CITY OF MADISON

Madison, Wisconsin

CITY ENGINEERING DIVISION
DEPARTMENT OF PUBLIC WORKS
PLAN OF PROPOSED IMPROVEMENT

ORCHARD STREET SANITARY SEWER REPAIR

CITY PROJECT NO. 12315
CONTRACT NO. 8907

INDEX OF SHEETS

SHEET NO.	U1	UTILITY PLAN & PROFILES

PUBLIC IMPROVEMENT PROJECT
APPROVED

MARCH 31, 2020

BY THE COMMON COUNCIL
OF MADISON, WISCONSIN

PUBLIC IMPROVEMENT DESIGN
APPROVED BY:

City Engineer   Date

SANITARY SEWER   REV. 4-23-2020
DESIGNED BY:

WISCONSIN
KYLE D. FRANK
E-45653
MADISON, WI
3/23/20
PROFESSIONAL ENGINEER

CONVENTIONAL SIGNS
FIELD VERIFY ALL UTILITY LOCATIONS

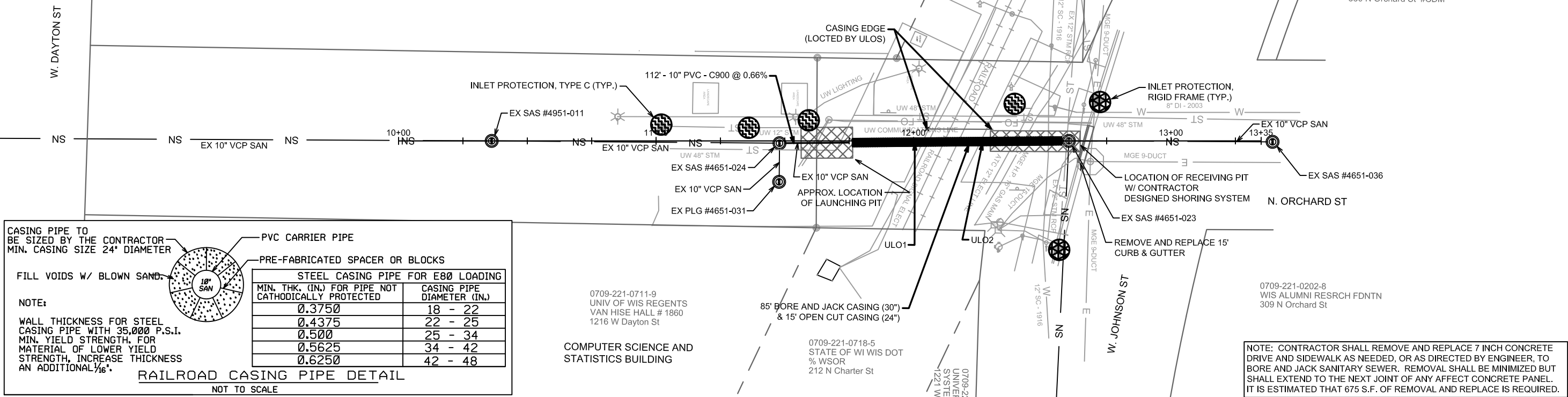|	
GAS	—— G ——
STORM SEWER	—— ST ——
SANITARY SEWER	—— SAN ——
WATER	—— W ——
BURIED ELECTRIC	—— E ——
OVERHEAD ELECTRIC	—— OH ——
POWER POLE	☐
ADA COMPLIANT RAMP W/ DETECTABLE WARNING FIELD	▦
COMBUSTIBLE FLUIDS	✹

NOTES:

ALL GUTTERS SHALL DRAIN WITH A MINIMUM GRADE
OF 0.50% TOWARD STORM SEWER INLETS.

SIDEWALK RAMPS SHALL HAVE A MAXIMUM SLOPE OF 1"
PER 12". SIDEWALK AND CURB RAMPS SHALL BE
CONSTRUCTED WITH A SIDE SLOPE OF 2.00%. SIDEWALK
SHALL HAVE A MINIMUM LONGITUDINAL SLOPE OF
0.50% AND A MAXIMUM LONGITUDINAL SLOPE OF 5.00%
EXCEPT WHERE STREET GRADES EXCEED 5.00%.

PROJECT LOCATION

NOTE: CONTRACTOR SHALL NOTIFY MG&E AND ATC TWO DAYS PRIOR TO CROSSING HIGH PRESSURE GAS MAIN AND ATC 12" TELEPHONE LINE WITH THE CASING PIPE.

0709-221-0613-7
UNIV OF WIS REGENTS
VAN HISE HALL #1860
1308 W Dayton St

UNION SOUTH BUILDING

0709-221-0612-9
STATE OF WI WIS DOT
% WSOR
1301 W Johnson St

CAMPUS DR

0709-221-0302-6
WI INST FOR DISCOVERY
CONDO ASSN WARF DIRECTOR
330 N Orchard St #CDM

CASING EDGE
(LOCTED BY ULOS)

W. DAYTON ST

112' - 10" PVC - C900 @ 0.66%

INLET PROTECTION,
RIGID FRAME (TYP.)

INLET PROTECTION, TYPE C (TYP.)

EX SAS #4951-011

EX 10" VCP SAN

10+00

NS

EX 10" VCP SAN

EX SAS #4651-024

EX 10" VCP SAN

EX 10" VCP SAN

APPROX. LOCATION
OF LAUNCHING PIT

EX PLG #4651-031

ULO1

ULO2

EX 10" VCP SAN

EX SAS #4651-036

LOCATION OF RECEIVING PIT
W/ CONTRACTOR
DESIGNED SHORING SYSTEM

EX SAS #4651-023

N. ORCHARD ST

REMOVE AND REPLACE 15'
CURB & GUTTER

CASING PIPE TO
BE SIZED BY THE CONTRACTOR
MIN. CASING SIZE 24" DIAMETER

PVC CARRIER PIPE
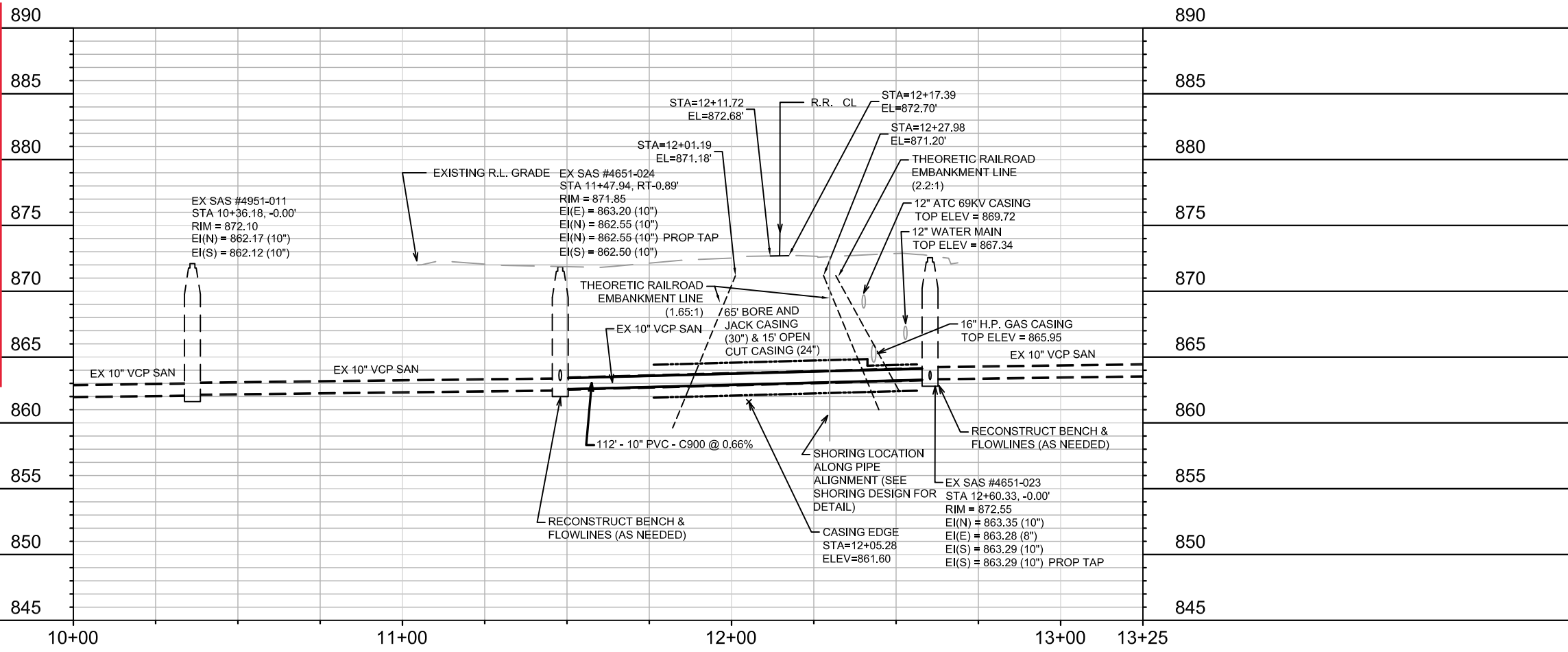
PRE-FABRICATED SPACER OR BLOCKS

FILL VOIDS W/ BLOWN SAND.

