

Appendix H

Strauss Wind Project Review



projects **WIND ENERGY SERVICES**

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Strauss Wind Project Review

11/17/2017



There is much more to just hauling freight. It's securing the route, removing the obstacles and, literally, stopping traffic. We make it happen with in-house permitting, our very own escorts, and expert project managers who make it seem like no big deal.



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Purpose

The Purpose of the report is to perform a detailed transportation study for the movement of wind turbine components to a location near Lompoc, CA.

Goal: To assess and determine that the routes leading to site are adequate to support cargo of determined sizes.

1. **Route Survey** – Checks for 3 key areas of road transport including: cornering, grade, and visual limitations on roads (i.e. bridges, wires, trees, and other obstructions, etc.) Confirmation of a clear route (dimensionally) will be completed by an ATS representative. A visual inspection of bridges and culverts will be completed but will not be an engineered assessment. Permit applications have not been submitted to the State of California.
2. **Equipment Study** – At certain sites, the equipment to transport large equipment over the road is not acceptable to get to the unloading point. If this is determined to be the case, an alternate plan to utilize proper equipment will be presented. If certain routes to the site need specific equipment due to certain obstructions, it will be identified in this survey.
3. **Site Study** – The scope of this survey will end at the county roads leading to the site entrance.

Project Description

Customer	GE
Project Name	Strauss Wind Project
Project Location	Lompoc, CA
Contractor Name	TBD
Type of Turbine	GE 1.79-100 on 80 m tower and GE 3.8-130 on 85 m towers
Quantity of Turbines	6 or 7 GE 1.79-100; 24 GE 3.8-130
Receiving Hours	TBD
Project Deliveries Start Date	TBD

Review Starting Point

The starting point is I-5 and CA166.



Project Overview

ATS has reviewed first hand each segment of the primary routing within this document. ATS has not applied for permits from the State of California.

From February 7-8th 2017, Stephen Jones from ATS physically reviewed the proposed State transport route and collaborated on the route improvements outlined in this document.

On November 7-8th, 2017, Logan Barnes from ATS attended a site visit and physically reviewed San Miguelito Rd for access to the project site and collaborated on the route improvements outlined in this document.

The route review beginning on page 9 shows the entire route detail along with noted areas of improvement. These improvements are based upon ATS equipment and transportation methods.

Attendees	Company	Contact Information
Stephen Jones	ATS	stephenj@atsinc.com
Logan Barnes	ATS	Loganba@atsinc.com
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Bobby Weyers	Heavy Transport	Bobby.Weyers@heavy-trans.com
Matt VoVilla	LAV Consulting & Engineering	Matt@pinnacle2.com

Review Summary

At the time of this review, test transport permits have not been applied for from the State of California. A compilation of worst case dimensions and weights will be used to ensure the proposed route will be suitable for transport.

1. Transport equipment listed in this document is a typical representation of the equipment that will be used. The exact equipment has not been selected.
2. The review was conducted assuming transports will exit I5 at CA166.
3. Roads were surveyed at 16' 1" vertical clearance. Road width requirements will also need to be met; a minimum of 16' usable road width is required for straight-line travel.
4. There are bridges that will be crossed in or near the project site. ATS will need confirmation the structures are approved and will support loaded transports. ATS did not order any permits within the project boundary or off of the main delivery route and assumes that these will be covered in local road use agreements.
5. Detailed improvement drawings were created using scaled Google and Bing Earth images. Shown improvements will be a good representation of what is needed however all improvement areas should be surveyed and exact dimensions of improvements to be confirmed prior to any construction.
6. The vertical clearances of all overpasses were checked along the proposed route; however the entire route will need to be checked for utility and tree clearances prior to deliveries. It is



recommended that a “high pole” run the entire route approximately 6 months prior to the start of deliveries to ensure adequate time for any tree trimming or to raise any utilities that will interfere with the safe transport of components.

- a. ATS will be able to schedule a “high pole” as needed.
7. San Miguelito Rd will require many improvements through the 2.5 miles in the canyon at the project site. These include cuts into the hillside, radius improvements, brush and tree removal. There are 30 curves that require some form of improvement.
8. This review was conducted using all information available at the time.



Primary Route of Travel for WECs from I-5 to the Strauss Wind Site

WEC Transport Route	Direction of Travel	Improvements Needed		Miles
Exit I-5	South	☐ Yes	☒ No	0.2
Highway 166	West	☒ Yes	☐ No	98
US 101	North	☒ Yes	☐ No	9
Tower Grove Drive	U Turn	☒ Yes	☐ No	.1
US 101	South	☒ Yes	☐ No	9.7
CA 135	South	☐ Yes	☒ No	2.1
CA 166	West	☒ Yes	☒ No	7.8
CA1	South	☒ Yes	☐ No	29.9
Ocean Ave	East	☒ Yes	☐ No	0.15
F Street	South	☒ Yes	☐ No	0.1
Cypress	West	☒ Yes	☐ No	0.2
I Street/San Miguelito Rd	South	☒ Yes	☐ No	7

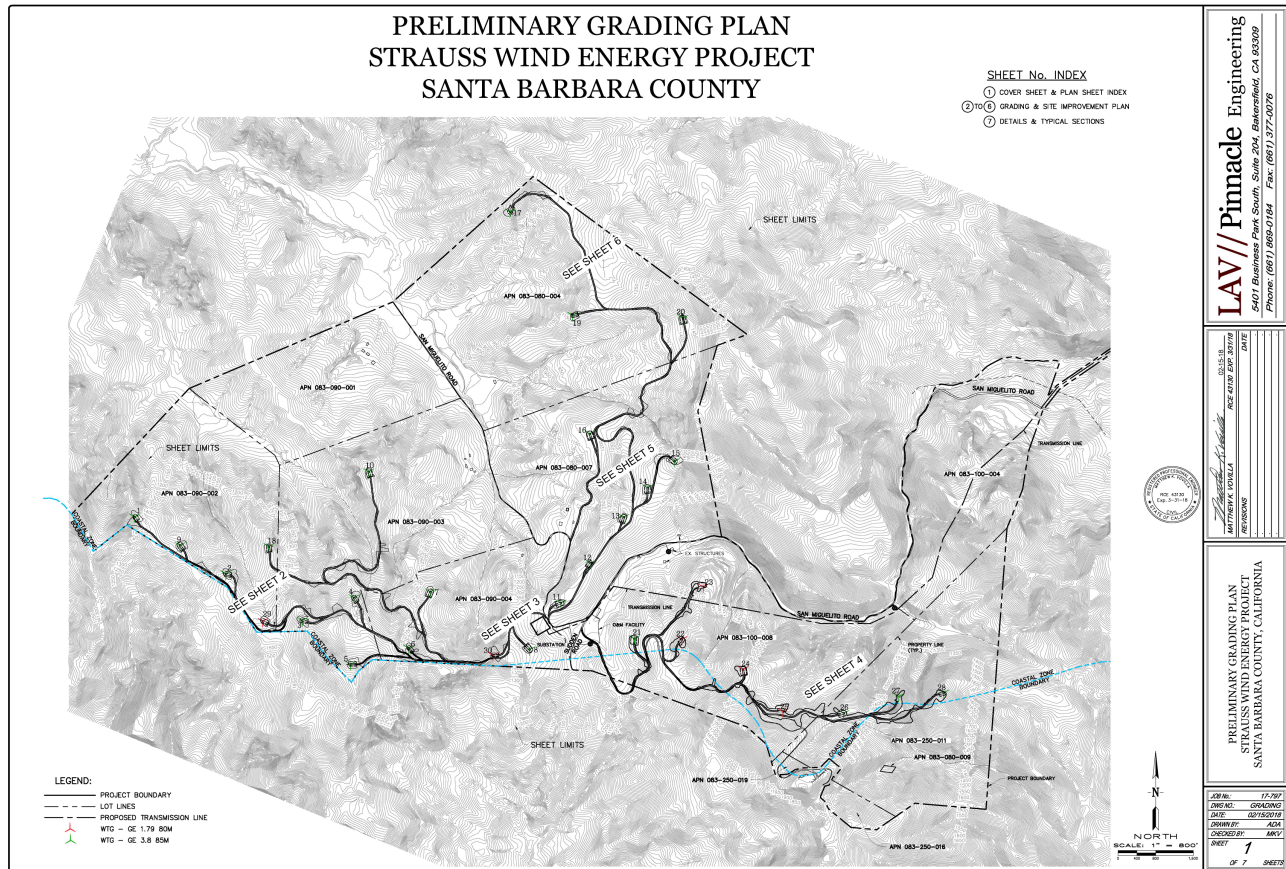
166 miles to End of Survey



Map 2: Strauss Site Location



Map 3: Strauss Project Site Plan

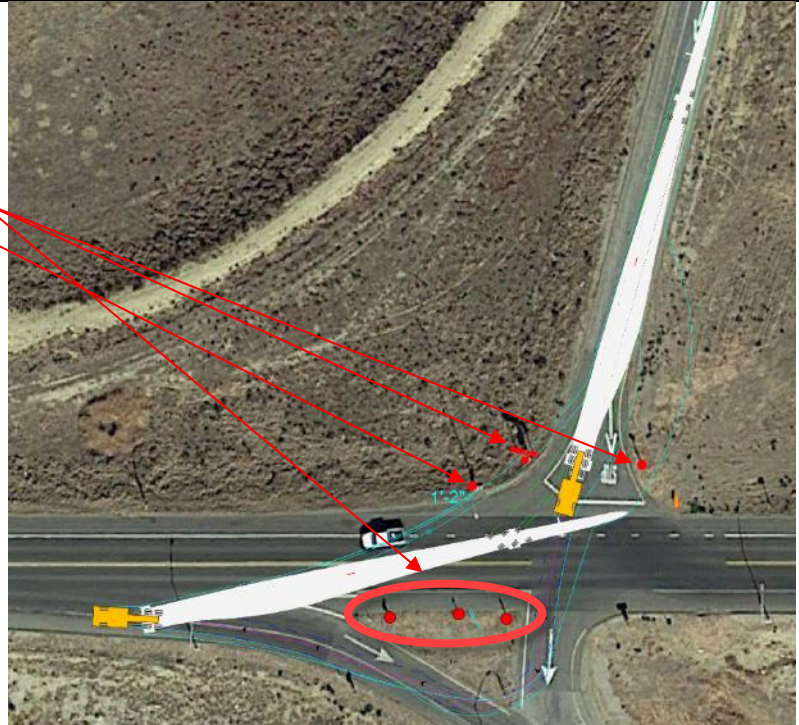




I-5 Exit to CA166

IMPROVEMENT NEEDED

Sleeve and remove signs.
Relocate Light pole.
Manual steer blades and towers.

