CORNVILLE METAL STRUCTURE BUILDING

CORNVILLE STRUCTURE CO.
CENE476
04/15/2021

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INTRODUCTION

- **Purpose:**
- Metal structure building
- Overall foundation design
- Footings for columns and rigid frame present
- **Client:**
- P.E Mark Lamer
- **Location:**
- Situated in Cornville, Arizona.
- 11450 East Oak Run Lane.

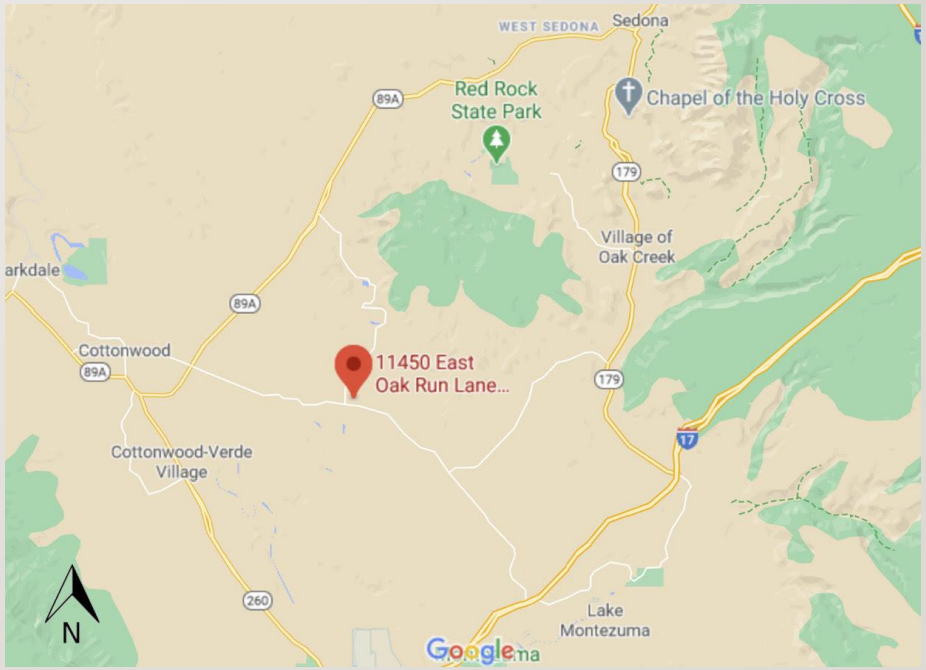


Figure 1: Location of Site with Respect to Sedona, Az.

Figure 2: Location of Proposed Building on Property (NOT TO SCALE)

INTRODUCTION

- **Brief Background:**
- Project in initial stages,
- Rigid frame and roof supplies purchased and on-site,
- Construction beginning in a few months, completion in a year.

Figure 3: Center Rigid Supports on Site

Figure 4: Center Rigid Supports Infront of Ex. Barn (34'x21')

PROJECT SCOPE

❑ Task 1 Investigation of Required Regulatory Codes

- Research the different building codes and regulations present.

➢ Task 1.1 Research International Building Code 2018

➢ Task 1.2 Yavapai County Code/Regulations

❑ Task 2 Site Visit

- Needed to properly plan for tasks such as the surveying task, and soil analysis.

Figure 5: Proposed Project Site

PROJECT SCOPE

❑ Task 3 Geotechnical Analysis of the Soil Samples

- Needed to allow the team to be able to investigate the characteristics of the soil samples found on the construction site

➢ Task 3.1 Plan laboratory access manual and agreement

➢ Task 3.2 Collect soil samples

➢ Task 3.3 Perform soil analysis

❑ Task 4 Surveying

- Needed to allow the team to build a necessary understanding of the vertical and horizontal reference points present on the site, to prepare a topographic map

➢ Task 4.1 Surveying analysis

➢ Task 4.2 Creation of topographic map

PROJECT SCOPE

❑ Task 5 Structural Analysis

- The objective of this task is to allow the team to fully understand the structure and the necessities required both structurally and material wise.

- ➢ Task 5.1 : Determination of internal forces
- ➢ Task 5.2 : Analysis of load combinations
- ➢ Task 5.3 : Failure analysis checks
- ➢ Task 5.4 : Uplift check
- ➢ Task 5.5 : Foundation design

❑ Task 6 Impacts

- The objective of this task is to assess all the impacts and their different affecting factors both during and after completion of the project.

- ➢ Task 6.1 : Social impacts
- ➢ Task 6.2 : Economic impacts
- ➢ Task 6.3 : Environmental impacts

PROJECT SCOPE

Task 7 Project Deliverables

- The team will need to complete the following deliverables for the CENE486 course for completion.

