Archaeological Resources

Airport Vicinity Development Checklist

Parking Study

Trip Generation Comparison

Parking Master Plan

SCOTTSDALE AIRPORT VICINITY DEVELOPMENT **LONG FORM**

For development projects with taxilane access and/or parcels adjacent to airport property

The owner of developments within the Airport Influence Area shall complete forms required by the City and Scottsdale Airport to comply with the Scottsdale Revised Code, Chapter 5 – Aviation and the Airpark Rules and Regulations; and submit the completed forms with final plans to the assigned city project manager.

Project Name: Silver King	Pre-App: 734-PA-2019
Site Address: 7335 E. Greenway Rd.	
Contact name: Daniel Childers	Phone: 480.466.7134

1. HEIGHT ANALYSIS, CH. 5, SEC. 5-354. GENERAL REQUIREMENTS

☐ Applicants must conduct a height analysis for all projects located within 20,000 feet of Scottsdale Airport.

1. Complete a height analysis for all structures, appurtenances or construction equipment through the FAA at: https://oeaaa.faa.gov/oeaaa/external/portal.jsp, click on the Notice Criteria Tool (left side). If you do not exceed criteria, submit this FAA response from the website with your packet or you must complete step 2.

IF required by FAA, complete Step 2

2. Submit an FAA form 7460-1 Notice of Proposed Construction or Alteration for review and determination. Please allow about 45 days for this process. A copy of the FAA's response will be required prior to final plan approval.

2. TAXILANE ACCESS REVIEW, AIRPARK RULES AND REGULATIONS

☐ **Submit a full-size site plan** at a 1"= 20' scale and elevation plan for aviation staff review. The plans must depict the following: **Taxilane centerline, proposed based aircraft (if known), hangar space dimensions, staging area dimensions, vehicle access path and gate.**

- A staging area shall be greater than or equal to the size of the largest hangar on the site per *Definitions section.*
- Also proposed parcel site must include enough hangar space for each proposed aircraft to fit simultaneously inside. *Sec. 310.*

- The taxilane easement safety area must be a weight-bearing surface. Gravel for ground cover is discouraged, and if requested, must be between 2" -3" diameter. *FAA Advisory Circular Airport Design.*
- The Maximum Recommended Wingspan for aircraft stored in the airpark is 66 feet or less as stated in the *Airpark Rules and Regulations, Sec. 206*
- Vehicular access to hangar/staging area must not traverse taxilane easement and requires a gate. *Sec. 404*

☐ **Existing or proposed fuel facility.** A fuel storage area must be constructed and maintained in accordance with the regulations in *Sec. 511*.

☐ **Proposed architectural barriers** (buildings, walls, bollards, etc.) that will separate auto parking area and taxilane easement safety area.

☐ **Drop-offs, objects** exceeding 3" in height or vegetation in the taxilane safety area (50' from airpark taxilane centerline) are not permitted. *FAA Advisory Circular Airport Design*.

☐ **Exterior lighting locations.** Lighting must be illuminated downward toward taxilane.

☐ **Landscape plan.** Slope gradients should not exceed 5%; storm water retention is prohibited.

☐ **Refuse collection dumpster storage locations.** Locate away from aircraft staging, taxilane access points and airport property fence line.

☐ **Helicopter landing area** (if applicable). Proposed helicopter operations require approval from both the city and FAA and a conditional use permit. A conditional use permit is required by the City of Scottsdale. The FAA requires completion of an FAA 7480-1 Notice of Landing Area Proposal.

3. AIRCRAFT NOISE AND OVERFLIGHT DISCLOSURE, CH. 5, SEC. 5-356 & SECT. 5-357

☐ Incorporate the Airport Disclosure for Development around Scottsdale Airport language into the CC&Rs or other procedural documents and provide a copy.

☐ An avigation easement will need to be granted to the city. If not already recorded for property, submit a notarized Avigation Easement form with packet to your project manager.

4. APPLICANT'S SIGNATURE

Signature: 

Date: 12/3/19

Aviation Approval:

Date:

Comments:

SCOTTSDALE AIRPORT
SDL

Federal Aviation Administration

« OE/AAA

Notice Criteria Tool

NOTE TO CITY REVIEWER: WE HAVE SUBMITTED TO FAA TO OBTAIN A LETTER IN TIME FOR FINAL REVIEW.

Notice Criteria Tool - Desk Reference Guide V_2018.2.0

The requirements for filing with the Federal Aviation Administration for proposed structures vary based on a number of factors: height, proximity to an airport, location, and frequencies emitted from the structure, etc. For more details, please reference CFR Title 14 Part 77.9.

You must file with the FAA at least 45 days prior to construction if:

- your structure will exceed 200ft above ground level
- your structure will be in proximity to an airport and will exceed the slope ratio
- your structure involves construction of a traverseway (i.e. highway, railroad, waterway etc...) and once adjusted upward with the appropriate vertical distance would exceed a standard of 77.9(a) or (b)
- your structure will emit frequencies, and does not meet the conditions of the FAA Co-location Policy
- your structure will be in an instrument approach area and might exceed part 77 Subpart C
- your proposed structure will be in proximity to a navigation facility and may impact the assurance of navigation signal reception
- your structure will be on an airport or heliport
- filing has been requested by the FAA

If you require additional information regarding the filing requirements for your structure, please identify and contact the appropriate FAA representative using the Air Traffic Areas of Responsibility map for Off Airport construction, or contact the FAA Airports Region / District Office for On Airport construction.

The tool below will assist in applying Part 77 Notice Criteria.

Latitude:	33 Deg 37 M 32.26 S N
Longitude:	111 Deg 55 M 44 S W
Horizontal Datum:	NAD83
Site Elevation (SE):	1475 (nearest foot)
Structure Height :	28 (nearest foot)
Traverseway:	No Traverseway (Additional height is added to certain structures under 77.9(c)) User can increase the default height adjustment for Traverseway, Private Roadway and Waterway
Is structure on airport:	(•) No ( ) Yes

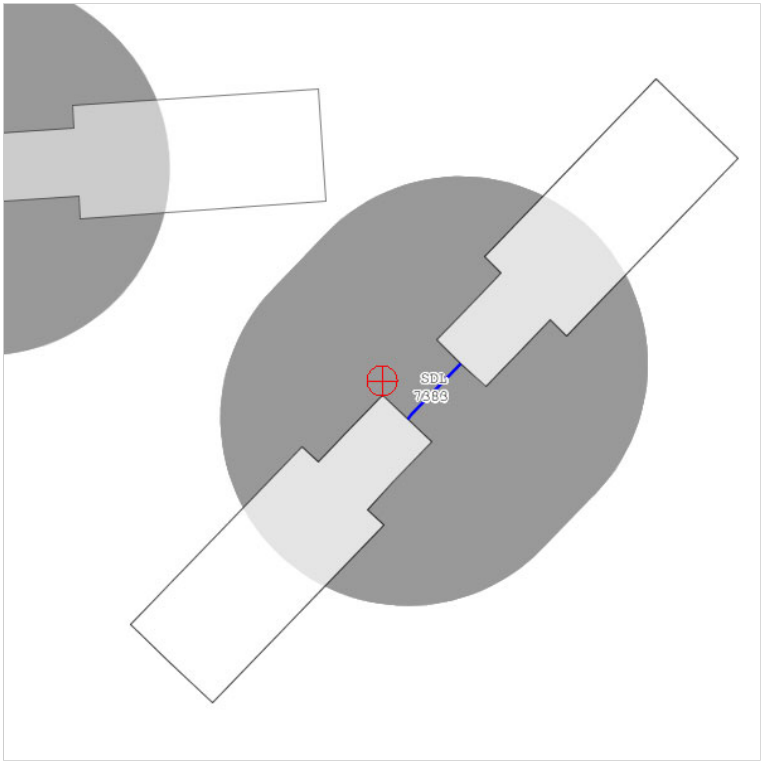
Results

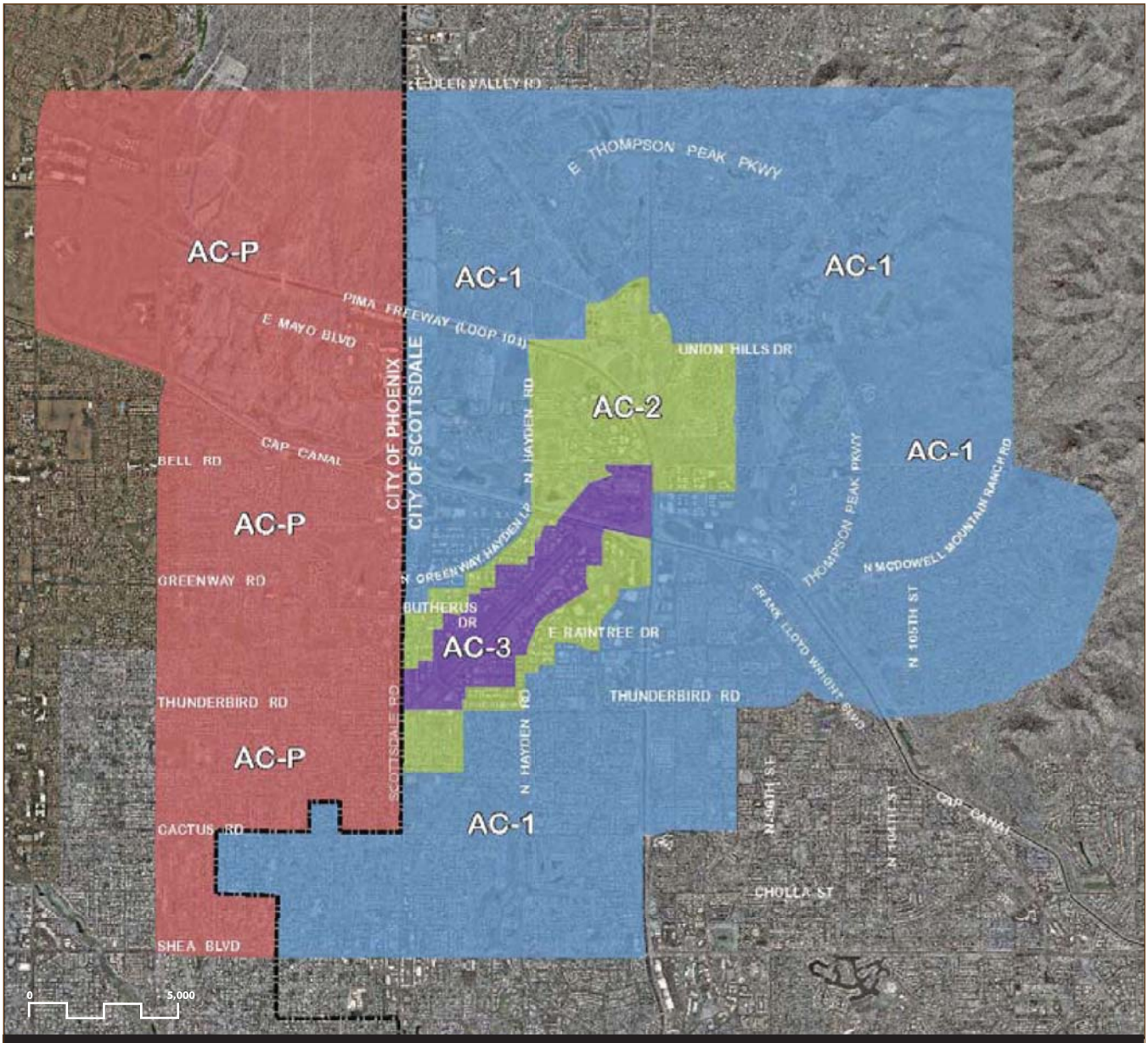
You exceed the following Notice Criteria:

Your proposed structure is in proximity to a navigation facility and may impact the assurance of navigation signal reception. The FAA, in accordance with 77.9, requests that you file.

77.9(b) by 7 ft. The nearest airport is SDL, and the nearest runway is 03/21.

The FAA requests that you file





LEGEND AND TABLE KEY

Municipal Boundary

Airport Influence Areas

AC-1 AC-3

AC-2 AC-P

NP - Not Permitted
P - Permitted with Use Limitations
(1) - Avigation easement required under Sec. 5-357
(2) - Noise attenuation required under Sec. 5-358

Noise Sensitive Uses	AC[1]-3	AC-2	AC-1
Dwelling unit*	NP	P (1) (2)	P (1)
Manufactured home*	NP	P (1) (2)	P (1)
Elementary and secondary school*	NP	P (1) (2)	P (1)
Hospital*	NP	P (1) (2)	P
Travel accommodation*	NP	P (1) (2)	P
Place of worship	NP	P (1) (2)	P (1)
Cultural, civic, and social organization	NP	P (1) (2)	P (1)

* The terms dwelling unit, manufactured home, elementary and secondary school, hospital and travel accommodation defined in the Basic Zoning Ordinance.
[1] AC - Airport Compatibility District

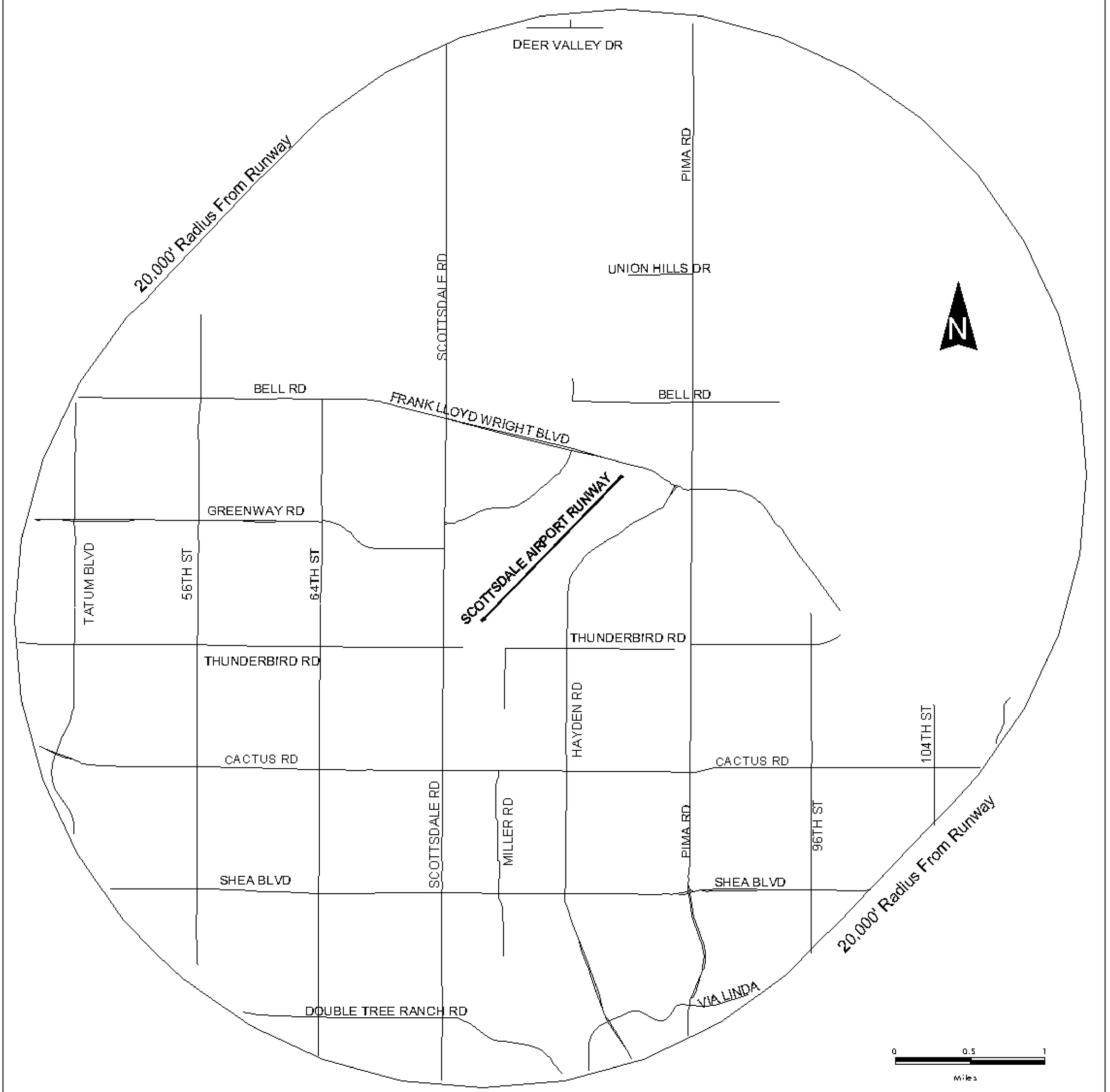
SOURCE: Scottsdale Revised Code; August 2012

SCOTTSDALE AIRPORT SDL

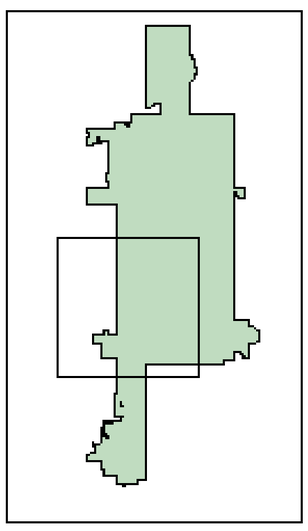
AIRPORT INFLUENCE AREA AND NOISE OVERLAY ZONES

Exh

Scottdale Airport Vicinity, FAA Notice of Proposed Construction

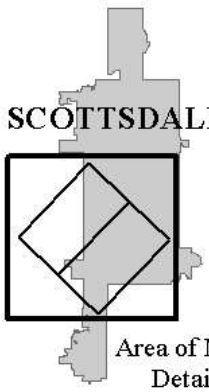


Area Of Detail



INSTRUCTIONS: Proposed temporary cranes or structures which exceed a height of 100:1 slope (100 ft horizontally for 1 foot vertically) from the nearest point of the runway must provide notice to the FAA via a 7460-1 form. Forms are available at the FAA Flight Standards District Office (480 419-0111) or the Scottsdale Airport Administration Office (480 312-2321).

Scottsdale Airport
Traffic Pattern Airspace



1 0.5 0 1 2 3 Miles

Map Date: October 18, 2001

55-DR-2019
12/17/2019

SAMPLE FAIR DISCLOSURE FOR DEVELOPMENT AROUND SCOTTSDALE AIRPORT

NOTICE TO PURCHASERS

OF PROXIMITY TO THE SCOTTSDALE AIRPORT

To include in CC&R's or disclosure notice:

Proximity to Airport.
Each Owner of a Lot in the Airport Influence Area identified in Chapter 5 of the Scottsdale Revised Code acknowledges that, as of the date of this notice:

(a) The Lot is close to the Scottsdale Airport (the "Airport"), located generally between Frank Lloyd Wright Boulevard on the north, Pima Road on the east, Thunderbird Road on the south and Scottsdale Road on the west.

