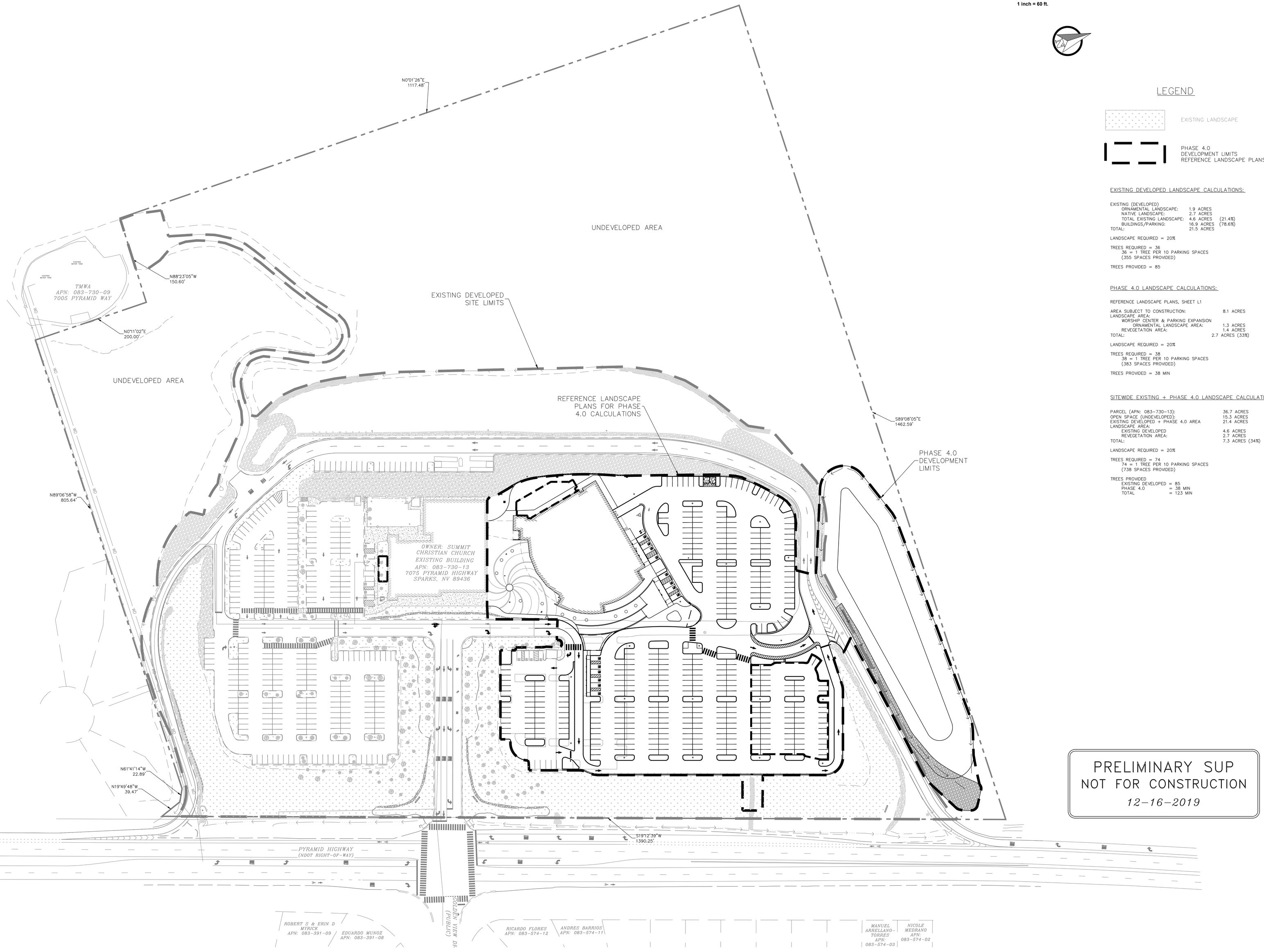
1 inch = 60 ft.



LEGEND

EXISTING LANDSCAPE

PHASE 4.0
DEVELOPMENT LIMITS
REFERENCE LANDSCAPE PLANS

EXISTING DEVELOPED LANDSCAPE CALCULATIONS:

EXISTING (DEVELOPED)

ORNAMENTAL LANDSCAPE:	1.9 ACRES	
NATIVE LANDSCAPE:	2.7 ACRES	
TOTAL EXISTING LANDSCAPE:	4.6 ACRES	(21.4%)
BUILDINGS/PARKING:	16.9 ACRES	(78.6%)
TOTAL:	21.5 ACRES	

LANDSCAPE REQUIRED = 20%

TREES REQUIRED = 36
36 = 1 TREE PER 10 PARKING SPACES
(355 SPACES PROVIDED)

TREES PROVIDED = 85

PHASE 4.0 LANDSCAPE CALCULATIONS:

REFERENCE LANDSCAPE PLANS, SHEET L1

AREA SUBJECT TO CONSTRUCTION:	8.1 ACRES
LANDSCAPE AREA:	
WORSHIP CENTER & PARKING EXPANSION ORNAMENTAL LANDSCAPE AREA:	1.3 ACRES
REVEGETATION AREA:	1.4 ACRES
TOTAL:	2.7 ACRES (33%)

LANDSCAPE REQUIRED = 20%

TREES REQUIRED = 38
38 = 1 TREE PER 10 PARKING SPACES
(383 SPACES PROVIDED)

TREES PROVIDED = 38 MIN

SITEWIDE EXISTING + PHASE 4.0 LANDSCAPE CALCULATIONS:

PARCEL (APN: 083-730-13):	36.7 ACRES
OPEN SPACE (UNDEVELOPED):	15.3 ACRES
EXISTING DEVELOPED + PHASE 4.0 AREA	21.4 ACRES
LANDSCAPE AREA:	
EXISTING DEVELOPED	4.6 ACRES
REVEGETATION AREA:	2.7 ACRES
TOTAL:	7.3 ACRES (34%)

LANDSCAPE REQUIRED = 20%

TREES REQUIRED = 74
74 = 1 TREE PER 10 PARKING SPACES
(738 SPACES PROVIDED)

TREES PROVIDED
EXISTING DEVELOPED = 85
PHASE 4.0 = 38 MIN
TOTAL = 123 MIN

PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy, Ste. A
Reno, Nevada 89521 Phone: 1-775-852-1440

PROFESSIONAL SEAL:

PROFESSIONAL ENGINEER - STATE OF NEVADA
ERIC L. JOHNSON
Exp: 6-30-21
CIVIL
No. 19440

12-16-2019

REVISIONS			
NO.	DATE	INITIALS	DESCRIPTION

SUMMIT CHRISTIAN CHURCH - PHASE 4.0
SPECIAL USE PERMIT APPLICATION

EXISTING AND SITEWIDE LANDSCAPE SUMMARY

7075 PYRAMID WAY
SPARKS, NV 89436

WASHOE NEVADA

DESIGNED BY:	LJ
DRAWN BY:	RC
CHECKED BY:	----
DATE:	12-16-2019
JOB NO.	SCC-PH419

SHEET NO.
C-7
7 OF 11

WSUP19-0026
EXHIBIT D

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PHASE 4 LANDSCAPE DATA

PROPERTY SITE AREA = 36.7 ACRES (1,599,044 SQ FT)
ZONING: GENERAL COMMERCIAL

AREA SUBJECT TO CONSTRUCTION APPROX. 435,835 SQ FT (8.07 ACRES)
REQUIRED LANDSCAPE AREA = 87,169 SQ FT (20%)

PROVIDED LANDSCAPE AREAS AS AS SHOWN:
- WORSHIP CENTER & PARKING EXPANSION ORNAMENTAL LANDSCAPE AREA = 56,209 SQ FT
- EXISTING ORNAMENTAL LANDSCAPING = 84,260 SQ FT
- REVEGETATION AREA = 60,924 SQ FT

TREES REQUIRED = 38

- 38 = 1 TREE PER 10 PARKING SPACES (383 SPACES PROVIDED)