- Task 7.1 30% Submittal
- Task 7.2 60% Submittal
- Task 7.3 90% Submittal
- Task 7.4 Final Submittal

Task 8 Project Management

- The objective of this task is to manage the different project elements including the following:

- Task 8.1 Various meetings
- Task 8.2 Schedule management
- Task 8.3 Resource management

PROJECT SCOPE

Exclusions

- The following tasks are not required for completion by the team, and are excluded from the project:

- Excavation on the site
- Concrete mixture check
- Construction

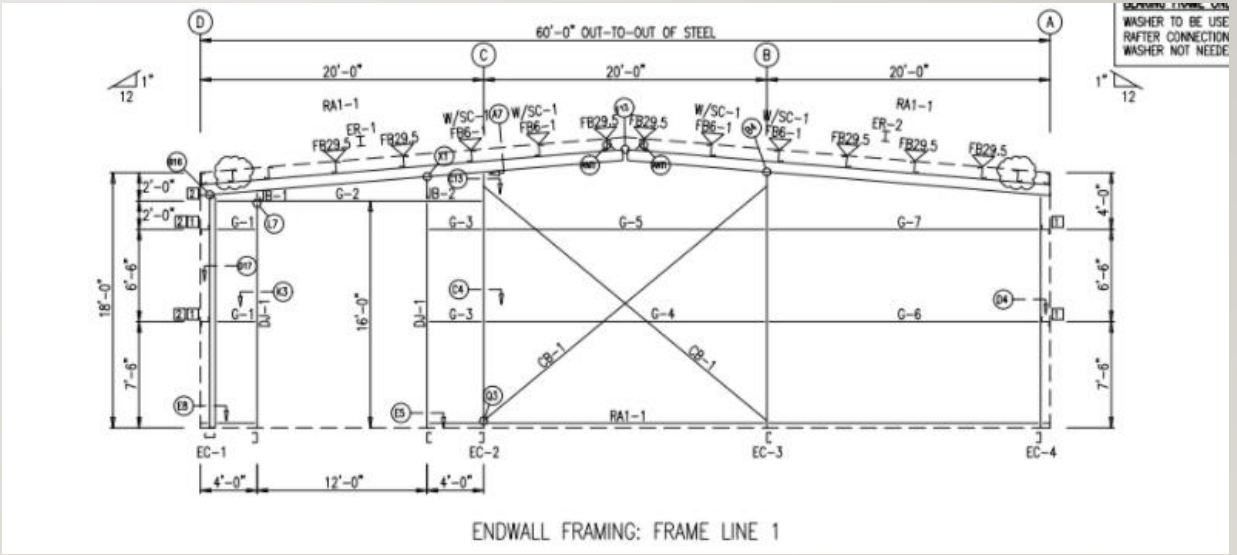
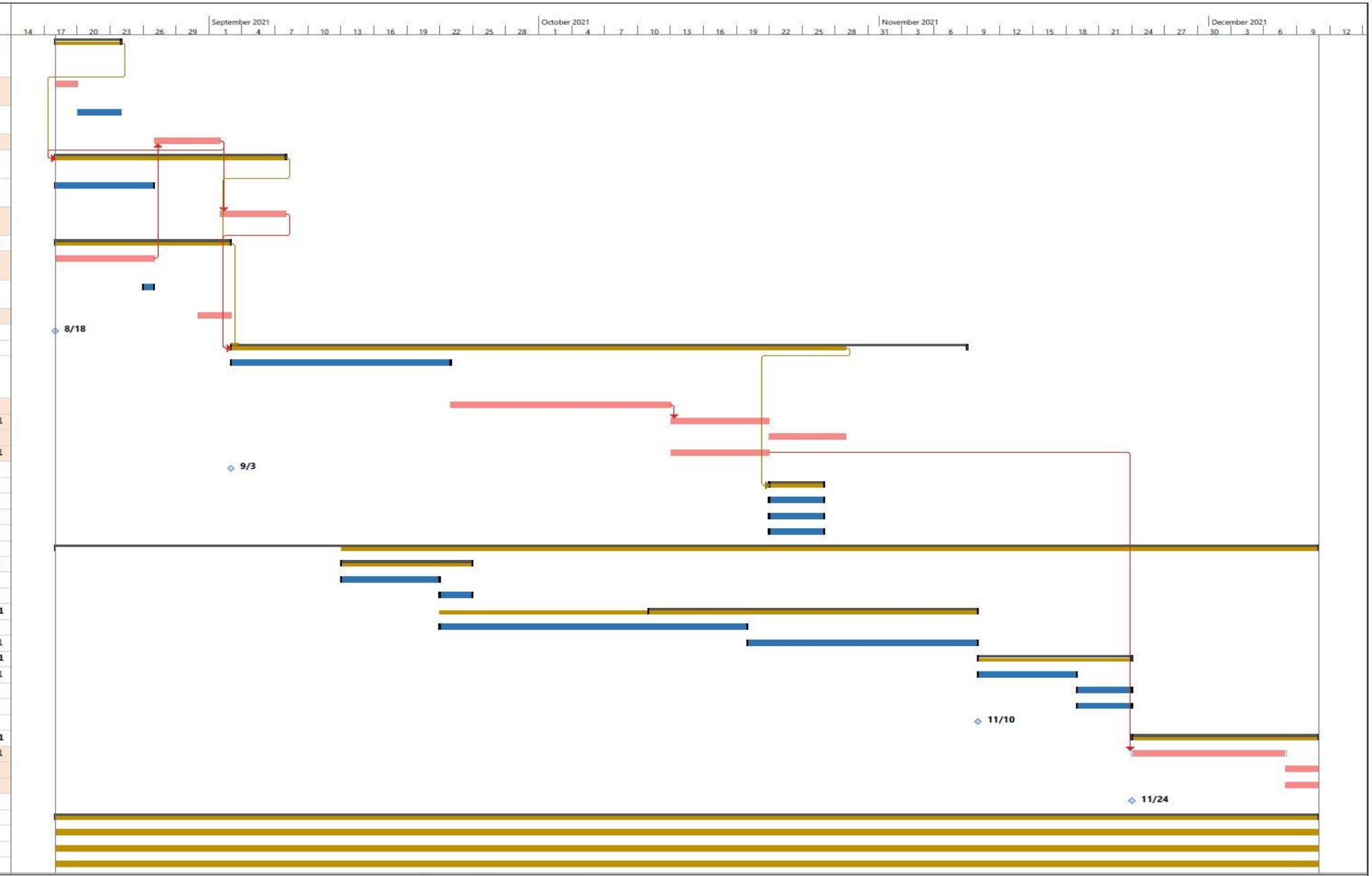


