REMEDIATION TARGET AREA (RTA 1) DESIGN

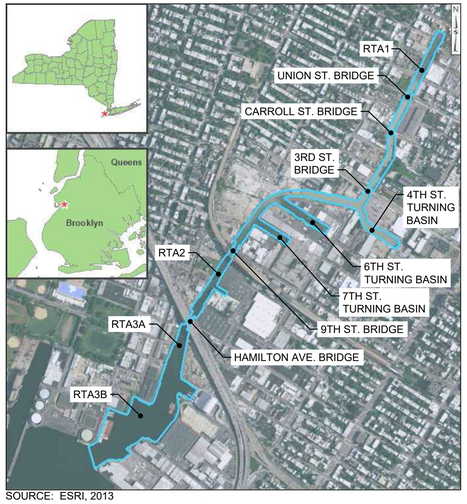
GOWANUS CANAL SUPERFUND SITE

BROOKLYN, NEW YORK

DOUGLASS STREET - WEST SIDE

100% DESIGN PACKAGE

FEBRUARY 2020



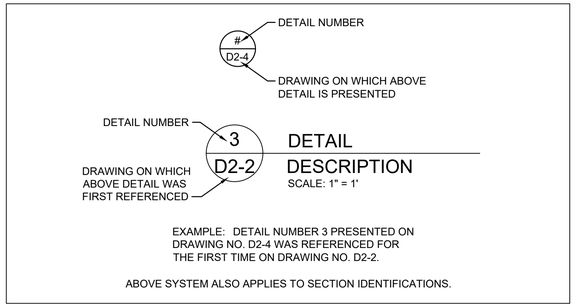
SOURCE: ESRI, 2013

VICINITY MAP
NOT TO SCALE

SOURCE: MICROSOFT CORPORATION BING MAPS 2016

LOCATION MAP
SCALE: 1" = 400'

INDEX OF DRAWINGS	
DRAWING NO.	DRAWING TITLE
D2-1	COVER SHEET - DOUGLASS STREET - WEST SIDE
D2-2	BULKHEAD SUPPORT PLAN - BLOCK NYC DOUGLASS STREET - WEST SIDE
D2-3	BULKHEAD PLAN & ELEVATION - DOUGLASS STREET - WEST SIDE
S2-1	WALL SECTIONS - DOUGLASS STREET - WEST SIDE



EXAMPLE: DETAIL NUMBER 3 PRESENTED ON DRAWING NO. D2-4 WAS REFERENCED FOR THE FIRST TIME ON DRAWING NO. D2-2.

ABOVE SYSTEM ALSO APPLIES TO SECTION IDENTIFICATIONS.

DETAIL IDENTIFICATION LEGEND

ABBREVIATIONS

AVE.	AVENUE
CPT	CONE PENETRATION TESTING
CSO	COMBINED SEWER OVERFLOW
DIA	DIAMETER
E	EAST
EL.	ELEVATION
EPA	U.S. ENVIRONMENTAL PROTECTION AGENCY
FT.	FEET
IN.	INCHES
ISS	IN SITU STABILIZATION/SOLIDIFICATION
INV.	INVERT
LF	LINEAR FEET
MLW	MEAN LOW WATER
MHW	MEAN HIGH WATER
MIN	MINIMUM
NAD83	NORTH AMERICAN DATUM OF 1983
NAVD88	NORTH AMERICAN VERTICAL DATUM OF 1988
NOAA	NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NTS	NOT TO SCALE
NYCDEP	NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
NYCDOT	NEW YORK CITY DEPARTMENT OF TRANSPORTATION
NYSDEC	NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
OD	OUTSIDE DIAMETER
OSHA	OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PD	PRE-DESIGN
PE	PROFESSIONAL ENGINEER
OSI	OCEAN SURVEY, INC.
RTA	REMEDIAL TARGET AREA
SPDES	STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM
ST.	STREET
STA.	STATION
TYP	TYPICAL
W	WEST

GENERAL NOTES:

1. THIS DRAWING SET IS FOR THE TEMPORARY BULKHEAD SUPPORT SYSTEM PROPOSED FOR REMEDIATION TARGET AREA (RTA) 1 ALONG THE GOWANUS CANAL SUPERFUND SITE. DREDGING, REMEDIATION, AND CAPPING PHASES OF WORK ARE PROVIDED IN A SEPARATE DRAWING SET.
2. ELEVATIONS (EL.) ARE IN FEET (FT) BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). THE GRID COORDINATE SYSTEM CORRESPONDS TO NEW YORK STATE PLANE, EAST ZONE (3101). HORIZONTAL REFERENCE DATUM IS NORTH AMERICAN DATUM OF 1983 (NAD83).
3. TIDAL EPOCHS WERE BASED ON THE TIDAL EPOCH FROM 1983 TO 2001 AT THE BATTERY STATION (NO. 8518750) MAINTAINED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA). MEAN LOW WATER (MLW) IS -2.57-FT AND MEAN HIGH WATER (MHW) IS 1.96-FT NAVD88.
4. ADDRESSES AND BLOCK AND LOT NUMBERS WERE GENERALLY OBTAINED FROM THE NEW YORK CITY TAX LOT DIGITAL MAP AS ACCESSED ON 1 JULY 2015 (OR LATER) AND/OR DIRECT DISCUSSIONS WITH THE PROPERTY OWNER, TENANT, AND/OR REPRESENTATIVE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SAFETY OF WORK AREAS AND LIMITING PUBLIC ACCESS INTO WORK AREAS.WORK SHALL BE PERFORMED IN ACCORDANCE WITH APPLICABLE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REQUIREMENTS AND WITH ENVIRONMENTAL HEALTH AND SAFETY/TRAINING REQUIREMENTS IN ACCORDANCE WITH THE APPROVED HEALTH AND SAFETY PLAN AND SECTION 01 35 29 OF THE SPECIFICATIONS.
6. CONTRACTOR SHALL CONTACT NEW YORK 811 (I.E., CALL BEFORE YOU DIG) 2 TO 10 WORKING DAYS (EXCLUDING HOLIDAYS AND WEEKENDS) PRIOR TO THE START OF CONSTRUCTION TO VERIFY THE LOCATION OF ANY POTENTIAL UTILITIES IN THE PUBLIC RIGHT OF WAY. CONTRACTOR IS RESPONSIBLE FOR LOCATING UNDERGROUND UTILITIES WITHIN EXCAVATION AREAS WITHIN THE PROPERTY LIMITS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE OR DISRUPTION OF UTILITY SERVICE DURING CONSTRUCTION. DO NOT MODIFY OR REMOVE ANY EXISTING UTILITIES WITHOUT THE PERMISSION OF THE UTILITY OWNER.
7. CONTRACTOR IS RESPONSIBLE FOR PROVIDING A USCG LOCAL NOTICE TO MARINERS TWO WEEKS PRIOR TO THE COMMENCEMENT OF MARINE CONSTRUCTION ACTIVITIES INVOLVING VESSEL ACTIVITY IN THE CANAL. REQUIREMENTS FOR SUBMITTING THE LOCAL NOTICE TO MARINERS ARE LISTED IN SECTION 01 41 00 OF THE SPECIFICATIONS.
8. CONTRACTOR SHALL VERIFY ACTUAL FIELD CONDITIONS AND CONFIRM THE ACCURACY OF THE PROPOSED DESIGN PRIOR TO COMMENCEMENT OF THE WORK. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER'S REPRESENTATIVE AND DESIGNER OF RECORD.
9. WATER ELEVATIONS AND QUALITY IN THE CANAL MAY BE AFFECTED BY CSO DISCHARGE. CONTRACTOR SHALL BE PREPARED TO ENCOUNTER OCCASIONAL PERIODS OF HIGHER FLOWS.
10. CONTRACTOR IS RESPONSIBLE FOR ASCERTAINING THAT THEIR TUGS, BARGES, AUXILIARY WATERCRAFT, AND OTHER VESSELS HAVE ADEQUATE DRAFT AND CLEARANCE. VESSELS SHOULD NOT BE ALLOWED TO RUN AGROUND AND SHOULD BE SELECTED WITH A GOAL OF MINIMIZING THE GENERATION OF TURBIDITY WHERE POSSIBLE. VESSELS SHALL BE IN PROPER WORKING CONDITION AND ROUTINELY INSPECTED.
11. THE BRIDGE OPENING WIDTHS (FOR VESSEL TRAFFIC) AT THE HAMILTON AVENUE (AVE.), 9TH STREET (ST.), AND 3RD ST. BRIDGES ARE APPROXIMATELY 47, 60, AND 42 FT, RESPECTIVELY BASED ON PHYSICAL MEASUREMENTS COMPLETED BY OSI IN OCTOBER 2014. THE BRIDGE OPENING WIDTH AT CARROLL ST. AND UNION ST. WAS ESTIMATED TO BE 36 FT AND 43 FT, RESPECTIVELY BASED ON UNITED STATES COAST GUARD "BRIDGE OVER NAVIGABLE WATERS REPORT"(1986). VERTICAL BRIDGE CLEARANCES ARE SUMMARIZED IN THE DOCUMENT "RESTRICTIONS TO NAVIGATION ANALYSIS" (GEOSYNTEC, 2016).
12. CONTRACTOR IS RESPONSIBLE FOR PROVIDING A MINIMUM OF TWO HOURS OF ADVANCED NOTIFICATION TO NEW YORK CITY DEPARTMENT OF TRANSPORTATION (NYCDOT) PRIOR TO THE 9TH ST., 3RD ST., CARROLL ST., AND UNION ST. BRIDGES BEING OPENED. THE FOLLOWING NUMBERS MAY BE USED TO CONTACT NYCDOT [(212) 839-3740 (WEEKDAYS), (718) 885-0805 (WEEKENDS AND HOLIDAYS), AND 718-254-8726 (ALTERNATIVE PHONE NUMBER)]. THE NYCDOT BRIDGE OPERATOR CAN ALSO BE REACHED ON MARINE RADIO CHANNEL 13. THE HAMILTON AVE. BRIDGE DOES NOT REQUIRE ADVANCED NOTIFICATION.
13. SEDIMENT AND EROSION CONTROL REQUIREMENTS IMPLEMENTED AS PART OF THE RTA1 DREDGING WORK WILL BE IN EFFECT AND SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT BULKHEAD SUPPORT AND INSTALLATION.
14. SHEET PILING IS TO BE INSTALLED USING THE PRESS-IN-METHOD. VIBRATORY AND IMPACT METHODS SHALL ONLY BE USED WHERE PRESS-IN-METHODS ARE NOT PRACTICAL, SUCH AS INSTALLATION OF DRIVE TEMPLATES, BEGINNING SHEET PILE SECTIONS, CLOSURE PIECES, AND LOCATIONS WHERE THE PRESS-IN EQUIPMENT IS OBSTRUCTED.

PRELIMINARY
NOT FOR CONSTRUCTION

WARNING
IT IS A VIOLATION OF NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER AN ITEM IN ANY WAY.

PROFESSIONAL SEAL

PREPARED FOR: Gowanus Environmental Remediation Trust

GOWANUS TRUST

APTIM ENGINEERING NEW YORK, P.C.
150 ROYALL STREET, SUITE 103
CANTON, MA 02021

CLIENT DWG NO:

NOTES	REFERENCE DRAWINGS	NO.	REVISION	DRAWN	CK'D	APPD	DATE
		A	65% DESIGN	PAR	AKF	CAM	6/11/19
		B	90% DESIGN	PAR	AKF	PAR	07/25/19
		C	90% DESIGN REVISED	PAR	AKF	CAM	08/08/19
		D	90% DESIGN FOR EPA REVIEW	PAR	AKF	CAM	09/30/19
		E	UPDATED 90% DESIGN	PAR	AKF	CAM	01-31-2020
		F	100% DESIGN - NOT ISSUED FOR CONSTRUCTION	PAR	AKF	CAM	02-18-2020

APTIM CASHMAN DREDGING

DRAWN: PAR | CK'D: AKF | APPD: CAM | DATE: | SCALE:

COVER SHEET
DOUGLASS STREET - WEST SIDE

FOR:

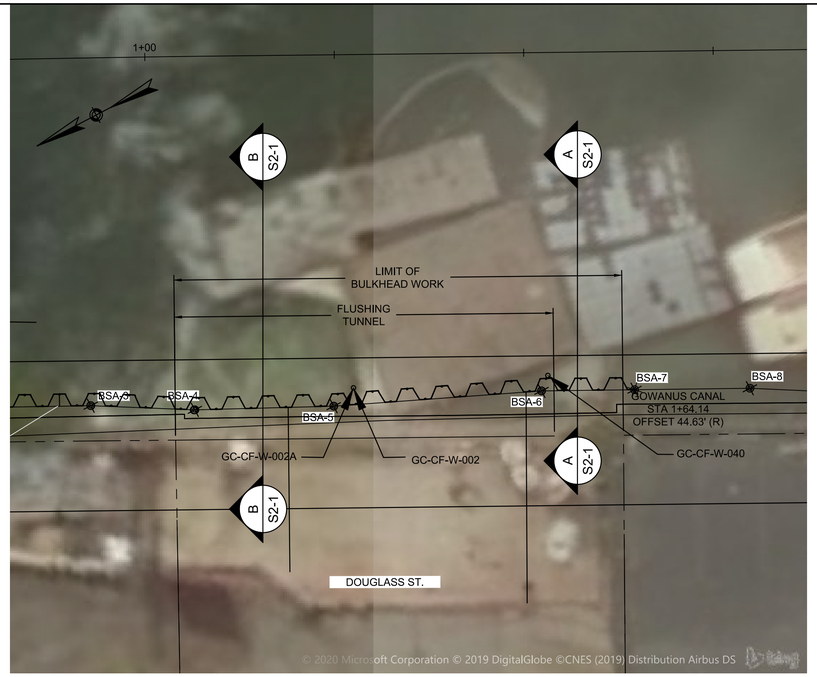
PROJECT NO: 749237266 | DWG NO: D2-1 | REV: F

DESIGN CRITERIA

1. GROUND SURFACE - EL. 6.0
2. UPLAND SURCHARGE
   a. SERVICE CONDITIONS / VEHICULAR LOADING - 250 PSF
   b. ADJACENT BULKHEAD (DEAD LOAD) - 2036 PSF AT FLUSHING, 1230 PSF SOUTHEND
3. WATER LEVEL CONDITIONS
   a. UPLAND GROUNDWATER TABLE - EL. 3.5 FT (INCLUDES 2.5 FT. MOUNDING)
   b. CANAL WATER TABLE (MEAN LOW WATER) - EL. -2.57 FT
4. CANAL MUDLINE CONDITIONS
   a. PHASE II DREDGE - EL. -18.0 FT @ FLUSHING TUNNEL
   b. PHASE III DREDGE EL -22.0 FT TO -20.5 FT @ FLUSHING TUNNEL
   c. PHASE II DREDGE - EL. -18.0 FT SOUTH OF FLUSHING TUNNEL
   d. PHASE III DREDGE - EL -20.5 FT SOUTH OF FLUSHING TUNNEL
   e. ADDITIONAL OVER-DREDGE ALLOWANCE - 0.5 FT
   f. FINAL TOP OF ENVIRONMENTAL CAP - EL. VARIES 3.66 FT TO 2.0 FT ABOVE PHASE III DREDGE ELEVATION.

GEOTECHNICAL INFORMATION:

1. PD-5 BLOCK 417, LOT 21 FACTUAL REPORT, GOWANUS CANAL SUPERFUND SITE BROOKLYN, NEW YORK, DATED APRIL 2016, FINAL, PREPARED BY GEOSYNTEC CONSULTANTS AND BEECH AND BONAPARTE ENGINEERING P.C.
2. PD-5 BLOCK DOUGLASS STREET, DEGRAW STREET, SACKETT STREET - FACTUAL REPORT, GOWANUS CANAL SUPERFUND SITE BROOKLYN, NEW YORK, DATED APRIL 2016, FINAL, PREPARED BY GEOSYNTEC CONSULTANTS AND BEECH AND BONAPARTE ENGINEERING P.C.