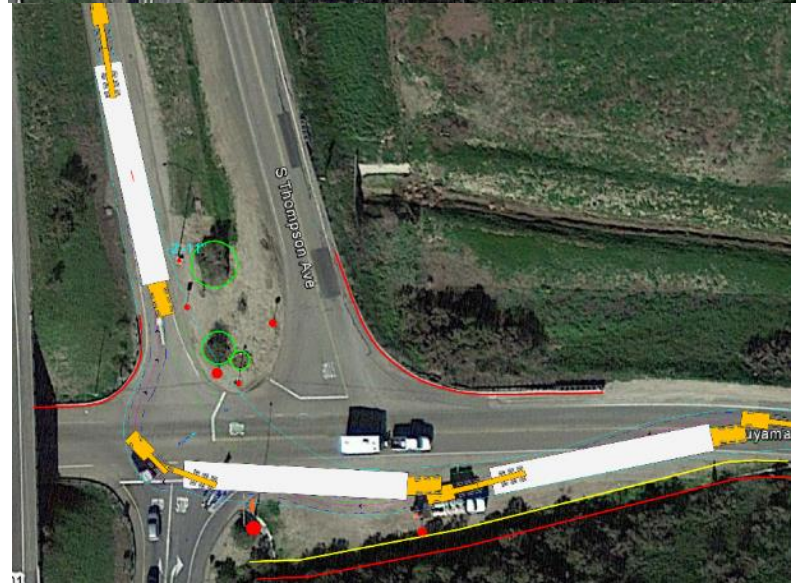
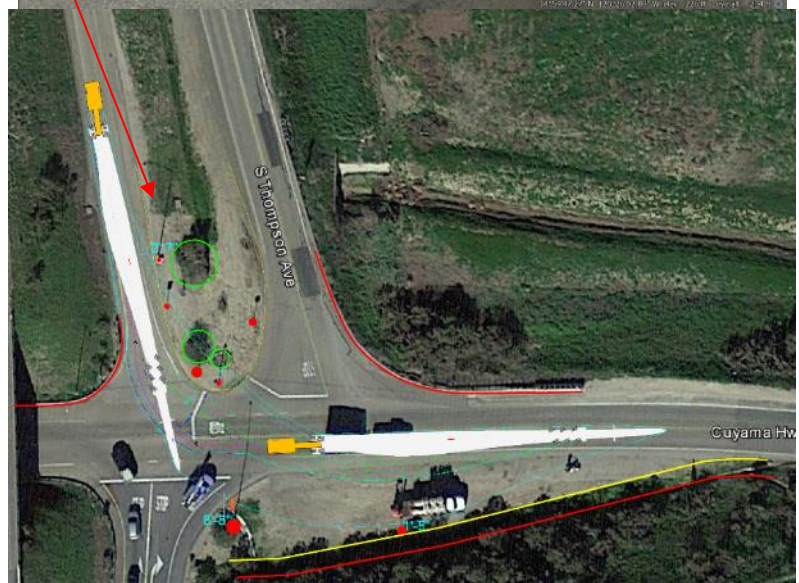




CA166 to US101 North

IMPROVEMENT NEEDED

Sleeve and remove sign.
Relocate light pole.
Manual steer blades and towers.





Tower Grove Drive U-Turn

IMPROVEMENT NEEDED

Sleeve and remove signs.
Add fill and compact.
Sleeve signs.

Manual steer blades and towers.





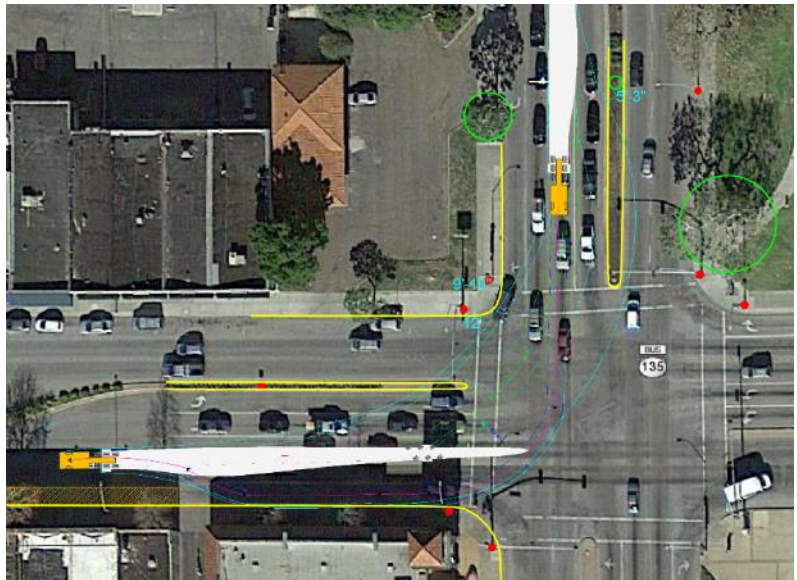
US101 S to CA 135 South

No issues



CA 135 S to CA 166 W

Blades and Towers must Wrong-way the median on 166.





CA166 to CA1

IMPROVEMENT NEEDED

Remove Utility Pole.
Remove light pole
Remove Electrical Box.
Sleeve and remove signs.

Manual steer blades and towers.

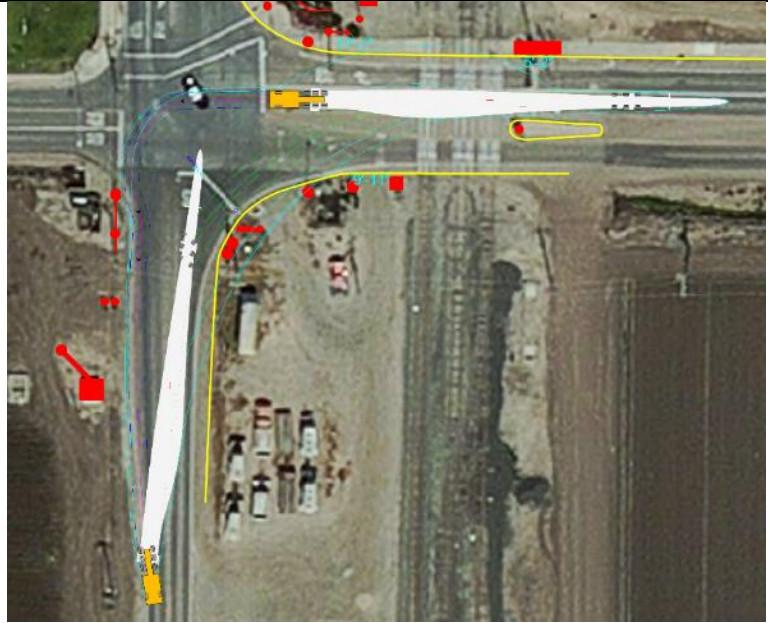




CA1

Right turn to continue on CA 1 at
Vandenberg AFB.

No issues.



CA1

RR #745438Y
0 Trains per day
10 mph



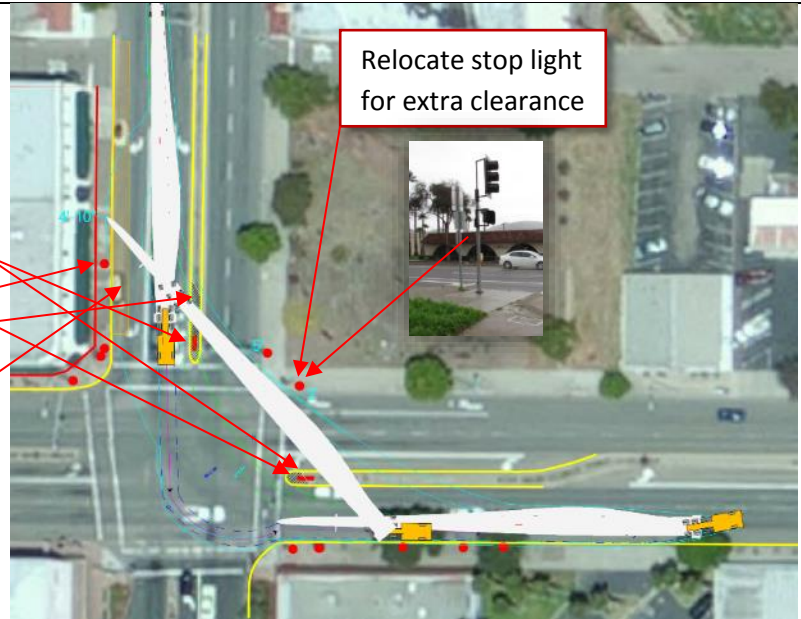


CA1 to CA246 (Ocean – Truck Route)

IMPROVEMENT NEEDED

Sleeve and remove signs in medians.
Sleeve Bike Rout sign on the right.
Round approach and Drive Over Medians
Clear for tip swing.
Create 'No Parking' zone on CA 1 S

Manual steer blades and towers.

