LORAC DESIGN GROUP, LLC
Structural Engineers

Design Calculations

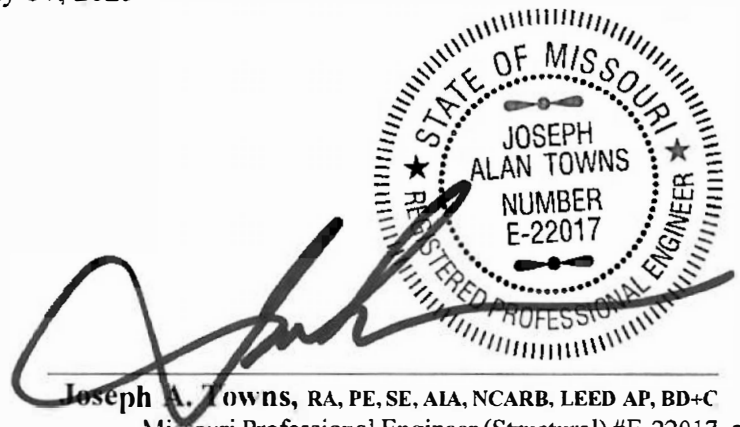
For

Summit Orchards
Lee's Summit, Missouri

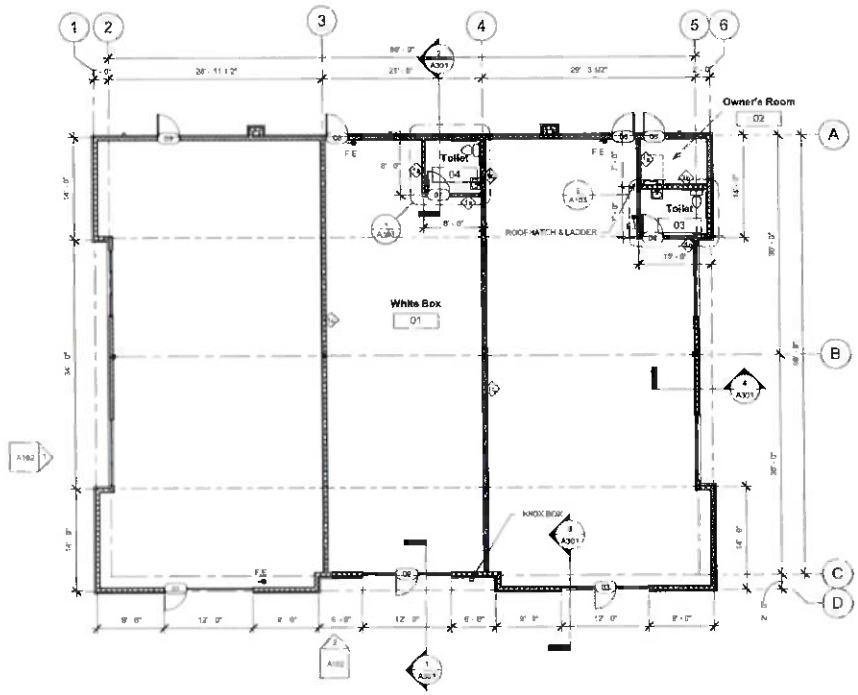
Architect,

Scharhag Architects
6247 Brookside Blvd., Suite #204
Kansas City, Missouri, 64113

Date: May 30, 2025



Joseph A. Towns, RA, PE, SE, AIA, NCARB, LEED AP, BD+C
Missouri Professional Engineer (Structural) #E-22017
Certification Applies to Pages Cover, through 43



1 Floor Plan
1/8" = 1'-0"

BUILDING CODE SUMMARY

APPLICABLE CODES
2018 INTERNATIONAL BUILDING CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL PLUMBING CODE
2018 INTERNATIONAL FIRE CODE
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2017 NATIONAL ELECTRICAL CODE
2017 ICC/ANSI A117.1

SUMMARY OF WORK
NEW SHELL SPEC BUILDING. NO C.O. IS REQUESTED WITH THIS SUBMITTAL. SEPARATE TENANT FINISH PLANS WILL BE SUBMITTED FOR EACH SPACE AT A LATER DATE

FIRE SUPPRESSION SUMMARY
NONE

OCCUPANCY CLASSIFICATION
M (RETAIL) & B (OFFICE)

TYPE OF CONSTRUCTION
V-B, NON - SPRINKLED

FLOOR AREA
BUILDING AREA: 6,119 SQ FT

OCCUPANT LOAD
TO BE DETERMINED

EXITS REQUIRED
TO BE DETERMINED

EXITS PROVIDED
TWO PER SPACE

TOILET FACILITIES REQUIRED
TO BE DETERMINED

TOILET FACILITIES PROVIDED
ONE UNISEX TOILET PER SPACE (ADA

DEFERRED SUBMITTALS TO BE COMPLETED BY OTHERS
ROOF TRUSS PLANS (PLANS BY SUBCONTRACTOR)

INTERIOR FINISH REQUIREMENTS
FLOOR FINISHES: CLASS I or CLASS II
WALL FINISHES: CLASS A (non-sprinkled)
CEILING FINISHES: CLASS A (non-sprinkled)

EGRESS DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT

PREMISES SHALL BE IDENTIFIED ON ALL EXTERIOR DOORS WITH NUMBERS AND/OR LETTERS. EACH CHARACTER SHALL BE NOT LESS THAN 6" HIGH WITH A MINIMUM STROKE WIDTH OF 1/2 INCHES. THEY SHOULD BE INSTALLED ON A CONTRASTING BACKGROUND. STREET FACING DOORS SHALL HAVE ADDRESSES THAT ARE PLAINLY LEGIBLE AND VISIBLE FROM THE STREET FRONTING THE PROPERTY. ADDRESS NUMBERS AND/OR LETTERS SHALL BE ARABIC NUMBERS OR ALPHABETIC LETTERS.

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NEW BUILDING FOR
SUMMIT ORCHARDS
LEES SUMMIT, MO

No.	Description	Date

Revision Schedule

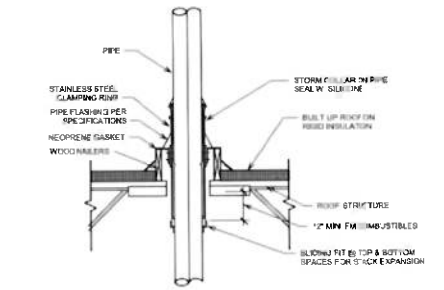
Floor Plan

Project number 2491
Date 02.19.2025

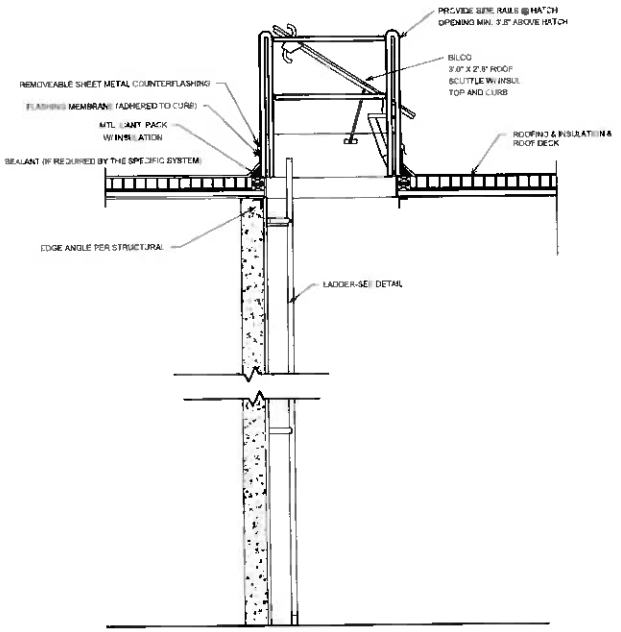
A101

Scale 1/8" = 1'-0"

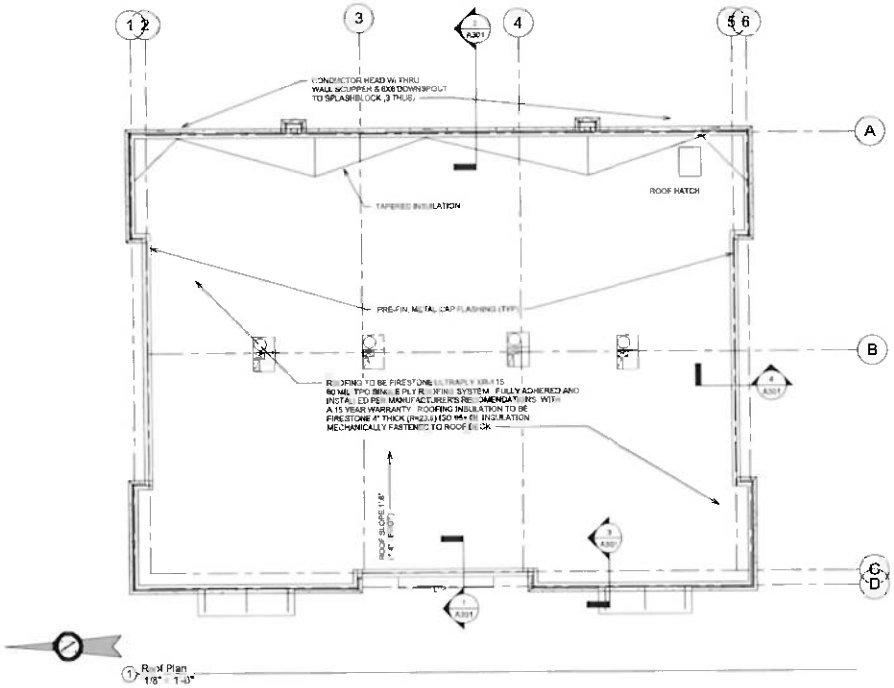
2



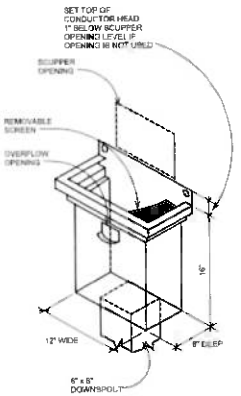
4 Pipe penetration
1" = 1'-0"



2 Roof hatch w/ guard rail
1" = 1'-0"

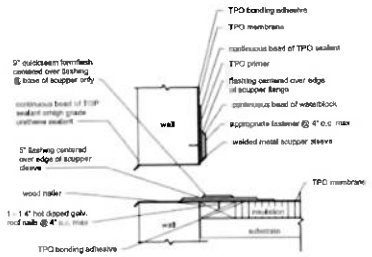


1 Roof Plan
1/8" = 1'-0"



SCUPPER DETAIL AT PARAPET WALL
NOT TO SCALE

3 Scupper detail
1/2" = 1'-0"



NOTE
CONDUCTOR HEADS AND DOWNSPOUTS SHOULD BE FABRICATED OF 24 GA. PRE-FINISHED METAL

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NEW BUILDING FOR
SUMMIT ORCHARDS
LEES SUMMIT, MO

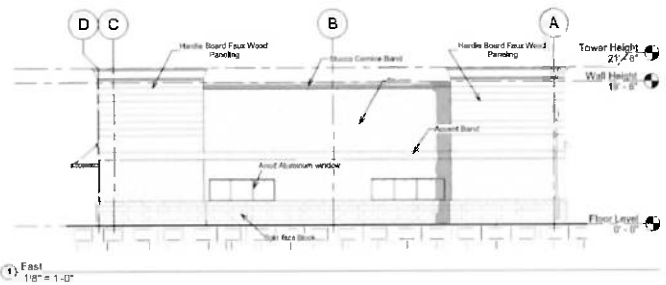
No.	Description	Date
	Revision Schedule	

Roof Plan

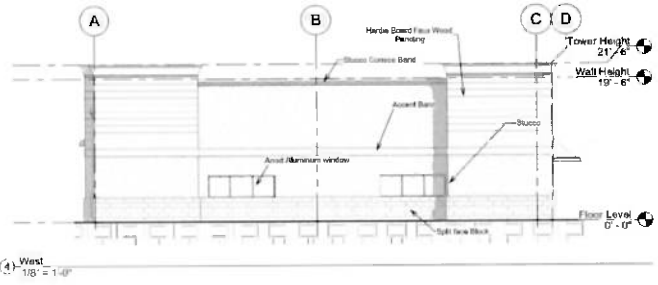
Project number 2491
Date 02.18.2025

A104

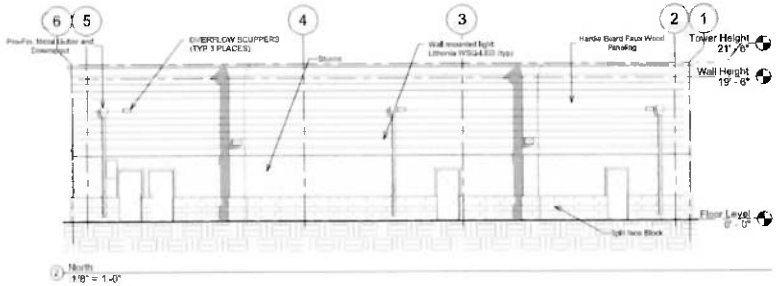
Scale As indicated



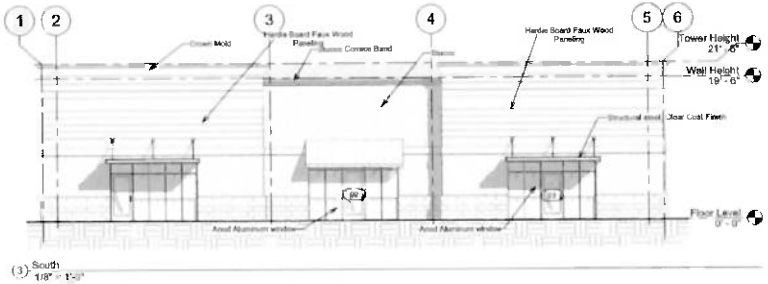
1 East
1/8" = 1'-0"



4 West
1/8" = 1'-0"



2 North
1/8" = 1'-0"



3 South
1/8" = 1'-0"

PROVIDE CLEAR SILICONE SEALER FOR BRICK

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NEW BUILDING FOR
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No.	Description	Date
	Revision Schedule	

Elevations

Project number 2491
Date 02.19.2025

A201

Scale 1/8" = 1'-0"

GENERAL NOTES

A GENERAL

1. These notes shall be read in connection with the Specifications and the Drawings. In the event of a conflict, notify the Architect for clarification.
2. Before pouring existing footer/base, examine actual job conditions. Report any discrepancy dimensional or otherwise, between architectural and structural Drawings and any other error, omission or difficulty affecting the work to the Architect and to the Structural Engineer for review.
3. The Owner or his Representative reserves the right to inspect any material fabrication, or workmanship at any time in field or shop for conformance to the Specifications and Drawings.
4. All details and sections are intended to be typical and shall be construed to apply to any similar situation elsewhere, except where a different detail is shown.

B DESIGN

1. Codes, specifications and standards (latest edition, U.N.O.)
   a. All design and construction shall conform to the International Building Code (currently adopted edition) as amended and adopted by the City of Jurisdiction.
   b. All construction shall comply with the provisions of the following codes, specifications and standards, except where noted to the contrary on drawings and specifications or where more stringent requirements are specified or shown:
      ACI 318 "Standard Specifications for Tolerance for Concrete Construction and Materials"
      ASCE 7 "Specifications for Structural Concrete for Buildings"
      AISC 360 "Building Code Requirements for Reinforced Concrete"
      ACI 530 "Building Code Requirements for Masonry Structures"
      AISC "Load and Resistance Factor Design (LRFC) Specification for Structural Steel Buildings"
      SDI "Steel Deck Manual for Floor Decks and Roof Decks"
      AWS D1.1 "Structural Welding Code - Steel."
2. Design Loads
   a. Roof Snow (roof rain or snow)
      Pf = 21 psf
      Ce = 1.0
      I = 1.00
      Ct = 1.00
   b. Wind
      Basic Wind Speed = 115 mph
      I = 1.00
      Wind Exposure B
      Internal Pressure Coefficient = 0.18
   d. Floor Live Load: Office 50 psf
      Hall/Stair (exits) stairs 100 psf
      Light Storage 125 psf
      Heavy storage 250 psf
   e. Canopy Roof Design Dead Loads
      Steel Panels 10 psf
      Steel Framing 5 psf
      Roofing 5 psf
      Total 40 psf
3. Foundations are designed for the following net allowable bearing capacities:
   a. Isolated Footings: 2 ksf
   b. Continuous Footings: 2 ksf
4. Foundations and retaining walls have been designed for an equivalent fluid pressure of 30 pcf.

C CONCRETE

1. Concrete used in the Work shall have the following minimum 28-day ultimate compressive strengths:
   a. Columns: 4000 psi
   b. Retaining walls, slabs on grade and footings 4000 psi
   c. Framed slabs 4000 psi
2. Air entrain all exterior concrete (admixture ASTM C 260).
3. Do not use calcium chloride admixtures under any circumstances.
4. Reinforcement: ASTM A 615 Specifications, Grade 60 deformed. Bend bars cold.
5. Welded wire fabric (WWF): ASTM A 185.
6. Maintain minimum concrete coverage for reinforcing as indicated, unless noted otherwise. Reference details 17/S1.0 and 18/S3.0 for placement of reinforcement in typical framed slabs.
   a. 3 in. clear where concrete is deposited directly against earth
   b. 2 in. clear where concrete is exposed to earth or weather but poured against forms for bars larger than #5.
   c. 1 1/2 in. clear where concrete is exposed to earth or weather but poured against forms for bars #5 or smaller
   d. 3/4 in. clear for slabs and walls formed above grade not exposed to weather
   e. 1 1/2 in. clear for beams and columns formed above grade and not exposed to weather
7. Lap all bars at splices in accordance with ACI 318, unless specifically noted otherwise.
8. Top and bottom bars in continuous grade beams shall run continuous through and splice at mid-span, where possible. Otherwise top bars shall splice within the middle 1/3 span and bottom bars shall splice over supports.
9. Pour columns, walls, and pilasters to be monolithic.
10. All concrete walls shall be properly braced and held in line until supporting slabs or floors are in place.
11. All bar steel and WWF shall be properly supported and held accurately in place as recommended by the Concrete Reinforcing Steel Institute, except that MAXIMUM spacing of any bar or mesh support shall be 3 feet.
   a. Support top slab bars with continuous high chairs.
   b. Support beam bars on heavy beam bolsters.
   c. Support footing and grade beam bars on precast reinforcing on concrete bricks, concrete blocks, or mounds of poured concrete.
   d. Support WWF in slab-on-grade properly at the mid-depth of the slab. Hooking and pulling up mesh after concrete has started to take its initial set is prohibited.
   e. Supports for reinforcement for exposed-to-view concrete surfaces shall have legs that are in contact with bars plastic protected (CRSI Class 1) or stainless steel (CRSI Class 2).
12. Where fullness-grade make an abrupt change in direction, such as at doors and corners or ends of walls, provide a #4 by 4 feet across the inside corner.
13. Provide the following minimum concrete cover for fire rating:
   Interior load bearing walls and columns 2 hrs 1 1/4" cover
   Concrete beams 2 hrs 1" cover
   Concrete joists 2 hrs 1 1/2" cover
   Floor slab 2 hrs 3/4" cover

D MASONRY

1. Concrete masonry units (CMU): ASTM C 90, lightweight units (105 pcf or less) with the minimum net area compressive strength of 1,900 psi.
2. Mortar: Portland cement and lime, and proportioned in accordance with ASTM C 270 for the following types:
   Type S for all walls above grade
   Type M for all walls below grade in contact with earth
3. f'm = 1,500 psi
4. Provide mortar bed on webs between grouted cells and hollow cells.
5. Grout: ASTM C 476. 3000 psi minimum 28-day compressive strength.
6. Grout all vertical cells and spaces containing reinforcing bars (as detailed) bond beams, and lintels.
7. Vertically reinforce walls as shown on drawings. However, if not indicated on the drawing reinforce wall as indicated below at each corner, at ends of 40 inches horizontal bi throughout the wall of walls, each side of control joints and openings, and at a maximum spacing unless noted otherwise as:
   8 or 6 wall #6
   12 or 10 wall (2) #6
8. Horizontally provide continuous bond beam with 2 #5 minimum for 12" or 12" CMU; 1 #5 minimum for 8" or 6" CMU at floor/roof, twice each height (10'-0" maximum spacing) and top of wall, unless noted otherwise. Provide #5 corner bar for each horizontal bond beam corners.
9. Place reinforcement prior to grouting. Hold vertical reinforcement in position with rebar positioner.
10. Provide horizontal joint reinforcement as indicated on the drawings and specifications, at a minimum provide at 16" o.c.
11. Lap joint reinforcement a minimum of 12 in.
12. In no case shall shoring and forms at lintels be removed until it is certain that the masonry has hardened sufficiently to carry its own weight and all other reasonable temporary loads that may be placed on it during construction.
13. Do not wet concrete masonry units.
14. Do not use calcium chloride.
15. Do not use masonry cement.
16. Keep masonry walls shored during construction until the roof deck and floor slabs are in place to provide lateral stability.