TREES PROVIDED = 38 MIN

SHRUBS REQUIRED = SHRUBS SUFFICIENT TO REACH COVERAGE REQUIREMENT PER WASHOE COUNTY CODE

- NEW ORNAMENTAL LANDSCAPE
- EXISTING ORNAMENTAL LANDSCAPE TO REMAIN
- REVEGETATION
- FUTURE PROJECT SITE

PLANT LEGEND

SYM.	QNT.	BOTANICAL NAME/COMMON NAME	MIN. SIZE
		DECIDUOUS TREES	
	--	ACER PLATANOIDES/NORWAY MAPLE	2-½" CAL.
	--	MALUS 'IOENSIS'/PRAIRIE ROSE CRAB	2-½" CAL.
	--	PLATANUS ACERIFOLIA 'BLOODSOOD'/BLOODSOOD LONDON PLANE	2-½" CAL.
	--	PRUNUS VIRGINIANA 'CANADA RED'/CANADA RED CHOKECHERRY	2-½" CAL.
	--	PYRUS CALLERYANA 'REDSPIRE'/REDSPIRE PEAR	2-½" CAL.
		EVERGREEN TREES	MIN. SIZE
	--	CALOCEDRUS DECURRENS/INCENSE CEDAR	6' HT.
	--	PICEA PUNGENS 'HOOPSII'/HOOPSII BLUE SPRUCE	6' HT.
	--	PINUS NIGRA/AUSTRIAN PINE	6' HT.
		COLUMNAR JUNIPERS (INCLUDED IN SHRUB COUNT)	
	--	JUNIPERUS CHINENSIS 'BLUE POINT'/BLUE POINT JUNIPER	6' HT.
	--	JUNIPERUS CHINENSIS 'SPARTAN'/SPARTAN JUNIPER	6' HT.
	--	JUNIPERUS SCOPULORUM 'MOONGLOW'/MOONGLOW JUNIPER	6' HT.
	--	JUNIPERUS SCOPULORUM 'WICHITA BLUE'/WICHITA BLUE JUNIPER	6' HT.
		SHRUBS & ORNAMENTAL GRASSES	MIN. SIZE
	--	BERBERIS THUNBERGII 'ATROPURPUREA'/RED-LEAF BARBERRY	5 GAL.
	--	CALAMAGROSTIS X ACUTIFLORA 'KARL FOERSTER'/FEATHER REED GRASS	1 GAL.
	--	CORNUS SERICEA 'ISANTI'/ISANTI RED-OSIER DOGWOOD	5 GAL.
	--	CORNUS STOLONIFERA/REDTWIG DOGWOOD	5 GAL.
	--	COTONEASTER MICROPHYLLUS/EVERGREEN COTONEASTER	5 GAL.
	--	EUONYMUS ALATUS 'COMPACTA'/DWARF BURNING BUSH	5 GAL.
	--	EUONYMUS FORTUNEI/EVERGREEN EUONYMUS	5 GAL.
	--	EUONYMUS FORTUNEI 'EMERALD AND GOLD'/E&G EUONYMUS	5 GAL.
	--	EUONYMUS KIAUTSCHOVICUS 'MANHATTAN'/MANHATTAN EUONYMUS	5 GAL.
	--	FORSYTHIA X INTERMEDIA/FORSYTHIA	5 GAL.
	--	JUNIPERUS CHINENSIS 'SEA GREEN'/S.G. JUNIPER	5 GAL.
	--	JUNIPERUS SABINA 'TAMARISCIFOLIA'/TAMARIX JUNIPER	5 GAL.
	--	PANICUM VIRGATUM/SWITCH GRASS	1 GAL.
	--	PEROVSKIA ATRIPLICIFOLIA/RUSSIAN SAGE	1 GAL.
	--	PHOTINIA X INTERMEDIA/PHOTINIA	5 GAL.
	--	PINUS MUGO MUGO/MUGHO PINE	5 GAL.
	--	PRUNUS CISTENA/DWARF PURPLE-LEAF PLUM	5 GAL.
	--	RHUS AROMATICA 'GRO-LOW/GRO-LOW FRAGRANT SUMAC	5 GAL.
	--	ROSA X NOARE/RED GROUNDCOVER ROSE	5 GAL.
	--	ROSA X RADRAZZ/KNOCK OUT ROSE	5 GAL.
	--	SPIRAEA X BUMALDA 'GOLDFLAME'/GOLDFLAME SPIRAEA	5 GAL.
	--	SPIRAEA X BUMALDA 'MONHUB'/LIMEMOUND SPIRAEA	5 GAL.
		PERENNIALS/FLOWERS	
	--	HEMEROCALLIS X 'SUMMER WINE'/SUMMER WINE DAYLILLY	1 GAL.
	--	LAVENDULA ANGUSTIFOLIA/LAVENDER	1 GAL.
	--	SALVIA X SUPERBA 'MAY NIGHT'/MAY NIGHT SALVIA	1 GAL.

PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

L.A. StudioNevada
the landscape architecture studio
1552 C Street Sparks, NV 89431 (775) 323-2223 NV RLA #440
www.lastudionevada.com

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy, Ste. A
Reno, Nevada 89521 Phone: 1-775-852-1440

REGISTERED LANDSCAPE ARCHITECT
RYAN HANSEN
440
12/16/19
Expires: 6/30/20
STATE OF NEVADA

REVISIONS	DESCRIPTION	INITIALS	DATE	NO.

SUMMIT CHRISTIAN CHURCH
Worship Center & Parking Expansion
Preliminary Landscape Plan
7075 Pyramid Way
Sparks, NV 89436

DESIGNED BY:	KRD	
DRAWN BY:	KRD	
CHECKED BY:	RWH	
DATE:	12/16/19	
JOB NO.	679-504-06-19	

SHEET NO.
L1
Landscape
1 OF 4

WSUP19-0028
EXHIBIT D

Z:\Projects\LA Studio Nevada\Current Work (Dyer Engineering)\679-504 SUMMIT Christian Church Expansion - CD DD Sparks\L1-679-504 Landscape Plan.dwg KELLI 12/12/2019 12:34 PM

PHASE 4 LANDSCAPE DATA

PROPERTY SITE AREA = 36.7 ACRES (1,599,044 SQ FT)
ZONING: GENERAL COMMERCIAL

AREA SUBJECT TO CONSTRUCTION APPROX. 435,835 SQ FT (8.07 ACRES)
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- REVEGETATION AREA = 60,924 SQ FT

TREES REQUIRED = 38

- 38 = 1 TREE PER 10 PARKING SPACES
  (383 SPACES PROVIDED)

TREES PROVIDED = 38 MIN

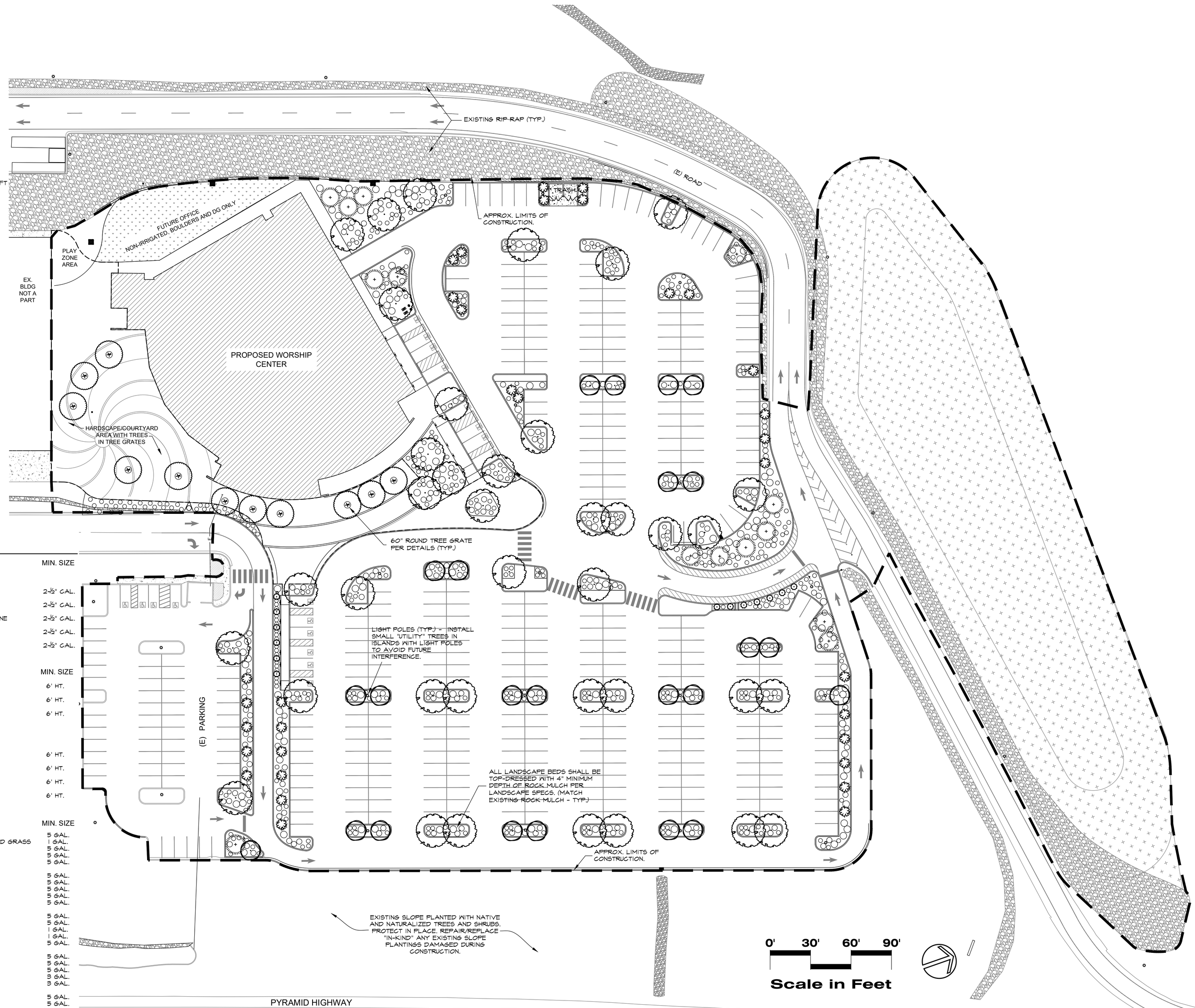
SHRUBS REQUIRED = SHRUBS SUFFICIENT TO REACH COVERAGE REQUIREMENT PER WASHOE COUNTY CODE

NEW ORNAMENTAL LANDSCAPE

EXISTING ORNAMENTAL LANDSCAPE TO REMAIN

REVEGETATION

FUTURE PROJECT SITE



PLANT LEGEND

SYM.	QNT.	BOTANICAL NAME/COMMON NAME	MIN. SIZE
		DECIDUOUS TREES	
	--	ACER PLATANOIDES/NORWAY MAPLE	2-½" CAL.
	--	MALUS 'IOENSIS'/PRAIRIE ROSE CRAB	2-½" CAL.
	--	PLATANUS ACERIFOLIA 'BLOODGOOD'/BLOODGOOD LONDON PLANE	2-½" CAL.
	--	PRUNUS VIRGINIANA 'CANADA RED'/CANADA RED CHOKECHERRY	2-½" CAL.
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		EVERGREEN TREES	MIN. SIZE
	--	CALOCEDRUS DECURRENS/INCENSE CEDAR	6' HT.
	--	PICEA PUNGENS 'HOOPSII'/HOOPSII BLUE SPRUCE	6' HT.
	--	PINUS NIGRA/AUSTRIAN PINE	6' HT.
		COLUMNAR JUNIPERS (INCLUDED IN SHRUB COUNT)	
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	--	CORNUS SERICEA 'ISANTI'/ISANTI RED-OSIER DOGWOOD	5 GAL.
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	--	COTONEASTER MICROPHYLLUS/EVERGREEN COTONEASTER	5 GAL.
	--	EUONYMUS ALATUS 'COMPACTA'/DWARF BURNING BUSH	5 GAL.
	--	EUONYMUS FORTUNEI/EVERGREEN EUONYMUS	5 GAL.
	--	EUONYMUS FORTUNEI 'EMERALD AND GOLD'/E&G EUONYMUS	5 GAL.
	--	EUONYMUS KIAUTSCHOVICUS 'MANHATTAN'/MANHATTAN EUONYMUS	5 GAL.
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	--	JUNIPERUS CHINENSIS 'SEA GREEN'/S.G. JUNIPER	5 GAL.
	--	JUNIPERUS SABINA 'TAMARISCIFOLIA'/TAMARIX JUNIPER	5 GAL.
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		PERENNIALS/FLOWERS	
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	--	LAVENDULA ANGUSTIFOLIA/LAVENDER	1 GAL.
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PRELIMINARY SUP
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12-16-2019