1 / - DETAIL
BULKHEAD SUPPORT
SCALE: 1" = 10'

NOTES:

1. CONTINGENT WORK TO BE PERFORMED IN ACCORDANCE WITH SECTION 31 41 16.
2. SEE TABLE 2 FOR OUTFALL PIPE LOCATIONS, SIZES, AND DISPOSITION.
3. NEW BULKHEAD WALLS BEING ADDED ARE CONSIDERED TO BE TEMPORARY FOR THE SUPPORT OF EXISTING BULKHEADS DURING RTA-1 DREDGING AND REMEDIATION AND SHALL NOT BE CONSIDERED A PERMANENT BULKHEAD. UPON COMPLETION OF RTA-1 WORK, THE TEMPORARY BULKHEADS ARE TO BE LEFT IN PLACE.
4. CONSTRUCTION SEQUENCE: THE FOLLOWING CONSTRUCTION SEQUENCE IS PROPOSED FOR RTA 1 REMEDIATION.
   A. PHASE I DREDGING: DREDGING PERFORMED TO FACILITATE BARGE ACCESS FOR BULKHEAD SUPPORT CONSTRUCTION.
   B. PRIOR TO INSTALLING THE SHEETING WITH THE GIKEN, SURFACE DEBRIS AND SHALLOW OBSTRUCTIONS (UP TO ELEVATION -10 FT) WILL BE REMOVED FROM THE BULKHEAD FOOT PRINT WITH AN EXCAVATOR WITH BUCKET OR GRAPPLE. A REVERSE FLIGHT AUGER WILL THEN BE USED TO PROBE THE AREA DOWN TO ELEVATION -20 FT FOR DEEPER OBSTRUCTIONS. IDENTIFIED OBSTRUCTIONS WILL BE REMOVED IMMEDIATELY WITH THE AUGER IF ONLY MINOR DISPLACEMENT OF MATERIAL IS REQUIRED. LARGER OBSTRUCTIONS WILL BE DUG OUT WITH AN EXCAVATOR BUCKET AND RESULTING HOLES IMMEDIATELY BACKFILLED WITH CLEAN MATERIAL. LIMITS OF POTENTIAL EXCAVATION TO REMOVE THESE OBSTRUCTIONS WILL BE REVIEWED WITH THE ENGINEER ON A CASE BY CASE BASIS TO CONFIRM THAT EXISTING BULKHEADS WILL NOT BE COMPROMISED OR IF REQUIRED, TO DEVELOP AN ENGINEERED SOLUTION FOR REMOVAL OF THE OBSTRUCTION. CONTRACTOR'S DREDGING WORK PLAN SHALL ADDRESS THE PROCEDURE OF THE PRE SHEETING OBSTRUCTION PROBING AND REMOVAL.
   C. SEAL PIPES TO BE SEALED AS NOTED IN TABLE 2. SURVEY PIPES TO REMAIN IN USE THAT WILL PENETRATE THE TEMPORARY BULKHEAD.
   D. BULKHEAD SUPPORT CONSTRUCTION: CONTRACTOR SHALL INSTALL BULKHEAD SUPPORT DESIGNED TO PROVIDE TEMPORARY STABILITY TO THE EXISTING BULKHEADS THROUGHOUT DREDGING, REMEDIATION, AND CAPPING CONSTRUCTION IF APPLICABLE.

      INSTALLATION OF THE SHEETING WILL BE DONE WITH AUGER ASSISTANCE AS NEEDED IN ACCORDANCE WITH GIKEN'S HARD GROUND PRESS-IN METHOD' INSTALLATION TECHNIQUE. THE GIKEN SUPPLIED AUGERS CAN BE FITTED WITH SPECIALIZED HEADS FOR PENETRATING COBBLE AND BOULDER OBSTRUCTIONS.

      BULKHEAD SUPPORT CONSTRUCTION IN FRONT OF THE FLUSHING TUNNEL:

      1. NYC SHALL CUT FLOW OFF TO THE FLUSHING TUNNEL PRIOR TO SHEETPILES INSTALLATION IN FRONT OF THE FLUSHING TUNNEL.
      2. BULKHEAD SUPPORT CONSTRUCTION: CONTRACTOR SHALL INSTALL BULKHEAD SUPPORT DESIGNED TO PROVIDE TEMPORARY STABILITY TO THE EXISTING BULKHEADS THROUGHOUT DREDGING, REMEDIATION, AND CAPPING CONSTRUCTION IF APPLICABLE.
      3. THE CONTRACTOR SHALL CUT THE BULKHEAD WALL DOWN TO THE EXISTING MUDLINE ELEVATION (ROUGHLY ELEVATION -14) IMMEDIATELY FOLLOWING WALL INSTALLATION. FLOW TO THE FLUSHING TUNNEL MAY BE TURNED BACK ON AFTER THE BULKHEAD IS CUT OFF.
      4. CONTRACTOR TO INSTALL PLATE FROM EL. 6.0 TO 2' BELOW INVERT ELEVATION PER DETAIL ON D2-3 TO CLOSE GAP BETWEEN CONCRETE AND SHEETPILE WALL. A BENT PLATE WITH SLOTTED HOLE SHALL BE WELDED TO TOP OF THE PLATE AND ANCHORED TO THE CONCRETE. ANCHOR BOLT IN CONCRETE WILL BE LOOSENED SO THAT BACKFILL WILL CAUSE PLATE TO ENGAGE SNUGLY WITH THE CONCRETE FACE. THE ANCHOR BOLT MAY THEN BE RETIGHTENED AFTER BACKFILL IS COMPLETE.
      5. THE CONTRACTOR WILL THEN PERFORM PHASE II DREDGING TO A FINAL ELEVATION APPROXIMATELY 1' BELOW THE INVERT (ROUGHLY ELEVATION -19). FLOW TO THE FLUSHING TUNNEL MAY NEED TO BE INTERMITTENTLY CUT OFF TO PERFORM THIS WORK. CONTRACTOR TO COORDINATE WITH NYC AS NEEDED.
      6. FOLLOWING PHASE II DREDGING, NYC SHALL CUT FLOW OFF TO THE FLUSHING TUNNEL. THE CONTRACTOR SHALL CONDUCT THE ISS TREATMENT IN FRONT OF THE TUNNEL AND CUT THE BULKHEAD WALL TO AN ELEVATION EQUAL TO THE INVERT ELEVATION OF THE FLUSHING TUNNEL. THE CONTRACTOR MAY ELECT TO REMOVE SEDIMENT IMMEDIATELY BEHIND THE WALL IN THE MOUTH OF THE FLUSHING TUNNEL USING DIVER-ASSISTED OR OTHER DREDGING TECHNIQUE BEFORE CUTTING THE SHEET. FLOW TO THE FLUSHING TUNNEL SHALL REMAIN OFF.
      7. SEDIMENT IN THE GAP BETWEEN THE SHEET AND THE FACE OF THE FLUSHING TUNNEL WILL BE REMOVED BY THE CONTRACTOR TO AN ELEVATION 1' BELOW THE INVERT AND THEN BACKFILLED WITH A TREMIE CONCRETE TO THE INVERT ELEVATION OF THE FLUSHING TUNNEL. FLOW TO THE FLUSHING TUNNEL MAY BE TURNED BACK ON AFTER TREMIE CONCRETE HAS REACHED THE SPECIFIED COMPRESSIVE STRENGTH.
      8. THE FLUSHING TUNNEL WILL THEN BE OPERATED BY NYC TO FLUSH OUT SEDIMENTS ACCUMULATED WITHIN THE EXISTING INFRASTRUCTURE.
      9. THE PHASE III "CLEANUP" DREDGE PASS WILL BE PERFORMED BY THE CONTRACTOR FOLLOWING THE SEDIMENT FLUSHING OPERATION PRIOR TO BEGINNING CAPPING OPERATIONS TO REMOVE ANY SEDIMENTS THAT ENTER THE CANAL FROM THE FLUSHING TUNNEL. FLOW TO THE FLUSHING TUNNEL MAY NEED TO BE INTERMITTENTLY CUT OFF TO PERFORM THIS WORK. CONTRACTOR TO COORDINATE WITH NYC AS NEEDED.

   E. PHASE II DREDGING: BULK DREDGING PERFORMED TO REMOVE CONTAMINATED SEDIMENTS AND IN PREPARATION OF (IN SITU STABILIZATION / SOLIDIFICATION) ISS INSTALLATION.
   F. REMEDIATION: SELECT AREAS WILL BE TREATED WITH (IN SITU STABILIZATION / SOLIDIFICATION) ISS ZONES. THE TARGET ISS ZONES ARE MIXED AND THEN ALLOWED TO CURE.
   G. PHASE III DREDGING: PROPOSED TARGET DREDGE DEPTH TO BE PERFORMED AFTER THE ISS ZONES HAVE ACHIEVED TARGET UNCONFINED COMPRESSIVE STRENGTH.
   H. LEVELING BACKFILL: SAND PLACED TO CREATE LEVEL PLATFORMS IN PREPARATION FOR CAP INSTALLATION.
   I. CAP INSTALLATION: PLACEMENT OF TREATMENT LAYER AND ARMOR CAP.

WALL STATIONING	PROPERTY	SHEET PILE NO.	SECTION	TOP OF PILE EL. (FT)	MIN. TIP EL. (FT)	SHEET PILE LENGTH (FT)	NO. PILES
1+03.51 TO 1+53.51	FLUSHING TUNNEL	UNKNOWN	AZ 36-700N	-18.0	-30	12	11
1+53.51 TO 1 +62.62 44.58' (R)	DOUGLASS ST.	UNKNOWN	AZ 36-700N	6.0	-46	52	2

3 / - TABLE
SHEET PILE SCHEDULE

IDENTIFICATION NO.	ADDRESS	BLOCK	LOT	SPDES PERMIT STATUS (NOTE 2)	NEW YORK EAST FIPS ZONE 3101		PIPE SIZE (NOTES 1 & 3)	PIPE MATERIAL (SEE NOTES 1 & 3)	INVERT ELEVATION (FT) (SEE NOTE 3)	DISPOSITION (SEE NOTE 4)	IS THE OUTFALL SUBMERGED? (SEE NOTE 1)	OUTFALL STATIONING / OFFSET ALONG BULKHEAD (TO BE FIELD VERIFIED)
					NORTH	EAST						
GC-CF-W-002	DOUGLASS STREET	NYC	N/A	UNKNOWN	673564.50	634339.10	24"	CONCRETE	TBD	LEAVE AS IS	TBD	1+27.05 / 43.975' (R)
GC-CF-W-002A	DOUGLASS STREET	NYC	N/A	UNKNOWN	673564.50	634339.10	12"	CONCRETE	TBD	SEAL	TBD	1+27.05 / 43.975' (R)
GC-CF-W-040	DOUGLASS STREET	NYC	N/A	UNKNOWN	673541.00	634328.70	1"	PVC	TBD	SEAL	TBD	1+52.71 / 42.63' (R)

NOTES:

1. THE OUTFALL AND COMBINED SEWER OVERFLOW DATA WAS GENERALLY OBTAINED FROM A DATABASE COMPLETED BY CH2M (2011) AND SUPPLEMENTED BY INFORMATION FROM NYCDEP (2007, 2015) AND NYSDEC.
   (I) (NYCDEP, 2007) - NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF ENGINEERING DESIGN AND CONSTRUCTION. GOWANUS CANAL WATERBODY/WATERSHED FACILITY PLAN REPORT, SEPTEMBER, 2007.
   (II) (CH2MHILL, 2011) - CH2MHILL, GRB ENVIRONMENTAL SERVICES, INC. APPENDIX G - SURVEY OF OUTFALL FEATURES TO THE GOWANUS CANAL, GOWANUS CANAL REMEDIAL INVESTIGATION REPORT. PREPARED FOR THE U.S. ENVIRONMENTAL PROTECTION AGENCY, JANUARY, 2011.
   (III) (NYCDEP, 2015) - NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION, BUREAU OF WASTEWATER TREATMENT. COMBINED SEWER OVERFLOW LONG TERM CONTROL PLAN FOR GOWANUS CANAL. PREPARED BY AECOM USA, INC., JUNE, 2015.
   (IV) NYSDEC - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION. OUTFALL PERMIT INFORMATION OBTAINED FROM STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES) DATABASE. DOWNLOADED ON MAY 23, 2017.
2. THE STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES) PERMIT STATUS FOR THE OUTFALL IN RTA-1 ARE UNKNOWN BY GEOSYNTEC AS OF SEPTEMBER 15, 2017. THE RD GROUP WILL WORK WITH EPA AND OTHER APPROPRIATE PARTIES TO VERIFY THE PERMIT STATUS.
3. OUTFALL LOCATIONS, SIZE, MATERIAL TYPE AND INVERT ELEVATIONS TO BE VERIFIED BY THE CONTRACTOR IN THE FIELD.
4. FOR CAPPING DETAILS SEE SHEET S2-1.

2 / - TABLE
OUTFALL DATA AND IDENTIFICATION

POINT ID	NORTHING	EASTING	STATION
BSA-4	673584.90	634346.19	1+05.97 46.67' (R)
BSA-5	673567.93	634338.15	1+24.42 46.37' (R)
BSA-6	673542.67	634327.29	1+51.87 44.64' (R)
BSA-7	673531.71	634321.75	1+64.11 / 44.60' (R)
BSA-8	673518.12	634314.89	1+79.37 44.61' (R)

4 / - TABLE
SHEET PILE ALIGNMENT CONTROL DATA

LEGEND

- CANAL BOUNDARY
- PROPERTY LINE
- 4+00 CANAL STATIONING
- PROPOSED STEEL SHEET PILE BULKHEAD SUPPORT
- NEW BULKHEAD SUPPORT ALIGNMENT CONTROL POINT

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PROFESSIONAL SEAL

GOWANUS TRUST

APTIM ENGINEERING NEW YORK, P.C.
150 ROYALL STREET, SUITE 103
CANTON, MA 02021

CLIENT DWG NO:

NOTES

REFERENCE DRAWINGS

NO.	REVISION	DRAWN	CK'D	APPD	DATE
A	65% DESIGN	PAR	AKF	CAM	06/12/19
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E	UPDATED 90% DESIGN	PAR	AKF	CAM	01-31-2020
F	100% DESIGN - NOT ISSUED FOR CONSTRUCTION	PAR	AKF	CAM	02-18-2020

APTIM

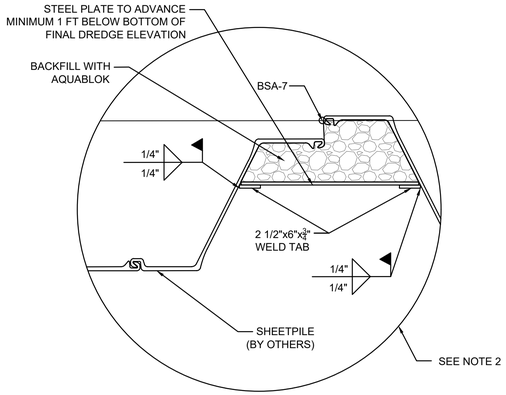
CASHMAN DREDGING

DRAWN: | CK'D: | APPD: | DATE: | SCALE:

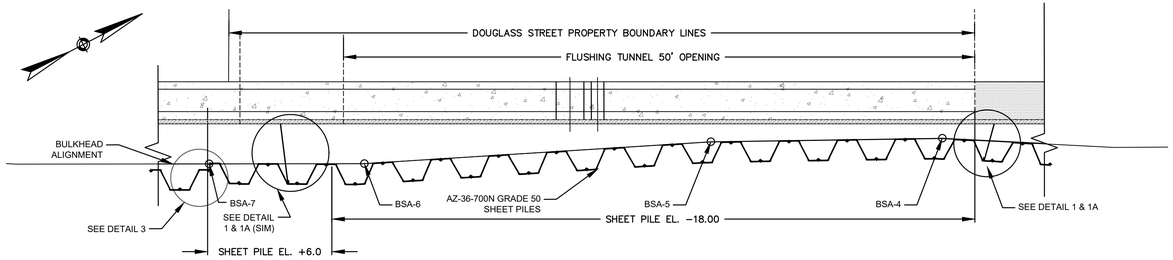
BULKHEAD SUPPORT PLAN
BLOCK NYC DOUGLASS STREET – WEST SIDE

FOR:

PROJECT NO: 749237266 | DWG NO: D2-2 | REV: F



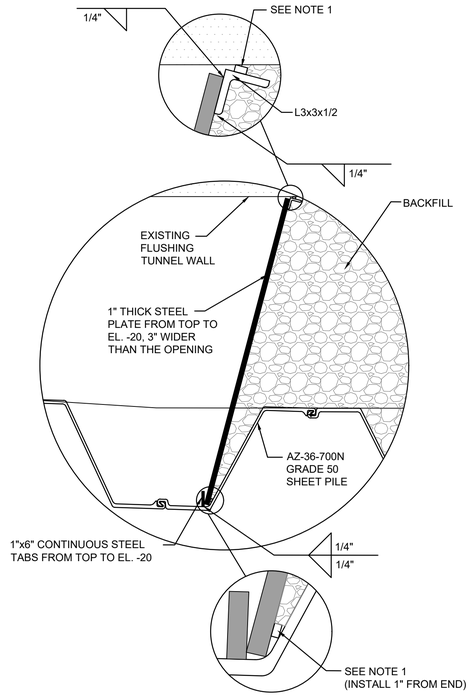
3 / - DETAIL
SHEETPILE CLOSURE ABUTTING OTHERS
NOT TO SCALE



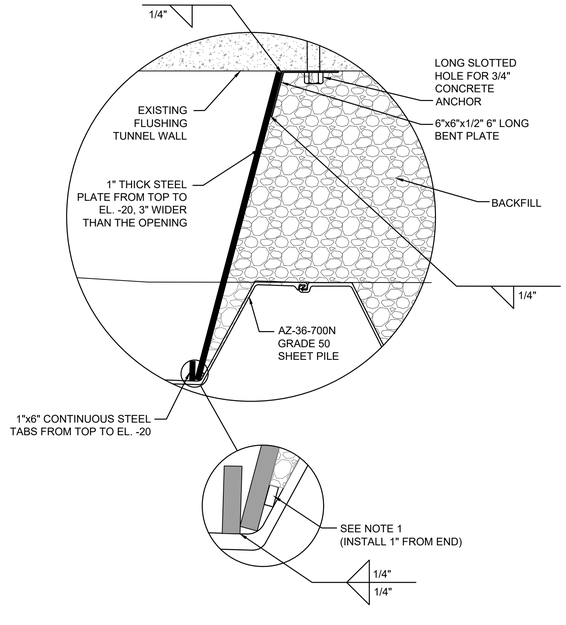
1 / - PLAN
BULKHEAD SUPPORT
SCALE: 1" = 6'

NOTES:

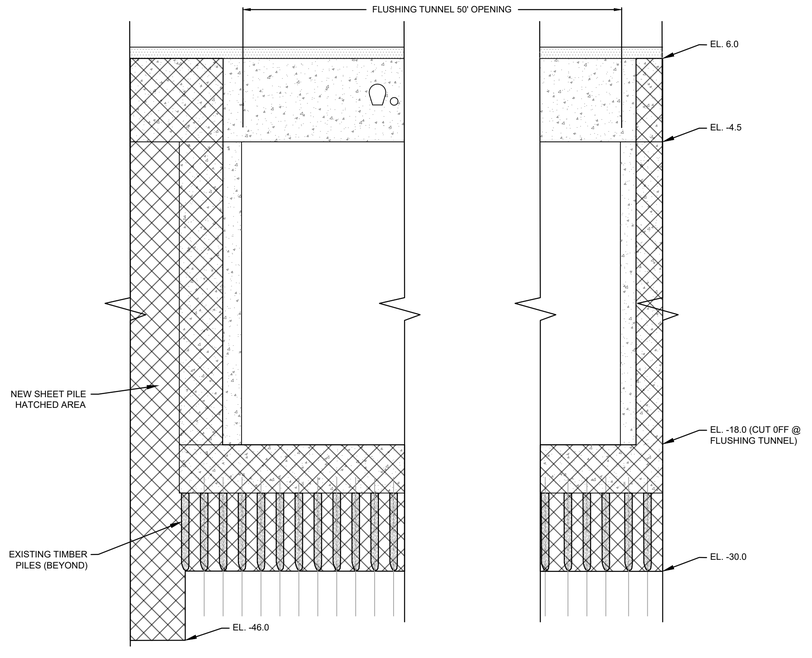
1. INSTALL SIKA HYDROTITE CJ-1020 NON-BENTONITE MODIFIED CHLOROPRENE RUBBER HYDROPHILIC WATERSTOP (39" X .79") AS SHOWN, PER MANUFACTURERS INSTALLATION INSTRUCTIONS. WATERSTOPS SHALL BE ADHERED TO THE 1" PLATE AND L3x3 AS SHOWN.
2. CONTRACTOR TO COORDINATE WORK WITH ADJACENT PROPERTY PROJECT TO FACILITATE CLOSURE DETAIL. PREFERABLY USE SHEET PILE INTERLOCKS AS AN ALTERNATIVE TO DETAIL 3.



1 / - DETAIL
SHEETPILE CLOSURE (EL. 5.5 TO -20)
NOT TO SCALE



1A / - DETAIL
SHEETPILE CLOSURE (EL. 6.0 TO 5.5)
NOT TO SCALE



2 / - ELEVATION
BULKHEAD SUPPORT
SCALE: 1" = 10'

LEGEND

- CANAL BOUNDARY
- PROPERTY LINE
- 4+00 CANAL STATIONING
- PROPOSED STEEL SHEET PILE BULKHEAD SUPPORT
- NEW BULKHEAD SUPPORT ALIGNMENT CONTROL POINT

PRELIMINARY
NOT FOR CONSTRUCTION

WARNING
IT IS A VIOLATION OF NYS EDUCATION LAW ARTICLE 145 FOR ANY PERSON, UNLESS HE IS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER AN ITEM IN ANY WAY.

PROFESSIONAL SEAL

GOWANUS TRUST

APTIM ENGINEERING NEW YORK, P.C.
150 ROYALL STREET, SUITE 103
CANTON, MA 02021

CLIENT DWG NO:

NOTES

REFERENCE DRAWINGS

NO.	REVISION	DRAWN	CK'D	APPD	DATE
A	90% DESIGN	PAR	AKF	CAM	7/25/19
B	90% DESIGN REVISED	PAR	AKF	CAM	08/08/19
C	90% DESIGN FOR EPA REVIEW	PAR	AKF	CAM	09/30/19
D	UPDATED 90% DESIGN	PAR	AKF	CAM	01-31-2020
E	100% DESIGN - NOT ISSUED FOR CONSTRUCTION	PAR	AKF	CAM	02-18-2020

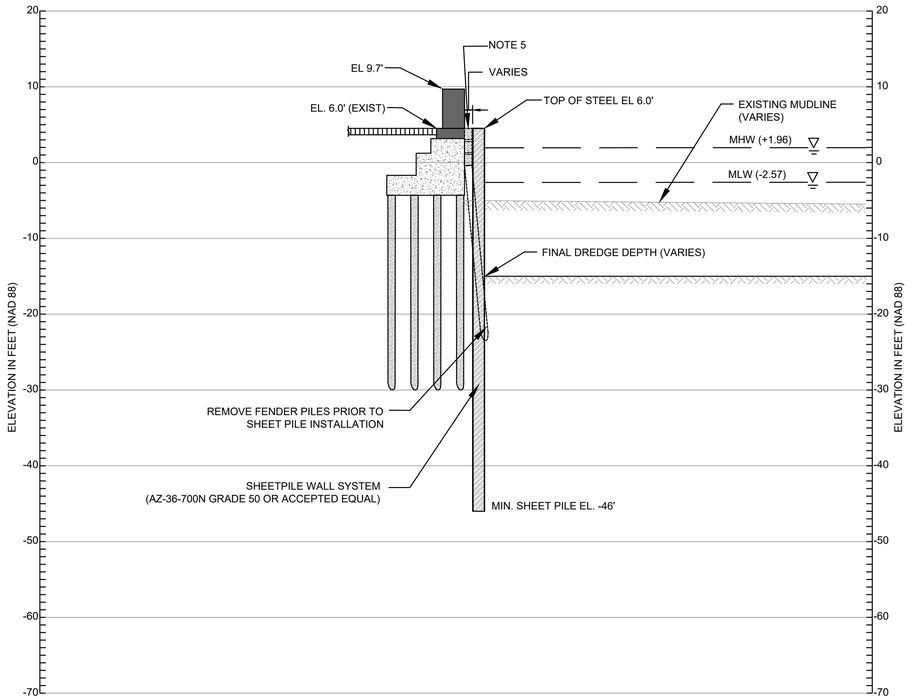
APTIM
CASHMAN DREDGING

DRAWN: PAR | CK'D: AKF | APPD: CAM | DATE: | SCALE:

BULKHEAD PLAN & ELEVATION
DOUGLASS STREET - WEST SIDE

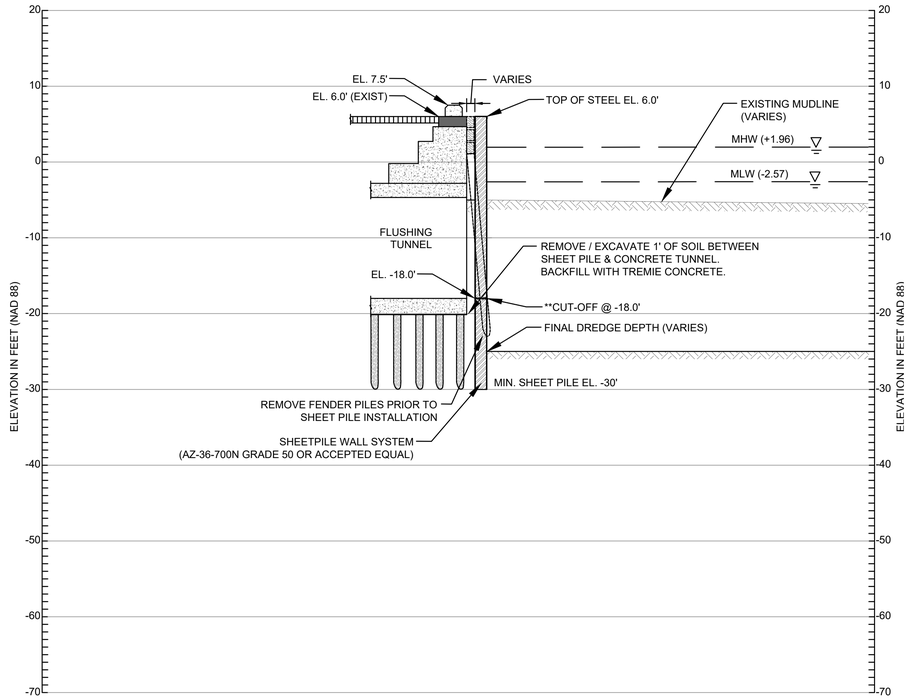
FOR:

PROJECT NO: 749237266 | DWG NO: D2-3 | REV: E



A D2-2 SECTION

SCALE: 1" = 30'

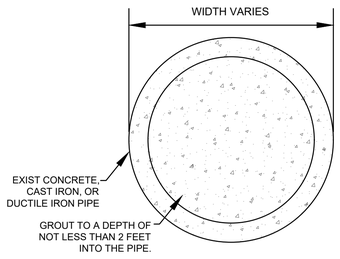


B D2-2 SECTION IN FRONT OF FLUSHING TUNNEL

SCALE: 1" = 30'

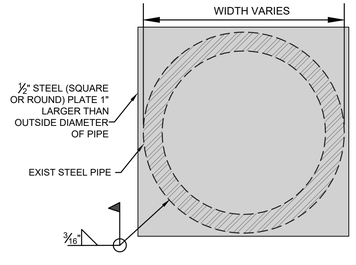
** NOTES:

1. TUNNEL INVERT ELEVATION TO BE FIELD VERIFIED PRIOR TO DRIVING SHEET PILES.
2. ALL IDENTIFIED PVC PIPES TO BE SEALED WITH A PVC CEMENTED CAP.
3. ALL PIPES TO BE SEALED, MUST BE SEALED PRIOR TO INSTALLING SHEET PILES, PER THE DETAILS ON THIS DRAWING.
4. CONTRACTOR TO COORDINATE WORK WITH ADJACENT PROPERTY PROJECT TO FACILITATE CLOSURE DETAIL, PREFERABLY WITH SHEET PILE INTERLOCKS.
5. FOR BACKFILL DETAILS BEHIND THE SHEET PILE BULKHEAD, REFER TO THE DREDGING, REMEDIATION, AND CAPPING DRAWINGS PROVIDED BY OTHERS. EXISTING SOIL BEHIND SHEETPILE IS TO REMAIN.



1 - DETAIL - PIPE CLOSURE

SCALE: NOT TO SCALE



2 - DETAIL - STEEL PIPE CLOSURE

SCALE: NOT TO SCALE

PRELIMINARY
NOT FOR CONSTRUCTION

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CANTON, MA 02021

CLIENT DWG NO:

NOTES

REFERENCE DRAWINGS

NO.	REVISION	DRAWN	CK'D	APPD	DATE
A	65% DESIGN	PAR	AKF	CAM	6/12/19
B	90% DESIGN (PREVIOUSLY S2-2)	PAR	AKF	CAM	07/25/19
C	90% DESIGN FOR EPA REVIEW	PAR	AKF	CAM	09/30/19
D	UPDATED 90% DESIGN	PAR	AKF	CAM	01-31-2020
E	100% DESIGN - NOT ISSUED FOR CONSTRUCTION	PAR	AKF	CAM	02-18-2020

APTIM CASHMAN DREDGING

DRAWN: PAR | CK'D: AKF | APPD: CAM | DATE: | SCALE:

WALL SECTIONS
DOUGLASS STREET - WEST SIDE

FOR:

PROJECT NO: 749237266 | DWG NO: S2-1 | REV: E

APTIM	Title: Bulkhead Analysis – Douglass Street (West)	Page 1 of 44 (173 Total Pages)

CALCULATION NUMBER

Project No.	Sys/Fun Code	Discipline Code	Document Type	Sequence No.	Revision No.
749237266	BH	S	CAL	003	E

Project Number:	749237266
Project Name / Client Name:	Gowanus Canal – RTA 1
Calculation Title:	Douglass Street (West)
Calculation Identification Number:	7429237266-BH-S-CAL-003

CONFIRMATION REQUIRED: YES ☒ NO ☐

	Name	Signature	Date
Preparer:	Gregory E. Brown		21 Jan 2020
Reviewer:	Alan F. Brown		21 Jan 2020
Lead Engineer:	Craig Morgan		21 Jan 2020

Record of Changes	
Revision	Changes
A	65% Design
B	90% Design
C	90% Design – Incorporate Client Comments
D	90% Design – Update for RTA-1 90% Design Info
E	90% Design – Update for EPA Comments & Mounding

Confirmation Required Status

Calculation Reference Page	Input/Assumption Summary That Requires Confirmation	Preparer and Date Input/Assumption Confirmed	Reviewer and Date Input/Assumption Approved
6	Unit Weight of Fresh ISS	G.E. Brown 21 Jan 2020	A.F. Brown 21 Jan 2020
6	Final Phase III Dredge Depths		
6	Final Remediation Cap data		
6	Groundwater Mounding Height		

TABLE OF CONTENTS

Revision History:

Revision A 65% Design

Revision B Calculation updated for Phase III dredge elevations specified in RFI-012. Surcharge values updated. Added additional analysis of Phase III dredging at Section B due to RFI-012 impacts. Soil profiles, passive loading conditions, analysis summaries and results tables updated in body of calculation. Added discussion of Global Slope Stability Analysis. Attachments A-C updated for revised analyses.

Revision C Updated graphics for Figure 2. Calculation updated to show additional analysis at front of Flushing Tunnel (updated text on page 22 to reflect client comments and new page 23 inserted into calculation).

Revision D Calculation updated for Phase III dredge elevations (in the vicinity of the Flushing Tunnel) as updated in the 90% RTA-1 Design Drawings (as issued on August 30, 2019). Revised and refined soil parameters (g, Kp & R x Kp) based on EPA comments on other RTA-1 analyses. Attachment C (additional, now superseded analyses, removed).

Revision E Calculation updated to incorporate EPA comments. Changes included addition of additional surcharge acting behind existing bulkhead walls at west side of canal and on each side of the CSO outlet, inclusion of undrained analyses, and an LPile analysis (to study expected movement of existing pile-supported bulkhead along west side of the canal) included as Attachment B. Overall summary of analysis results (previously included as Attachment A) removed.

1. OBJECTIVE

The objective of this calculation is to provide a temporary bulkhead design for Douglass Street (West) (Block NYC, Lot N/A) to be installed along Gowanus Canal (Canal) to facilitate implementation of the remedy outlined in the Record of Decision (ROD). The design will minimize the need for mitigation to nearby properties, structures and utilities, and at the same time preserving the existing bulkheads during the dredging and capping operations.

