



DEPARTMENT OF
FIRE, EMS & RESCUE

JOSEPH PONZI
CHIEF



August 25, 2020

Joe Looby, ASLA, LEED GA
EMH&T
5500 New Albany Road
Columbus, Ohio 43054

RE: 5481 Worthington Road Preliminary Plan Review

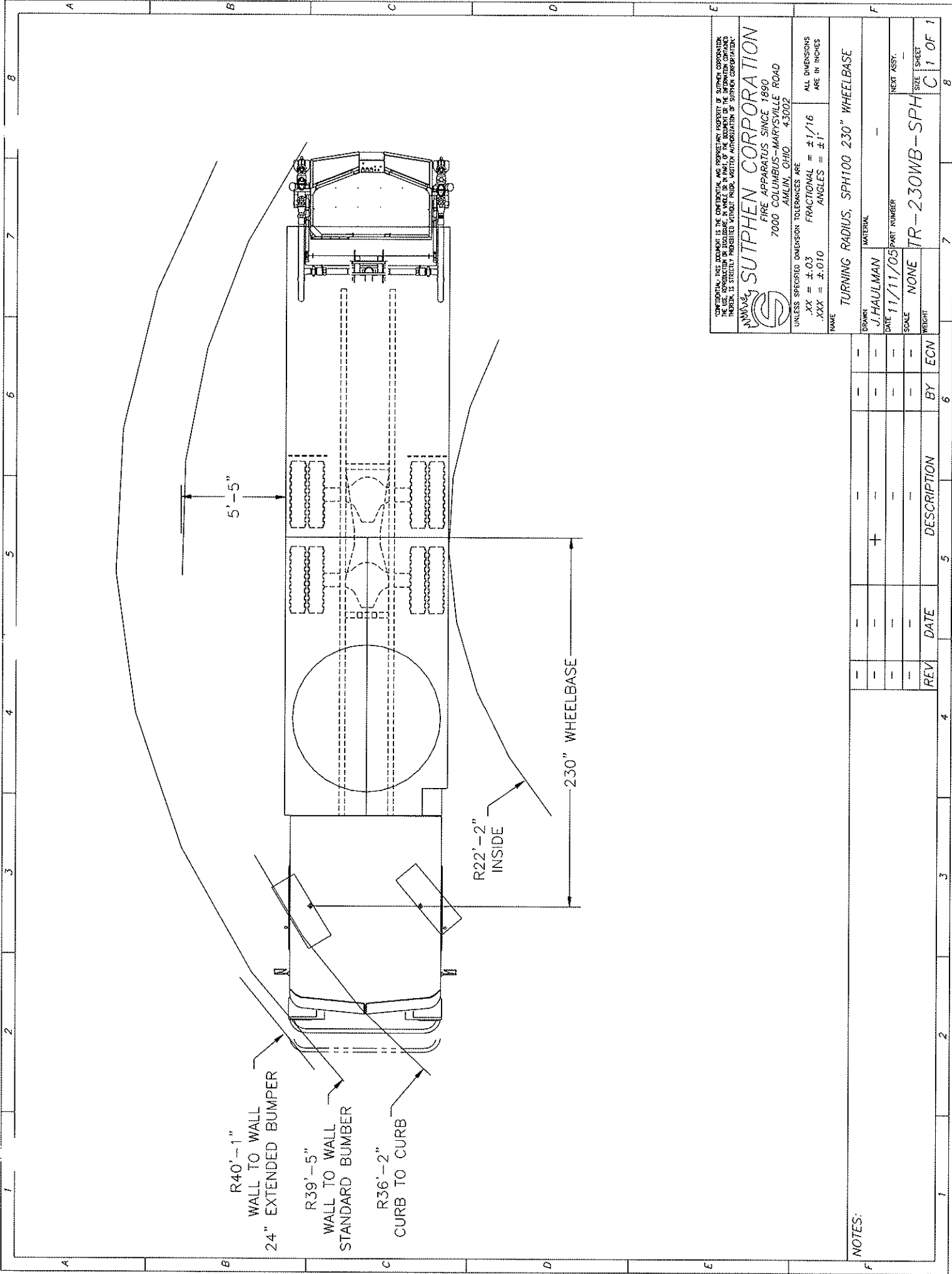
The fire department has reviewed and approves the preliminary site plans dated 8/24/2020 for 5481 Worthington Road.

