

Rebuilding California History: Research, Conceptual Design, and Code
Analysis for the Reconstruction of the Swanton Pacific Railroad on
Swanton Ranch

A Senior Project

presented to

the faculty of the City & Regional Planning Department California
Polytechnic State University, San Luis Obispo

In Partial Fulfillment

of the requirements for the Degree

Bachelor of Science in City and Regional Planning

by David J. Choy

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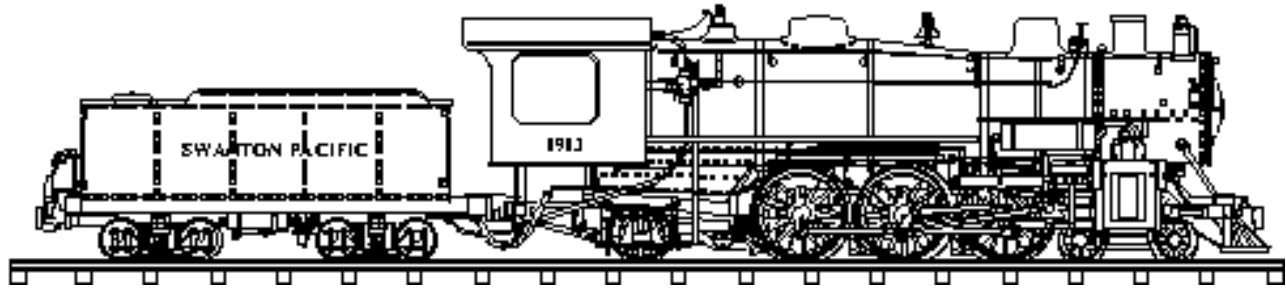


Figure 1 - Outline of No. 1913 from SPRR Website

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I am indebted to Professor Glen Matterson, who helped connect me to other members of the SPRR railroad community in San Luis Obispo.

I would like to thank SPRR President Geoff Torben for agreeing to let me come along side assist the SPRR in its visioning and rebuilding efforts.

I would also like to extend my deepest gratitude to Karl Hovanitz for allowing me to see the Norgrove Garden Railway and for walking me through the site, showing me the railroad equipment, and explaining their development process to me.

In addition, I would like to thank those who took the time to let me interview them and who gave me a better understanding of this community: SPRR Vice President Randy Jones, SPRR Former Director Dr. Charles Crabb, BJWRR Board Members Doug and George.

Introduction and Project Objectives

The purpose of this report is to provide code research, code analysis, and conceptual design work for the Swanton Pacific Railroad. This work will provide a basis that decisions makers can use to review potential actions for the future of the Swanton Pacific Railroad. Based on the research, several issues have been identified that will need to be addressed if rebuilding is to succeed.

- The parcel that the railroad is located on is Split Zoned, which will need to be resolved.
- A decision needs to be made if this project is: Only rebuilding what was existing beforehand, rebuilding in part and building new in part, or building brand new entirely.

After explaining the relevant background information and ordinances of the Santa Cruz County Code, this report will recommend two separate alternatives for the future. In addition, a list of resources and contacts will be provided that the Swanton Pacific Railroad Society can use to receive material, design, and financial aid.



Figure 2 - No. 502 Diesel outside of the Roundhouse, from SPRR Facebook

The objectives of this report include the following:

- An analysis of relevant sections of the Santa Cruz County Code's Title 13: Planning and Zoning Regulations.
- Creating a Conceptual Site Plan #1 with a Baseline Recovery
- Creating a conceptual Site Plan #2 with an Expansion of Facilities
- Recommendations for next steps to achieve site plan options 1 or 2
- Recommendations to pursue resources to facilitate the rebuilding.