2. METHODOLOGY

A static analysis will be performed for all wall sections. The static design of the bulkhead wall is controlled by forces and moments acting on the wall, deflection of the wall, and toe embedment. The following methods will be used, and will be used, for the static analyses of both the cantilevered and anchored wall sections:

- The wall will be designed as either a cantilevered wall or an anchored wall system depending on structural requirements and system stability, see Reference 1.
- A maximum design deflection and maximum design allowable bending moment will be designed in accordance with the AISC Steel Construction Manual, see Reference 2.
- Static analyses will be performed utilizing CivilTech Shoring Suite software (Version 8.18c).
- Soil will be modeled using the Mohr-Coulomb method.
- Surcharge pressures will be modeled as uniform surcharge loads.
- For analysis purposes, the soil profiles will be assumed to extend to a depth of 100 feet below the top of the bulkhead.
- The analyses will consider the worst case conditions only. Typically, the Phase III conditions will be the worst case conditions as these locations include the deepest dredge depths. However, where in-situ soil stabilization (ISS) is employed, the analysis will consider the Phase II dredge conditions with fresh ISS as well. As the Post-Remediation, in-canal material elevations are above the Phase II and Phase III dredge elevations, and because the replacement materials have significantly more strength than the materials that were removed, Post-Remediation analyses are not required as they will be governed by the Phase II and Phase III analyses.

The analysis will first consider the use of a cantilever bulkhead. If the deflections exceed the allowable deflections, or steel stresses exceed the allowable stresses, a design employing tie-backs will be considered.

Anchored wall sections, if required, will be designed using the Free Earth and/or Fixed Earth methods in accordance with the USS Steel Sheetpile Manual, see Reference 3. The Free Earth Support method assumes that the soil into which the lower end of the piling is driven is incapable of producing effective restraint from passive pressure to the extent necessary to induce negative bending moments. The sheet piling is assumed to be inflexible and that no pivot point exists below the mudline. Therefore, no passive resistance develops on the backside of the piling. The Free Earth method will be used to calculate the maximum tie-back load that would be transferred into the bracing system, if required.

3. REFERENCES

1. File: M.5cRTA1 Bulkhead Drawings
2. American Institute of Steel Construction (AISC), Steel Construction Manual 14th Edition, 2011.
3. United States Steel (USS), Steel Sheet Piling Design Manual, July 1984.
4. Remediation Target Area 1 (RTA-1) Design, Gowanus Canal Superfund Site, Brooklyn, New York, 90% Design Package, September 2019, distributed August 30, 2019 ("Gowanus RTA1 - 90% Design.pdf") - as modified by additional direction relating to in-canal soil profiles in the vicinity of the Flushing Tunnel
5. File: M.1b 65% RTA1 Calculations_Appendix B23-65% Design_ISS Layout and Thickness_Rev. C
6. PD-5 Douglass Street, DeGraw Street, Sackett Street Factual Report
7. File: M.5f3_Butler Street - Flushing Tunnel (Gowanus1.pdf)
8. RTA1 Gowanus Canal Basis of Design, Rev. B, 07.25.19
9. NAVFAC Design Manual 7.2 Foundations and Earth Structures
10. File: M.1b_65% RTA1 Calculations_AppendixB3-65% Design Geotech Parameters
11. Remedial Design Work Plan (RDWP) – Near Term Remedial Actions Fulton Municipal Works Former Gas Plant, Brooklyn, New York, GZANY, January 2016
12. Geosyntec Calculation – "Geotechnical and Structural Stability of Cap and ISS Soils" dated August 2019.
13. Geosyntec Calculation - "Geotechnical Properties of Treated Sediment", dated September 2019
14. Geosyntec Calculation – "Appendix B18 - 90% RTA1 Design_Simulated Vertical Specific Discharge Rate after Capping_RevD", August 2019 (as modified by RFI-017)
15. Geosyntec Calculation – "Appendix B19 - 90% RTA1 Design_Summary of Subsurface Stratigraphy and ISS Material Properties_RevD, August 2019

4. INPUTS

1. Upland geotechnical information modeled from Factual Report, Reference 6.
2. Canal side geotechnical information obtained from an interpretation of the canal profile included in Reference 4.
3. Updated In-situ Stabilization (ISS) limits included in Reference 4.
4. Updated Phase III dredge limits included in Reference 4.

5. ASSUMPTIONS

1. CivilTech Shoring Suite software models active and passive pressures to complete the analysis. For temporary dredge conditions a safety factor of 1.3 (divider) was applied to all calculated passive pressures.
2. Active and passive earth pressure coefficients determined using Figure 5 of Reference 9.
3. The ultimate friction factor and adhesion for the steel sheet pile and soil interface was determined from Table 1 in Reference 9. From this table (based on the observed soil types and properties) an interface friction angle, δ, 10 degrees was selected for native alluvial, and organic materials; 14 degrees was selected for soft sediment and mature ISS materials; for fill and glacial sand, and remediation cap materials, an interface friction angle of 17 degrees was selected. Note: Not all materials and soil interface angles are applicable to this analysis.
4. Passive earth pressure coefficients were reduced using the reduction factor, R, in Table 5 (Reference 9) for various interface friction and slope configurations.
5. To show the benefit of water on the passive Gowanus Canal side of the sheet pile water was netted out of the active side above the final dredge. Modeling the water level as a fluid on the passive side would have been subject to the passive safety factors described in (1) above; this was considered to over-estimate the amount of passive resistance in the analysis.
6. For undrained analyses, to be consistent with typical industry practice, the upland soils will be modelled using soil friction angles, ignoring the contributions of undrained shear strengths and/or cohesion (which act to reduce the active pressure on the wall) to ensure a conservative analysis. Thus, the undrained strength parameters noted in Reference 10 will only be used to model the in-canal soils that provide passive resistance.
7. The groundwater elevation differential due to mounding is assumed to be 2.5 feet above the groundwater elevations noted within the relevant factual report (per Reference 14).
8. For purposes of this design, it was assumed that at a minimum, the sheet piles would consist of ASTM A572, Grade 50 steel.
9. Flushing Tunnel and existing bulkhead founded on end bearing timber piles at El -30.
10. Surcharge Loadings on bulkhead walls:
    a. Vehicular Loads – 250 psf
    b. Flushing Tunnel Surcharge – 2036 psf (calculated)
    c. Existing Bulkhead Surcharge – 1230 psf (calculated)
    d. Combined Soil and Vehicular Surcharge Loads (behind existing bulkheads) - As noted within the calculation
11. Freshly mixed ISS (where required) will be modeled as soil/fluid with no shear strength ($\phi = 0$) with a total unit weight of 120 pcf.

12. Compressive strength of mature ISS assumed to be 12 psi; the shear strength is assumed to be half the value at 6 psi (860 psf). This is an extremely conservative assumption as Reference 13 indicates that the 7-day strength of ISS (using 8 percent cement is 62.1 psi).
13. No corrosion loss is assumed in this calculation.
14. The sheet piling is assumed to be inflexible and that no pivot point exists below the mudline.
15. Final cap condition assumes a 30-inch sand cap with a friction angle, ϕ, of 30 degrees.

6. CONFIRMATIONS REQUIRED

1. ~~Unit weight of freshly mixed ISS~~. Resolved – Unit Weight = 120 pcf per Reference 15.
2. Final Phase III dredge depths
3. Final Remediation Cap thickness and elevations
4. Final groundwater elevation/elevation differential due to mounding (RFI-17).

7. COMPUTER CODE IDENTIFICATION

1. CivilTech Shoring Suite Software, Version 8.18c, 2019.

8. CONCLUSIONS

Analysis Results

Section/Surcharge Loading/Analysis Type	*Surcharge (psf)*	*M_{max} (k-ft/ft)*	*Δ_{max} (in)*	*Min Pile Length (ft)*
Sect A - Phase II Dredge to El. -18.5 AZ 36-700N Cantilever Analysis - Drained	2,286	0.00	19.48 (vs 1.96 allowable) (Note B)	24.56
Sect A - Phase II Dredge to El. -18.5 AZ 36-700N Cantilever Analysis - Undrained	2,286	0.00	0.33 (vs 1.96 allowable)	24.60
Sect A - Phase III Dredge to El. –22.0 AZ 36-700N Cantilever Analysis – Drained/Undrained	2,286	0.02	0.27 (vs 2.24 allowable)	28.07
Sect B - Phase II Dredge to El. –18.5 AZ 36-700N Cantilever Analysis - Drained	1,480	85.20	1.24 (vs 1.96 allowable)	46.57
Sect B - Phase II Dredge to El. –18.5 AZ 36-700N Cantilever Analysis - Undrained	1,480	82.21	1.20 (vs 1.96 allowable)	46.30
Sect B - Phase III Dredge to El. -20.5 AZ 36-700N Cantilever Analysis – Drained/Undrained	1,480	75.24	1.44 (vs 2.12 allowable)	45.37

Dredge Elevations noted above include 6-inch overdredge allowance (where applicable)

Notes:

A. Minimum Pile Length is measured from the existing ground level (the top of the analysis section (which is held constant for consistency in all analyses).

B. See discussion of sheet pile deflections and cut-off elevations on page 29.

Recommendations:

Section A: (Flushing Tunnel): Use AZ 36-700N Sheet Pile Bulkheads

Bottom Elevation of Sheet Pile:	El. –30.0
Top of Sheet Pile Elevation	El. -18.0 (even with Flushing Tunnel Invert)
Specified Sheet Pile Length	36.0 feet (prior to cutoff)

Section B (South of Flushing Tunnel): Use AZ 36-700N Sheet Pile Bulkheads

Bottom Elevation of Sheet Pile:	El. –46.0 (see discussion on Page 38)
Specified Sheet Pile Length	52.0 feet

Note: The sheet pile lengths specified above have been increased approximately 10% to provide an additional factor of safety.

9. CALCULATION

9.1 Design Sections

Two design sections will be considered for this property as the majority of the Douglass Street right-of-way is underlain by the Flushing Tunnel outfall. The outfall is a concrete structure that is supported by timber piles. The second section, south of the outfall to the edge of the right-of-way includes a concrete bulkhead on timber piles. Section A, representing the portion of the property extends from Sta. 1+00 (+/-) to Sta. 1+55 (+/-). Section B, representing the portion of the property with only a concrete bulkhead is considered to extend from Sta. 1+55 to the southern edge of the Douglass Street parcel.

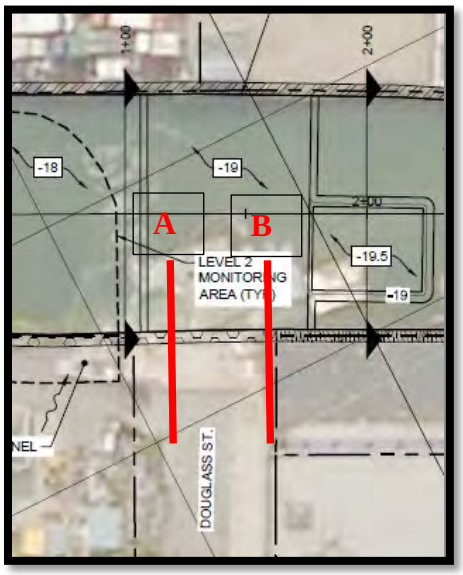


Figure 1- Douglass Street (West) Canal Side Plan View (Reference 4)

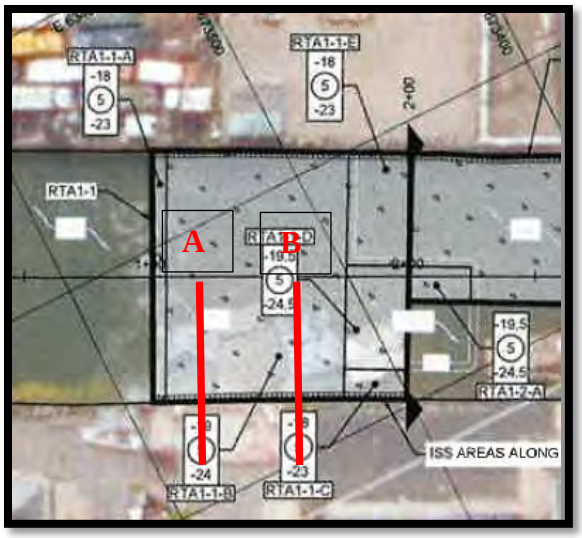


Figure 2 - ISS in Proximity to Douglass Street (West) (Reference 4)

9.2 Critical Design Scenarios

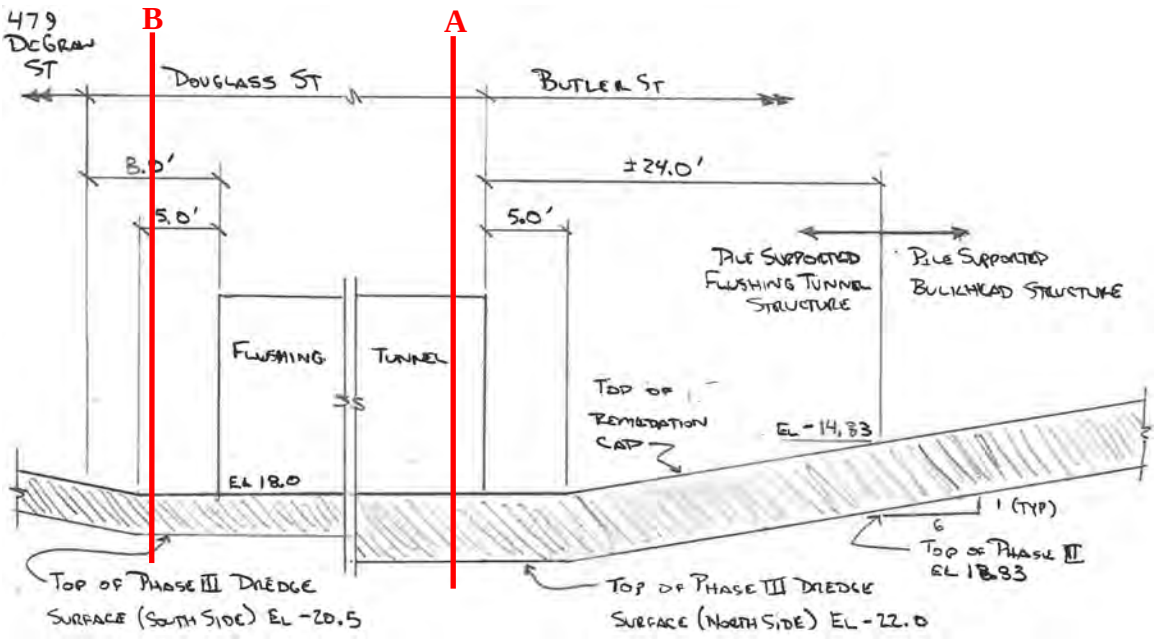


Figure 3 - Soil Profile at Face of Flushing Tunnel (per Reference 4)

Section A (Flushing Tunnel) - Phase II Dredge to El. -18.0

The analysis at this section considered a worst case scenario that included dredging to the expected Phase II depth of -18.0 (the invert elevation of the Flushing Tunnel) which occurs within

the limits of the ISS columns. The ISS columns are considered to be placed at an elevation range of El -22.0 to El. -27.0 in this area.

Section B (South of Tunnel) - Phase II Dredge to El. -18.0

Dredging to the deepest section of the proposed Phase II dredge depth of El -18, occurring within the limits of the ISS columns. The ISS columns are considered to be placed between El. -20.5 and El. -25.5 in this portion of the canal. The analysis assumes 6 inches of over dredging to the analyzed depth of El. -18.5.

Section B (South of Tunnel) - Phase III Dredge to El. -20.5

Dredging to the deepest section of the proposed Phase IIII dredge depth of El -20.5 (adjacent to the Flushing Tunnel outfall), occurring within the limits of the ISS columns. The ISS columns are considered to be placed between El. -20.5 and El. -25.5 in this portion of the canal. No over dredge allowance is included as the mature ISS is considered to have enough strength to resist the dredging operations.

Post Remediation Conditions

Based on the data related to the post-remediation cap materials and elevations included in the remediation design package (Reference 4) we note that the final post remediation cap elevations will be several feet above the Phase II and Phase III dredge elevations. Therefore, as the cap will be comprised of materials that provide significantly more passive resistance than the materials employed in the Phase II and Phase III analyses, it can be determined by inspection that there is no need for post-remediation analyses provided that the Phase II and Phase III bulkhead wall design can adequately resist the postulated loadings.