NOTE:

WALL THICKNESS FOR STEEL
CASING PIPE WITH 35,000 P.S.I.
MIN. YIELD STRENGTH. FOR
MATERIAL OF LOWER YIELD
STRENGTH, INCREASE THICKNESS
AN ADDITIONAL 1/16".

10"
SAN

STEEL CASING PIPE FOR E80 LOADING	
MIN. THK. (IN.) FOR PIPE NOT CATHODICALLY PROTECTED	CASING PIPE DIAMETER (IN.)
0.3750	18 - 22
0.4375	22 - 25
0.500	25 - 34
0.5625	34 - 42
0.6250	42 - 48

RAILROAD CASING PIPE DETAIL
NOT TO SCALE

0709-221-0711-9
UNIV OF WIS REGENTS
VAN HISE HALL # 1860
1216 W Dayton St

COMPUTER SCIENCE AND
STATISTICS BUILDING

0709-221-0718-5
STATE OF WI WIS DOT
% WSOR
212 N Charter St

85' BORE AND JACK CASING (30")
& 15' OPEN CUT CASING (24")

W. JOHNSON ST

0709-221-0202-8
WIS ALUMNI RESRCH FDNTN
309 N Orchard St

NOTE: CONTRACTOR SHALL REMOVE AND REPLACE 7 INCH CONCRETE
DRIVE AND SIDEWALK AS NEEDED, OR AS DIRECTED BY ENGINEER, TO
BORE AND JACK SANITARY SEWER. REMOVAL SHALL BE MINIMIZED BUT
SHALL EXTEND TO THE NEXT JOINT OF ANY AFFECT CONCRETE PANEL.
IT IS ESTIMATED THAT 675 S.F. OF REMOVAL AND REPLACE IS REQUIRED.

CASING CLARIFICATIONS:
1) A 30" steel casing will utilized up to the H.P. gas main. A 0.5" steel plate with a 24" hole will be welded to the face of 30" casing. A 24" casing will be inserted in to hole and welded into place.
2) The casing walls of the 30" casing will be 0.5" thick
3) The casing pipes will have a minimum yield strength of 35,000 psi

LAUNCHING PIT CLARIFICATIONS:
1) The launching pit will be a minimum of 33' from the track centerline (measurement shall be perpendicular to the track centerline)
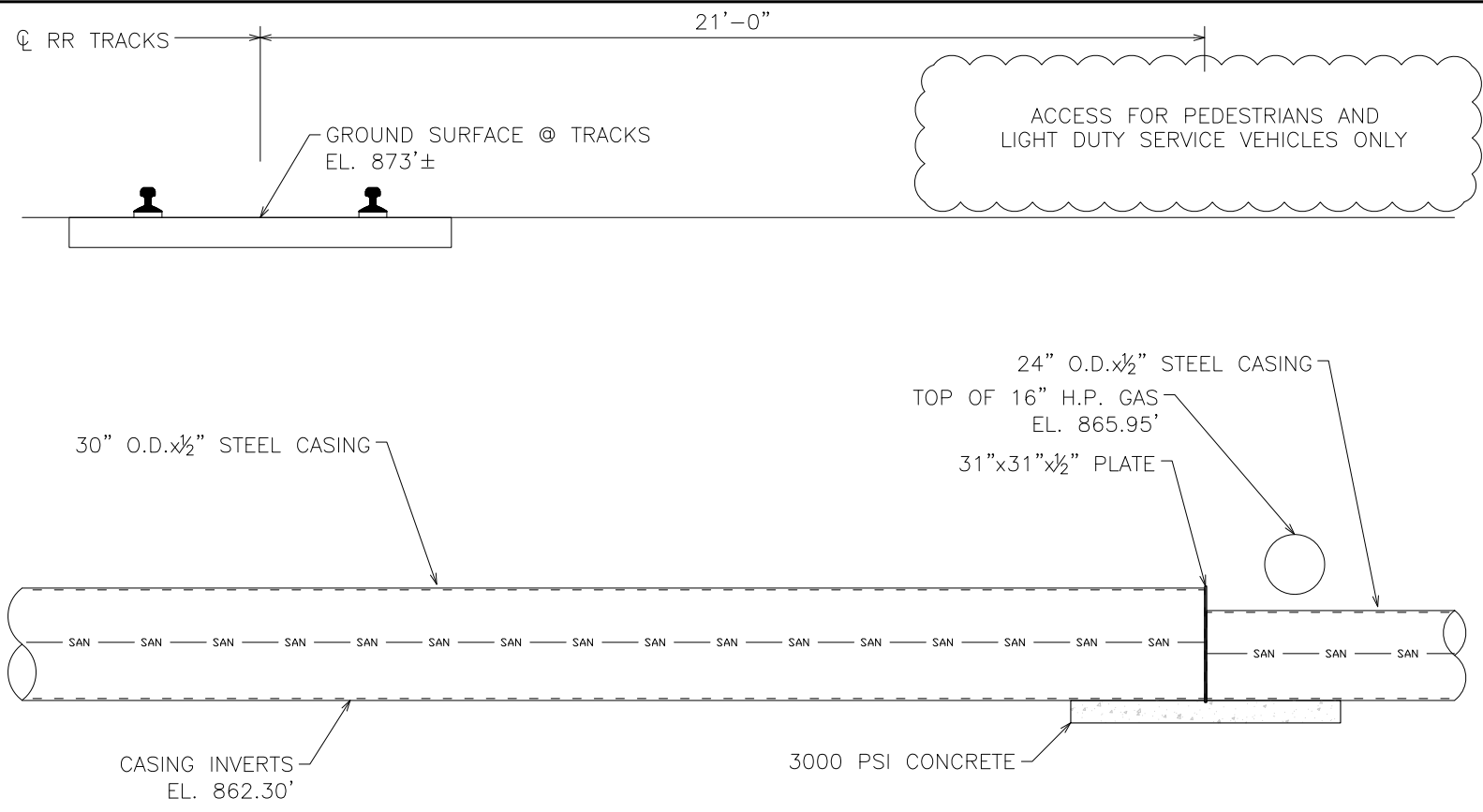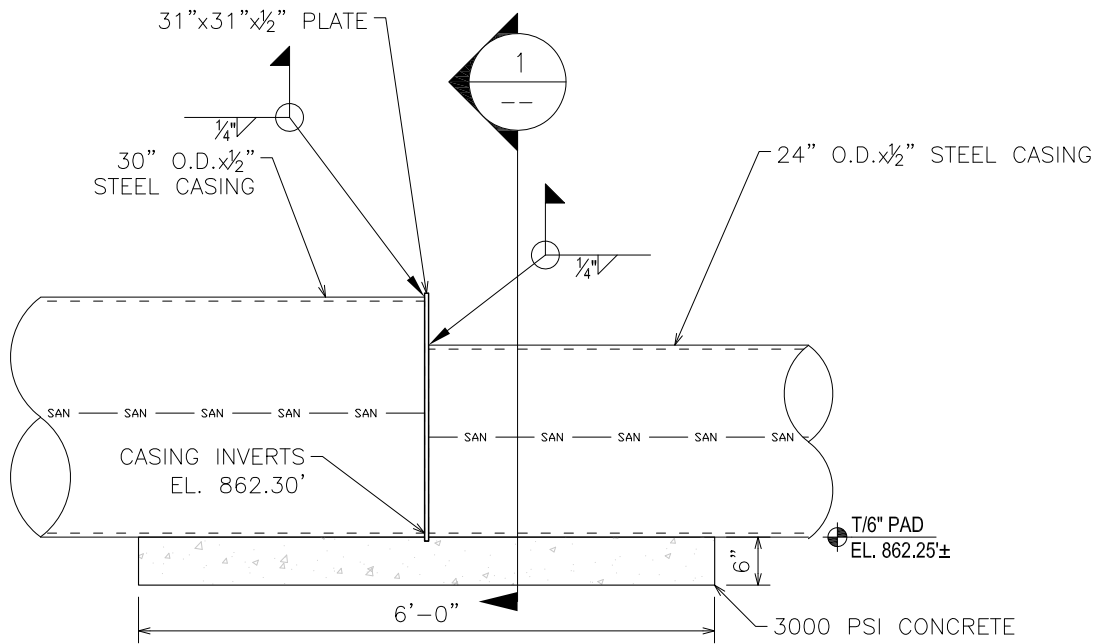2) The face of the launching pit will be retained by vertical shoring

STA=12+11.72
EL=872.68'

R.R. CL

STA=12+17.39
EL=872.70'

STA=12+27.98
EL=871.20'

STA=12+01.19
EL=871.18'

THEORETIC RAILROAD
EMBANKMENT LINE
(2.2:1)

EXISTING R.L. GRADE

EX SAS #4651-024
STA 11+47.94, RT-0.89'
RIM = 871.85
EI(E) = 863.20 (10")
EI(N) = 862.55 (10")
EI(N) = 862.55 (10") PROP TAP
EI(S) = 862.50 (10")

12" ATC 69KV CASING
TOP ELEV = 869.72

12" WATER MAIN
TOP ELEV = 867.34

EX SAS #4951-011
STA 10+36.18, -0.00'
RIM = 872.10
EI(N) = 862.17 (10")
EI(S) = 862.12 (10")

THEORETIC RAILROAD
EMBANKMENT LINE
(1.65:1)

65' BORE AND
JACK CASING
(30") & 15' OPEN
CUT CASING (24")