(b) The Airport is operated as a general aviation reliever/commercial service airport for Scottsdale and North Phoenix, and used generally for airplanes, jets and helicopters.

(c) Aircraft using the Airport may fly over the Lot and adjacent properties at altitudes that vary for several reasons, including weather conditions, aircraft type, aircraft performance and pilot proficiency.

(d) The majority of takeoffs and landings occur between 6:00 a.m. and 11:00 p.m., but the Airport is open 24 hours each day, so takeoffs and landings may occur at any time.

(e) The number of takeoffs and landings at the Airport average approximately 400 each day, but that number varies and may increase.

(f) Aircraft using the Airport will generate noise, the volume, pitch, amount and frequency of which will vary for several reasons, including weather conditions, aircraft type, aircraft altitude and aircraft number.

(g) Airport management attempts to minimize aircraft noise and its influence on Lots in the Airport Influence Zone, but there is no guarantee that such attempts will be effective or remain in place.

The Owner accepts and assumes any and all risks, burdens and inconvenience caused by or associated with the Airport and its operations (including noise), and agrees not to assert or make any claim arising out of the Airport and its operations against the City of Scottsdale, its elected and appointed officials, officers, directors, commissioners, representatives, employees, and agents.

Any questions regarding the operation of the Airport can be directed to the Airport Administration office at 480-312-2321.

WHEN RECORDED, RETURN TO:
CITY OF SCOTTSDALE
ONE STOP SHOP/RECORDS
(_____)
7447 E. Indian School Road, Suite 100
Scottsdale, AZ 85251

Exempt from Affidavit of Value
under A.R.S. § 11-1134(A)(2, 3)

CITY OF SCOTTSDALE
AVIGATION EASEMENT

Project No. 734-PA-2019

Q.S. _____

FOR ONE DOLLAR ($1.00) and other good and valuable consideration received _____ _____ (collectively "Grantor") grants to the City of Scottsdale, an Arizona municipal corporation ("Grantee"), a perpetual, non-exclusive easement upon, over and across the parcel of land (the "Property") described on the legal description and the sketch attached hereto as Exhibits "A" and "B". The purpose of the easement is for a right of flight for aircraft in the airspace above the Property.

1. "Aircraft" means any manned or unmanned device that flies.

2. Without limitation, the right of flight includes the right to operate aircraft over and near the Property, and cause any noise, vibration, fumes, light, exhaust, odors, fuel vapor particles, electronic interference, dust, annoyances, nuisances, emissions, and any other effects relating to operating aircraft (collectively "Aircraft Effects").

3. All Aircraft Effects are included within the scope of the easement, including without limitation those that reach or affect the Property or improvements to the Property, interfere with other uses of the Property, annoy users of the Property, and are caused or made worse by any changes in the following:

   3.1 The size, number, method of propulsion, weight, noisiness, design, fuel, category, type or other characteristics of aircraft, and in any aircraft practices, laws, rules, policies, circumstances, customs, protocols or procedures.

   3.2 The airport size, orientation, configuration, location, runway length, improvements or other characteristics, and in any airport practices, laws, rules, policies, circumstances, customs, protocols or procedures.

   3.3 The flight paths, flight frequency, flight timing, airport operations, climbing and descending, altitudes, takeoff and landing, air traffic control, and in any related aircraft and airport practices, laws, rules, policies, circumstances, customs, protocols or procedures.

3.4 Grantor's or others' personal perceptions of Aircraft Effects or sensitivity to Aircraft Effects.

4. Grantor shall not cause or allow the Property to be used to discharge fumes; smoke; dust; or electronic, light, laser or other emissions, which may obstruct visibility or adversely affect or interfere with the operation of aircraft or any navigational facilities. No building, mast, tree, vegetation, or other thing upon the Property shall exceed Federal Aviation Administration approved height restrictions.

5. Grantor has been advised and understands that:

   5.1. All or a portion of the Property is located in a noise-influence area.

   5.2. Aircraft Effects might be annoying to users of the Property and might interfere with the unrestricted use and enjoyment of the Property.

   5.3. Aircraft Effects will likely increase over time.

6. Grantor waives all rights and claims that Grantor may ever have against, and agrees not to sue, Grantee regarding Aircraft Effects. Grantor makes its waivers and agreements for itself, its successors and assigns, in favor of Grantee, and all Grantee's officers, officials, employees, agents, lessees, permittees, invitees, successors and assigns.

Grantor warrants and covenants to Grantee and its successors and assigns that Grantor is lawfully seized and possessed of the Property; that Grantor has a good and lawful right to make the conveyance described herein; and that Grantee shall have title and quiet possession against the claims of all persons.

The person executing this document on behalf of a corporation, trust or other organization warrants his or her authority to do so and that all persons necessary to bind Grantor have joined in this document. This document runs with the land in favor of Grantee's successors and assigns.

DATED this ____ day of _____, 20___.

GRANTOR: _____

for _____

_____

for _____

STATE OF ARIZONA)
) ss.
County of Maricopa)

This document was acknowledged before me this ___ day of _____, 20___, by _____ for and on behalf of_____.

_____
NOTARY PUBLIC

My commission expires:

_____

STATE OF ARIZONA)
) ss.
County of Maricopa)

This document was acknowledged before me this ___ day of _____, 20___, by ___ _____ for and on behalf of _____.

_____
NOTARY PUBLIC

My commission expires:

_____

N/A THERE IS NO FUEL DISPENSING INTALLATION ON SITE

SCOTTSDALE AIRPARK
FUEL DISPENSING INSTALLATION APPROVAL FORM

(Required for installation of an airpark aircraft fuel dispensing and storage facility)

PURPOSE: Scottsdale Airpark Rules and Regulations specify requirements relating to fueling, flammable fluids and safety in the airpark. Proposed installation plans for fuel dispensing facilities in the airpark must be reviewed and approved by airport staff to ensure compliance with all applicable laws, ordinances, rules and regulations. Airport approval is required prior to issuance of any other applicable City permits.

INSTRUCTIONS: Please complete Section A below and submit this form with a site plan, project description and system design for review and approval by Scottsdale Airport staff prior to final plans approval or fire department inspection. After project review, Airport staff will complete Section B and return the form to the Applicant at the specified address, fax, or email address.

Section A – To be completed by Applicant. Please "x" the boxes and complete the requested information as it applies to the project.

☐ **Applicant Name and Fuel Dispensing location:**

Applicant: _____

Installation Address: _____

APN: _____

Authorized Representative: _____ Title: _____

Indicate where approval should be sent: _____

☐ **Specify the number of dispensing sites, tanks, capacity of each tank, and type of fuel:**

	Tank 1 (Indicate capacity and fuel type below)	Tank 2 (Indicate capacity and fuel type below)	Tank 3 (Indicate capacity and fuel type below)	Tank 4 (Indicate capacity and fuel type below)
Dispensing Site 1				
Dispensing Site 2				
Dispensing Site 3				

☐ **I have reviewed and understand the applicable sections of the Airpark Rules and Regulations including, without limitation, Article 500 pertaining to Fueling, Flammable Fluids, and Safety.**

I certify that the statements made in this application are true and complete to the best of my knowledge. The undersigned representative certifies he/she is authorized to sign for the applicant.

_____

Authorized Representative's Signature Date signed

Return this completed form to: Airport Administration, 15000 N. Airport Drive, Suite 200, Scottsdale, AZ 85260

N/A THERE IS NO FUEL DISPENSING INTALLATION ON SITE

**********************************_Airport Administration Only_**********************************

<u>Section B</u> – To be completed by Airport Staff and returned to Applicant.

☐ **Airport staff has reviewed the submitted information pertaining to (AP#)__________, and has determined the proposed project complies with current Airpark Rules and Regulations. Total gallons for the site: ________.**

☐ **Airport staff cannot approve this project based upon the submitted information. The proposed project must address the following stipulations before airport staff can approve the project:**

Stipulations:

Attach copies of applicable documents

☐ Approved Conditional Use Permit

☐ Self-fueling Permit No._________

Airport Director (or designee)

Date signed

WHEN RECORDED, RETURN TO:
CITY OF SCOTTSDALE
ONE STOP SHOP/RECORDS
(_____)
7447 E. Indian School Road, Suite 100
Scottsdale, AZ 85251

Exempt from Affidavit of Value
under A.R.S. § 11-1134(A)(2, 3)

CITY OF SCOTTSDALE
AVIGATION EASEMENT

Project No. 734-PA-2019

Q.S. _____

FOR ONE DOLLAR ($1.00) and other good and valuable consideration received _____ The Vanderhuul Family LMT Partnership (collectively "Grantor") grants to the City of Scottsdale, an Arizona municipal corporation ("Grantee"), a perpetual, non-exclusive easement upon, over and across the parcel of land (the "Property") described on the legal description and the sketch attached hereto as Exhibits "A" and "B". The purpose of the easement is for a right of flight for aircraft in the airspace above the Property.

1. "Aircraft" means any manned or unmanned device that flies.

2. Without limitation, the right of flight includes the right to operate aircraft over and near the Property, and cause any noise, vibration, fumes, light, exhaust, odors, fuel vapor particles, electronic interference, dust, annoyances, nuisances, emissions, and any other effects relating to operating aircraft (collectively "Aircraft Effects").

3. All Aircraft Effects are included within the scope of the easement, including without limitation those that reach or affect the Property or improvements to the Property, interfere with other uses of the Property, annoy users of the Property, and are caused or made worse by any changes in the following:

   3.1 The size, number, method of propulsion, weight, noisiness, design, fuel, category, type or other characteristics of aircraft, and in any aircraft practices, laws, rules, policies, circumstances, customs, protocols or procedures.

   3.2 The airport size, orientation, configuration, location, runway length, improvements or other characteristics, and in any airport practices, laws, rules, policies, circumstances, customs, protocols or procedures.

   3.3 The flight paths, flight frequency, flight timing, airport operations, climbing and descending, altitudes, takeoff and landing, air traffic control, and in any related aircraft and airport practices, laws, rules, policies, circumstances, customs, protocols or procedures.

55-DR-2019
2/20/2020

3.4 Grantor's or others' personal perceptions of Aircraft Effects or sensitivity to Aircraft Effects.

4. Grantor shall not cause or allow the Property to be used to discharge fumes; smoke; dust; or electronic, light, laser or other emissions, which may obstruct visibility or adversely affect or interfere with the operation of aircraft or any navigational facilities. No building, mast, tree, vegetation, or other thing upon the Property shall exceed Federal Aviation Administration approved height restrictions.

5. Grantor has been advised and understands that:

   5.1. All or a portion of the Property is located in a noise-influence area.

   5.2. Aircraft Effects might be annoying to users of the Property and might interfere with the unrestricted use and enjoyment of the Property.

   5.3. Aircraft Effects will likely increase over time.

6. Grantor waives all rights and claims that Grantor may ever have against, and agrees not to sue, Grantee regarding Aircraft Effects. Grantor makes its waivers and agreements for itself, its successors and assigns, in favor of Grantee, and all Grantee's officers, officials, employees, agents, lessees, permittees, invitees, successors and assigns.

Grantor warrants and covenants to Grantee and its successors and assigns that Grantor is lawfully seized and possessed of the Property; that Grantor has a good and lawful right to make the conveyance described herein; and that Grantee shall have title and quiet possession against the claims of all persons.

The person executing this document on behalf of a corporation, trust or other organization warrants his or her authority to do so and that all persons necessary to bind Grantor have joined in this document. This document runs with the land in favor of Grantee's successors and assigns.

DATED this 13 day of December, 2019.

GRANTOR: _____

for The Vanderhurst Family Limited Partnership

_____

for _____

13911239v2 (4673852)

STATE OF ARIZONA)
) ss.
County of Maricopa)

This document was acknowledged before me this ___ day of _____, 20___, by _____ for and on behalf of_____.

_____
NOTARY PUBLIC

My commission expires:

_____

STATE OF ARIZONA)
) ss.
County of Maricopa)

This document was acknowledged before me this 12th day of December, 2019, by ___ _____ for and on behalf of _____.

Victoria Stewart
NOTARY PUBLIC

My commission expires:

10/26/21

Victoria Stewart
Notary Public
Maricopa County, Arizona
My Comm. Expires 10/26/21

Structural Calculations

Project

Silverking Office Building and Car Storage

Permit Submittal

Scottsdale, AZ

Project No. A19104

03 February 2020

BDA Engineers

Scottsdale

BDA design

project name: SILVER KING.

design by:

checked by: gb

page #: 2

project #: A 1904

date: March 2019

SEE KEYPLAN

CITY OF SCOTTSDALE

ROOF FRAMING DESIGN LOADS

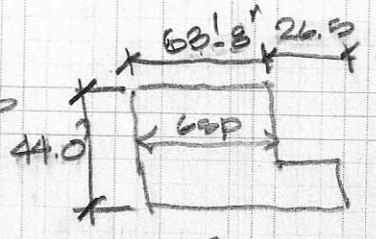
LIVE 20 PSF

DEAD 20 PSF

HIGH ROOF

ROOF JOISTS

J1



MTL DECK

MAX SPAN = 10.75

18GA N DECK

WR = 42 PSF OK

✓ 6 SPACES @ 68.67/6 = 10.61 ! OK

✓ JOISTS L = 44.0'

WD: 215

WL: 215

WTL: 430 PLF

28LH02

WR = 305/496 OK

L TL

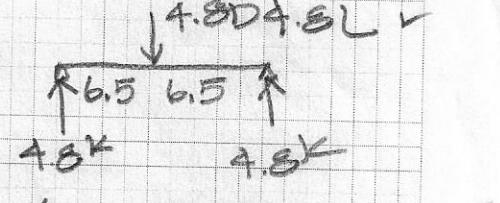
R = 4.8D ✓

4.8L ✓

✓ EDGE BEAMS

NORTH Lmax = 13' ✓ WORST CASE ✓

B1



M = 6.5(4.8) = 31 KFT ✓

W8X15 MR = 32 KFT

TW 10.5

D 0.21

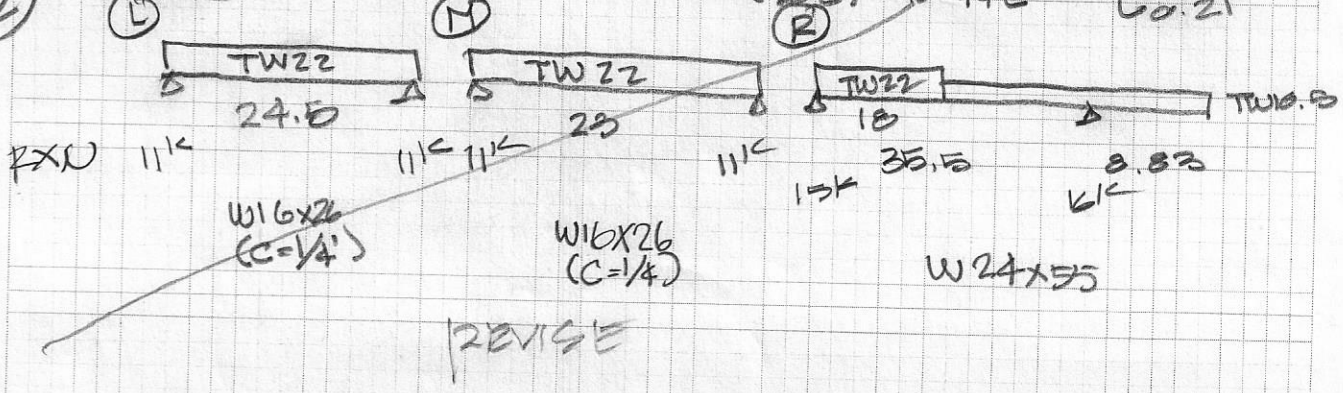
L 0.21

TW22

W = 22' (20D / 20L) = 0.44D / 0.44L

B2

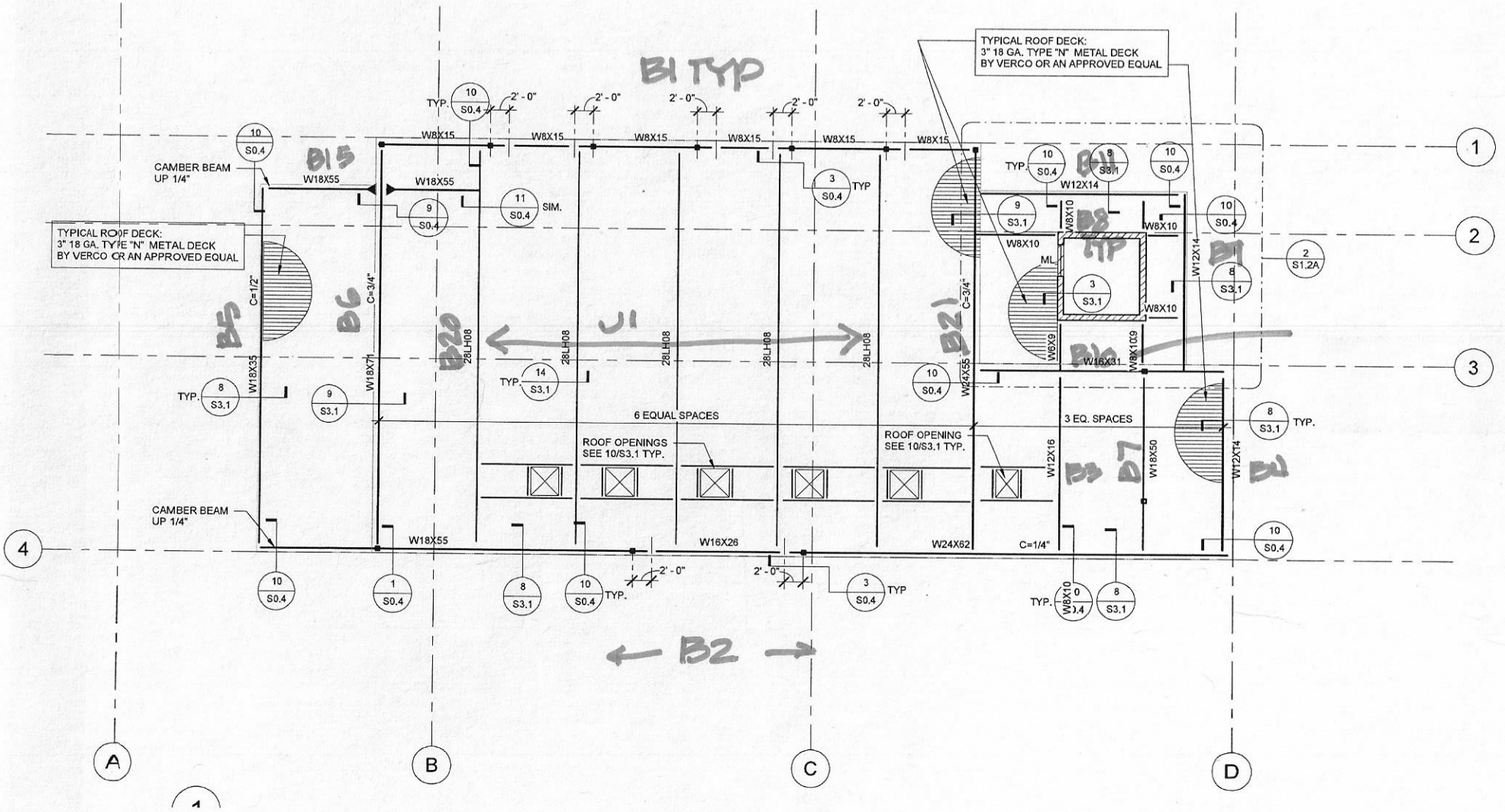
SOUTH 3 SPANS



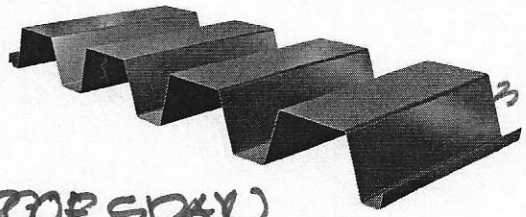
REVISE

55-DR-2019
2/20/2020

KEY PLAN



Type PLN3™ or HSN3™



ROOF SPAN

Allowable Uniform Loads (psf)