9.3 Subgrade Profiles

9.3.1 Upland Side (Active Side)

See Reference 6

Random Fill: Beneath the asphalt/concrete pavement, a stratum of fill material was observed to be approximately 7.4 ft thick, from the ground surface, Elev. 5.9, to Elev. - 1.5. Samples of this material were observed to consist of silty sand and sandy gravel, fine to medium grained sand and small to large gravel. The consistency of the material was characterized as loose based on observed N-values of 2 blows per foot (bpf). The material is classified as NYC Building Code (NYCBC) Class 7 material. Native Alluvial Sediments: This stratum was observed to be 27.5 ft thick, from Elev. -1.5 to Elev.-29, and was encountered below the Random Fill. The material consists of dark gray, elastic silt to sandy silt, and trace fibrous organics. Its consistency was characterized as very loose/very soft to medium dense based on the observed N-values between weight of hammer (WOH) and 13 bpf. The material is predominately classified as NYCBC Class 6 material.

Glacial Deposits: This material was encountered below the Native Alluvial Sediments, below Elev. -29. The Glacial Deposits consist of dark gray to grayish brown, gravelly sand/poorly graded sand/ well graded sand, fine to coarse grained sand and small to large subangular gravel. The consistency of the stratum was characterized as very loose to very dense, densifying with depth. The observed N-values were between 3 and 10 bpf down to Elev. -49 and between 29 and 50+ bpf for the remainder of the layer. The material is classified as NYCBC Class 6 down to Elev. -49, and predominately NYCBC Class 2a for the remainder of the layer.

Assumed upland (active) soil profile:

Strata	Symbol	Elevation Range	Thickness, feet
Fill	[FILL]	El 5.9 to El -1.5	7.4
Native Alluvial Sediment	[NAS]	El -1.5 to El -29	27.6
Glacial Deposits	[GLACIAL DEPOSITS]	El -29 to End of Boring	

Assumed canal (passive) soil profile:

Strata	Symbol	Elevation Range	Thickness, feet
Native Alluvial Sediment	[NAS]	El -18 to El -20	2
Glacial Deposits	[GLACIAL DEPOSITS]	El -20 to End of Boring	

Canal side geotechnical interpretation from Section 9.3.2 below.

9.3.2 Canal Side

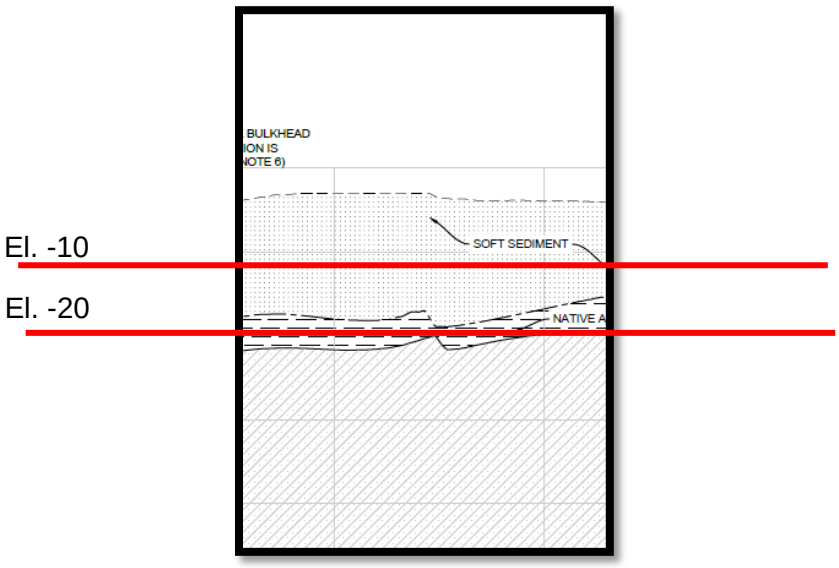


Figure 4 – Douglass Street (West) Canal Side Profile (See Reference 4 Sheet DR-1)

10 Geotechnical Design Parameters

See Reference 8

10.1 Sediments (Canal Soil)

Total Unit Weight

CANAL SOIL		
Soil Type	**Soil Symbol**	**Total Unit Weight, pcf**
Soft Sediment	[SS]	80
Native Alluvial Sediment	[NAS]	115
Glacial Deposit	[GD-S]	125

Drained Shear Strength

CANAL SOIL		
Soil Type	**Soil Symbol**	**Drained Shear Strength, degrees**
Soft Sediment	[SS]	28
Native Alluvial Sediment	[NAS]	28
Glacial Deposit	[GD-S]	34

Undrained Shear Strength

CANAL SOIL		
Soil Type	**Soil Symbol**	**Undrained Shear Strength, psf**
To Elevation -20	-	250
Below Elevation -20	-	500

10.2 ISS Soil (Canal Soil)

Total Unit Weight	Unconfined Compression Strength	Tensile Strength	Youngs Modulus	Allowable Compressive Strain,
pcf	Psi	psi	tsf	%
120	20	2	100-430	0.75

10.3 Upland Soil

Total Unit Weight

UPLAND SOIL		
Soil Type	**Soil Symbol**	**Total Unit Weight, pcf**
Fill	[FILL]	120
Organic Sediment	[OS]	95
Native Alluvial Sediment	[NAS]	115
Glacial Deposit with Fines	[GD-S]	125
Glacial Deposit with Sand	[GD-S]	125

Drained Shear Strength

UPLAND SOIL		
Soil Type	**Soil Symbol**	**Drained Shear Strength, degrees**
Fill	[FILL]	34
Organic Sediment	[OS]	23
Native Alluvial Sediment	[NAS]	28
Glacial Deposit with Fines	[GD-S]	28
Glacial Deposit with Sand	[GD-S]	34

Undrained Shear Strength

UPLAND SOIL		
Soil Type	**Soil Symbol**	**Undrained Shear Strength, psf**
Organic Sediment	[OS]	250
Native Alluvial Sediment	[NAS]	250
Glacial Deposit with Fines	[GD-S]	500

10.4 Soil Properties Used in the Design

Soil	Unit Weight, pcf	Friction Angle, Φ	Undrained Shear Strength, psf
[FILL]	120	34	-
[OS]	95	23	-
[NAS]	115	28	250 (El. > El. -20.0) 500 (El. < El. -20.0)
[GD-S]	125	34	-
[SS]	80	28	-
ISS (Fresh)	120	0	
ISS (Mature)	120	0	860
[FILL] Cap	110	30	-

Note: If included in the analysis, Fresh ISS is considered to have no shear strength (ϕ=0) and a unit weight of 120 psf. For Mature ISS, the average allowable minimum ISS allowable compressive strength is assumed at 12 psi (1,728 psf); the shear strength is assumed to be half the compressive strength or 6 psi (860 psf).

10.5 Active and Passive Earth Pressure Coefficients

Active and passive earth pressure coefficients were determined using Figure 6 from Reference 9, Active and Passive Coefficients with Wall Friction (sloping Backfill).

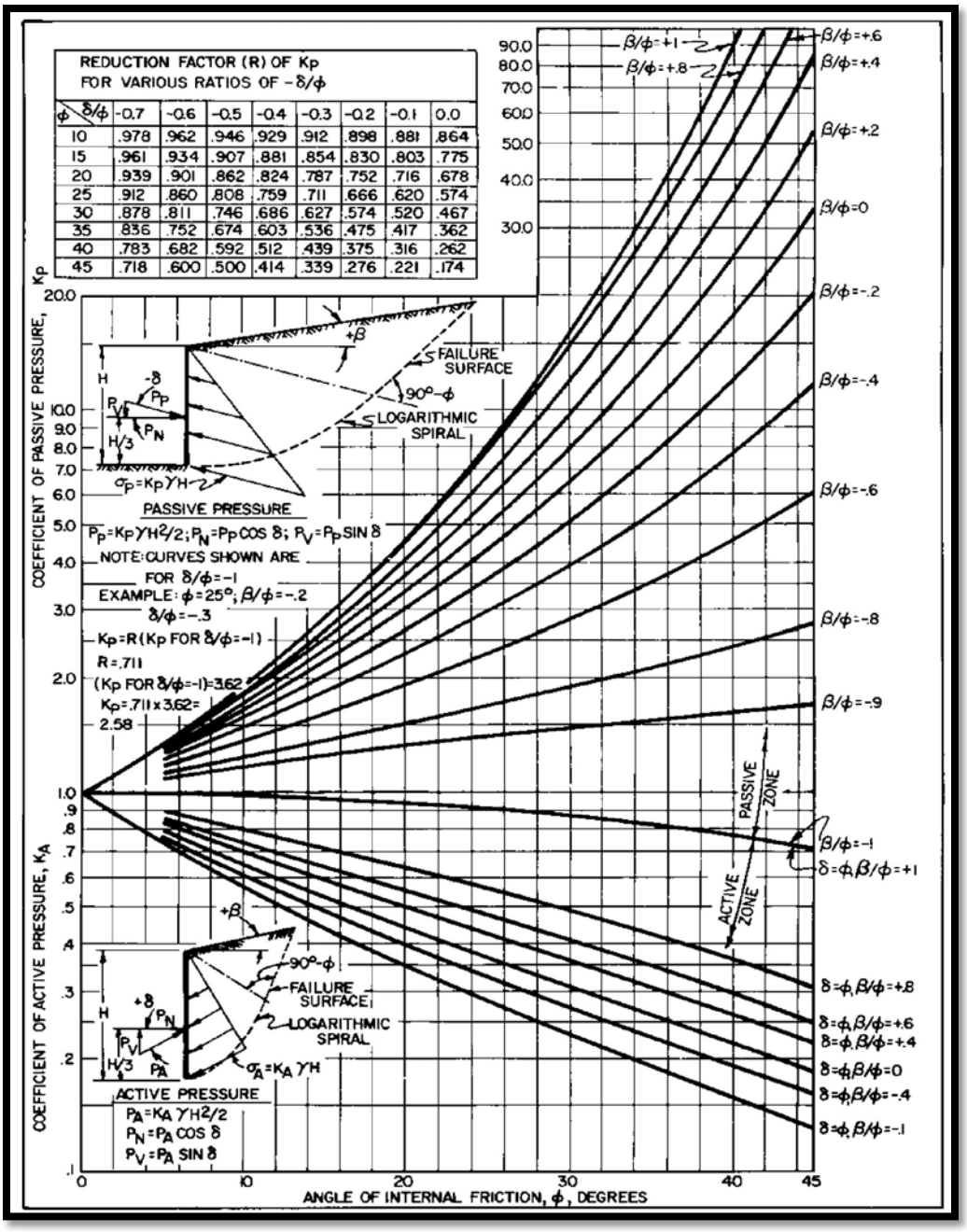


Figure 5 - Active and Passive Coefficients with Wall Friction (Reference 9 – Figure 6)

Assume wall friction, δ = 10 degrees, for Native Alluvial, & Organic materials
Assume wall friction, δ = 14 degrees, for Soft Sediment materials
Assume wall friction, δ = 17 degrees, for Fill, Glacial Sand & Remediation Cap materials

From Figure 5, read:

Soil	Ka	Kp	δ/Φ
[FILL]	0.26	9.0	0.50
[OS]	0.39	3.6	0.74
[NAS]	0.33	5.5	0.36
[GD-S]	0.26	9.2	0.50
[SS]	0.33	5.5	0.50
ISS (Fresh & Mature)	-	-	-
[FILL] Cap	0.30	6.8	0.57

10.6 Passive Coefficient Reduction Factors

Passive earth pressure reduction factors were obtained using the table in Figure 5, read:

Soil	R	R-Kp
[FILL]	-	-
[OS]	-	-
[NAS]	0.685	3.77
[GD-S]	0.71	6.77
[SS]	0.685	3.77
ISS (Fresh & Mature)	-	-
[FILL] Cap	0.79	5.39

11 Groundwater

Groundwater was encountered between 2.7 and 4.5 ft bgs, approximately Elev. 0 to Elev. 3.2. Groundwater fluctuations were observed throughout drilling as the water level changed between high and low tide conditions. The average groundwater level is anticipated to be at Elev. 1.

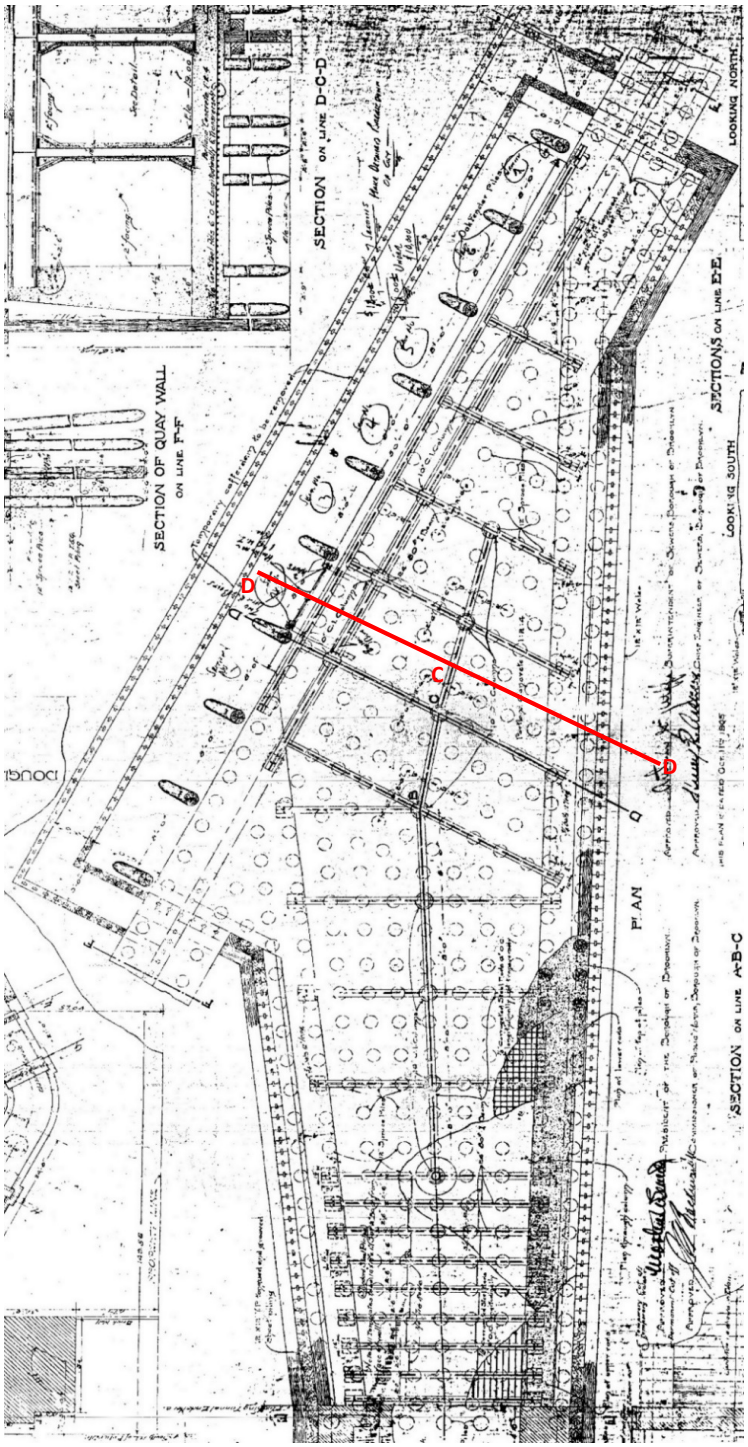
In addition, per Reference 14, mounding of groundwater on the upland side of the bulkhead wall is expected to increase the groundwater level by approximately 2.5 feet. Therefore, for the analysis of the sheet pile bulkhead, the groundwater level on the upland side will be taken as Elev. 3.5.

12 Surcharges

- 250 psf Vehicular Surcharge
- 2,036 psf Flushing Tunnel Surcharge
- 1,230 psf Bulkhead Surcharge
- Combined Soil and Vehicular Surcharge Loads (behind existing bulkheads) - As noted within the calculation

The calculation of the surcharge loadings are included on the following pages.