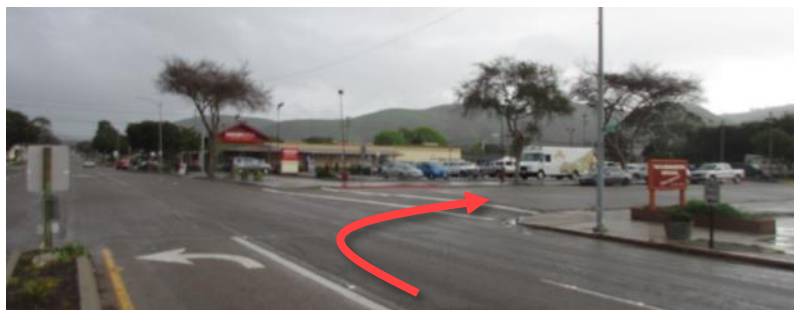
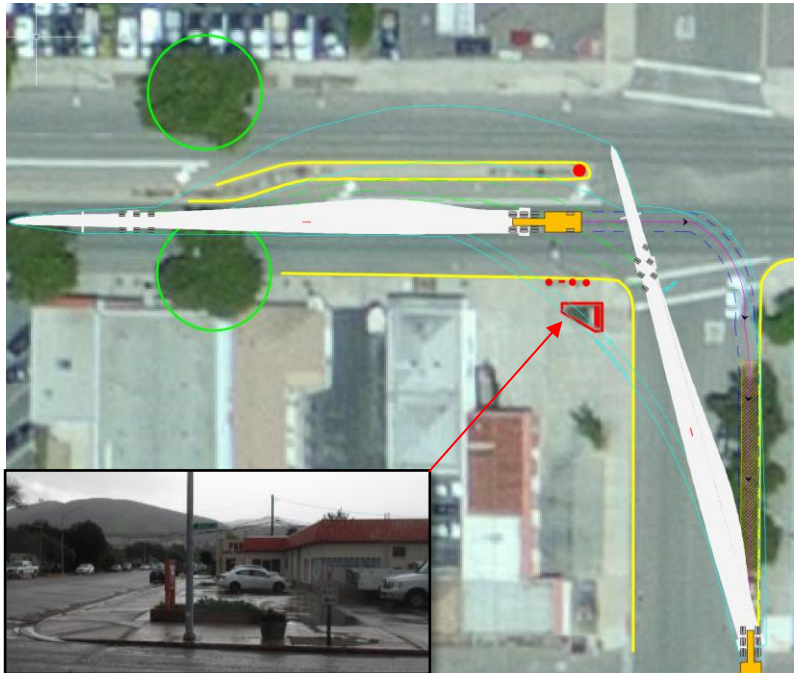




CA246 to F (Truck Route)

IMPROVEMENT NEEDED

- Sleeve and remove sign in medians.
- Clear for tip swing.
- Remove elevated bridge planter and sign in SW corner
- Remove Light pole, sign and planters.
- Create no parking zone on east side of F St.
- Manual steer blades and towers.



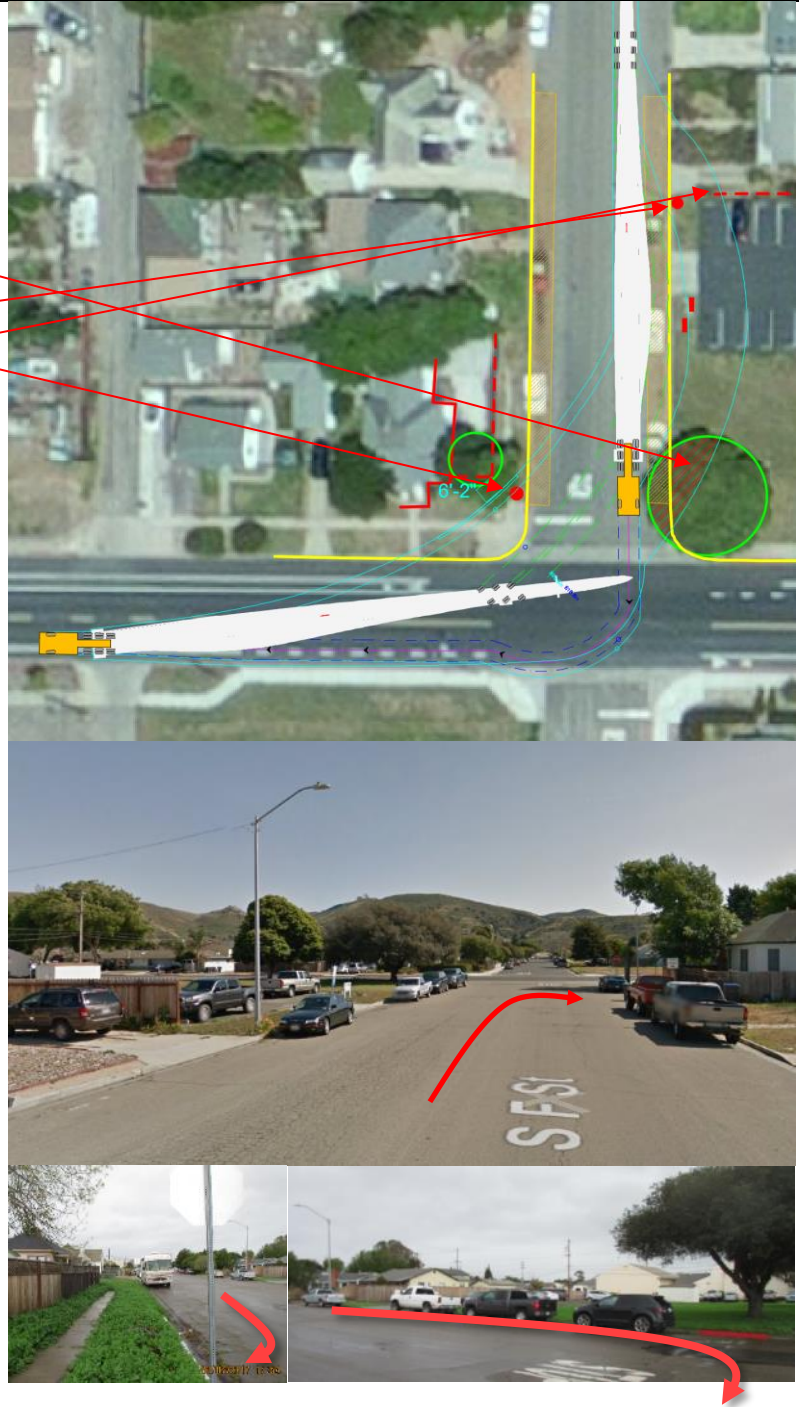


F to Cypress (Truck Route)

IMPROVEMENT NEEDED

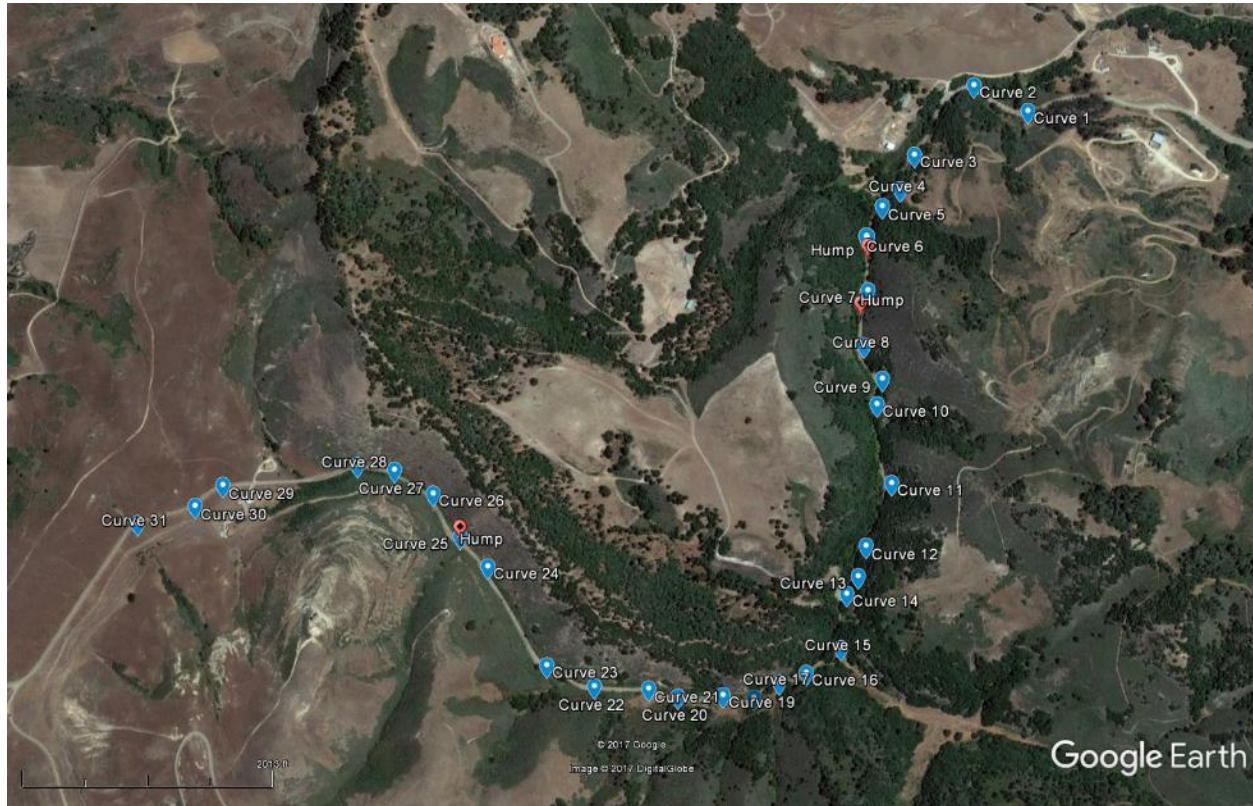
Create no parking zones.
Clear for tip swing.
Remove Tree
Remove Light
Remove Fence
Remove Signs

Manual steer blades and towers.