Figure 6: Proposed Metal Structure

ID	Task Mode	Task Name	Duration	Start
1		**Task 1 Investigation of any/all Required Regulatory Codes of Construction and Design Manuals**	**4 days**	**Wed 8/18/21**
2		Task 1.1 Research International Building Code 2018	2 days	Wed 8/18/21
3		Task 1.2 Yavapai County Code/Regulations	2 days	Fri 8/20/21
4		**Task 2 Site Visit**	**4 days**	**Fri 8/27/21**
5		**Task 3 Geotechnical Analysis of the Soil Samples**	**15 days**	**Wed 8/18/21**
6		Task 3.1 Plan Laboratory Access Manual and Agreement	7 days	Wed 8/18/21
7		Task 3.2 Collect and test Soil Samples from Project Site	4 days	Thu 9/2/21
8		**Task 4 Surveying of the Project Site**	**12 days**	**Wed 8/18/21**
9		Task 4.1 Prepare necessary Lab Access Manual and Lab Access	7 days	Wed 8/18/21
10		Task 4.2 Perform Surveying Analysis on the proposed project site	1 day	Thu 8/26/21
11		Task 4.3 Creation of Topographic ma	3 days	Tue 8/31/21
12		Analysis completion	0 days	
13		**Task 5 Structural analysis/concrete de**	**47 days**	**Fri 9/3/21**
14		Task 5.1 Determination of Internal Forces of each element present and Loading	14 days	Fri 9/3/21
15		Task 5.2 Analysis of Load Combinatic	14 days	Thu 9/23/21
16		Task 5.3 Failure Analysis Checks	7 days	Wed 10/13/21
17		Task 5.4 Uplift Check:	5 days	Fri 10/22/21
18		Task 5.5 Foundation Choice/Design	7 days	Wed 10/13/21
19		Loading determination	0 days	
20		**Task 6 Impacts**	**3 days**	**Fri 10/22/21**
21		Task 6.1 Social Impacts	3 days	Fri 10/22/21
22		Task 6.2 Economic Impacts	3 days	Fri 10/22/21
23		Task 6.3 Environmental Impacts	3 days	Fri 10/22/21
24		**Task 7 Project Deliverables**	**83 days**	**Wed 8/18/21**
25		**Task 7.1 30% Submittal**	**10 days**	**Mon 9/13/21**
26		Task 7.1.1 30% Report Submittal	7 days	Mon 9/13/21
27		Task 7.1.2 30% Presentation	3 days	Wed 9/22/21
28		**Task 7.2 60% Submittal:**	**22 days**	**Mon 10/11/21**
29		Task 7.2.1 60% Report Submittal	20 days	Wed 9/22/21
30		Task 7.2.2 60% Presentation	15 days	Wed 10/20/21
31		**Task 7.3 90% Submittal:**	**10 days**	**Wed 11/10/21**
32		Task 7.3.1 90% Report Submittal	7 days	Wed 11/10/21
33		Task 7.3.2 90% Presentation	3 days	Fri 11/19/21
34		Task 7.3.3 90% Website	3 days	Fri 11/19/21
35		Final Milestone-Pre Completion	0 days	
36		**Task 7.4 Final Submittal:**	**13 days**	**Wed 11/24/21**
37		Task 7.4.1 Final Report Submittal	10 days	Wed 11/24/21
38		Task 7.4.2 Final Presentation	3 days	Wed 12/8/21
39		Task 7.4.3 Final Website	3 days	Wed 12/8/21
40		Completion	0 days	
41		**Task 8 Project Management**	**83 days**	**Wed 8/18/21**
42		Task 8.1 Meetings	83 days	Wed 8/18/21
43		Task 8.3 Schedule Management	83 days	Wed 8/18/21
44		Task 8.4 Resource Management	83 days	Wed 8/18/21