SPAN	DECK GAGE	CRITERIA	SPAN (ft-in.) 4'-0"	5'-0"	6'-0"	7'-0"	8'-0"	9'-0"	10'-0"	11'-0"	12'-0"	13'-0"	14'-0"	15'-0"	16'-0"	17'-0"	18'-0"	19'-0"	20'-0"
SINGLE	22	Stress	300	282	196	144	110	87	71	58	49	42	36	31	28	24	22	20	18
		L/360	♦♦♦	252	146	92	62	43	32	24	18	14	12	9	8	6	5	5	4
		L/240	♦♦♦	♦♦♦	♦♦♦	138	92	65	47	36	27	22	17	14	12	10	8	7	6
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	87	63	47	37	29	23	19	15	13	11	9	8
	20	Stress	300	300	251	184	141	112	90	75	63	53	46	40	35	31	28	25	23
		L/360	♦♦♦	♦♦♦	180	113	76	53	39	29	23	18	14	12	10	8	7	6	5
		L/240	♦♦♦	♦♦♦	♦♦♦	170	114	80	58	44	34	27	21	17	14	12	10	9	7
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	107	78	58	45	35	28	23	19	16	13	11	10
	18	Stress	300	300	300	274	210	166	134	111	93	79	68	60	52	46	41	37	34
		L/360	♦♦♦	♦♦♦	249	157	105	74	54	40	31	24	20	16	13	11	9	8	7
		L/240	♦♦♦	♦♦♦	♦♦♦	235	158	111	81	61	47	37	29	24	20	16	14	12	10
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	148	108	81	62	49	39	32	26	22	18	16	13
	16	Stress	300	300	300	300	276	218	177	146	123	104	90	78	69	61	55	49	44
		L/360	♦♦♦	♦♦♦	♦♦♦	200	134	94	69	52	40	31	25	20	17	14	12	10	9
		L/240	♦♦♦	♦♦♦	♦♦♦	♦♦♦	201	141	103	78	60	47	38	31	25	21	18	15	13
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	269	189	138	103	80	63	50	41	34	28	24	20	17
DOUBLE	22	Stress	300	300	225	165	127	100	81	67	56	48	41	36	32	28	25	22	20
		L/360	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	62	48	38	30	25	20	17	14	12	10
		L/240	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	30	25	21	18	16
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦
	20	Stress	300	300	283	208	159	126	102	84	71	60	52	45	40	35	31	28	25
		L/360	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	100	75	58	46	37	30	25	20	17	15	13
		L/240	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	45	37	31	26	22	19
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	25
	18	Stress	300	300	300	295	226	178	144	119	100	85	74	64	56	50	45	40	36
		L/360	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	134	101	78	61	49	40	33	27	23	20	17
		L/240	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	73	60	49	41	35	29	25
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	39	34
	16	Stress	300	300	300	300	291	230	186	154	129	110	95	83	73	64	58	52	47
		L/360	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	229	167	126	97	76	61	50	41	34	29	24	21
		L/240	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	91	74	61	51	43	37	31
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	57	49	42	
TRIPLE	22	Stress	300	300	281	207	158	125	101	84	70	60	52	45	40	35	31	28	25
		L/360	♦♦♦	♦♦♦	♦♦♦	189	126	89	65	49	37	29	24	19	16	13	11	9	8
		L/240	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	97	73	56	44	35	29	24	20	17	14	12
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	59	47	38	32	26	22	19	16
	20	Stress	300	300	300	260	199	157	127	105	88	75	65	57	50	44	39	35	32
		L/360	♦♦♦	♦♦♦	♦♦♦	229	154	108	79	59	45	36	29	23	19	16	13	11	10
		L/240	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	118	89	68	54	43	35	29	24	20	17	15
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	72	57	47	38	32	27	23	20
	18	Stress	300	300	300	300	282	223	181	149	125	107	92	80	71	62	56	50	45
		L/360	♦♦♦	♦♦♦	♦♦♦	♦♦♦	205	144	105	79	61	48	38	31	26	21	18	15	13
		L/240	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	216	157	118	91	72	57	47	38	32	27	23	20
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	122	96	77	62	51	43	36	31	26
	16	Stress	300	300	300	300	300	288	233	193	162	138	119	104	91	81	72	65	58
		L/360	♦♦♦	♦♦♦	♦♦♦	♦♦♦	256	180	131	98	76	60	48	39	32	27	22	19	16
		L/240	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	269	196	148	114	89	72	58	48	40	34	29	25
		L/180	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	♦♦♦	151	119	95	78	64	53	45	38	33

See footnotes on page 61.

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2/20/2020

BDA design

project name: SILVER KING | page #: 4

design by: | project #: A19104

checked by: gb | date: March 2019

HIGH ROOF (CONT)

SHORT JOISTS L=21' 3 SPANS @ 8.83'

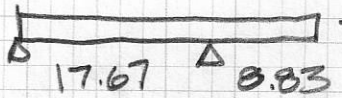
SAME MTL DECK

BEAMS AS JOISTS

B3 ✓ MID L=21' TW=8.83' D 0.18 L 0.18 W12x16 ✓

B4 ✓ END L=21' TW=4.42' D 0.09 L 0.09 W12x14 ✓

EDGE BEAM AT STAIR



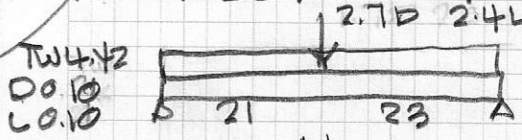
~~W14x22~~

4K
1.7D
2.0L

4.8K D
4.4L

W16x31

B21 NO EDGE BM @ STAIR



W24x55 C=1/4" ✓

Gravity Beam Design

RAM SBeam v3.0
Silver King
High Roof Short Beams as Joists - Middle
Licensed to: RAM International

B3

B

06/08/19 13:13:31

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (21.00,0.00)

Beam Size (User Selected) = W12X16 Fy = 50.0 ksi
Total Beam Length (ft) = 21.00
Top flange braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.016	0.000
	21.000	0.016	0.000
2	0.000	0.180	0.180
	21.000	0.180	0.180

SHEAR: Max V (DL+LL) = 3.95 kips fv = 1.50 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	20.7	10.5	0.0	1.00	14.55	33.00	14.55	33.00
Controlling		20.7	10.5	0.0	1.00	14.55	33.00	---	---

REACTIONS (kips):

	Left	Right
DL reaction	2.06	2.06
Max +LL reaction	1.89	1.89
Max +total reaction	3.95	3.95

DEFLECTIONS:

Dead load (in)	at	10.50 ft	=	-0.287	L/D =	878
Live load (in)	at	10.50 ft	=	-0.264	L/D =	956
Net Total load (in)	at	10.50 ft	=	-0.551	L/D =	457

Gravity Beam Design

RAM SBeam v3.0
Silver King
High Roof Short Beams as Joists - End
Licensed to: RAM International

6

BY

06/08/19 13:15:10

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (21.00,0.00)

Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 21.00
Top flange braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.014	0.000
	21.000	0.014	0.000
2	0.000	0.100	0.100
	21.000	0.100	0.100

SHEAR: Max V (DL+LL) = 2.25 kips fv = 0.98 ksi Fv = 18.76 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	11.8	10.5	0.0	1.00	9.51	33.00	9.51	33.00
Controlling		11.8	10.5	0.0	1.00	9.51	33.00	---	---

REACTIONS (kips):

	Left	**Right**
DL reaction	1.20	1.20
Max +LL reaction	1.05	1.05
Max +total reaction	2.25	2.25

DEFLECTIONS:

Dead load (in)	at	10.50 ft	=	-0.194	L/D =	1296
Live load (in)	at	10.50 ft	=	-0.170	L/D =	1480
Net Total load (in)	at	10.50 ft	=	-0.365	L/D =	691

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Gravity Beam Design

RAM SBeam v3.0
Silver King
Hi Roof - NS Edge Beam at Stair B21
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B21 G3

02/01/20 09:44:17

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (44.00,0.00)

Beam Size (User Selected) = W24X55 Fy = 50.0 ksi
Total Beam Length (ft) = 44.00
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
21.000	1.70	2.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.055	0.000
	44.000	0.055	0.000
2	0.000	0.110	0.110
	44.000	0.110	0.110
3	0.000	0.100	0.100
	44.000	0.100	0.100

SHEAR: Max V (DL+LL) = 12.39 kips fv = 1.39 ksi Fv = 18.78 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	155.4	21.0	0.0	1.00	16.22	33.00	16.22	33.00
Controlling		155.4	21.0	0.0	1.00	16.22	33.00	---	---

REACTIONS (kips):

	Left	**Right**
DL reaction	6.73	6.65
Max +LL reaction	5.67	5.57
Max +total reaction	12.39	12.23

DEFLECTIONS: (Camber = 1/2)

Dead load (in)	at	22.00 ft	=	-0.699	L/D =	755
Live load (in)	at	22.00 ft	=	-0.604	L/D =	874
Net Total load (in)	at	22.00 ft	=	-0.803	L/D =	657

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BDA design

project name: SILVER KING

design by:

checked by: gb

page #: 7

project #: A19104

date: September 2019

ROOF (CONT)

WEST EDGE @ STAIR

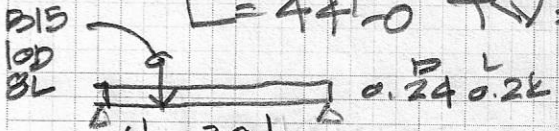
B5 L = 38'-0 TW = 12.67' / 2 = 6.34' D 0.13 L 0.13

W18 x 35 (C = 1/2")

R = 3.6D 3.0L

B6 WEST BM @ G1

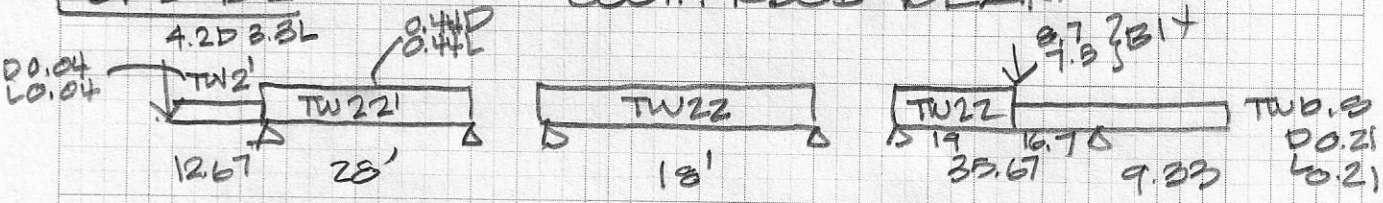
L = 44'-0 TW = 6.34 + 10.61/2 = 11.65' D 0.24 L 0.24



R = 28k 15k

W18 x 71 C = 3/4

REV'D B2



SOUTH EDGE BEAM

B2 LEFT

W18 x 55

CAMBER UP 1/4"

R 27k 11k 9k

B2 CENTER

W16 x 26

9k 2k

B2 RIGHT

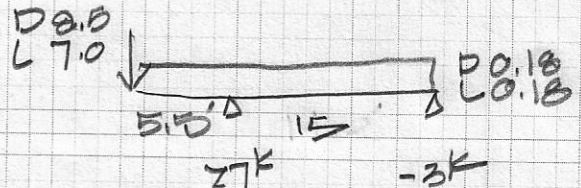
W24 x 62

C = 1/4"

24

B7

CANT BM SUPPORTING B2 RIGHT



~~W18 x 40~~ W18 x 50

BDA design

project name: SILVER KING | page #: 8

design by: | project #: A19104

checked by: gb | date: September 2019

ROOF CONT

STAIR AREA

B8 SHORT BMS Lmax = 9.5' TW = 8.75' D 0.175 L 0.175

M = (0.175)2(9.5)^2/8 = 4 KFT

W6X9 OK REV. ST W8X10

B9 EDGE BM GL D

TW = 4.5' D 0.09 L 0.09

14 9.5

R 1 2.42 D 2.14 L

~~W12X14~~

W12X19

B10 BM ON GL 3

2.6 2.5 { B8 2.1 D 3.0 L + B8 0.5 0.5 } B4 1.2 1.1 + B9 1.0 1.0 } 8.2 D 8.1 L

8.84 8.84

17.67 9.5

R 2^K 11^K

W16X31

B11 TW = 4.5' D 0.1 L 0.1

8.84 8.84 9.5

2^K TL 2.6 D 2.3 L

W12X19

B12 0.05 D 0.05 L B9 2.42 D 2.20 L

8.84 9.5

W16X31

B13 SAME AS B12

B15 D 3.6 L 3.0 FR B5

0.04 D 0.04 L

12.7 11.5

W18X55

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2/20/2020

Gravity Beam Design

B5

9

RAM SBeam v3.0
Silver King
Hi Roof - West Edge Canopy Beam B5
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11/16/19 08:10:51

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (39.00,0.00)

Beam Size (User Selected) = W18X35 Fy = 50.0 ksi
Total Beam Length (ft) = 39.00
Top flange braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.035	0.000
	39.000	0.035	0.000
2	0.000	0.150	0.150
	39.000	0.150	0.150

SHEAR: Max V (DL+LL) = 6.53 kips fv = 1.29 ksi Fv = 19.13 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	63.7	19.5	0.0	1.00	13.27	33.00	13.27	33.00
Controlling		63.7	19.5	0.0	1.00	13.27	33.00	---	---

REACTIONS (kips):

	Left	Right
DL reaction	3.61	3.61
Max +LL reaction	2.92	2.92
Max +total reaction	6.53	6.53

DEFLECTIONS: (Camber = 1/2)

Dead load (in)	at	19.50 ft =	-0.651	L/D =	719
Live load (in)	at	19.50 ft =	-0.528	L/D =	887
Net Total load (in)	at	19.50 ft =	-0.679	L/D =	689

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Gravity Beam Design

RAM SBeam v3.0
Silver King
Hi Roof - West Beam at S1 - B6
Licensed to: RAM International

B6

11/16/19 08:20:23

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (44.00,0.00)

Beam Size (User Selected) = W18X71 Fy = 50.0 ksi
Total Beam Length (ft) = 44.00
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
6.000	10.00	8.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.071	0.000
	44.000	0.071	0.000
2	0.000	0.240	0.240
	44.000	0.240	0.240

SHEAR: Max V (DL+LL) = 27.66 kips fv = 3.02 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	192.8	17.5	0.0	1.00	18.21	33.00	18.21	33.00
Controlling		192.8	17.5	0.0	1.00	18.21	33.00	---	---

REACTIONS (kips):

	Left	Right
DL reaction	15.47	8.20
Max +LL reaction	12.19	6.37
Max +total reaction	27.66	14.57

DEFLECTIONS: (Camber = 3/4)

Dead load (in)	at	21.12 ft	=	-1.135	L/D =	465
Live load (in)	at	21.12 ft	=	-0.887	L/D =	595
Net Total load (in)	at	21.12 ft	=	-1.272	L/D =	415

Gravity Beam Design

RAM SBeam v3.0
Silver King
Hi Roof - South Edge Beams - Left B2 Left
Licensed to: RAM International

09/26/19 15:18:33

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (40.67,0.00)

Beam Size (User Selected) = W18X55 Fy = 50.0 ksi
Total Beam Length (ft) = 40.67
Cantilever on left (ft) = 12.67
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
0.000	4.20	3.80	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.055	0.000
	12.670	0.055	0.000
2	12.670	0.055	0.000
	40.670	0.055	0.000
3	12.670	0.440	0.440
	40.670	0.440	0.440
4	0.000	0.040	0.040
	12.670	0.040	0.040

SHEAR: Max V (DL+LL) = 17.10 kips fv = 2.42 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Left	Max -	-112.2	12.7	12.7	1.00	13.70	30.00	13.70	23.52
Center	Max +	63.7	29.0	0.0	1.00	7.78	33.00	7.78	33.00
	Max -	-112.2	12.7	28.0	1.75	13.70	30.00	13.70	16.38
Controlling		-112.2	12.7	28.0	1.75	---	---	13.70	16.38

REACTIONS (kips):

	Left	**Right**
DL reaction	14.51	4.76
Max +LL reaction	12.30	6.16
Max -LL reaction	0.00	-1.83
Max +total reaction	26.81	10.92

DEFLECTIONS:

Left cantilever:

Dead load (in)	=	-0.309	L/D =	985
Pos Live load (in)	=	-0.588	L/D =	517
Neg Live load (in)	=	0.341	L/D =	891
Pos Total load (in)	=	-0.896	L/D =	339
Neg Total load (in)	=	0.033	L/D =	9316

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Gravity Beam Design

Center span:

Dead load (in)	at	27.79 ft	=	-0.070	L/D	= 4785
Live load (in)	at	27.79 ft	=	-0.234	L/D	= 1436
Net Total load (in)	at	27.79 ft	=	-0.304	L/D	= 1105

Gravity Beam Design

RAM SBeam v3.0
Silver King
Hi Roof - South Edge Beams - B2 Center
Licensed to: RAM International

09/26/19 15:21:06

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (18.00,0.00)

Beam Size (User Selected) = W16X26 Fy = 50.0 ksi
Total Beam Length (ft) = 18.00
Top flange braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.026	0.000
	18.000	0.026	0.000
2	0.000	0.440	0.440
	18.000	0.440	0.440

SHEAR: Max V (DL+LL) = 8.16 kips fv = 2.17 ksi Fv = 17.89 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	36.7	9.0	0.0	1.00	11.47	33.00	11.47	33.00
Controlling		36.7	9.0	0.0	1.00	11.47	33.00	---	---