San Miguelito Rd Map





San Miguelito Rd Review

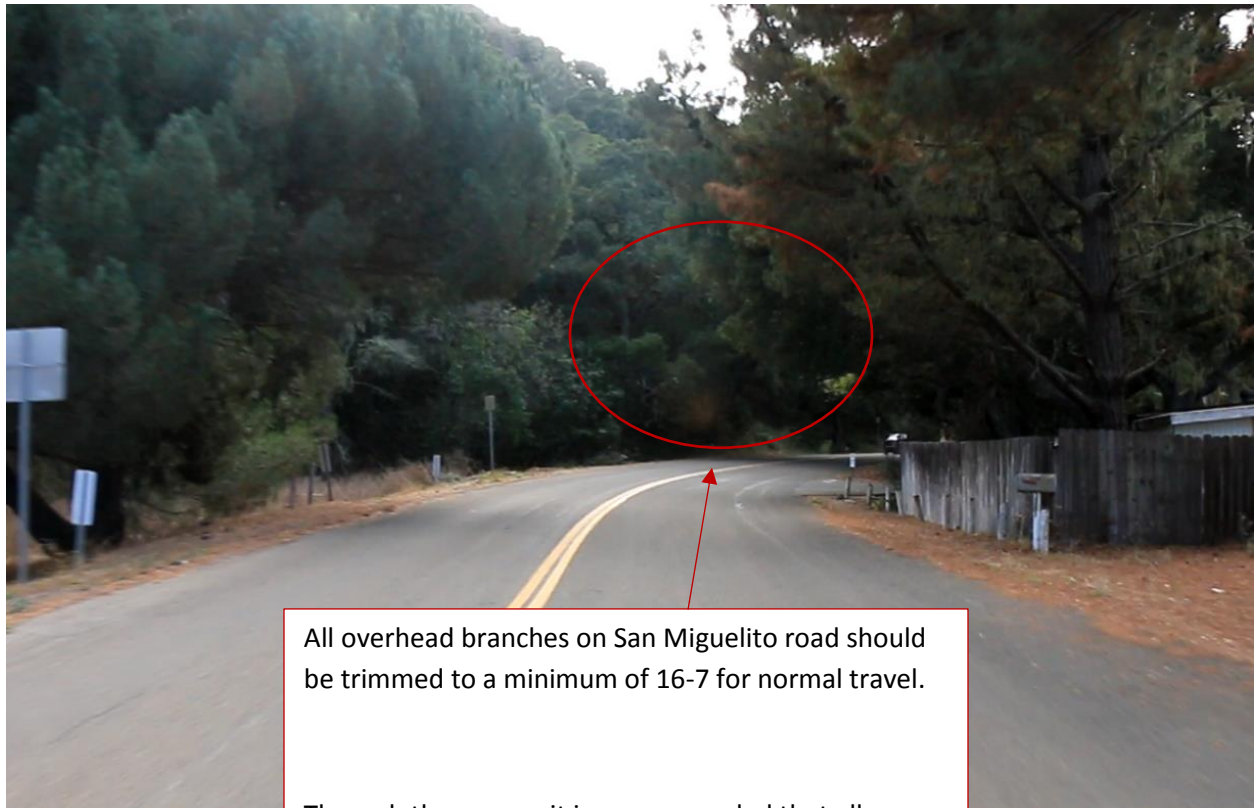
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San Miguelito - Low Branches



All overhead branches on San Miguelito road should be trimmed to a minimum of 16-7 for normal travel.

Through the canyon it is recommended that all branches be trimmed to 18' to allow tower sections to raise all the way up for additional belly clearance.





San Miguelito Rd - Curve 1

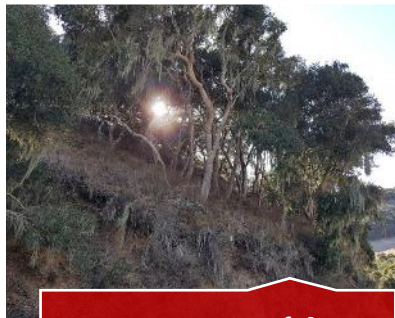




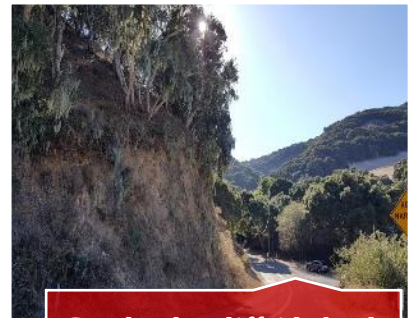
San Miguelito Rd - Curve 2



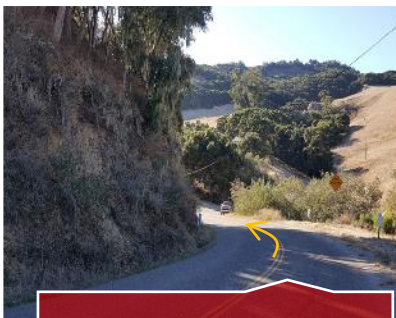
Remove tree on the right side



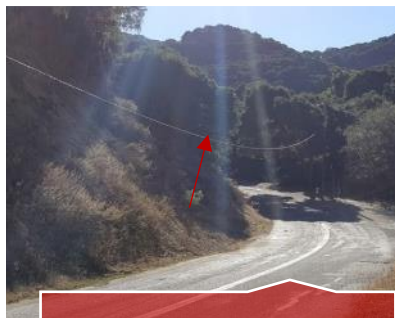
Trees on top of the cliffside



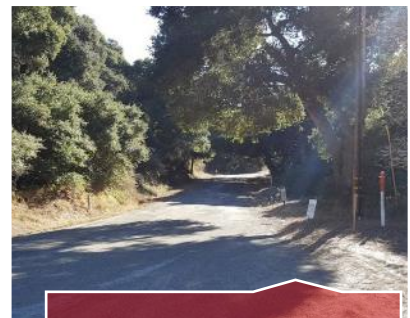
Cut the the cliffside back on the inside of the curve



View of cliffside



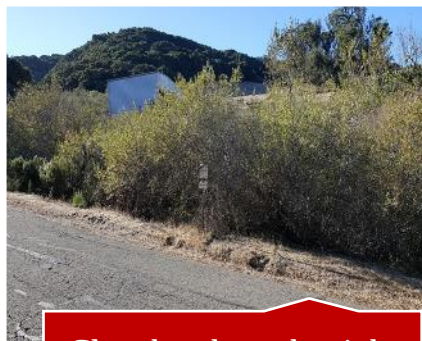
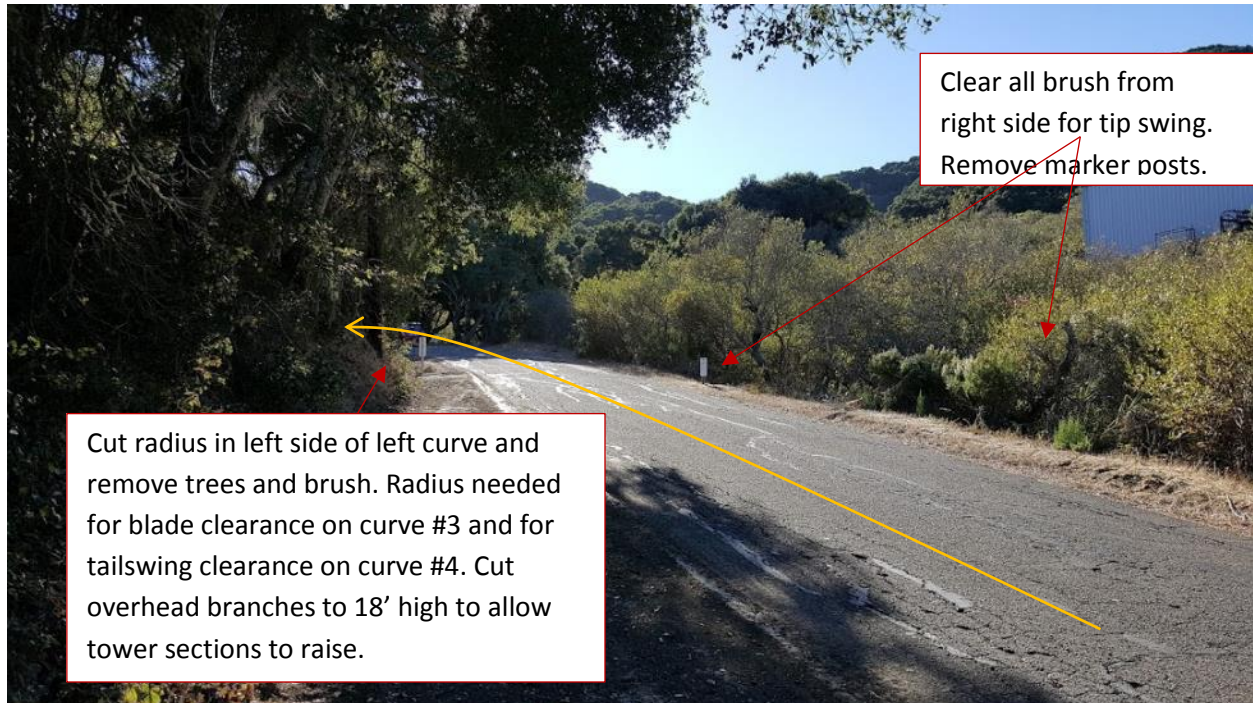
Raise wire hanging down through the curve.



Trim overhead branches after curve



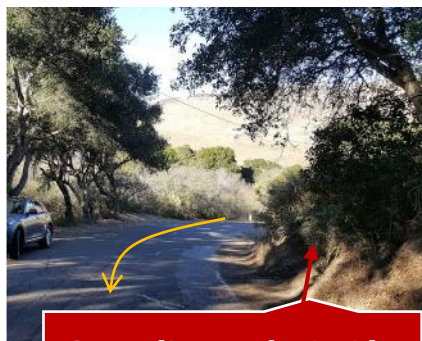
San Miguelito Rd - Curve 3



Clear brush on the right side



Remove marker posts



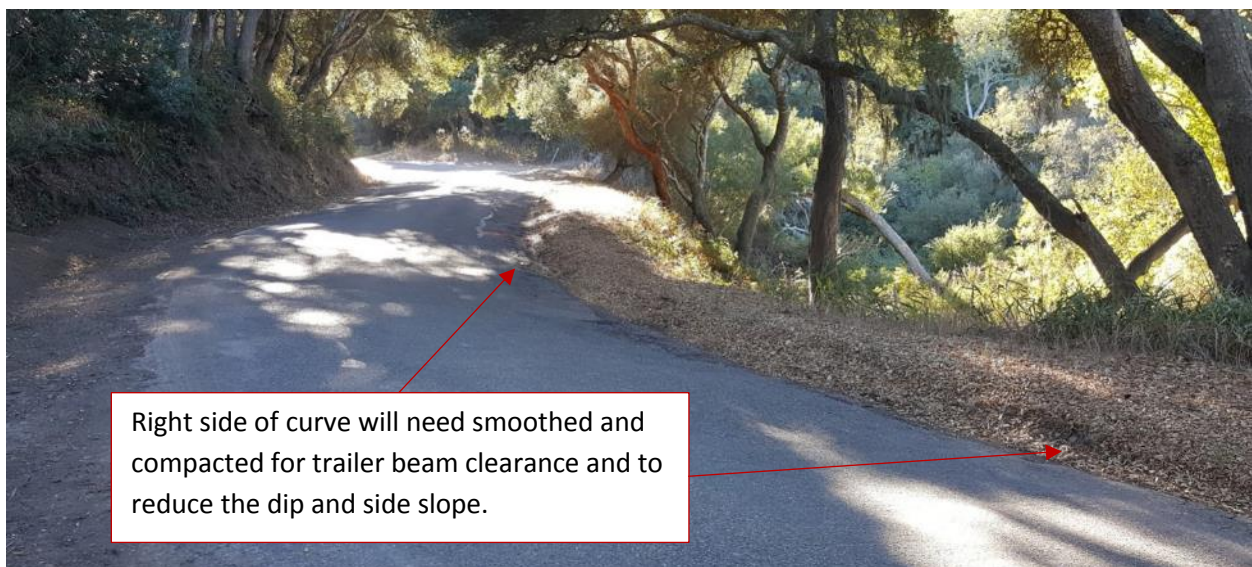
Cut radius on the inside. Remove brush and trees



Cut radius on the inside.