EX 10" VCP SAN

16" H.P. GAS CASING
TOP ELEV = 865.95

EX 10" VCP SAN

EX 10" VCP SAN

EX 10" VCP SAN

EX 10" VCP SAN

RECONSTRUCT BENCH &
FLOWLINES (AS NEEDED)

112' - 10" PVC - C900 @ 0.66%

SHORING LOCATION
ALONG PIPE
ALIGNMENT (SEE
SHORING DESIGN FOR
DETAIL)

EX SAS #4651-023
STA 12+60.33, -0.00'
RIM = 872.55
EI(N) = 863.35 (10")
EI(E) = 863.28 (8")
EI(S) = 863.29 (10")
EI(S) = 863.29 (10") PROP TAP

RECONSTRUCT BENCH &
FLOWLINES (AS NEEDED)

CASING EDGE
STA=12+05.28
ELEV=861.60

10+00   11+00   12+00   13+00   13+25

ℂ RR TRACKS

21'-0"

GROUND SURFACE @ TRACKS
EL. 873'±

ACCESS FOR PEDESTRIANS AND
LIGHT DUTY SERVICE VEHICLES ONLY

24" O.D.x½" STEEL CASING

TOP OF 16" H.P. GAS
EL. 865.95'

30" O.D.x½" STEEL CASING

31"x31"x½" PLATE

SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN — SAN

SAN — SAN — SAN

CASING INVERTS
EL. 862.30'

3000 PSI CONCRETE

GENERAL ELEVATION VIEW
SCALE: 1/4" = 1'-0"

31"x31"x½" PLATE

1

¼"

30" O.D.x½"
STEEL CASING

¼"

24" O.D.x½" STEEL CASING

SAN — SAN — SAN — SAN — SAN

SAN — SAN — SAN — SAN — SAN

CASING INVERTS
EL. 862.30'

T/6" PAD
EL. 862.25'±

6"

6'-0"

3000 PSI CONCRETE

DETAIL ELEVATION VIEW
SCALE: 1/2" = 1'-0"

WISCONSIN
JOSEPH P.
WIEDEMANN
PE-27977
CARY,
IL
PROFESSIONAL ENGINEER

Joseph P. Wiedemann

8/21/2020

31"x31"x½" PLATE
30" O.D.x½" STEEL CASING
24" O.D.x½" STEEL CASING

CASING INVERTS
EL. 862.30'

T/6" PAD
EL. 862.25'±

6"
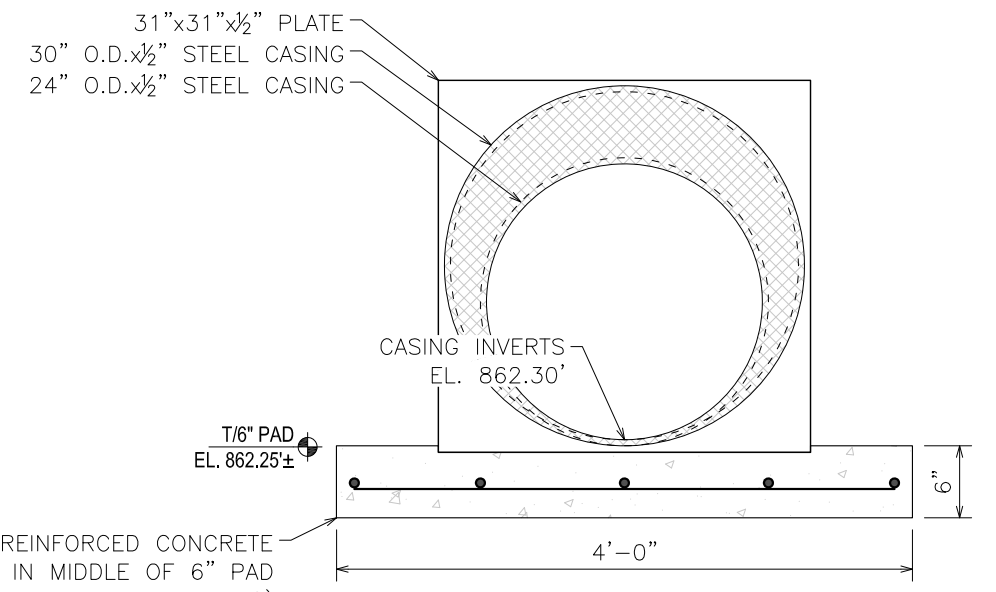
4'-0"

4' WIDE x 6' LONG x 6" THICK REINFORCED CONCRETE
#4 BARS E.W, 12" C.C., IN MIDDLE OF 6" PAD
(VERIFY PAD TO BE PLACED ON NATIVE MEDIUM DENSE SOILS)

SECTION 1
SCALE: 3/4" = 1'-0"

WEBER
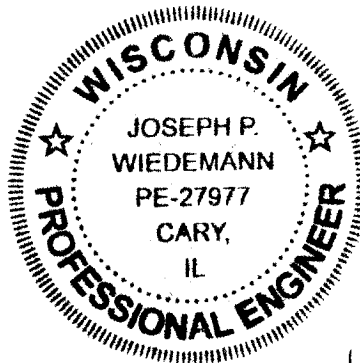ASSOCIATES
GEOTECHNICAL DESIGN
& CONSULTATION

TEMPORARY EXCAVATION SUPPORT
Orchard Street Sanitary Sewer Repair
Orchard Street at Campus Drive

Dane County, Wisconsin
August 13, 2020

Prepared for:
Speedway Sand & Gravel, Inc.
Middleton, Wisconsin

Prepared by:
Weber Associates LLC
Belleview, WI ~ Elgin, IL ~ Milwaukee, WI

[Professional Engineer seal: WISCONSIN — JOSEPH P. WIEDEMANN — PE-27977 — CARY, IL — PROFESSIONAL ENGINEER]

Cover sheet plus 13 pages

Joseph P. Wiedemann   P.E. #27977
Weber Associates Project #20.148

₵ WIS & SOUTHERN RxR

N →

PLAN VIEW 1/8" = 1 ft

7'9"

10'

12' (NO EXCAVATION)

15'6"

24:1 INFL.

12 ft

DETAIL A

12" ATC 69 kV
TOP EL 869.72

16" HP GAS MAIN
(TOP EL 865.95

₵ 24" CASING
(INV. EL 862.3)

25°

TRACK ₵

8' WIDE x ≈10' HIGH
STEEL ROAD PLATE
TO CLOSE END (1" THICK)

TRENCH SHIELD

7' CLEAR WIDTH
(MIN 6" SIDE WALLS)

10' LONG

10' HEIGHT

2 EACH { HP 14×23 } × 31 ft

8' 7'6"

7'-0"

SLOPE

DETAIL A (1/4" = 1')

WEBER
ASSOCIATES
GEOTECHNICAL DESIGN
& CONSULTATION
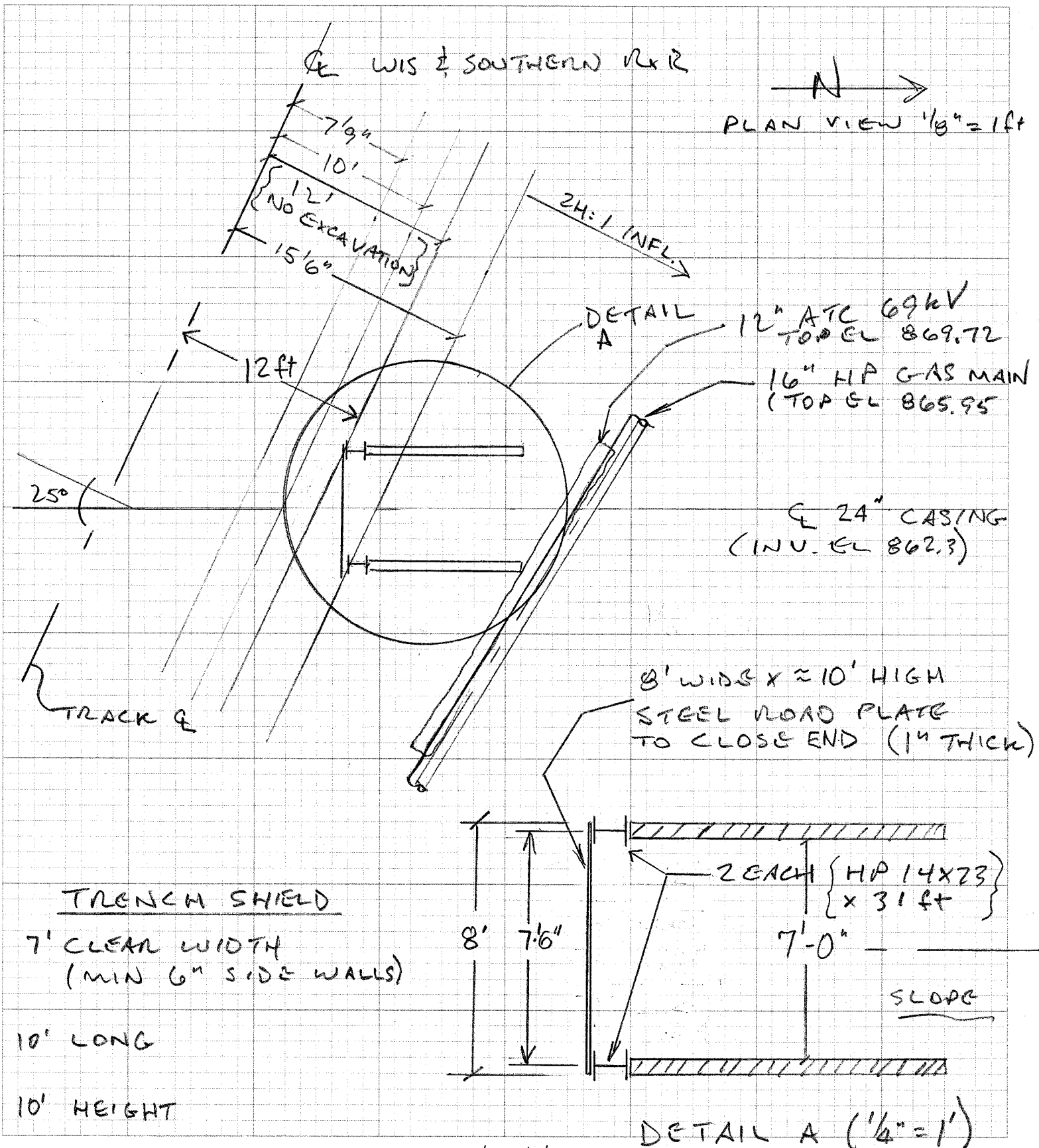
BY __JPW__ DATE __8/12/20__ SUBJECT __ORCHARD ST SAN REPAIR__ SHEET NO. __2__ OF _____