REACTIONS (kips):

	Left	Right
DL reaction	4.20	4.20
Max +LL reaction	3.96	3.96
Max +total reaction	8.16	8.16

DEFLECTIONS:

Dead load (in)	at	9.00 ft =	-0.126	L/D =	1713
Live load (in)	at	9.00 ft =	-0.119	L/D =	1814
Net Total load (in)	at	9.00 ft =	-0.245	L/D =	881

Gravity Beam Design

RAM SBeam v3.0
Silver King
Hi Roof - South Edge Beams - B2 Right
Licensed to: RAM International

14

09/27/19 11:44:01

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (45.00,0.00)

Beam Size (Optimum) = W24X62 Fy = 50.0 ksi
Total Beam Length (ft) = 45.00
Cantilever on right (ft) = 9.33
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
19.000	8.70	7.80	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.062	0.000
	35.670	0.062	0.000
2	35.670	0.062	0.000
	45.000	0.062	0.000
3	0.000	0.440	0.440
	19.000	0.440	0.440
4	19.000	0.210	0.210
	35.670	0.210	0.210
5	35.670	0.210	0.210
	44.320	0.210	0.210

SHEAR: Max V (DL+LL) = 22.43 kips fv = 2.20 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	256.1	19.0	0.0	1.00	23.28	33.00	23.28	33.00
	Max -	-18.4	35.7	35.7	1.75	1.67	30.00	1.67	8.60
Right	Max -	-18.4	35.7	9.3	1.00	1.67	30.00	1.67	26.47
Controlling		256.1	19.0	0.0	1.00	23.28	33.00	---	---

REACTIONS (kips):

	Left	**Right**
DL reaction	11.83	13.35
Max +LL reaction	10.60	11.10
Max -LL reaction	-0.22	0.00
Max +total reaction	22.43	24.45

DEFLECTIONS: (Camber = 1/4)

Center span:

Dead load (in)	at	17.66 ft	=	-0.602	L/D =	711
Live load (in)	at	17.83 ft	=	-0.551	L/D =	776
Net Total load (in)	at	17.83 ft	=	-0.903	L/D =	474

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Right cantilever:

Dead load (in)	=	0.457	L/D	=	490
Pos Live load (in)	=	-0.039	L/D	=	5670
Neg Live load (in)	=	0.442	L/D	=	507
Neg Total load (in)	=	0.898	L/D	=	249

Gravity Beam Design

RAM SBeam v3.0
Silver King
High Roof Cant Beam Supp ~~B2 Right~~ B7
Licensed to: RAM International

16

09/26/19 15:41:43

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (20.50,0.00)

Beam Size (User Selected) = W18X40 Fy = 50.0 ksi
Total Beam Length (ft) = 20.50
Cantilever on left (ft) = 5.50
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
0.000	8.50	7.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.040	0.000
	5.500	0.040	0.000
2	0.000	0.180	0.180
	5.500	0.180	0.180
3	5.500	0.040	0.000
	20.500	0.040	0.000
4	5.500	0.180	0.180
	20.500	0.180	0.180

SHEAR: Max V (DL+LL) = 17.70 kips fv = 3.14 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Left	Max -	-91.3	5.5	5.5	1.00	16.02	30.00	16.02	30.00
Center	Max -	-91.3	5.5	15.0	1.75	16.02	30.00	16.02	20.60
Controlling		-91.3	5.5	15.0	1.75	---	---	16.02	20.60

REACTIONS (kips):

	Left	**Right**
DL reaction	14.70	-1.69
Max +LL reaction	12.09	1.35
Max -LL reaction	0.00	-2.75
Max +total reaction	26.79	-0.34
Max -total reaction	14.70	-4.44

DEFLECTIONS:

Left cantilever:

Dead load (in)	=	-0.166	L/D =	796	
Pos Live load (in)	=	-0.150	L/D =	879	
Neg Live load (in)	=	0.014	L/D =	9738	
Pos Total load (in)	=	-0.316	L/D =	418	

Center span:

Dead load (in)	at	11.72 ft	=	0.057	L/D =	3174
Live load (in)	at	11.72 ft	=	0.058	L/D =	3108

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2/20/2020

Center span:

Net Total load (in)	at	11.72 ft	=	0.115	L/D	=	1570

Gravity Beam Design

RAM SBeam v3.0
Silver King
High Roof Stair Area B9 - GL D
Licensed to: RAM International

18

09/27/19 10:50:47

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (23.50,0.00)

Beam Size (Optimum) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 23.50
Cantilever on left (ft) = 9.50
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
0.000	0.10	0.10	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.014	0.000
	9.500	0.014	0.000
2	0.000	0.100	0.100
	9.500	0.100	0.100
3	9.500	0.014	0.000
	23.500	0.014	0.000
4	9.500	0.100	0.100
	23.500	0.100	0.100

SHEAR: Max V (DL+LL) = 2.33 kips fv = 1.02 ksi Fv = 18.76 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Left	Max -	-11.6	9.5	9.5	1.00	9.31	30.00	9.31	12.05
Center	Max +	2.6	18.5	0.0	1.00	2.13	33.00	2.13	33.00
	Max -	-11.6	9.5	14.0	1.75	9.31	30.00	9.31	9.71
Controlling		-11.6	9.5	14.0	1.75	---	---	9.31	9.71

REACTIONS (kips):

	Left	**Right**
DL reaction	2.42	0.36
Max +LL reaction	2.14	0.70
Max -LL reaction	0.00	-0.39
Max +total reaction	4.56	1.06
Max -total reaction	2.42	-0.03

DEFLECTIONS:

Left cantilever:

Dead load (in)	=	-0.196	L/D =	1164
Pos Live load (in)	=	-0.251	L/D =	910
Neg Live load (in)	=	0.073	L/D =	3121
Pos Total load (in)	=	-0.446	L/D =	511

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Center span:

Dead load (in)	at	14.75 ft	=	0.015	L/D	= 10840
Live load (in)	at	14.75 ft	=	0.046	L/D	= 3676
Net Total load (in)	at	14.75 ft	=	0.061	L/D	= 2745

Gravity Beam Design

RAM SBeam v3.0
Silver King
High Roof Stair Area B10 - GL3
Licensed to: RAM International

09/27/19 10:57:04

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (27.17,0.00)

Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 27.17
Cantilever on right (ft) = 9.50
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
8.840	2.60	2.50	No	No
27.150	2.20	2.10	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.031	0.000
	17.670	0.031	0.000
2	0.000	0.020	0.020
	17.670	0.020	0.020
3	17.670	0.031	0.000
	27.170	0.031	0.000
4	17.670	0.020	0.020
	27.170	0.020	0.020

SHEAR: Max V (DL+LL) = 5.67 kips fv = 1.37 ksi Fv = 19.67 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	13.7	8.8	0.0	1.00	3.49	33.00	3.49	33.00
	Max -	-44.0	17.7	17.7	1.75	11.18	30.00	11.18	15.16
Right	Max -	-44.0	17.7	9.5	1.00	11.18	30.00	11.18	22.67
Controlling		-44.0	17.7	17.7	1.75	---	---	11.18	15.16

REACTIONS (kips):

	Left	**Right**
DL reaction	0.44	5.75
Max +LL reaction	1.43	4.90
Max -LL reaction	-1.18	0.00
Max +total reaction	1.87	10.64
Max -total reaction	-0.74	5.75

DEFLECTIONS:

Center span:

Dead load (in)	at	11.31 ft =	0.021	L/D =	10298
Live load (in)	at	11.31 ft =	0.065	L/D =	3261
Net Total load (in)	at	11.31 ft =	0.086	L/D =	2477

Right cantilever:

Dead load (in)	=	-0.219	L/D	=	1039
Pos Live load (in)	=	-0.283	L/D	=	805
Neg Live load (in)	=	0.081	L/D	=	2829
Pos Total load (in)	=	-0.503	L/D	=	453

Gravity Beam Design

RAM SBeam v3.0
Silver King
High Roof Stair Area B11 GL 1
Licensed to: RAM International

22

09/27/19 11:02:07

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (27.17,0.00)

Beam Size (User Selected) = W12X19 Fy = 50.0 ksi
Total Beam Length (ft) = 27.17
Cantilever on right (ft) = 9.50
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
27.160	0.10	0.10	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.019	0.000
	17.670	0.019	0.000
2	0.000	0.100	0.100
	17.670	0.100	0.100
3	17.670	0.019	0.000
	27.170	0.019	0.000
4	17.670	0.100	0.100
	27.170	0.100	0.100

SHEAR: Max V (DL+LL) = 2.60 kips fv = 0.91 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	5.7	7.2	0.0	1.00	3.20	33.00	3.20	33.00
	Max -	-11.8	17.7	17.7	1.75	6.64	30.00	6.64	11.39
Right	Max -	-11.8	17.7	9.5	1.00	6.64	30.00	6.64	13.28
Controlling		-11.8	17.7	17.7	1.75	---	---	6.64	11.39

REACTIONS (kips):

	Left	**Right**
DL reaction	0.69	2.64
Max +LL reaction	0.88	2.24
Max -LL reaction	-0.31	0.00
Max +total reaction	1.58	4.88

DEFLECTIONS:

Center span:

Dead load (in)	at	7.95 ft	=	-0.014	L/D =	14817
Live load (in)	at	7.95 ft	=	-0.057	L/D =	3689
Net Total load (in)	at	7.95 ft	=	-0.072	L/D =	2953

Right cantilever:

Dead load (in)	=	-0.112	L/D =	2044
Pos Live load (in)	=	-0.200	L/D =	1141
Neg Live load (in)	=	0.100	L/D =	2278

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Right cantilever:

Pos Total load (in) = -0.311 L/D = 732

Gravity Beam Design

RAM SBeam v3.0
Silver King
High Roof Stair Area B12 GL 2
Licensed to: RAM International

24

09/27/19 11:06:42

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (18.17,0.00)

Beam Size (User Selected) = W16X31 Fy = 50.0 ksi
Total Beam Length (ft) = 18.17
Cantilever on right (ft) = 9.50
Top flange braced by decking.

POINT LOADS (kips):

Dist (ft)	DL	LL	Flange Bracing Top	Flange Bracing Bottom
18.160	2.50	2.20	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.031	0.000
	8.670	0.031	0.000
2	0.000	0.050	0.050
	8.670	0.050	0.050
3	8.670	0.031	0.000
	18.170	0.031	0.000
4	8.670	0.050	0.050
	18.170	0.050	0.050

SHEAR: Max V (DL+LL) = 6.39 kips fv = 1.55 ksi Fv = 19.67 ksi

MOMENTS:

Span	Cond	Moment kip-ft	@ ft	Lb ft	Cb	Tension Flange fb	Tension Flange Fb	Compr Flange fb	Compr Flange Fb
Center	Max -	-50.5	8.7	8.7	1.75	12.84	30.00	12.84	30.00
Right	Max -	-50.5	8.7	9.5	1.00	12.84	30.00	12.84	22.67
Controlling		-50.5	8.7	9.5	1.00	---	---	12.84	22.67

REACTIONS (kips):

	Left	Right
DL reaction	-2.81	6.78
Max +LL reaction	0.22	5.56
Max -LL reaction	-2.67	0.00
Max +total reaction	-2.59	12.34
Max -total reaction	-5.48	6.78

DEFLECTIONS:

Center span:

Dead load (in) at 5.03 ft = 0.020 L/D = 5186
Live load (in) at 5.03 ft = 0.018 L/D = 5870
Net Total load (in) at 5.03 ft = 0.038 L/D = 2753

Right cantilever:

Dead load (in) = -0.243 L/D = 940
Pos Live load (in) = -0.209 L/D = 1092

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2/20/2020

Right cantilever:

Neg Live load (in)	=	0.002	L/D =	111245
Pos Total load (in)	=	-0.451	L/D =	505

Gravity Beam Design

RAM SBeam v3.0
Silver King
High Roof Stair Area B14
Licensed to: RAM International

26

09/27/19 11:40:18

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (44.00,0.00)

Beam Size (User Selected) = W24X55 Fy = 50.0 ksi
Total Beam Length (ft) = 44.00
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
20.000	2.50	2.20	No	No
34.000	2.50	2.20	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.055	0.000
	44.000	0.055	0.000
2	0.000	0.250	0.250
	44.000	0.250	0.250

SHEAR: Max V (DL+LL) = 17.99 kips fv = 2.02 ksi Fv = 18.78 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	205.9	20.1	0.0	1.00	21.49	33.00	21.49	33.00
Controlling		205.9	20.1	0.0	1.00	21.49	33.00	---	---

REACTIONS (kips):

	Left	**Right**
DL reaction	8.65	9.79
Max +LL reaction	7.20	8.20
Max +total reaction	15.85	17.99

DEFLECTIONS: (Camber = 3/4)

Dead load (in)	at	22.22 ft	=	-0.969	L/D =	545
Live load (in)	at	22.22 ft	=	-0.812	L/D =	650
Net Total load (in)	at	22.22 ft	=	-1.031	L/D =	512

55-DR-2019
2/20/2020

BDA design

project name:

design by:

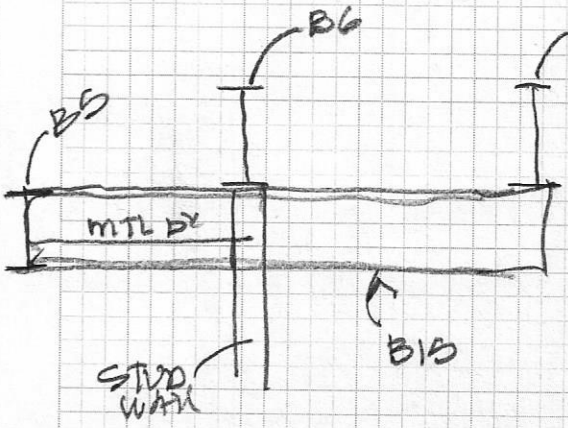
checked by: gb

page #:

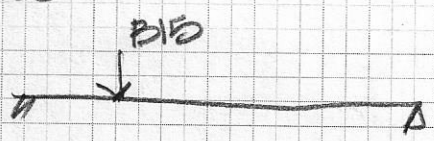
project #:

date: January 2020

REVISE FRAMING @ CANOPIES (BMS LOWER)



B5 UNCHANGED
B15 UNCHANGED
B6 UNCHANGED
B20



AS B6

BDA design

project name: OLIVE KING

page #: 27

design by:

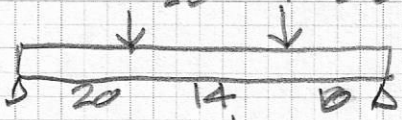
project #:

checked by: gb

date: September 2019

ROOF CONST

B14



TW = 10.5

D 0.22
L 0.22

16K

18K

W24X55 (C=3/4)

Gravity Beam Design

RAM SBeam v3.0
Silver King
Hi Roof - West Edge Canopy Beam B15
Licensed to: RAM International

B15

26

11/16/19 08:15:52

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (24.20,0.00)

Beam Size (User Selected) = W18X55 Fy = 50.0 ksi
Total Beam Length (ft) = 24.20
Cantilever on left (ft) = 12.70
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
0.000	3.60	3.00	Yes	Yes

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.055	0.000
	12.700	0.055	0.000
2	0.000	0.040	0.040
	12.700	0.040	0.040
3	12.700	0.055	0.000
	24.200	0.055	0.000
4	12.700	0.040	0.040
	24.200	0.040	0.040

SHEAR: Max V (DL+LL) = 9.01 kips fv = 1.28 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Left	Max -	-94.7	12.7	12.7	1.00	11.56	30.00	11.56	23.47
Center	Max -	-94.7	12.7	11.5	1.75	11.56	30.00	11.56	30.00
Controlling		-94.7	12.7	12.7	1.00	---	---	11.56	23.47

REACTIONS (kips):

	Left	Right
DL reaction	10.00	-4.10
Max +LL reaction	7.33	0.23
Max -LL reaction	0.00	-3.59
Max +total reaction	17.33	-3.87
Max -total reaction	10.00	-7.69

DEFLECTIONS:

Left cantilever:

Dead load (in)	=	-0.354	L/D =	861
Pos Live load (in)	=	-0.281	L/D =	1086
Neg Live load (in)	=	0.002	L/D =	14142
				1
Pos Total load (in)	=	-0.635	L/D =	480

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Center span:

Dead load (in)	at	17.53 ft	=	0.029	L/D	= 4772
Live load (in)	at	17.53 ft	=	0.023	L/D	= 5879
Net Total load (in)	at	17.53 ft	=	0.052	L/D	= 2634

BDA design project name: SILVER KING	page #: 30
design by:	project #: A19104
checked by: gb	date: May 2019

3/4" STUDS

FLOOR FRAMING

3" NWC/3" MTL DK. DL=55

DL TOT = 80 LL = 100 PSF C=60PSF

TYP FLOOR BEAM

7 SPACES @ 64.5 = 9.22'

D 2.4
L 2.4 FR ROOF

MID

(FB1)

34.67 9.33

D 12.4 25.7
C 10 17.2
L 16.2 29

D 0.74 C 0.56
L 0.92

W18x60 (26) ✓
(C=3/8) ✓

FB2B

12'

PEN 24x12

W21x62
O/C

MID W/ DUCT PEN

14" x 20" ~~12" x 26~~ MID POINT

(FB2)

SAME AS ↑

W21x62 (28) ✓

~~EDGE~~

~~D 0.37 C=0.28~~
~~L 0.46~~

~~D 6.6 11.5~~
~~C 5.2 9~~
~~L 8 13~~

W18x40 (17)
C=3/8

SHORT BEAMS MIDDLE

(FB3)

L=21' TW=8.83'

D 0.71
Se 0.35
L 0.88

R 7.7D
3.9C
9.3L

W12x22 (10)

SHORT BEAMS END

(FB4)

L=21 TW=4.42

D 0.36
C 0.18
L 0.44

R 4D
2C
4.7L

W12x14 (7)