Please contact me with questions.

Sincerely,

A handwritten signature in blue ink, appearing to read "A. J. Caito", is written over a horizontal line.

Anthony J. Caito
Genoa Township Fire Marshal
tcaito@genoatwp.com



CONSTRUCTION: THIS DRAWING IS THE PROPERTY OF SUTPHEN CORPORATION. IT IS TO BE USED FOR THE DESIGN OF THE APPARATUS ONLY. NO USE, REPRODUCTION OR DISSEMINATION IN ANY FORM OR BY ANY MEANS, WITHOUT THE WRITTEN PERMISSION OF SUTPHEN CORPORATION, IS STRICTLY PROHIBITED. WITHOUT PRIOR WRITTEN AUTHORIZATION OF SUTPHEN CORPORATION.

SUTPHEN CORPORATION
 FIRE APPARATUS SINCE 1890
 7000 COLUMBUS-MARYSVILLE ROAD
 ARLIN, OHIO 43002

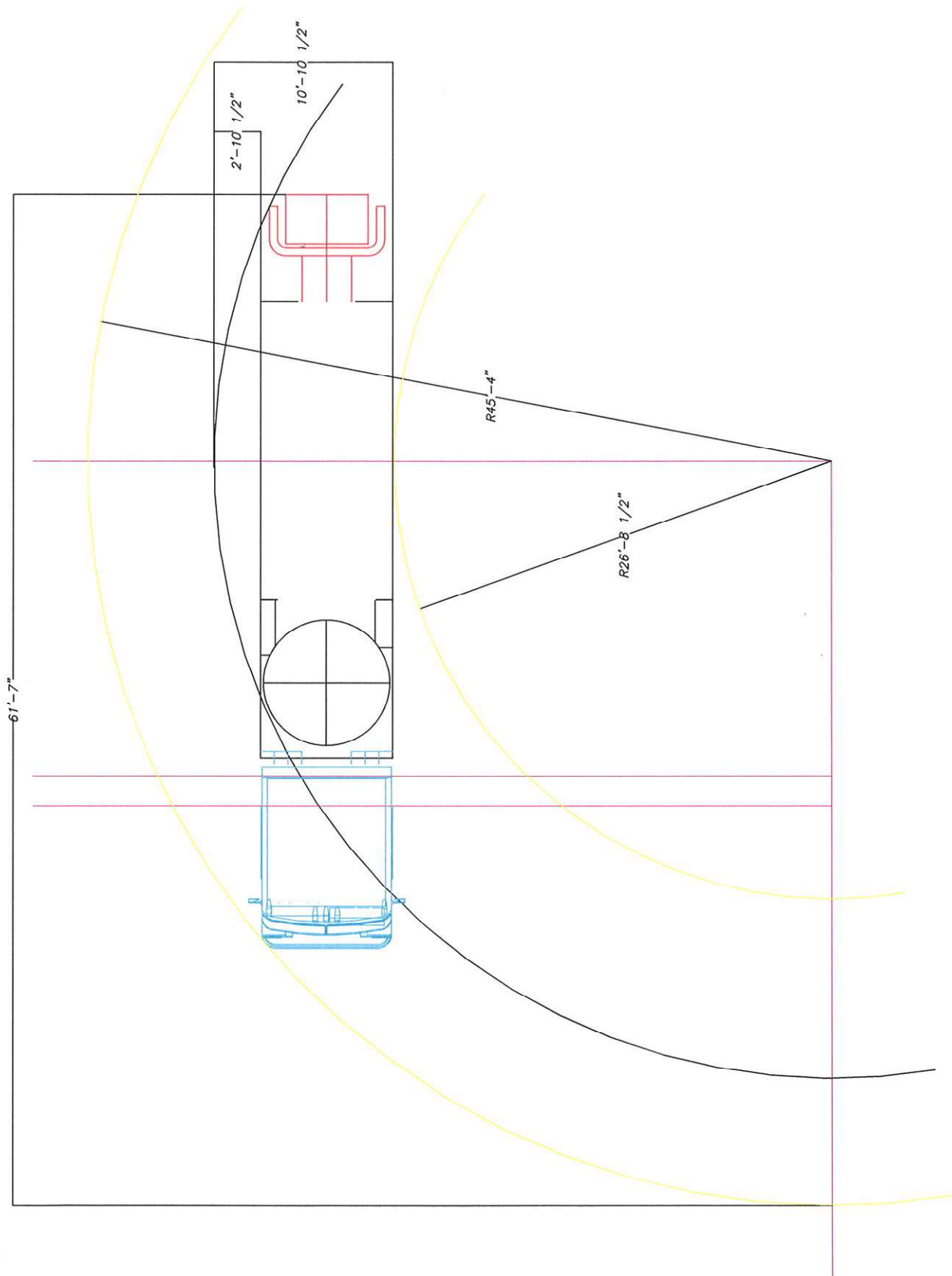
UNLESS SPECIFIED DIMENSION TOLERANCES ARE:
 .XX = ±.03 FRACTIONAL = ±1/16
 .XXX = ±.010 ANGLES = ±1°