CHKD. BY _____ DATE _____ __MADISON, WIS__ JOB NO. __20.148__

MIN 12 FT
TO TRACK ℄

TRENCH SHIELD

EXISTING GRADE 873+/-

ELEV 873

870

12" ATC 69 kV

16" H.P. GAS
VERIFY LOCATION

1" STEEL PLATE 8' WIDE

24" CASING
INV 862.3

860

BOTTOM OF EXC. 861.3

HP 14 X 73 X 31'
TWO EACH, CENTER ON 30" CASING
AND ALLOW APPROX 76" CLEAR

WEBER
ASSOCIATES
GEOTECHNICAL DESIGN
& CONSULTATION
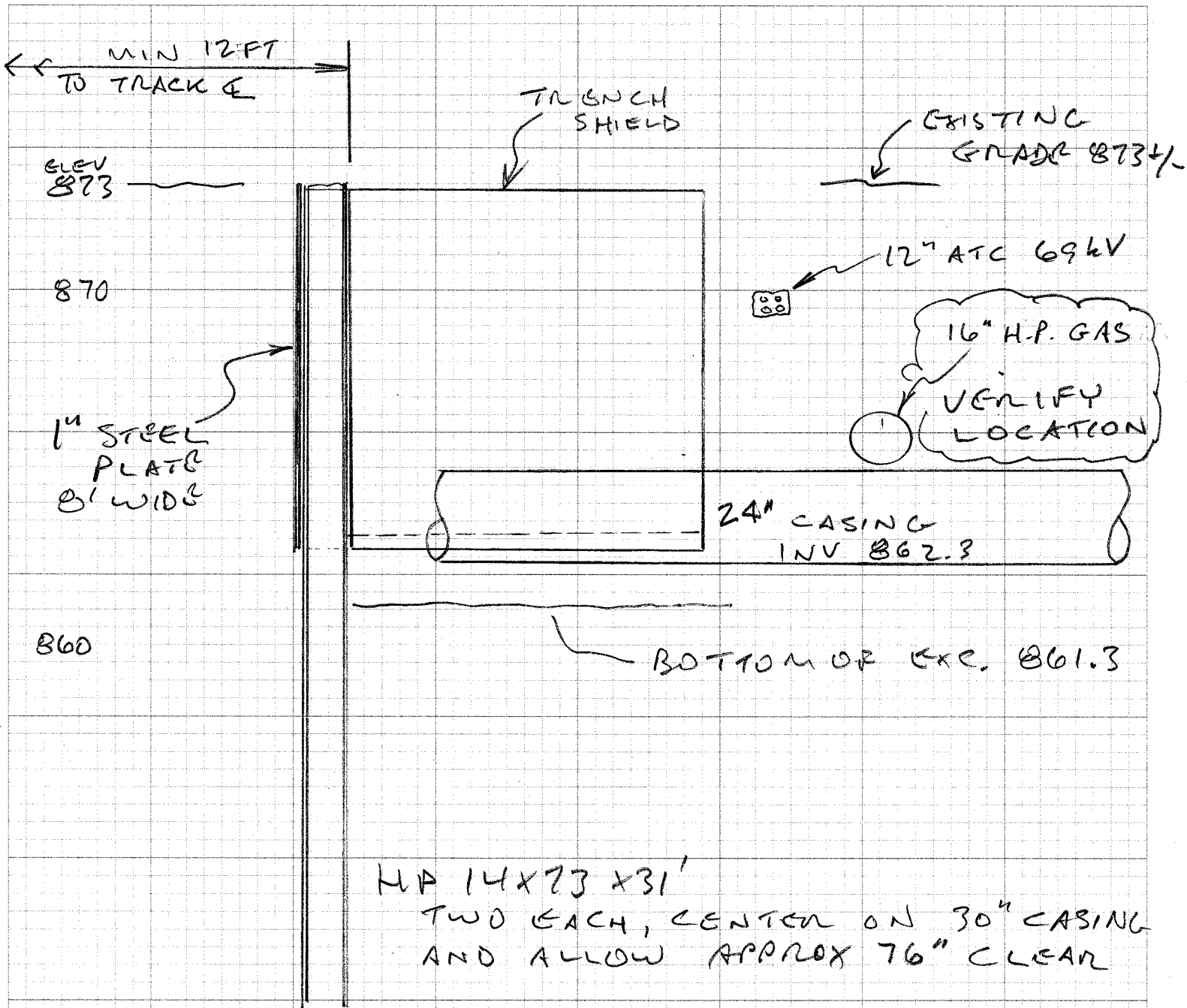
BY __JPW__   DATE _8/12/20_   SUBJECT _ORCHARD ST. SAN_   SHEET NO. __3__ OF _____

CHKD. BY _____   DATE _____   _STEEL "LAGGING" PLATE_ JOB NO. _20.148_

CHECK CAPACITY OF 1" (36 ksi) STEEL PLATE
TO COVER END OF TRENCH BOX

6'4" SPAN   7'6" c/c   HP 14X73
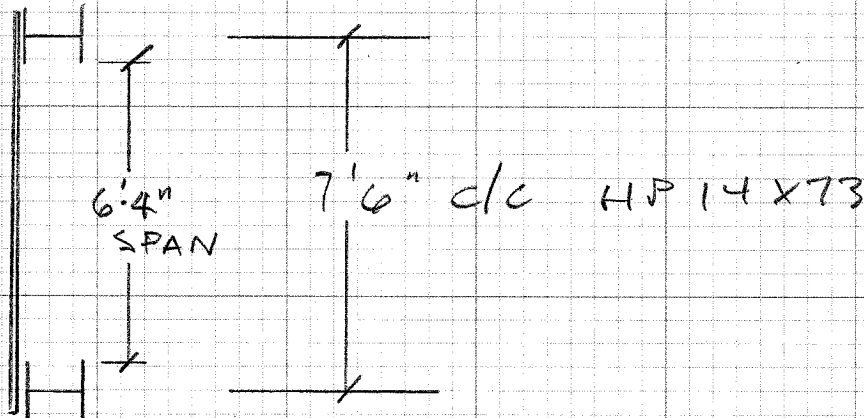
MAXIMUM EARTH LOADING ON PLATE = 752 PSF
(REF. CIVIL TECH p 6)