Project: Project2
Date: Wed 4/14/21

Task, Split, Milestone, Summary, Project Summary, Inactive Task, Inactive Milestone, Inactive Summary, Manual Task, Duration-only, Manual Summary Rollup, Manual Summary, Start-only, Finish-only, External Tasks, External Milestone, Deadline, Critical, Critical Split, Progress, Manual Progress

STAFFING

Table 1: Hourly Staffing Table

Task	Hours Per Position					
	Sr. Eng.	P. Eng.	E.I.T	LAB	A.A	Total
1.0 Investigation of Required Regulatory Codes						**26**
1.1 Research International Building Code 2018	1	2	6	3	1.5	13.5
1.2 Yavapai County Code/Regulations	1	2	5	3	1.5	12.5
2.0 Site Visit	4	12	16	16	6	**54**
3.0 Geotechnical Analysis of Soil Samples						**21.5**
3.1 Plan Laboratory Access Manual and Agreement	1	1	2	7	1	12
3.2 Collect Soil Samples				4		4
3.3 Perform Soil Analysis				4	1.5	5.5
4.0 Surveying						**61**
4.1 Prepare necessary Lab Access Manual and Lab Access Agreement	1	1	2	14	1	19
4.2 Perform Surveying Analysis on the proposed project site	1	2	5	14	1.5	23.5
4.3 Creation of Topographic map	1	1	3	12	1.5	18.5
5.0 Structural analysis						**250**
5.1 Determination of Internal Forces and Loading	10	14	20		12	56
5.2 Analysis of Load Combinations	14	18	22		10	64
5.3 Failure Analysis Checks	8	10	16		6	40
5.4 Uplift Check	8	12	18		6	44
5.5 Foundation Choice/Design	10	12	14		10	46
6.0 Impacts						**37.5**
6.1 Social Impacts	1	2	8		1.5	12.5
6.2 Economic Impacts	1	2	8		1.5	12.5
6.3 Environmental Impacts	1	2	8		1.5	12.5
7.0 Project Deliverables	16	19.5	73	8	36	**152.5**
8.0 Project Management	18	20	40		18	**96**
Total	**97**	**132.5**	**266**	**85**	**118**	**698.5**

COST OF SERVICES

Table 2: Staffing Cost Table

Cost Classification	Rate	# of Units	Units	Total Calculated Cost
Sr. Eng.	$150	97	Hr.	$14,550
Proj. Eng.	$115	132.5	Hr.	$15,238
E.I.T	$85	266	Hr.	$22,610
LAB	$60	85	Hr.	$5,100
A.A	$45	118	Hr.	$5,310
Total Personnel		698.5	Hr.	**$62,808**
Laboratory	Surveying Equipment Rental at ($150/day)	2	Days	$300
	Laboratory Room Rental ($150/day)	7	Days	$1,050
Travel	2 Trips to Project Site ($0.56/mi.)(50mi.One way)	200	Miles	$112
Total Cost				**$64,270**

REFERENCES

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THANK YOU FOR YOUR TIME

Questions/Feedback