E STEEL

1. Qualifications for Welding Work:
   a. Perform all welding by a certified welder.
   b. Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure".
   c. Provide certifications that welders to be employed, have satisfactorily passed AWS qualification tests within previous 12 months.
   d. If recertification of welders is required, retesting will be Contractor's responsibility.
2. Erector must examine areas and conditions under which structural steel work is to be installed, and notify Contractor in writing of conditions detrimental to proper and timely completion of Work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Erector.
3. Submit shop drawings prepared under supervision of a registered professional engineer including complete details and schedules for fabrication and assembly of structural steel members, procedures and diagrams. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols, and show size, length, and type of each weld. Show size and type of bolt for all bolted connections.
4. Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed by others.
5. Paragraph 4.2.1 of the AISC "Code of Standard Practice for Steel Buildings and Bridges" is hereby modified by deletion of the following sentence: "The approval constitutes the owner's acceptance of all responsibility for the design adequacy of any detail configuration of connections developed by the fabricator as a part of his preparation of these shop drawings."
6. If required use wedges of backing strips, minimum bars, or cut-off plates flush with edge of abutting parts.
7. Where framing members and/or connections for steel stairs are not indicated on either structural or architectural drawings, Design the members and/or connections and submit calculations or supporting data to verify their adequacy. A live load of 125 psf shall be used in the design. Fully detail stair connections, including attachment to supporting members.
8. Structural steel: ASTM A 572 - wide flange sections, ASTM A 36 - angles, channels, and plates. ASTM A 500 - pipes, and ASTM A 500, Grade B - tubes.
9. High Strength Bolts (slip-critical connections): ASTM A 325N, with twist-off-tail indicator type bolts.
10. Anchor bolts: ASTM A 307, unless indicated are based on preliminary reactions and spacing.
11. Welded connections: AWS Standards and Specifications using E70xx electrodes, unless noted otherwise.
12. Expansion Bolts: Stud type expansion anchors, (Wedge Bolt, ET).
13. Injection Adhesive: Hilti Bonding Anchor (HY 150), Rawl, Dekal Tail-Fast Ramset/Redhead Epcon Ceramic 6.
14. Drill holes for anchors using a bit incapable of cutting steel. Do not cut existing concrete reinforcing steel. If while drilling, reinforcing steel is encountered, notify the Structural Engineer for approval of new location. Grouted and patch the abandoned hole grout.
15. Ends of beams which have copes to the extent that allowable shear or bending stress of steel is exceeded shall have web plates of sufficient size welded to the beam to reduce such stresses.
16. Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.
17. Do not flame cut holes or enlarge holes by burning.
18. Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of a complete frame or structure before permanently fastening. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
19. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structure as erection proceeds.
20. Clean bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base plates.
21. Grout plates are prohibited. Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with edge of base plate prior to packing with grout.
22. Non-shrink grout: CRD-C 621 Type A, premixed, nonmetallic, noncorrosive containing.
23. Provide open-web joists (K-series), longspan joists (LH-series), and joist girders as indicated on the drawings and in accordance with specifications of SJI.
   a. Weld K-series joists to supporting steel with 1/8 in. fillet welds 1in. long, each side o.c.b.o.
   b. Weld LH-series joists to supporting steel with 1/4 in. fillet welds 2 in. long, each side o.c.b.o.
   c. Bolt joists at or nearest a column to supporting steel in conformance with O.S.H.A. with erection bolts.
   d. Provide continuous horizontal bridging for joists (o.n.o.) and bottom chord braces. Bridge joist girders as required by SJI, except where the roof uplift loading requires additional bridging.
   e. Provide horizontal bridging to resist 10 psf uplift for main roof at service building and future building penthouse.
   f. Extend bottom cord in brace beam bottom flange at mid-span of beams at service building.
24. Form deck: 4-1/6 in. galvanized deck with the following minimum properties:
   Minimum thickness 0.029"
   Moment of Inertia 0.624 in.^4
   Section Modulus 0.67 3 in.^3
25. Composite floor deck: 1-1/2 in. galvanized deck with the following minimum properties:
   Minimum thickness 0.035"
   Moment of Inertia 0.195 in.^4
   Section Modulus 0.240 in.^3
26. Roof deck: 1-1/2" painted wide rib deck with the following minimum properties:
   Minimum thickness 0.358"
   Moment of Inertia 0.212 in.^4
   Section Modulus 0.224 in.^3
27. Roof deck shall be welded in supports to resist a net uplift of 20 PSF.
28. Provide 2 1/2" x 2 1/2" x 1/4" angles as required to support deck at columns ends of beams, around openings, etc. Shown as noted otherwise.
29. Provide 1,500 # mass steel for use by Engineers as needed.

F EPOXY AND MECHANICAL ANCHORS

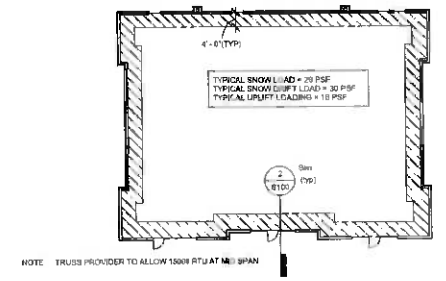
1. For concrete grouted CMU and solid masonry use Hilti HY RY 150 two-part hybrid adhesive. For hollow CMU and masonry use Hilti HY 1020 two-part hybrid adhesive with screen tubes. Equivalent adhesives may be used with prior written approval by the Structural Engineer.
2. Thoroughly clean holes with nylon brush and pressurized air per manufacturers instructions.
3. Drill holes to the embedment depths indicated on the drawings. If no depths are indicated, use 9 inch or less diameters with HY150 and 12 inch diameters for HY 20.
4. "Wedge" or "Expansion" anchors shall be Hilti Kwik bolt II expansion anchors. Embed anchor 7 bolt diameters unless noted otherwise. Equivalent anchors may be substituted with prior written approval of the Structural Engineer.

G METAL STUDS

1. Install cold-formed metal studs per drawings and manufacturer's recommendations. See Structural Plan for sizes and gauges.

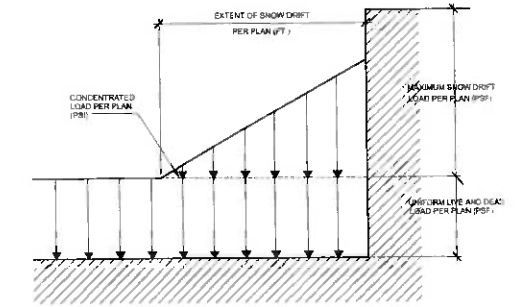
H CONSTRUCTION

1. See architectural and mechanical requirements for embedded items not shown hereon and to verify size and location of all openings.
2. Coordinate the sizes and locations of all miscellaneous metal items required for mechanical and electrical.
3. Requirements for embedded items, sleeves, block outs, duct openings, etc. in the concrete frame shall be submitted (plans and details) to the structural engineer for approval at least two weeks prior to the proposed date of placing concrete. No such items other than those shown, shall be permitted in the structure without the approval of the structural engineer.
4. Provide adequate shoring or bracing during construction to resist forces such as wind and unbalanced loading due to construction.
5. Field verify the location and depth (or height) of all utilities prior to beginning construction in order to provide adequate clearances and to ensure uninterruption of service.



NOTE TRUSS PROVIDER TO ALLOW 18000 #TU AT MID SPAN

(3) Snow Load Plan
1/16" = 1'-0"



(2) Snow load
1/2" = 1'-0"

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NEW BUILDING FOR
SUMMIT ORCHARDS
LEES SUMMIT, MO

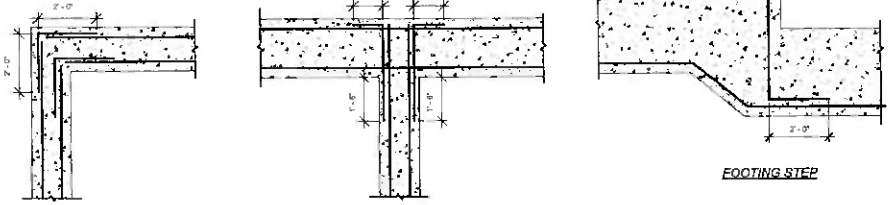
No.	Description	Date
	Revision Schedule	

Structural Notes

Project number 2491
Date 02.19.2025

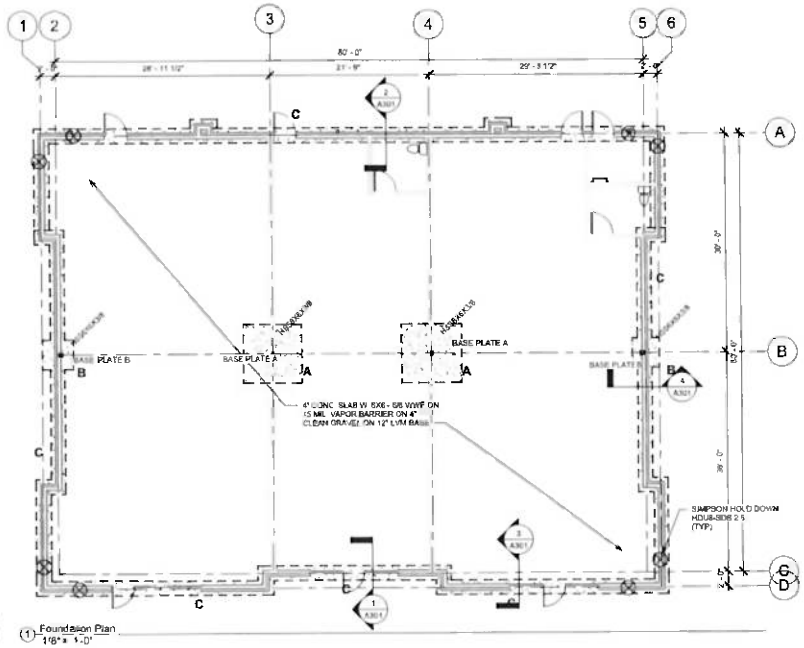
S100

Scale As indicated

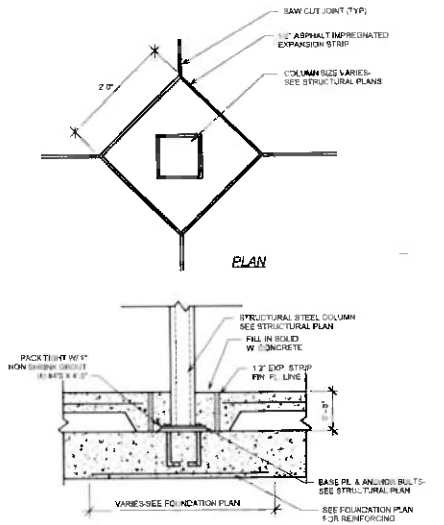


5 Typical Footing Detail
1/2" = 1'-0"

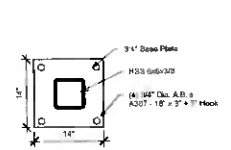
Structural Foundation Schedule		
Type Mark	Type	Type Comments
A	8'x 8' x 2'-0" deep	(7) #6's each way
B	4' x 4' x 3'-0" deep	(5) #5 s each way at T &B w/ (1) #6 vert. @ each corner
C	Bearing Footing	2'-0" w x 3'-0" deep w/2' (4) #5's cont. & #3 ties # 36" O.C w/ #5 dowel 3' x 3' into slab @ 36" O.C.



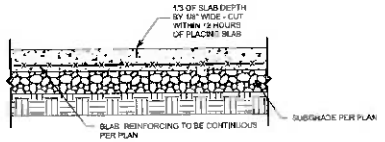
1 Foundation Plan
1/16" = 1'-0"

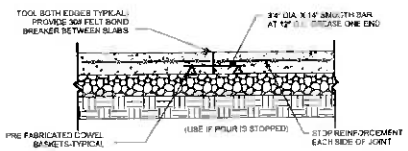


4 Column Detail
1" = 1'-0"

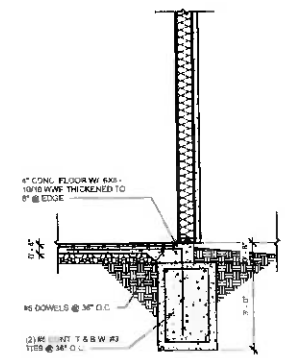


2 Base Plate Details
1" = 1'-0"





3 Typical Floor Slab
3/4" = 1'-0"



6 Footing Type 'C'
1/2" = 1'-0"

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LEES SUMMIT, MO

No.	Description	Date

Revision Schedule

Foundation

Project number 2491
Date 02.19.2025

S101

Scale As Indicated

TRUSSES TO BEAR AT 12'-0" AFF
TRUSSES TO BE 4'-0" DEEP AT NORTH WALL
TRUSSES TO BE 2'-0" DEEP AT SOUTH WALL

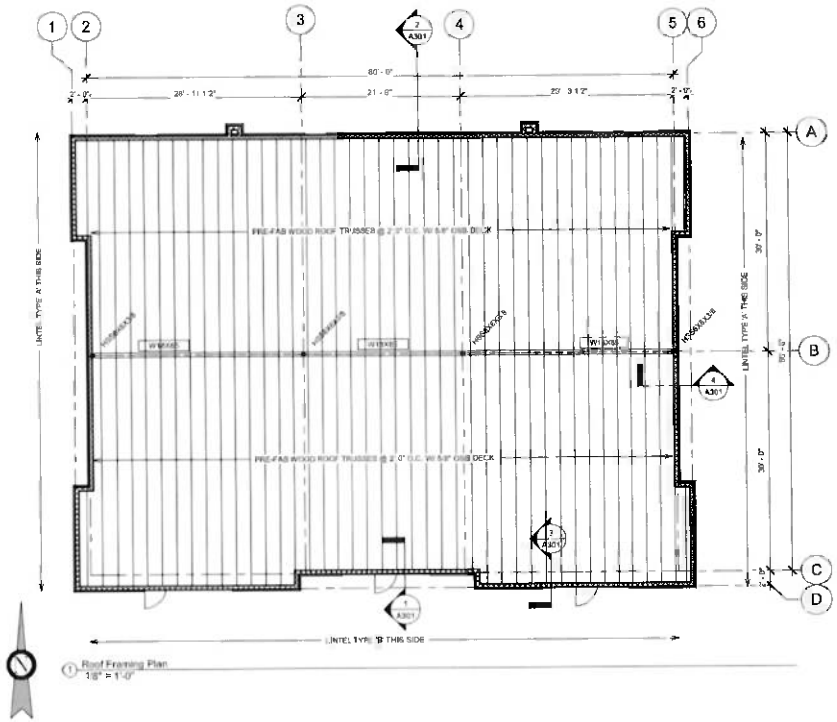
LINTEL SCHEDULE

LINTEL TYPE 'A'	THREE 2X12'S
LINTEL TYPE 'B'	W14X26

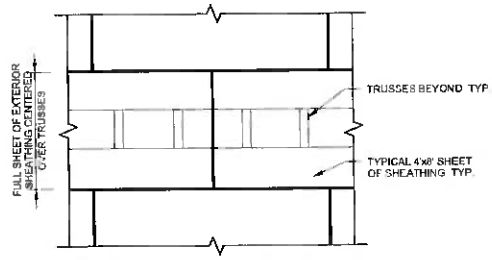
PROVIDE (4) 2X6'S BEARING AT EACH END OF LINTELS

STRUCTURAL NOTES

1. TRUSS MANUFACTURER TO FURNISH ALL HOLD DOWNS AND CLIPS FOR WOOD TRUSSES
2. PROVIDE HEAVY DUTY CLIPS AT ALL PANEL EDGES PERPENDICULAR TO TRUSSES AT 2'-0" O.C. STAGGERED END OF PANELS AND GAP ALL PANELS 1/16" AT ALL EDGES
3. PROVIDE SIMPSON H1 HOLD DOWN CLIPS FOR EACH TRUSS
4. ROOF SHEATHING TO BE 5/8" EXTERIOR APA PLYWOOD NAILED WITH 10d NAILS AT 6" O.C. ALL AROUND PLYWOOD EDGES (BLOCKING AS REQUIRED) AND ALL AROUND ROOF PERIMETER WITH 10d NAILS AT 6" O.C. AT ALL INTERMEDIATE SUPPORTS
5. BRACING DESIGN BY TRUSS MANUFACTURER
6. TRUSS MANUFACTURER TO PROVIDE LIVE/ON DRAWINGS AND CALCULATIONS AND LAYOUT PLAN SEALED BY REGISTERED ENGINEER FOR REVIEW AND FOR APPROVAL BY THE CITY
7. WALL SHEATHING TO BE 5/8 OSB NAILED WITH 8d NAILS AT 6" O.C. AT ALL STUDS AND FULL PERIMETER OF EACH PLYWOOD SHEET (BLOCKING AS REQUIRED) AND ALL AROUND PERIMETER OF WALL AND AROUND ALL OPENINGS
8. SEE ARCHITECTURAL SHEETS FOR ALL OPENING HEIGHTS AND WIDTHS
9. ALL DOOR AND WINDOW OPENINGS TO BE SUPPORTED BY MIN. (3) 2X12 LINTEL ABOVE OPENING, BEARING ON 2 STUDS AT EACH SIDE
10. ALL STEEL LINTEL BEAMS TO BE SUPPORTED BY (4) 2X STUDS AT EACH END

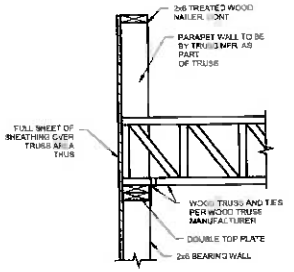


1 Roof Framing Plan
1/8" = 1'-0"



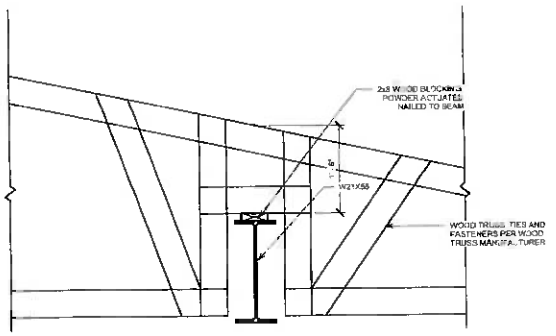
NOTE: ALL EXTERIOR SHEATHING TO HAVE NAILS @ 4" O.C. AROUND EDGE AND 8" O.C. INFIELD

5 Typical Exterior sheathing wood
1/2" = 1'-0"



NOTE FOR TYPICAL SHEATHING DETAIL RE: 1/8001

3 typical section at truss bearing wood
1" = 1'-0"



NOTE TRUSS ATTACHMENT TO BE SIMPSON H1 CLIPS

4 typical section at truss bearing 2 wood
1" = 1'-0"

scharhag
HERMAN A. SCHARHAG, COMPANY ARCHITECTS
6247 Brookside Blvd. #204 Kansas City, Mo 64113
Phone: 816-856-5055 Scharhagarch@gmail.com

NEW BUILDING FOR
SUMMIT ORCHARDS
LEES SUMMIT, MO

No	Description	Date
	Revision Schedule	

Framing

Project Number 2491
Date 02.19.2025

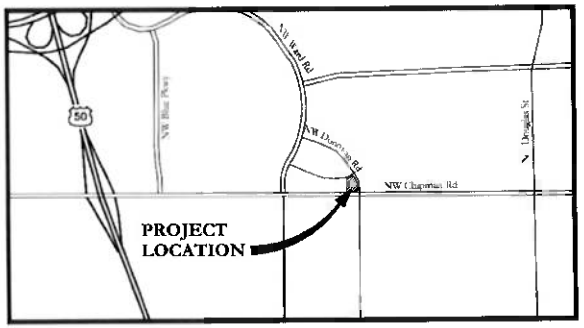
S102

Scale As indicated

SUMMIT ORCHARDS - LOTS 4E-2A & 4E-2B

FINAL DEVELOPMENT PLANS

400 NW CHIPMAN ROAD
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI
SEC. 31-48-31



LOCATION MAP
NOT TO SCALE

SHEET LIST	
SHEET NUMBER	SHEET TITLE
1	COVER
2	GENERAL NOTES & LEGEND
3A	EXISTING CONDITIONS
3B	PROPOSED MINOR PLAT
4	SITE PLAN
5	GRADING & EROSION CONTROL PLAN
6	GRADING PLAN - CUT & FILL
7	SPOT ELEVATION PLAN
8	SPOT ELEVATION PLAN
9	DRAINAGE AREA MAP & CALCS
10	UTILITY PLAN
11	UTILITY PROFILES
12	DETAILS
13	DETAILS
14	DETAILS
15	DETAILS
L5101	LANDSCAPE PLAN

SEE ADDITIONAL PLANS PREPARED BY OLSON ARCHITECTURAL GROUP ARCHITECTS AND SCHARHAG ARCHITECTS.

MCLAUGHLIN MUELLER INC HAS SOLE RESPONSIBILITY FOR SHEET 3A, HG CONSULT INC HAS SOLE RESPONSIBILITY FOR SHEET 3B, VSR DESIGN HAS SOLE RESPONSIBILITY FOR SHEET L5101

LEGAL DESCRIPTION

LOTS 4E-2A & 4E-2B A REPLAT OF LOT 4E-2, SUMMIT ORCHARD, LOTS 4E-1 AND 4E-2 LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

FLOOD NOTE

THIS PROPERTY DOES NOT LIE WITHIN A FLOOD ZONE AS SHOWN ON THE FLOOD INSURANCE RATE MAP 29095C0417G. DATED 1/20/2017

OIL AND GAS WELL NOTE

THERE WAS NO OIL OR GAS WELLS LOCATED ON PROPERTY PER MISSOURI DEPARTMENT OF NATURAL RESOURCES OIL AND GAS PERMITS WEBSITE.

UTILITIES AND PUBLIC AGENCIES

CITY OF LEE'S SUMMIT PUBLIC WORKS	Dena Mezger	(816) 969-1800
WATER UTILITIES	Mark Schaufler	(816) 969-1900
ELECTRIC EVERGY	Ron Dejarnette	(816) 347-4318
GAS SPIRE	Brent Jones	(816) 389-9633
TELEPHONE AT&T	Marty Loper Mark Manion	(816) 276-1850 (816) 325-5815
CABLE COMCAST	Barbara Brown	(816) 795-2255

NOTE:

Contractor shall be responsible for determining the exact locations of all underground utilities or appurtenances prior to commencing construction. Existing underground utilities shown on the drawings are for reference only, and their accuracy and completeness are not guaranteed. Contractor shall be responsible for repair or replacement of all underground utilities damaged during construction.

CONTACTS

ENGINEERING

Engineering Primary 781-4200
Ronald L. Cowger PE

Engineering Alternate 781-4200
Art Akin, PE

DEVELOPER

SUPERSTAR HOLDINGS, LLC
TIM HARRIS
244 W. MILL STREET, SUITE 101
LIBERTY, MISSOURI, 64068
(816) 781-2322

AGC Engineers, INC.
405 S. Leonard St., Suite D
Liberty, Missouri 64068
www.agcengineers.com
816.781.4200
fax 792.3666

STATUS **DATE:**

☒ FOR PERMIT 3-17-23
☐ FOR CONSTRUCTION

BY	REVISION	DATE
RCIACA	FOR REVIEW	3-17-23

ENGINEER'S CERTIFICATION:

I hereby certify that this project has been designed, and these plans prepared, to meet or exceed the design criteria of City of Lee's Summit, Missouri, in current usage, except as indicated below.

Exceptions: 1. _____
2. _____
3. _____
4. _____

I have not been retained to coordinate as-built drawings for this project.

3-17-23

Ronald L. Cowger, PE
AGC Engineers, Inc

GENERAL PROJECT NOTES:

1. The Contractor shall, at a minimum, have the following document(s) at the job site at all times:
   Signed approved plans,
   Contract Documents and Project Specifications,
   Standard Specifications (Kansas City Metro Chapter-APWA)
   All required permits
2. The Contractor shall reference the City of Lee's Summit Design Criteria, Standard Specifications, Standard Details, Approved Products Lists found at the following website:
   https://cityofls.net/development-services/design/design-criteria/design-construction-manual-infrastructure
3. This Project shall be constructed in accordance with these Plans, City of Lee's Summit criteria and specifications (listed above), and their absence the Kansas City Metro Chapter of American Public Works Association (most current version) "APWA"
4. All work required to complete the project and that is not specifically itemized in the Contractor's proposal shall be considered subsidiary to other work itemized in the proposal.
5. All materials and workmanship associated with this project shall be subject to inspection by the City of Lee's Summit and the Owner. The City and/or Owner reserves the right to accept or reject any such materials and workmanship that does not conform to the Standards and Technical Specifications.
6. RESERVED
7. The Contractor shall notify the Engineer immediately of any discrepancies in the Plans.
8. By use of these Plans the Contractor agrees that he shall be solely responsible for the safety and protection of the construction workers and the public.
9. Contractor is to obtain the necessary permits for all construction activities.
10. Contractor shall be responsible for determining the exact locations of all underground utilities or appurtenances prior to commencing construction. Existing underground utilities shown on the drawings are for reference only, and their accuracy and completeness are not guaranteed. Contractor shall be responsible for repair or replacement of all underground utilities damaged during construction.
11. RESERVED
12. It shall be the responsibility of the Contractor to control erosion and siltation during all phases of construction.
13. Any sidewalk, curb & gutter or pavement disturbed, damaged or destroyed during construction shall be replaced by Contractor at no additional cost to Owner.
14. Modified curb shall be used at all locations where pavement drains away from curb.
15. The Contractor shall contact the City's Development Service Engineering inspectors 48 hours prior to any land disturbance work at (816) 969-1200.
16. Contractor shall be responsible to install pavement joints on all concrete pavement, aisles, and / or sidewalk. At a minimum, an expansion joint shall be provided along all interfaces of
    1. Building to sidewalk
    2. Building to concrete pavement
    3. Sidewalk to concrete pavement

    Contractor shall submit a joint plan to the Engineer for review.