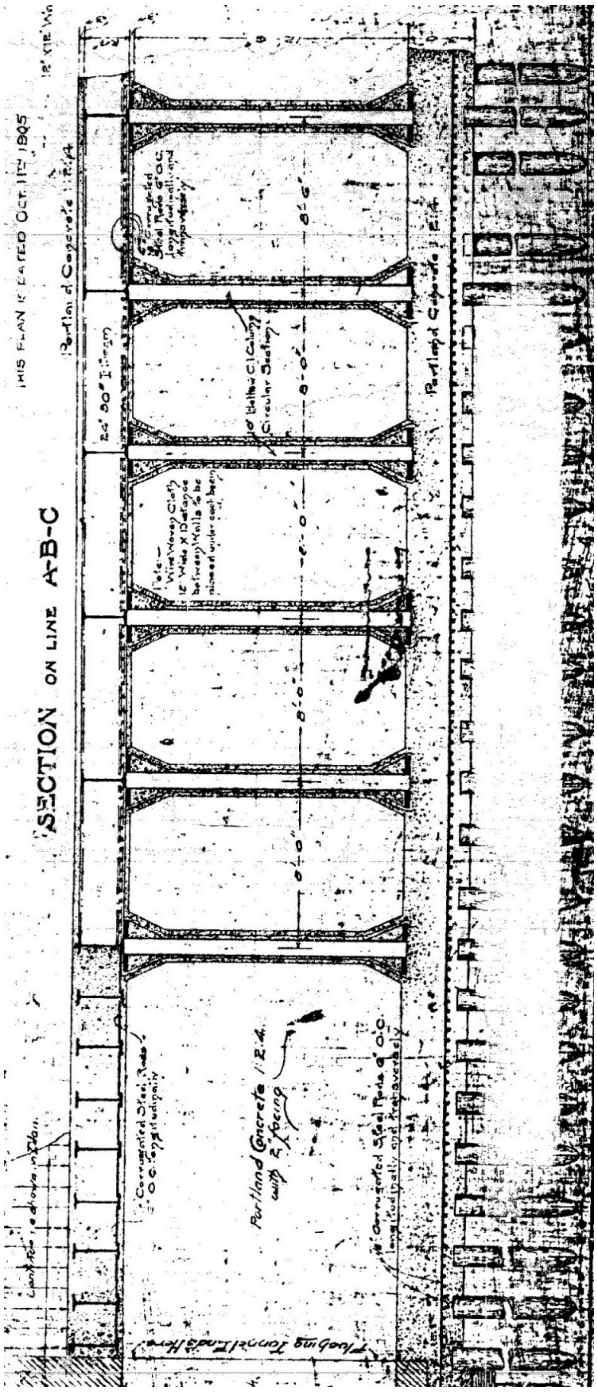
Calculate Total Weight & Surcharge of Flushing Tunnel (Based on Sect D-C-D)



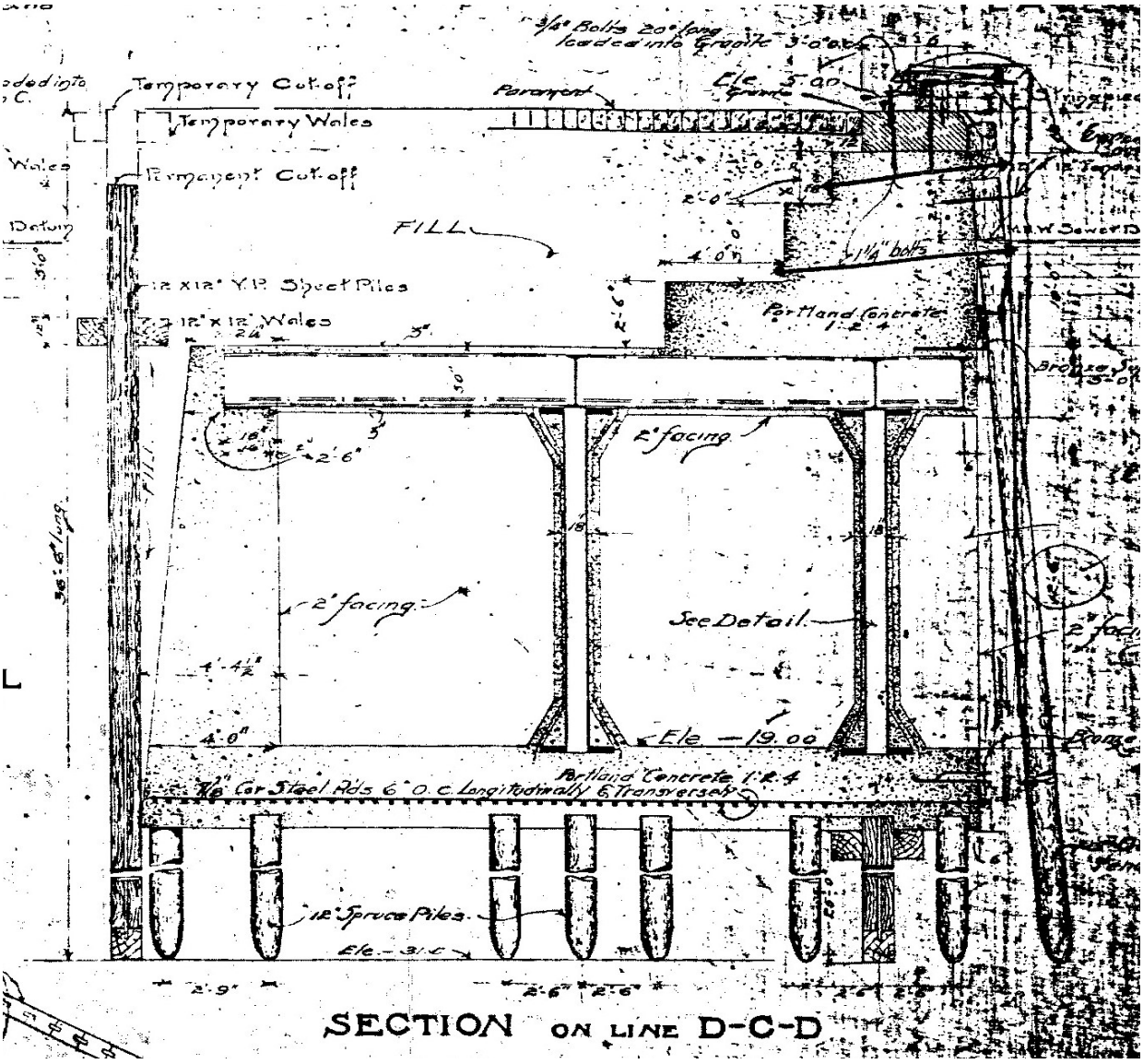
Plan - Flushing Tunnel

CALCULATION NUMBER

Project No.		Sys/Fun Code		Discipline Code		Document Type		Sequence No.		Revision No.
729221426	**--**	**BH**	**--**	**S**	**--**	**CAL**	**--**	**003**	**--**	**E**



Cross Section - Flushing Tunnel


Temporary Cut-off
Temporary Wales
Permanent Cut-off
Permanent
FILL
12 x 12" Y.P. Sheet Piles
12" x 12" Wales
Portland Concrete 1:2:4
2' facing
See Detail
Ele -19.00
Portland Concrete 1:2:4
12" Spruce Piles
SECTION ON LINE D-C-D

Outlet Section Plan Dimensions

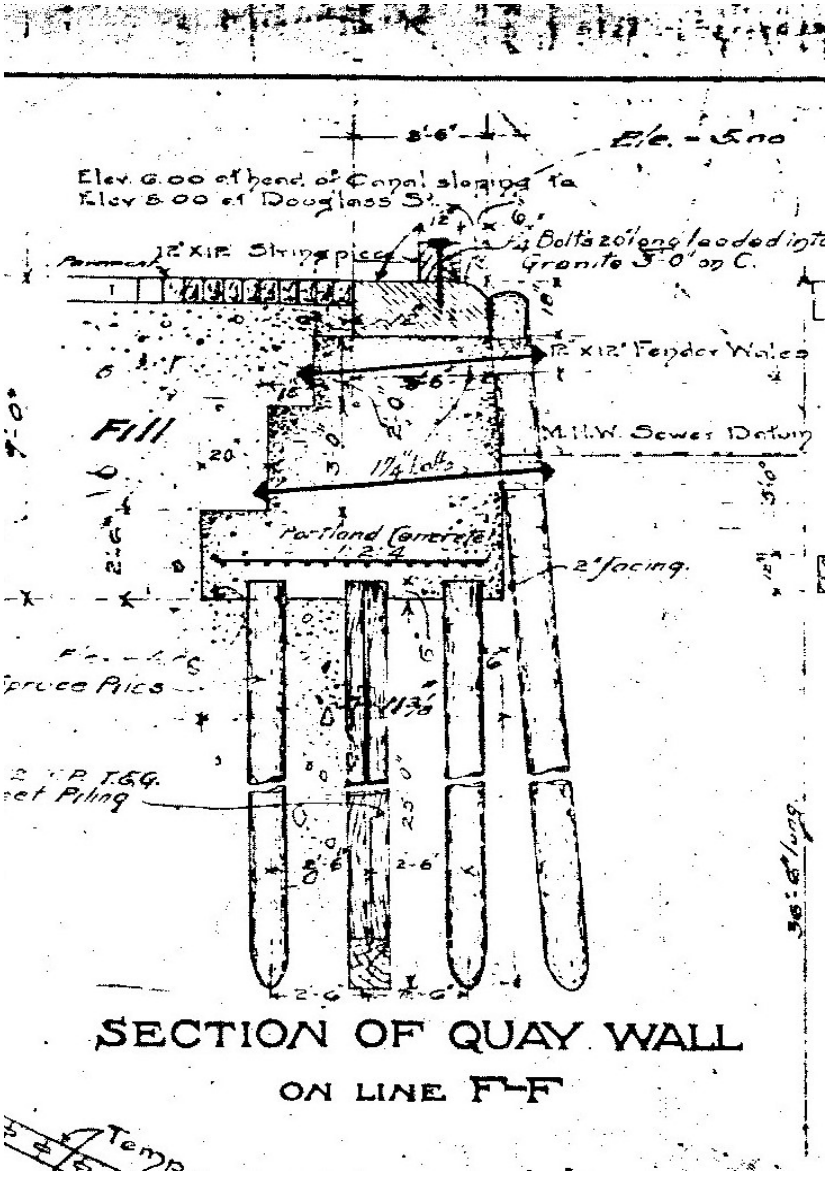
L = 26.50 ft, Distance Outlet to Start of Back Wall @ Sect D-C-D

W = 72.00 ft, Width at Face of Flushing Tunnel Structure

10" CI Columns - Area = 16.1 in^2 (Assumed same as Sched 80 piping)

	No.	Unit Weight pcf	L ft	W ft	H ft	Total Weight kips
Granite Cap	1	175	3.50	72.00	1.50	66.2
Conc Bulkhead 1st Level	1	150	4.50	72.00	2.00	97.2
Conc Bulkhead 2nd Level	1	150	6.00	72.00	3.00	194.4
Conc Bulkhead 3rd Level	1	150	10.00	72.00	2.50	270.0
Brick Paving	1	140	23.00	72.00	0.33	77.3
Fill - Level 1	1	120	22.00	72.00	2.00	380.2
Fill - Level 2	1	120	20.50	72.00	3.00	531.4
Fill - Level 3	1	120	16.50	72.00	2.50	356.4
Concrete Base	1	150	26.50	72.00	3.00	858.6
Concrete Top	1	150	26.50	72.00	2.50	715.5
Concrete Side Walls	2	150	26.50	3.25	12.50	323.0
24" x 90 I-Beams	6	90 plf	26.50	1.00	1.00	14.3
10" Hollow CI Colums	9	4.19 plf	1.00	1.00	12.50	0.5
					Total Weight (kips):	3884.8
					Surcharge due to Outfall and Existing Bulkhead (ksf):	2.036
					Surcharge due to Vehicle Loads (ksf):	0.250
					Total Surcharge transferred to piles (ksf):	2.286

Calculate Total Weight & Surcharge of Douglass Street Bulkhead (Per Unit Width)



Bulkhead Section Plan Dimensions

L = 7.42 ft, Distance Outlet to Start of Back Wall @ Sect F-F

W = 1.00 ft, Width at Face of Bulkhead Structure

	No.	Unit Weight	L	W	H	Total Weight
		pcf	ft	ft	ft	kips
Granite Cap	1	175	3.50	1.00	1.50	0.9
Conc Bulkhead 1st Level	1	150	4.50	1.00	2.00	1.4
Conc Bulkhead 2nd Level	1	150	5.75	1.00	3.00	2.6
Conc Bulkhead 3rd Level	1	150	7.42	1.00	2.50	2.8
Brick Paving	1	140	3.92	1.00	0.33	0.2
Fill - Level 1	1	120	2.92	1.00	2.00	0.7
Fill - Level 2	1	120	1.67	1.00	3.00	0.6
Fill - Level 3	1	120	0.00	1.00	2.50	0.0
					Total Weight (kips):	9.1
					Surcharge due to Existing Bulkhead (ksf):	1.230
					Surcharge due to Vehicle Loads (ksf):	0.250
					Total Surcharge transferred to piles (ksf):	1.480

Calculate Additional Lateral Pressures that are expected to act on the temporary bulkeads

Lateral Pressure Due to Surcharge of Soils Behind the Existing Structures

γ_{H20}	=	62.4	pcf	Unit Weight of Water
Q_{veh}		250	psf	Vehicle Surcharge
GWT	=	3.50	ft	Elevation of Groundwater Table
CWT	=	-2.57	ft	Canal Water Table

At Section A (In Front of Flushing Tunnel)

L_{top}	=	6.00	ft	Top of Bulkhead Elevation
EL_{Fill}	=	-1.50	ft	Bottom of Fill Stratum
EL_{NAS}	=	-21.00	ft	Bottom of NAS / Flushing Tunnel Concrete

γ_{Fill} = 120.0 pcf

γ'_{Fill} = $\gamma_{Fill} - \gamma_{H20}$

= 57.6 pcf

γ_{NAS} = 115.0 pcf

γ'_{NAS} = γ_{NAS} - γ_{H20}

= 52.6 pcf

Q_{fill1} = (L_{top}-GWT) x γ_{Fill} Fill above GWT

= 300.0 psf

Q_{fill2} = (GWT-EL_{Fill}) x γ'_{Fill} Fill below GWT

= 288.0 psf

Q_{NAS} = (EL_{Fill} - EL_{NAS}) x γ'_{NAS}

= 1026 psf

Q_{H20} (GWT - EL_{NAS}) x γ_{H20}

1529 psf

ΣQ_{A1} = Q_{veh} + Q_{fill1} + Q_{fill2} + Q_{NAS} + Q_{H2O} Total Surcharge Loading

= 3393 psf

ΣQ_{A2} = Q_{fill1} + Q_{fill2} + Q_{NAS} + Q_{H2O} Total Surcharge Loading Less Vehicle Loads

= 3143 psf

ka_{GD-S} = 0.26

H_{A1} = ka_{GD-S} x ΣQ_{A1} Add'l Soil Surcharge acting below base of Flushing Tunnel

882.1 psf

H_{A2} = ka_{GD-S} x ΣQ_{A2} Add'l Soil Surcharge acting below base of Flushing Tunnel (No Vehicles)

817.1 psf

For ShoringSuite Analysis, H_{A1} will be applied as a Strip Load, 40-feet wide, 26.5 feet from the face of the sheet pile bulkhead, at a depth of 27.0 feet (bottom of Flushing Tunnel). The loading will be applied using a Boussinesq distribution.