S_x PLATE = $bh^2/6$ CONSIDER LOADED 12" STRIP

$= 12(1")^2/6 = 2$ in^3

W earth + surcharge = 752 PSF

FROM MACNAB 2002, REDUCED SOIL PRESSURE DUE TO ARCHING SAY 800 PSF × 2/3
= 533 PSF

$M_{12" STRIP} = w\ell^2/8$

$= (.53^k/ft^2)(6.33')^2/8 = 2.67$ k.ft/ft

REQUIRED $S_x = M \times (12"/1)/.66 F_y = 2.67 \times 12/24 = 1.34$ in^3

1.34 in^3 < 2.0 in^3 FS = 1.5

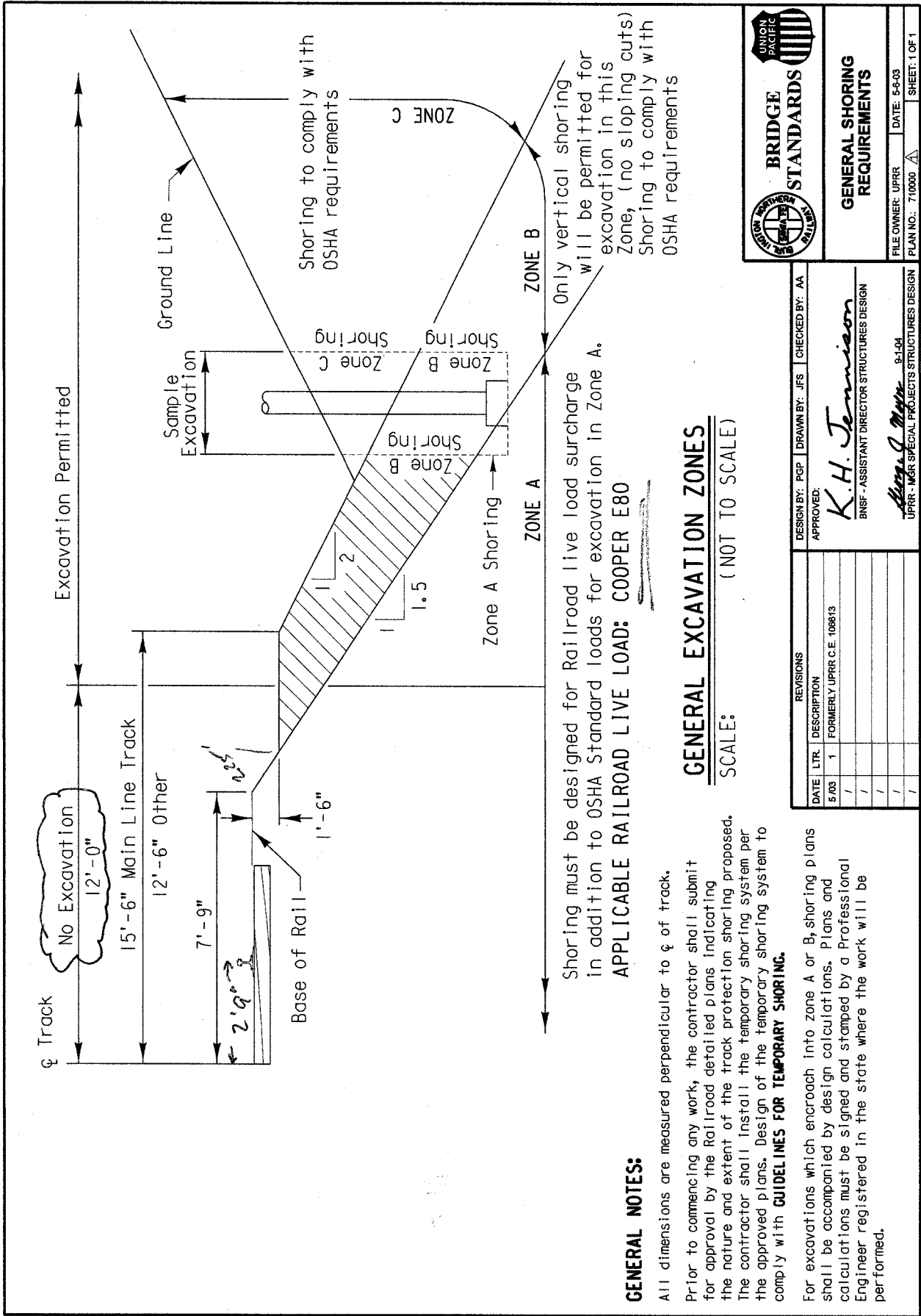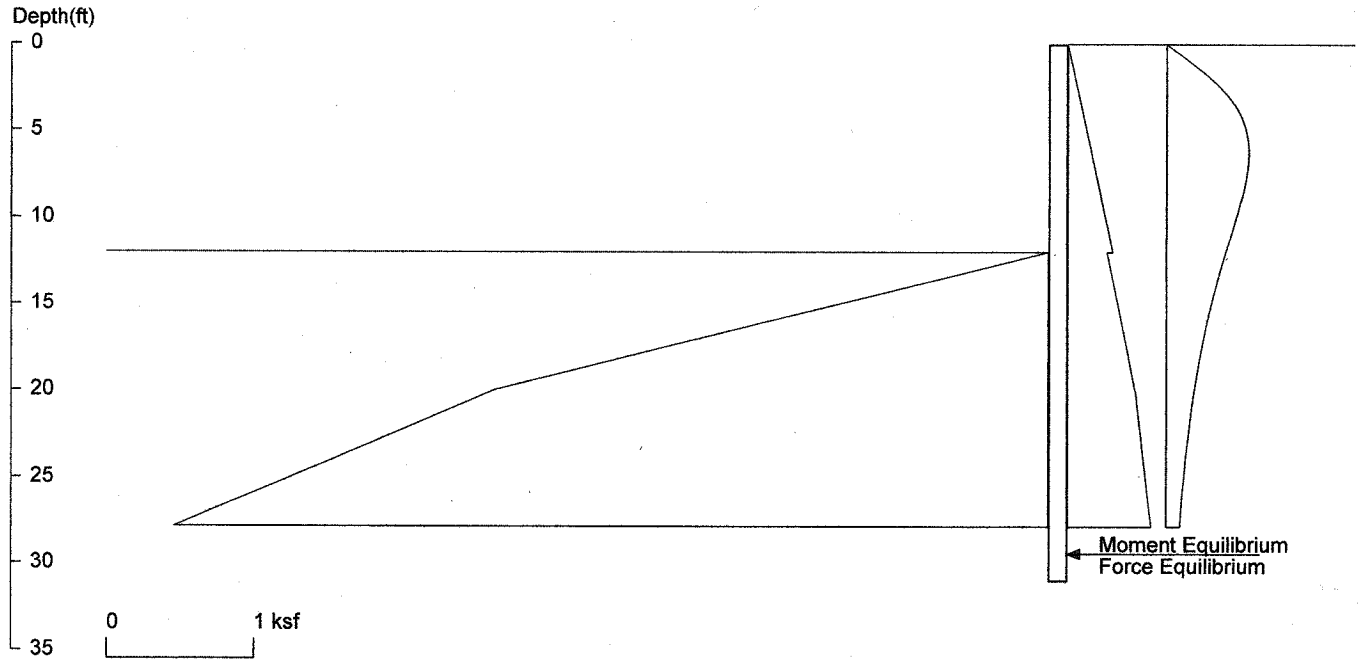USE 1" STEEL PLATE, GRADE 36 ksi MIN
FOR CLEAR SPAN = 6'-4"

Figure 1

GENERAL NOTES:

All dimensions are measured perpendicular to ℄ of track.

Prior to commencing any work, the contractor shall submit for approval by the Railroad detailed plans indicating the nature and extent of the track protection shoring proposed. The contractor shall Install the temporary shoring system per the approved plans. Design of the temporary shoring system to comply with GUIDELINES FOR TEMPORARY SHORING.

For excavations which encroach into zone A or B, shoring plans shall be accompanied by design calculations. Plans and calculations must be signed and stamped by a Professional Engineer registered in the state where the work will be performed.

℄ Track

No Excavation

12'-0"

15'-6" Main Line Track

12'-6" Other

7'-9"

Base of Rail

1'-6"

Excavation Permitted

Ground Line

Shoring to comply with OSHA requirements

ZONE C

ZONE B

Only vertical shoring will be permitted for excavation in this Zone, (no sloping cuts) Shoring to comply with OSHA requirements

Sample Excavation

Zone C Shoring

Zone B Shoring

Zone B Shoring

ZONE A

Zone A Shoring

2

1

1.5

1

Shoring must be designed for Railroad live load surcharge in addition to OSHA Standard loads for excavation in Zone A.

APPLICABLE RAILROAD LIVE LOAD: COOPER E80

GENERAL EXCAVATION ZONES

SCALE: (NOT TO SCALE)

REVISIONS			
DATE	LTR.	DESCRIPTION	
5/03	1	FORMERLY UPRR C.E. 106813	

DESIGN BY: PGP | DRAWN BY: JFS | CHECKED BY: AA

APPROVED:

K.H. Jennison

BNSF – ASSISTANT DIRECTOR STRUCTURES DESIGN

UPRR – MGR SPECIAL PROJECTS STRUCTURES DESIGN 9-1-04

BRIDGE STANDARDS

GENERAL SHORING REQUIREMENTS

FILE OWNER: UPRR | DATE: 5-8-03

PLAN NO.: 710000 | SHEET: 1 OF 1

Orchard St San Sewer Repair
earth pres. at min. 12ft from track centerline

Depth(ft)

Moment Equilibrium
Force Equilibrium

0   1 ksf

<ShoringSuite> CIVILTECH SOFTWARE USA www.civiltech.com

Licensed to   JP Wiedemann   jpw   Date: 8/12/2020
File: C:\Users\josep\Desktop\PROJECTS\Speedway\Orchard St San Bore Pit at RxR\weber design\12 ft cantilever at end

Wall Height=12.0   Pile Diameter=1.0   Pile Spacing=3.5   Wall Type: 2. Soldier Pile, Drilled

PILE LENGTH: Min. Embedment=19.04   Min. Pile Length=31.04 (in graphics and analysis)
MOMENT IN PILE: Max. Moment=259.81 per Pile Spacing=3.5 at Depth=19.97

PILE SELECTION:
Request Min. Section Modulus = 94.5 in3/pile=1548.17 cm3/pile, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
HP14X73 has Section Modulus = 107.0 in3/pile=1753.41 cm3/pile. It is greater than Min. Requirements!
Top Deflection = 1.83(in) based on E (ksi)=29000.00 and I (in4)/pile=729.0

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
*	Above	Base		
0.000	0.000	12.000	0.305	0.025392
*	Below	Base		
12.000	0.265	20.000	0.455	0.023765
20.000	0.456	108.000	1.683	0.013942
*	Sur-	charge		
0.000	0.000	0.600	0.098	0.163482
0.600	0.098	1.200	0.192	0.156693
1.200	0.192	1.800	0.278	0.143917
1.800	0.278	2.400	0.354	0.126569
2.400	0.354	3.000	0.418	0.106370
3.000	0.418	3.600	0.469	0.085032
3.600	0.469	4.200	0.508	0.064020
4.200	0.508	4.800	0.534	0.044421
4.800	0.534	5.400	0.550	0.026927
5.400	0.550	6.000	0.558	0.011880
6.000	0.558	6.600	0.557	-0.000648
6.600	0.557	7.200	0.551	-0.010768