GRADING NOTES:

1. Erosion protection shall be in place prior to any land disturbance.
2. Contours shown are to finished grade.
3. The construction area shall be cleared, grubbed, and stripped of topsoil and organic matter from all areas. Excess topsoil shall be stockpiled separately from compactable material. Stripping existing topsoil and organic matter shall be to a minimum depth of six (6) inches.
4. Areas to receive fill shall be stripped of top soil and other organic material, scarified, and the top eight (8) inch depth compacted to 95% standard proctor density prior to the placement of any fill material. Any unsuitable areas shall be undercut and replaced with suitable material before any fill material can be placed.
5. Fill material shall be made in lifts not to exceed nine (9) inches depth compacted to 95% standard proctor density (per ASTM D-698) with a moisture content -3% and +2% optimum moisture. Contractor shall provide (at his/her sole cost) an independent geotechnical report certifying compaction at a sample interval of one (1) sample per 5000 square feet per lift or more frequent if required/recommended by the geotechnical firm. Geotechnical firm shall be approved by Owner prior to beginning fill operations. Fill material may include rock from on-site excavation if carefully placed so that large stones are well disturbed and voids are completely filled with smaller stones, earth, sand or gravel to furnish a solid embankment. No rock larger than three (3) inches in any dimension nor any shale shall be placed in the top 12 inches of embankment.
6. In all areas of excavation, if unsuitable soil conditions are encountered, a qualified Geotechnical engineer shall recommend to the Owner on the methods of undercutting and replacement of properly compacted, approved fill material.
7. All slopes are to be 3:1 or flatter unless otherwise indicated.
8. All slopes and areas disturbed by construction shall be graded smooth and a minimum four (4) inches of topsoil applied. If adequate topsoil is not available on-site, the Contractor shall provide topsoil, approved by the Owner, as needed. Any areas disturbed for any reason shall be corrected by the Contractor at no additional cost to the Owner prior to final acceptance of the project.
9. All disturbed areas shall be seeded, fertilized and mulched or sodded in accordance with the standards and specifications adopted by the reviewing governing agency and good engineering practices.

EROSION CONTROL NOTES:

1. Control of sediment is a very dynamic (ever changing) process. These plans are provided as a basis of anticipated erosion control measures. The Contractor shall modified add or delete with the Owner's permission the erosion control measure shown to prevent the migration of sediment off of the Owner's property and/or into jurisdictional waters/waterways.
2. Any sediment deposited on public streets shall be removed immediately by Contractor at his sole expense.
3. Stockpile excavation materials away from existing channels and grade to drain to adequate erosion control measures.
4. Remove silt build up in temporary sediment basins (if applicable), inlet protection devices and/or silt fence until site is completely stabilized. Verify grade prior to final seeding, lining or rip-rap installation
5. All disturbed areas shall be seeded, fertilized and mulched, or sodded, in accordance with the Kansas City Metro Chapter of American Public Works Association. Seeding/Sodding shall be completed within 14 days after completing the work, in any area. If this is outside of the recommended seeding period, erosion control measures or other similarly effective measure shall remain and be maintained by Contractor until such time that the areas can be seeded and a stand of grass established per Missouri DNR or MoDOT Section 805.4 standards.
6. When sediment deposits reach approximately one-half the height of the BMP, the sediment shall be removed or a second BMP shall be installed. All costs associated with this work, including related incidents, shall be the Contractor's responsibility and shall be included in the bid for the proposed work.
7. Contractor shall perform BMP inspection once a week and after each rainfall event, and provide Owner a copy of report within 48 hrs. Faulty or inadequate erosion control measures shall be remediated or modified the same day of inspection so as to maximize the risk of sediment discharge from the Owner's property or jurisdictional waters/waterways.
8. Contractor shall protect and maintain erosion control measures until a complete stand of grass as defined by Missouri DNR has been established.
9. Concrete Washout Areas will be determined onsite by the Job Superintendent.
10. At a minimum the following permits/approvals shall be posted on site or as required by the permit terms and conditions:
    City of Lee's Summit Land Disturbance Permit.
11. Permanent fertilizing, seeding (Type "A") and mulch shall be in accordance with Kansas City Metro Chapter of American Public Works Association. Final acceptance per MoDOT Sections 805.4
12. The Contractor shall install Erosion Control Blanket (ECB) on all slopes with 3:1 slope or greater. ECB shall be Landlok C82 or approved equal.
13. Provide temporary silt fencing at all pipe entrances until all site seeding and sodding has been established. Maintain as necessary.
14. Immediately remove sediments or other materials tracked onto public roadways.
15. Provide and maintain stabilized roadway construction entrance (or entrances as may be required).
16. Coordinate site grading with existing and proposed utilities.
17. Stock pile waste excavation materials away from existing channels and grade to drain.
18. Remove silt build up in basin and verify grade prior to final seeding, lining or rip-rap installation and clean up.
19. All disturbed areas shall be seeded, fertilized and mulched, or sodded, in accordance with the Standards and Specifications adopted by the City of Lee's Summit, MoDOT, MoDNR or other governing agency and good engineering practices.
20. Silt fences, whether straw bales or filter fabric, require maintenance to preserve their effectiveness. All silt fences shall be inspected immediately after each heavy rainstorm and at least daily during prolonged rainfall. Any required repairs shall be made immediately. When sediment deposits reach approximately one-half the height of the silt fence, the sediment shall be removed or a second silt fence shall be installed. All costs associated with this work, including related incidentals, shall be the contractor's responsibility and shall be included in the bid for the proposed work.

WATER NOTES:

1. Reference MEP Plans to confirm fire protection main size, domestic water and meter sizes. If a discrepancy exists between the Plans contact the Engineer prior to ordering material.
2. Domestic water shall be 1-inch "K" copper conforming to the latest federal specifications or cross-linked polyethylene (PEX) meeting current City Code.
3. Minimum cover for water lines shall be 42 inches.
4. Install fittings as required. Maximum pipe deflection per manufacturers recommendations.
5. Install 1-inch water meter at property line (on private property side).
6. All water service installation, including back-flow devices, are subject to field verification and approval by City Inspector.

STORM NOTES:

1. All HDPE pipe shall be Water Tight.
2. All High Density Polyethylene (HDPE) pipe shall conform to AASHTO M294 Type S. Acceptable pipe must come from a Plastic Pipe Institute (PPI) certified manufacturer and have passed the PPI 3rd Party Certification testing. Each individual section of pipe shall be marked in accordance with AASHTO M294 and shall be affixed with the PPI Certification label. HDPE pipe shall be joined with water tight joints meeting the requirements of AASHTO M294 Paragraph 7.8.3.
3. Pipe lengths are from inside face to inside face.
4. End sections for HDPE pipe shall be metal with concrete toe wall unless noted otherwise.

ELECTRIC:

1. Contractor to coordinate with Evergy Electric for electrical service.
2. Contractor to coordinate with Evergy Electric for location of transformer pad and transformer if required.

GAS:

1. Contractor to coordinate with Spire for gas service, and location of meter.

TELEPHONE:

1. Site contractor to install PVC conduit(s) for use by telephone company. Site contractor to coordinate with telephone company for installation of service and location of proposed pedestals, etc. Telephone conduit shall have a minimum cover of 36". Site contractor shall coordinate location with telephone company representative and locate PVC crossings as necessary. See building plans for entrance locations.

REFERENCE DOCUMENTS & DRAWINGS:

Contractor shall reference the following documents prior to beginning Work
1. Architectural Plans (including but not limited to MEP and Structural Plans)
2. Landlord Work Order Ref from Superstar Holdings, LLC

SANITARY NOTES:

1. All sanitary stub lines shall be laid on 2.00% grade unless approved otherwise.
2. The Contractor shall install and properly maintain a mechanical plug at all connection points with existing lines until such time that the new line is tested and approved.
3. Where sanitary sewer lines are to be installed over and across water lines, a minimum of 24 inches of clearance shall be provided. Where clearance is not provided, construct sanitary sewer line of ductile iron pipe for a distance of at least 10 feet in each direction from crossing, with no joint within 8 feet of crossing.
4. Performance testing in accordance with APWA Section 2508. Witness and acceptance by City is required before placing in service.
5. All service lines shall be PVC (SDR 26) conforming to ASTM D 1784 and F1336 and having a cell classification of 12454B or 12364B as defined in ASTM D 1784 with Push-On joints.
6. All pre-cast manholes shall meet or exceed standards and specifications as set forth in ASTM C-478.
7. All PVC pipe shall meet or exceed standards and specifications as set forth in ASTM D-3034.
8. All proposed and existing street crossings shall be tamped granular backfill (Type 3) from the bottom of the trench to a point that is 15" below the finished grade of the street. All existing street crossings shall be filled with flowable fill per detail STR-011.
9. Mandrel testing is required and shall be performed in accordance with APWA 2508.8, at a minimum of 30 days after installation.
10. All inspection of sanitary sewer construction shall be performed by the City of Lee's Summit.
11. It is the responsibility of the contractor to have sanitary sewer lines air tested and sanitary sewer manholes vacuum tested for new construction and modifications to existing. Contractor shall provide city with test results upon completion of construction.
12. Areas with less than three (3) feet of depth from existing grade to proposed top of pipe shall be filled to an elevation of three (3) feet above the proposed top of pipe, compacted to 95% density +/-2% prior to trenching or laying of any pipe.
13. Sanitary sewer piping material shall be as follows:
    0 to 15' depth; SDR-35 PVC
    15' to 22' depth; SDR-26 PVC
    22' to 30' depth; SDR-21 PVC
    greater than 30' depth; D.I.P.
    6" service laterals; SDR-35 PVC at 2.0% minimum.
14. All manholes, catch basins, utility valves, and meter pits shall be adjusted or rebuilt to grade as required.
15. Service lines shall be extended a minimum of 1 foot past the house side of all utility easements.
16. Insert Tee's or Saddles for service lines are not allowed except in special cases with prior City approval and City observation of installation.

LEGEND

EXISTING	PROPOSED	
DOWN GUY	SANITARY STRUCTURE	D/E DRAINAGE EASEMENT
FINISH FLOOR ELEVATION	SAN SANITARY SEWER	GM GAS METER
FIRE HYDRANT	STORM STRUCTURE	WM WATER METER
IRON BAR		E/E ELECTRIC EASEMENT
MANHOLE	STORM SEWER	U/E UTILITY EASEMENT
POWER POLE	W WATERLINE	B/L BUILDING LINE SETBACK
SIGN	WM WATER METER	MH MANHOLE
TREE	WV WATER VALVE	R RADIUS OR RAMP (as it relates to sidewalks)
WATER METER	G GAS LINE	L LANDING (as it relates to sidewalks)
WATER VALVE	CO CLEANOUT	S/W or SW SIDEWALK
YARD LIGHT	780 CONTOUR	AC AIR CONDITIONER
OVERHEAD POWER	LIGHT POLE (SITE PARKING)	MEP MECHANICAL, ELECTRICAL & PLUMBING
UNDERGROUND GAS		WSD WATER SERVICES DEPARTMENT
UNDERGROUND POWER		D/S DOWN SPOUT
UNDERGROUND WATER		TC TOP OF CURB
		G GROUND
		P PAVEMENT
		LP LOW POINT
		HP HIGH POINT

BY	REVISION	DATE
RG/ACA	FOR REVIEW	2-17-23

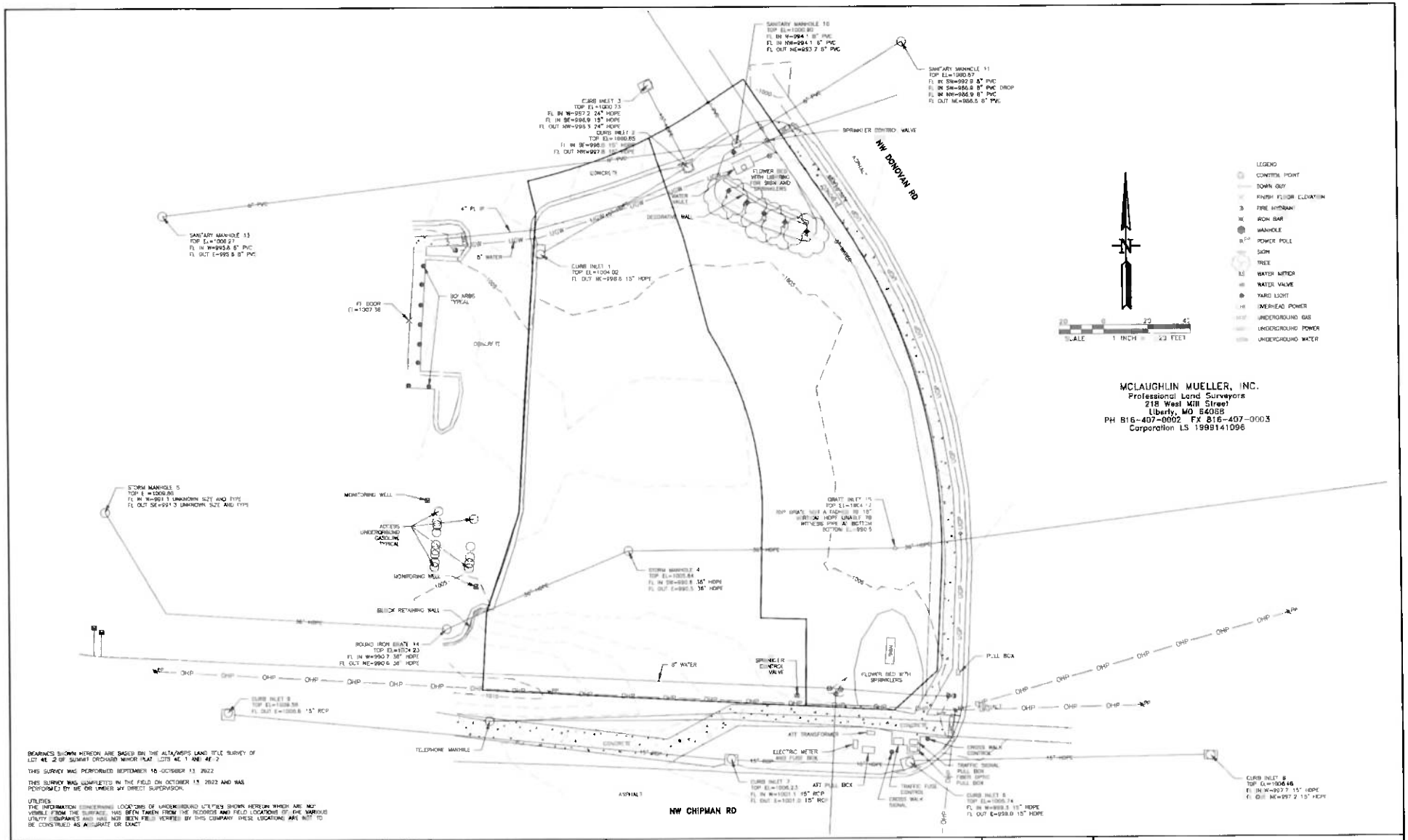
AGC Engineers, INC.
405 S. Leonard St., Suite D
Liberty, Missouri 64068
816.781.4200
fax 792.3666
www.agcengineers.com

2-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
GENERAL NOTES & LEGEND

2



BEARINGS SHOWN HEREON ARE BASED ON THE ALTA/NSPS LAND TITLE SURVEY OF LOT 4E 2 OF SUMMIT ORCHARD MINOR PLAT LOTS 4E 1 AND 4E 2

THIS SURVEY WAS PERFORMED SEPTEMBER 16 -OCTOBER 13 2022

THIS SURVEY WAS COMPLETED IN THE FIELD ON OCTOBER 13 2022 AND WAS PERFORMED BY ME OR UNDER MY DIRECT SUPERVISION.

UTILITIES
THE INFORMATION CONCERNING LOCATIONS OF UNDERGROUND UTILITIES SHOWN HEREON WHICH ARE NOT VISIBLE FROM THE SURFACE, HAS BEEN TAKEN FROM THE RECORDS AND FIELD LOCATIONS OF THE VARIOUS UTILITY COMPANIES AND HAS NOT BEEN FIELD VERIFIED BY THIS COMPANY. THESE LOCATIONS ARE NOT TO BE CONSTRUED AS ACCURATE OR EXACT

McLAUGHLIN MUELLER, INC.
Professional Land Surveyors
218 West Mill Street
Liberty, MO 64068
PH 816-407-0002 FX 816-407-0003
Corporation LS 1999141096

BY	REVISION	DATE
BCACA	FOR REVIEW	2-17-23

AGC Engineers, INC.
405 S. Leonard St., Suite D
Liberty, Missouri 64068
816.781.4200
fax 792.3666
www.agcengineers.com

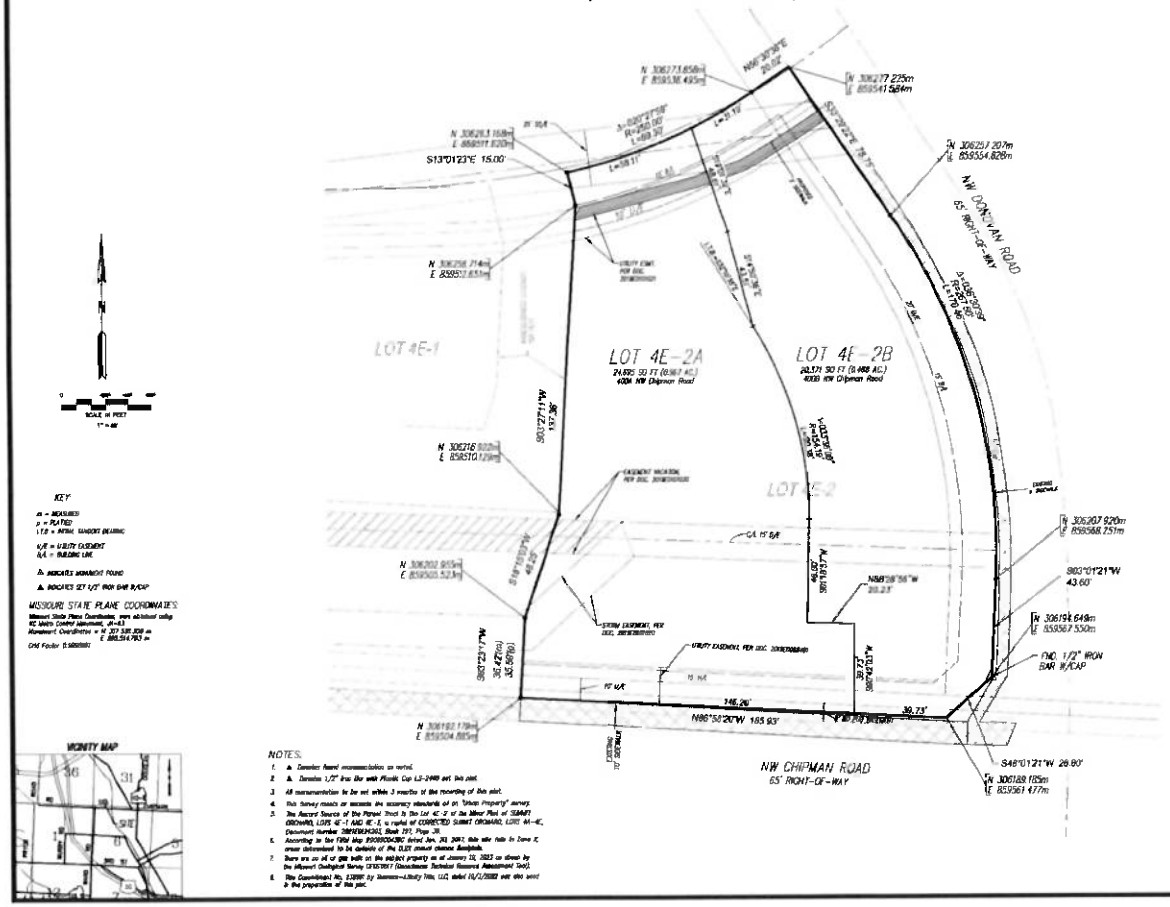
SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
EXISTING CONDITIONS

3A

10

MINOR PLAT
SUMMIT ORCHARD MINOR PLAT, 4E-2A & 4E-2B
A REPLAT OF LOT 4E-2, SUMMIT ORCHARD, LOTS 4E-1 AND 4E-2
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI



SCALE IN FEET
1" = 40'

KEY

m = MEASURED
p = PLATTED
1.1ft = RADIAL BEARING

U/E = UTILITY EASEMENT
B/L = BUILDING LINE

▲ INDICATES MONUMENT FOUND

▲ INDICATES SET 1/2" IRON BAR W/CAP

MISSOURI STATE PLANE COORDINATES:

Missouri State Plane Coordinates, west oriented using NE Metro Control Adjustment, JA-NE3
Monument Coordinates = N 307,335.308 m
E 865,541.783 m

CAD Factor: 0.9999881

VICINITY MAP

NOTES:

1. ▲ Denotes found monumentation as noted.
2. ▲ Denotes 1/2" Iron Bar with Plastic Cap LS-2486 set, this plat.
3. All monumentation to be set within 3 months of the recording of this plat.
4. This survey meets or exceeds the accuracy standards of an "Urban Property" survey.
5. The Record Source of the Platted Tract is the Lot 4E-2 of the Minor Plat of SUMMIT ORCHARD, LOTS 4E-1 AND 4E-2, is replat of CORRECTED SUMMIT ORCHARD, LOTS 4A-4E, Document number 2016E0034301, Book 197, Page 28.
6. According to the FEMA Map 29095C0042C dated Jan. 20, 2017, this site falls in Zone X, areas determined to be outside of the 0.2% annual chance floodplain.
7. There are no oil or gas wells on the subject property as of January 10, 2023 as shown by the Missouri Geological Survey (2100.2917 (Geoscience Technical Resource Assessment Tool).
8. This Boundary No. 330991 by Summit—Liberty Title, LLC, dated 10/2/2020 was also used in the preparation of this plat.