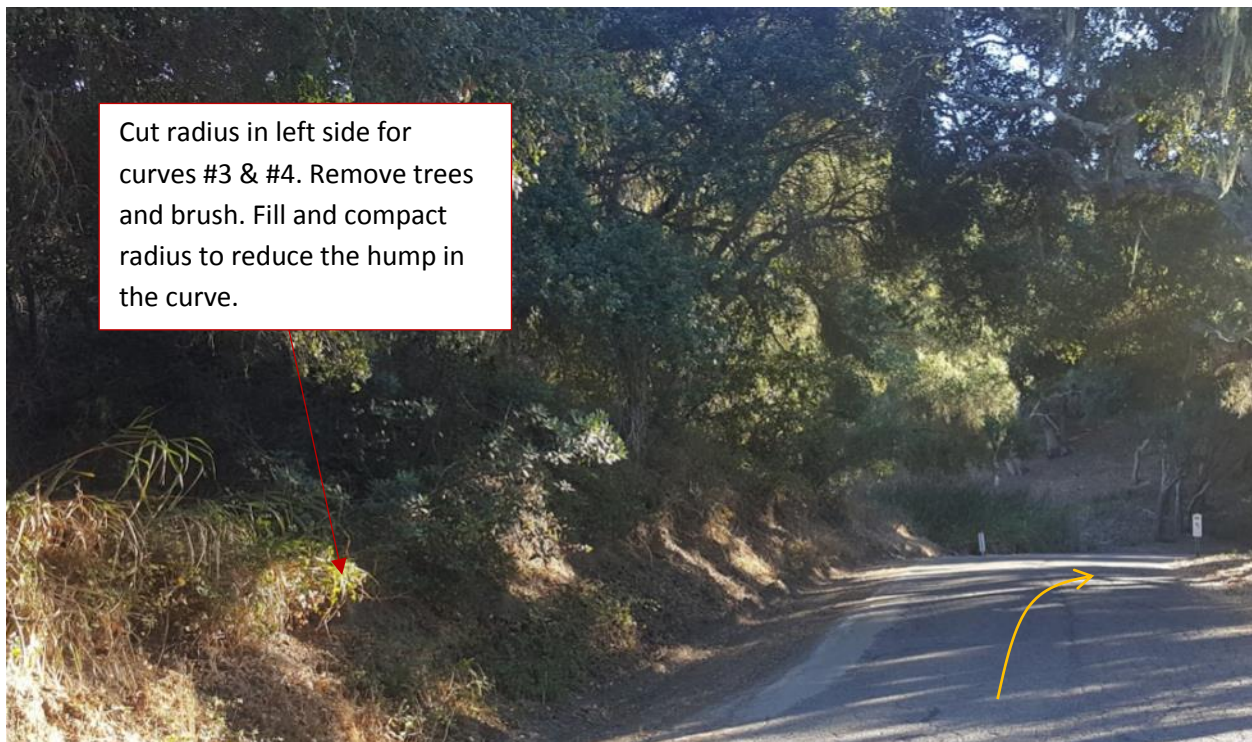


San Miguelito Rd - Curve 4



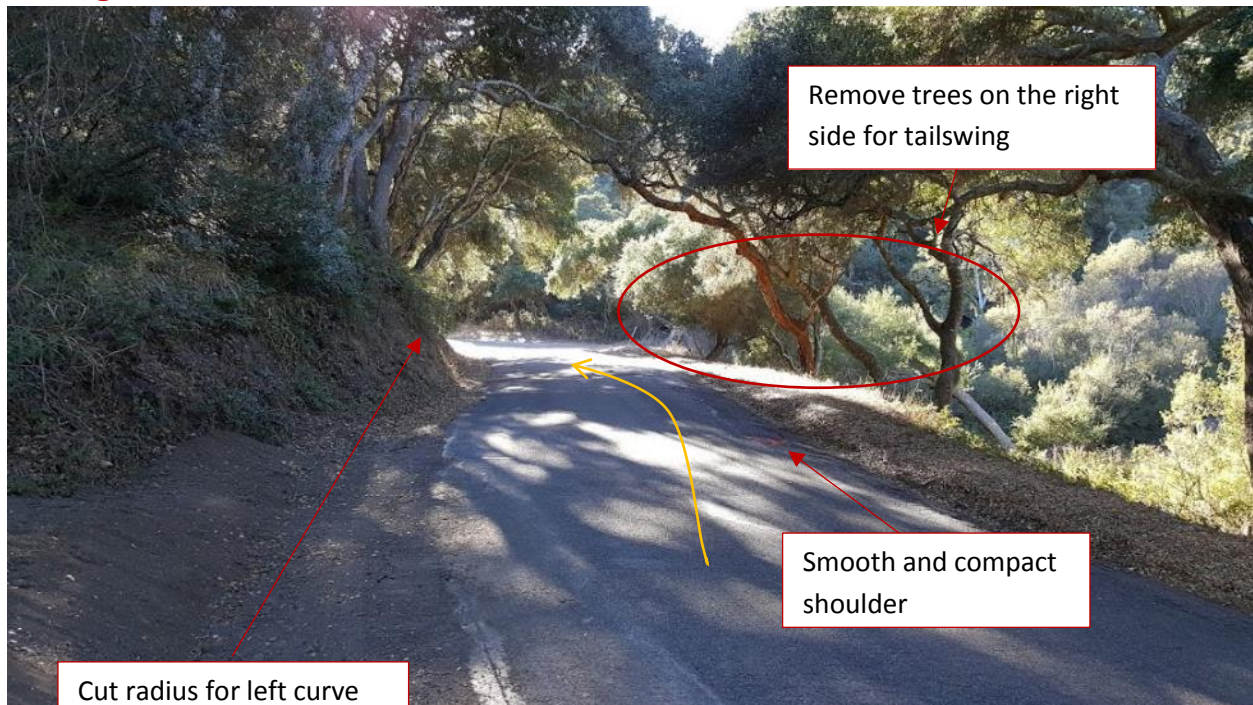


San Miguelito Rd - Curve 4 Continued





San Miguelito Rd - Curve 5





San Miguelito Rd - Curve 6





San Miguelito Rd - Curve 6 Continued





San Miguelito Rd - Hump



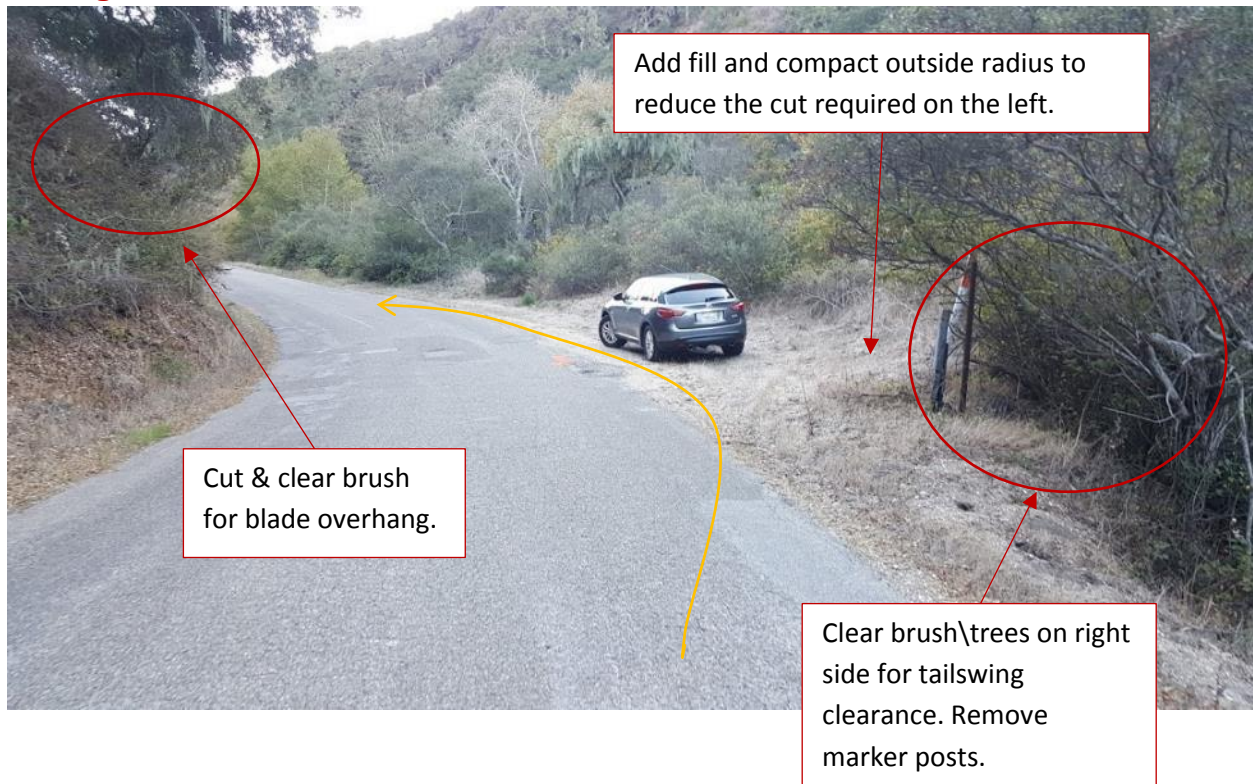


San Miguelito Rd - Curve 7





San Miguelito Rd - Curve 7 Continued





San Miguelito Rd - Hump





San Miguelito Rd - Curve 8





San Miguelito Rd - Curve 8 Continued



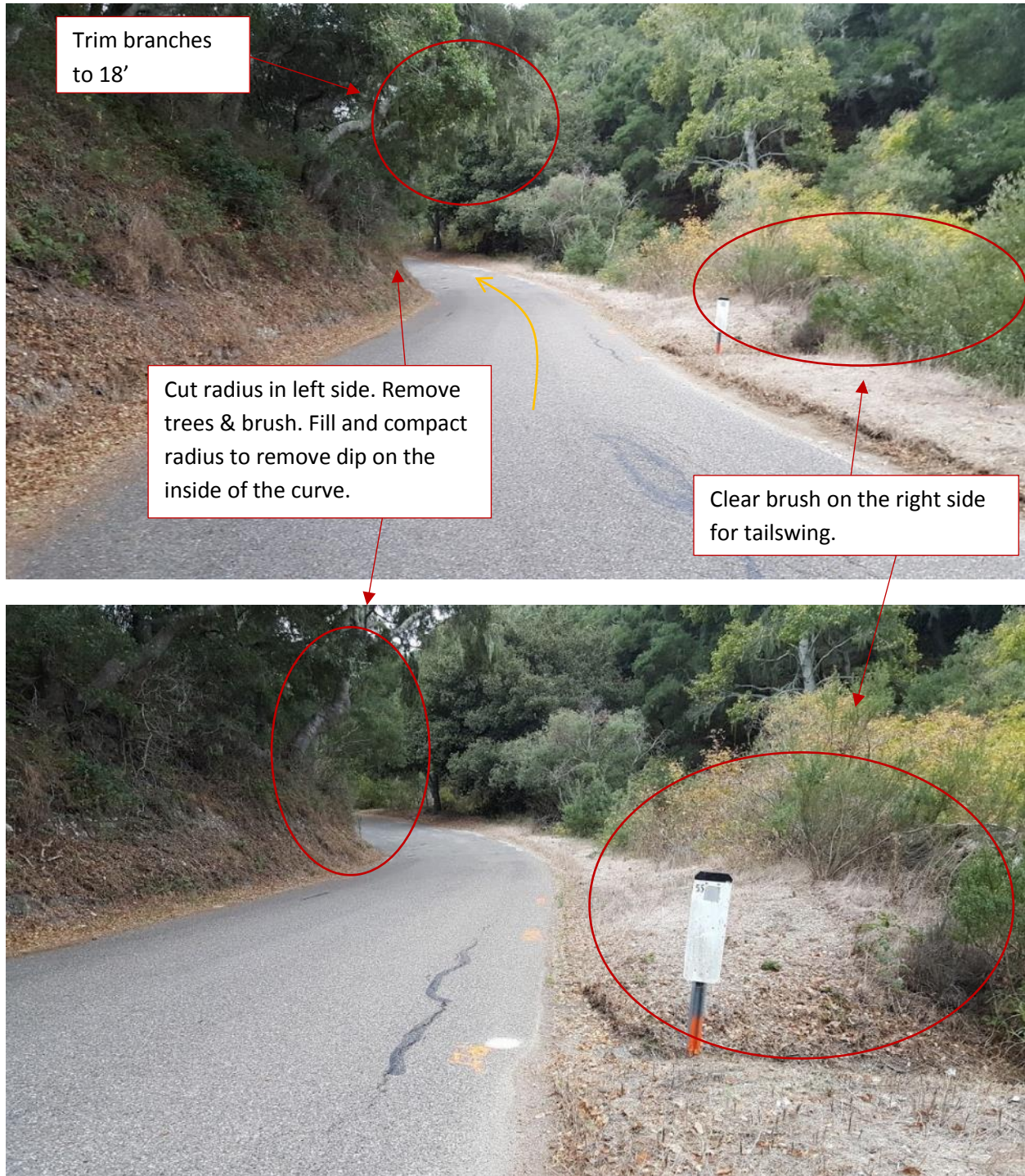


San Miguelito Rd - Curve 9





San Miguelito Rd - Curve 10





San Miguelito Rd - Curve 10 Continued





San Miguelito Rd - Low branches





San Miguelito Rd - Curve 11





San Miguelito Rd - Low branches



Trim overhead branches
between curves 11 and 12



San Miguelito Rd - Curve 12





San Miguelito Rd - Curve 12 Continued





San Miguelito Rd - Curve 13