WSUP19-0026
EXHIBIT D

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy., Ste A.
Reno, Nevada 89521 Phone: 1-775-832-1440

REGISTERED LANDSCAPE ARCHITECT
RYAN HANSEN
440
12/16/19
Expires: 6/30/20
STATE OF NEVADA

REVISIONS

NO.	DATE	INITIALS	DESCRIPTION

SUMMIT CHRISTIAN CHURCH
Worship Center & Parking Expansion
Preliminary Landscape Plan
7075 Pyramid Way
Sparks, NV 89436

L1

DESIGNED BY:	KRD		
DRAWN BY:	KRD	CHECKED BY:	RWH
DATE:	12/16/19	JOB NO.	679-504-06-19

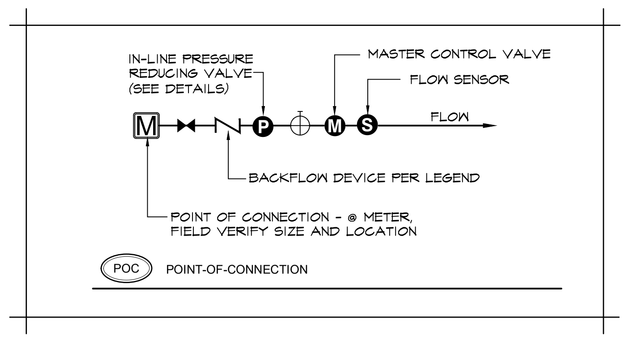
L.A. StudioNevada
the landscape architecture studio
1552 C Street Sparks, NV 89431 (775) 323-2223 NV RLA #440
www.lastudionevada.com

SHEET NO.
Landscape
1 OF 4

PRELIMINARY WATER DEMAND

ALL CALCULATIONS DONE USING TMNA CALCULATIONS
BASED ON PRELIMINARY LANDSCAPE PLAN BY LA STUDIO NEVADA DATED 11/18/19

- 14360 GALLONS PER WEEK
- TOTAL 1.43 ACRE FEET PER YEAR



DRIP IRRIGATION LEGEND

C — IRRIGATION CONTROL CLOCK: RAINBIRD ESP-LXME/F CONTROLLER. INSTALL CLOCK AND SENSOR PER MFG'S SPECIFICATIONS.

M — 1" WATER METER - VERIFY SIZE AND LOCATION PER CIVIL DWGS.

Z — 1" REDUCED PRESSURE TYPE BACKFLOW PREVENTER: WILKENS 975XL (OAE). INSTALL PER DETAIL(S).

M — 1" MASTER VALVE - SUPERIOR MASTER VALVE - NORMALLY OPEN

F — RAINBIRD FLOW SENSOR AND TRANSMITTERS - SIZE AND INSTALLATION PER MFG'S SPECIFICATIONS.

MANUAL DRAIN VALVE. 3/4" BRASS GATE VALVE. (GRINNELL OR OAE) INSTALL AT ALL LOW POINTS ALONG MAINLINE

BRASS GATE VALVE: GRINNELL (OAE) FOR MAINLINE ISOLATION. SAME SIZE AS MAINLINE.

DRIP VALVE ASSEMBLY: RAINBIRD XCZ-100-PRB-COM COMMERCIAL WIDE FLOW DRIP KIT (0.3-20 GPM).

QUICK COUPLER: RAINBIRD 44-LRC. PROVIDE OWNER WITH TWO VALVE KEYS (RAINBIRD 44-K).

02 — SIZE 1" — GPM --

VALVE I.D. - STATION #, VALVE SIZE, AND APPROX. G.P.M.

1-1/2" MAINLINE: ALL MAINLINES SHALL BE SCH. 40 PVC. INSTALL ALL MAINLINES AT 24" MINIMUM DEPTH. SIZE PER PLAN.

1" LATERAL PIPES: SCH. 40 PVC LATERAL - INSTALL AT 18" MINIMUM DEPTH.

DRIP DISTRIBUTION TUBING: 3/4" RAINBIRD XBS-BLACK STRIPE TUBING IRRIGATION TUBING WITH RAINBIRD MDCFCAP REMOVABLE FLUSH CAP.

SLEEVES: ALL IRRIGATION SLEEVES UNDER STREETS AND DRIVEWAYS SHALL BE 4" MINIMUM SCH. 40 PVC. SLEEVES FOR DRIP TUBING UNDER SIDEWALKS MAY BE 2" MINIMUM SCH. 40. PROVIDE ONE SLEEVE PER PIPE AND ONE SLEEVE FOR WIRING.

VALVE BOXES (NOT SHOWN): ALL VALVES SHALL BE LOCATED IN RAINBIRD PVB PROFESSIONAL SERIES VALVE BOXES PER DETAILS.

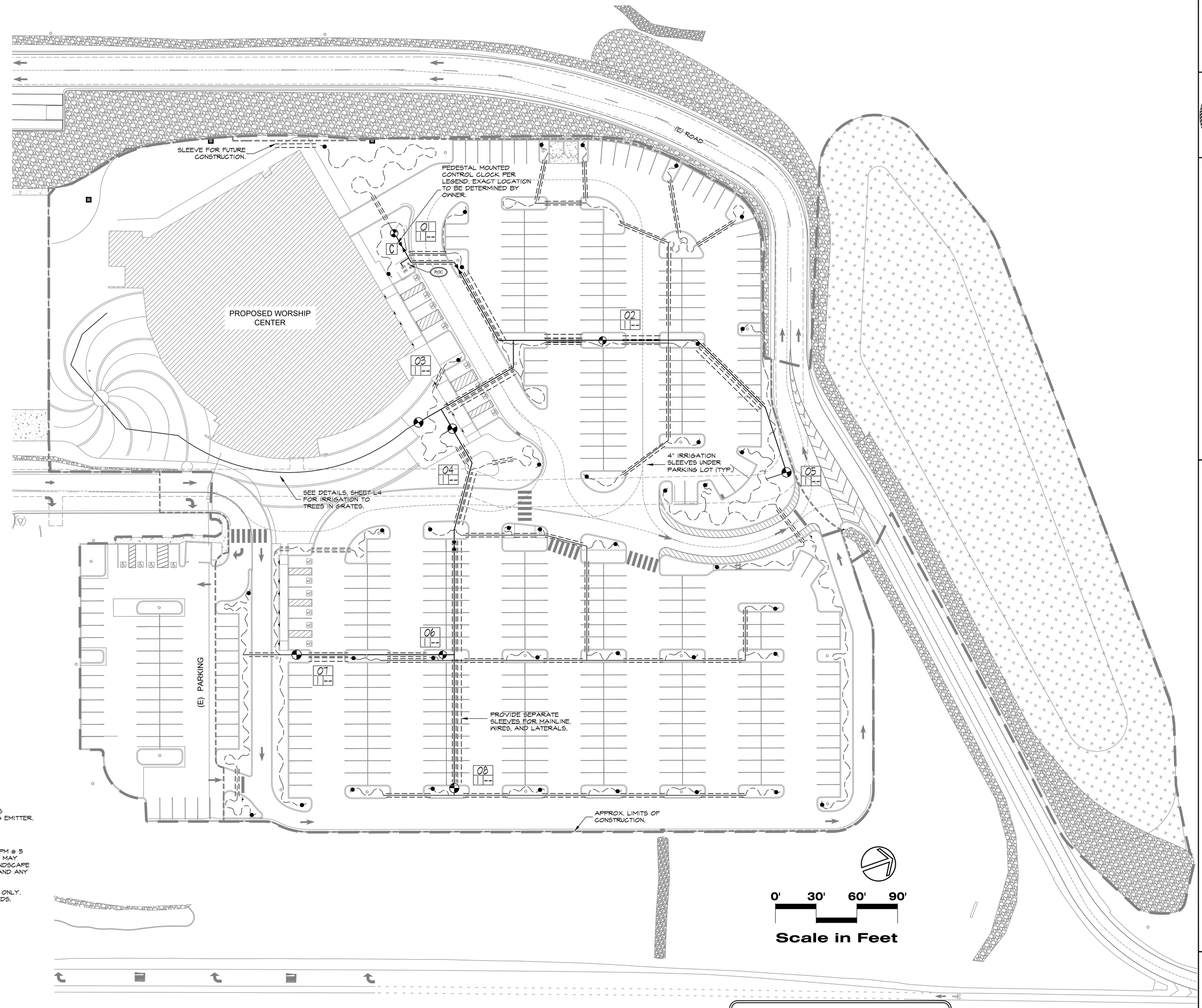
EMITTER SCHEDULE

TREES: (4) RAINBIRD XERI-BUG 2 GPH PRESSURE COMPENSATING EMITTERS #5 AND #1 SHRUBS: (2) RAINBIRD XERI-BUG 1 GPH PRESSURE COMPENSATING EMITTERS GROUND COVER/PERENNIALS: (1) RAINBIRD XERI-BUG 1 GPH PRESSURE COMPENSATING EMITTER.

DESIGN PRESSURE NOTE:

ASSUMED AVAILABLE WATER PRESSURE AT P.O.C. IS 65 PSI. ASSUMED FLOW IS 12 GPM @ 5 FPS. CONTRACTOR TO VERIFY PRIOR TO SYSTEM INSTALLATION. FUTURE PRESSURES MAY VARY DUE TO NEW DEVELOPMENT AND/OR OTHER UNFORESEEN CIRCUMSTANCES. LANDSCAPE ARCHITECT SHALL BEAR NO RESPONSIBILITY FOR FUTURE DEVIATIONS IN PRESSURE AND ANY RESULTING EFFECTS ON THE PERFORMANCE OF THE IRRIGATION SYSTEM.

IRRIGATION MAINLINES ARE SHOWN IN STREET/PAVED AREAS FOR GRAPHIC CLARITY ONLY. WHERE POSSIBLE, ALL IRRIGATION COMPONENTS SHALL BE LOCATED IN PLANTING BEDS.