PROPERTY DESCRIPTION:

ALL OF LOT 4E-2, SUMMIT ORCHARD MINOR PLAT, LOTS 4E-1 and 4E-2, A SUBDIVISION IN THE CITY OF LEE'S SUMMIT, JACKSON COUNTY, MISSOURI, CONTAINING 1.04 ACRES.

DEDICATION: THE UNDERSIGNED OWNER(S) OF THE PROPERTY DESCRIBED HEREON HAS/HAVE CAUSED THE SAME TO BE SUBDIVIDED IN THE MANNER SHOWN ON THIS PLAT AND THE PROPERTY SHALL HEREAFTER BE KNOWN AS "SUMMIT ORCHARD MINOR PLAT, LOTS 4E-2A and 4E-2B".

EASEMENTS: AN EASEMENT OR LICENSE IS HEREBY GRANTED TO THE CITY OF LEE'S SUMMIT, MISSOURI, TO LOCATE, CONSTRUCT AND MAINTAIN, OR TO AUTHORIZE THE LOCATION, CONSTRUCTION AND MAINTENANCE OF POLES, WIRES, ANCHORS, CONDUITS, AND/OR STRUCTURES FOR WATER, GAS, STORMWATER SEWERS, SANITARY SEWERS, ELECTRICITY, TELEPHONE, CABLE TELEVISION, OR ANY OTHER NECESSARY PUBLIC UTILITY OR SERVICES, ANY OR ALL OF THEM, UPON, OVER, OR UNDER THOSE AREAS OUTLINED OR DESIGNATED UPON THIS PLAT AS UTILITY EASEMENTS (U/E), OR SIMILAR ANY STREETS OR THOROUGHFARES DEDICATED TO PUBLIC USE ON THIS PLAT.

GRANTOR, ON BEHALF OF HIMSELF, HIS HEIRS, HIS ASSIGNS AND SUCCESSORS IN INTEREST, HEREBY WAIVES, TO THE FULLEST EXTENT ALLOWED BY LAW, INCLUDING, WITHOUT LIMITATION, SECTION 527.188, RSMO, (2000), AND RIGHT TO REMAKES, REDESIGNATION OR WORKS PREVIOUSLY TRANSFERRED AND VACATION OF THE EXISTENT HEREIN GRANTED.

DRAINAGE PLAN: INDIVIDUAL LOT OWNERS SHALL NOT CHANGE OR OBSTRUCT THE FLOW PATH OF LOTS, UNLESS SPECIFIC APPLICATION IS MADE AND APPROVED BY THE CITY ENGINEER.

BUILDING LINES: BUILDING LINES OR SETBACK LINES ARE HEREBY ESTABLISHED AS SHOWN ON THE ACCOMPANYING PLAT AND NO BUILDING OR PORTION THEREOF SHALL BE CONSTRUCTED BETWEEN THIS LINE AND THE STREET RIGHT OF WAY LINE.

IN TESTIMONY WHEREOF, THE UNDERSIGNED OWNERS HAVE HEREUNTO SET THEIR HANDS THIS _____ DAY OF _____, 20__.

SUPERIOR HOLDINGS, LLC, AGENT OF LA PUENTE, OWNER

STATE OF _____

COUNTY OF _____

ON THIS _____ DAY OF _____, 20___, BEFORE ME PERSONALLY APPEARED THE ABOVE PERSON(S), TO BE KNOWN TO BE THE PERSON(S) DESCRIBED IN AND WHO EXECUTED THE FOREGOING INSTRUMENT AND ACKNOWLEDGED THAT THEY EXECUTED THE SAME AS THEIR FREE ACT AND DEED.

IN WITNESS WHEREOF, I HAVE HEREUNTO SET MY HAND AND AFFIXED MY NOTARIAL SEAL AT MY OFFICE IN SAID COUNTY AND STATE THE DATE AND YEAR LAST WRITTEN ABOVE.

NOTARY PUBLIC _____ MY COMMISSION EXPIRES _____

APPROVED:

THIS IS TO CERTIFY THAT THE MINOR PLAT OF "SUMMIT ORCHARD MINOR PLAT, LOTS 4E-2A AND 4E-2B" WAS SUBMITTED TO AND DULY APPROVED BY THE CITY OF LEE'S SUMMIT, MISSOURI, PURSUANT TO CHAPTER 33, THE UNIFIED DEVELOPMENT ORDINANCE, OF THE CODE OF ORDINANCES.

TRISHA TOBLER MEGUIRE, CITY CLERK _____ DATE _____

GEORGE M. BINGER III, P.E., CITY ENGINEER _____ DATE _____

ASHLEY JOHNSON, DIRECTOR OF DEVELOPMENT SERVICES _____ DATE _____

APPROVED BY JACKSON COUNTY ASSESSOR/GIS DEPARTMENT

By _____

Date _____

I hereby certify that the within plat of "SUMMIT ORCHARD MINOR PLAT, LOTS 4E-2A AND 4E-2B, is based on an actual survey made by me or under my direct supervision and that said survey made or exceeds the current MINIMUM STANDARDS FOR PROPERTY BOUNDARY SURVEYS as adopted by the Missouri Board for Architects, Professional Engineers, and Land Surveyors and the Missouri Department of Natural Resources. I further certify that the Sectional and Subdivision Subdivision corner monuments and survey boundary corner monuments were either found or set as indicated on this plat, that I have complied with all State and City of Lee's Summit ordinances, ordinances and regulations governing the practice of surveying and platting of subdivisions to the best of my knowledge and belief.

REVIEW COPY

R. Kevin Sherrill, MO LS-2486 _____ Date

Surveyed for
Superior Holdings, LLC
Robert De La Fuente
344 E. 8th Street, Suite 110
Liberty, Mo. 64068

Consult Inc engineers planners
1533 Locust Street, Kansas City, Missouri 64108
CORPORATE LICENSE No. 2007005 (MO) / E-1735 (KS)

Sheet 1 of 1
Project No. 21-026
Prepared 01/19/2023
Prepared By: BPW

BY	REVISION	DATE
RG/ACA	FOR REVIEW	2-17-23

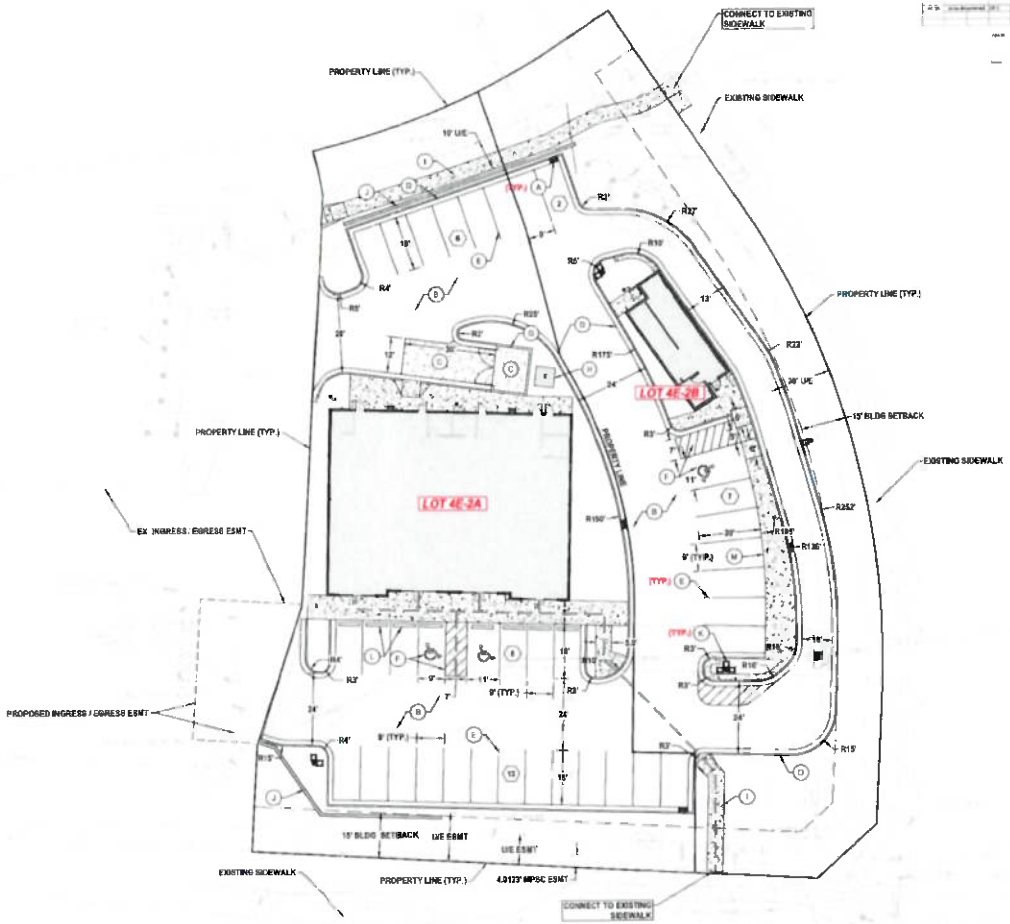
AGC Engineers, INC.
405 S. Leonard St., Suite D
Liberty, Missouri 64068
816.781.4200
fax 792.3666
www.agcengineers.com

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
PROPOSED MINOR PLAT

3B

SITE DATA:



LEGEND:

ADA PEDESTRIAN ROUTE

(9) PARKING STALL COUNTS

KEY LEGEND

- (A) CURB INLET (RE: UTILITY PROFILES)
- (B) CONCRETE PAVEMENT
- (C) HEAVY DUTY CONCRETE
- (D) SG-1 CURB & GUTTER (RE: SPOT ELEVATION PLANS)
- (E) PARKING STRIPING - 4" YELLOW
- (F) STRIPING (RE: ADA ACCESSIBLE STRIPING LAYOUT)
- (G) TRASH ENCLOSURE (RE: ARCH)
- (H) ELECTRICAL TRANSFORMER
- (I) PROPOSED 5' CONCRETE SIDEWALK
- (J) SEGMENTAL BLOCK WALL
- (K) LIGHT POLE (RE: MEP)
- (L) CONCRETE WHEEL STOP
- (M) INTEGRAL SIDEWALK / CURB

NOTES:

1. CONTRACTOR SHALL COORDINATE WITH SUPERSTAR HOLDINGS, LLC. FOR ANY TENANT - SPECIFIC SIGNAGE, MENU BOARDS, CLEARANCE POSTS, ETC. NOT AVAILABLE TO CIVIL ENGINEER AT TIME OF SITE DESIGN
2. CONTRACTOR SHALL REVIEW LANDLORD WORK ORDER LETTER PRIOR TO BEGINNING CONSTRUCTION.

NORTH

BY	REVISION	DATE
BC/ACA	FOR REVIEW	2-17-23

(IN FEET)
1 inch = 20 ft.

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2-17-23

SUMMIT ORCHARDS - SWIG

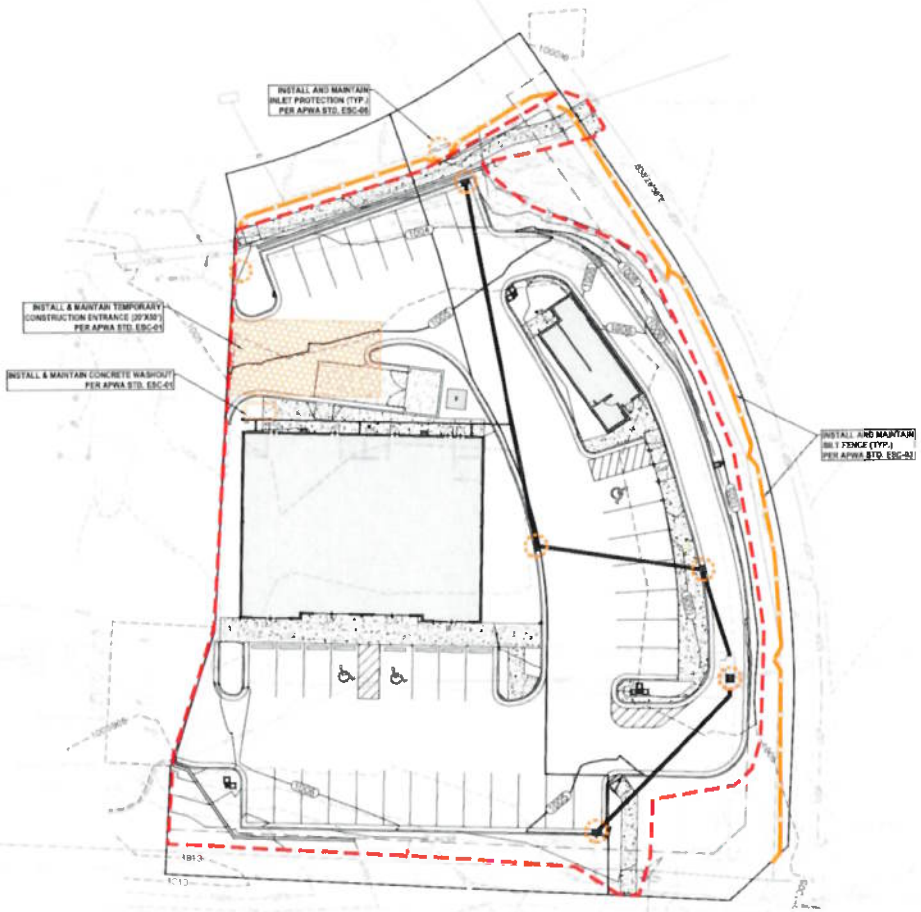
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS

SITE PLAN

4

21



LEGEND:

EROSION CONTROL

- INLET PROTECTION PER APWA STD. IMWO ESC-06
- SILT FENCE PER APWA STD. OWB ESC-02
- LIMITS OF DISTURBANCE

NOTES:

1. INSTALL TEMPORARY CONSTRUCTION ENTRANCE AND PERIMETER SILT FENCE BEFORE GRADING.
2. REMOVE TEMPORARY BMPs AFTER PAVING IS COMPLETED AND PERMANENT GRASS IS ESTABLISHED
3. DISTURBED AREA = 0.84 AC

BY	REVISION	DATE
RCIACA	FOR REVIEW	2-17-23

20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

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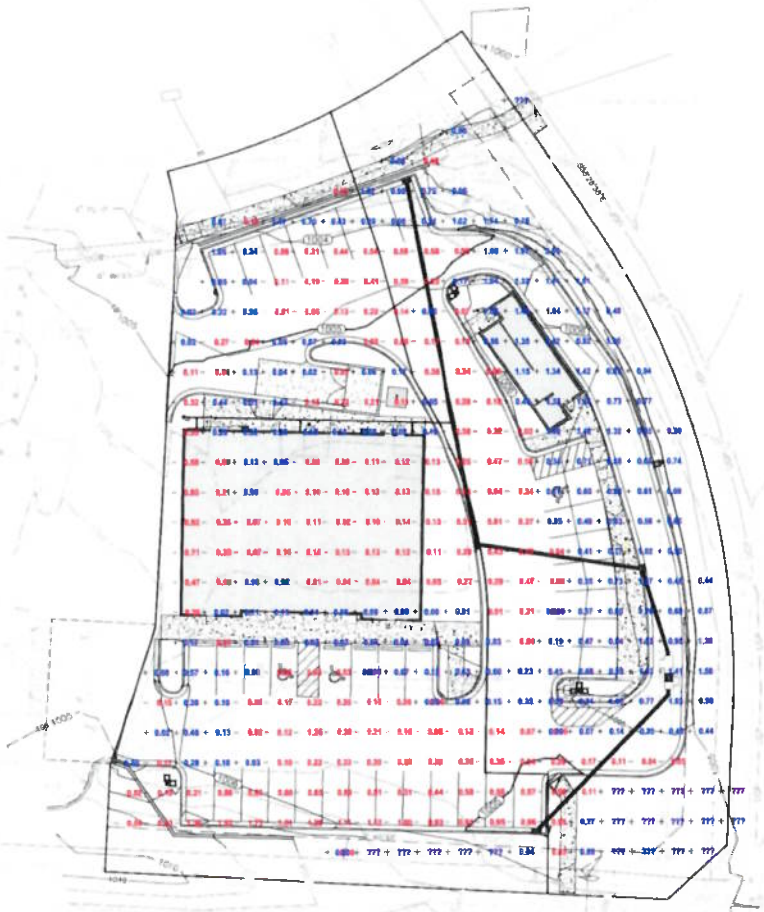
2-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
GRADING & EROSION CONTROL PLAN

5

13



LEGEND:

- CUT AREA
- FILL AREA

NOTE:
CUT / FILL SHOWN IS TO FINISHED GRADE AND / OR TOP OF PAVEMENT

NORTH

BY	REVISION	DATE
RCIACA	FOR REVIEW	2-17-23

[IN FEET]
1 inch = 20 ft.

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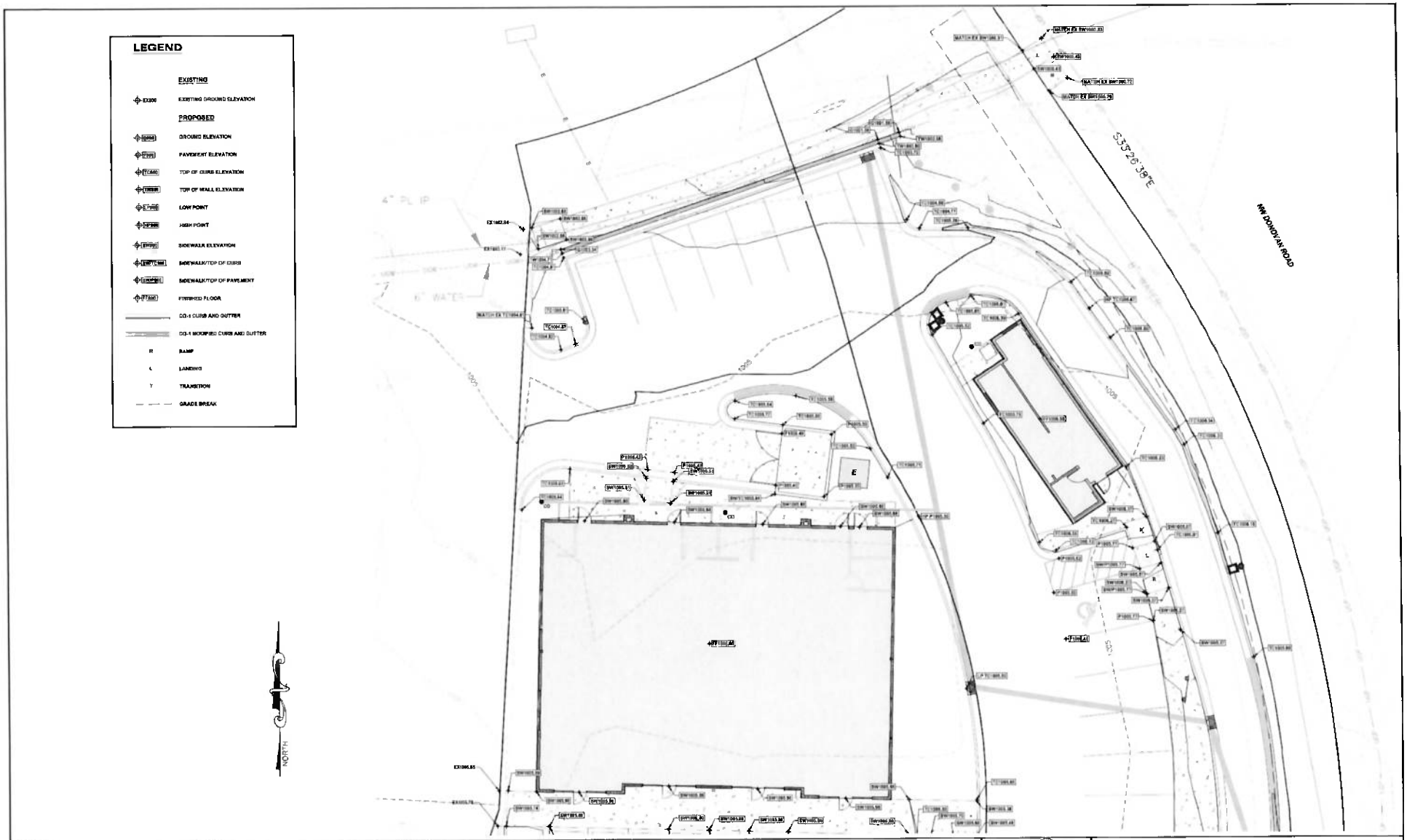
2-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
GRADING PLAN - CUT & FILL

6

41



BY	REVISION	DATE
BCACA	FOR REVIEW	2-17-23

10 0 5 10 20
[IN FEET]
1 inch = 10 ft.

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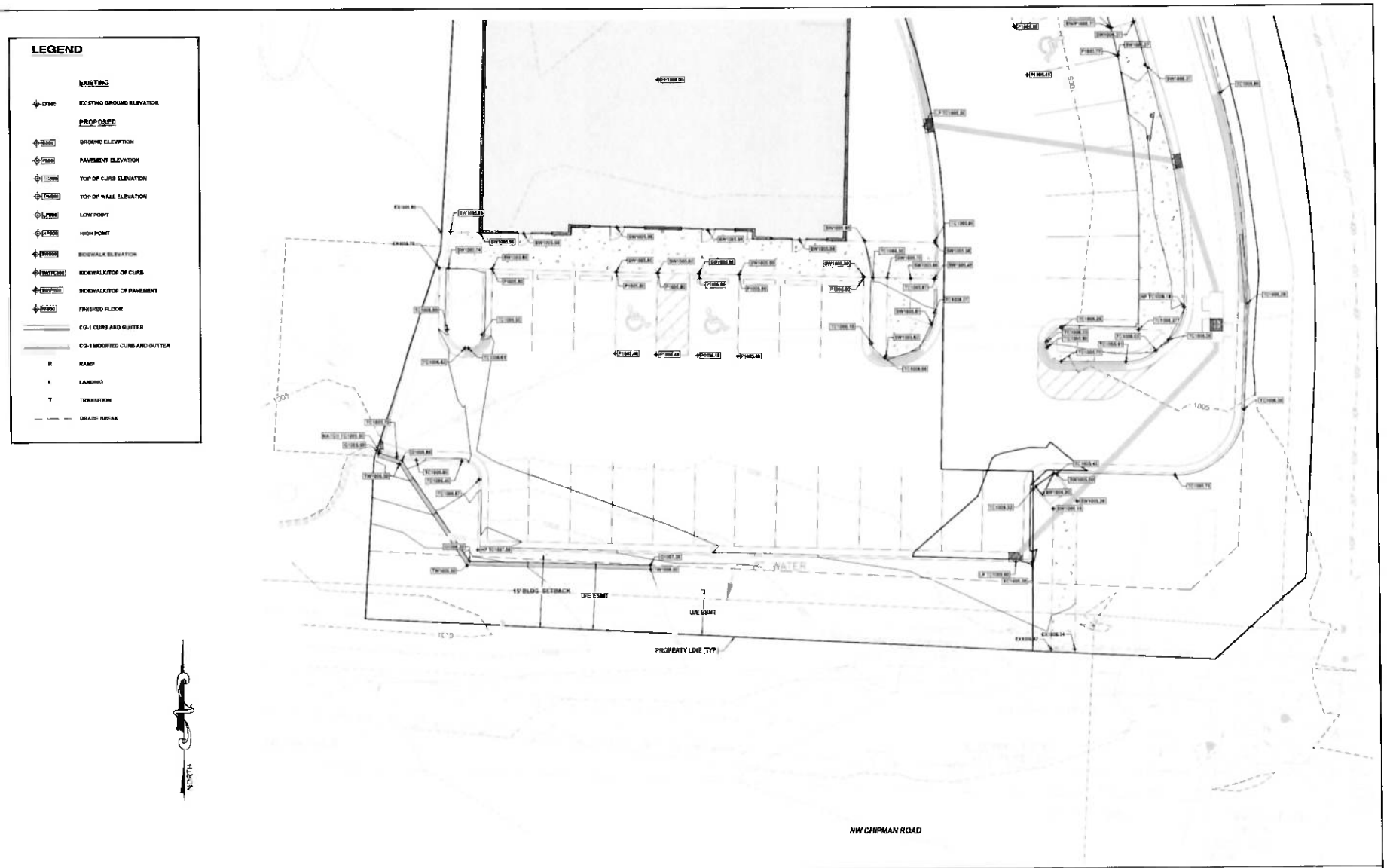
2-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
SPOT ELEVATION PLAN

7

51



BY	REVISION	DATE
RCIACA	FOR REVIEW	2-17-23

10 0 5 10 20
(IN FEET)
1 inch = 10 ft.