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FLOOR KEY PLAN

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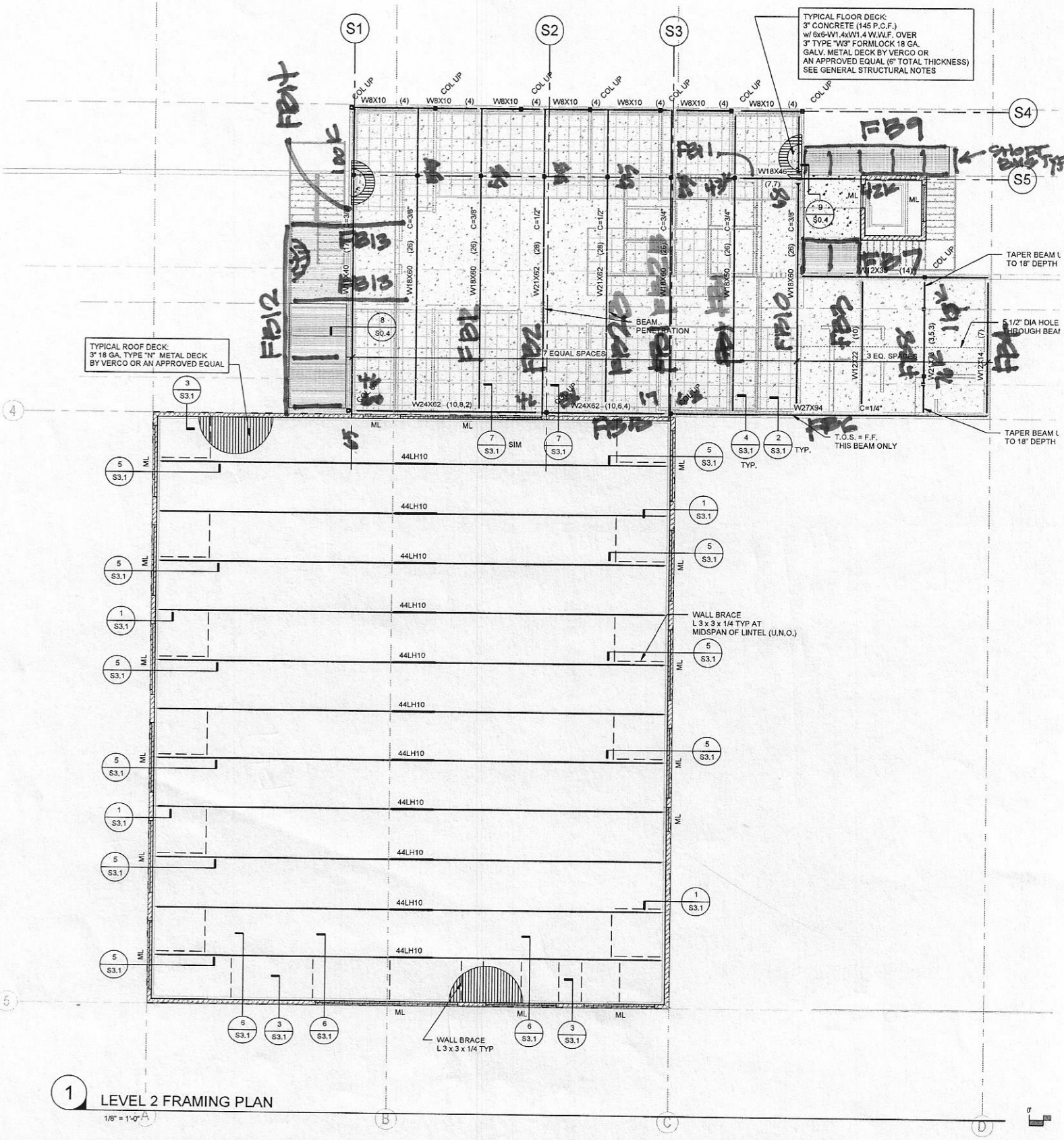

1 LEVEL 2 FRAMING PLAN

1/8" = 1'-0"

55-DR-2019
2/20/2020

Gravity Beam Design

RAM SBeam v3.0
Silver King
Typical Floor Beam
Licensed to: RAM International

FB1

32

06/08/19 13:42:18

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (44.00,0.00)

Beam Size (User Selected) = W18X60 ✓ Fy = 50.0 ksi
Total Beam Length (ft) = 44.00
Cantilever on right (ft) = 9.33
Distance to Adjacent Beam on Left (ft) = 9.3
Distance to Adjacent Beam on Right (ft) = 9.3

COMPOSITE PROPERTIES (Not Shored):

		Left			Right
Concrete thickness (in)		3.00			3.00
Unit weight concrete (pcf)		150.00			150.00
f'c (ksi)		3.50			3.50
Decking Orientation		perpendicular			perpendicular
Decking type		VERCO W3 Formlok			VERCO W3 Formlok
beff (in)	= 104.01		Y bar(in)	=	18.44
Seff (in3)	= 142.17		Str (in3)	=	175.57
Ieff (in4)	= 2129.10		Itr (in4)	=	3248.62
Stud length (in)	= 5.00		Stud diam (in)	=	0.75

Stud Capacity (kips) q = 9.4
# of studs: Max = 68 Partial = 26 Actual = 26 ✓
Number of Stud Rows = 1 Percent of Full Composite Action = 25.56
Top flange braced by decking.

POINT LOADS (kips):

Dist (ft)	DL	CDL	LL	CLL	Flange Bracing Top	Bottom
43.950	2.40	0.00	2.40	0.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.060	0.060	0.000	0.000
	34.670	0.060	0.060	0.000	0.000
2	0.000	0.750	0.555	0.930	0.000
	34.670	0.750	0.555	0.930	0.000
3	34.670	0.060	0.060	0.000	0.000
	44.000	0.060	0.060	0.000	0.000
4	34.670	0.750	0.555	0.930	0.000
	44.000	0.750	0.555	0.930	0.000

SHEAR: Max V (DL+LL) = 33.63 kips fv = 4.45 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	PreCmp+	79.5	16.1	0.0	1.00	8.83	33.00	8.83	33.00
	PreCmp-	-26.8	34.7	34.7	1.75	2.97	30.00	2.97	14.57
	Max +	233.5	16.4	---	---				

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		kip-ft	ft	ft		fb	Fb	fb	Fb
	Mmax/Seff					19.70	33.00	---	---
	Mconst/Sx+Mpost/Seff					21.83	45.00	---	---
	Max -	-120.3	34.7	34.7	1.75	13.36	30.00	13.36	14.57
Right	PreCmp-	-26.8	34.7	9.3	1.00	2.97	30.00	2.97	30.00
	Max -	-120.3	34.7	9.3	1.00	13.36	30.00	13.36	30.00
Controlling		-120.3	34.7	34.7	1.75	---	---	13.36	14.57

fc (ksi) = 0.40 Fc = 1.58

REACTIONS (kips):

	Left	Right
Initial reaction	9.89	17.17
DL reaction	12.38	25.65
Max +LL reaction	16.12	29.01
Max -LL reaction	-1.81	0.00
Max +total reaction	28.50	54.66

DEFLECTIONS: (Camber = 3/8) ✓

Center span:

Initial load (in)	at	16.99 ft	=	-0.579	L/D =	718
Live load (in)	at	16.99 ft	=	-0.489	L/D =	850
Post Comp load (in)	at	16.99 ft	=	-0.528	L/D =	788
Net Total load (in)	at	16.99 ft	=	-0.732	L/D =	568

Right cantilever:

Init load (in)	=	0.393	L/D =	569
Pos Live load (in)	=	-0.282	L/D =	795
Neg Live load (in)	=	0.422	L/D =	531
Pos Post Comp load (in)	=	-0.336	L/D =	666
Neg Post Comp load (in)	=	0.367	L/D =	610
Neg Total load (in)	=	0.760	L/D =	295

Gravity Beam Design

RAM SBeam v3.0
Silver King
Typical Floor Beam with duct pen ~~FB22~~ FB2 24
Licensed to: RAM International
11/16/19 09:10:12

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (44.00,0.00)

Beam Size (User Selected) = W21X62 Fy = 50.0 ksi
Total Beam Length (ft) = 44.00
Cantilever on right (ft) = 9.33
Distance to Adjacent Beam on Left (ft) = 9.3
Distance to Adjacent Beam on Right (ft) = 9.3

COMPOSITE PROPERTIES (Not Shored):

		Left			Right
Concrete thickness (in)		3.00			3.00
Unit weight concrete (pcf)		150.00			150.00
f'c (ksi)		3.50			3.50
Decking Orientation		perpendicular			perpendicular
Decking type		VERCO W3 Formlok			VERCO W3 Formlok
beff (in)	=	104.01	Y bar(in)	=	20.67
Seff (in3)	=	164.75	Str (in3)	=	200.15
Ieff (in4)	=	2786.51	Itr (in4)	=	4151.97
Stud length (in)	=	5.00	Stud diam (in)	=	0.75

Stud Capacity (kips) q = 9.4
# of studs: Max = 68 Partial = 28 Actual = 28
Number of Stud Rows = 1 Percent of Full Composite Action = 26.63
Top flange braced by decking.

POINT LOADS (kips):

Dist (ft)	DL	CDL	LL	CLL	Flange Bracing Top	Bottom
43.950	2.40	0.00	2.40	0.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.062	0.062	0.000	0.000
	34.670	0.062	0.062	0.000	0.000
2	0.000	0.750	0.555	0.930	0.000
	34.670	0.750	0.555	0.930	0.000
3	34.670	0.062	0.062	0.000	0.000
	44.000	0.062	0.062	0.000	0.000
4	34.670	0.750	0.555	0.930	0.000
	44.000	0.750	0.555	0.930	0.000

SHEAR: Max V (DL+LL) = 33.67 kips fv = 4.01 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	PreCmp+	79.8	16.1	0.0	1.00	7.54	33.00	7.54	33.00
	PreCmp-	-26.9	34.7	34.7	1.75	2.54	30.00	2.54	12.18
	Max +	233.8	16.4	---	---				

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		kip-ft	ft	ft		fb	Fb	fb	Fb
	Mmax/Seff					17.03	33.00	---	---
	Mconst/Sx+Mpost/Seff					18.75	45.00	---	---
	Max -	-120.4	34.7	34.7	1.75	11.37	30.00	11.37	12.18
Right	PreCmp-	-26.9	34.7	9.3	1.00	2.54	30.00	2.54	28.79
	Max -	-120.4	34.7	9.3	1.00	11.37	30.00	11.37	28.79
Controlling		-120.4	34.7	34.7	1.75	---	---	11.37	12.18

fc (ksi) = 0.34 Fc = 1.58

REACTIONS (kips):

	Left	Right
Initial reaction	9.93	17.23
DL reaction	12.42	25.72
Max +LL reaction	16.12	29.01
Max -LL reaction	-1.81	0.00
Max +total reaction	28.54	54.73

DEFLECTIONS:

Multipliers for effects of Web Openings:

Span	Precomp/Noncomp	Composite
Center Span	1.000	1.000
Right Cantilever	1.000	1.000

Center span:

Initial load (in)	at	16.99 ft	=	-0.430	L/D =	967
Live load (in)	at	16.99 ft	=	-0.374	L/D =	1113
Post Comp load (in)	at	16.99 ft	=	-0.403	L/D =	1032
Net Total load (in)	at	16.99 ft	=	-0.834	L/D =	499

Right cantilever:

Init load (in)	=	0.292	L/D =	767
Pos Live load (in)	=	-0.213	L/D =	1051
Neg Live load (in)	=	0.322	L/D =	695
Pos Post Comp load (in)	=	-0.254	L/D =	883
Neg Post Comp load (in)	=	0.282	L/D =	795
Neg Total load (in)	=	0.574	L/D =	390

WEB OPENINGS:

Opening #	Dist* ft	Shp	H/Dia in	B in	Position to in		Stiffener Width in	Thick in	Length in	Sides	Weld in
1	18.00	Rect	14.00	20.00	Centered	Center	---	---	---		---

*Dist is the distance along the beam from the left end.

Opening #1 at 18.000 ft

Minimum corner radii (in): 0.8000 or greater
Min. Slab Reinforcement: 0.0025 Transv. and Longit. within a distance of 1.75 ft of opening
Min. Shear Connectors: 2 studs/ft for a dist. 1.75 ft from opening towards max moment point

Capacity - Noncomposite / Precomposite

Top Tee

Prt = 0.00 kips mut = 0.00 nut = 5.71 alphavt = 0.33
Vpt = 40.41 kips Vmt = 13.29 kips

Bottom Tee

Prb = 0.00 kips mub = 0.00 nub = 5.71 alphavb = 0.33
Vpb = 40.41 kips Vmb = 13.29 kips

Capacity: Vpbar = 242.49 kips
Upper Limit Vm = 0.67 Vpbar = 161.66 kips
Vm = 13.29 + 13.29 = 26.59 kips
Mm = 511.62 kip-ft

Capacity - Composite

Top Tee

Pch = 112.50 kips dh = 5.82 in Pcl = 103.13 kips dl = 3.17 in
Prt = 0.00 kips mut = 2.32 nut = 5.71 alphavt = 0.64
Vpt = 40.41 kips Vmt(sh) = 51.53 kips Vmt = 25.88 kips

Bottom Tee

Prb = 0.00 kips mub = 0.00 nub = 5.71 alphavb = 0.33
Vpb = 40.41 kips Vmb = 13.29 kips

Capacity: Vpbar = 242.49 kips Vcbar = 0.00 kips
Upper Limit Vm = 0.67 Vpbar + Vcbar = 161.66 kips
Vm = 25.88 + 13.29 = 39.17 kips
Mm = 580.75 kip-ft

Precomposite

Vu = 2.02 kips Mu = 133.72 kip-ft at 18.00 ft (1.7DL+1.7LL)
Interaction: Vu / 1.00 Vm = 0.076
Mu / 1.00 Mm = 0.261
M - V Interaction = 0.263

Composite

Vu = 4.80 kips Mu = 393.51 kip-ft at 18.00 ft (1.7DL+1.7LL)
Interaction: Vu / 1.00 Vm = 0.122
Mu / 1.00 Mm = 0.678
M - V Interaction = 0.679

Compression Tee Buckling

Couple arm distance (in) = 19.74 phi = 1.00
K = 1.0 L (in) = 20.00
Top: area (in2) = 6.22 rx (in) = 0.79 ry (in) = 2.15

Cond	Mu kip-ft	LoadCombo	Pu kips	phi*Pn kips	Ratio
Precomp M	133.72	1.7DL+1.7LL	81.31	296.68	0.274

Gravity Beam Design

RAM SBeam v3.0
Silver King
Typical Floor Beam with duct pen FB2B
Licensed to: RAM International

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11/16/19 09:08:32

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (44.00,0.00)

Beam Size (User Selected) = W21X62 Fy = 50.0 ksi
Total Beam Length (ft) = 44.00
Cantilever on right (ft) = 9.33
Distance to Adjacent Beam on Left (ft) = 9.3
Distance to Adjacent Beam on Right (ft) = 9.3

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Concrete thickness (in)	3.00	3.00
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	3.50	3.50
Decking Orientation	perpendicular	perpendicular
Decking type	VERCO W3 Formlok	VERCO W3 Formlok

beff (in)	=	104.01	Y bar(in)	=	20.67
Seff (in3)	=	164.75	Str (in3)	=	200.15
Ieff (in4)	=	2786.51	Itr (in4)	=	4151.97
Stud length (in)	=	5.00	Stud diam (in)	=	0.75

Stud Capacity (kips) q = 9.4
# of studs: Max = 68 Partial = 28 Actual = 28
Number of Stud Rows = 1 Percent of Full Composite Action = 26.63
Top flange braced by decking.

POINT LOADS (kips):

Dist (ft)	DL	CDL	LL	CLL	Flange Bracing Top	Flange Bracing Bottom
43.950	2.40	0.00	2.40	0.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.062	0.062	0.000	0.000
	34.670	0.062	0.062	0.000	0.000
2	0.000	0.750	0.555	0.930	0.000
	34.670	0.750	0.555	0.930	0.000
3	34.670	0.062	0.062	0.000	0.000
	44.000	0.062	0.062	0.000	0.000
4	34.670	0.750	0.555	0.930	0.000
	44.000	0.750	0.555	0.930	0.000

SHEAR: Max V (DL+LL) = 33.67 kips fv = 4.01 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment kip-ft	@ ft	Lb ft	Cb	Tension Flange fb	Tension Flange Fb	Compr Flange fb	Compr Flange Fb
Center	PreCmp+	79.8	16.1	0.0	1.00	7.54	33.00	7.54	33.00
	PreCmp-	-26.9	34.7	34.7	1.75	2.54	30.00	2.54	12.18
	Max +	233.8	16.4	---	---				

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		kip-ft	ft	ft		fb	Fb	fb	Fb
	Mmax/Seff					17.03	33.00	---	---
	Mconst/Sx+Mpost/Seff					18.75	45.00	---	---
	Max -	-120.4	34.7	34.7	1.75	11.37	30.00	11.37	12.18
Right	PreCmp-	-26.9	34.7	9.3	1.00	2.54	30.00	2.54	28.79
	Max -	-120.4	34.7	9.3	1.00	11.37	30.00	11.37	28.79
Controlling		-120.4	34.7	34.7	1.75	---	---	11.37	12.18

fc (ksi) = 0.34 Fc = 1.58

REACTIONS (kips):

	Left	Right
Initial reaction	9.93	17.23
DL reaction	12.42	25.72
Max +LL reaction	16.12	29.01
Max -LL reaction	-1.81	0.00
Max +total reaction	28.54	54.73

DEFLECTIONS:

Multipliers for effects of Web Openings:

Span	Precomp/Noncomp	Composite
Center Span	1.000	1.000
Right Cantilever	1.000	1.000

Center span:

Initial load (in)	at	16.99 ft	=	-0.430	L/D =	967
Live load (in)	at	16.99 ft	=	-0.374	L/D =	1113
Post Comp load (in)	at	16.99 ft	=	-0.403	L/D =	1032
Net Total load (in)	at	16.99 ft	=	-0.834	L/D =	499

Right cantilever:

Init load (in)	=	0.292	L/D =	767
Pos Live load (in)	=	-0.213	L/D =	1051
Neg Live load (in)	=	0.322	L/D =	695
Pos Post Comp load (in)	=	-0.254	L/D =	883
Neg Post Comp load (in)	=	0.282	L/D =	795
Neg Total load (in)	=	0.574	L/D =	390

WEB OPENINGS:

#	Dist* ft	Shp	H/Dia in	B in	Position to in		Stiffener Width in	Thick in	Length in	Sides	Weld in
1	12.00	Rect	14.00	24.00	Centered	Center	---	---	---		---

*Dist is the distance along the beam from the left end.