Project Description

The Swanton Pacific Railroad Society (SPRR) wishes to rebuild, modify, make additions, and building new buildings on their site to reconstruct after the devastating 2020 CZU Lighting Complex Fire. They wish to rebuild the Roundhouse and Machine Shop with modification. They also wish to relocate the Car barn, Car Fabrication Shop, and the Red House (also known as SPRR House), also with modifications. However, due to timing constraints this report will assume that all buildings would be rebuilt on their former site and that the list of buildings would only include the Roundhouse, Machine Shop, and Car Barn & Shop with modifications. A brief alternative analysis will be presented later with the requested new and moved buildings.

The Roundhouse is designed to store and maintain the steam locomotives No. 1912, No. 1913, No. 1914, No. 1500, and diesel No. 502¹. It is a 7-sided half circle building, with 6 sections measuring (11' x 34'8" x ~15' at 2,310 sqft) and the last section measuring (17' x 34'8" x ~15'). It would include an open shop that houses 5 bays for locomotives, an office, a crew lounge with kitchen, and an ADA compliant bathroom. The Roundhouse would be rebuilt according to original drawings (~2,100 sqft) from the Calistoga Steam Railroad with modifications: removal of the bedroom and full bath to fit an additional 5th bay, with the additional 210 sqft (see SCC 13.20.063(C) Replacement after disaster exemption) being added to the combination of living room and crew lounge with ADA half bathroom. Additional modifications include fire resistant materials and heated floors.

The Machine Shop will be a single medium size nonhabitual building across from the Roundhouse. It was used to house the heavy machinery needed to repair the locomotives. There are currently no designs for this shop, so for this report it is assumed to be the same dimensions of the Car Shop as Steel Building E on the Car Barn Foundation (83' x 24' x 13'5" at 1,992 sqft). It would be eligible for an additional 199 sqft (see SCC 13.20.063(C) Replacement after disaster exemption).

The Car Barn & Shop was a two-part building built in several stages. It consisted of an earlier built Car Shop and a Car Barn built in 2 phases. The dimensions for the Car Barn (88' x 23'9" x 13'5" at 2,099 sqft) and Car Shop as Steel Building E on the Car Barn Foundation (83' x 24' x 13'5" at 1,992 sqft). Height was assumed from the Car Barn Structural Attachment, but it should be noted that the accuracy of this attachment could not be ascertained. The Car Barn would be eligible for an additional 209 sqft while the Car Shop would be eligible for an additional 199 sqft (see SCC 13.20.063(C) Replacement after disaster exemption).

¹ The No.502 number was an inside joke with SPRR volunteers and Al Smith, referencing an old DMC code for DUI. From interview with Karl Hovanitz and a SPRR Facebook post of Feb. 24, 2021.

Relevancy to Planning and intended use to Client.

This report was modeled after a simulated staff report for a Development Permit that we learned to create in CRP 430 – Professional Planning Practice. As such it provides an overview of the relevant biographical and geographical information needed to identify and analysis the parcel and proposed development. The planning topics discussed are: legal non-confirming uses, post-disaster recovering, Split Zoning, and application processing.

The intended use is to give the SPRR officers, faculty from both CAED and CAFES, and the CP Foundation officers a report from which they can use to make informed decisions on the future direction of the SPRR.

History of the Swanton Pacific Railroad

The Swanton Pacific Railroad was one of the two passions of Al Smith after his retirement, the other being the Swanton Pacific Ranch. The railroad the collection of the 1/3 scale Overfair Railway built by Louis MacDermot for the Panama-Pacific International Expositions of 1914, which was reunited by Al Smith for the first time since the death of its creator. It is also made up of equipment custom built by Cal Poly students, the SPRR volunteers, and a company from Kentucky. The SPRR current location is connected to the: The Ocean Shore Railroad, the San Vincente Logging Company, and the U.C. Berkeley College of Engineering summer school² Further information on the history of the property and railroads involved, see *Una Legua Cuadrada*.