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2-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
SPOT ELEVATION PLAN

8

CURB INLET DESIGN TABLE

Return Frequency 10 yr

Return Frequency 100 yr

ROOF DRAIN DESIGN TABLE

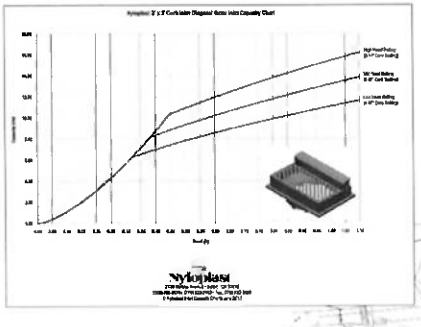
Return Frequency 10-yr

Return Frequency 100-yr

PIPE DESIGN TABLE

Return Frequency 10 yr

Return Frequency 100 yr



BY	REVISION	DATE
BCIACA	FOR REVIEW	2-17-23

20 0 10 20 40
(IN FEET)
1 inch = 20 ft.

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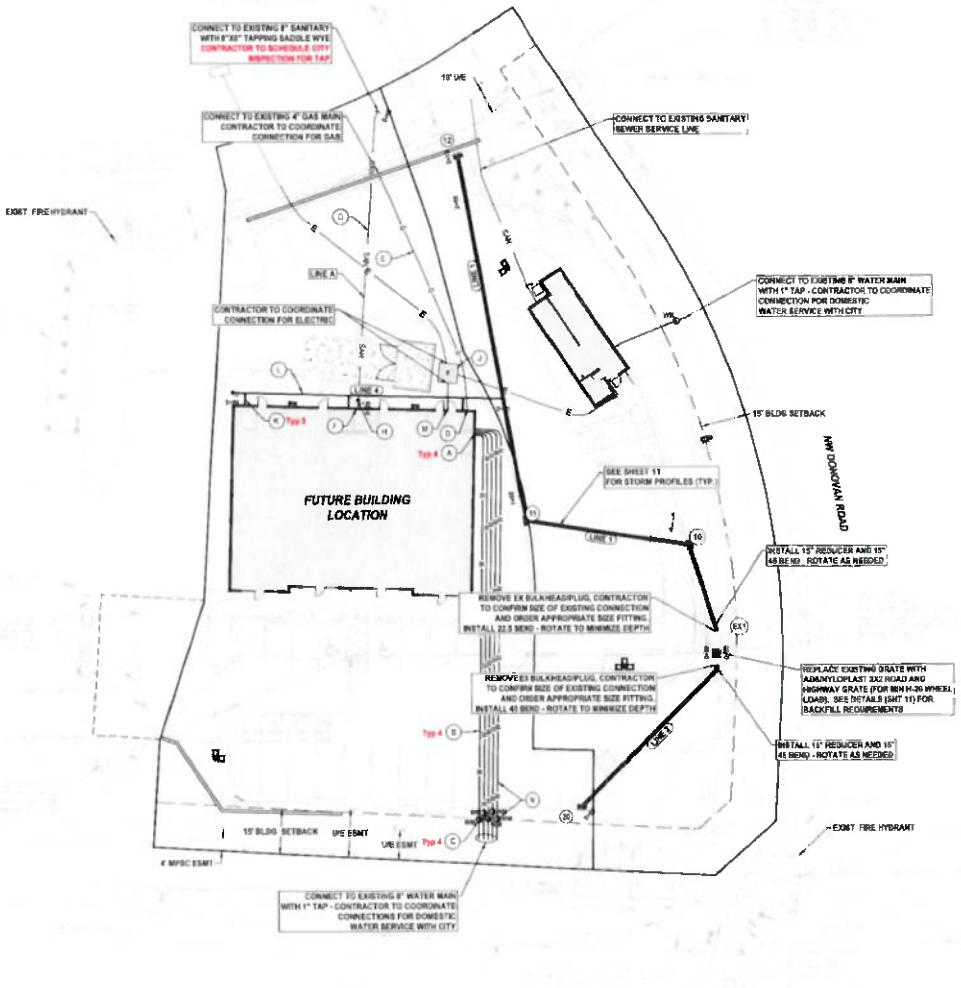
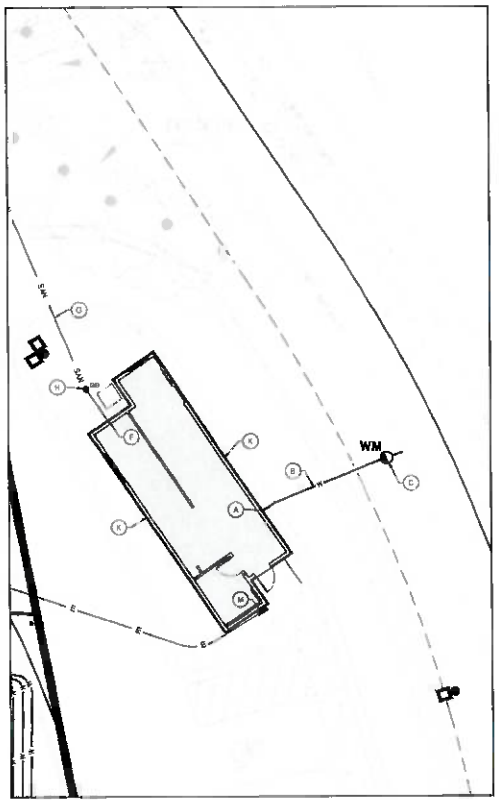
2-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
DRAINAGE AREA MAP & CALCS

9





NOTES:

1. CONTRACTOR SHALL COORDINATE WITH SUPERSTAR HOLDINGS, LLC PRIOR TO BEGINNING UNDERGROUND UTILITIES TO VERIFY SPECIFIC TENANT REQUIREMENTS SUCH AS DOMESTIC WATER, WATER METER AND FIRE LINE SIZES, CONDUITS TO / FROM MESSAGE BOARDS, AND GROUND LOOP DETECTION SYSTEMS.

2. SANITARY SEWER CROSSING WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN INCHES (18") BETWEEN THE OUTSIDE BOTTOM OF THE WATER MAIN AND THE OUTSIDE TOP OF THE SANITARY SEWER. MAINTAIN EIGHTEEN INCHES (18") MINIMUM SEPARATION FROM THE TOP OF THE SANITARY SEWER TO THE BOTTOM OF THE WATER MAIN WHEN WATER LINE DOES UNDER A SANITARY SEWER THEN THE SANITARY SEWER SHOULD BE PRESSURE RATED PIPE OR ENCASED IN CONCRETE

KEY LEGEND

- (A) DOMESTIC WATER ENTRY (RE: MEP)
- (B) 1" DOMESTIC WATER LINE (CONFIRM WITH MEP PRIOR TO INSTALLATION)
- (C) 1" WATER METER AND METER PIT
- (D) GAS ENTRY (RE: MEP)
- (E) GAS LINE (RE: SPIRE OR MEP FOR GAS SIZE AND MATERIAL)
- (F) SANITARY SEWER ENTRY (RE: MEP)
- (G) 6" SANITARY SEWER LINE (2% MIN. SLOPE)
- (H) CLEANOUT
- (I) PHONE / DATA SERVICE ENTRY (RE: ARCH)
- (J) ELECTRICAL TRANSFORMER (RE: MEP)
- (K) DOWNSPOUT (RE: ARCH) (SEE DOWNSPOUT BRAIN DETAIL)
- (L) 6" PVC DOWNSPOUT STORM LINE
- (M) ELECTRICAL ENTRY
- (N) 1" IRRIGATION METER AND LINE

BY	REVISION	DATE
RCACA	FOR REVIEW	2-17-23

(IN FEET)
1 inch = 20 ft.

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2-17-23

SUMMIT ORCHARDS - SWIG
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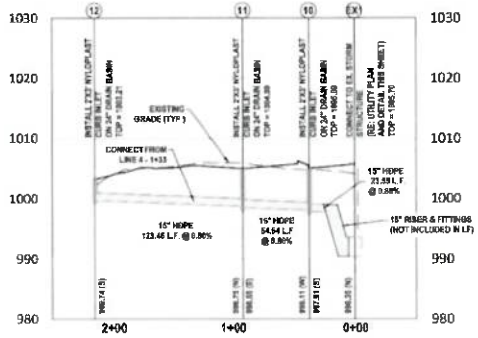
SITE DEVELOPMENT PLANS
UTILITY PLAN

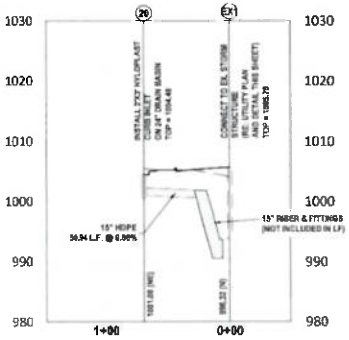
10

18

LINE 1

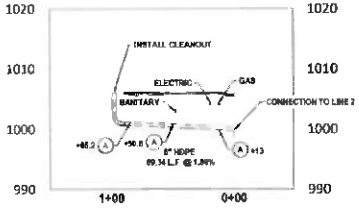


LINE 2



LINE 3 NOT USED

LINE 4



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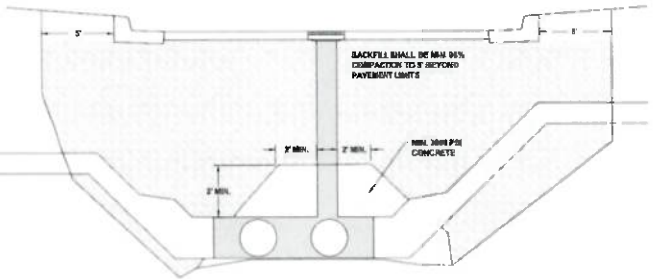
KEY LEGEND

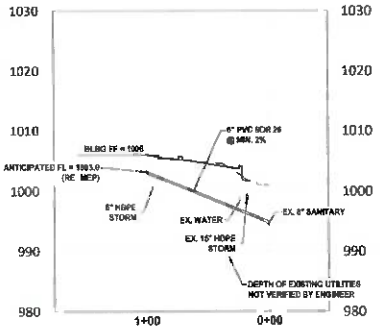
(A) DOWNSPOUT CONNECTION



CONNECTION TO EXISTING STORM STRUCTURE

not to scale

LINE A



BY	REVISION	DATE
RCIACA	FOR REVIEW	3-17-23

(VERT. IN FEET)
1 inch = 10 ft.

(IN FEET)
1 inch = 50 ft.

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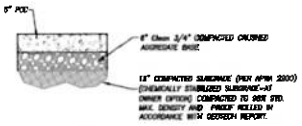
3-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

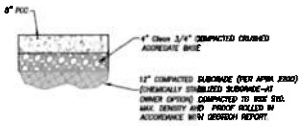
SITE DEVELOPMENT PLANS
UTILITY PROFILES

11



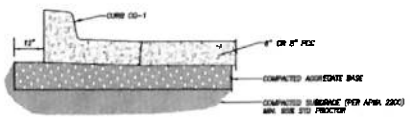
NORMAL DUTY CONCRETE SECTION

NOT TO SCALE



HEAVY DUTY CONCRETE SECTION

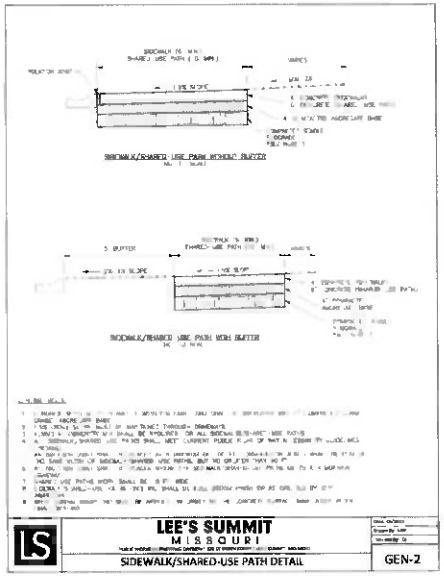
NOT TO SCALE

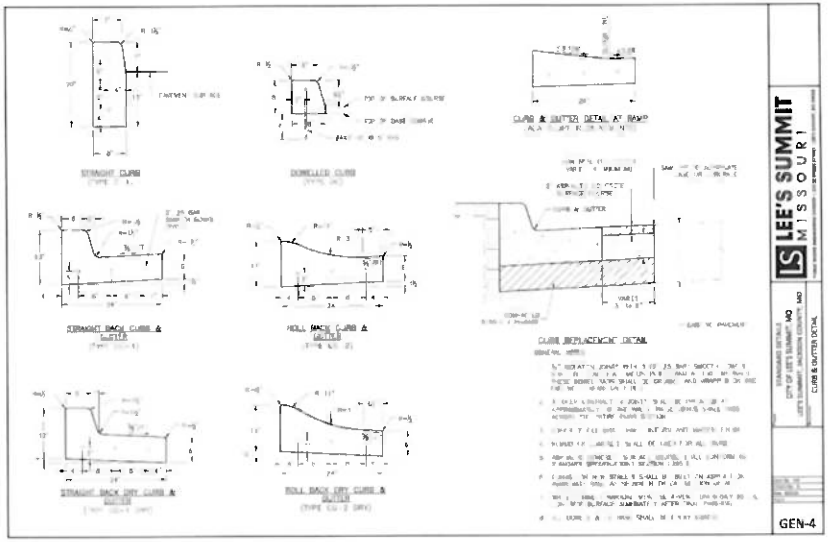


- EXTEND BASE SECTION 12" BEHIND CURB
- SEE PAVEMENT SECTIONS FOR TYPE & THICKNESS

CURB & GUTTER BASE SECTION

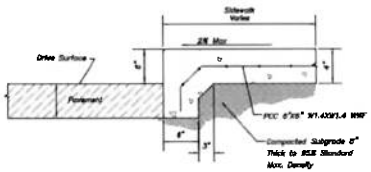
NOT TO SCALE





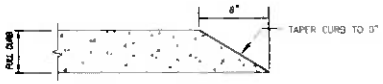
CONCRETE JOINT DETAILS

NOT TO SCALE



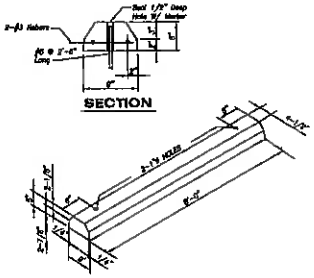
INTEGRAL SIDEWALK / CURB DETAIL

NOT TO SCALE



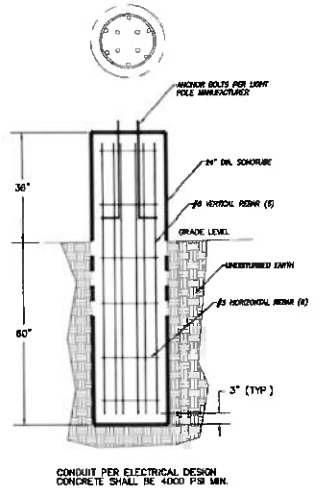
CURB TERMINATION DETAIL

NOT TO SCALE



PRECAST CONCRETE WHEEL STOP

NOT TO SCALE



CONDUIT PER ELECTRICAL DESIGN
CONCRETE SHALL BE 4000 PSI MIN.

CONCRETE LIGHT POLE BASE DETAIL FOR POLE < 15 FOOT

NOT TO SCALE

BY	REVISION	DATE
RCJACA	FOR REVIEW	2-17-23

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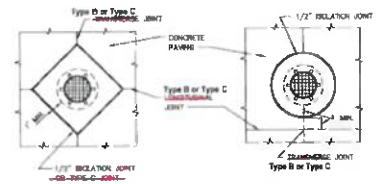
2-17-23

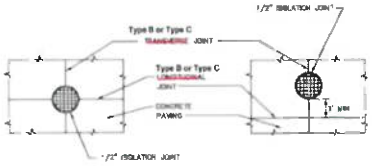
SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
DETAILS

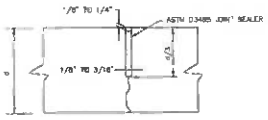
12

02





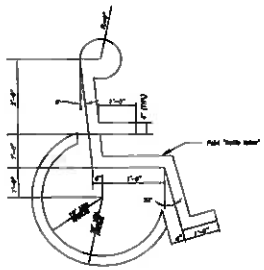
CONCRETE PAVING ISOLATION JOINTS



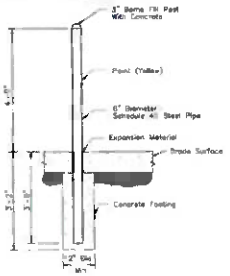
TYPICAL SECTION

NOTES:
1. JOINT SEALING MATERIAL SHALL CONFORM TO ASTM D3405 AND SHALL BE APPLIED IN ACCORDANCE WITH MATERIAL MANUFACTURER'S RECOMMENDATIONS.
2. d = DEPTH OF SLAB

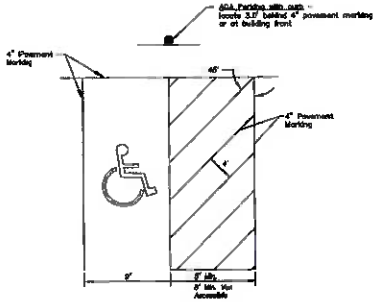
CONCRETE PAVING JOINT SEALING



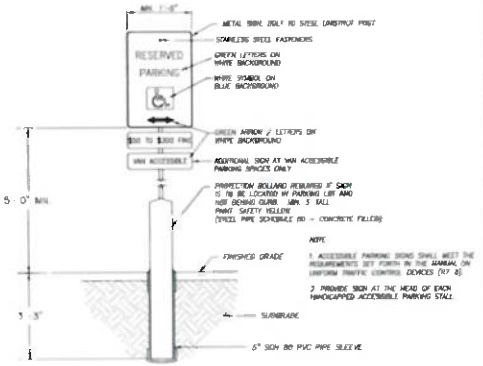
ACCESSIBLE PARKING SYMBOL
NOT TO SCALE



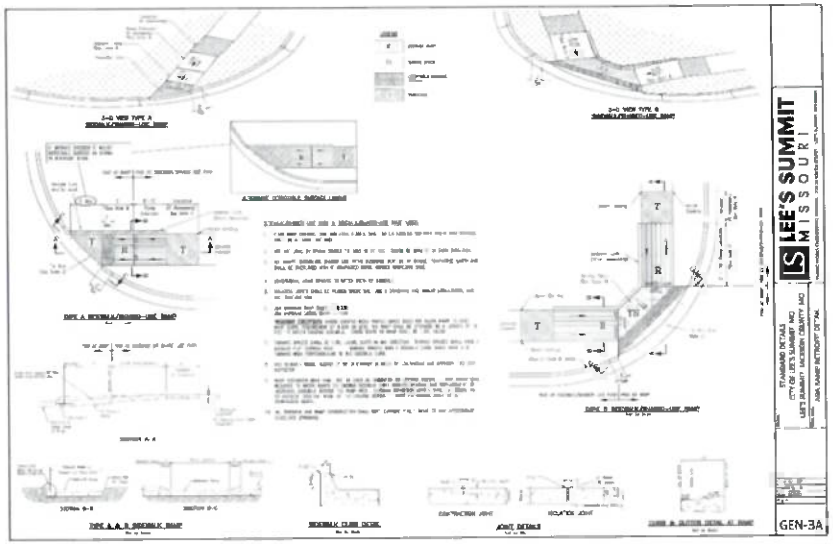
BOLLARD
NOT TO SCALE



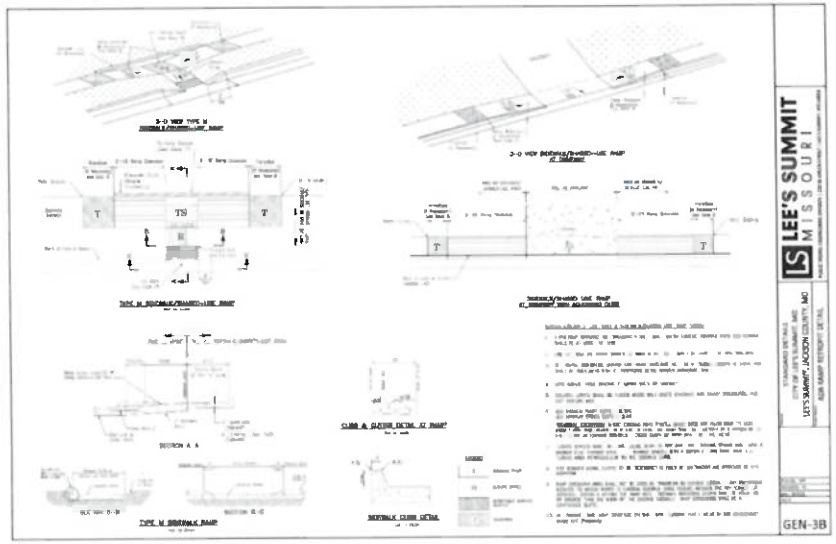
ADA ACCESSIBLE STRIPING LAYOUT
NOT TO SCALE



HANDICAP BOLLARD / SIGN
NOT TO SCALE



LEE'S SUMMIT MISSOURI
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
ADA RAMP RETROFIT DETAIL
GEN-3A



LEE'S SUMMIT MISSOURI
STANDARD DETAILS
CITY OF LEE'S SUMMIT, MO
LEE'S SUMMIT, JACKSON COUNTY, MO
ADA RAMP RETROFIT DETAIL
GEN-3B

BY	REVISION	DATE
RC/ACA	FOR REVIEW	2-17-23

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2-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
DETAILS