Section B (South of Flushing Tunnel)

EL_{Bulk} = -9.00 ft Bottom of Bulkhead Concrete

Q_{Fill1} = (L_{top}-GWT) x γ_{Fill} Fill above GWT

= 300.0 psf

Q_{Fill2} = (GWT-EL_{Fill}) x γ'_{Fill} Fill below GWT

= 288.0 psf

Q_{NAS} = (EL_{Fill} - EL_{Bulk}) x γ'_{NAS}

= 395 psf

Q_{H20} $(GWT - EL_{Bulk}) \times \gamma_{H20}$

780 psf

$\Sigma Q_{B1} = Q_{veh} + Q_{fill1} + Q_{fill2} + Q_{NAS} + Q_{H2O}$ Total Surcharge Loading

$= 2013$ psf

$\Sigma P_{B2} = Q_{fill1} + Q_{fill2} + Q_{NAS} + Q_{H2O}$ Total Surcharge Loading Less Vehicle Loads

$= 1763$ psf

$ka_{NAS} = 0.33$

$H_{B1} = ka_{NAS} \times \Sigma Q_{B1}$ Add'l Soil Surcharge acting below base of Bulkhead

664.1 psf

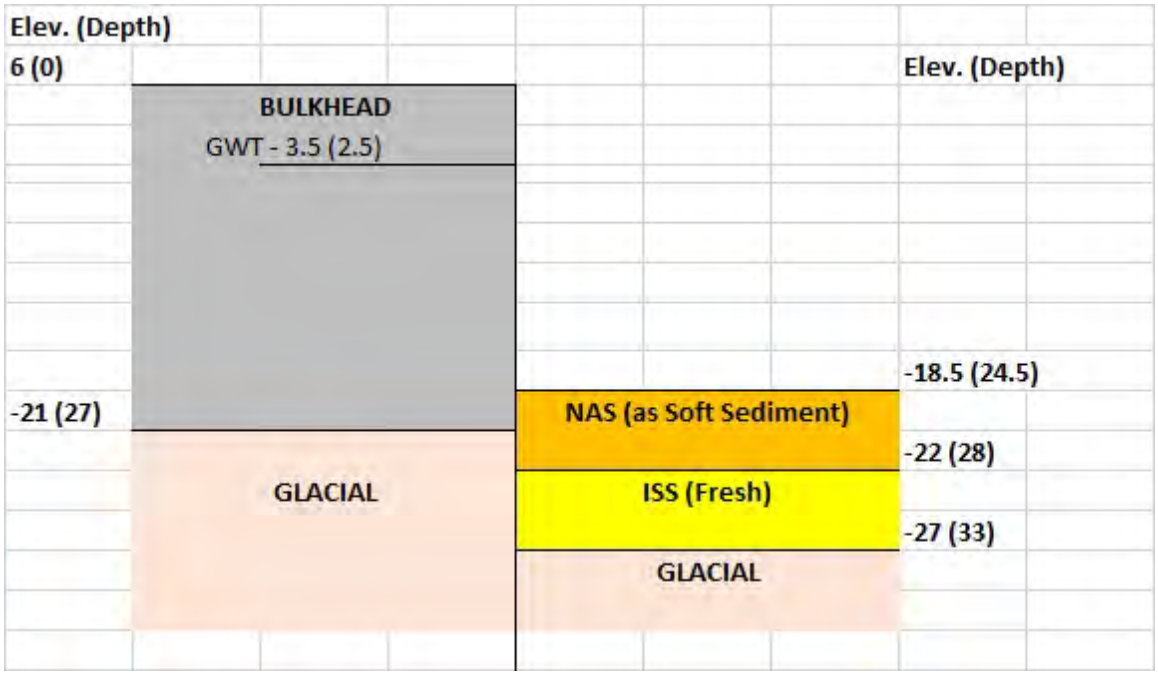
$H_{B2} = ka_{NAS} \times \Sigma Q_{B2}$ Add'l Soil Surcharge acting below base of Bulkhead (No Vehicles)

581.6 psf

For ShoringSuite Analysis, H_{B1} will be applied as a Strip Load, 40-feet wide, 7.42 feet from the face of the sheet pile bulkhead, at a depth of 9.0 feet (bottom of existing bulkhead). The loading will be applied using a Boussinesq distribution.

13 Analysis

Section A (Flushing Tunnel) - Phase II Dredge to El. -18.0



Active (Upland) Side

Depth	Soil	Strata Thickness	Ka	γ_T	γ_w	P_2 (pcf)	P_2 (kcf)	P_2 Cum (kcf)
0								
9	BULKHEAD	0	0.26	120		0.00	0	0
27	BULKHEAD	0	0.26	120	62.4	0.00	0.000	0.000
100	Glacial	73	0.26	125	62.4	5,743.35	5.743	5.743

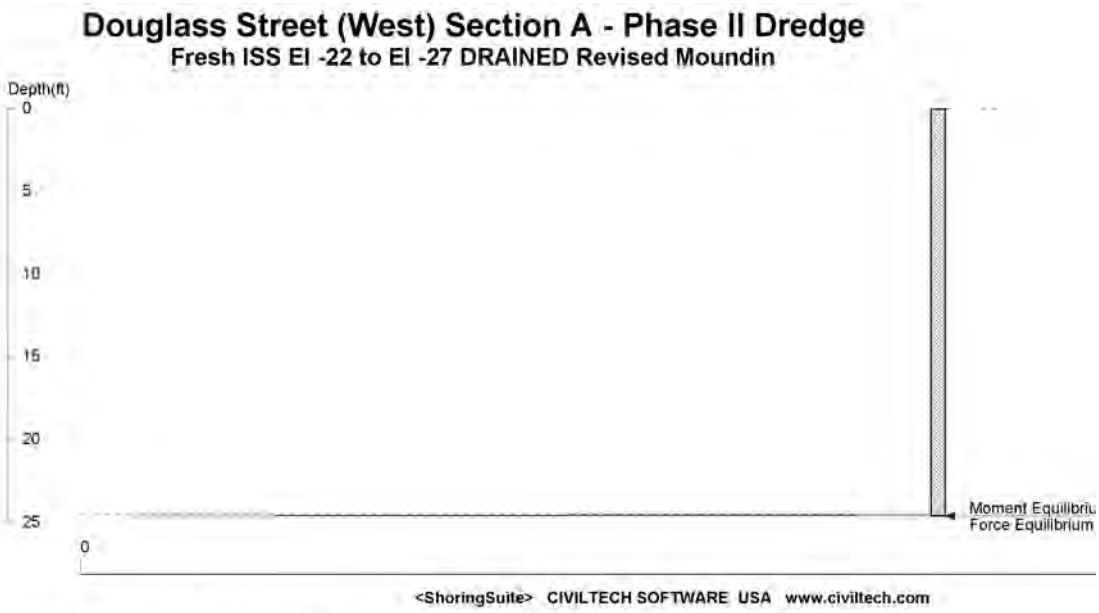
Passive Pressure Data - Drained Analysis							
Elev.	Depth	Soil	Strata Thickness	R x K_p	γ_T	γ_w	γ'
6.00	0.00	Ground Surface					
-18.50	24.50	Canal Bottom	24.50	0.00	0	0	0
-22.00	28.00	Native Alluvial	3.50	3.77	80	62.4	17.6
-27.00	33.00	Fresh ISS	5.00	0.00	120	62.4	57.6
-94.00	100.00	Glacial	67.00	6.77	125	62.4	62.6

Passive Pressure Data - Drained Analysis										
Elev.	Depth	Soil	Soil σ_v Cum (ksf)	H_20 σ_v Cum (ksf)	Surcharge (psf)	Su (psf)	Gradient (kcf)	ΔP (ksf)	P_1 (Ksf)	P_2 (ksf)
6.00	0.00	Ground Surface	0.0	0.0					0.000	0.000
-18.50	24.50	Canal Bottom	0.0	0.0			0.000	0.000	0.000	0.000
-22.00	28.00	Native Alluvial	61.6	218.4	0.0		0.129	0.451	0.000	0.451
-27.00	33.00	Fresh ISS	349.6	530.4	280.0	0.0	0.120	0.600	0.280	0.880
-94.00	100.00	Glacial	4543.8	4711.2	2897.2		0.486	32.576	2.897	35.473

Passive Pressure Data - Undrained Analysis							
Elev.	Depth	Soil	Strata Thickness	R x K_p	γ_T	γ_w	γ'
6.00	0.00	Ground Surface					
-18.50	24.50	Canal Bottom	24.50	0.00	0	0	0
-22.00	28.00	Native Alluvial	3.50	0.00	80	62.4	17.6
-27.00	33.00	Fresh ISS	5.00	0.00	120	62.4	57.6
-94.00	100.00	Glacial	67.00	6.77	125	62.4	62.6

Passive Pressure Data - Undrained Analysis										
Elev.	Depth	Soil	Soil σ_v Cum (ksf)	H_20 σ_v Cum (ksf)	Surcharge (psf)	Su (psf)	Gradient (kcf)	ΔP (ksf)	P_1 (Ksf)	P_2 (ksf)
6.00	0.00	Ground Surface	0.0	0.0					0.000	0.000
-18.50	24.50	Canal Bottom	0.0	0.0			0.000	0.000	0.000	0.000
-22.00	28.00	Native Alluvial	61.6	218.4	0.0	250.0	0.080	0.280	0.250	0.530
-27.00	33.00	Fresh ISS	349.6	530.4	280.0	0.0	0.120	0.600	0.280	0.880
-94.00	100.00	Glacial	4543.8	4711.2	2897.2		0.486	32.576	2.897	35.473

Analysis Summary – Douglass Street Section A @ Flushing Tunnel, Phase II
Cantilever Analysis - Drained



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File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section A Phase II Fresh ISS DRAINED Rev Mo

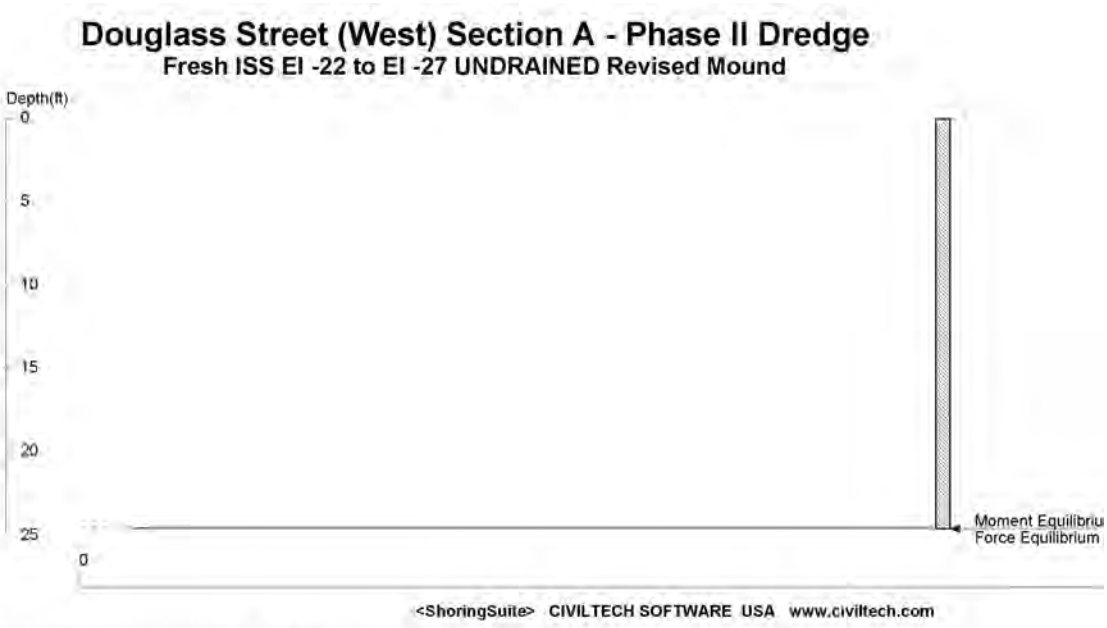
Wall Height=24.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=0.10 (5~10ft is recommended!!!) Min. Pile Length=24.60
MOMENT IN PILE: Max. Moment=0.00 per Pile Spacing=1.0 at Depth=24.56

PILE SELECTION:
Request Min. Section Modulus = 0.0 in3/ft=0.00 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 19.48(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

See Deflection & Sheet Pile Cut-off Note on Page 29 and additional discussion on Page 32.

Analysis Summary – Douglass Street Section A @ Flushing Tunnel, Phase II
Cantilever Analysis - Undrained



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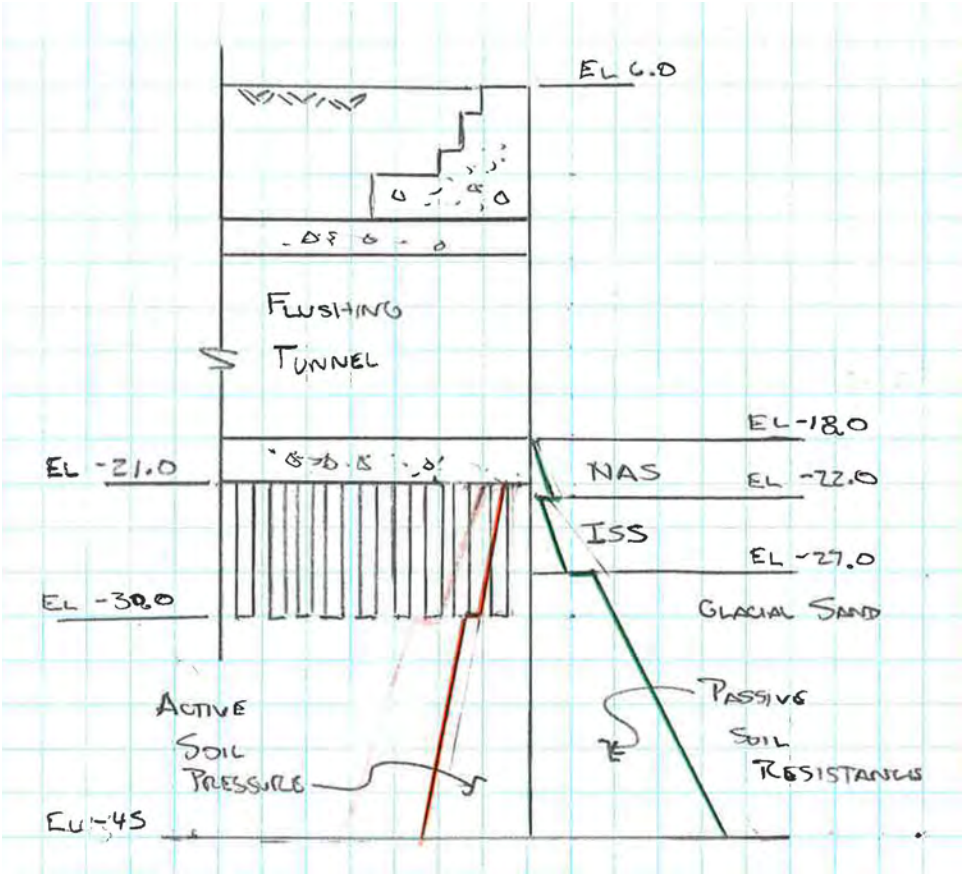
Wall Height=24.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=0.10 (5~10ft is recommended!!!) Min. Pile Length=24.60
MOMENT IN PILE: Max. Moment=0.00 per Pile Spacing=1.0 at Depth=24.56

PILE SELECTION:
Request Min. Section Modulus = 0.0 in3/ft=0.01 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 0.33(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

See Deflection & Sheet Pile Cut-off Note on Page 29 and additional discussion on Page 32.

Flushing Tunnel Soil Pressure Diagram for Proposed Dredging and ISS Installation Conditions

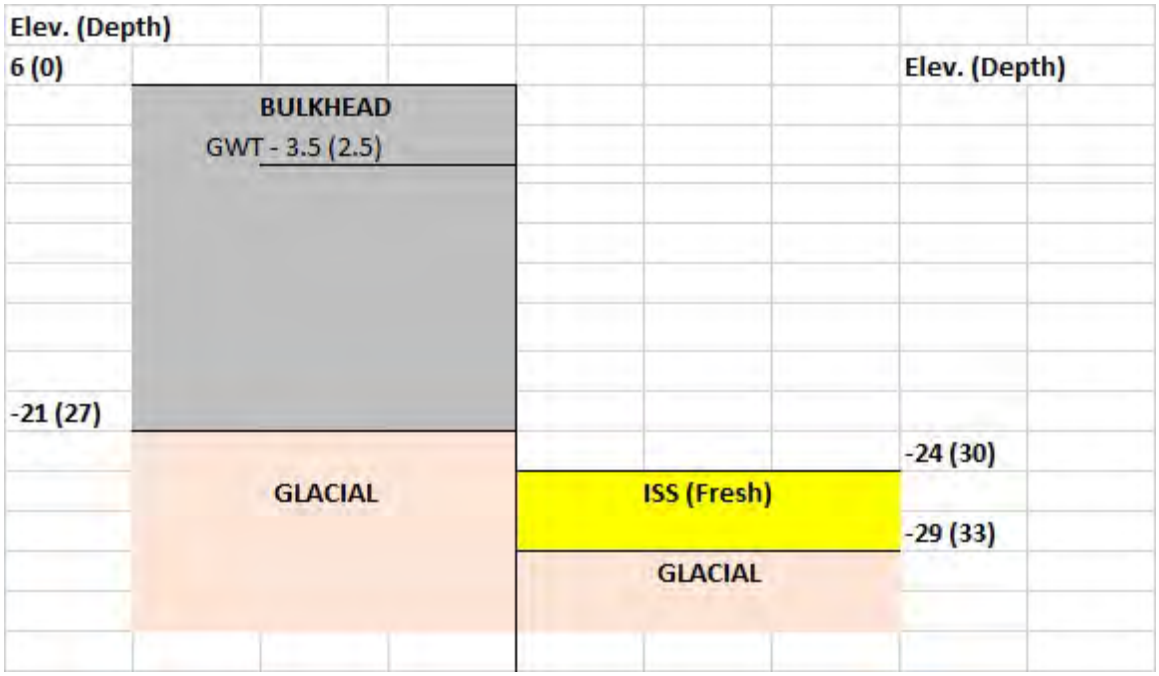


Deflection & Sheet Pile Cut-off Note:

Further, based on a review of Shoring Suite analyses, it is recognized that the amount of passive resistance provided by the in-canal soils is significantly greater than the active pressures. This is especially true if the in-canal conditions are modelled as previously shown for the Phase II conditions. Thus, the top of the in-canal soils are at a level that is above the bottom of the Flushing Tunnel outfall structures. As shown above, the “passive” loads are significantly greater than the “active” loads on the bulkhead wall. As a result, the Shoring Suite Analysis calculates deflections based on an unrealistically small embedment depth for the sheet pile bulkhead as equilibrium is reached almost immediately. Therefore, the deflections shown on the previous pages are considered to be unrealistic and may be discounted.