Opening #1 at 12.000 ft

Minimum corner radii (in): 0.8000 or greater
Min. Slab Reinforcement: 0.0025 Transv. and Longit. within a distance of 2.00 ft of opening
Min. Shear Connectors: 2 studs/ft for a dist. 2.00 ft from opening towards max moment point

Capacity - Noncomposite / Precomposite

Top Tee

Prt = 0.00 kips mut = 0.00 nut = 6.86 alphavt = 0.29
Vpt = 40.41 kips Vmt = 11.53 kips

Bottom Tee

Prb = 0.00 kips mub = 0.00 nub = 6.86 alphavb = 0.29
Vpb = 40.41 kips Vmb = 11.53 kips

Capacity: Vpbar = 242.49 kips
Upper Limit Vm = 0.67 Vpbar = 161.66 kips
Vm = 11.53 + 11.53 = 23.05 kips
Mm = 511.62 kip-ft

Capacity - Composite

Top Tee

Pch = 93.75 kips dh = 5.85 in Pcl = 75.00 kips dl = 3.12 in
Prt = 0.00 kips mut = 2.22 nut = 6.86 alphavt = 0.54
Vpt = 40.41 kips Vmt(sh) = 51.53 kips Vmt = 21.98 kips

Bottom Tee

Prb = 0.00 kips mub = 0.00 nub = 6.86 alphavb = 0.29
Vpb = 40.41 kips Vmb = 11.53 kips

Capacity: Vpbar = 242.49 kips Vcbar = 0.00 kips
Upper Limit Vm = 0.67 Vpbar + Vcbar = 161.66 kips
Vm = 21.98 + 11.53 = 33.50 kips
Mm = 570.04 kip-ft

Precomposite

Vu = 4.28 kips Mu = 126.93 kip-ft at 12.00 ft (1.7DL+1.7LL)

Interaction:
Vu / 1.00 Vm = 0.186
Mu / 1.00 Mm = 0.248
M - V Interaction = 0.279

Composite

Vu = 12.98 kips Mu = 368.97 kip-ft at 12.00 ft (1.7DL+1.7LL)

Interaction:
Vu / 1.00 Vm = 0.387
Mu / 1.00 Mm = 0.647
M - V Interaction = 0.691

Compression Tee Buckling

Couple arm distance (in) = 19.74 phi = 1.00
K = 1.0 L (in) = 24.00
Top: area (in2) = 6.22 rx (in) = 0.79 ry (in) = 2.15

Cond	Mu kip-ft	LoadCombo	Pu kips	phi*Pn kips	Ratio
Precomp M	126.93	1.7DL+1.7LL	77.18	290.55	0.266

Gravity Beam Design

RAM SBeam v3.0
Silver King
Short Beams - Middle
Licensed to: RAM International

FB3

40

06/08/19 13:55:11

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (21.00,0.00)

Beam Size (User Selected) = W12X22 ✓ Fy = 50.0 ksi
Total Beam Length (ft) = 21.00
Distance to Adjacent Beam on Left (ft) = 9.3
Distance to Adjacent Beam on Right (ft) = 9.3

COMPOSITE PROPERTIES (Not Shored):

		Left			**Right**
Concrete thickness (in)		3.00			3.00
Unit weight concrete (pcf)		150.00			150.00
f'c (ksi)		3.50			3.50
Decking Orientation		perpendicular			perpendicular
Decking type		VERCO W3 Formlok			VERCO W3 Formlok
beff (in)	= 63.00		Y bar(in)	=	14.49
Seff (in3)	= 39.45		Str (in3)	=	51.52
Ieff (in4)	= 474.97		Itr (in4)	=	748.98
Stud length (in)	= 5.00		Stud diam (in)	=	0.75

Stud Capacity (kips) q = 9.4
# of studs: Max = 21 Partial = 10 Actual = 10 ✓
Number of Stud Rows = 1 Percent of Full Composite Action = 28.93
Top flange braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.022	0.022	0.000	0.000
	21.000	0.022	0.022	0.000	0.000
2	0.000	0.710	0.350	0.880	0.000
	21.000	0.710	0.350	0.880	0.000

SHEAR: Max V (DL+LL) = 16.93 kips fv = 5.29 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	PreCmp+	20.5	10.5	0.0	1.00	9.69	33.00	9.69	33.00
	Max +	88.9	10.5	---	---				
	Mmax/Seff					27.03	33.00	---	---
	Mconst/Sx+Mpost/Seff					30.48	45.00	---	---
Controlling		88.9	10.5	---	---	27.03	33.00	---	---

fc (ksi) = 0.51 Fc = 1.58

REACTIONS (kips):

	Left	**Right**
Initial reaction	3.91	3.91
DL reaction	7.69	7.69
Max +LL reaction	9.24	9.24
Max +total reaction	16.93	16.93

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DEFLECTIONS:

Initial load (in)	at	10.50 ft	=	-0.360	L/D	= 700
Live load (in)	at	10.50 ft	=	-0.280	L/D	= 901
Post Comp load (in)	at	10.50 ft	=	-0.394	L/D	= 640
Net Total load (in)	at	10.50 ft	=	-0.754	L/D	= 334

Gravity Beam Design

RAM SBeam v3.0
Silver King
Short Beams - End
Licensed to: RAM International

FB4

42

06/08/19 13:57:36

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (21.00,0.00)

Beam Size (User Selected) = W12X14 Fy = 50.0 ksi
Total Beam Length (ft) = 21.00
Distance to Adjacent Beam on Left (ft) = 9.3
Distance to Adjacent Beam on Right (ft) = 9.3

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Concrete thickness (in)	3.00	3.00
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	3.50	3.50
Decking Orientation	perpendicular	perpendicular
Decking type	VERCO W3 Formlok	VERCO W3 Formlok

beff (in)	=	63.00	Y bar(in)	=	14.82
Seff (in3)	=	24.35	Str (in3)	=	33.07
Ieff (in4)	=	298.27	Itr (in4)	=	491.78
Stud length (in)	=	5.00	Stud diam (in)	=	0.75

Stud Capacity (kips) q = 9.4
# of studs: Max = 21 Partial = 7 Actual = 7
Number of Stud Rows = 1 Percent of Full Composite Action = 27.04
Top flange braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.014	0.014	0.000	0.000
	21.000	0.014	0.014	0.000	0.000
2	0.000	0.360	0.180	0.440	0.000
	21.000	0.360	0.180	0.440	0.000

SHEAR: Max V (DL+LL) = 8.55 kips fv = 3.73 ksi Fv = 18.76 ksi

MOMENTS:

Span	Cond	Moment kip-ft	@ ft	Lb ft	Cb	Tension Flange fb	Tension Flange Fb	Compr Flange fb	Compr Flange Fb
Center	PreCmp+	10.7	10.5	0.0	1.00	8.62	33.00	8.62	33.00
	Max +	44.9	10.5	---	---				
	Mmax/Seff					22.12	33.00	---	---
	Mconst/Sx+Mpost/Seff					25.46	45.00	---	---
Controlling		44.9	10.5	---	---	22.12	33.00	---	---

fc (ksi) = 0.31 Fc = 1.58

REACTIONS (kips):

	Left	Right
Initial reaction	2.04	2.04
DL reaction	3.93	3.93
Max +LL reaction	4.62	4.62
Max +total reaction	8.55	8.55

55-DR-2019
2/20/2020

DEFLECTIONS:

Initial load (in)	at	10.50 ft	=	-0.331	L/D	= 762
Live load (in)	at	10.50 ft	=	-0.223	L/D	= 1132
Post Comp load (in)	at	10.50 ft	=	-0.314	L/D	= 803
Net Total load (in)	at	10.50 ft	=	-0.644	L/D	= 391

BDA design

project name: SILVER KING

design by:

checked by: gb

page #: 44

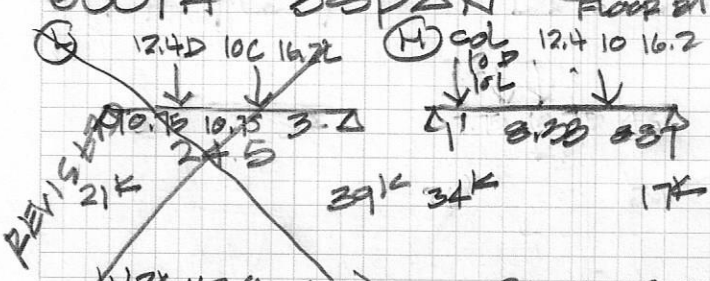
project #: A19104

date: May 2019

FLOOR CONT

SOUTH 3 SPAN

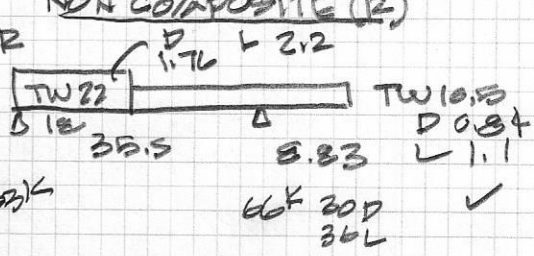
FB5



W21X48 (1,7,8)

FB6

NON COMPOSITE (12)

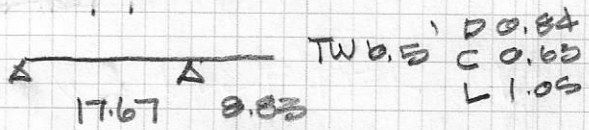


W27X94 ✓

C=1/4

EDGE BM @ STAIR

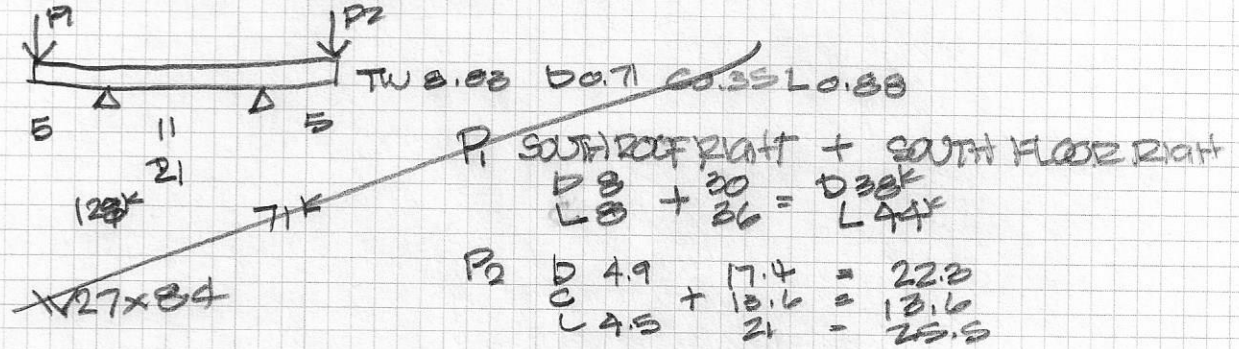
FB7



W12X35 (14)

D 6 17.4
C 4.6 13.6
L 9.3 21

DOUBLE CANT BEAM



P1 SOUTH ROOF RIGHT + SOUTH FLOOR RIGHT

D 8 + 30 = D 38K

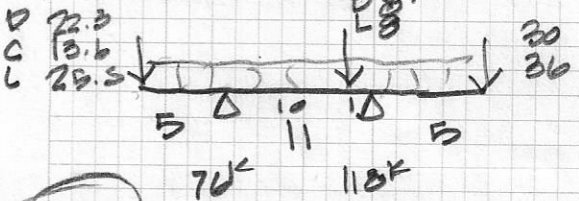
L 8 + 36 = L 44K

P2 D 4.9 + 17.4 = 22.3

C + 13.6 = 13.6

L 4.5 + 21 = 25.5

REMOVE W/ONLY ONE POINT LOAD @ LEFT CANT.



W21X73 (10) ✓

FB8

Gravity Beam Design

RAM SBeam v3.0
Silver King
Floor South Edge Beam - Mid FB5
Licensed to: RAM International

10/07/19 18:52:36

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (18.25,0.00)

Beam Size (User Selected) = W21X48 Fy = 50.0 ksi
Total Beam Length (ft) = 18.25
Distance to Adjacent Beam on Left (ft) = 9.3
Distance to Adjacent Beam on Right (ft) = 9.3

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Concrete thickness (in)	3.00	3.00
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	3.50	3.50
Decking Orientation	parallel	parallel
Decking type	VERCO W3 Formlok	VERCO W3 Formlok

beff (in)	=	54.75	Y bar(in)	=	19.76
Seff (in3)	=	120.70	Str (in3)	=	145.01
Ieff (in4)	=	1980.60	Itr (in4)	=	2877.04
Stud length (in)	=	5.00	Stud diam (in)	=	0.75

Stud Capacity (kips) q = 12.5

# of studs per stud segment: Full = 4,26,29
Partial = 1,7,8
Actual = 1,7,8

Number of Stud Rows = 1 Percent of Full Composite Action = 28.37
Top flange braced by decking.

POINT LOADS (kips):

Dist (ft)	DL	CDL	LL	CLL	Flange Bracing Top	Flange Bracing Bottom
1.000	10.00	0.00	10.00	0.00	No	No
9.380	12.40	10.00	16.20	0.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.048	0.048	0.000	0.000
	18.250	0.048	0.048	0.000	0.000

SHEAR: Max V (DL+LL) = 33.24 kips fv = 4.81 ksi Fv = 19.05 ksi

MOMENTS:

Span	Cond	Moment kip-ft	@ ft	Lb ft	Cb	Tension Flange fb	Tension Flange Fb	Compr Flange fb	Compr Flange Fb
Center	PreCmp+	47.6	9.4	18.3	1.00	6.14	30.00	6.14	14.74
	Max +	142.1	9.4	---	---				
	Mmax/Seff					14.13	33.00	---	---
	Mconst/Sx+Mpost/Seff					15.54	45.00	---	---
Controlling		142.1	9.4	---	---	14.13	33.00	---	---

fc (ksi) = 0.33 Fc = 1.58

55-DR-2019
2/20/2020

REACTIONS (kips):

	Left	Right
Initial reaction	5.30	5.58
DL reaction	15.92	7.36
Max +LL reaction	17.33	8.87
Max +total reaction	33.24	16.23

DEFLECTIONS:

Initial load (in)	at	9.13 ft	=	-0.083	L/D	= 2642
Live load (in)	at	9.13 ft	=	-0.068	L/D	= 3226
Post Comp load (in)	at	9.13 ft	=	-0.083	L/D	= 2630
Net Total load (in)	at	9.13 ft	=	-0.166	L/D	= 1318

Gravity Beam Design

RAM SBeam v3.0
Silver King
Double Cant Floor Beam FB8
Licensed to: RAM International

47

10/08/19 10:10:30

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (21.00,0.00)

Beam Size (User Selected) = W21X73 Fy = 50.0 ksi
Total Beam Length (ft) = 21.00
Cantilever on left (ft) = 5.00
Cantilever on right (ft) = 5.00
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
15.000	8.00	8.00	No	No
0.000	22.30	25.50	No	No
20.990	30.00	36.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.073	0.000
	5.000	0.073	0.000
2	0.000	0.710	0.880
	5.000	0.710	0.880
3	5.000	0.073	0.000
	16.000	0.073	0.000
4	5.000	0.710	0.880
	16.000	0.710	0.880
5	16.000	0.073	0.000
	21.000	0.073	0.000
6	16.000	0.710	0.880
	21.000	0.710	0.880

SHEAR: Max V (DL+LL) = 74.32 kips fv = 7.70 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Left	Max -	-259.8	5.0	5.0	1.00	20.65	33.00	20.65	33.00
Center	Max -	-350.1	16.0	11.0	1.14	27.82	30.00	27.82	29.92
Right	Max -	-350.1	16.0	5.0	1.00	27.82	33.00	27.82	33.00
Controlling		-350.1	16.0	11.0	1.14	---	---	27.82	29.92

REACTIONS (kips):

	Left	**Right**
DL reaction	27.78	48.97
Max +LL reaction	48.06	69.84
Max -LL reaction	-17.33	-12.59
Max +total reaction	75.84	118.81

DEFLECTIONS:

Left cantilever:

Dead load (in)	=	-0.163		L/D	=	735	
Pos Live load (in)	=	-0.202		L/D	=	595	
Neg Live load (in)	=	0.012		L/D	=	10173	
Pos Total load (in)	=	-0.365		L/D	=	329	

Center span:

Dead load (in)	at	10.61 ft	=	0.071		L/D	=	1851	
Live load (in)	at	10.61 ft	=	0.093		L/D	=	1423	
Net Total load (in)	at	10.61 ft	=	0.164		L/D	=	804	

Right cantilever:

Dead load (in)	=	-0.186		L/D	=	645	
Pos Live load (in)	=	-0.236		L/D	=	509	
Neg Live load (in)	=	0.014		L/D	=	8678	
Pos Total load (in)	=	-0.422		L/D	=	284	

BDA design

project name: SILVER KING

design by:

checked by: gb

page #: 49

project #: A19104

date: July 2019

FLOOR FRAMING - EAST STAIR AREA

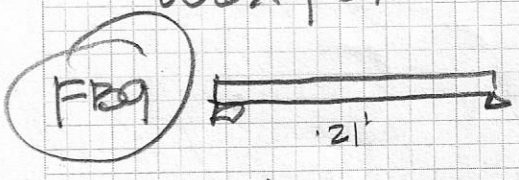
"TYP SHORT BM" SUPPORTING GRATING

L = 4.75' max TW = 5' max

DL = 20 psf LL = 100 psf

W = 600 PLF M = 0.6(4.75)²/8 = 1.7 K-FT

W6X9 OK OR C8X11.5



TW = 2.5'

D 0.05

L 0.25

NON COMP

R 0.74D
2.62L

C12X20.7

Gravity Beam Design

RAM SBeam v3.0
Silver King
Floor Stair Area FB9
Licensed to: RAM International

50

10/08/19 11:31:55

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (21.00,0.00)

Beam Size (User Selected) = C12X20.7 Fy = 50.0 ksi
Total Beam Length (ft) = 21.00
Top flange braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.021	0.000
	21.000	0.021	0.000
2	0.000	0.050	0.250
	21.000	0.050	0.250

SHEAR: Max V (DL+LL) = 3.37 kips fv = 1.00 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	17.7	10.5	0.0	1.00	9.87	33.00	9.87	33.00
Controlling		17.7	10.5	0.0	1.00	9.87	33.00	---	---

REACTIONS (kips):

	Left	Right
DL reaction	0.74	0.74
Max +LL reaction	2.62	2.62
Max +total reaction	3.37	3.37

DEFLECTIONS:

Dead load (in)	at	10.50 ft	=	-0.083	L/D =	3048
Live load (in)	at	10.50 ft	=	-0.292	L/D =	862
Net Total load (in)	at	10.50 ft	=	-0.375	L/D =	672

55-DR-2019
2/20/2020

Gravity Beam Design

RAM SBeam v3.0
Silver King
Floor Framing FB10
Licensed to: RAM International

S1

10/08/19 12:02:24

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (44.00,0.00)

Beam Size (Optimum) = W24X68 Fy = 50.0 ksi
Total Beam Length (ft) = 44.00
Cantilever on right (ft) = 9.33
Distance to Adjacent Beam on Left (ft) = 9.3
Distance to Adjacent Beam on Right (ft) = 9.3

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Concrete thickness (in)	3.00	3.00
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	3.50	3.50
Decking Orientation	perpendicular	perpendicular
Decking type	VERCO W3 Formlok	VERCO W3 Formlok

beff (in)	=	104.01	Y bar(in)	=	22.60
Seff (in3)	=	196.92	Str (in3)	=	237.75
Ieff (in4)	=	3655.24	Itr (in4)	=	5391.96
Stud length (in)	=	5.00	Stud diam (in)	=	0.75

Stud Capacity (kips) q = 9.4
# of studs: Max = 102 Partial = 33 Actual = 33
Number of Stud Rows = 1 Percent of Full Composite Action = 26.15
Top flange braced by decking.