Figure 3 – (Left) An Overfair Pacific at the PPIE

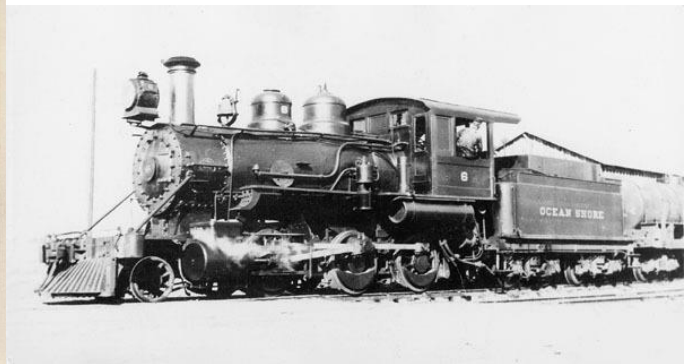


Figure 4 – (Right) An Ocean Shore Locomotive

Historic Planning Issues

After the Cal Poly Foundation took ownership of the Ranch, there were several noise complaints made about the operation of the railroad. These issues were discovered by the County of Santa Cruz’s Planning Department after the California Polytechnic State University Foundation (Foundation) took over the property. The issues of the SPRR buildings can be seen in the letter from November 2005, SPRR Decision or Stipulation and Order. At issues is the operations of the SPRR and particularly the buildings being in violation of County Codes:

Intensification of use w/o Development Permit	Structural remodel of “Cal Barn” w/o permits.	Constructed an “equipment shed” w/o permits.
Constructed a covered “railroad station” w/o permits.	Installed four (4) cabooses without the required Development Permit.	

² According to *Una Legua Cuadrada, Exploring the History of Swanton Pacific Ranch*, Appendix H on page 141, this school ran from 1909 – 1924. They are also responsible for the construction of the Red House, the traditional house used by the SPRR that was lost to the fire.

The Foundation was ordered to do the following within 2 years:

Pay accrued Enforcement costs of \$649.68.	Pay a Civil Penalty of \$4,500	Within 2 years Obtain all required Development and Building Permits.
Limit the operations of train engines to an average of no more than 3 days per month between the hours of 8:00 am and 10:00pm with the exception of New Year’s evening when operations may continue past 10:00pm		
Limit the use of train whistles, amplified music, and public address systems to the minimum required, and not exceeding 65 decibels measured at the property line, in accordance with section 6.9 of the Santa Cruz County General Plan. With exception for New Year’s Eve when operations may continue past 10:00pm.		

This seemed to be resolved within the time frame, with changes of the use of building and operations by the railroad to reflect the requirements laid out in this letter. The buildings most likely became Legal-Nonconforming uses, but I am unable to verify the document online.

Site Conditions

The relevant zoning for the sites is the following:

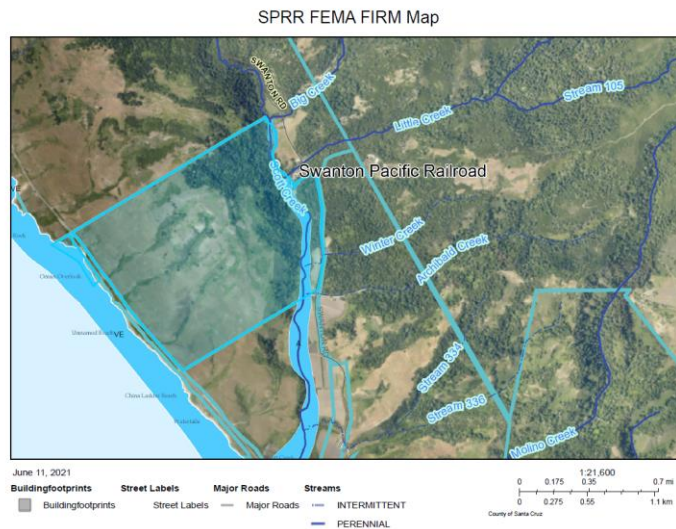
Zone District	Allowed Uses
“CA” Commercial Agriculture	Commercial agriculture, farm buildings, livestock raising, green-houses, farm worker camps. One single-family dwelling.
“A” Agriculture	Agriculture, farm buildings, livestock raising, lumber mills, visitor accommodations, zoos & natural science museums. One single-family dwelling.
“P” Agricultural Preserve	Has an Agricultural Preserve or Farmland Security contract with the County to maintain the land in its natural state for 10-years.
“TP” Timber Production	Growing and harvesting of timber and other forest products, agriculture. One single family dwelling.
“L” Historic Landmark	The property or structure has been designated a historic landmark and is subject to the Historic Resources Ordinance
“PR” Parks, Recreation and Open Space	Community centers, open space uses, recreational facilities, visitor accommodations, and timber harvesting.