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REGISTERED LANDSCAPE ARCHITECT
RYAN HANSEN
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12/16/19
Expires: 6/30/20
STATE OF NEVADA

NO.	DATE	INITIALS	DESCRIPTION

SUMMIT CHRISTIAN CHURCH
Worship Center & Parking Expansion
Preliminary Irrigation Plan
7075 Pyramid Way
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Nevada

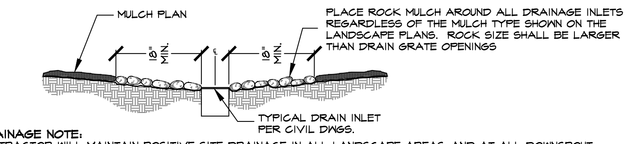
L1

DESIGNED BY:	KRD	
DRAWN BY:	KRD	RWH
CHECKED BY:		12/16/19
DATE:		679-504-06-19
JOB NO.		

SHEET NO.
Landscape 2 OF 4

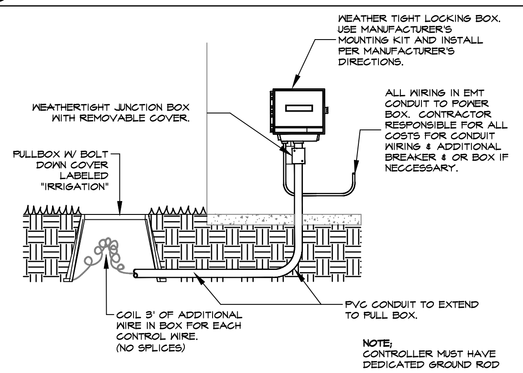
Z:\HLA-Projects\LA STUDIO PROJECTS\2019\679 (Dyer Engineering)\679-504-06-19 (Summit Christian Church Expansion - CD DD Sparks)\L2-679-504 Irrigation Plan.dwg KELLI 12/12/2019 10:12 AM

WSUP19-0026
EXHIBIT D

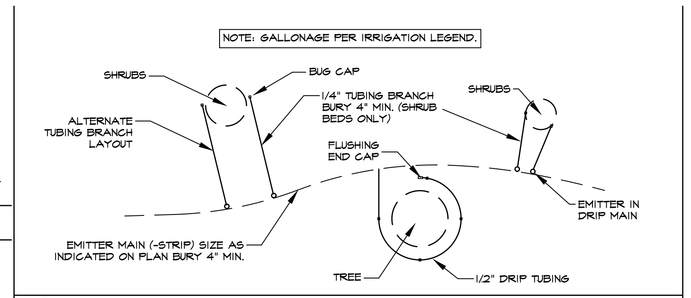


DRAINAGE NOTE:
CONTRACTOR WILL MAINTAIN POSITIVE SITE DRAINAGE IN ALL LANDSCAPE AREAS, AND AT ALL DOWNSPOUT LOCATIONS AWAY FROM STRUCTURES. PROVIDE NOTCH OR BREAK IN LAWN EDGING (IF APPLICABLE) AS NEEDED. PROVIDE ROCK-LINED 'DRY CREEK' DRAINAGE SWALES IN ALL NON-TURF LANDSCAPE AREAS. DO NOT INSTALL DG OR BARK MULCH IN ANY AREAS SUBJECT TO CONCENTRATED DRAINAGE FLOWS (I.E. ROOF DRAIN LOCATIONS, SWALE LINES, YARD DRAIN INLETS, ETC.) WHERE EROSION MAY OCCUR.

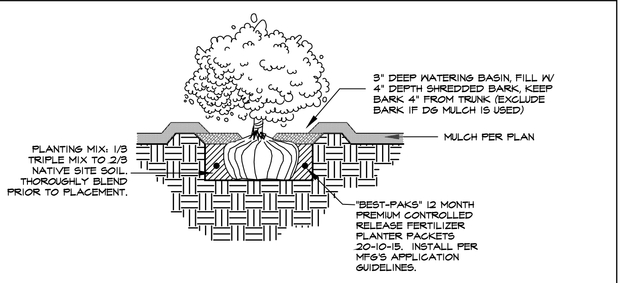
1 TYPICAL YARD DRAIN MULCH TREATMENT — NOT TO SCALE



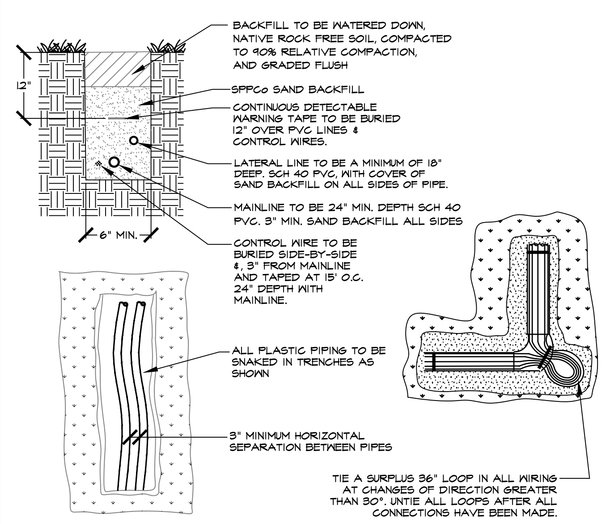
1 WALL MOUNTED CONTROL CLOCK — NOT TO SCALE



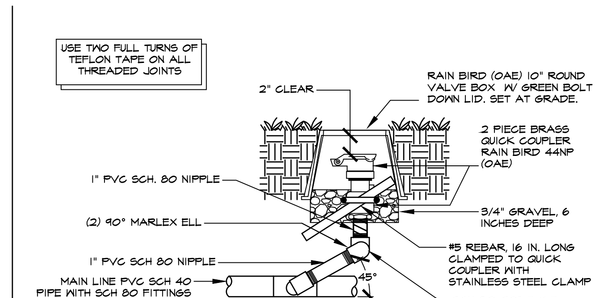
2 DRIP EMITTER LAYOUT — NOT TO SCALE



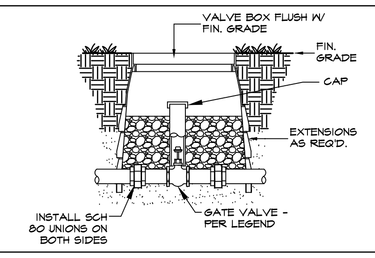
3 SHRUB PLANTING DETAIL — NOT TO SCALE



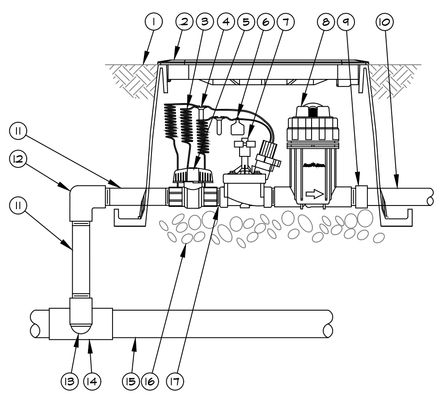
4 TRENCH DETAIL/CONTROLLER WIRING — NOT TO SCALE



5 QUICK COUPLING VALVE — NOT TO SCALE

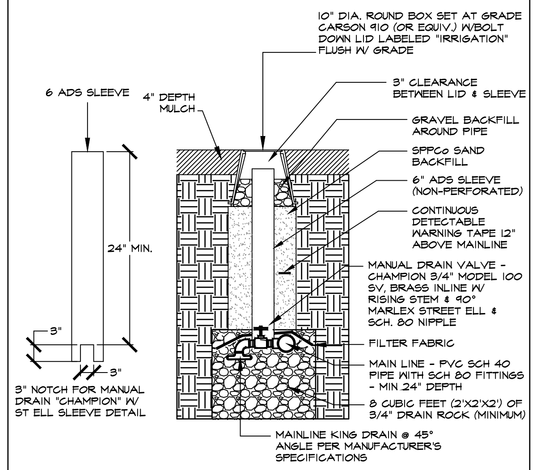


6 GATE VALVE — NOT TO SCALE



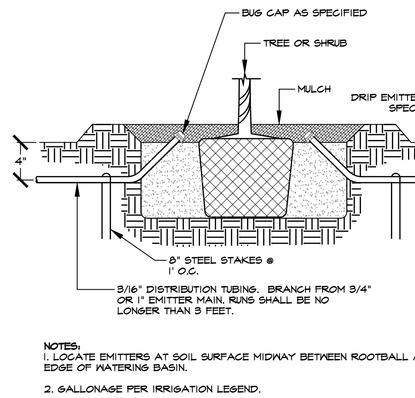
1. FINISH GRADE/TOP OF MULCH
2. VALVE BOX WITH COVER: RAIN BIRD VB-STD
3. 30-INCH LINEAR LENGTH OF WIRE, COILED
4. WATERPROOF CONNECTION: RAIN BIRD DB SERIES
5. 1-INCH BALL VALVE (INCLUDED IN XCZ-PRB-100-COM KIT)
6. ID TAG
7. REMOTE CONTROL VALVE: RAIN BIRD PESB (INCLUDED IN XCZ-PRB-100-COM KIT)
8. PRESSURE REGULATING QUICK CHECK BASKET FILTER. RAIN BIRD PRB-QKCHK-100 (INCLUDED IN XCZ-PRB-100-COM KIT)
9. PVC SCH 40 FEMALE ADAPTOR
10. LATERAL PIPE
11. PVC SCH 80 NIPPLE (LENGTH AS REQUIRED)
12. PVC SCH 80 ELL
13. PVC SCH 80 NIPPLE (2-INCH LENGTH, HIDDEN) AND PVC SCH 40 ELL
14. PVC SCH 80 TEE OR ELL
15. SCH 40 MAINLINE PIPE WITH SCH 80 FITTINGS
16. 3-INCH MINIMUM DEPTH OF 3/4-INCH WASHED GRAVEL
17. PVC SCH 80 NIPPLE, CLOSE (INCLUDED IN XCZ-PRB-100-COM KIT)

7 DRIP VALVE ASSEMBLY — NOT TO SCALE



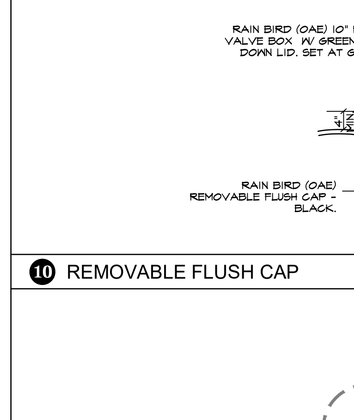
NOTE:
INSTALL AT ALL LOW POINTS IN MAINLINE

8 MANUAL DRAIN VALVE — NOT TO SCALE

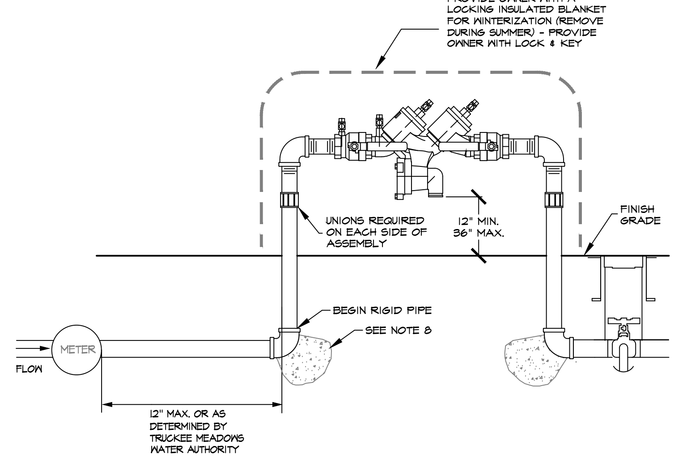


NOTES:
1. LOCATE EMITTERS AT SOIL SURFACE MIDWAY BETWEEN ROOTBALL AND EDGE OF WATERING BASIN.
2. GALLONAGE PER IRRIGATION LEGEND.