ALL DIMENSIONS ARE IN INCHES

TURNING RADIUS, SPH100 230" WHEELBASE

NAME	DATE	BY	ECN
J. HAULMAN	11/11/05		
MATERIAL			
PART NUMBER			
SCALE	NONE		
WEIGHT			
TR-230WB-SPH		C 1 OF 1	

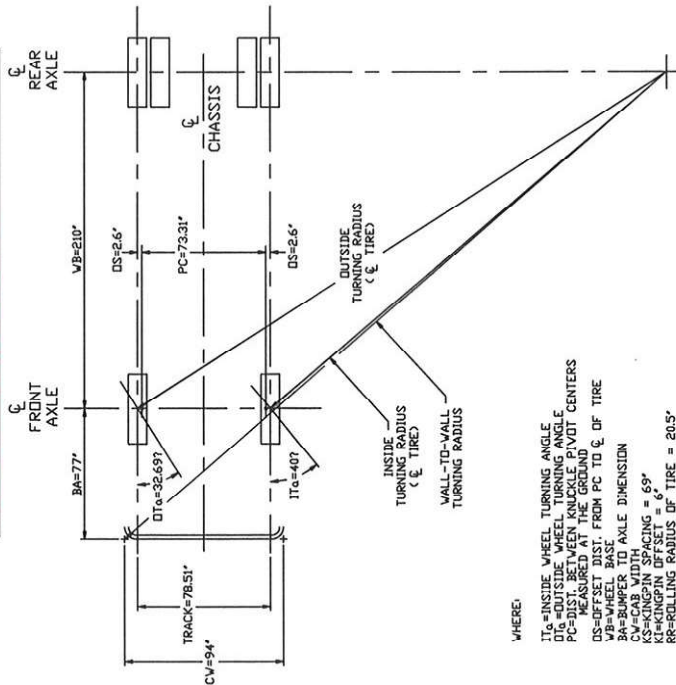
NOTES:



 SUTPHEN CORPORATION 7000 COLUMBUS-MARYSVILLE ROAD FAIRBORN, OHIO 43022		WEIGHT
DR. T. STITES	SUTPHEN 230" W.B.	DWG. NO.
DATE 6/3/03	100' 5 SEC. PLATFORM	230TURN-100-5
SCALE	TOTAL	NONE

TURNING PERFORMANCE OF A SUTPHEN 230" WB CUSTOM CHASSIS

OUTSIDE TURNING RADIUS: MEASURED TO THE CENTERLINE OF THE OUTSIDE TIRE	36'-10"
INSIDE TURNING RADIUS: MEASURED TO THE CENTERLINE OF THE INSIDE TIRE	30'-5"
CURB TO CURB TURNING RADIUS: (CALCULATED FOR A 300 INCH CURB HEIGHT)	37'-4"
WALL TO WALL TURNING RADIUS: MEASURED USING AN AXLE TO BUMPER DIMENSION OF 77"	41'-1"
WALL TO WALL TURNING RADIUS: MEASURED USING AN AXLE TO BUMPER DIMENSION OF 85"	41'-7"



WHERE:

- ITa=INSIDE WHEEL TURNING ANGLE
- DTa=OUTSIDE WHEEL TURNING ANGLE
- PC=DISTANCE BETWEEN KNUCKLE PIVOT CENTERS
- DS=DISTANCE FROM PC TO Q OF TIRE
- WB=WHEEL BASE
- BA=BUMPER TO AXLE DIMENSION
- CV=CAB WIDTH
- KT=KINGPIN ANGLE = 6°
- RR=ROLLING RADIUS OF TIRE = 20.5'
- CV-TIRE WIDTH = 11"
- C-C=CURB CONTACT LENGTH = 36"