POINT LOADS (kips):

					Flange Bracing	
Dist (ft)	DL	CDL	LL	CLL	Top	Bottom
43.950	2.40	0.00	2.40	0.00	No	No
19.250	6.00	4.60	9.33	0.00	No	No
39.670	0.75	0.00	2.62	0.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.068	0.068	0.000	0.000
	34.670	0.068	0.068	0.000	0.000
2	0.000	0.750	0.555	0.930	0.000
	34.670	0.750	0.555	0.930	0.000
3	34.670	0.068	0.068	0.000	0.000
	44.000	0.068	0.068	0.000	0.000
4	34.670	0.750	0.555	0.930	0.000
	44.000	0.750	0.555	0.930	0.000

SHEAR: Max V (DL+LL) = 42.79 kips fv = 4.58 ksi Fv = 19.79 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange	Compr Flange

55-DR-2019
2/20/2020

S2

Gravity Beam Design

RAM SBeam v3.0
Silver King
Floor Framing FB10
Licensed to: RAM International

10/08/19 12:02:24

		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	PreCmp+	116.8	19.3	0.0	1.00	9.10	33.00	9.10	33.00
	PreCmp-	-27.1	34.7	34.7	1.75	2.11	30.00	2.11	11.18
	Max +	356.5	19.3	---	---				
	Mmax/Seff					21.73	33.00	---	---
	Mconst/Sx+Mpost/Seff					23.71	45.00	---	---
	Max -	-137.5	34.7	34.7	1.75	10.71	30.00	10.71	11.18
Right	PreCmp-	-27.1	34.7	9.3	1.00	2.11	30.00	2.11	29.39
	Max -	-137.5	34.7	9.3	1.00	10.71	30.00	10.71	29.39
Controlling		-137.5	34.7	34.7	1.75	---	---	10.71	11.18

fc (ksi) = 0.46 Fc = 1.58

REACTIONS (kips):

	Left	Right
Initial reaction	12.07	19.96
DL reaction	15.08	30.08
Max +LL reaction	20.27	37.19
Max -LL reaction	-2.19	0.00
Max +total reaction	35.35	67.27

DEFLECTIONS:

Center span:

Initial load (in)	at	17.34 ft	=	-0.443	L/D =	939
Live load (in)	at	17.34 ft	=	-0.415	L/D =	1003
Post Comp load (in)	at	17.34 ft	=	-0.452	L/D =	921
Net Total load (in)	at	17.34 ft	=	-0.895	L/D =	465

Right cantilever:

Init load (in)	=	0.322	L/D =	696
Pos Live load (in)	=	-0.191	L/D =	1171
Neg Live load (in)	=	0.355	L/D =	631
Pos Post Comp load (in)	=	-0.213	L/D =	1050
Neg Post Comp load (in)	=	0.333	L/D =	673
Neg Total load (in)	=	0.655	L/D =	342

Gravity Beam Design

RAM SBeam v3.0
Silver King
Added Floor Girder GLS5 FB11
Licensed to: RAM International

S3

10/08/19 12:09:16

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (18.10,0.00)

Beam Size (User Selected) = W18X55 Fy = 50.0 ksi
Total Beam Length (ft) = 18.10
Distance to Adjacent Beam on Left (ft) = 9.3
Distance to Adjacent Edge on Right (ft) = 0.5

COMPOSITE PROPERTIES (Not Shored):

		Left			Right
Concrete thickness (in)		3.00			3.00
Unit weight concrete (pcf)		150.00			150.00
f'c (ksi)		3.50			3.50
Decking Orientation		parallel			parallel
Decking type		VERCO W3 Formlok			VERCO W3 Formlok
beff (in)	= 33.15	Y bar(in)		=	15.75
Seff (in3)	= 127.82	Str (in3)		=	145.31
Ieff (in4)	= 1775.88	Itr (in4)		=	2300.74
Stud length (in)	= 5.00	Stud diam (in)		=	0.75

Stud Capacity (kips) q = 12.5
# of studs per stud segment: Full = 18,18
Partial = 7,7
Actual = 7,7
Number of Stud Rows = 1 Percent of Full Composite Action = 39.43
Top flange braced by decking.

POINT LOADS (kips):

					Flange Bracing	
Dist (ft)	DL	CDL	LL	CLL	Top	Bottom
9.220	30.00	20.00	38.00	0.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.055	0.055	0.000	0.000
	18.100	0.055	0.055	0.000	0.000
2	0.000	0.400	0.000	0.500	0.000
	18.100	0.400	0.000	0.500	0.000

SHEAR: Max V (DL+LL) = 43.28 kips fv = 6.13 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment kip-ft	@ ft	Lb ft	Cb	Tension Flange fb	Tension Flange Fb	Compr Flange fb	Compr Flange Fb
Center	PreCmp+	92.7	9.2	18.1	1.00	11.32	30.00	11.32	14.48
	Max +	346.7	9.2	---	---				
	Mmax/Seff					32.55	33.00	---	---
	Mconst/Sx+Mpost/Seff					35.16	45.00	---	---
Controlling		346.7	9.2	---	---	32.55	33.00	---	---

fc (ksi) = 1.34 Fc = 1.58

55-DR-2019
2/20/2020

REACTIONS (kips):

	Left	Right
Initial reaction	10.31	10.69
DL reaction	18.84	19.40
Max +LL reaction	23.17	23.88
Max +total reaction	42.01	43.28

DEFLECTIONS:

Initial load (in)	at	9.14 ft	=	-0.170	L/D	= 1274
Live load (in)	at	9.14 ft	=	-0.181	L/D	= 1201
Post Comp load (in)	at	9.14 ft	=	-0.241	L/D	= 901
Net Total load (in)	at	9.14 ft	=	-0.412	L/D	= 528

BDA design

project name: SILVERKING

design by:

checked by: gb

page #: 55

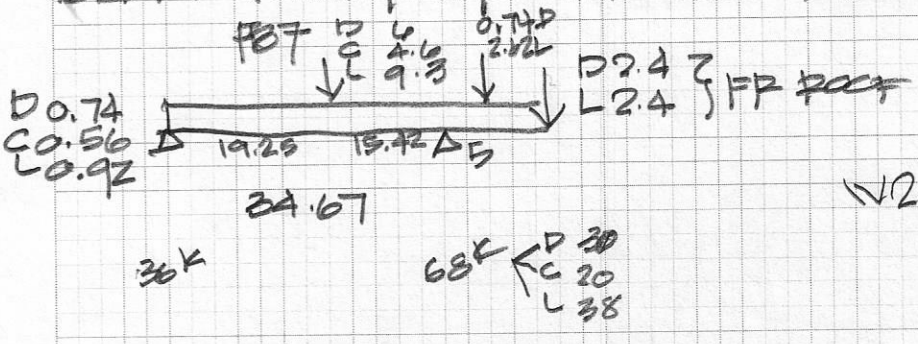
project #: A19104

date: September 2019

FLOOR (CONT)

FB10

BEAM WEST OF STAIR AREA



34.67

W24x68 (33)

36K

68K

D 30
C 20
L 38

55-DR-2019
2/20/2020

BDA design

project name: silver kira

design by:

checked by: gb

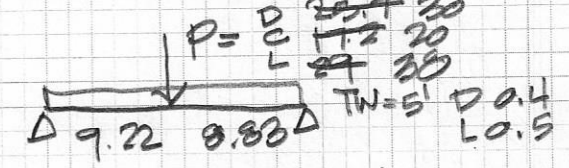
page #: S6

project #: A19104

date: July 2019

ADD FB11

NEW FLOOR GIRDER · GL S5 TO S4U



W18x55 (7,7)

~~27.3K~~ 42 k

~~28.8K~~ 43 k

WEST STAIR AREA

FB2 NON COMP.

28.33

FB12L C12x20.7

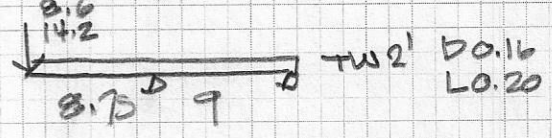
R 3.9 7.7 3.3 7.7 5.3 6.5

FB12R C12x20.7

5.3 6.5

FB13

CANT BMS

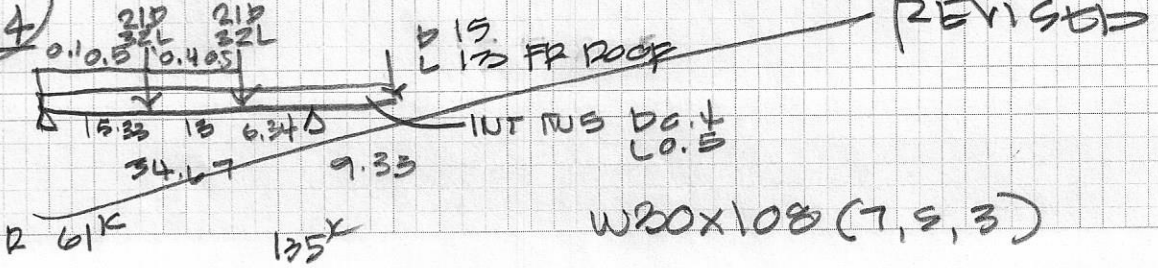


W18x55 camber up 1/4"

210 -23

32L

FB14



REVISED

W30x108 (7,5,3)

55-DR-2019
2/20/2020

Gravity Beam Design

RAM SBeam v3.0
Silver King
Floor West Stair Aea FB12L
Licensed to: RAM International

S7

10/08/19 12:34:12

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (15.33,0.00)

Beam Size (Optimum) = C12X20.7 Fy = 50.0 ksi
Total Beam Length (ft) = 15.33
Top flange braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.021	0.000
	15.330	0.021	0.000
2	0.000	0.400	0.500
	15.330	0.400	0.500
3	0.000	0.010	0.500
	15.330	0.010	0.500

SHEAR: Max V (DL+LL) = 10.97 kips fv = 3.24 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	42.0	7.7	0.0	1.00	23.46	33.00	23.46	33.00
Controlling		42.0	7.7	0.0	1.00	23.46	33.00	---	---

REACTIONS (kips):

	Left	**Right**
DL reaction	3.30	3.30
Max +LL reaction	7.66	7.66
Max +total reaction	10.97	10.97

DEFLECTIONS:

Dead load (in)	at	7.66 ft =	-0.143	L/D =	1286
Live load (in)	at	7.66 ft =	-0.332	L/D =	554
Net Total load (in)	at	7.66 ft =	-0.475	L/D =	387

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2/20/2020

Gravity Beam Design

RAM SBeam v3.0
Silver King
Floor West Stair Aea FB12R
Licensed to: RAM International

S8

10/08/19 12:35:41

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (13.00,0.00)

Beam Size (User Selected) = C12X20.7 Fy = 50.0 ksi
Total Beam Length (ft) = 13.00
Top flange braced by decking.

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.021	0.000
	13.000	0.021	0.000
2	0.000	0.400	0.500
	13.000	0.400	0.500
3	0.000	0.400	0.500
	13.000	0.400	0.500

SHEAR: Max V (DL+LL) = 11.83 kips fv = 3.50 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	38.5	6.5	0.0	1.00	21.47	33.00	21.47	33.00
Controlling		38.5	6.5	0.0	1.00	21.47	33.00	---	---

REACTIONS (kips):

	Left	Right
DL reaction	5.33	5.33
Max +LL reaction	6.50	6.50
Max +total reaction	11.83	11.83

DEFLECTIONS:

Dead load (in)	at	6.50 ft	=	-0.141	L/D =	1107
Live load (in)	at	6.50 ft	=	-0.172	L/D =	908
Net Total load (in)	at	6.50 ft	=	-0.313	L/D =	499

55-DR-2019
2/20/2020

Gravity Beam Design

RAM SBeam v3.0
Silver King
Floor West Stair Aea FB13
Licensed to: RAM International

54

10/08/19 12:41:46

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (17.75,0.00)

Beam Size (User Selected) = W18X55 Fy = 50.0 ksi
Total Beam Length (ft) = 17.75
Cantilever on left (ft) = 8.75
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
0.000	8.60	14.20	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.055	0.000
	8.750	0.055	0.000
2	0.000	0.160	0.200
	8.750	0.160	0.200
3	8.750	0.055	0.000
	17.750	0.055	0.000
4	8.750	0.160	0.200
	17.750	0.160	0.200

SHEAR: Max V (DL+LL) = 26.43 kips fv = 3.74 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Left	Max -	-215.4	8.8	8.8	1.00	26.29	30.00	26.29	29.95
Center	Max -	-215.4	8.8	9.0	1.75	26.29	30.00	26.29	30.00
Controlling		-215.4	8.8	8.8	1.00	---	---	26.29	29.95

REACTIONS (kips):

	Left	**Right**
DL reaction	20.73	-8.31
Max +LL reaction	31.51	0.90
Max -LL reaction	0.00	-14.66
Max +total reaction	52.23	-7.41
Max -total reaction	20.73	-22.96

DEFLECTIONS:

Left cantilever:

Dead load (in)	=	-0.282	L/D =	745	
Pos Live load (in)	=	-0.454	L/D =	463	
Neg Live load (in)	=	0.004	L/D =	59008	
Pos Total load (in)	=	-0.736	L/D =	285	

Center span:

Dead load (in)	at	12.53 ft	=	0.028	L/D =	3878
Live load (in)	at	12.53 ft	=	0.046	L/D =	2354

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Center span:

Net Total load (in)	at	12.53 ft	=	0.074	L/D	= 1465

Gravity Beam Design

RAM SBeam v3.0
Silver King
West Stair Area FB14
Licensed to: RAM International

6\

11/16/19 08:25:53

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (44.00,0.00)

Beam Size (User Selected) = W30X108 Fy = 50.0 ksi
Total Beam Length (ft) = 44.00
Cantilever on right (ft) = 9.33
Distance to Adjacent Edge on Left (ft) = 0.5
Distance to Adjacent Beam on Right (ft) = 9.3

COMPOSITE PROPERTIES (Not Shored):

	Left	Right
Concrete thickness (in)	3.00	3.00
Unit weight concrete (pcf)	150.00	150.00
f'c (ksi)	3.50	3.50
Decking Orientation	perpendicular	perpendicular
Decking type	VERCO W3 Formlok	VERCO W3 Formlok

beff (in)	=	58.00	Y bar(in)	=	22.74
Seff (in3)	=	353.46	Str (in3)	=	407.15
Ieff (in4)	=	6907.32	Itr (in4)	=	9310.60
Stud length (in)	=	5.00	Stud diam (in)	=	0.75

Stud Capacity (kips) q = 9.4
# of studs per stud segment: Full = 27,20,10
Partial = 7,6,3
Actual = 7,5,3
Number of Stud Rows = 1 Percent of Full Composite Action = 25.35
Top flange braced by decking.

POINT LOADS (kips):

Dist (ft)	DL	CDL	LL	CLL	Flange Bracing Top	Flange Bracing Bottom
15.330	21.00	0.00	32.00	0.00	No	No
28.330	21.00	0.00	32.00	0.00	No	No
43.950	15.00	0.00	13.00	0.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.108	0.108	0.000	0.000
	34.670	0.108	0.108	0.000	0.000
2	0.000	0.370	0.280	0.460	0.000
	34.670	0.370	0.280	0.460	0.000
3	34.670	0.108	0.108	0.000	0.000
	44.000	0.108	0.108	0.000	0.000
4	34.670	0.370	0.280	0.460	0.000
	44.000	0.370	0.280	0.460	0.000
5	0.000	0.100	0.000	0.500	0.000
	15.330	0.100	0.000	0.500	0.000
6	15.330	0.040	0.000	0.500	0.000
	28.330	0.040	0.000	0.500	0.000

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SHEAR: Max V (DL+LL) = 98.13 kips fv = 6.04 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	PreCmp+	50.1	16.1	0.0	1.00	2.01	33.00	2.01	33.00
	PreCmp-	-16.9	34.7	34.7	1.75	0.68	30.00	0.68	13.52
	Max +	749.3	15.3	---	---				
	Mmax/Seff					25.44	33.00	---	---
	Mconst/Sx+Mpost/Seff					25.75	45.00	---	---
	Max -	-300.7	34.7	34.7	1.75	12.07	30.00	12.07	13.52
Right	PreCmp-	-16.9	34.7	9.3	1.00	0.68	30.00	0.68	28.70
	Max -	-300.7	34.7	9.3	1.00	12.07	30.00	12.07	28.70
Controlling		-300.7	34.7	34.7	1.75	---	---	12.07	13.52

fc (ksi) = 1.43 Fc = 1.58

REACTIONS (kips):

	Left	Right
Initial reaction	6.24	10.83
DL reaction	20.61	59.47
Max +LL reaction	40.05	75.41
Max -LL reaction	-4.06	0.00
Max +total reaction	60.66	134.88

DEFLECTIONS:

Center span:

Initial load (in)	at	17.16 ft	=	-0.080	L/D =	5174
Live load (in)	at	17.16 ft	=	-0.510	L/D =	816
Post Comp load (in)	at	17.16 ft	=	-0.679	L/D =	613
Net Total load (in)	at	17.16 ft	=	-0.759	L/D =	548

Right cantilever:

Init load (in)	=	0.055	L/D =	4101
Pos Live load (in)	=	-0.183	L/D =	1222
Neg Live load (in)	=	0.450	L/D =	498
Pos Post Comp load (in)	=	-0.138	L/D =	1620
Neg Post Comp load (in)	=	0.495	L/D =	452
Pos Total load (in)	=	-0.084	L/D =	2677
Neg Total load (in)	=	0.550	L/D =	407

BDA design

project name: SILVER CIVIC

design by:

checked by: gb

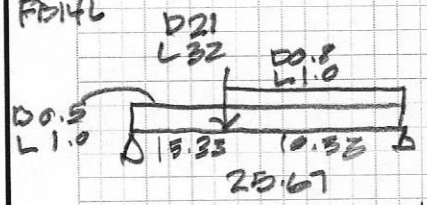
page #: 62 B

project #: 19104

date: January 2020

REVISE FB14 · TOO DEEP

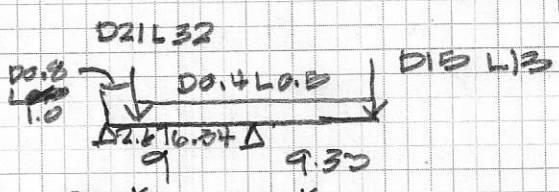
FB14L



P 41K 51K

W21X83 (6,6)

FB14R



W21X62

COL 77K 90K

HSS5X5X3/8 HSS5X5X3/8

PL 8'-0"X8'-0" PL 8'-0"X8'-0"

Gravity Beam Design

RAM SBeam v3.0
Silver King
West Stair Area FB14 Right Beam
Licensed to: RAM International

02/01/20 08:54:08

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (18.33,0.00)

Beam Size (Optimum) = W21X62 Fy = 50.0 ksi
Total Beam Length (ft) = 18.33
Cantilever on right (ft) = 9.33
Top flange braced by decking.