The existing property is a single parcel divided by Highway 1, with the zone PR-P located on a detached section of the parcel against the Pacific Ocean, while much of the site is zoned CA-P. However, for the purpose of this report it is assumed that both zoning designations apply equally to this site, or that PR-P prevails. The SPRR buildings in this report are located just Off of Swanton Rd, across from the intersection of Schoolhouse Gulch Rd. The surrounding properties are all part of Swanton Pacific Ranch, but have different zoning uses: CA-P (Commercial Agriculture with Agricultural Preserve), PR-P, R-M (Mountain Residential), and TP-L (Timber Production with Historic Landmark), and A (Agriculture). All adjacent properties were damaged during the CZU Lighting Complex Fire, and it is currently unknown what zoning compliance was like on adjacent properties.



Map 1 - Zoning and APN Map of Site

The Car Barn and Shop appears to have a setback of 40ft away from the perennial Little Creek, which is beyond the required 20ft setback.³ The SPRR site is within a Very High Liquefaction Zone, (see SPRR Liquefaction Map), is adjacent to but not within a FEMA FIRM Zone A (See SPRR FEMA FIRM Map).



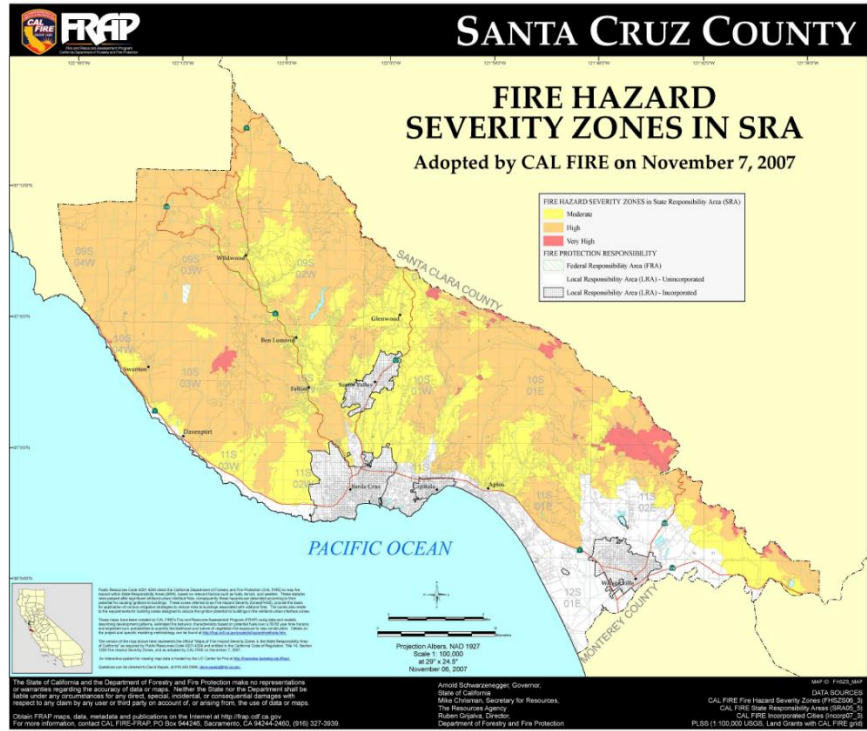
Map 2 - FEMA Flood Plains around the Site

The SPRR is not on nor within a Fault or Fault Zone. However, within a 10-mile radius there are 2 types of Fault Zones and several Fault Traces. (See SPRR Faults Map)

The Soil types on-site are: Soquel Loam with 0-2% slope and Santa Lucia clay Loam with 5-30% slope.