+ .158 ⇒ 715 PSF

7.200	0.551	7.800	0.540	-0.018697
7.800	0.540	8.400	0.525	-0.024707
8.400	0.525	9.000	0.507	-0.029082
9.000	0.507	9.600	0.488	-0.032099
9.600	0.488	10.200	0.468	-0.034007
10.200	0.468	10.800	0.447	-0.035028
10.800	0.447	11.400	0.425	-0.035349
11.400	0.425	12.000	0.404	-0.035131
12.000	0.404	13.200	0.363	-0.034040
13.200	0.363	14.400	0.325	-0.031789
14.400	0.325	15.600	0.290	-0.029050
15.600	0.290	16.800	0.259	-0.026170
16.800	0.259	18.000	0.231	-0.023355
18.000	0.231	19.200	0.206	-0.020715
19.200	0.206	20.400	0.184	-0.018303
20.400	0.184	21.600	0.165	-0.016137
21.600	0.165	22.800	0.148	-0.014215
22.800	0.148	24.000	0.133	-0.012520
24.000	0.133	26.400	0.108	-0.010385
26.400	0.108	28.800	0.088	-0.008107
28.800	0.088	31.200	0.073	-0.006373

PASSIVE PRESSURES:

Z1	P1	Z2	P2	Slope
*	Below	Base		
12.000	0.000	20.000	3.759	0.469924
20.000	3.759	108.000	28.029	0.275792

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	3.50
2	12.00	1.00

PASSIVE SPACING:

No.	Z depth	Spacing
1	12.00	2.00

UNITS: Width,Spacing,Diameter,Length,and Depth - ft; Force - kip; Moment - kip-ft
Friction,Bearing,and Pressure - ksf; Pres. Slope - kip/ft3; Deflection - in

Orchard St San Sewer Repair
earth pres. at min. 12ft from track centerline

Depth(ft)

Moment Equilibrium
Force Equilibrium

0   1 ksf

Net Pressure Diagram

Depth(ft)

Max. Shear=71.12 kip   Max. Moment=259.81 kip-ft   Top Deflection=1.83(in)
Max Deflection=1.83(in)

71.12 kip   0   259.81 kip-ft   0   1.830(in)   0

Shear Diagram   Moment Diagram   Deflection Diagram
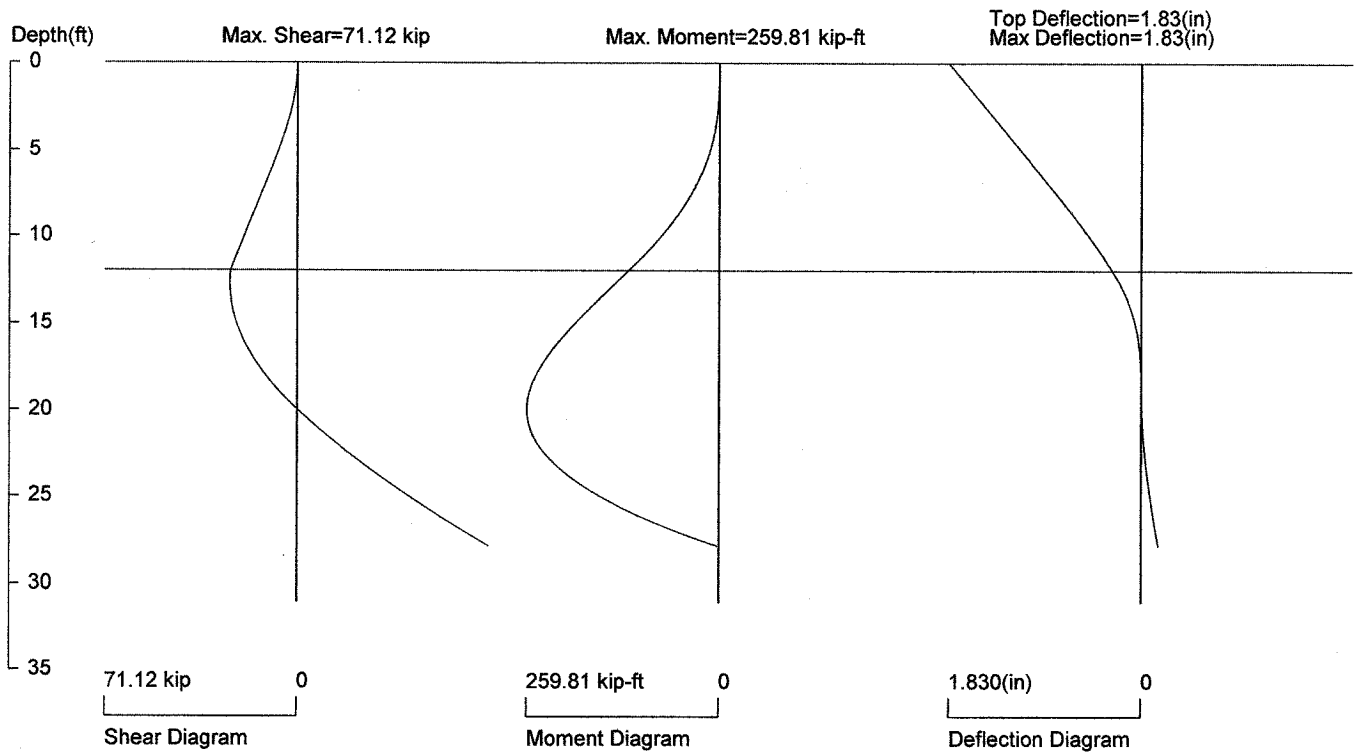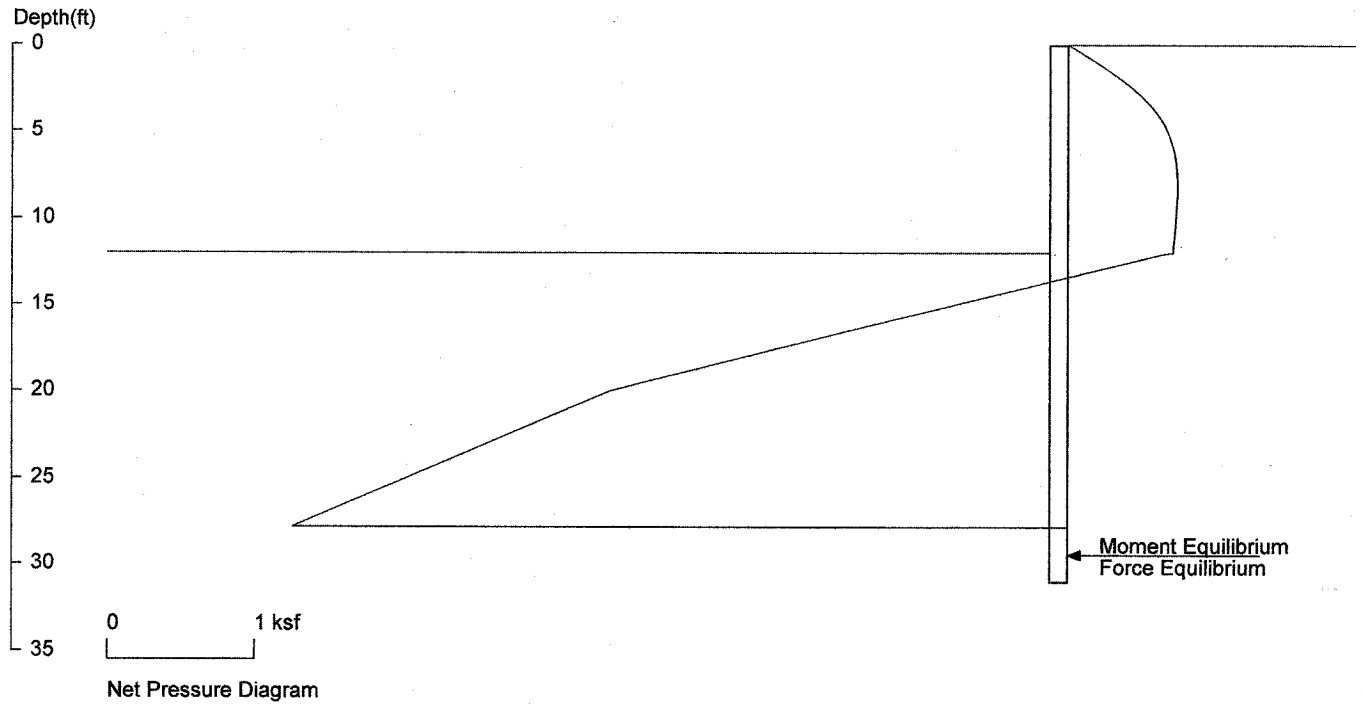
PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 3.5 foot or meter

User Input Pile, HP14X73:   E (ksi)=29000.0,   I (in4)/pile=729.0

File: C:\Users\josep\Desktop\PROJECTS\Speedway\Orchard St San Bore Pit at RxR\weber design\12 ft cantilever at end of trench shield.sh8

