Notes from the Traffic Impact Study (TIS)

Conducted by Short Elliott Hendrickson

Updated May 17, 2023

Vehicles:

1. The Traffic Impact Study was completed by Chad Jorgenson, PE, PTOE, from Short Elliot Hendrickson Inc, from St. Paul, MN.
2. Highway 37 and Spruce Street has experienced 35 crashes during the 5-year analysis period, which exceeds the calculated critical rate (7 per year). This has reduced to 5 crashes per year since the 2020 intersection reconfiguration.
3. Highway 37 and 257th Street had 2 crashes, which does not exceed the critical crash rate.
4. Traffic estimates are based off the Volga plant, with a 20% increase, since the Mitchell plant will be 20% larger than the Volga plant.
5. Volume thresholds were based on the 2022 existing, 2043 No Build and 2043 Peak Season Build demand scenarios. The 2043 Peak hour build scenario had 2 hours of the required 8 hours that exceeded volume thresholds, resulting in *not* meeting the requirement for a traffic signal at Highway 37 and 257th Street (Table 9).
6. *Average* traffic is anticipated at 436 entering/exiting trips per day (Findings and Recommendations on page ES-3).
7. Section 3.1.5 on page 11 shows *peak* operations at 565 trucks per day. The Findings and Recommendations on page ES-3 shows 1,214 entering/exiting per day. This 1,214 is also mentioned in Section 7, page 37. To clarify, this is:
    a. 565 trucks per day during harvest - 1,130 trips (entering/exiting)
    b. 33 day shift employees assumed to all arrive during the AM peak hour and depart during PM peak hour of the roadway - 66 trips (entering/exiting)
    c. 9 overnight employees each exit in the AM peak hour and enter during the PM peak hour - 18 trips (entering/exiting)
    d. A total of 1,214 vehicles
8. For the HWY 37/Spruce St. streetlights, the additional vehicle traffic (employees, trucks, etc.) can be accommodated with minor signal timing adjustments.
9. In 2043, the southbound left turn lane will also be extended from 280’ to 310’ to allow traffic to turn east on Spruce. St.
10. Vehicle Traffic Counts in the study were based off a 13-hour day from 6:00 AM to 7:00 PM.
11. All site generated traffic is expected to enter and exit the site from the intersection of SD Highway 37 and 257th Street.
12. A westbound (north) right turn lane on 257th of 520’ will extend from the plant exit driveway to HWY 37.
    a. The right turn lane (north) will accommodate an 85’ turn radius for large trucks.

Rail:

1. The Plant will generate 638 railcars of product per month. (3.1.6-Page 12)
    a. The RR intersection at 257th currently sees an average of 2 trains per day.

b. Two unit trains (single commodity) and 3 manifest trains (accept cars from multiple locations) per week are expected for the plant (57% increase).
c. A unit train will take approximately 5 minutes 30 seconds to clear Spruce St. at 15 MPH.
d. At worse-case scenario, a train will block 257th St. for 20 minutes.
e. Using worse-case scenario data, the HWY 37 southbound left turn lane at 257th is recommended to be extended from 221' to 1,250'. (See GIS photo with new turning lanes below)
f. Using worse-case scenario data, the HWY 37 northbound right turn lane at 257th is recommended to be extended from 0' to 1,100'.
g. The RR Tracks (both sides) will include a "Do Not Block Tracks" sign.
h. If the RR Tracks are blocked by a train entering/exiting the plant, there is sufficient room to store trucks in the southbound and northbound turning lanes that will be installed on HWY 37, as explained in 6.2.7-9 on page 36.

2. Rusty and Jeff met with BNSF, SD DOT, Jeff Cooley from CDI, and Mark Hyde from SDSP on May 10, 2023 to discuss the expansion of the rail crossing on 257th to allow for a turning (third) lane on the north side. It was determined the need for signals on the tracks were *not* needed. The trees will be removed from the RR Right of Way, to allow for better visibility for trucks traveling north, then turning east to the plant. Jeff/Rusty will review the Traffic Impact Study once more, sending any questions to Chad Jorgenson, from Short Elliot Hendrickson.

Traffic Summary:

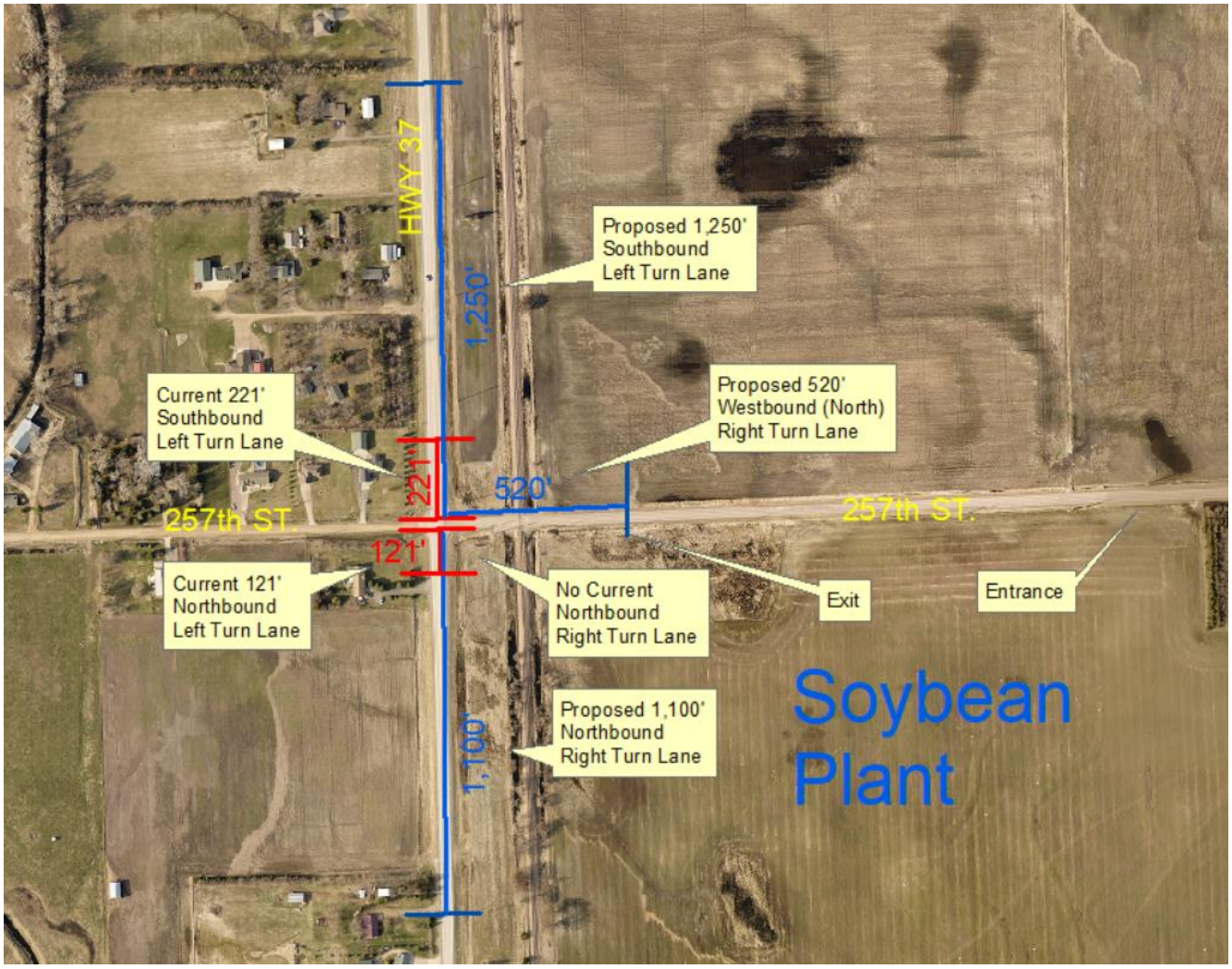
1. The plant has the ability to old 64 double trailers on site.
2. In 2025, the plant expects 127 trucks per day. (3.1.2 on page 10)
3. In 2030, the plant expects 176 trucks per day (3.1.4 on page 11), with peak harvest days (September-October) expecting 565 trucks per day, as shown in Table 7.

Table 7 – Peak Harvest Season Peak Day Cumulative Bushels in Queue

Time	Hourly Trucks	Bushels Arriving per hour	Cumulative Bushels In Queue
6:00 AM	5	5430	0
7:00 AM	48	51780	1,780
8:00 AM	53	56630	8,410
9:00 AM	59	63030	21,440
10:00 AM	59	63610	35,050
11:00 AM	53	57210	42,260
12:00 PM	49	52750	45,010
1:00 PM	49	52750	47,760
2:00 PM	48	51780	49,540
3:00 PM	52	55660	**55,200**
4:00 PM	38	40920	46,120
5:00 PM	35	37430	33,550
6:00 PM	15	16290	0
7:00 PM	2	2520	0
Total	565		

   a. It is anticipated that 82% of the trucks will be single trailers and 18% doubles.
   b. The plant can process 50,000 bushels per hour.
   c. A single truck is 67’ long and can hold 970 bushels.
   d. A double truck is 100’ long and can hold 1,550 bushels.

4. The proposed development is not anticipated to have a detrimental impact to the surrounding roadway network.
   a. One thing to consider, this facility is not creating more land or commodity. Existing commodity is grown on existing land, harvested, and being hauled to a local elevator. Upon completion of the new plant, the commodity destination of 35 million bushels of soybeans will change from a surrounding elevator to the new plant.


HWY 37
1,250'
Proposed 1,250'
Southbound
Left Turn Lane
Current 221'
Southbound
Left Turn Lane
221'
Proposed 520'
Westbound (North)
Right Turn Lane
520'
257th ST.
257th ST.
121'
Current 121'
Northbound
Left Turn Lane
No Current
Northbound
Right Turn Lane
Exit
Entrance
Proposed 1,100'
Northbound
Right Turn Lane
1,100'
Soybean
Plant