9 DRIP EMITTER INSTALLATION — NOT TO SCALE



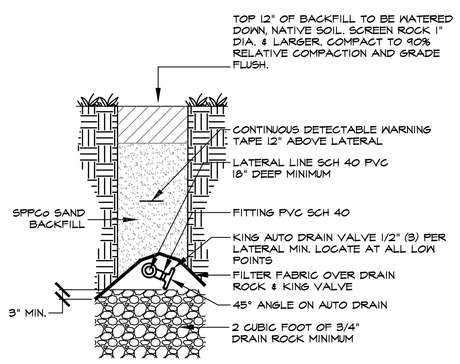
10 REMOVABLE FLUSH CAP — NOT TO SCALE



NOTES:
1. ASSEMBLY SHALL BE A USC APPROVED LEAD FREE DEVICE.
2. THE RP SHALL BE INSTALLED ABOVE GRADE.
3. EITHER VALVE BOXES OR PIPE RISERS MAY BE USED FOR THE 2 BELOW GRADE SHUT OFF VALVES.
4. MANUAL SHUT OFF VALVE: INLINE BRASS GLOBE OR CURB VALVE SIZED SAME AS MAINLINE.
5. NO STOP AND WASTE VALVES.
6. INSPECTION BY TMWA BACKFLOW PREVENTION GROUP PERSONNEL REQUIRED BEFORE METER IS SET OR SERVICE IS ACTIVATED.
7. IF INITIAL TEST DONE BY TMWA FIELD PERSONNEL FAILS, RETESTING OF BACKFLOW ASSEMBLY IS REQUIRED WITHIN 7 DAYS AFTER METER IS SET OR SERVICE ACTIVATION. COPY OF TEST RESULTS TO BE FORWARDED TO TMWA BACKFLOW PREVENTION GROUP BY A CERTIFIED ASSEMBLY TESTER WITHIN THAT SAME TIMEFRAME.
8. MINIMUM DIMENSIONS FOR THE THRUST BLOCK BEARING AREA FOR PIPE 2" AND SMALLER SHALL BE 8" X 8" AND 12" IN DEPTH. ALL OTHER SIZES TO BE DETERMINED BY ENGINEER.
9. FOR YEAR-ROUND USE REFER TO 10A-2.

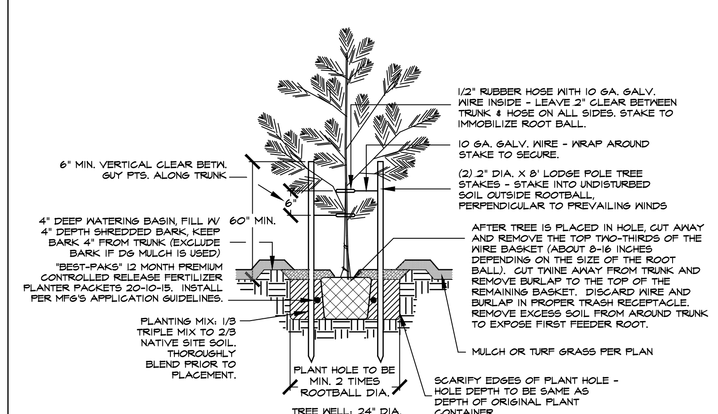
TRUCKEE MEADOWS WATER AUTHORITY	DATE	APPENDIX 10A BACKFLOW PREVENTION ASSEMBLIES	DRAWING NUMBER
	7/2001		10A-3
	REV	REDUCED PRESSURE PRINCIPLE ASSEMBLY FOR IRRIGATION AND CONSTRUCTION WATER USE - HORIZONTAL	
	6/2016		

14 BACKFLOW PREVENTER DETAIL — NOT TO SCALE



NOTE,
ALL AUTO DRAINS SHALL BE LOCATED DOWNSTREAM OF THE BACKFLOW PREVENTER - NAC 445A.67295.

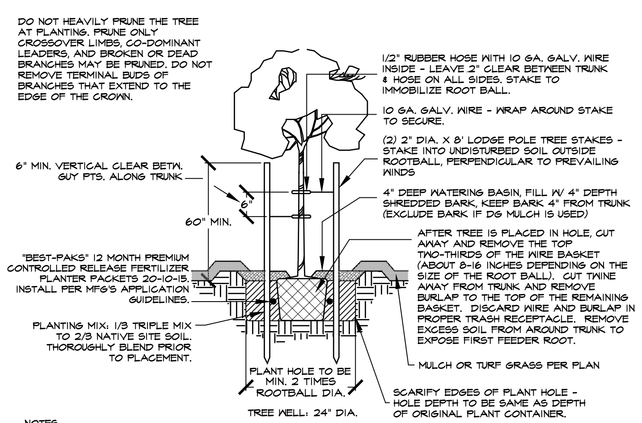
11 AUTO DRAIN



NOTES:
1. REMOVE ALL NURSERY STAKES, TIES & TAGS - TREES MUST STAND UPRIGHT TO BE ACCEPTABLE. SEE NURSERY STOCK QUALITY STANDARDS. ALL TREES SHALL BE STAKED SO AS TO REMAIN UPRIGHT AND PLUMB FOLLOWING INSTALLATION.
2. REMOVE DAMAGED BRANCHES - DO NOT REMOVE CENTRAL LEADER OR ANY LOWER BRANCHES.
3. TOP OF ROOT BALL* TO BE 1" ABOVE EXISTING GRADE - NO NATIVE SOIL TO BE PLACED ON TOP OF ROOT BALL.
4. GRADE WATERING BASIN SUCH THAT WATER COLLECTS AT EDGE OF ROOT BALL, NOT AT TRUNK.
5. THOROUGHLY WATER IMMEDIATELY AFTER PLANTING.
6. ORIENT GRAFT UNION TO FACE NORTH.

* TOP OF ROOT BALL IS DEFINED AS THE LOCATION OF THE UPPERMOST LATERAL ROOT NOT THE SOIL LEVEL IN THE PLANT CONTAINER.

12 EVERGREEN TREE PLANTING — NOT TO SCALE



NOTES:
1. REMOVE ALL NURSERY STAKES, TIES & TAGS - TREES MUST STAND UPRIGHT TO BE ACCEPTABLE. SEE NURSERY STOCK QUALITY STANDARDS. ALL TREES SHALL BE STAKED SO AS TO REMAIN UPRIGHT AND PLUMB FOLLOWING INSTALLATION.
2. REMOVE DAMAGED BRANCHES - DO NOT REMOVE CENTRAL LEADER OR ANY LOWER BRANCHES.
3. TOP OF ROOT BALL* TO BE 1" ABOVE EXISTING GRADE - NO NATIVE SOIL TO BE PLACED ON TOP OF ROOT BALL.
4. GRADE WATERING BASIN SUCH THAT WATER COLLECTS AT EDGE OF ROOT BALL, NOT AT TRUNK.
5. THOROUGHLY WATER IMMEDIATELY AFTER PLANTING.
6. ORIENT GRAFT UNION TO FACE NORTH.

* TOP OF ROOT BALL IS DEFINED AS THE LOCATION OF THE UPPERMOST LATERAL ROOT NOT THE SOIL LEVEL IN THE PLANT CONTAINER.

13 DECIDUOUS TREE PLANTING — NOT TO SCALE

PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy., Ste. A
Reno, Nevada 89521 Phone: 1-775-826-1440

REGISTERED LANDSCAPE ARCHITECT RYAN HANSEN 440 12/16/19 Expires: 6/30/20 STATE OF NEVADA

NO.	DATE	INITIALS	DESCRIPTION
			REVISIONS

Nevada

SUMMIT CHRISTIAN CHURCH
Worship Center & Parking Expansion
7075 Pyramid Way
Sparks, NV 89436

Preliminary Landscape & Irrigation Details

L1

DESIGNED BY:	KRD
DRAWN BY:	KRD
CHECKED BY:	RWH
DATE:	12/16/19
JOB NO.	679-504-06-19

SHEET NO.
Landscape 3 OF 4

L.A. StudioNevada
the landscape architecture studio
1552 C Street Sparks, NV 89431 (775) 323-2223 NV RLA #440
www.lastudionevada.com

WSUP19-0026
EXHIBIT D

LANDSCAPE SPECIFICATIONS

GENERAL

1. PLAN IS DIAGRAMMATIC ONLY. ALL LOCAL GOVERNING CODES SHALL BE MET. EXACT LOCATION OF TREES AND SHRUBS SHALL BE DETERMINED IN THE FIELD (INSTALL AS PER DETAILS) AND APPROVED BY THE OWNER'S REPRESENTATIVE.

2. A MINIMUM OF TWO WORKING DAYS BEFORE PERFORMING ANY DIGGING, CALL UNDERGROUND SERVICE ALERT FOR INFORMATION ON THE LOCATION OF NATURAL GAS LINES, ELECTRIC CABLES, TELEPHONE CABLES, ETC. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATION AND PROTECTION OF ALL UTILITIES, AND REPAIR OF ANY DAMAGE RESULTING FROM HIS WORK AT NO ADDITIONAL COST TO THE OWNER.

3. DAMAGES: CONTRACTOR SHALL PROMPTLY REPAIR ALL DAMAGES TO EXISTING SITE AT NO COST TO OWNER.

4. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES (I.E., PAVING, PLUMBING, ELECTRICAL, ETC.)