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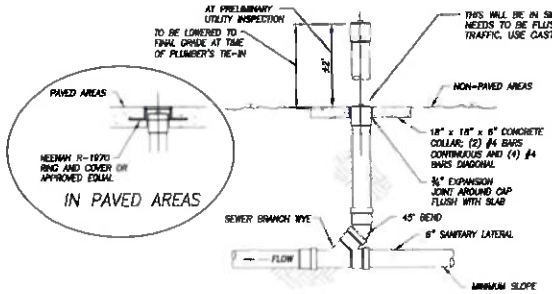
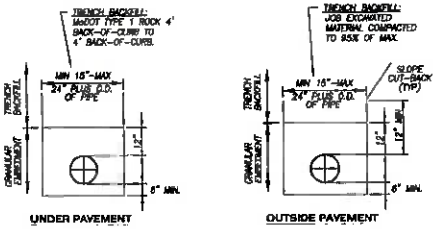
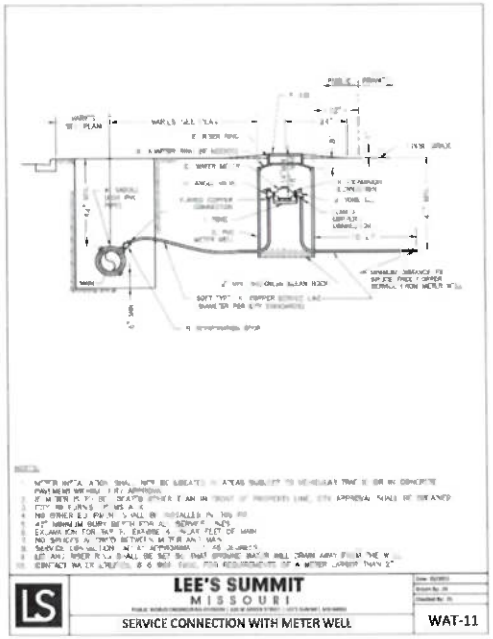
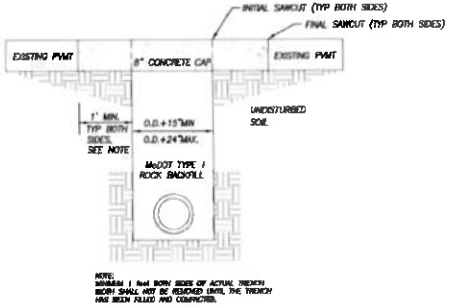


CLEAN-OUT DETAIL
NOT TO SCALE

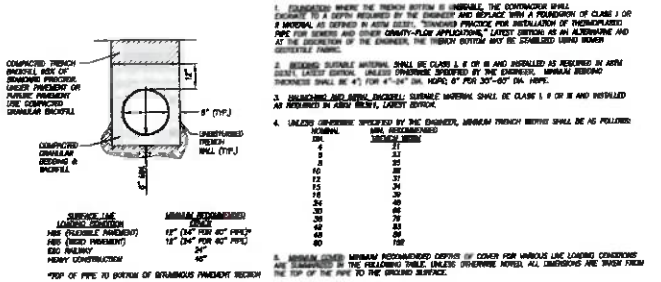


EMBEDMENT AND BACKFILL FOR SANITARY SEWERS
NOT TO SCALE





STREET CROSSING RESTORATION DETAIL
NOT TO SCALE

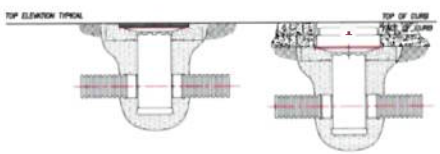


1. EXCAVATION WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS 1 OR II MATERIAL AS DEFINED IN ASTM D2321, STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS," LATEST EDITION. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING WOVEN GEOTEXTILE FABRIC.
2. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4") FOR 4"-24" DIA. HDPE; 6" FOR 30"-60" DIA. HDPE.
3. BACKFILLING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
4. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:

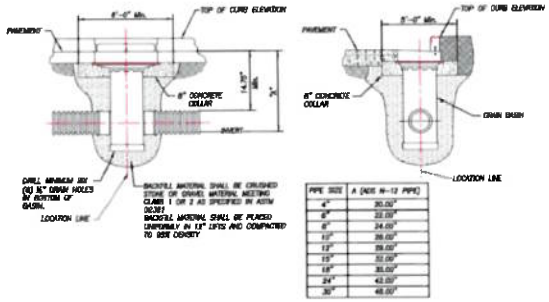
NOMINAL SIZE	MIN. RECOMMENDED TRENCH WIDTH
4	21
6	21
8	25
10	28
12	31
15	34
18	39
24	48
30	66
36	74
42	83
48	89
60	108

5. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF THE PIPE TO THE GROUND SURFACE.

HDPE (HIGH DENSITY POLYETHYLENE) PIPE INSTALLATION DETAIL
NOT TO SCALE



CONSTRUCTION STAKING DETAIL - NYLOPLAST CURB INLET / DRAIN BASIN
NOT TO SCALE



NYLOPLAST DRAIN BASIN - TYPICAL INSTALLATION
NOT TO SCALE

BY	REVISION	DATE
RCIACA	FOR REVIEW	2-17-23

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2-17-23

SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI
SITE DEVELOPMENT PLANS
DETAILS
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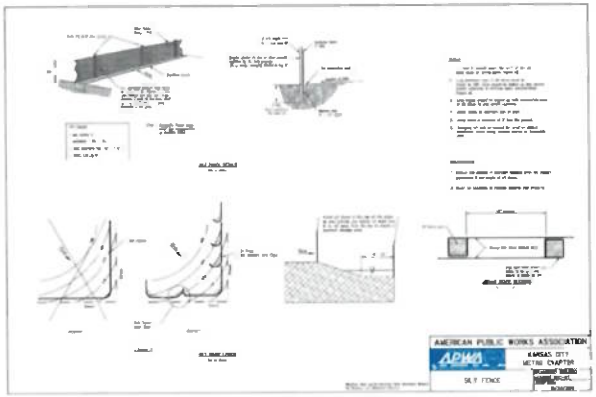

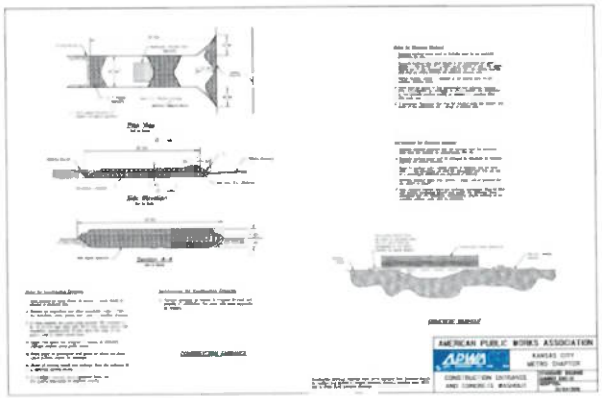

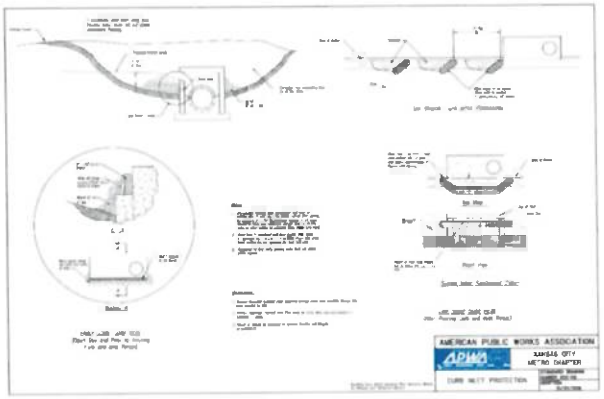

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SUMMIT ORCHARDS - SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI

SITE DEVELOPMENT PLANS
DETAILS

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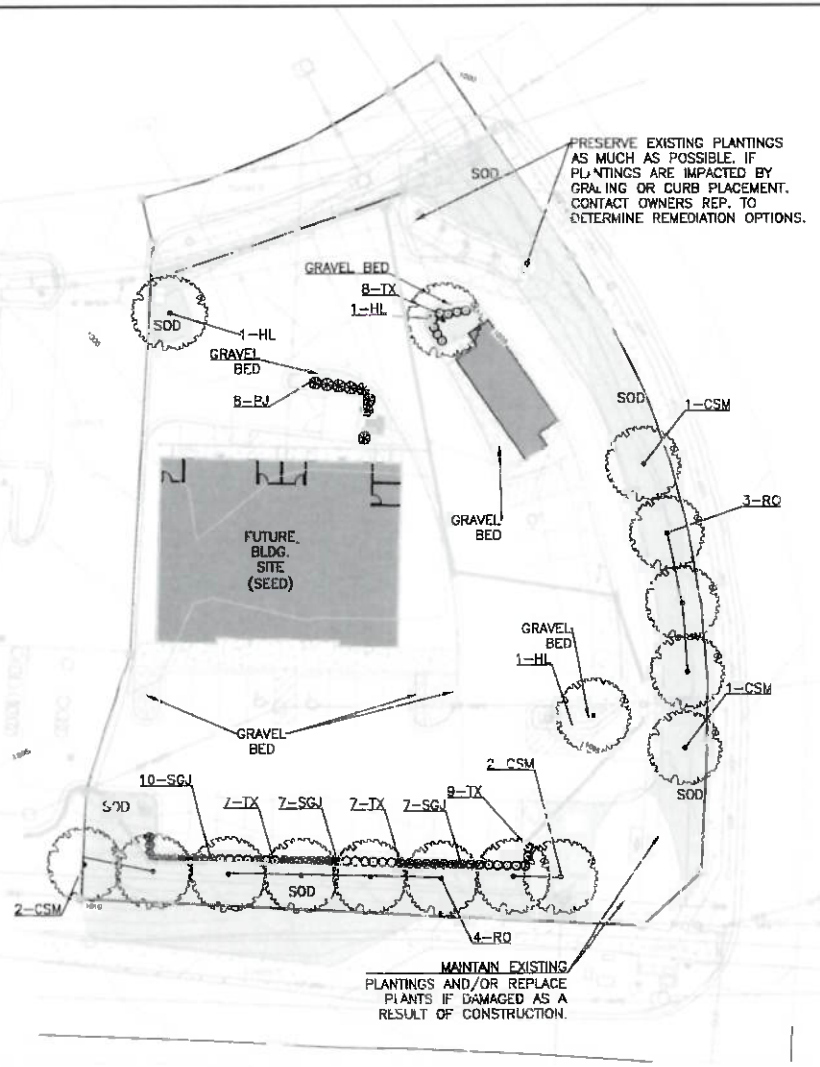


GRAPHIC SCALE

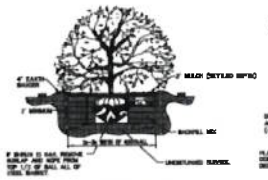
(IN FEET)
1 inch = 80 ft.

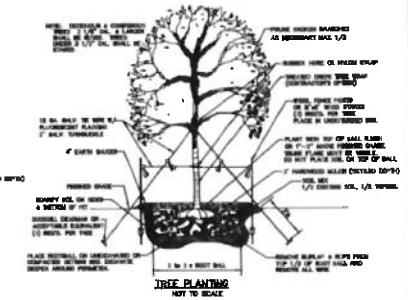
IRRIGATION PERFORMANCE SPECIFICATION:
THE FOLLOWING CRITERIA SHALL BE CONSIDERED MINIMUM STANDARDS FOR DESIGN AND INSTALLATION OF LANDSCAPE IRRIGATION SYSTEM:

1. GENERAL – IRRIGATION SYSTEM TO INCLUDE DRIP IRRIGATION OF SHRUB BEDS ADJACENT TO BUILDINGS, SPRAY HEADS IN THE PARKING ISLANDS, AND ROTORS AROUND THE PERIMETER OF THE PARKING LOTS. HEADS SHALL THROW AWAY FROM BUILDING AND AVOID SPRAYING OVER SIDEWALKS.
2. IRRIGATION SYSTEM SHALL CONFORM TO ALL INDUSTRY STANDARDS AND ALL FEDERAL, STATE AND LOCAL LAWS GOVERNING DESIGN AND INSTALLATION.
3. WATER LINE TYPE, SIZE LOCATION, PRESSURE AND FLOW SHALL BE FIELD VERIFIED PRIOR TO SYSTEM DESIGN AND INSTALLATION.
4. ALL MATERIALS SHALL BE FROM NEW STOCK FREE OF DEFECTS AND CARRY A MINIMUM ONE YEAR WARRANTY FROM THE DATE OF SUBSTANTIAL COMPLETION.
5. THE IRRIGATION SYSTEM SHALL BE DESIGNED AND INSTALLED IN SUCH A WAY THAT ALL SYSTEM COMPONENTS OPERATE WITHIN THE GUIDELINES ESTABLISHED BY THE MANUFACTURER.
6. LAWN AREA AND SHRUB BEDS SHALL BE ON SEPARATE CIRCUITS.
7. PROVIDE WATER TAP, METER SET, METER VAULT AND ALL OTHER OPERATIONS NECESSARY TO PROVIDE WATER FOR IRRIGATION SHALL CONFORM TO LOCAL WATER GOVERNING AUTHORITY GUIDELINES AND STANDARDS.
8. BACKFLOW PREVENTION SHALL BE PROVIDED IN ACCORDANCE WITH STATE AND LOCAL REGULATIONS.
9. IRRIGATION CONTROLLER TO BE LOCATED IN UTILITY ROOM INSIDE BUILDING, AS IDENTIFIED BY OWNER.
10. IRRIGATION CONTROLLER STATIONS SHALL BE LABELED TO CORRESPOND WITH THE CIRCUIT IT CONTROLS.
11. CONTRACTOR SHALL PROVIDE TO THE OWNER WRITTEN OPERATION INFORMATION FOR ALL SYSTEM COMPONENTS.
12. CONTRACTOR SHALL PROVIDE TO THE OWNER ALL KEYS, ACCESS TOOLS, WRENCHES AND ADJUSTING TOOLS NECESSARY TO GAIN ACCESS, ADJUST AND CONTROL THE SYSTEM.
13. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
14. AN AUTOMATIC RAIN SHUT-OFF OR MOISTURE DEVICE SHALL BE INSTALLED.
15. INSTALL SCHEDULE 40 PVC SLEEVES UNDER ALL CURBS, PAVING AND SIDEWALKS. SLEEVES TO BE TWICE THE SIZE OF THE LINE IT HOUSES.
16. INSTALL MANUAL DRAIN VALVES AT LOWEST POSSIBLE ELEVATION ON IRRIGATION MAIN TO ALLOW GRAVITY DRAINING OF MAIN DURING WINTER MONTHS. PROVIDE QUICK COUPLERS AT MULTIPLE LOCATIONS TO ALLOW FOR EASY "BLOWING OUT" OF LATERAL AND MAIN LINES.
17. ZONES OR NOZZLES SHALL BE DESIGNED WITH MATCHED PRECIPITATION RATES.
18. MINIMUM LATERAL DEPTH IS 15" AND MAIN DEPTH IS 18".
19. SUBMIT DESIGN DRAWING WITH BID TO ALLOW OWNER TO EVALUATE SYSTEM. INCLUDE CUT SHEETS OF ALL COMPONENTS AND ZONE TABLE ILLUSTRATING FLOWS AND ANTICIPATED PRESSURE AT FURTHEST HEAD.
20. AN "AS-BUILT" SCALED DRAWING SHALL BE PROVIDED TO THE OWNER BY THE CONTRACTOR AND SHALL INCLUDE BUT NOT BE LIMITED TO THE FOLLOWING:
    - AS CONSTRUCTED LOCATION OF ALL COMPONENTS
    - COMPONENT NAME, MANUFACTURER, MODEL INFORMATION, SIZE AND QUANTITY
    - PIPE SIZE AND QUANTITY
    - INDICATION OF SPRINKLER HEAD SPRAY PATTERN
    - CIRCUIT IDENTIFICATION SYSTEM
    - DETAILED METHOD OF WINTERIZING SYSTEM

SUBMIT AS-BUILT DRAWING IN FULL SIZE DRAWING FORM AS WELL AS PDF ELECTRONIC FORMAT. (SCANNING FULL SIZE COPY OF PLAN IS ACCEPTABLE IF IT CAN BE PRINTED TO SCALE)

LANDSCAPING NOTES:
1. LOCATE ALL UTILITIES BEFORE LANDSCAPE CONSTRUCTION BEGINS.
2. NOTIFY OWNER REPRESENTATIVE OF ANY LAYOUT DISCREPANCIES.
3. ALL EXTERIOR GROUND WITHIN THE LIMITS OF THE CONTRACT, EXCEPT FOR SURFACES OCCUPIED BY BUILDINGS, STRUCTURES,PAVING, AND AS DIRECTED ON THE DRAWINGS AS UNDISTURBED, SHALL BE FILLED WITH SIX INCHES (6") OF TOPSOIL.
4. ALL DISTURBED AREAS NOT DESIGNATED FOR OTHER PLANTING SHALL BE SODDED SOD SHALL CONSIST OF 90% TURF TYPE TALL FESCUE 10% BLUEGRASS.
5. WEED MAT SHALL BE USED UNDER ALL PLANTING AREAS NOT TO BE SODDED OR AS DIRECTED ON THE DRAWINGS. THE MAT SHALL BE COVERED WITH MULCH AND SECURED IN-PLACE BY A SOIL ANCHOR.
6. QUANTITIES INDICATED IN PLANT LIST ARE FOR CONVENIENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR PLANT QUANTITIES AS ILLUSTRATED ON THE PLAN.
7. SHREDDED HARDWOOD MULCH SHALL BE USED AS THREE INCH (3") TOP DRESSING IN ALL PLANT BEDS AND AROUND ALL TREES. SINGLE TREES OR SHRUBS SHALL BE MULCHED TO THE OUTSIDE EDGE OF SAUCER OR LANDSCAPE ISLAND (SEE PLANTING DETAILS).
8. PROVIDE STEEL EDGING AROUND ALL SHRUB AND GROUNDCOVER BEDS. STEEL EDGING SHALL BE 1/8" x 4" WITH CLIPS AND REBAR STAKES FIVE FEET(5') ON CENTER.
9. FERTILIZE ALL PLANTS AT THE TIME OF PLANTING WITH TIME-RELEASE FERTILIZER(3-4 SLOW-RELEASE TABLETS/PELLETS).
10. IF LEANING OCCURS WITHIN ONE YEAR, TREES SHALL BE RE-STAKED (SEE PLANTING DETAILS).
11. CONTRACTOR SHALL STAKE ALL PLANT MATERIALS PRIOR TO INSTALLATION FOR THE PURPOSE OF DETERMINING CONFLICTS WITH ROCK, UTILITIES, ETC. NO PLANTS CAN BE PLANTED DIRECTLY ON ROCK OR UTILITIES. NOTIFY ARCHITECT/ENGINEER/OWNER AT ONCE IF ANY CONFLICTS OCCUR. CONTRACTOR WILL BE REQUIRED TO ADJUST PLANT LOCATIONS AT NO ADDITIONAL COST.
12. CONTRACTOR IS RESPONSIBLE FOR WATERING ALL SOD UNTIL ROOTS HAVE KNOTTED INTO SOIL AND OWNER HAS OCCUPIED THE BUILDING.
13. PROVIDE "GATOR" BAGS ON ALL TREES. REFILL AS NECESSARY UNTIL OWNER OCCUPIES THE BUILDING.
14. PROVIDE ROLLED EROSION CONTROL MAT, NORTH AMERICAN GREEN SC150BN OR APPROVED EQUAL OVER ALL NATIVE GRASS SEEDED AREAS.
15. GRAVEL BEDS – PROVIDE AND INSTALL HEAVY DUTY WEED BARRIER FABRIC UNDER GRAVEL. PROVIDE AND INSTALL 3" DEPTH OF 1"–2" MULTI-COLORED WASHED RIVER GRAVEL. SUBMIT COLOR SAMPLE TO OWNER FOR APPROVAL.