San Miguelito Rd - Curve 14





San Miguelito Rd - Low Branches





San Miguelito Rd - Curve 15





San Miguelito Rd - Curve 16



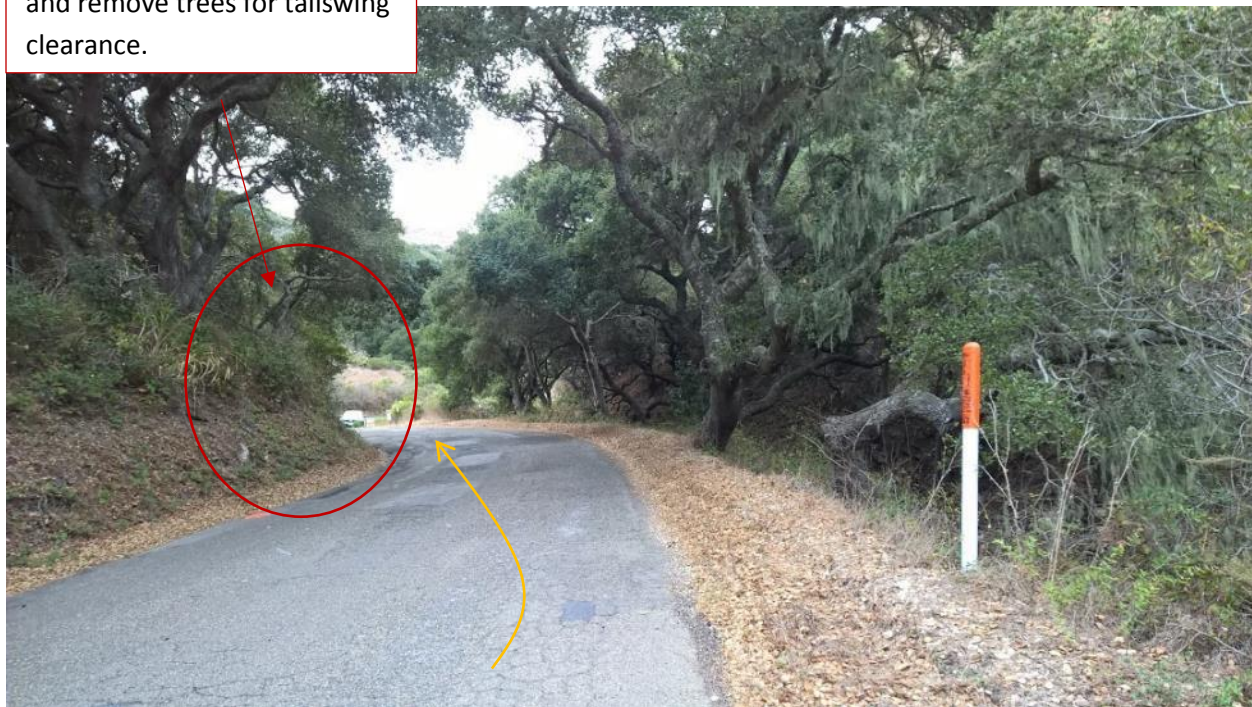


San Miguelito Rd - Curve 17



Clear brush on right side of curve for tailswing clearance & remove markers.

Cut radius in left side of curve and remove trees for tailswing clearance.



San Miguelito Rd - Curve 18





San Miguelito Rd - Curve 18 Continued





San Miguelito Rd - Curve 19





San Miguelito Rd - Curve 20



San Miguelito Rd - Curve 21





San Miguelito Rd - Curve 22





San Miguelito Rd - Low Branches



San Miguelito Rd - Curve 23





San Miguelito Rd - Curve 24





San Miguelito Rd - Curve 25



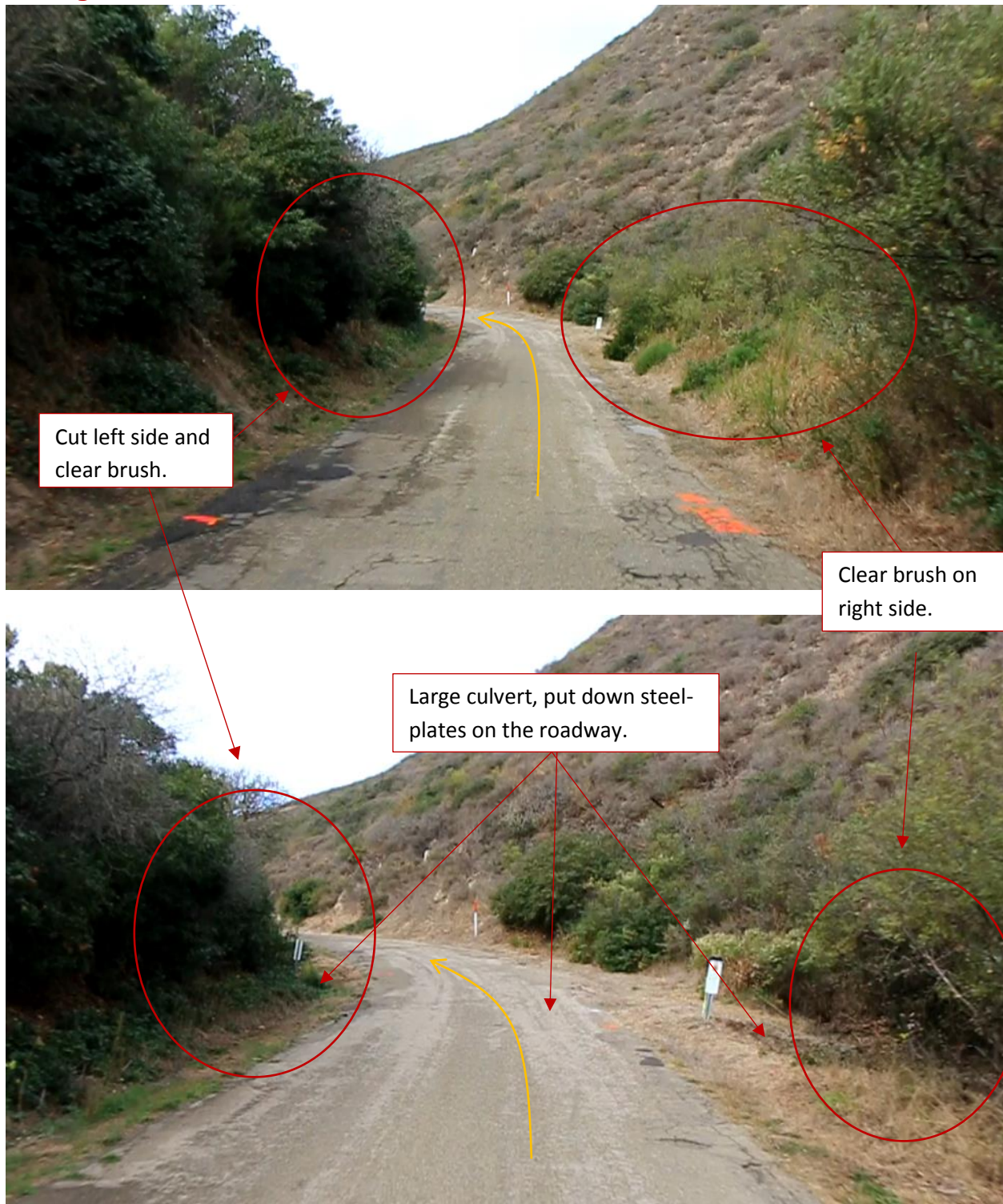


San Miguelito Rd - Curve 26





San Miguelito Rd - Curve 27





San Miguelito Rd - Curve 28





San Miguelito Rd - Curve 29



Move fence on left side. Add fill & compact shoulder.