Orchard St San Sewer Repair
earth pres. at min. 12ft from track centerline

Xp=48.0   Xa=48.0

Xp=0,Xa=0

Z=0, Wall Top

Z=12.0, Wall Base

GWT   GWT

Z=24.0
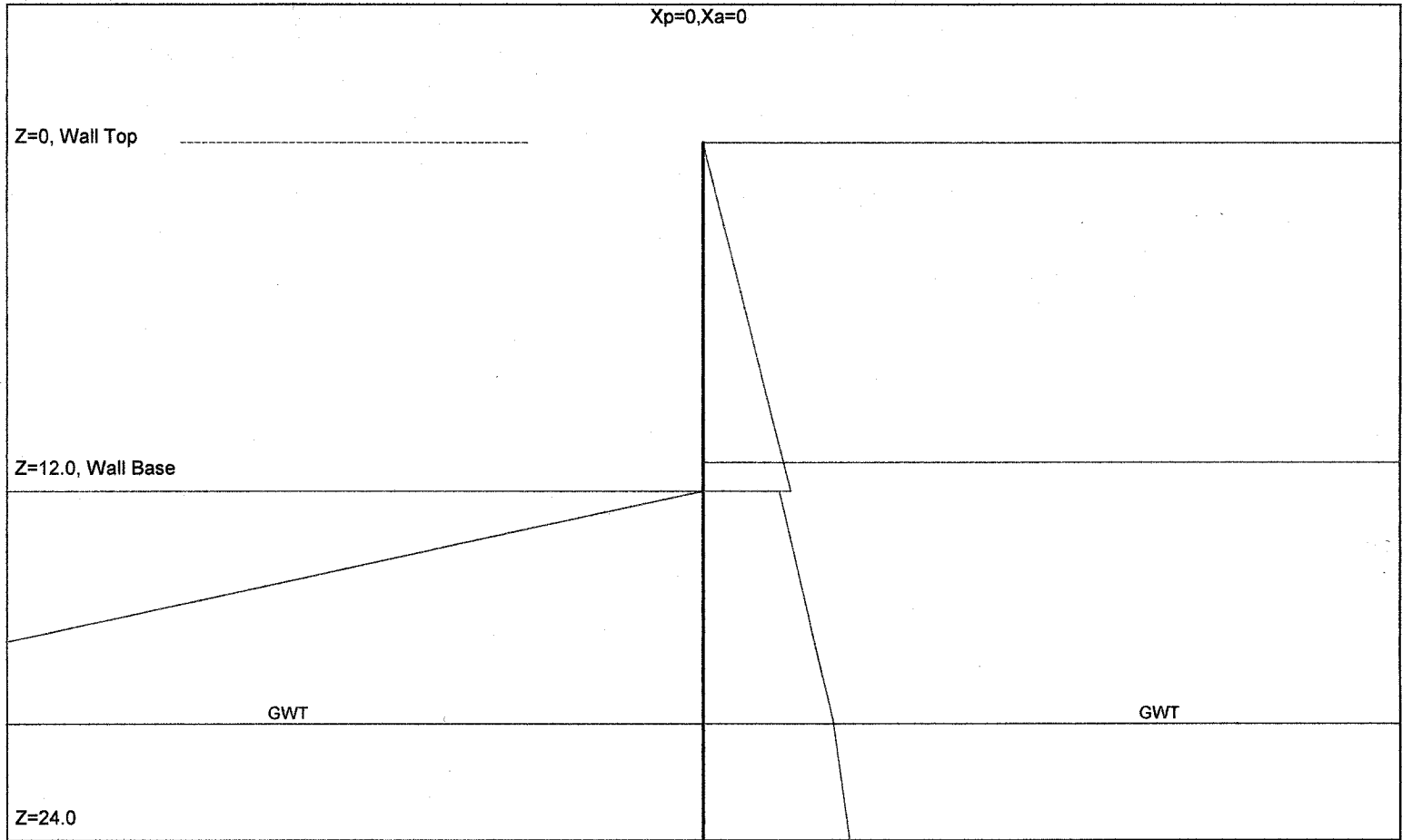
<EarthPres> CIVILTECH SOFTWARE   www.civiltech.com * Licensed to   JP Wiedemann   jpw
UNITS: DEPTH/DISTANCE: ft, UNIT WEIGHT: pcf, FORCE: kip/ft, PRESSURE: ksf, SLOPE: kcf
Date: 8/12/2020   File: C:\Users\josep\Desktop\PROJECTS\Speedway\Orchard St San Bore Pit at RxR\weber design\12 ft cantilever, at end of shield.ep8

* INPUT DATA *

Wall Height=12.0   Total Soil Types= 2

Soil No.	Weight	Saturate	Phi	Cohesion	Nspt	Type	Description
1	113.0	125.0	32	0.0	9	4	Silty Sand FILL
2	122.0	134.0	36	0.0	25	4	Silty Sand, dense

Ground Surface at Active Side:

Line	Z1	Xa1	Z2	Xa2	Soil No.	Description
1	0.0	0.0	0.0	800.0	1	Silty Sand FILL
2	11.0	0.0	11.0	800.0	2	Silty Sand, dense

Water Table at Active Side:

Point	Z-water	X-water
1	20.0	0.0
2	20.0	800.0

Ground Surface at Passive Side:

Line	Z1	Xp1	Z2	Xp2	Soil No.	Description
1	12.0	0.0	12.0	800.0	2	Silty Sand, dense

Water Table at Passive Side:

Point	Z-water	X-water
1	20.0	0.0
2	20.0	800.0

Wall Friction Options: 1.* No wall friction
Wall Batter Angle = 0

* OUTPUT RESULTS *

Total Force above Base= 1.83 per one linear foot (or meter) width along wall height

Total Static Force above Base= 1.83. Distributed in Triangular Envelope along wall height. Ignore soil layers and water line

Driving Pressure above Base - Output to Shoring - Multiplier of Pressure = .75 *(ARCHING ACROSS 7 FT OPENING)*

Z1	Pa1	Z2	Pa2	Slope	Coef.
0.00	0.00	12.00	0.30	0.0254	0.2247

Driving Pressure below Base - Output to Shoring - Multiplier of Pressure = .75

Z1	Pa1	Z2	Pa2	Slope	Ka or Ko
12.00	0.27	20.00	0.46	0.0238	0.1948
20.00	0.46	24.00	0.51	0.0141	0.1975

Passive Pressure below Base - Output to Shoring - Multiplier of Pressure = 1

Z1	Pp1	Z2	Pp2	Slope	Kp
12.00	0.00	20.00	3.76	0.470	3.8518
20.00	3.76	24.00	4.86	0.276	3.8518

UNITS: DEPTH/DISTANCE: ft, UNIT WEIGHT: pcf, FORCE: kip/ft, PRESSURE: ksf, SLOPE: kcf

Date: 8/12/2020   File Name: C:\Users\josep\Desktop\PROJECTS\Speedway\Orchard St San Bore Pit at RxR\weber design\12 ft cantilever, at end of

Orchard St San Sewer Repair
Cooper E80

Max. Pressure= 0.56
At depth= 6.00

<Surcharge> CIVILTECH SOFTWARE USA www.civiltech.com
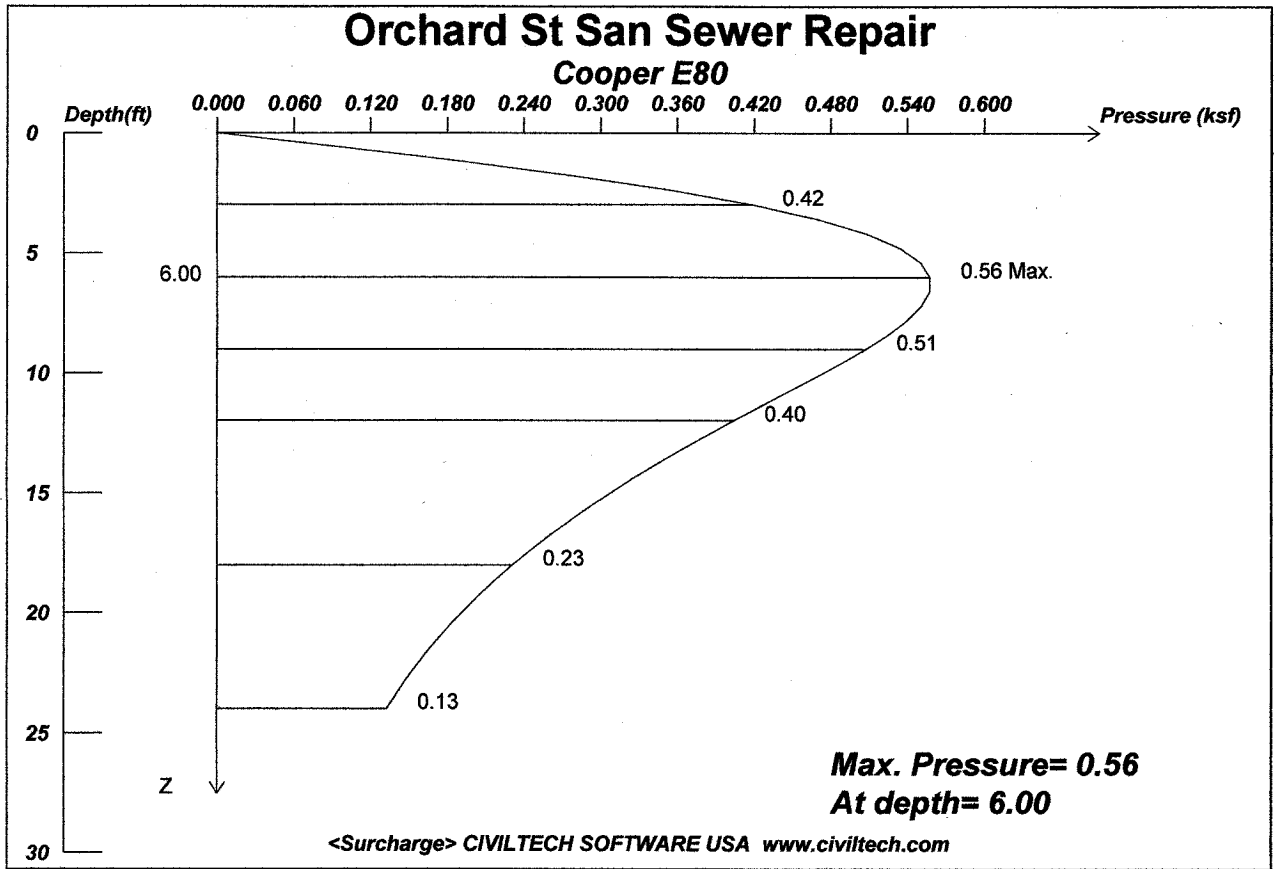
Licensed to   JP Wiedemann   jpw
Date: 8/12/2020   File: C:\Users\josep\Desktop\PROJECTS\Speedway\Orchard St San Bore Pit at RxR\weber design\F