SUTPHEN CORPORATION 7000 COLUMBUS-MARYSVILLE RD. ANLIN, OHIO 43002	
DRAWN BY: CMH	TURNING RADIUS CALCULATIONS FOR A 230" WHEEL BASE SUTPHEN CUSTOM CHASSIS
APPROVED BY: RVA	NO. REV'D
DATE: 8-29-89	SCALE: 1/8"=1'-0"
SCALE: 1/8"=1'-0"	NOT ASSEMBLY
A 230TR	

FRONT AXLE: ROCKWELL FG-941
FRONT TIRE: 11.00R20
CRAMP ANGLE: 40 DEGREES
FRONT AXLE TRACK: 78.51"

TURNING PERFORMANCE OF A SUTPHEN 200" WB CUSTOM CHASSIS

CALCULATIONS:

$$PC = KS + (2RR \times \tan KT) \\ = 69 + (2 \times 20.5 \times \tan 61^\circ) = 73.31'$$

OUTSIDE WHEEL TURNING ANGLE:

$$DTa = \arctan \left(\frac{1}{\tan 507' + PC/VB} \right) \\ = \arctan \left(\frac{1}{\tan 507' + 73.31/200} \right) = 32.69'$$

OUTSIDE TURNING RADIUS:

$$DTR = \frac{WB}{\sin DTa} + DS \\ = \frac{200}{\sin 32.69'} + 2.6 = 372.906' \text{ or } 373'$$

INSIDE TURNING RADIUS:

$$ITR = \frac{WB}{\sin ITa} - DS \\ = \frac{200}{\sin 407'} - 2.6 = 308.548' \text{ or } 309'$$

CURB-TO-CURB TURNING RADIUS:

$$C-C = \sqrt{\left(DTR + \frac{IV}{2} \right)^2 + \left(\frac{C}{2} \right)^2} \\ = \sqrt{\left(373 + \frac{11}{2} \right)^2 + \left(\frac{36}{2} \right)^2} = 378.928' \text{ or } 379'$$

WALL-TO-WALL TURNING RADIUS: (WITH STANDARD FRONT BUMPER - BA = 77")

$$V-W = \sqrt{\left[r + \left(\frac{CV}{2} - \frac{PC}{2} \right) \right]^2 + \left(VB + BA \right)^2} \\ = \sqrt{\left[311.65 + \left(\frac{94}{2} - \frac{73.31}{2} \right) \right]^2 + \left(200 + 77 \right)^2} = 424.747' \text{ or } 425'$$