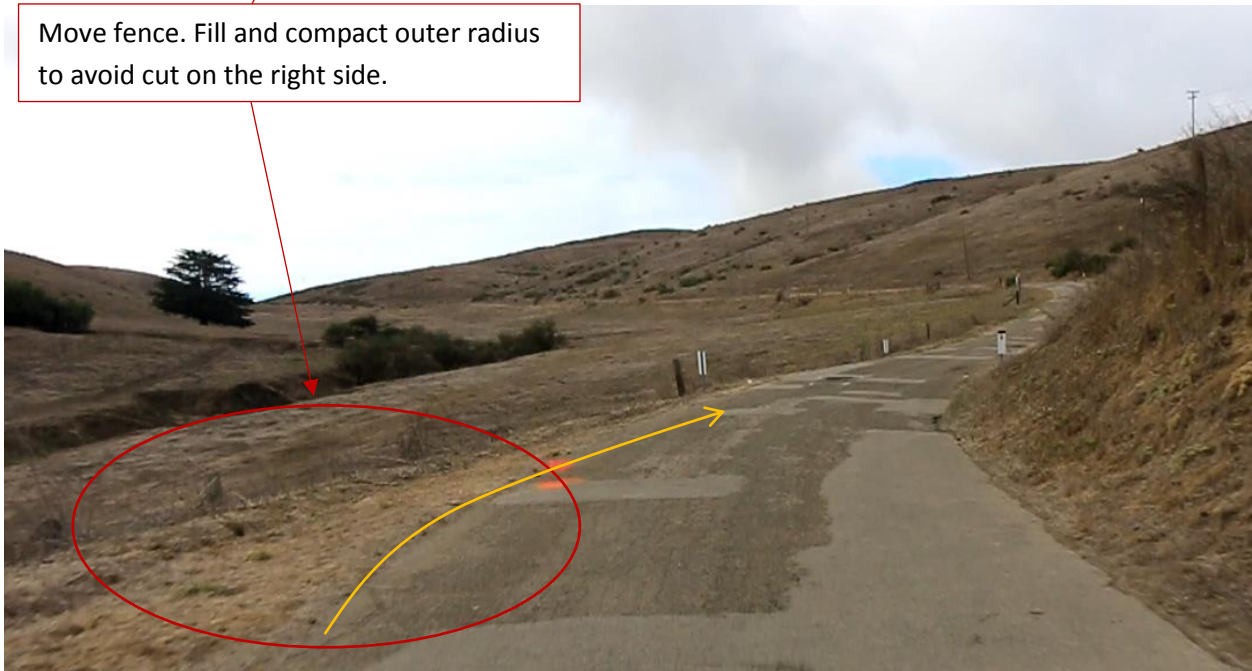




San Miguelito Rd - Curve 30



Move fence. Fill and compact outer radius to avoid cut on the right side.





San Miguelito Rd - Curve 31





Comments

1. The trailers listed are examples based on ATS equipment and are subject to change at the time of transport.
2. A drawing of the 65M blade has not been received at this time. A generic blade was created based on the shape of a 57M blade with an overhang on the driver's side.
3. Due to the challenging nature of San Miguelito Rd, ATS recommends performing a test run using an empty blade trailer with PVC pipe or similar materials to simulate loaded dimensions. This should be completed prior to deliveries and to allow time for any additional improvements that may be needed.
4. Final weights, center of gravity & tip stand location for the blade have not been determined. ATS assumes that the blade will be able to load and scale with the current equipment.

ATS Specialized, Inc. (ATS) has exercised due and customary care in conducting this project route review and has not, save as specifically stated, independently verified information provided by others. No other warranty, express or implied is made in relation to the conduct of the review or the contents of this report. Therefore, ATS assumes no liability for any loss resulting from errors, omissions, or misrepresentations made by others. This review has been prepared at the request of the customer. The use of this report is unauthorized by third parties without written authorization of ATS and shall be at their own risk, and ATS accepts no duty of care to any such third party.

Any recommendations, opinions or findings stated in the review are based on circumstances and facts as they existed at the time ATS performed the work. Any changes in circumstances and facts upon which this review was conducted may adversely affect any recommendations, opinions or findings contained in this report.



Appendix

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Figure 3: 80M Top..... 70

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Figure 6: Hub..... 73

Figure 7: 65M Blade 74



Figure 3: 80M Top

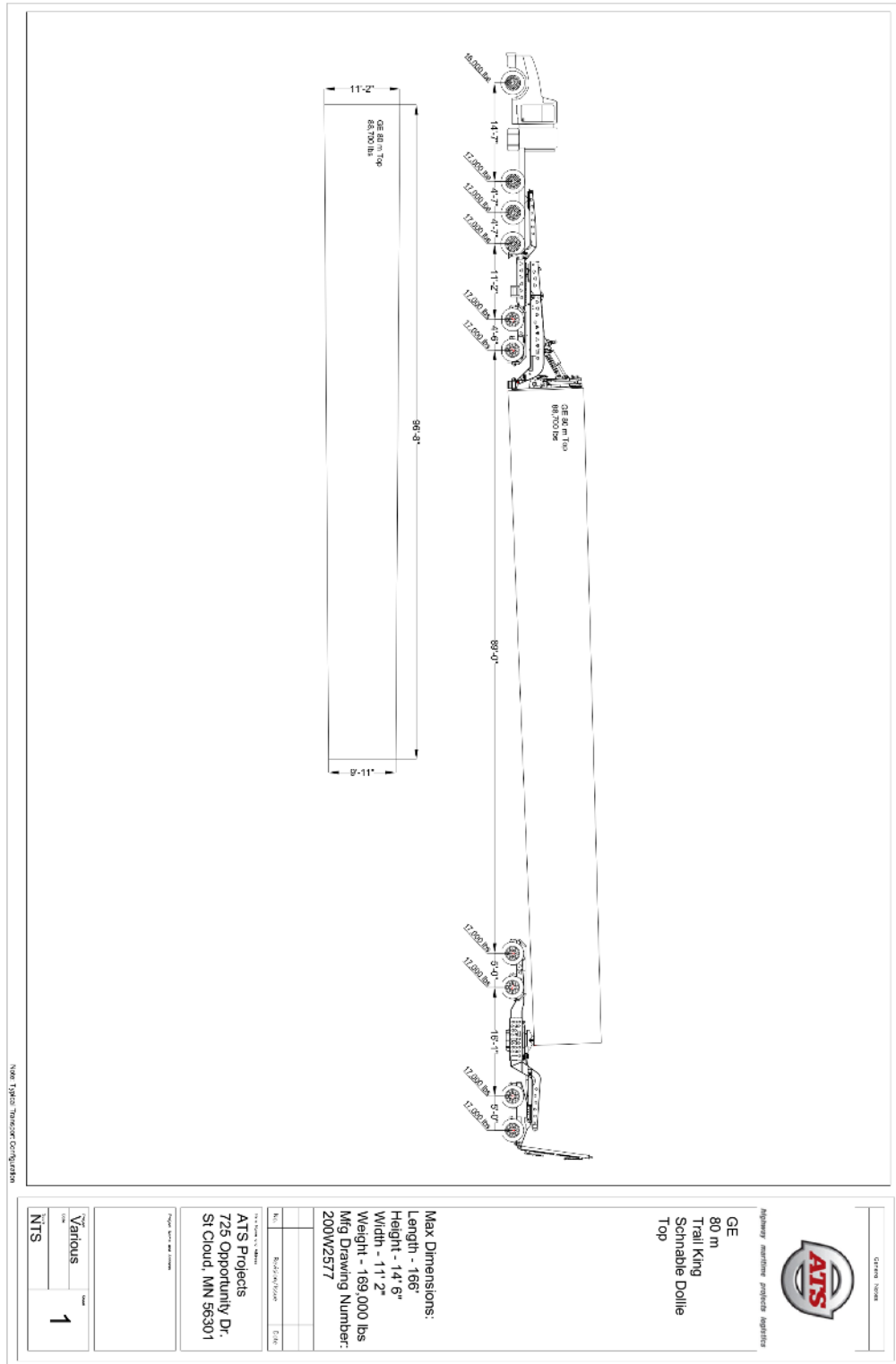




Figure 4: 85M Mid (78'-4" L)