Wall Height, H= 12   Load Depth at Surface, D= 0
Load Factor of Surcharge Loading = 1
Rigid Wall Condition -- No movement or deflection of the wall are allowed.
Max. Pressure = 0.558   at depth = 6.00

Cooper E80 Railroad Loading. From wall to railroad center, X=12

UNITS: LENGTH/DEPTH: ft, Qpoint: kip, Qline: kip/ft, Qstrip/Qarea/PRESSURE: ksf

GME TRENCH SHIELD MANUFACTURER'S TABULATED DATA

| WIS4M1010 | 1,587 PSF | 7752 ✓ |

MODEL NO.

SHIELD CAPACITY

MAXIMUM DEPTH TABLE

SOIL TYPE	EFP	MAXIMUM DEPTH (FT)
A	25	68'
B	45	40'
C	60	31'
C	80	25'

| M16061119 |
SERIAL NO.

| 20 FT |
MAX SPREADER LENGTH

| 06/03/2016 |
DATE SHIPPED

| 8 IN SCH 80 |
SPREADER SIZE

CONDITIONS FOR USE OF TABULATED DATA:

1. This Tabulated Data has been prepared by a registered professional engineer as required to comply with the OSHA standard 29 CFR Part 1926, Subpart P.

2. The Soil Types A - 25, B - 45, and C - 80 are as defined in the OSHA Standard. Soil Type C - 60 is a moist, cohesive soil or a moist dense granular soil, which is not flowing or submerged and has an Equivalent Fluid Pressure (EFP) of 60 PSF per foot of depth. The competent person must monitor the excavation for signs of deterioration that may alter soil pressures and produce the Soil Type C - 80 condition. Such signs are indicated by, but not limited to, freely seeping water or flowing soil entering the excavation around or below the shield.

3. Trench Shields shall be used in accordance with the depth chart. The maximum depth is the distance from the surface of the excavation to the bottom of the trench. Depth ratings shown are based upon examples of homogeneous soil conditions. Soil pressures may vary due to non - homogeneous soils, surcharge loads, and slope of embankment (layback). Actual soil pressures should be verified to be sure that the shield capacity is not exceeded.

4. Surcharge loads are not included in the maximum depth table. Surcharge loads are possible due to heavy equipment, vibrations, or soil piles adjacent to the trench. (Adjacent is defined as within a distance equal to the depth of the trench.)

5. Trench Shields are not intended to provide stability to adjacent buildings or other structures.

6. 1 3/4 inch diameter pins furnished by GME shall be placed in all spreader to collar connections.

GENERAL NOTES FOR TRENCH SHIELD USE:

1. Any modifications to shields using parts not manufactured by GME will void Tabulated Data unless otherwise specified or allowed in writing by GME.

2. GME Trench Shields may be stacked provided that appropriate connections are made between stacked shields as specified by GME. Each stacked shield shall have a depth rating equal to or greater than the actual depth at which it is used.

3. Maximum depths are based on shields being in structurally sound condition. Trench Shields should be inspected prior to each use for any damage or deterioration. If a shield has sustained major structural damage or permanent deformation of a structural member or connection, the Tabulated Data is void until repairs are made as specified by a registered professional engineer.

4. The use of GME Trench Shields shall be in accordance with this tabulated data and all requirements of the OSHA standard. Trench Shield usage other than specified or required may create unsafe conditions that could cause a cave - in, structural failure, or collapse resulting in a disabling injury or even death. GME shall not be liable for shield usage other than specified.

TRINITY SHORING PRODUCTS, INC.
A TRINITY MINING & CONSTRUCTION EQUIPMENT, INC. COMPANY

[Seal: STATE OF MICHIGAN, TIMOTHY S. DEY, LICENSED PROFESSIONAL ENGINEER No. 43202]
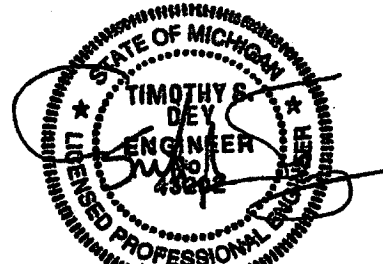
3/18/14

Griswold Machine & Engineering
594 W. Highway M - 60
Union City, MI 49094
Phone 517 - 741 - 4300

SPEED SHORE®
PIONEERING TRENCH SAFETY
TABULATED DATA AND
TRENCH SHIELD CERTIFICATION

SERIAL NUMBER:	99-2988		MODEL: TS- 10 10 DW 6
HEIGHT = 10 feet	LENGTH = 10 feet		THICKNESS= 6 inches
MAXIMUM LATERAL EARTH PRESSURE =		1,955 Pounds per square foot	>752 psf ✓

MAXIMUM DEPTH OF EXCAVATION		
O.S.H.A. Soil Type	Equivalent Weight Effect (p.c.f.)	Depth "H" (feet)
A	25	50
B	35	50
B	45	47
C	60	36
C	80	29
Spreader Size = 8 inch Schedule 80 Pipe / Maximum Spreader Length = 20 feet		

This shield is manufactured to meet the requirements of O.S.H.A. CFR 29, Part 1926, Subpart P. This shield must be used in a manner consistent with safe working procedures, Federal, State and local regulation and manufacturer's instructions. Contact manufacturer for any non-standard use of this trench shield.

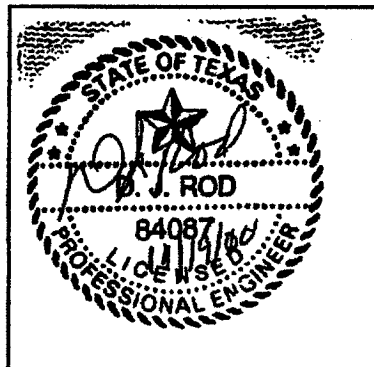## GENERAL NOTES AND INSTRUCTIONS:

1. Contractors must assign a *"competent person"*, knowledgeable and capable of complying with all federal regulations, state and local laws and ordinances. **NOTE:** For copies of applicable federal or state laws contact: Dept. of Labor, Occupational Safety and Health Division

2. A *"competent person"*, trained and experienced in the proper use of trench shields, safe excavation practices and soil classification methods must direct and control the use of this trench shield.

3. This Tabulated Data applies to standard products manufactured exclusively by SPEED SHORE CORPORATION. This data complies with the requirements of federal O.S.H.A. CFR 29, Part 1926, Subpart P-Excavations. Information not found in this data shall be referenced by obtaining copies of the applicable Federal or State laws governing excavation

4. Modifications of this product shall be approved by the manufacturer in writing and shall accompany this Tabulated Data sheet. Any modification not specifically allowed by SPEED SHORE CORPORATION voids this data.

11.24.00   Page 1 of 1

SPEED SHORE CORPORATION
P.O. Box 450889
Houston, Texas 77245-0889
Phone (713) 943-0750 Fax (713) 943-8483

SPEED SHORE®

PIONEERING TRENCH SAFETY

TABULATED DATA AND

TRENCH SHIELD CERTIFICATION

SERIAL NUMBER: 0-3103		MODEL: TS- 10 10 DW 4	KE
HEIGHT = 10 feet	LENGTH = 10 feet	THICKNESS= 4 inches	
MAXIMUM LATERAL EARTH PRESSURE =	1,105 Pounds per square foot >752 PSF		

MAXIMUM DEPTH OF EXCAVATION		
O.S.H.A. Soil Type	Equivalent Weight Effect *(p.c.f.)*	Depth "H" *(feet)*
A	25	46
B	35	35
B	45	28
C	60	22
C	80	18
Spreader Size = 8 inch Schedule 80 Pipe / Maximum Spreader Length = 20 feet		

This shield is manufactured to meet the requirements of O.S.H.A. CFR 29, Part 1926, Subpart P. This shield must be used in a manner consistent with safe working procedures, Federal, State and local regulation and manufacturer's instructions. Contact manufacturer for any non-standard use of this trench shield.

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11.24.00   Page 1 of 1

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