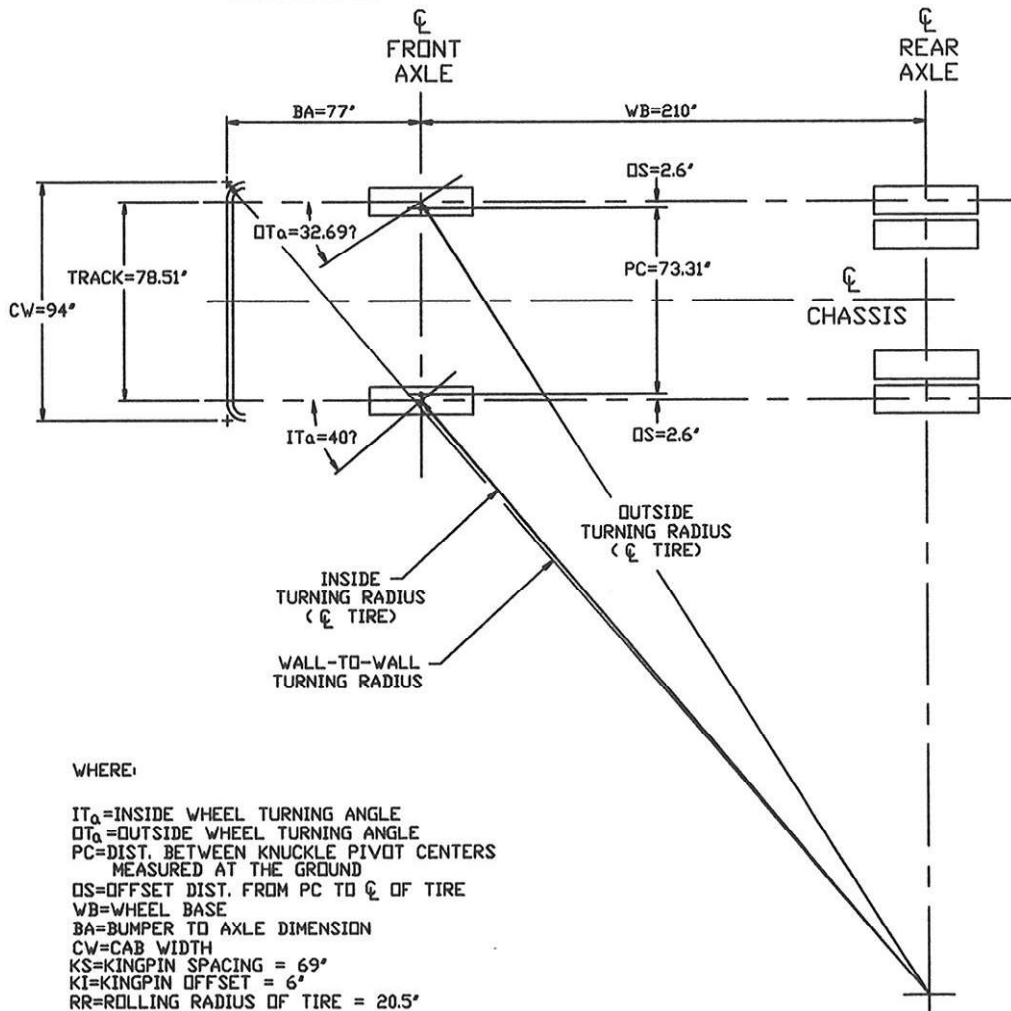
WALL-TO-WALL TURNING RADIUS: (WITH EXTENDED FRONT BUMPER - BA = 85")

$$V-W = \sqrt{\left[r + \left(\frac{CV}{2} - \frac{PC}{2} \right) \right]^2 + \left(VB + BA \right)^2} \\ = \sqrt{\left[311.65 + \left(\frac{94}{2} - \frac{73.31}{2} \right) \right]^2 + \left(200 + 85 \right)^2} = 430.007' \text{ or } 430'$$

SUTPHEN CORPORATION 7000 COLUMBUS-MARYSVILLE RD. ANLIN, OHIO 43002	
DRAWN BY: CMH	TURNING RADIUS CALCULATIONS FOR A 200" WHEEL BASE SUTPHEN CUSTOM CHASSIS
APPROVED BY: RVA	NO. REV'D
DATE: 8-29-89	SCALE: 1/8"=1'-0"
SCALE: 1/8"=1'-0"	NOT ASSEMBLY
A 200TR-2	

TURNING PERFORMANCE OF A SUTPHEN 230" WB CUSTOM CHASSIS

OUTSIDE TURNING RADIUS: (MEASURED TO THE CENTERLINE OF THE OUTSIDE TIRE)	36'-10"
INSIDE TURNING RADIUS: (MEASURED TO THE CENTERLINE OF THE INSIDE TIRE)	30'-5"
CURB TO CURB TURNING RADIUS: (CALCULATED FOR A 9.00 INCH CURB HEIGHT)	37'-4"
WALL TO WALL TURNING RADIUS: (MEASURED USING AN AXLE TO BUMPER DIMENSION OF 77")	41'-1"
WALL TO WALL TURNING RADIUS: (MEASURED USING AN AXLE TO BUMPER DIMENSION OF 85")	41' 7"



WHERE:

IT_a = INSIDE WHEEL TURNING ANGLE
 OT_a = OUTSIDE WHEEL TURNING ANGLE
 PC = DIST. BETWEEN KNUCKLE PIVOT CENTERS
 MEASURED AT THE GROUND
 OS = OFFSET DIST. FROM PC TO ϕ OF TIRE
 WB = WHEEL BASE
 BA = BUMPER TO AXLE DIMENSION
 CW = CAB WIDTH
 KS = KINGPIN SPACING = 69"
 KI = KINGPIN OFFSET = 6"
 RR = ROLLING RADIUS OF TIRE = 20.5"
 TW = TIRE WIDTH = 11"
 C = CURB CONTACT LENGTH = 36"