5. THE CONTRACTOR SHALL BE RESPONSIBLE TO FIELD VERIFY SITE CONDITIONS PRIOR TO CONSTRUCTION AND TO NOTIFY THE OWNER'S REPRESENTATIVE SHOULD CONDITIONS EXIST WHICH PREVENT CONSTRUCTION AS PER THESE PLANS. COMMENCEMENT OF WORK SHALL CONSTITUTE ACCEPTANCE OF CONDITIONS AND RESPONSIBILITY FOR CORRECTIONS.

6. CONTRACTOR AGREES THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR ASSUMES SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS AND CONTRACTOR FURTHER AGREES TO DEFEND, INDEMNIFY AND HOLD HARMLESS THE OWNER FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THE PROJECT.

PLANTING

7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FINISH GRADING THROUGHOUT ALL LANDSCAPE AREAS SUCH THAT THERE ARE NO HUMPS OR DEPRESSIONS AND POSITIVE DRAINAGE OCCURS THROUGHOUT. THE TOP 18" OF ALL PLANTING BEDS SHALL BE CLEAN NATIVE SOIL FREE OF ALL CONSTRUCTION DEBRIS AND NATIVE ROCKS OVER 1" IN DIAMETER. CONTRACTOR SHALL AMEND THE PLANTING BED OR PLANTING HOLES PER PLANS AND SPECIFICATIONS. FINAL GRADE OF ALL PLANTERS (I.E. MULCH SURFACE) SHALL BE FLUSH WITH ADJACENT HARDSCAPE SURFACES.

8. SOIL TEST: CONTRACTOR SHALL PROVIDE SOIL TEST RESULTS FOR EXISTING SITE SOIL AS FOLLOWS:
- ANALYSIS PACKAGE LTP.4 BY SUNLAND ANALYTICAL (916)852-8557 (OAE).
- TEST RESULTS SHALL INCLUDE SOIL SATURATION PERCENT, SOIL TEXTURE, INFILTRATION RATE, pH, CONDUCTIVITY, TOTAL DISSOLVED SALTS, CATION EXCHANGE CAPACITY, POTASSIUM, SODIUM, CALCIUM, MAGNESIUM, NITRATE & PHOSPHORUS, SULFUR, CHLORIDE, BORON, COPPER, IRON, MANGANESE, ZINC & LIME REQUIREMENT OR GYPSUM REQUIREMENT, SODIUM ABSORPTION RATIO, EXCHANGEABLE SODIUM PERCENT & ORGANIC MATTER, ALONG WITH RECOMMENDATIONS FOR SOIL AMENDMENT BASED ON ANALYSIS RESULTS.
- CONTRACTOR SHALL FOLLOW RECOMMENDATIONS OF SOIL TEST.

9. IT IS THE CONTRACTOR'S RESPONSIBILITY TO TOTAL AND CONFIRM ALL MATERIAL QUANTITIES. ITEMS QUANTITIFIED BY AN AREA (I.E., SQUARE FEET - SF, SQUARE YARD - SY) OR VOLUME (CUBIC FEET - CU FT, CUBIC YARD - CU YD) SHALL BE CALCULATED AND CONFIRMED BY THE CONTRACTOR. THE QUANTITIES LISTED ON THE PLANT LIST ARE ESTIMATED. IN THE EVENT OF A DISCREPANCY BETWEEN THE TOTALS LISTED ON THE PLANT LIST AND THE QUANTITY OF GRAPHIC PLANT SYMBOLS DEPICTED ON THE DRAWINGS, THE GRAPHIC SYMBOLS ON THE PLANS SHALL GOVERN. THE ACTUAL TOTAL QUANTITIES SHALL BE DETERMINED BY THE CONTRACTOR.

10. SOIL AMENDMENT: UNLESS OTHERWISE INDICATED BY THE SOIL TEST, SOIL AMENDMENT SHALL BE HUMUS COMPOSED OF TOPSOIL, BARK HUMUS, AND COMPOST. SUBMIT TO OWNER'S REPRESENTATIVE FOR APPROVAL.

11. CONTRACTOR IS RESPONSIBLE FOR PROVIDING PLANT MATERIAL PER SYMBOLS AND SPACING INDICATED ON PLAN. SYMBOLS PREVAIL OVER NUMBERS ON PLANT LIST. NO SUBSTITUTIONS WILL BE ACCEPTED WITHOUT EXPRESSED WRITTEN CONSENT OF THE OWNER'S REPRESENTATIVE. SEE SUBMITTALS.

12. ALL PLANTS NOT MEETING OR EXCEEDING REQUIREMENTS AND RECOMMENDATIONS OF THE LATEST EDITION OF THE ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN SHALL BE REJECTED. CONTRACTOR SHALL RECEIVE ON-SITE APPROVAL OF PLANT MATERIAL BY OWNER'S REPRESENTATIVE PRIOR TO PLANTING. FAILURE TO RECEIVE PRIOR APPROVAL MAY RESULT IN REJECTION OF PLANT MATERIAL FOLLOWING INSTALLATION. THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO INSPECT AND EVALUATE PLANT MATERIAL THROUGHOUT THE CONSTRUCTION AND MAINTENANCE PERIOD.

13. ALL PLANTING BEDS SHALL RECEIVE TOP-DRESSING OF MULCH AS FOLLOWS:

- FROCK, 2"X3" FRACTURED ROCK (OAE) - INSTALL 4" MIN. DEPTH OF ROCK MULCH OVER LANDSCAPE FABRIC IN A LANDSCAPE BEDS.
- BARK MULCH - INSTALL WALK-ON BARK MULCH (OAE) IN TREE AND SHRUB WATERING WELLS LOCATED WITHIN ROCK MULCH AREAS. - DO NOT INSTALL LANDSCAPE FABRIC UNDER BARK.
- LANDSCAPE FABRIC - DEWITT PRO-5 WEED BARRIER (OAE). INSTALL IN ACCORDANCE WITH MFG'S SPECIFICATIONS.
- GRANULAR, PRE-EMERGENT HERBICIDE - APPLY RONSTAR TURF & ORNAMENTAL HERBICIDE (OAE) TO ALL PLANTING BEDS PER MFG'S SPECIFICATIONS.

NOTE: DIGITAL PHOTOS OF ALL MULCH SAMPLES SHALL BE SUBMITTED TO OWNER'S REPRESENTATIVE FOR REVIEW AND APPROVAL MIN. 48 HOURS PRIOR TO START OF ANY LANDSCAPE OR IRRIGATION WORK. IF UNACCEPTABLE MULCH IS INSTALLED WITHOUT APPROVAL, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CORRECT THE ISSUES AT HIS EXPENSE.

OBSERVATIONS/APPROVALS/SUBMITTALS

14. CONTRACTOR IS RESPONSIBLE FOR NOTIFYING OWNER'S REPRESENTATIVE, A MINIMUM OF 48 HOURS IN ADVANCE, FOR THE FOLLOWING SITE OBSERVATIONS AND/OR MEETINGS:

A. PRECONSTRUCTION MEETING WITH ALL PARTIES
B. PLANT MATERIAL ON SITE, PRIOR TO INSTALLATION
C. FINAL PROJECT WALK-THROUGH
D. ADDITIONAL SITE OBSERVATIONS AS DEEMED NECESSARY BY THE OWNER'S REPRESENTATIVE AND/OR CONTRACTOR.

15. SUBMIT AMENDMENT AND MULCH SAMPLES TO OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO INSTALLATION. FAILURE TO COMPLY MAY RESULT IN REJECTION OF MULCH OR AMENDMENT PRIOR TO OR FOLLOWING INSTALLATION.

16. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO LOCATE AND PROVIDE PLANT MATERIAL AS SPECIFIED ON THIS PLAN. THE CONTRACTOR MAY SUBMIT A REQUEST TO PROVIDE SUBSTITUTIONS FOR THE SPECIFIED PLANT MATERIAL UNDER THE FOLLOWING CONDITIONS:

A. ANY SUBSTITUTIONS PROPOSED SHALL BE SUBMITTED TO THE PROJECT OWNER'S REPRESENTATIVE WITHIN TWO WEEKS OF THE AWARD OF CONTRACT. SUBSTITUTIONS MUST MEET EQUIVALENT DESIGN AND FUNCTIONAL GOALS OF THE ORIGINAL MATERIALS AS DETERMINED BY THE OWNER'S REPRESENTATIVE. ANY CHANGES MUST HAVE THE APPROVAL OF THE OWNER'S REPRESENTATIVE.
B. THE REQUEST WILL BE ACCOMPANIED BY AT LEAST THREE NOTICES FROM PLANT MATERIAL SUPPLIERS THAT THE PLANT MATERIAL SPECIFIED IS NOT AVAILABLE AND WILL NOT BE AVAILABLE PRIOR TO CONSTRUCTION.

17. SUBMIT REQUIRED SOIL REPORT, AND SAMPLE OF PROPOSED SOIL AMENDMENTS TO OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.

18. RECORD (AS-BUILT) DRAWINGS: FOLLOWING COMPLETION OF PROJECT INSTALLATION, AND PRIOR TO FINAL APPROVAL, CONTRACTOR SHALL PREPARE AND SUBMIT RECORD DRAWINGS DEPICTING A COMPLETE LANDSCAPE AND IRRIGATION INSTALLATION. PROCURE FROM OWNER DIGITAL COPIES OF CONTRACT DRAWINGS. CONSTRUCTION DRAWINGS SHALL BE ON THE PROJECT SITE AT ALL TIMES DURING INSTALLATION. CONTRACTOR SHALL MAKE A DAILY RECORD OF ALL WORK INSTALLED DURING EACH DAY. ACTUAL LOCATION OF TREES AND SHRUB BEDS, IRRIGATION VALVES, AND ALL IRRIGATION AND DRAINAGE PIPING SHALL BE SHOWN ON THE PRINTS BY DIMENSIONS FROM EASILY IDENTIFIED PERMANENT FEATURES, SUCH AS BUILDINGS, CURBS, FENCES, WALKS, OR PROPERTY LINES. DRAWINGS SHALL SHOW MANUFACTURER'S NAME AND CATALOG NUMBER. THE DRAWINGS SHALL BE TO SCALE. ALL INFORMATION NOTED ON THE PRINT SHALL BE TRANSFERRED TO THE COPIES BY CONTRACTOR AND ALL INDICATIONS SHALL BE RECORDED IN A NEAT, ORDERLY WAY. THE RECORD COPIES SHALL BE TURNED OVER TO THE OWNER'S REPRESENTATIVE.