For Fire concerns, the SPRR is within the State Responsibility Area (SRA) and is designated a Very High Fire Severity Zone.

³ SCCC 16.10.070(G)(3) Permit Conditions – Where neither a base flood elevation nor a floodway has been identified ... a minimum setback of 20ft from the top edge of the banks of a drainage course shall be maintained.



Map 3 - SRA and the High Fire Severity Zone for SPRR

The site is within a Ag. Resource Area, designated as AG-3. It is also adjacent to a Riparian Woodlands area.

The Site is both within the Coastal Zone and the Coastal Zone Appeal Jurisdiction, which requires it to apply for a Coastal Development Permit as well. Due to the project being classified as a “Historic Theme Park”, it requires a Master Site Plan due to SCCC, which makes the site a project under CEQA.

*Note – maps and data sets provided by Santa Cruz County GIS Web will find that all data sets are off by approximately 30ft, which made identification of the parcel and relevant data difficult to determine.

Methodology

The research for this project was collected using qualitative data from primary and secondary sources. Research was conducted in three parts: Interviews with current and past members of the SPRR; studying compiled histories and news articles about the SPRR; and evaluating the relevant sections of the Santa Cruz County Code.

Part 1 – Interviews

Interviews were conducted with several current and past members of the SPRR. The selection of those to interview were primarily based on contact information society President Geoff Tobin and Civil Engineering Professor Glen Matterson. In total, five interviews were conducted with members in order to learn about the history of the railroad, the state of the current facilities before and after the fire, and their request for rebuilding. Those interviews included: President Geoff Tobin, Vice President Randy Jones, Former Director Dr. Charles Crabb, Former Member Karl Hovanitz. An additional interview was conducted with members of the Billy Jones Wildcat Railroad in Los Gatos, CA, in order to get additional information about operational requirements and railroad equipment building and purchasing costs. These interviews were unstructured and written notes were the primary means of recording data.

No methodology was picked for analyzing the interviews. Since this project was primarily based on producing a code analysis and a conceptual design, the data collected was used in furthering research into the County Code and as input into the conceptual design.

In these interviews the information provided resolved around two themes: a general emphasis on the stories about the SPRR and specifications on the railroad equipment. This made it difficult to filter out information needed for the code analysis. A combination of the pandemic, current cleanup operations, and the ongoing discussion at the Foundation on the future of the ranch made determining the strategic direction for the SPRR impossible at this time. This, in turn, made it difficult to determine the requirements that they needed in their spaces, and therefore the SPRR was unable to fully articulate all their requests for the rebuilding process.

Part 2 – Written Sources

Several written sources were referenced for a more comprehensive understanding of the history of the site and the buildings before the fire. These included: a history of Swanton Pacific Ranch compiled by a Cal Poly Librarian called *Una Legua Cuadrada*, several journal and newspaper articles, several specific books on the particular railroad equipment, several planning documents and orders/fines, and a collection of historical documents from academic sources. In addition, several blueprints were provided showing various degrees of detail, which served to guide the conceptual design work. Written sources were selected based on several categories: material describing the connection between Cal Poly and Swanton Pacific Ranch, material describing the history and equipment of the Overfair Railway to the SPRR, local history of Swanton Pacific Ranch, and local history of the Ocean Shore Railroad. All material was collected online through journals, libraries, or government databases.

No methodology was picked for analyzing the written source. Since this project was primarily based on producing a code analysis and a conceptual design, the data collected was used in furthering research into the County Code and as input into the conceptual design.