FRONT AXLE: ROCKWELL FG-941
 FRONT BRAKES: DISC
 FRONT TIRES: 11.00R20
 CRAMP ANGLE: 40 DEGREES
 FRONT AXLE TRACK: 78.51"

 SUTPHEN CORPORATION 7000 COLUMBUS-MARYSVILLE RD. ARLIN, OHIO 43002			
DRAWN BY CMH		TURNING RADIUS CALCULATIONS FOR A 230" WHEEL BASE SUTPHEN CUSTOM CHASSIS	
APPROVED BY RWA		MATERIAL	
DATE 8-29-89		NEXT ASSEMBLY	
SCALE .0156	TOL.	A	NO. REQ'D
			DWG. NO. 230TR

TURNING PERFORMANCE OF A SUTPHEN 200" WB CUSTOM CHASSIS

CALCULATIONS:

$$\begin{aligned} PC &= KS + (2RR \times \tan KI) \\ &= 69 + (2 \times 20.5 \times \tan 67) = 73.31' \end{aligned}$$

OUTSIDE WHEEL TURNING ANGLE:

$$\begin{aligned} O\Delta a &= \arctan\left(\frac{1}{(\tan 507) + PC/WB}\right) \\ &= \arctan\left(\frac{1}{(\tan 507) + 73.31/200}\right) = 32.697 \end{aligned}$$

OUTSIDE TURNING RADIUS:

$$\begin{aligned} OTR &= \frac{WB}{\sin O\Delta a} + OS \\ &= \frac{200}{\sin 32.697} + 2.6 = 372.906' \text{ or } \underline{373'} \end{aligned}$$

INSIDE TURNING RADIUS:

$$\begin{aligned} ITR &= \frac{WB}{\sin I\Delta a} - OS \\ &= \frac{200}{\sin 407} - 2.6 = 308.545' \text{ or } \underline{309'} \end{aligned}$$

CURB-TO-CURB TURNING RADIUS:

$$\begin{aligned} C-C &= \sqrt{\left(OTR + \frac{TW}{2}\right)^2 + \left(\frac{C}{2}\right)^2} \\ &= \sqrt{\left(373 + \frac{11}{2}\right)^2 + \left(\frac{36}{2}\right)^2} = 378.928' \text{ or } \underline{379'} \end{aligned}$$

WALL-TO-WALL TURNING RADIUS: (WITH STANDARD FRONT BUMPER - BA = 77')

$$\begin{aligned} W-W &= \sqrt{\left[Y + \left(\frac{CW}{2} - \frac{PC}{2}\right)\right]^2 + (WB + BA)^2} \\ &= \sqrt{\left[311.65 + \left(\frac{94}{2} - \frac{73.31}{2}\right)\right]^2 + (200 + 77)^2} = 424.747' \text{ or } \underline{425'} \end{aligned}$$

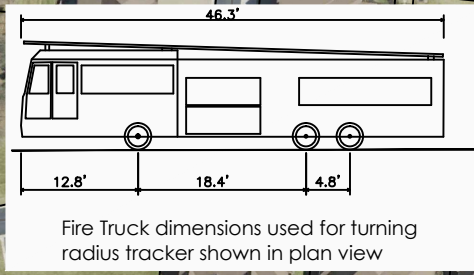
WALL-TO-WALL TURNING RADIUS: (WITH EXTENDED FRONT BUMPER - BA = 85')

$$\begin{aligned} W-W &= \sqrt{\left[Y + \left(\frac{CW}{2} - \frac{PC}{2}\right)\right]^2 + (WB + BA)^2} \\ &= \sqrt{\left[311.65 + \left(\frac{94}{2} - \frac{73.31}{2}\right)\right]^2 + (200 + 85)^2} = 430.007' \text{ or } \underline{430'} \end{aligned}$$

		SUTPHEN CORPORATION 7000 COLUMBUS-MARYSVILLE RD. ARLIN, OHIO 43002	
DRAWN BY CMH	TURNING RADIUS CALCULATIONS FOR A 200" WHEEL BASE SUTPHEN CUSTOM CHASSIS		NO. REQ'D
APPROVED BY RWA			
DATE 8-29-89	MATERIAL		
SCALE NONE	TOL.	NEXT ASSEMBLY	DWG. NO. 200TR-2

NORTH

Villas at Walnut Grove



Big Walnut Road

SWM

Homestead at Highland Lakes

Worthington Road

The Nook