SHRUB PLANTING
NOT TO SCALE


TREE PLANTING
NOT TO SCALE

PLANT SCHEDULE

KEY	QTY.	BOTANICAL NAME	COMMON NAME	SIZE/REMARKS
TREES				
CSM	6	ACER SACHARUM 'AUTUMN SPLENDOR'	CADDO SUGAR MAPLE	3" CAL. B&B
HL	3	GLEDITSIA TRIACANTHOS 'SKYLINE'	SKYLINE HONEYLOCUST	3" CAL. B&B
RO	7	QUERCUS RUBRA	RED OAK	3" CAL. B&B
PJ	8	JUNIPERUS CHINENSIS 'PERFECTA'	PERFECTA JUNIPER	6' HT. B&B
SHRUBS/GRABSES/GROUNDCOVER				
SGJ	24	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	5 GAL
TX	31	TAXUS x MEDIA 'DENSIFORMIS'	DENSIFORMIS YEW	5 GAL

LANDSCAPE WORKSHEET

	ORDINANCE REQUIREMENT	REQUIRED FOR THIS SITE	PROPOSED (EXISTING AND NEW LANDSCAPE)
8.790.A.1 Street Frontage Trees (NW Chapman)	1 tree per 30 feet of street frontage	215 ft. of street frontage /30 = 8 trees required	8 trees
8.790.A.2 Street Frontage Shrubs (NW Chapman)	1 shrub per 20 feet of street frontage	215 ft. of street frontage /20 = 11 shrubs required	11 shrubs *
8.790.A.2 Street Frontage Green Strip (NW Chapman)	20 feet	20 feet	20 feet
8.790.B.1 Open Yard Shrubs	2 shrubs per 5000 sq. ft. of total lot area excluding building footprint	20,452 sq.ft. of total lot area minus 678 sq.ft. of bldg. = 19,7745,600 x 2 = 8 shrubs	8 shrubs
8.790.B.3 Open Yard Trees	1 tree per 3000 sq. ft. of total lot area excluding building and parking	20,452 sq.ft. of total lot area minus 678 sq.ft. of bldg 19,1743,000 = 7 trees	7 trees
8.810. Parking Lot Landscape Islands	5% of entire parking area (spaces, aisles & drives). 1 island at end of every parking bay, min. 9' wide	19,707 sq.ft. of parking area x .05 = 935 sq.ft. of landscape parking lot islands required	1,098 sq.ft.
8.820 Screening of Parking Lot NW Chapman	12 shrubs per 40 linear feet (must be 2.5 feet tall, berms may be combined with shrubs)	120 linear feet/40 x 12 = 36 shrubs required.	36 shrubs

BY	REVISION	DATE
VSR	OWNER CHANGES	2/16/23
VSR	SITE DEVELOPMENT PLAN	1.27.2023

2/7/23

SUMMIT ORCHARDS-SWIG
LEE'S SUMMIT, JACKSON COUNTY, MISSOURI
LANDSCAPE PLAN LS101

24

LORAC DESIGN GROUP, LLC
Structural Engineers

Loads and Codes

Offices: 3933 NE Grant Lee's Summit Missouri 64064 Office 816-529-4019
Practice Licensed in Missouri-Arkansas-Kansas-Colorado-Minnesota-Florida and Oklahoma, Architecture Missouri-Oklahoma
Mo. Cert. of Auth. #E-2005032846–D, Ks. Cert. of Auth. #1883, Ok. Cert. of Auth. #E-6355, Fl. Cert. of Auth. #31516

TABLE 1607.1
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS[a]

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
1. Apartments (see residential)	—	—
2. Access floor systems		
Office use	50	2,000
Computer use	100	2,000
3. Armories and drill rooms	150[f]	—
4. Assembly areas		
Fixed seats (fastened to floor)	60[j]	
Follow spot, projections and control rooms	50	
Lobbies	100[m]	—
Movable seats	100[j]	
Stage floors	150[f]	
Platforms (assembly)	100[m]	
Other assembly areas	100[m]	
5. Balconies and decks[h]	1.5 times the live load for the area served, not required to exceed 100	—
6. Catwalks	40	300
7. Cornices	60	—
8. Corridors		
First floor	100	
Other floors	Same as occupancy served except as indicated	—
9. Dining rooms and restaurants	100[m]	—
10. Dwellings (see residential)	—	—
11. Elevator machine room and controlroom grating (on area of 2 inches by 2 inches)	—	300
12. Finish light floor plate construction (on area of 1 inch by 1 inch)	—	200
13. Fire escapes		
On single-family dwellings only	100 40	—
14. Garages (passenger vehicles only)	40[f]	Note a
Trucks and buses	See Section 1607.7	
15. Handrails, guards and grab bars	See Section 1607.8	
16. Helipads	See Section 1607.6	
17. Hospitals		
Corridors above first floor	80	1,000
Operating rooms, laboratories	60	1,000
Patient rooms	40	1,000
18. Hotels (see residential)	—	—
19. Libraries		
Corridors above first floor	80	1,000
Reading rooms	60	1,000
Stack rooms	150[f,n]	1,000
20. Manufacturing		
Heavy	250[n]	3,000
Light	125[n]	2,000
21. Marquees, except one- and two-family dwellings	75	—
22. Office buildings		
Corridors above first floor	80	2,000
File and computer rooms shall be designed for heavier loads based on anticipated occupancy	—	—
Lobbies and first-floor corridors	100	2,000
Offices	50	2,000

(continued)

TABLE 1607.1—continued
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS[a]

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
23. Penal institutions		
Cell blocks	40	—
Corridors	100	
24. Recreational uses:		
Bowling alleys, poolrooms and similar uses	75[m]	
Dance halls and ballrooms	100[m]	
Gymnasiums	100[m]	
Ice skating rink	250[n]	—
Reviewing stands, grandstands and bleachers	100[c,m]	
Roller skating rink	100[m]	
Stadiums and arenas with fixed seats (fastened to floor)	60[c,m]	
25. Residential		
One- and two-family dwellings		
Uninhabitable attics without storage[i]	10	
Uninhabitable attics with storage[i,k]	20	
Habitable attics and sleeping areas[k]	30	
Canopies, including marquees	20	—
All other areas	40	
Hotels and multifamily dwellings		
Private rooms and corridors serving them	40	
Public roomsm and corridors serving them	100	
26. Roofs		
All roof surfaces subject to maintenance workers		300
Awnings and canopies:		
Fabric construction supported by a skeleton structure	5[m]	
All other construction, except one- and two-family dwellings	20	
Ordinary flat, pitched, and curved roofs (that are not occupiable)	20	
Primary roof members exposed to a work floor		
Single panel point of lower chord of roof trusses or any point along primary structural members supporting roofs over manufacturing, storage warehouses, and repair garages		2,000
All other primary roof members		300
Occupiable roofs:		
Roof gardens	100	
Assembly areas	100[m]	
All other similar areas	Note l	Note l
27. Schools		
Classrooms	40	1,000
Corridors above first floor	80	1,000
First-floor corridors	100	1,000
28. Scuttles, skylight ribs and accessible ceilings	—	200
29. Sidewalks, vehicular driveways and yards, subject to trucking	250[d,n]	8,000[e]
30. Stairs and exits		
One- and two-family dwellings	40	300[l]
All other	100	300[f]

(continued)

TABLE 1607.1—continued
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS[g]

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (pounds)
31. Storage warehouses (shall be designed for heavier loads if required for anticipated storage)		
Heavy	250[f]	—
Light	125[f]	
32. Stores		
Retail		
First floor	100	1,000
Upper floors	75	1,000
Wholesale, all floors	125[h]	1,000
33. Vehicle barriers	See Section 1607.9	
34. Walkways and elevated platforms (other than exitways)	60	—
35. Yards and terraces, pedestrians	100[m]	—

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm^2, 1 square foot = 0.0929 m^2, 1 pound per square foot = 0.0479 kN/m^2, 1 pound = 0.004448 kN, 1 pound per cubic foot = 16 kg/m^3.

a. Floors in garages or portions of buildings used for the storage of motor vehicles shall be designed for the uniformly distributed live loads of this table or the following concentrated loads: (1) for garages restricted to passenger vehicles accommodating not more than nine passengers, 3,000 pounds acting on an area of 4½ inches by 4½ inches; (2) for mechanical parking structures without slab or deck that are used for storing passenger vehicles only, 2,250 pounds per wheel.

b. The loading applies to stack room floors that support nonmobile, double-faced library book stacks, subject to the following limitations:
   1. The nominal book stack unit height shall not exceed 90 inches.
   2. The nominal shelf depth shall not exceed 12 inches for each face.
   3. Parallel rows of double-faced book stacks shall be separated by aisles not less than 36 inches wide.

c. Design in accordance with ICC 300.

d. Other uniform loads in accordance with an approved method containing provisions for truck loadings shall be considered where appropriate.

e. The concentrated wheel load shall be applied on an area of 4.5 inches by 4.5 inches.

f. The minimum concentrated load on stair treads shall be applied on an area of 2 inches by 2 inches. This load need not be assumed to act concurrently with the uniform load.

g. Where snow loads occur that are in excess of the design conditions, the structure shall be designed to support the loads due to the increased loads caused by drift buildup or a greater snow design determined by the building official (see Section 1608).

h. See Section 1604.8.3 for decks attached to exterior walls.

i. Uninhabitable attics without storage are those where the maximum clear height between the joists and rafters is less than 42 inches, or where there are not two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses. This live load need not be assumed to act concurrently with any other live load requirements.

j. Uninhabitable attics with storage are those where the maximum clear height between the joists and rafters is 42 inches or greater, or where there are two or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches in height by 24 inches in width, or greater, within the plane of the trusses.

   The live load need only be applied to those portions of the joists or truss bottom chords where both of the following conditions are met:
   i. The attic area is accessible from an opening not less than 20 inches in width by 30 inches in length that is located where the clear height in the attic is not less than 30 inches.
   ii. The slopes of the joists or truss bottom chords are not greater than two units vertical in 12 units horizontal.

   The remaining portions of the joists or truss bottom chords shall be designed for a uniformly distributed concurrent live load of not less than 10 pounds per square foot.

(continued)

TABLE 1607.1—continued
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS[g]

k. Attic spaces served by stairways other than the pull-down type shall be designed to support the minimum live load specified for habitable attics and sleeping rooms.

l. Areas of occupiable roofs, other than roof gardens and assembly areas, shall be designed for appropriate loads as approved by the building official. Unoccupied landscaped areas of roofs shall be designed in accordance with Section 1607.13.3.

m. Live load reduction is not permitted.

n. Live load reduction is only permitted in accordance with Section 1607.11.1.2 or Item 1 of Section 1607.11.2.

o. Live load reduction is only permitted in accordance with Section 1607.11.1.3 or Item 2 of Section 1607.11.2.

1607.6 Helipads. Helipads shall be designed for the following live loads:

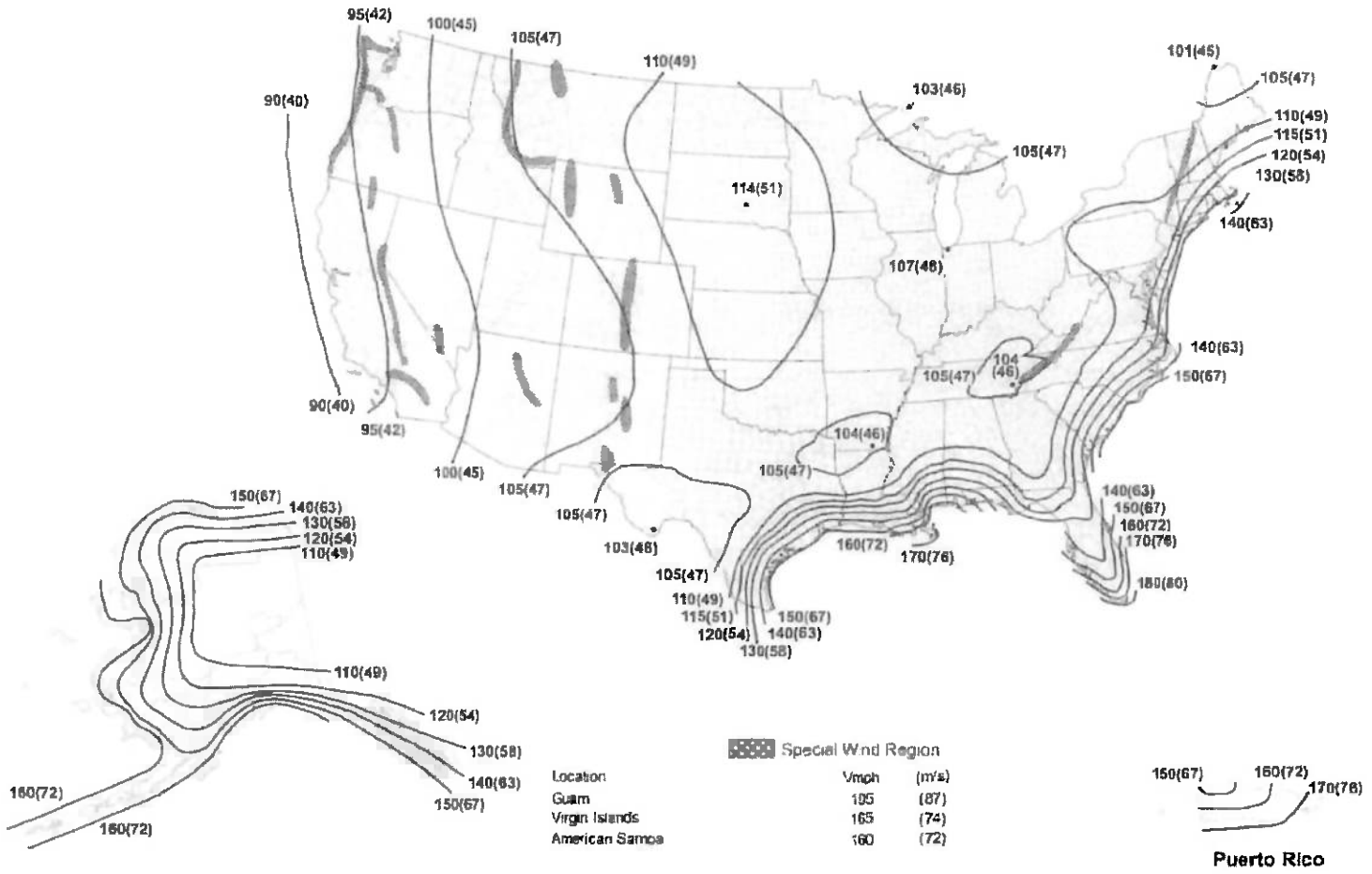
1. A uniform live load, L, as specified in Items 1.1 and 1.2. This load shall not be reduced.
   1.1. 40 psf (1.92 kN/m^2) where the design basis helicopter has a maximum take-off weight of 3,000 pounds (13.35 kN) or less.
   1.2. 60 psf (2.87 kN/m^2) where the design basis helicopter has a maximum take-off weight greater than 3,000 pounds (13.35 kN).
2. A single concentrated live load, L, of 3,000 pounds (13.35 kN) applied over an area of 4.5 inches by 4.5 inches (114 mm by 114 mm) and located so as to produce the maximum load effects on the structural elements under consideration. The concentrated load is not required to act concurrently with other uniform or concentrated live loads.
3. Two single concentrated live loads, L, 8 feet (2438 mm) apart applied on the landing pad (representing the helicopter's two main landing gear, whether skid type or wheeled type), each having a magnitude of 0.75 times the maximum take-off weight of the helicopter, and located so as to produce the maximum load effects on the structural elements under consideration. The concentrated loads shall be applied over an area of 8 inches by 8 inches (203 mm by 203 mm) and are not required to act concurrently with other uniform or concentrated live loads.

Landing areas designed for a design basis helicopter with maximum take-off weight of 3,000-pounds (13.35 kN) shall be identified with a 3,000 pound (13.34 kN) weight limitation. The landing area weight limitation shall be indicated by the numeral "3" (kips) located in the bottom right corner of the landing area as viewed from the primary approach path. The indication for the landing area weight limitation shall be a minimum 5 feet (1524 mm) in height.

1607.7 Heavy vehicle loads. Floors and other surfaces that are intended to support vehicle loads greater than a 10,000-pound (4536 kg) gross vehicle weight rating shall comply with Sections 1607.7.1 through 1607.7.5.

1607.7.1 Loads. Where any structure does not restrict access for vehicles that exceed a 10,000-pound (4536 kg) gross vehicle weight rating, those portions of the structure subject

FIGURE 1608.2—continued
GROUND SNOW LOADS, p_g, FOR THE UNITED STATES (psf)



Notes:

1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10m) above ground for Exposure C category.
2. Linear interpolation is permitted between contours. Point values are provided to aid with interpolation.
3. Islands, coastal areas, and land boundaries outside the last contour shall use the last wind speed contour.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 Years).
6. Location-specific basic wind speeds shall be permitted to be determined using www.atcouncil.org/windspeed

FIGURE 1609.3(1)
BASIC DESIGN WIND SPEEDS, *V*, FOR RISK CATEGORY II BUILDINGS AND OTHER STRUCTURES

LORAC DESIGN GROUP, LLC
Structural Engineers

Misc. Calculations

Offices: 3933 NE Grant Lee's Summit Missouri 64064 Office 816-529-4019
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Mo. Cert. of Auth. #E-2005032846–D, Ks. Cert. of Auth. #1883, Ok. Cert. of Auth. #E-6355, Fl. Cert. of Auth. #31516

Design Calculations

Summit Orchards

Lee's Summit, Missouri

Misc. Calcs - Continous Grade Beam Check

Concrete Beam Calcs - 18"x36" Grade Beam

Typical Strip -

*	Section Trib Width (Selected)	3	ft	Per Drawings
*	Max Span	10	ft	Per Drawings
*	Loading Dead	1.5	kips/ft^2	Per Drawings
	Loading Live	0.5	kips/ft^2	Per Drawings
	Trib Area	1.5	feet	= 3feet/2000
	f'c =	4000	psi	By Design
	fy =	60000	psi	By Design
	Beam Ldg (Dead)	2.25	kips/lin. ft	
	Beam Ldg (Live)	0.75	kips/lin. ft	
	Moment (Dead)	28.13	kip-feet	M=wl^2/2
	Moment (Live)	9.38	kip-feet	M=wl^2/2
	Total Moment	37.50	kip-feet	summation
	Factored Moment (Dead)	39.38	kip-feet	M=wl^2/2 *1.4
	Factored Moment (Live)	15.94	kip-feet	M=wl^2/2 *1.6
	Total Factored Mom.	**55.31**	**kip-feet**	summation
	Reactions (Dead)	11.25	kips	
	Reactions (Live)	3.75	kips	
	Total Reaction			

		b =	18.00 inch	By Design
		d =	30.00 inch	By Design
	Omega =		0.0114	
	Omega'=		0.0113	
	rho =		0.0008	
As, Rqd	As =		0.41 in^2	
	As, min =		1.71	ACI 10.5.1
	Select =	1-#6's	0.44 in^2/ft	
			OK	

Beam Check

T = Asfy =	26.40	kips
a = Asfy/.85f'cb =	0.43	inches
Moment Strength =	707.68	in-kips
or	58.97	kip-feet
	OK	

Design Calculations

Summit Orchards

Lee's Summit, Missouri

Foundation Calcs - Continuous Footing

Typical

Wall Perimeter,

Roof Loads

1st Total Trib Width	12	feet	From Drawings
2nd Total Trib Width	0	feet	From Drawings
Dead Load	35	psf	Loads and Codes
Live Load	30	psf	Loads and Codes
Design Load	0.390	klf	Sum of Loads

Second Floor

1st Total Trib Width	0	feet	From Drawings
2nd Total Trib Width	0	feet	From Drawings
Dead Load	0	psf	Loads and Codes
Live Load	0	psf	Loads and Codes
Design Load	0	klf	Sum of Loads

First Floor

1st Total Trib Width	8.5	feet	From Drawings
2nd Total Trib Width	0	feet	From Drawings
Dead Load	60	psf	Loads and Codes
Live Load	100	psf	Loads and Codes
Total Wall Height (This section)	12	feet	From Drawings
Estimated Wall Weight	45	psf	Area * Load

Design Load	1.22 klf	Sum of Loads
Total Design Load	1.61 klf	Summation of Loads
Allowable Bearing Stress	2.00 k/ft^2	OK By IBC
Footing Width	0.81 ft	Load/Stress
Footing Depth	2.00 ft	By Design

Design Calculations

Summit Orchards

Lee's Summit, Missouri

LRFD, Short Hss Column Calculation

CITED TEXT: STRUCTURAL STEEL DESIGN, LRFD 3rd Edition, A. WILLIAMS PhD, SE

Member =		HSS6x6x3/8		AISC
Factored Load =		100	kips	Conservative
				Ref:
rx = ry =		2.28	inches	AISC
phi =		0.90		LRFD
Ag =		7.58	inches^2	AISC
Fy =		42.00	ksi	AISC
E =		29000.00	ksi	AISC
K =		1.00		
L =		12.00	feet	
		144.00		
rx = ry =		2.28	inches	
Fe =		71.75	ksi	E3-4
.44FY =		18.48	ksi	
	Short Column, Eq. E3-2 Controls			
k = FY/Fe =		0.59		
Fcr =		32.87	ksi	E3-2
phi*Ag*Fc =		224.26	kips	
% Capacity =		45%		
		OK	Say OK... full load not likely	

Design Calculations

Summit Orchards

Lee's Summit, Missouri

Load Combinations: **IBC 1605.2, IBC 2018**

Dead Load	D	15	psf/total
Wind Load	W	20	psf/total
Flood Load	F	0	psf/total
Live Load (Floor)	L	40	psf/total
Height Load	H	1	unit factor
Snow Load	S	25	psf/total (Ice on Snow, IBC 1607)
Rain Load	R	15	psf/total
Earthquake Load	E	15	psf/total
LL adjustment	f1	0.5	other LL's
Snow adjustment	f2	0	Non-Saw Tooth Roofs

Load Cases:

1	1.4(D +F) =	21	Eq 16-1
2	1.2(D +F) + 1.6(L + H) + .5(Lr or S or R)	96.1	Eq 16-2
3	1.2(D +F) + 1.6(Lr or S or R) + 1.6H + (f1L or .5W)	79.6	Eq 16-3
4	1.2(D +F) + 1.0 W + f1L + 1.6H + .5(Lr or S or R)	72.1	Eq 16-4
5	1.2(D +F) + 1.0 E + f1L + 1.6H + f2S	39.6	Eq 16-5
6	.9D + 1.0 W + 1.6H	35.1	Eq 16-6
7	.9(D + F) +1.0 E + 1.6H	30.1	Eq 16-7
8	optional case		
9	optional case		
10	optional case		

Controlling Case: 2 96.1 psf/total

Design Calculations

Summit Orchards

Lee's Summit, Missouri

Slab Calculation:

Slab thickness	4	inches
f'c	4000	ksi in 28 days
k	200	
desired safety factor	2.5	

Ec	3604996.5	ksi
I	64.0	inches^4
L	0.0	
Sec.Mod. per foot	32.0	Inches^3
allowable bending stress	227.7	Inches^2
Allowable load	1170.3	lbs per square foot

Design Calculations

Summit Orchards

Lee's Summit, Missouri

Wood Frame Building

Misc. Calcs - Spread Footing Calculations

Footing Carrying; Corners

*	Dead Load (conservative estimate)	4		By Design
*	Live Load (conservative estimate)	5		By Design
	Total Column Load	9	kips	Per Drawings
*	Bending Moment	1	kip-feet	By Design, Seismic
	Bending Moment	12	in-kips	M*12
**	Allow. Soil Pressure	2000	psf	Conservative Estimated (IBC)
*	f'c =	4000	psi	By Design
	fy =	60000	psi	By Design

Select Footing Size

*	Footing Width (minor axis)		3	feet	By Design
**	Footing Length (major axis)	L =	3	feet	By Design
*	Footing thickness		2.8	feet	By Design
	Direct Soil Pressure		473	psf	
	Axial Bearing Stress =		1420	psf	P/A
	P/3Af*(4L/L-2e) =		1998	psf	

Solve for "x" (length of bearing)=		4.27	feet	=((Sum of Loads))*1000)/(0.5*Pa*Fw
Check Overturning =	Mo =	9	inch-kips	(Mdes*.75)
	Mr =	208	inch-kips	=((Sum of Loads))*1000)/(0.5*Pa*Fr
	S.F. =	**23.06**		Mr/Mo

Check Punching Shear

	Vc =	253	psi	ACI
Column Size	Length =	12	inches	By Design
	Width =	12	inches	By Design

Punching Shear Failure Perimeter:

*	Flexural Shear Critical Section =	23.76	inches	Estimated @ (.7071*t)
	Punching Shear Critical Section	11.88	inches	=Flex Cr/2
	bo=	143.03		

Ultimate Load to Footing:

Pu =	14.10	kips	=1.4DL + 1.7LL

Ultimate Punching Shear:

Soil Load due to Column Load Only

Pc =	1000.00	psf	=P/A ftg
Vu=	26.56	kips	=P/Lin at edge

Calculate Depth Required:

Vu/phi*bo*Vc =	d=	0.86	inches

Check Flexural Shear

Vc =	126	ksi	

Soil Pressure at Critical Section:

Psoil =	2456.44		
Total Shear Force	6680.96	lbs	
Vu =	12107.24	lbs	
d =	3.13	inch	

Flexural Shear Does NOT Control Design

Check Bending

	M=	35.71	kip-feet
	Mu=	60.71	kip-feet

Select Reinforcement

	Mu/ftg length =	20	kip-ft/ft	
	Minimum As =	0.73	inches^2	
**	Try 5 - #6's	2.20	inches^2/foot	Each Way!!
	Mu Capacity =	282	kip-ft/ft	
		OK		

Check if Tensile Steel is Required at Top of Footing:

*	Overburden =	2.50	feet
**	Soil weight =	0.11	pcf
	Mu =	0.59	kip-feet/foot
	fc = Mc/I=	3.14	psi
	fr =	205.55	psi
		OK, No Top Steel Required	