The information varied in form from newspaper articles to newsletters to academic papers; several included historical photos and drawings as references. Much of the historical data focused on stories of the people involved with the Ranch and Railroad or gave a general overview of the timelines. Many of the sources gave clarity to some of the reasons why the property existed like it did before the fire, like confirming information from the interviews on the historical overlap between the SPRR and Ocean Shore rights-of-way. However, they still left unanswered several questions on the modifications made to the specific buildings that the SPRR lost. This blueprints and drawings for some of the buildings proved to be most helpful in the conceptual design phase, as they gave a baseline to design around. However, it must be noted that the buildings are known to have been altered from their original designs, as the County Order to rectify their lack of permits and pays fines shows. Further discussions with the SPRR members will be required to give a proper description of the buildings conditions, dimensions, and uses at the time of the fire.

Part 3 – Santa Cruz County Code

One of the main objectives of the project was to analyze the requests based on what the Santa Cruz County Code allows. As the Swanton Pacific Ranch is owned by the Corporation, it is considered private land and not state land. The property, therefore, lies within the jurisdiction of the Santa Cruz County Planning Department in regard to building and code requirements. The analysis mainly focused on Santa Cruz County Code, Title 13 Planning and Zoning Regulations, and some provisions in Title 16 Environmental Resource Protection. Most of the code was available online, however it noteworthy that the changes that caused the split zoning happened before the date of the online digital records. This hampered the investigation into the split zoning issue.

The methodology was done in three steps: definitions and boundaries, allowed uses, constrains and restrictions. This was done to understand what jurisdictions were controlling and what exactly applied to this parcel, understanding the current allowed uses and what could possible be allowed under a different zoning type, and to understand physical constraints in possible designs due to hazards or regulations.

The information from the code confirmed the legal complexity of the site from both written sources and interviews. As all the buildings were legal nonconforming, it is difficult to state what condition they were in and to what their exact dimensions were. The SPRR buildings were complex to analyze: they were legal nonconforming, in the jurisdiction of the Local Costal plan, on a parcel with split-zoning, and had access to fast-tracked post disaster recovery regulations. This made determining which uses were allowed and how to both provide reasonable rebuilding options difficult. Additional complexity was added through the ArcMap Online portal, which all parts of the property were off their legal boundaries by at least 30ft.

Case Study – Norgrove Gardens Railway

A single case study was investigated in order to understand possible rebuilding options that could fit with the site's characteristics and the nature of SPRR. It came about as a lead from Professor Glen Matterson, who introduced me to Karl Hovanitz and the Norgrove Gardens Railway. The NGR is, as described by Mr. Hovanitz, "a railway with a vineyard attached to it". The property is located just southeast of Arroyo Grande in San Luis Obispo County. It was pastureland on several hills that has been graded and converted into a vineyard with 3 varieties of grapes, citrus trees planted at the boundaries of the property, several entertainment venues, on site living quarters, and a fully operational narrow-gauge railway.

The railway is a collection of historic steam and diesel narrow-gauge trains from around the world that are being restored. The railway is used for entertainment and for agricultural operations. This site is a useful case study for several reasons: it has an agricultural use surrounding the railroad, it was permitted through county government, and its scale of trains and length of track is close to the SPRR.



Figure 5 - Restored US Army Davenport Engine of Norgrove Gardens Railway, picture by Mike Massee

They got permission for their railway by designating it as an "agricultural tramway" from the county. This also means that their grading permit for agricultural roadbeds included the railway bed. In addition, they walked county planners through several sets of industry standards to give them assurance that they had solid designs. In particular they referenced the Union Pacific's ballast standards for roadbed construction and an obscure US Army manual produced after the WW1 called "*Notes on Light Railways (1918)*". Based on both an industry standard and an official, albeit old federal standard, the county approved the design and construction.

Mr. Hovanitz also explained that they worked very closely with county planners to make sure that they were doing everything correctly and to make them comfortable with what they were doing. They started by slowly walking with planner through their vision and the immense amount of research and planning they had done ahead of time on what they wanted for their railroad. They got the planners to allow for their grading permit for agricultural roadbed to include "agricultural tramways". They pointed to an industry standard and federal guideline in their design and construction of the roadbed and tracks

respectively. They compiled a map of their site and all of the associated permits they had, both active and completed, so that the planners could understand who they have interfaced with at each agency and their respective progresses to completion. And they let planners interact with and experience the railway while active in order to feel apart of the project and understand the experience they wanted for the railway. This act of walking alongside the planners to make sure they were comfortable and understood what they had planed for the property extended the timeline for the project, but it probably is one of the main reasons why they had so little problems getting approved with such a unique concept for their property.