GUARANTEES/WARRANTY

20. ALL PLANTED AREAS SHALL BE MAINTAINED FOR A PERIOD OF SIXTY DAYS FOLLOWING WRITTEN ACCEPTANCE BY OWNER'S REPRESENTATIVE. LANDSCAPE CONTRACTOR WILL GUARANTEE ALL PLANT MATERIAL (INCLUDING BUT NOT LIMITED TO TREES, SHRUBS, GROUNDCOVER, AND GRASSES) FOR A PERIOD OF ONE FULL YEAR FOLLOWING FINAL ACCEPTANCE OF THE LANDSCAPE INSTALLATION BY THE OWNER'S AUTHORIZED REPRESENTATIVE. IN BIDDING AND INSTALLING THE PLANT MATERIAL SPECIFIED ON THESE PLANS, THE LANDSCAPE CONTRACTOR AGREES THAT THE PLANT MATERIAL SPECIFIED IS SUITABLE TO THE PROJECT SITE. FURTHERMORE, THE LANDSCAPE CONTRACTOR AGREES TO HONOR THE WARRANTY AND, IF NECESSARY, REPLACE SPECIES WITH A MORE HARDY PLANT TYPE IF DEEMED NECESSARY DUE TO EXCESSIVE DIE OUT. IF THE LANDSCAPE CONTRACTOR DOES NOT BELIEVE CERTAIN PLANT MATERIAL IS SUITABLE FOR THE SITE AND/OR ITS MICRO-CLIMATES, THE LANDSCAPE CONTRACTOR SHALL REQUEST TO MAKE PLANT MATERIAL SUBSTITUTIONS IN WRITING TO THE LANDSCAPE ARCHITECT PRIOR TO THE START OF INSTALLATION. PROPOSED SUBSTITUTIONS WILL RESULT IN NO ADDED COST.

IRRIGATION SPECIFICATIONS

GENERAL

1. PLAN IS DIAGRAMMATIC ONLY. FINAL LOCATION OF LINES AND HEADS SHALL BE DETERMINED IN THE FIELD AND APPROVED BY THE OWNER'S REPRESENTATIVE. LINES SHALL BE IN A COMMON TRENCH WHEREVER POSSIBLE. THE POINT-OF-CONNECTION SHALL BE AS INDICATED ON THE PLAN.

2. THE CONTRACTOR SHALL VERIFY EXISTING SITE CONDITIONS AND ENSURE THAT ALL LOCAL CODES ARE MET.

3. THE CONTRACTOR SHALL APPLY AND PAY FOR ALL PERMITS REQUIRED FOR INSTALLATION OF THE IRRIGATION SYSTEM AS DEPICTED ON THESE PLANS.

4. CONTRACTOR SHALL VERIFY AVAILABLE FLOW AND PRESSURE DOWNSTREAM FROM THE POINT-OF-CONNECTION PRIOR TO SYSTEM INSTALLATION. CONTRACTOR SHALL NOTIFY OWNER'S REPRESENTATIVE IMMEDIATELY IF AVAILABLE FLOW IS LESS THAN REQUIRED TO RUN THE LARGEST ZONE. CONTRACTOR SHALL NOT PROCEED ANY FURTHER WITH INSTALLATION OF THE SYSTEM UNTIL NECESSARY DESIGN REVISIONS HAVE BEEN DETERMINED BY OWNER'S REPRESENTATIVE.

5. THE CONTRACTOR SHALL NOT WILLFULLY INSTALL THE IRRIGATION SYSTEM AS SHOWN ON THE DRAWINGS WHEN IT IS OBVIOUS IN THE FIELD THAT UNKNOWN OBSTRUCTIONS OR DIFFERENCES IN DIMENSIONS EXIST THAT MIGHT HAVE BEEN UNKNOWN DURING ENGINEERING. SUCH OBSTRUCTIONS SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S AUTHORIZED REPRESENTATIVE. IN THE EVENT THIS NOTIFICATION IS NOT PERFORMED, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY REVISIONS NECESSARY AT NO ADDITIONAL COST TO OWNER.

6. ALL SPRINKLER EQUIPMENT NOT OTHERWISE DETAILED OR SPECIFIED SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND SPECIFICATIONS.

7. CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ALL IRRIGATION MATERIAL, INCLUDING PIPE, WITH THE LANDSCAPE DRAWINGS TO AVOID INTERFERING WITH THE PLANTING OF TREES, SHRUBS, OR OTHER PLANTINGS.

8. ALL VALVES ARE TO BE LOCATED IN PLANTING AREAS WHEREVER POSSIBLE.

9. ALL ELECTRICAL WIRE FROM CONTROLLER TO VALVES SHALL BE 12 GAUGE UL DIRECT BURIAL OR LARGER AS REQUIRED BY LENGTH PER MANUFACTURER'S SPECIFICATIONS.

10. BACKFILL FOR TRENCHING SHALL BE COMPACTED TO A DRY DENSITY EQUAL TO THE UNDISTURBED ADJACENT SOIL AND SHALL CONFORM TO ADJACENT GRADES WITHOUT DIPS, HUMPS, OR OTHER IRREGULARITIES.

11. A MINIMUM OF TWO WORKING DAYS PRIOR TO PERFORMING ANY DIGGING, CALL UNDERGROUND SERVICE ALERT AT 1-800-227-2600 FOR INFORMATION ON THE LOCATION OF NATURAL GAS LINES, ELECTRICAL CABLES, TELEPHONE CABLES, ETC.

12. CONTRACTOR AGREES THAT, IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY. THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND SHALL NOT BE LIMITED TO NORMAL WORKING HOURS.

13. INSTALL ALL PIPE AND CONTROL WIRE IN LANDSCAPE BEDS AND IN COMMON TRENCHES WHEREVER POSSIBLE.

14. INSTALL ALL PIPE AND CONTROL WIRE, WHICH RUNS UNDER PAVING, WITHIN SCH. 40 PVC SLEEVES 4" DIA. MINIMUM SIZE AS REQUIRED TO ALLOW INSTALLATION WITHOUT BINDING. PROVIDE (1) SLEEVE PER PIPE. PROVIDE SEPARATE SLEEVES FOR CONTROL WIRE.

15. CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE FOR COMPLETE DRAINAGE OF THE MAINLINES BY INSTALLING MANUAL DRAINS AS INDICATED ON PLAN AND AT ALL SYSTEM LOW POINTS.

FLUSHING AND TESTING

16. PIPING SHALL BE COMPLETELY FLUSHED OF FOREIGN PARTICLES BEFORE ATTACHING IRRIGATION COMPONENTS AND DRAIN VALVES.

17. AFTER FLUSHING, AND WHEN ALL VALVES AND QUICK COUPLERS ARE IN PLACE, ALL MAIN SUPPLY LINES SHALL BE TESTED AT 100 POUNDS PER SQUARE INCH (100 PSI) WITH VALVES CLOSED. MAINTAIN PRESSURE FOR A PERIOD OF NOT LESS THAN (4) CONSECUTIVE HOURS. ALL JOINTS SHOWING LEAKS SHALL BE CLEANED, REMADE, AND TESTED.

18. OPERATIONAL TESTING: PERFORM OPERATIONAL TESTING AFTER HYDROSTATIC TESTING IS COMPLETED. DEMONSTRATE TO THE OWNER'S REPRESENTATIVE THAT THE SYSTEM MEETS COVERAGE REQUIREMENTS (100%) AND THAT AUTOMATIC CONTROLS FUNCTION PROPERLY.

SUBMITTALS

19. MATERIALS LIST: WITHIN (15) DAYS AFTER AWARD OF CONTRACT, SUBMIT TO OWNER'S REPRESENTATIVE (3) COPIES OF A COMPLETE MATERIAL LIST (PARTIAL LIST NOT ACCEPTABLE) OF ALL MATERIALS TO BE USED ON THE PROJECT, SPECIFYING MANUFACTURER, GRADE, TRADE NAME, CATALOG NUMBER, SIZE, ETC. THIS SHALL IN NO WAY BE CONSTRUED AS ALLOWING A SUBSTITUTION FOR ANY ITEM SPECIFIED ON THE PLANS. EQUIPMENT OR MATERIALS INSTALLED OR FURNISHED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE OWNER'S REPRESENTATIVE MAY BE REJECTED AND THE CONTRACTOR REQUIRED TO REMOVE THE MATERIALS AT HIS OWN EXPENSE.

INSTALLATION AND PERFORMANCE OF APPROVED SUBSTITUTIONS ARE THE CONTRACTORS RESPONSIBILITY. ANY CHANGES REQUIRED FOR INSTALLATION OF ANY APPROVED SUBSTITUTION MUST BE MADE TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE WITHOUT ADDITIONAL COST TO OWNER.

20. PRIOR TO SYSTEM INSTALLATION CONTRACTOR SHALL VERIFY AND SUBMIT TO OWNER'S REPRESENTATIVE IN WRITING, AVAILABLE FLOW AND PRESSURE AT POINT-OF-CONNECTION AS DESCRIBED IN SPECIFICATION #4 ABOVE.

21. COMPLETE WARRANTY CARDS FOR AUTOMATIC CONTROLLER AND OTHER IRRIGATION MATERIAL (CONTROLLER KEYS, ETC.) SHALL BE DELIVERED TO OWNER.

22. CONTRACTOR SHALL PREPARE AND ISSUE TO THE OWNER (AT COMPLETION OF THE INSTALLATION) AN ANNUAL CHART INDICATING LOCATION, OPERATING DATES, CYCLES, AND TIME FOR EACH ZONE.