Design Calculations

Summit Orchards

Lee's Summit, Missouri

Steel Girder at Mid Line of Building

Supporting Roof

Cap. Check - Max Span=		20	6096 mm	Dim. Converted to mm
Trib Width	Per Beam (2 total)		60 ft	Per Drawings
Beam Span			20 ft	Per Drawings
Beam Loading Live =	LL = (1.6*.025)		0.04 kips/ft^2	Gravity Load Calcs
Beam Loading Dead=	DL = (1.4*.03)		0.04 kips/ft^2	Gravity Load Calcs
Trib Area	(half wall width, per bm)		30.00 feet	
	Total Beam Loading		2.46 kips/lin. ft	
Point Load 1			1 kips	
(as applicable)		a =	10 ft	
		b =	10 ft	
Point Load 2			0 kips	
(as applicable)		a =	0 ft	
		b =	20 ft	
Point Load 3			0 kips	
(as applicable)		a =	0 ft	
		b =	20 ft	
Point Load 4			0 kips	
(as applicable)		a =	0 ft	
		b =	20 ft	

Total Moment		Mu=.9*Mn =	115.20	kip-feet	Mu=.9*Mn =
			1382.40	kip-inches	
Reactions		Right Reaction =	25.10	kips	
		Left Reaction =	25.10	kips	
		Zx req'd =	30.72	in^3	=(Mu*12)/(0.9*Fy)
		OK			
Select	W21x44				
		Depth =	21.00	Inch	
		Area =	13.00	Inch^2	
		Zx =	95.40	Inch^3	
		Ixx =	843.00	inch^4	
		Fy =	50.00	ksi	
Allowable Defl.	L/240		1.00	inches	Span/Allowable
Deflection	Point & Uniform Ldg		0.37	inches	AISC Simple Bm
		Zx act =	95.4	in^3	
		Zx req'd =	30.72	in^3	
		OK			
		M(plastic) = Fy*Z =	4770	kip-in	AISC LRFD
		My = Fy*S =	4770	kip-in	AISC LRFD
		Mp Limit = 1.5*My =	7155	kip-in	AISC LRFD
		OK			
		J =	0.77		
		Lp =	10.10596		F10-5
		Lp (actual) =	5.0000		

Design Calculations

Summit Orchards

Lee's Summit, Missouri

Wind Posts

Supporting Front Wall (Store Front)

Building Height		16	4877 mm	Dim. Converted to mm
Trib Width	Building Length/4=		16.875 ft	Per Drawings
Wind Post Height			16 ft	Per Drawings
Beam Loading Live =	LL = (1.6*.025)		0.04 kips/ft^2	Gravity Load Calcs
Trib Area	(half wall width, per bm)		8.44 feet	
	Total Loading (Vertical)		0.34 kips/lin. ft	
Point Load 1			1 kips	
(as applicable)		a =	8 ft	
		b =	8 ft	
Point Load 2			0 kips	
(as applicable)		a =	0 ft	
		b =	16 ft	
Point Load 3			0 kips	
(as applicable)		a =	0 ft	
		b =	16 ft	
Point Load 4			0 kips	
(as applicable)		a =	0 ft	
		b =	16 ft	

Total Moment		Mu=.9*Mn =	13.32	kip-feet	Mu=.9*Mn =
			159.84	kip-inches	
Reactions		Right Reaction =	3.20	kips	
		Left Reaction =	3.20	kips	
		Zx req'd =	3.55	in^3	=(Mu*12)/(0.9*Fy)
		OK			
Select	W12x26				
		Depth =	12.00	Inch	
		Area =	7.85	Inch^2	
		Zx =	37.20	Inch^3	
		Ixx =	204.00	inch^4	
		Fy =	50.00	ksi	
Allowable Defl.	L/240		0.80	inches	Span/Allowable
Deflection	Point & Uniform Ldg		0.11	inches	AISC Simple Bm
		Zx act =	37.2	in^3	
		Zx req'd =	3.55	in^3	
		OK			
		M(plastic) = Fy*Z =	1860	kip-in	AISC LRFD
		My = Fy*S =	1860	kip-in	AISC LRFD
		Mp Limit = 1.5*My =	2790	kip-in	AISC LRFD
		OK			
		J =	0.3		
		Lp =	7.183287		F10-5
		Lp (actual) =	5.0000		

Attachment to Footing

Mu =	13.32	kip-ft	
Bolt Centers	16	inches	

Couple Force = Mu/Ctrs	9.99	Kips
Number of Bolts Anchors	2	bolts
Force Per Bolt Force/no.	4.995	kips
Select Bolt	3/4" A307	
Capacity	14	kips
	OK	

Design Calculations

Summit Orchards

Lee's Summit, Missouri

The following calculations are based on "out-to-out" dimensions as determined by the designing engineer.

All values are IBC, "simplified method" for structures under 30 feet in height.

Unit Description: 80'x60'x19' Monoslope

Length:	80	feet	Re: Plan Drawings OUT TO OUT
Width:	60	feet	Re: Plan Drawings OUT TO OUT
Eave Height:	19	feet	Re: Plan Drawings
Roof Mean Height above eave:	1	feet	Re: Plan Drawings
Height Adjustment Factor:	1		Height Adjustmt Lamda, Fig 28.6-1
Design Wind Speed:	115	mph	IBC Table 1609.6.2.1 (1), pg 294
Roof Slope:	14.5	degrees	By Calculation
Exposure:	B		ASCE, pg195
Floors Considered in Calcs:	1	Floor	Re: Plan Drawings

For Simplicity and 120 Loading, Wall Forces Rounded to 20 psf
Roof Forces take as Exp C Rounded to -30

From IBC:	Longitudinal			(Wind Force at End of Building)
	Wind Pressure to Eave:	20	psf	ASCE Table 27.6-1
	Wind Pressure to Roof:	-30	psf	ASCE Table 27.6-2
	Vertical Pressures:			
	Windward:	20	psf	ASCE Table 27.6-1
	Leeward:	0	psf	

From IBC:	Transverse			(Wind Force at Length of Building)
	Wind Pressure to Eave:	20	psf	ASCE Table 27.6-1
	Wind Pressure to Roof:	-30	psf	ASCE Table 27.6-2
	Vertical Pressures:			
	Windward:	20	psf	ASCE Table 27.6-1
	Leeward:	0	psf	

Pressumed Dead Loads

Roof:	16	psf	Re: Plan Drawings
Floor:	0	psf	Re: Plan Drawings, Slab on Grade
Ext. Walls:	16	psf	Re: Plan Drawings

MWFRS - Longitudinal - **80'x60'x19'**

Horizontal Wind Loads

Building Width	60	feet	Re: Plan Drawings
Building Eave Height	19	feet	Re: Elevation Drawings
Roof Mean Height above eave	1	feet	Re: Elevation Drawings
Wind Pressure to Eave	20	psf	IBC Table 1609.6.2.1(1)
Wind Pressure to Roof	-30	psf	IBC Table 1609.6.2.1(1)
Height Adjustment Factor	1		IBC Table 1609.6.2.1 (4)
Total Wind Load at Walls	22.8	kips	By Calculation
Total Wind Load at Roof	-1.8	kips	By Calculation
Total Wind Shear (Longitudinal)	**21**	**kips**	**By Calculation**
Unit Shear Stress at Base	0.13	kips/ft	By Calculation

Theorhetical Chord Stress at T.O.W.

Bending Moment:	157.5	k-ft	M=(wl^2)/8
Bending Stress:	2.0	k/in^2	Stress=M/d
Area for 2 Plate top chord:	10.5	in^2	By Calculation
Stress per Square Inch:	187.5	psi	By Calculation
	OK		
Shear to Top of Wall:	10.5	kips	By Calculation
Theor. OT Reactions:	2.49	kips	By Calculation
Theor. Panel Shear Stress:	0.26	klf	By IBC
Lineal Feet Required:	9.78	feet	By Calculation
	OK		

MWFRS - Transverse - **80'x60'x19'**

Horizontal Wind Loads

Building Length	80	feet	Re: Plan Drawings
Building Eave Height	19	feet	Re: Elevation Drawings
Roof Mean Height above eave	1	feet	Re: Elevation Drawings
Wind Pressure to Eave	20	psf	IBC Table 1609.6.2.1(1)
Wind Pressure to Roof	-30	psf	IBC Table 1609.6.2.1(1)
Height Adjustment Factor	1		IBC Table 1609.6.2.1 (4)
Total Wind Load at Walls	30.4	kips	By Calculation
Total Wind Load at Roof	-0.6	kips	By Calculation
Total Wind Shear (Transverse)	29.8	kips	By Calculation
Unit Stress at Base (Transverse)	0.248333	kips/ft	By Calculation

Theorhetical Chord Stress at T.O.W.

Bending Moment:	298.0	k-ft	M=(wl^2)/8
Bending Stress:	5.0	k/in^2	Stress=M/d
Area for 2 Plate top chord:	10.5	in^2	By Calculation
Stress per Square Inch:	473.0	psi	By Calculation
	Check Design		
Shear to Top of Wall:	14.9	kips	By Calculation
Theor. OT Reactions:	3.5	kips	By Calculation
Theor. Panel Shear Stress:	0.3	klf	By IBC
Lineal Feet Required:	13.9	feet	By Calculation
	OK		

MWFRS - Longitudinal - **80'x60'x19'**

Vertical Wind Loads (Uplift)

Building Width	60	feet	Re: Plan Drawings
Building Eave Height	19	feet	Re: Elevation Drawings
Roof Mean Height above eave	1	feet	Re: Elevation Drawings
Wind Pressure to Leeward	-10.7	psf	IBC Table 1609.6.2.1(1)

Height Adjustment Factor	1		IBC Table 1609.6.2.1 (4)
Total Wind Load at Roof	-25.7	kips	By Calculation
Total Wind Force Vertical (Longitudinal)	-0.3	kips/ft	By Calculation

Dead Load Forces

Roof:	0.480	klf	By Calculation
Floors:	0.000	klf	By Calculation
Walls:	0.304	klf	By Calculation
Total:	0.784	klf	By Calculation

NET, Unit Stress at Foundation (Longitudinal)	0.463	kips/ft	By Calculation

Dead Load Controls, Uplift < DL

MWFRS - Transverse - 80'x60'x19'

Vertical Wind Loads (Uplift)

Building Length	80	feet	Re: Plan Drawings
Building Eave Height	19	feet	Re: Elevation Drawings
Roof Mean Height above eave	1	feet	Re: Elevation Drawings
Wind Pressure to Windward	20	psf	IBC Table 1609.6.2.1(1)
Height Adjustment Factor	1		IBC Table 1609.6.2.1 (4)
Total Wind Windward Pressure	48	kips	By Calculation
Total Wind Force Vertical (Transverse)	0.6	kips/ft	By Calculation

Dead Load Forces

Roof:	0.48	klf	By Calculation
Floors:	0	klf	By Calculation
Walls:	0.304	klf	By Calculation
Total:	0.784	klf	By Calculation

NET, Unit Stress at Foundation (Transverse)	1.384	kips/ft	By Calculation

Dead Load Controls, Uplift < DL

MWFRS - Longitudinal - 80'x60'x19'

OTM - Horizontal Wind Forces

Total Wind Shear (Longitudinal)	21.00 kips	By Calculation
Total Wind Force Vertical (Longitudinal)	-25.68 kips	By Calculation Controlling Value ONLY
Summing Moments at End	46.68 kips	By Calculation
Unit Stress at Extrema (longitudinal)	0.78 kips/ft Dead Load Controls	By Calculation

MWFRS - Transverse - **80'x60'x19'**

OTM - Horizontal Wind Forces

Total Wind Shear (Transverse)	29.80 kips	By Calculation
Total Wind Force Vertical (Transverse)	48.00 kips	By Calculation Controlling Value ONLY
Summing Moments at End	77.80 kips	By Calculation
Unit Stress at Extrema (Transverse)	0.97 kips/ft Hold Downs Required	By Calculation

Foundation Loads Due to Wind

Longitudinal Wind Loads

Shear Stress/foot	0.13 kips/ft	By Calculation
Vertical Force/foot	0.46 kips/ft	By Calculation
OT Force (Vertical)	0.78 kips/ft	By Calculation
Total Shear	21.00 kips	By Calculation
Shear @ Brace = Tshear/2=	**10.50** kips	By Calculation

Transverse Wind Loads

Shear Stress/foot	0.25	kips/ft	By Calculation
Vertical Force/foot	1.38	kips/ft	By Calculation
OT Force (Vertical)	0.97	kips/ft	By Calculation
Total Shear	29.80	kips	By Calculation

Simpson Hold Down Confirmation

By Standard, Check			
Simpson HD8A, w/ 5/8"	3.66	kips/conn.	Simpson, pg 29
A307, Bolt Embed 12" min.			
Controlling Vertical Load:	0.97	kips/ft	By Calculation
Hold Down Spacing:			

OK, Hold Downs per Code and Calculation

Nail Pattern Confirmation, for Structural Sheathing

By Standard, Check	0.27	kips/ft	6" o.c. at Edges
Edge Condition for 15/32"	0.36	kips/ft	4" o.c. at Edges
Plywood with 2x4 studs,			
and 8d, 1 3/8" nails.			
Controlling Shear Stress	0.25	kips/ft	By Calculation

Design Edge Pattern **6 in. o.c Edge Spacing Required**

Shear Wall Quantity Confirmation

Transverse Loading

SW2	**1/2" Gyp blckd**	134	plf	Table 2306.3.1
Lineal feet available for SW1		135	lf	By Calculation
Shear Capacity		18.09	kips	By Calculation
Factored Capacity		18.09	kips	By Calculation
Total Shear		29.80	kips	By Calculation
% Shear Resisted		61%		
% Shear Remaining		39%	Additional Capacity Required	

SW1	**15/32" Shtg blckd**	255	plf	Table 2306.3.1
Lineal feet available for SW1		135	lf	By Calculation
Shear Capacity		34.43	kips	By Calculation
Opening Reduction Factor		0.77		Table 2305.3.7.2
Wind Increase Factor		1.40		IBC 2306.4.1
Factored Capacity		37.11	kips	By Calculation
Combined Capacity		55.20	kips	By Calculation
Total Shear		29.80	kips	By Calculation
% Shear Resisted		185%		
% Shear Remaining		-85%	Shear Demand Met	

Longitudinal Loading

SW2	**1/2" Gyp blckd**	175	plf	Table 2306.3.1
Lineal feet available for SW1		115	lf	By Calculation
Shear Capacity		20.125	kips	By Calculation
Reduction Factor		1		
Factored Capacity		20.125	kips	By Calculation
Total Shear		21	kips	By Calculation
% Shear Resisted		96%		
% Shear Remaining		4%	Additional Capacity Required	

SW1	**15/32" Shtg blckd**	255	plf	Table 2306.3.1
Lineal feet available for SW1		115	lf	By Calculation
Shear Capacity		29.33	kips	By Calculation
Opening Reduction Factor		1		
Wind Increase Factor		1.40		IBC 2306.4.1
Factored Capacity		41.06	kips	By Calculation
Combined Capacity		61.18	kips	By Calculation

Total Shear	21.00	kips	By Calculation
% Shear Resisted	291%		
% Shear Remaining	-191%	Shear Demand Met	

Shear Wall Design, Wind

Longitudinal Loading

SW3	**1/2" Gyp blckd**	175	plf	Table 2306.3.1
Lineal feet available for SW1		115	lf	By Calculation
Shear Capacity		20.13	kips	By Calculation
Reduction Factor		1		
Factored Capacity		20.13	kips	By Calculation
Total Shear		21.00	kips	By Calculation
% Shear Resisted		96%		
% Shear Remaining		4%		

SW2	**15/32" Shtg blckd**	255	plf	Table 2306.3.1
Lineal feet available for SW1		115	lf	By Calculation
Shear Capacity		21.00	kips	By Calculation
Opening Reduction Factor		1		
Wind Increase Factor		1.40		IBC 2306.4.1
Factored Capacity		29.40	kips	By Calculation
Combined Capacity		49.53	kips	By Calculation
Total Shear		21.00	kips	By Calculation
% Shear Resisted		236%		
% Shear Remaining		-136%	Capacity Demand Met	

Design Calculations

Summit Orchards

Lee's Summit, Missouri

Misc. Calcs - Window Headers 9'-0"

Supporting - Roof - Wall - Parapet

Beam Designation None

Beam Span	Max. Typical	12	feet	Re: Plan Drawings
Uniform Load Width		16.88	feet	Re: Plan Drawings
Uniform Load (total load LL+DL) 1.6*.025+1.4*.035		0.075	ksf	Load & Codes
Beam Loading		1.27	klf	ULW * UL
Point Load 1		0.0	kips	
Point Load 1 Location		6.0	feet	
Point Load 2		0.0	kips	By Design
Point Load 2 Location		6.0	feet	
Point Load 3		0.0	kips	
Point Load 3 Location		6.0	feet	

For Conservatism All Moments Consider at Midspan !!
All beams considered continually braced at top flange !!

Moments	Uniform Load	22.781	k-ft	M=(wl^2))/8
	Point Load 1	0.00	k-ft	M=(wl^2))/8
	Point Load 2	0.00	k-ft	M=(wl^2))/8
	Point Load 2	0.00	k-ft	M=(wl^2))/8
	Total	22.78	k-ft	Summation
Allow Deflection	L 360	0.400	inches	Span/allowable
Reaction		7.59375	kips	=(w*l)*span/2

Size Beam

By Design

b =	4.5	inches
d =	14.0	inches
Ixx =	1029.0	inches^4
E =	1800	ksi
Deflection, Uniform	0.3188	inches
Deflection, PL 1	0.0000	inches
Deflection, PL 2	0.0000	inches
Deflection, PL 3	0.0000	inches
Deflection Total	**0.3188**	**inches**
	OK	
Shear Stress	**0.121**	**ksi**

Check Bending Stresses

Sxx=	147.0	inches^3

Adjustment Factors

Cd	0.95	Section 2.3.2 Duration
Cm	1.00	ASD Wood Design Manual
Ct	1.00	ASD Wood Design Manual
Cl	Braced	Section 4.4.1 Stability
Cf	1.00	ASD Wood Design Manual
Cv	1.03	Table 5A Wood Supplement page 57
Adjusted Cv	1.00	Max Value from Suppl.page 57
Cfu	1.00	ASD Wood Design Manual
Cr	1.15	ASD Rep Factor, NDS Section 4.3.9
		Ref: Page 30
Fb=	1800	#2 GRD, DF
F'b=	2019.87	psi
Actual fb=	**1859.69**	**psi**
	OK	

Design Calculations

Summit Orchards

Lee's Summit, Missouri

Misc. Calcs - Studs @ Windows - Max Load

Column Capacity - 2x6 Studs

	Column Designation	None			
			BLOCKING REQ'D		
*	**Column Length**	**unbraced length**	8.0	feet	Re: Plan Drawings
*	Trib Width		14.4	feet	Re: Plan Drawings
	Trib Length		33.8	feet	Re: Plan Drawings
*	Uniform Load	Loads (LL + DL)	0.1	ksf	Load & Codes
		Additional Load (xxx)	0.0	kips	
	Column Loading		29.1	kips	Sum(Loads above)
*	Column "d"	12-2x6's	13.0	inches	Re: Plan Drawings
*	Column "b"		5.5	inches	Re: Plan Drawings
	Wind Loading	Considered in Other Calcs	0	kips	By Design & Drawings
			0	kips	By Design & Drawings
			0	kips	By Design & Drawings
			0	kips	By Design & Drawings
			0	kips	By Design & Drawings

For Conservatism Column Consider Unbraced !!

	Total Design Load		**29.10938**	**kips**	**Sum (Loads above)**
	Adjustment Factors				
		Cd	0.9		Table 2.3.2, pg. 9
		Cm	1		Table 4B, NDS Sup, pg 36, **
		Ct	1		Table 2.3.3, pg. 9
		Cf	1		ASD Wood Design Manual
*		Bearing Stress =	825		Bearing Stress Unfactored
		Fc=	742.5		H.2, pg 157, See definition
		l = le			
		l/d Ratio =	7.384615		H.2, pg 157, NDS
			OK		
*		Kce =	0.3		Equation H3, pg 157, NDS
		E=E'	1500000	psi	
		Fce=	8251.953		Equation H2, pg 157, NDS
		F'c=	728.396		Equation H1, pg 157, NDS
*	Logic Statement	Design Stress	728.396	psi	Lesser Value of F'c or Fce
*		c=	0.80		Equation H2, pg 157, NDS
		Cp =	0.68		Equation 3.7-1, pg 19, NDS
	Capacity	**P'=**	**36.33**	**kips**	**=((Fc*Cp)*(d*b))/1000**
		Capacity Check	OK		

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Seismic

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SEISMIC LOADS - ASCE 7-2010

Site Class Soil Definition	D		Per Geotechnical recommendation
	.2 Second Response Ss=	0.12	Map Figure 22-1 p.211
	Fa =	1.6	Table 11.4-1
SMS =	Fa x Ss =	0.192	Eq. 11.4-1
SDS =	2/3 SMS =	0.128	Eq. 11.4-3
	1 Second Response S1=	0.06	Map Figure 22-2 p.213
	Fv =	2.4	Table 11.4-2
SM1 =	Fv x S1 =	0.144	Eq. 11.4-2
SD1 =	2/3 SM1 =	0.096	Eq. 11.4-4

Occupancy	II		Table 1-1 (p3)
Seismic Design Category	A		Table 11.4-1 (p115)
	B		Table 11.4-2 (p115)
Importance Factor I =		1	Table 11.5-1, Category I (p116)
Redundancy r=		1	12.3.4.1 (Design Category B or C) (p1
Ordinary Steel Concentrically Braced Frame			
Overstrength factor Wo =		6.5	Table 12.2-1 Ordinary Wood Framing
Response Modification Coeff R=		3	Table 12.2-1 Ordinary Wood Framing

Base Shear for Building V = Cs W — Eq. 12.8-1 (p129)

Cs=	SDS / R / I =	0.042667	Use	Eq. 12.8-2
Max. Cs=	SD1 / (R / I) T =	0.336359		Eq. 12.8-3
	Ta=	CT hnx =	0.1	Eq. 12.8-7
		CT =	0	Table 12.8-2 -All other systems
		hn=	8	Taken at Median height
		x=	0.8	Table 12.8-2-All other systems
	T<=	CuTa=	0.2	OK
		Cu=	1.6	Table 12.8-1 (p129) for SD1<.1

(See Eq. 12.8-4 for period T> TL of 12 sec for Max Cs)

Min. Cs=	.5 S1 / R / I =	0.01	<= .0	Eq. 12.8-5 and 12.8-6

Dead Load =	80x60x.035	168.00
Dead Load =		

168.00

Total Dead Load W for Bldg=	168 k	
Total Base Shear V = Cs W =	7.17 k	To building Frame

FIGURE 1613.2.1(1)—continued
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)

FIGURE 1613.2.1(2)—continued
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE_R) GROUND MOTION RESPONSE ACCELERATIONS FOR THE CONTERMINOUS UNITED STATES OF 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)

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End of Review

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