Analysis

Based on the initial concept submitted by Eric Johnson, the SPRR does not meet any requirements for either Principal Permitted Uses or Allowed Uses in CA-P 13.10.312. However, it appears fit the description of a “Historic Theme Park” in the PR-P zoning code 13.10.355. This would be a Principal Permitted Use and require an Approval Level V (which is an administrative decision that requires a field visit). While the site is in the Coastal Zone the required Coastal Development Permit would be waived due to the Replacement After Disaster Exemption 13.20.063. This constrains the project, however, because it requires that the buildings be rebuilt with the same use, location on the site, conform to all applicable LCP requirements from SCCC 16.10.070(H)(4), and only increase the size of the destroyed structure by 10% in total (That increase is in floor area, height, or bulk). This would conflict with the expansions requested by SPRR but would not conflict with upgrading building material or safety improvements. The project would be required to adhere to these standards for the site size and building dimensions. SCCC 13.10.353

PR SITE AND STRUCTURAL DIMENSIONS CHART

District	Minimum Site Area (net developable acres)	Minimum Site Width (feet)	Minimum Site Frontage (feet)	Yards (Front, Side and Rear) (feet)	Maximum Height (feet)
PR	20	100	60	all yards 30	28

Because of the CZU Lighting Complex Fire and the probable nature of the buildings being Legal-Nonconforming use, the SPRR would be required to apply for a Development Permit through a Level IV Approval and Conditional Use Permit through a Level V. See SCCC 13.10.261(C)(1) Nonconforming uses.

A Historic Theme Park requires conformity with SCCC 13.10.355, which in turn requires a Master Site Plan for the SPRR. A Master Site Plan requires a description of all proposed uses, proposed immediate and future phases of construction, provision for adequate access and public services, and a management plan for the conservation and use of the open space resource. This does meet the definition of “project” under CEQA and requires environmental review. A CEQA review would require several steps, from which a basic checklist is outlined from the Geologic Hazards section 16.10.070 below:

- B-1 identifying faults and faults zones.
- D-1 identifying liquefaction zones.
- E-1 identifying slope instability.
- G-2 Sites where Floodways are not established.
- G-3 Floodways where setbacks are not established.
 - Both done to avoid G- 1, an outright prohibition on building in a Floodway.

In addition, a Floodway Review would be mostly like be required. Even if CEQA did not require it this planner would still recommend it, given the historic precedence of washouts. There was one in 1997 which washed out the old bridge, (See *The Sage of the Overfair Railway Pacific’s* by Karl Hovanitz and Dr. Walter Rice) and the most one that happened more recently in 2017.



Figure 6 - Picture of Washout from 2017, from SPRR Facebook

Parking requirements are laid out in SCCC 13.10.552(B) Schedule of off-street parking space requirements, require that museums provide 1 auto parking space/300 sqft of gross floor area and 1 bicycle parking space/1000 sqft of gross floor area, with a minimum of 2 spots. The rough estimate for the combined sqft of all 4 buildings is 8,393 sqft. This means that, as a site, the SPRR need to provide 10 bicycle spaces and 28 auto parking spaces.

Recommendation

After considering the research compiled from the interviews, written sources, and county code, a set of conceptual designs were created for the SPRR based on two separate building concepts, with a further third being added based on the case study. These options are sparse and not totally reflective of the full needs of the SPRR, but hopefully can serve as guides for latter design work. There were four main buildings considered for the purpose of this report: the Roundhouse, the Machine Shop, the Car Barn, and the Car Shop.