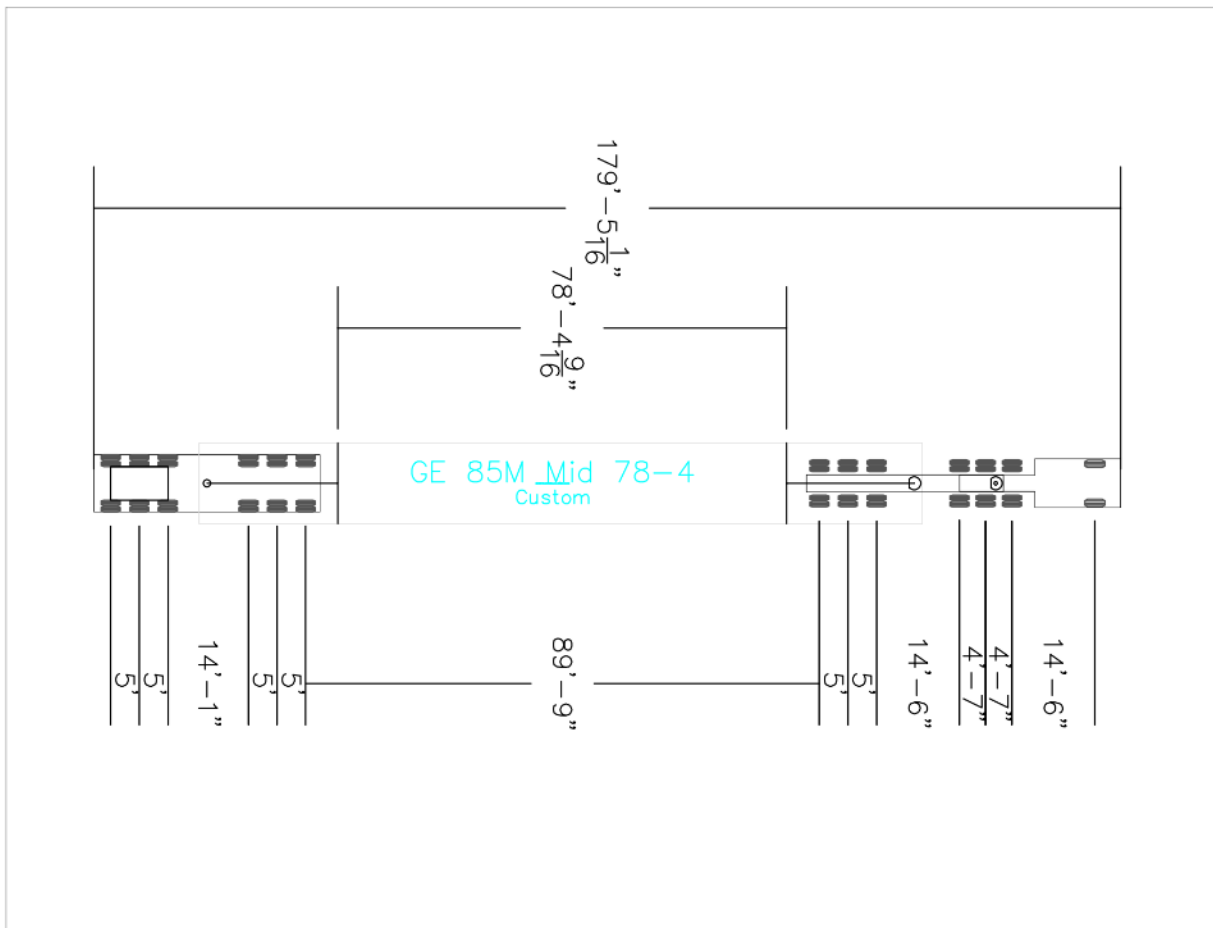




Figure 5: 13 Axle Nacelle

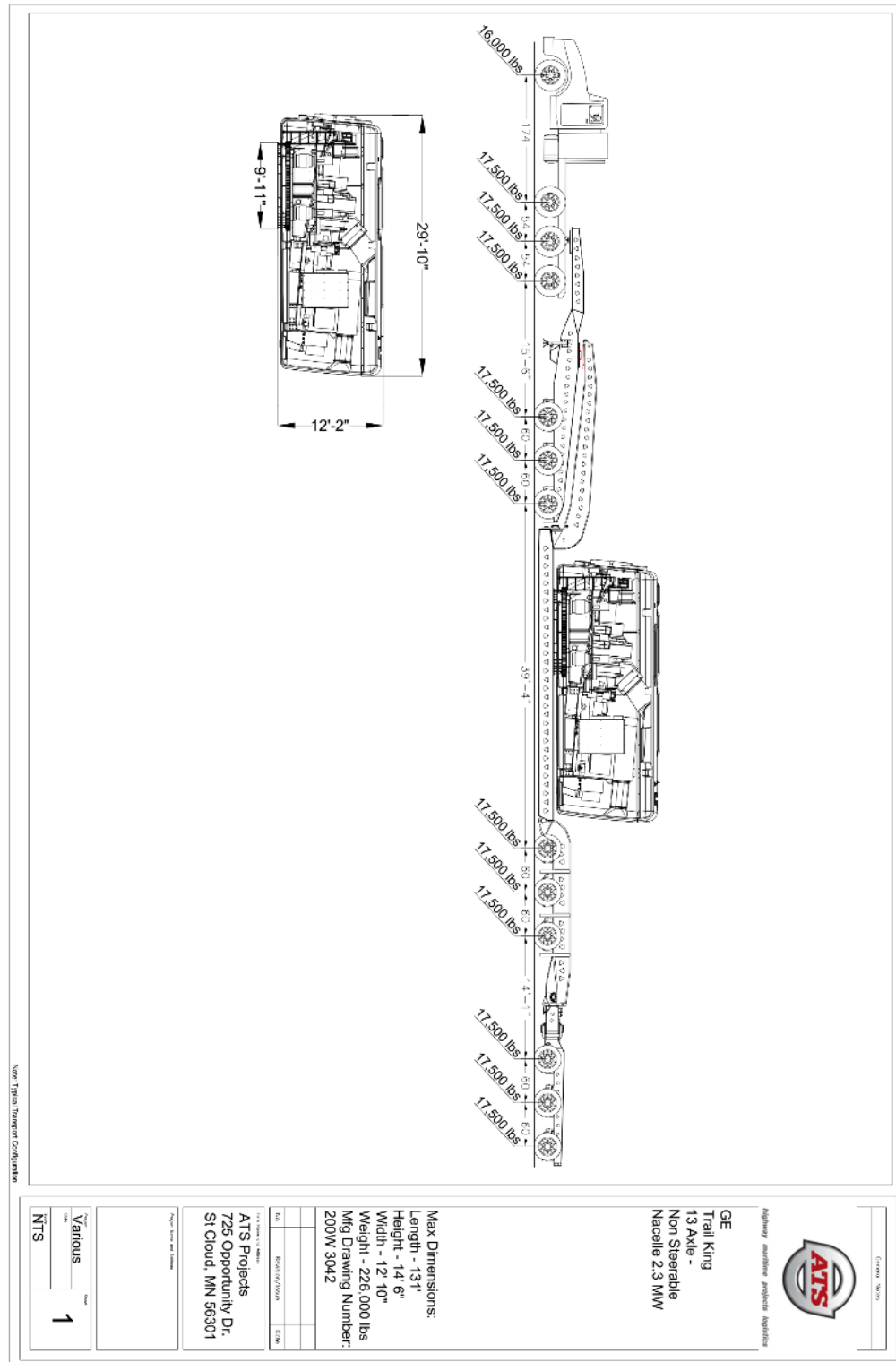




Figure 6: Hub

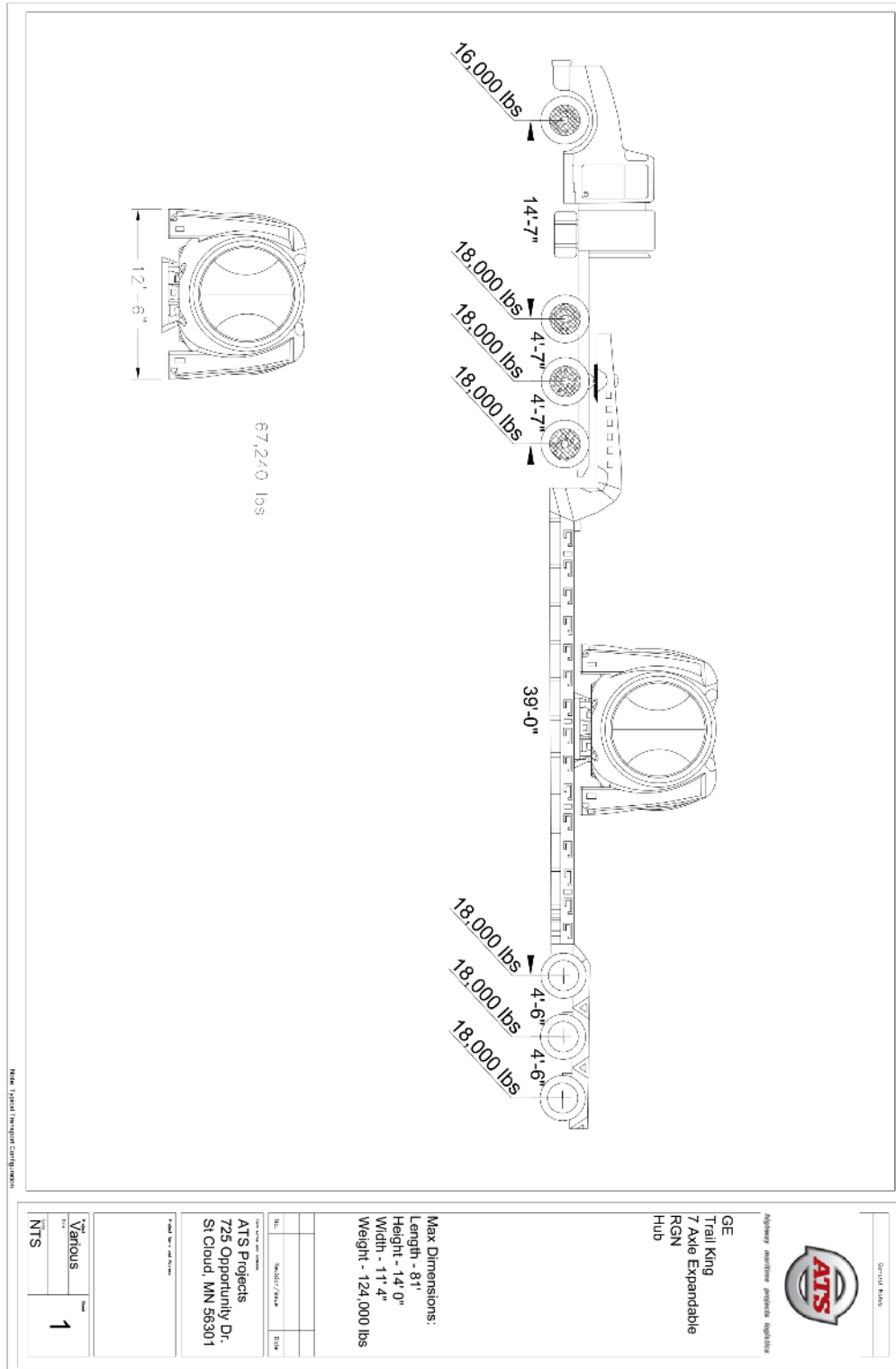




Figure 7: 65M Blade