POINT LOADS (kips):

			Flange Bracing	
Dist (ft)	DL	LL	Top	Bottom
2.670	21.00	32.00	No	No
18.310	15.00	13.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	LL
1	0.000	0.062	0.000
	9.000	0.062	0.000
2	0.000	0.370	0.460
	9.000	0.370	0.460
3	9.000	0.062	0.000
	18.330	0.062	0.000
4	9.000	0.370	0.460
	18.330	0.370	0.460
5	0.000	0.040	0.500
	2.670	0.040	0.500

SHEAR: Max V (DL+LL) = 53.23 kips fv = 6.34 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment	@	Lb	Cb	Tension Flange		Compr Flange	
		kip-ft	ft	ft		fb	Fb	fb	Fb
Center	Max +	61.4	2.7	0.0	1.00	5.80	33.00	5.80	33.00
	Max -	-299.5	9.0	9.0	1.75	28.30	30.00	28.30	30.00
Right	PreCmp-	-16.9	9.0	0.0	0.00	1.60	0.00	1.60	0.00
	Max -	-299.5	9.0	9.3	1.00	28.30	30.00	28.30	28.79
Controlling		-299.5	9.0	9.3	1.00	---	---	28.30	28.79

REACTIONS (kips):

	Left	**Right**
DL reaction	-0.80	44.83
Max +LL reaction	25.71	44.73
Max -LL reaction	-15.67	0.00
Max +total reaction	24.91	89.56
Max -total reaction	-16.47	44.83

DEFLECTIONS:

Center span:

Dead load (in) at 5.45 ft = 0.025 L/D = 4313
Live load (in) at 5.45 ft = 0.033 L/D = 3301

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Center span:						
Net Total load (in)	at	5.45 ft	=	0.058	L/D =	1870
Right cantilever:						
Dead load (in)	=	-0.361	L/D =	621		
Pos Live load (in)	=	-0.354	L/D =	633		
Neg Live load (in)	=	0.056	L/D =	4015		
Pos Total load (in)	=	-0.714	L/D =	313		

Gravity Beam Design

RAM SBeam v3.0
Silver King
West Stair Area FB14 Left Beam
Licensed to: RAM International

625

02/01/20 08:56:24

STEEL CODE: ASD 9th Ed.

SPAN INFORMATION (ft): I-End (0.00,0.00) J-End (25.67,0.00)

Beam Size (User Selected) = W21X83 Fy = 50.0 ksi
Total Beam Length (ft) = 25.67
Distance to Adjacent Edge on Left (ft) = 0.5
Distance to Adjacent Beam on Right (ft) = 9.3

COMPOSITE PROPERTIES (Not Shored):

		Left			Right
Concrete thickness (in)		3.00			3.00
Unit weight concrete (pcf)		150.00			150.00
f'c (ksi)		3.50			3.50
Decking Orientation		perpendicular			perpendicular
Decking type		VERCO W3 Formlok			VERCO W3 Formlok
beff (in)	= 44.50		Y bar(in)	=	16.85
Seff (in3)	= 209.17		Str (in3)	=	242.72
Ieff (in4)	= 3045.47		Itr (in4)	=	4113.90
Stud length (in)	= 5.00		Stud diam (in)	=	0.75

Stud Capacity (kips) q = 9.4
# of studs per stud segment: Full = 21,20
Partial = 6,6
Actual = 6,6
Number of Stud Rows = 1 Percent of Full Composite Action = 28.32
Top flange braced by decking.

POINT LOADS (kips):

Dist (ft)	DL	CDL	LL	CLL	Flange Bracing Top	Flange Bracing Bottom
15.330	21.00	0.00	32.00	0.00	No	No

LINE LOADS (k/ft):

Load	Dist (ft)	DL	CDL	LL	CLL
1	0.000	0.083	0.083	0.000	0.000
	25.670	0.083	0.083	0.000	0.000
2	0.000	0.370	0.280	0.460	0.000
	25.670	0.370	0.280	0.460	0.000
3	0.000	0.100	0.000	0.500	0.000
	15.330	0.100	0.000	0.500	0.000
4	15.330	0.040	0.000	0.500	0.000
	25.670	0.040	0.000	0.500	0.000

SHEAR: Max V (DL+LL) = 50.57 kips fv = 4.59 ksi Fv = 20.00 ksi

MOMENTS:

Span	Cond	Moment kip-ft	@ ft	Lb ft	Cb	Tension Flange fb	Tension Flange Fb	Compr Flange fb	Compr Flange Fb
Center	PreCmp+	29.9	12.8	0.0	1.00	2.10	33.00	2.10	33.00
	Max +	445.2	15.3	---	---				

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	kip-ft	ft	ft		fb	Fb	fb	Fb
Mmax/Seff					25.54	33.00	---	---
Mconst/Sx+Mpost/Seff					25.93	45.00	---	---
Controlling	445.2	15.3	---	---	25.54	33.00	---	---

fc (ksi) = 1.56 Fc = 1.58

REACTIONS (kips):

	Left	Right
Initial reaction	4.66	4.66
DL reaction	15.43	19.14
Max +LL reaction	25.21	31.43
Max +total reaction	40.64	50.57

DEFLECTIONS:

Initial load (in)	at	13.35 ft	=	-0.067	L/D =	4622
Live load (in)	at	13.35 ft	=	-0.316	L/D =	976
Post Comp load (in)	at	13.35 ft	=	-0.472	L/D =	653
Net Total load (in)	at	13.35 ft	=	-0.539	L/D =	572

BDA design

project name: SILVER KING

design by:

checked by: gb

page #: 63

project #: A19104

date: July 2019

COLS/FTGS QS = 1500 psf

COLUMNS UP TO ROOF Pmax = 49K (S1/4)(B/4)

HSS4x4x1/4 PR = 60K (h = 11')

COLS DOWN TO FTGS

COL GRIDS	LOAD	CAP/PIER	FTG
B/4	P = 65K + 46K = 111K	MPR Wall Pier	9'-0 x 9'-0 F
B.5/4	P = 46 * 34 = 80K	"	8'-0 x 8'-0
C/4	P = 17 + 68 = 85K	"	"
B-/2	P = ~~100K~~ 135K	HSS 5x5x1/2 PR = 151K	10'-0 x 10'-0 ~~9'-0 x 9'-0~~
TYP/2	P = 65K	HSS4x4x3/8 PR = 74K	7'-0 x 7'-0
C+/3 FB2	P = 76 118	HSS5x5x3/8	8'-0 x 8'-0 9'-0 x 9'-0

GARAGE AREA

WALL FTG LOAD BEARING

W = 74/2 (40) roof + 65 (24) wall = 3040 PLF FTG 2'-0 WIDE

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2/20/2020

BDA design

project name: SILVER KING
design by:
checked by: gb

page #: 64
project #: A19104
date: September 2019

LATERAL ANALYSIS

DET. LOAD CONTROLLING

WIND NORTH/SOUTH
0-20' 15 PSF
20-30' 18 PSF

h = 27' max 2 STORY parapet
h = 12.67' 2ND FLOOR
h = 22' single story parapet

N/S

V_{NS} = 103' (7'(18psf) + 7.33'(15psf) + 12.67/2 (15 psf))
= 103 (126 + 110 + 95) + 15(2(18) + 9(15))
2 story single story
= 34093 + 2565
= 36,700#

EAST/WEST

V_{EW} = 44(126 + 110 + 95) + 84(36 + 135) =
= 14564 + 14364
= 29 000#

COMPARE SEISMIC R=2 ORD MAS SHEARWALLS
$V = \frac{0.19(1)}{2} W$

EST. W
ROOF 10 PSF × [(75×84) + (103×44)] = 108K
2 story
FLOOR 55 psf (103)44) = 249K
CMU 45psf (23/2)(75 + 84 + 75 + 84)(minus opngs
+ 45(27/2)(12 + 12 + 12 + 12) = 117 + 16 = 133K
ELEV

55-DR-2019
2/20/2020

BDA design

project name: CALVER KING

design by:

checked by: gb

page #: 65

project #: A19104

date: September 2019

LAT (2)

$V_{SEISMIC} = \frac{0.19}{2}(108 + 249 + 133) = 47^K$

80 SEISMIC CONTROLS

$V_{TWO\ STORY\ AREA} = 30^K$ ← ROOF 6K, FLOOR 24K

$V_{SINGLE\ STORY} = 17^K$

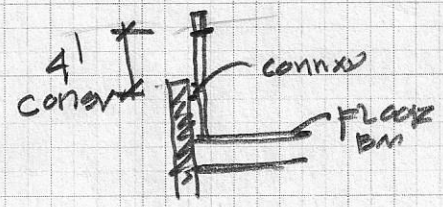
2 sto.

ROOF → FLOOR

V_{R1} $V = 2040^\#$ RESISTED BY (3) COLS DOWN TO CMU WALL

$V_{COL} = 800^\#$

N/S CONTROLS



$V_{max} = V_{R4}$

$V = 1305 + 1866 = 3.2^K$

$P = 32^K$

$M = V_h = 3.2(4') = 12.8\ K\text{-}FT$

Interaction $\frac{P}{P_R} + \frac{M}{M_R} < 1.33$

$M_R = 0.6(F_y)S$

$= 0.6(46)4.11 = 113\ K\text{-}FT$

CK HSS4x4x1/4 $\frac{32}{55^K} + \frac{12.8}{113} = 0.7$ OK

55-DR-2019
2/20/2020

BDA design

project name: SILVER KILN | page #: 66

design by: | project #: A19104

checked by: gb | date: September 2019

LAT ③

ROOF → FLOOR CON

VR2

V = 2400# + 1900# = 4300#

REGISTED BY CMU @ ELEV.

(2)9½,0 walls w/ #5@32" oc

Ae = 60in²/ft

$f_v = \frac{V}{Ae} = \frac{4300}{60(2)9} = 4\,psi$ << $F_v = 30\,psi$ ok

VR5 . LESS FORCE THAN VR2 ok.

FLOOR → GROUND

SEE KEY

VF1 Vmax = 16K

REGISTED BY CMU @ ELEV

AS ABOVE $f_v = 15\,psi$ ok

VF2 Vmax = 16 + 8.5 = 24.5K

RES. BY 8" CMU SHEAR WALL

L = 18' + 29' = 47'

$f_v = \frac{24500}{60(47)} = 9\,psi$ ok

BDA design

project name: CANYON KIDS

design by:

checked by: gb

page #: 67

project #: A19104

date: October 2019

LAT ④

VF 3/4 $V_{max} = 12 + 8.5 = 20.5 + 4^{k}_{roof} = 25^{k}$

RES. BY 8" CMU L_{min} 5 PIERS @ 4' = 20'

$$f_v = \frac{\frac{25^{k}}{5 \text{ PIERS}}}{60(4)} = 21 \text{ psi ok.}$$

∴ CMU SHEARWALLS ADEQUATE

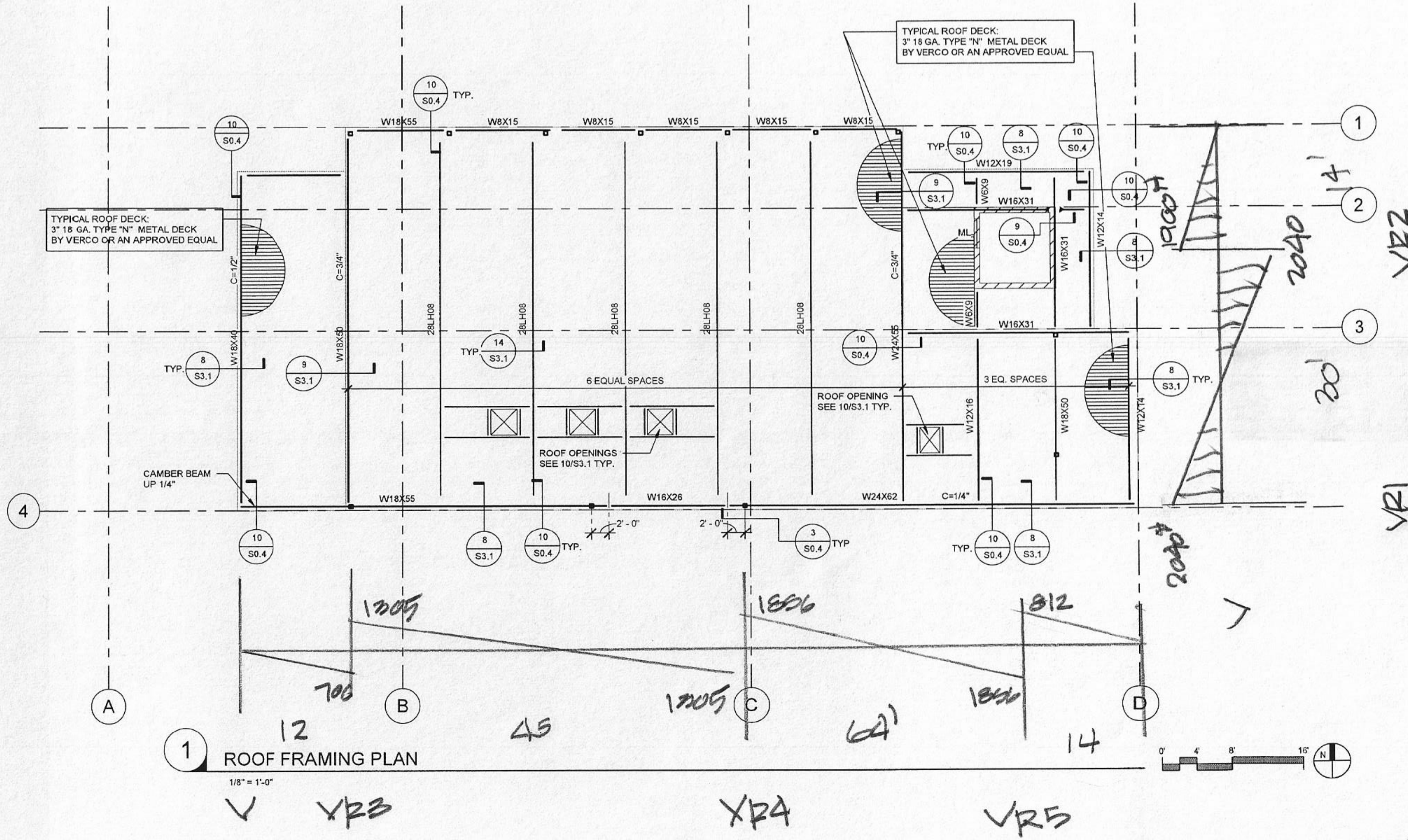
55-DR-2019
2/20/2020

ROOF LEVEL
LAT. FORCES

$V = 6000^{\#}$

$\updownarrow v = 6000/103' = 58 \text{ plf}$

$\leftrightarrow v = 6000/44' = 136 \text{ plf}$



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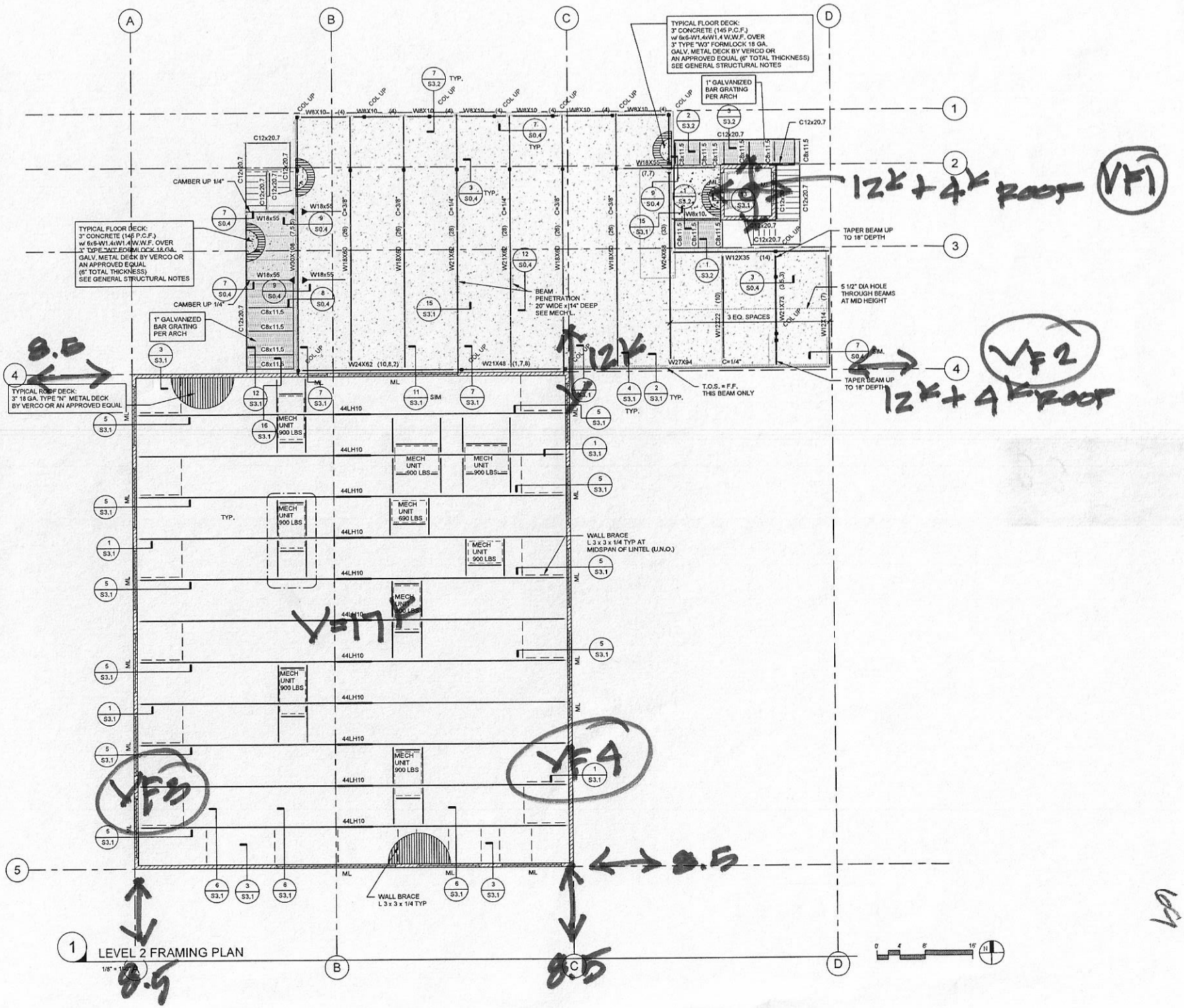
FLOOR/ROOF → ABOVE



55-DR-2019
2/20/2020