Option 1: Rebuilding Old

In this first option, the SPRR would rebuild their previous structures as they were before the fire. This would mean the same placement on the site as previous, with buildings serving the same purpose and with the same dimensions as previous plus a ten percent sqft increase allowance per building. These buildings would require an update in building materials and fixtures to meet new building and fire codes, which means the original look and spaces may need to be modified. These building must be rebuild on the previous foundations and serve the same use as prior to qualify for the ten-percent bonus and fast track disaster-recovery service.

This option would be the easiest to implement out of the three, as it is based on previous building uses and footprints. Being fast tracked on the disaster-recovery service, this would also likely be exempt from a time consuming and costly Costal Development Permit.

However, this would also provide no real opportunity to expand workshops and storage space. This means that the layouts of the buildings cannot be changed, and that a new Woodshop could not be set up under this plan either. A site plan view is show below.



Map 4 - Rebuilding Old Site Plan

Option 2: Mixing Old and New

In the second option, the SPRR would rebuild some of their original buildings from before the fire while others would be built brand new. This would require: the Machine Shop space to become a Woodshop, move Car Shop and an extend Car Barn adjacent to the Woodshop, add 1200 sqft to the round for office and machine space, and add an exception pit besides the Roundhouse.

This option would organize the layout of the site into a more compact format. It would add additional work and storage space that members are seeking. This would also increase the setback of the buildings from the property line of Little Creek to the north, which has the side affect of decrease flood risk as well.

However, the movement and expansion of buildings would require a completely new development permit application instead of the disaster recovery option. This new permit could trigger a review of the Split Zoning issue for the site, which might not be resolved in SPRR favor. If a review is triggered, it is recommended that a text amendment for the current zoning, CA-P, be requested to allow a conditional use permit for a Historic Theme Park. A site plan view is show below.



Map 5 - Rebuilding Old and New, map courtesy of SPRR. Note that the SPRR House was not analyzed in this report.

Option 3: Changing Operations to Fit Zoning

A third option was considered based on the case study, Norgrove Gardens Railway. This could see the SPRR integrated into the agricultural operations for the Ranch. While not fleshed out, there are several options for the SPRR to connect to agricultural or lumber operations on the ranch. This may require movement of the tracks, or it can be integrated in the current right-of-way.

This option could fit into the current CA-P zoning designation, removing the split zoning issue. This could allow for all request in increased workshop and storage spaces that members wanted. And this would see greater connection to ranch operations, possibly allowing more opportunism for railroad operations and public events.

However, this would probably require the movement of tracks to meet new operational requirements. This would also probably require a new Costal Development Permit and new Santa Cruz County Development Permit. A zoning amendment would probably be required to allow for “agricultural tramways” in CA-P. There was not site plan created for a possible case study design.



Figure 7 - Ariel view of Norgrove Garden Railways, picture by Mike Massee

Guide for next steps

There are several steps that I recommend for SPRR board members, Swanton Pacific Ranch Staff, and Cal Poly Corporation to pursue going forward. The options above will hopefully provide a guide moving forward for the SPRR as it considers its next steps. The following is a list with a brief description of the item and opportunity.

Union Pacific Foundation Local Grant Program (Application Submission Period between June 1st and July 31st)

- a. The SPRR would qualify for the program as it would meet this definition:
“Preserve and share the unique culture and history of the local community, including projects related to train and/or Union Pacific history”
- b. Typical grant awards range from \$2,500 - \$25,000 for a one-year term. This money could be used as seed or the main source of funding for repairs on the maintenance away vehicles, which is the first step in track reconstruction.

Student Work (From Cal Poly's CAFES, CAED, and CENG)

- c. CAFES and CAED are already working on creating studios and classes for the 2021-2022 school year that will focus on the Ranch and the recovery process. This work is aimed at the ranch as a whole, and the SPRR should participate to get their needs heard.
- d. CENG and CAED have several majors who directly relate to railroad projects, both design and construction of buildings. CENG could probably contribute in track and vehicle rebuilding with several classes taking part. Of particular note is Professor Glen Matterson, who teaches CE 425: Introduction to Railroad Engineering

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