23. ASBUILT IRRIGATION DRAWINGS: CONTRACTOR SHALL FURNISH ASBUILTS OF THE COMPLETE IRRIGATION SYSTEM. PROCURE FROM OWNER'S REPRESENTATIVE DIGITAL COPIES OF CONTRACT DRAWINGS. CONSTRUCTION DRAWINGS SHALL BE ON THE CONSTRUCTION SITE AT ALL TIMES WHILE THE IRRIGATION SYSTEM IS BEING INSTALLED. CONTRACTOR SHALL MAKE A DAILY RECORD OF ALL WORK INSTALLED DURING EACH DAY. ACTUAL LOCATION OF VALVES AND ALL IRRIGATION AND DRAINAGE PIPING SHALL BE SHOWN ON THE PRINTS BY DIMENSIONS FROM EASILY IDENTIFIED PERMANENT FEATURES, SUCH AS BUILDINGS, CURBS, FENCES, WALKS, OR PROPERTY LINES. DRAWINGS SHALL SHOW APPROVED MANUFACTURER'S NAME AND CATALOG NUMBER. THE DRAWINGS SHALL BE TO SCALE AND ALL INDICATIONS SHALL BE NEAT. ALL INFORMATION NOTED ON THE PRINT SHALL BE TRANSFERRED TO THE COPIES BY CONTRACTOR AND ALL INDICATIONS SHALL BE RECORDED IN A NEAT, ORDERLY WAY. THE RECORD COPIES SHALL BE TURNED OVER TO THE OWNER'S REPRESENTATIVE AT OR BEFORE FINAL ACCEPTANCE/APPROVAL OF THE PROJECT.

GUARANTEE/FINAL ACCEPTANCE

24. CONTRACTOR SHALL UNCONDITIONALLY GUARANTEE THE IRRIGATION SYSTEM FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE. MANUFACTURER WARRANTIES SHALL ONLY EXCEED THIS GUARANTEE AND CONTRACTOR SHALL BE LIABLE FOR REPAIRS/REPLACEMENT OF FAILED MATERIAL/WORKMANSHIP.

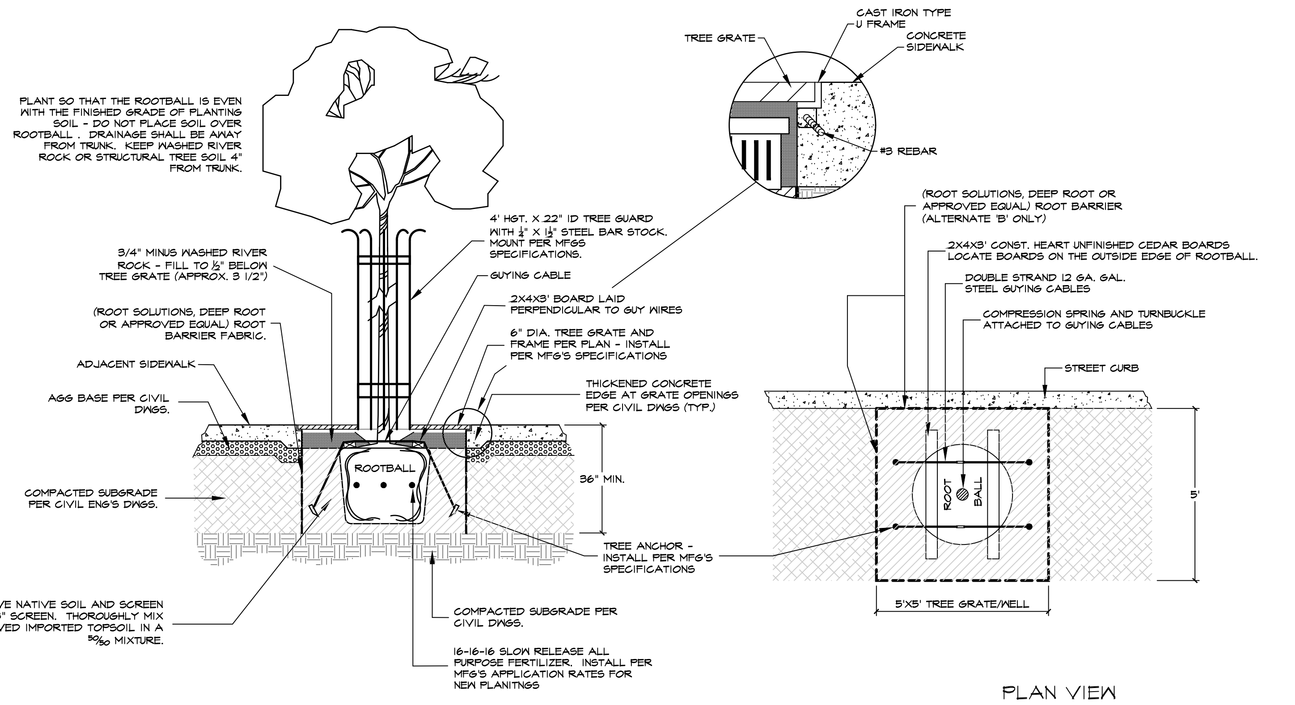
MAINTENANCE

25. AFTER SYSTEM IS INSTALLED AND APPROVED, INSTRUCT OWNER'S DESIGNATED PERSONNEL IN COMPLETE OPERATION AND MAINTENANCE PROCEDURES. DRAIN ENTIRE SYSTEM AT END OF FIRST WATERING SEASON FOLLOWING INSTALLATION. TRAIN OWNER'S DESIGNATED PERSONNEL BY HAVING THEM ASSIST IN WINTERIZING PROCEDURE.

NEENAH FOUNDARY "MAJESTIC COLLECTION"
- SERIES NO. R-8871, GRATE SIZE: 60" ROUND
- TREE OPENING SIZE: 16"
- SLOT SIZE: 0.25 INCHES
- WITH LIGHT OPENING: R-8871

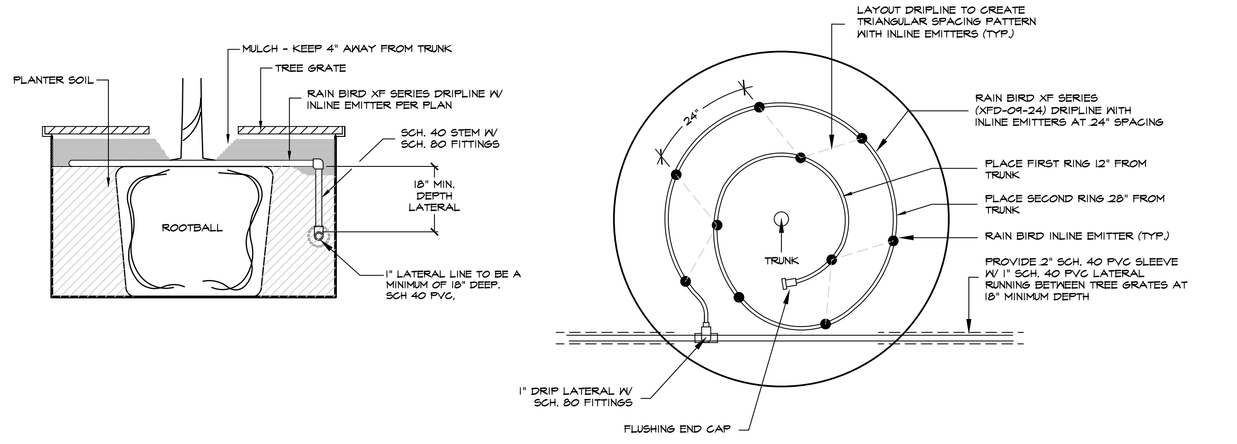
1 TREE GRATE DETAIL

NOT TO SCALE



2 TREE GRATE PLANTING DETAIL

NOT TO SCALE



3 TREE WELL IRRIGATION

NOT TO SCALE

PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

L.A. StudioNevada
the landscape architecture studio
1552 C Street Sparks, NV 89431 (775) 323-2223 NV RLA #440
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DYER ENGINEERING CONSULTANTS
9160 Double Diamond Pkwy., Ste. A
Reno, Nevada 89521 Phone: 1-775-832-1440

REGISTERED LANDSCAPE ARCHITECT
RYAN HANSEN
440
12/16/19
Expires: 6/30/20
STATE OF NEVADA

NO.	DATE	INITIALS	REVISIONS DESCRIPTION

SUMMIT CHRISTIAN CHURCH
Worship Center & Parking Expansion
Preliminary Landscape & Irrigation Details
7075 Pyramid Way
Sparks, NV 89436
Nevada

DESIGNED BY:	KRD
DRAWN BY:	KRD
CHECKED BY:	RWH
DATE:	12/16/19
JOB NO.	679-504-06-19

SHEET NO.
Landscape
4 OF 4
L1

WSUP19-0026
EXHIBIT D

Z:\HLA-Projects\LA STUDIO PROJECTS\2019\679 (Dyer Engineering)\679-504-06-19 (Summit Christian Church Expansion - CD DD Sparks)\L3-679-504 Details and Specs (2 Sheets).dwg KELLI 12/12/2019 9:53 AM

SHEET NOTES

1. EXISTING POLES INDICATED ARE 10 FEET ON 2-FOOT BASES AT THE LOCATIONS INDICATED.
2. EXISTING POLES INDICATED ARE 20' FEED ON 3-FOOT BASES AT THE LOCATIONS INDICATED "(E)".
3. NEW POLES INDICATED ARE 20' FEET ON 3-FOOT BASES AT THE LOCATION INDICATED "(N)".

PROPERTY LINE

PROPERTY LINE

A | E1.2 — SITE LIGHTING & PHOTOMETRY PLAN
SCALE: 1" = 40'-0"

PRELIMINARY SUP
NOT FOR CONSTRUCTION
12-16-2019

CONTRACTOR

These plans are prepared and submitted by the contractor as an exemption to NRS 623.330 for work under the contract's license category authorized under NRS 624

Paradigm Electric, Inc.	Mike Hall
Company Name	(Please Print) Contractor Representative OR Master or Q.I. If Plumbing or Electrical Journeyman Number
50247	
Contractor License Number	
Paradigm Electric, Inc	
Plans Prepared By:	Signature

SUMMIT CHRISTIAN CHURCH
PHASE 4.0 WORSHIP CENTER
7075 PYRAMID HIGHWAY
SPARKS, NEVADA 89434

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Creating space. Inspiring people.
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Phone: 775.626.2828
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NCL #50247
CCL #863493

PARADIGM ELECTRIC INC. ELECTRICAL CONTRACTOR 12.16.19 NEV. LIC. #50247

REV.	DESCRIPTION	DATE	REV.	DESCRIPTION	DATE

SHEET TITLE:
SITE LIGHTING & PHOTOMETRIC PLAN

JOB NAME:	SUMMIT 4.0 CHRISTIAN CHURCH WORSHIP CENTER
JOB NO.:	PEI-20-001
DATE:	12-16-19
DRAWN BY:	PEI
CHECKED BY:	MH
FILE NAME:	
SHEET NO.:	**E1.2**

WSUP19-0026
EXHIBIT D