Further, as the “passive” resistance is expected to be significantly greater than the “active” loads on the bulkhead wall, by engineering judgment, the sheet pile bulkheads at the front of the Flushing Tunnel may be stopped at El. -30. This is an elevation that is equal to the level of the existing pile tips, and will afford enough embedment depth to allow dredging to the planned elevations, while providing protection to the existing timber piles.

Section A (Flushing Tunnel) - Phase II Dredge to El. -18.0 – Revised Phase II Profile

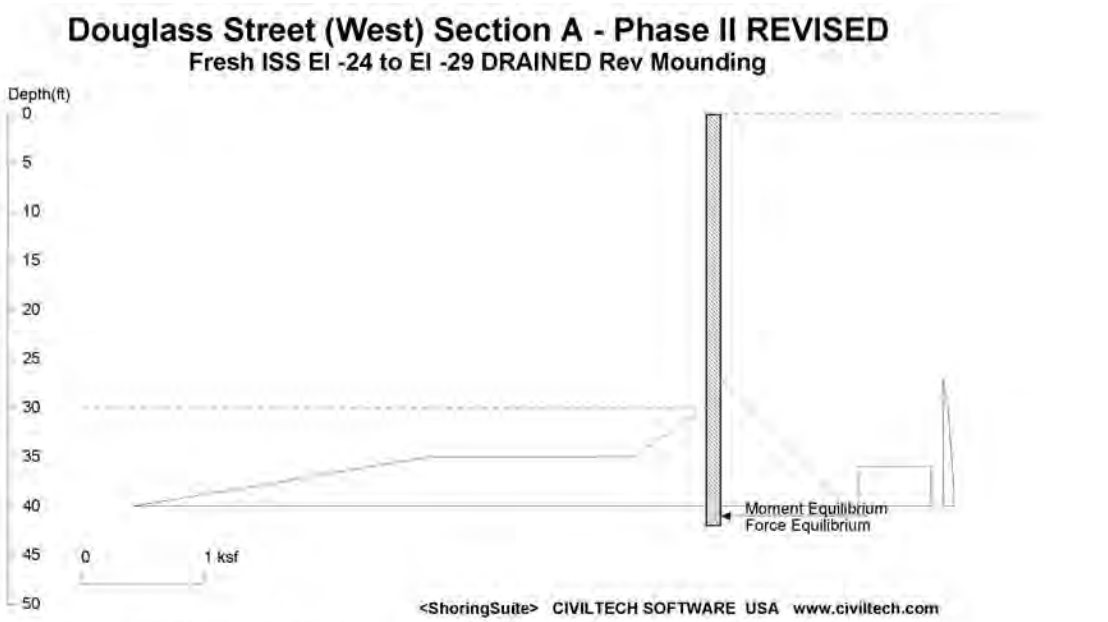


Active (Upland) Side								
		Strata						
Depth	Soil	Thickness	Ka	γ_T	γ_w	P_2 (pcf)	P_2 (kcf)	P_2 Cum (kcf)
0								
9	BULKHEAD	0	0.26	120		0.00	0	0
27	BULKHEAD	0	0.26	120	62.4	0.00	0.000	0.000
100	Glacial	73	0.26	125	62.4	5,743.35	5.743	5.743

Passive Pressure Data - Drained Analysis							
Elev.	Depth	Soil	Strata Thickness	R x K_p	γ_T	γ_w	γ'
6.00	0.00	Ground Surface					
-24.00	30.00	Canal Bottom	30.00	0.00	0	0	0
-29.00	35.00	Fresh ISS	5.00	0.00	120	62.4	57.6
-94.00	100.00	Glacial	65.00	6.77	125	62.4	62.6

Passive Pressure Data - Drained Analysis										
Elev.	Depth	Soil	Soil σ_v Cum (ksf)	H_20 σ_v Cum (ksf)	Surcharge (psf)	Su (psf)	Gradient (kcf)	ΔP (ksf)	P_1 (Ksf)	P_2 (ksf)
6.00	0.00	Ground Surface	0.0	0.0					0.000	0.000
-24.00	30.00	Canal Bottom	0.0	0.0			0.000	0.000	0.000	0.000
-29.00	35.00	Fresh ISS	288.0	312.0	0.0	0.0	0.120	0.600	0.000	0.600
-94.00	100.00	Glacial	4357.0	4368.0	2261.8		0.486	31.603	2.262	33.865

Analysis Summary – Douglass Street Section A @ Flushing Tunnel, Phase II
Revised (Drained) - Cantilever Analysis



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File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section A Phase II Fresh ISS REVISED DRAINE

Wall Height=30.0 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

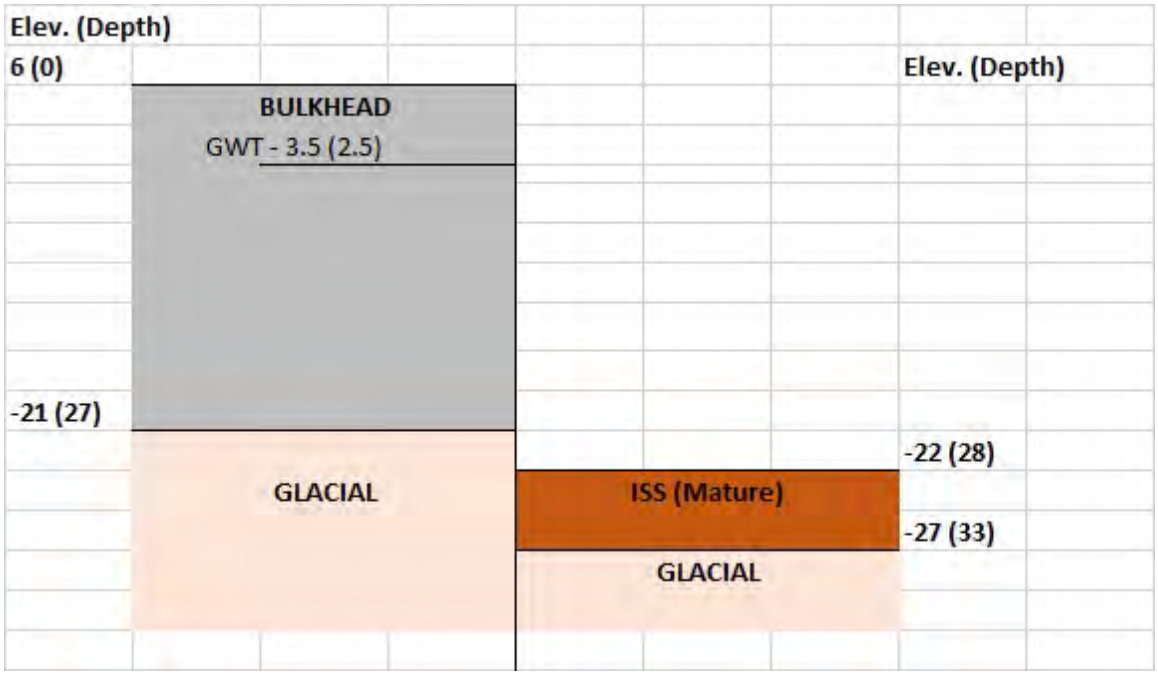
PILE LENGTH: Min. Embedment=11.95 Min. Pile Length=41.95
MOMENT IN PILE: Max. Moment=7.00 per Pile Spacing=1.0 at Depth=36.59

PILE SELECTION:
Request Min. Section Modulus = 2.5 in3/ft=136.83 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 2.76(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

Note: This analysis is hypothetical and does not reflect the proposed RTA-1 dredging conditions in any way, shape or form. This analysis was developed to demonstrate that the seemingly strange analysis results for the previous drained and undrained analyses are correct and consistent with expected behavior. Thus, the hypothetical analysis at this location was based on a dredge depth (to El. -24.0) that is below the Phase II dredge depth that has been specified by Reference 4 (El. -22.0) to ensure that the analysis program can converge to a solution. This profile was developed and checked to demonstrate that the ShoringSuite Program can converge to a solution for this location, so long as the depth of the soils that provide the passive resistance are sufficiently lower than the active soils that are located below the flushing tunnel on the upland side of the bulkhead.

For the same reason, the in-canal Natural Alluvial overburden soils were not included as a passive layer for this analysis. Thus, the analysis is a conservative estimate of the bulkhead behavior for this “revised” dredge scenario.

Section A (Flushing Tunnel) - Phase III Dredge to El. -22.0



Active (Upland) Side

Depth	Soil	Strata Thickness	Ka	γ_T	γ_w	P_2 (pcf)	P_2 (kcf)	P_2 Cum (kcf)
0								
9	BULKHEAD	0	0.26	120		0.00	0	0
27	BULKHEAD	0	0.26	120	62.4	0.00	0.000	0.000
100	Glacial	73	0.26	125	62.4	5,743.35	5.743	5.743

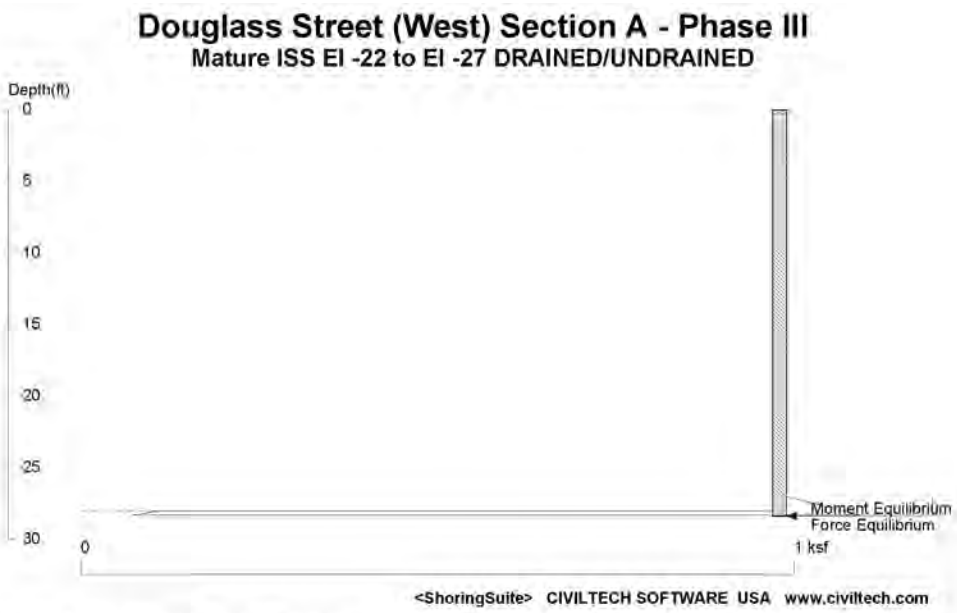
Passive Pressure Data - Drained/Undrained Analysis

Elev.	Depth	Soil	Strata Thickness	R x K_p	γ_T	γ_w	γ'
6.00	0.00	Ground Surface					
-22.00	28.00	Canal Bottom	28.00	0.00	0	0	0
-27.00	33.00	Mature ISS	5.00	0.00	120	62.4	57.6
-94.00	100.00	Glacial	67.00	6.77	125	62.4	62.6

Passive Pressure Data - Drained/Undrained Analysis

Elev.	Depth	Soil	Soil σ_v Cum (ksf)	H_20 σ_v Cum (ksf)	Surcharge (psf)	Su (psf)	Gradient (kcf)	ΔP (ksf)	P_1 (Ksf)	P_2 (ksf)
6.00	0.00	Ground Surface	0.0	0.0					0.000	0.000
-22.00	28.00	Canal Bottom	0.0	0.0			0.000	0.000	0.000	0.000
-27.00	33.00	Mature ISS	288.0	312.0	0.0	860.0	0.120	0.600	0.860	1.460
-94.00	100.00	Glacial	4482.2	4492.8	2261.8		0.486	32.576	2.262	34.837

Analysis Summary – Douglass Street Section A @ Flushing Tunnel, Phase III
Cantilever Analysis – Drained/Undrained



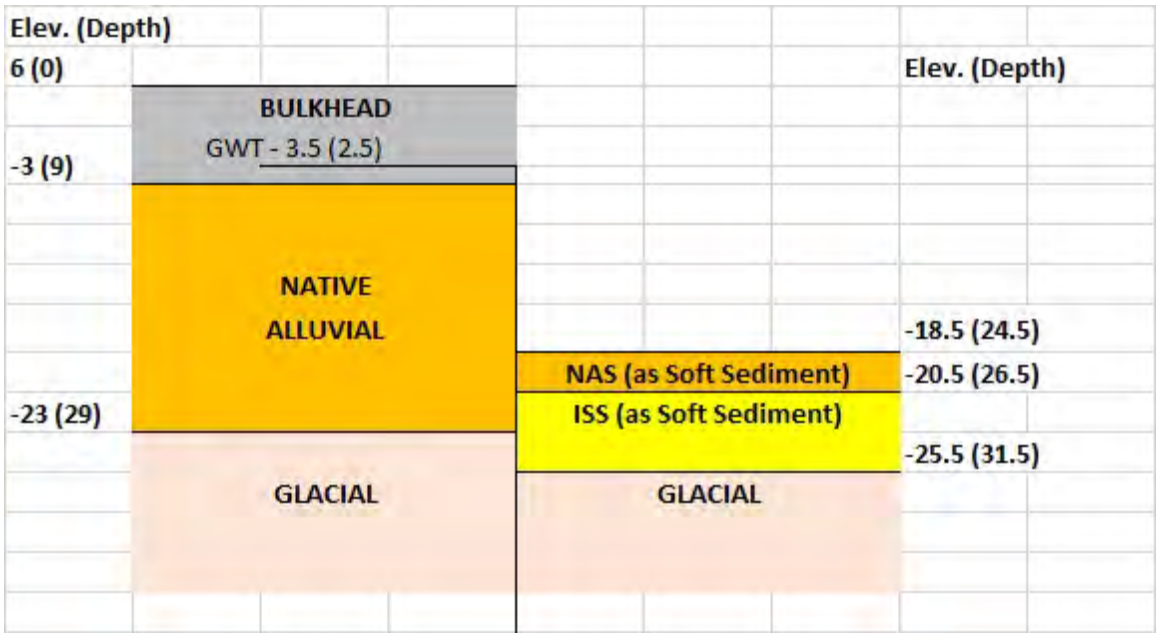
Licensed to 4324324234 3424343 Date: 1/10/2020
File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Douglass Street Section A Phase III Mature ISS

Wall Height=28.0 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=0.38 (5~10ft is recommended!!!) Min. Pile Length=28.38
MOMENT IN PILE: Max. Moment=0.02 per Pile Spacing=1.0 at Depth=28.07

PILE SELECTION:
Request Min. Section Modulus = 0.0 in3/ft=0.33 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 0.27(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

Section B (South of Tunnel) - Phase II Dredge to El. -18.0



Active (Upland) Side

Depth	Soil	Strata Thickness	Ka	γ_T	γ_W	P_2 (pcf)	P_2 (kcf)	P_2 Cum (kcf)
0								
0	BULKHEAD	0	0.26	120		0.00	0	0
9	BULKHEAD	0	0.26	120	62.4	0.00	0.000	0.000
29	Native Alluvial	20	0.34	115	62.4	357.68	0.358	0.358
100	Glacial	71	0.26	125	62.4	5,586.00	5.586	5.944

Passive Pressure Data - Drained Analysis							
Elev.	Depth	Soil	Strata Thickness	R x K_p	γ_T	γ_w	γ'
6.00	0.00	Ground Surface					
-18.50	24.50	Canal Bottom	24.50	0.00	0	0	0
-20.50	26.50	Native Alluvial	2.00	3.77	80	62.4	17.6
-25.50	31.50	Fresh ISS	5.00	0.00	120	62.4	57.6
-94.00	100.00	Glacial	68.50	6.77	125	62.4	62.6

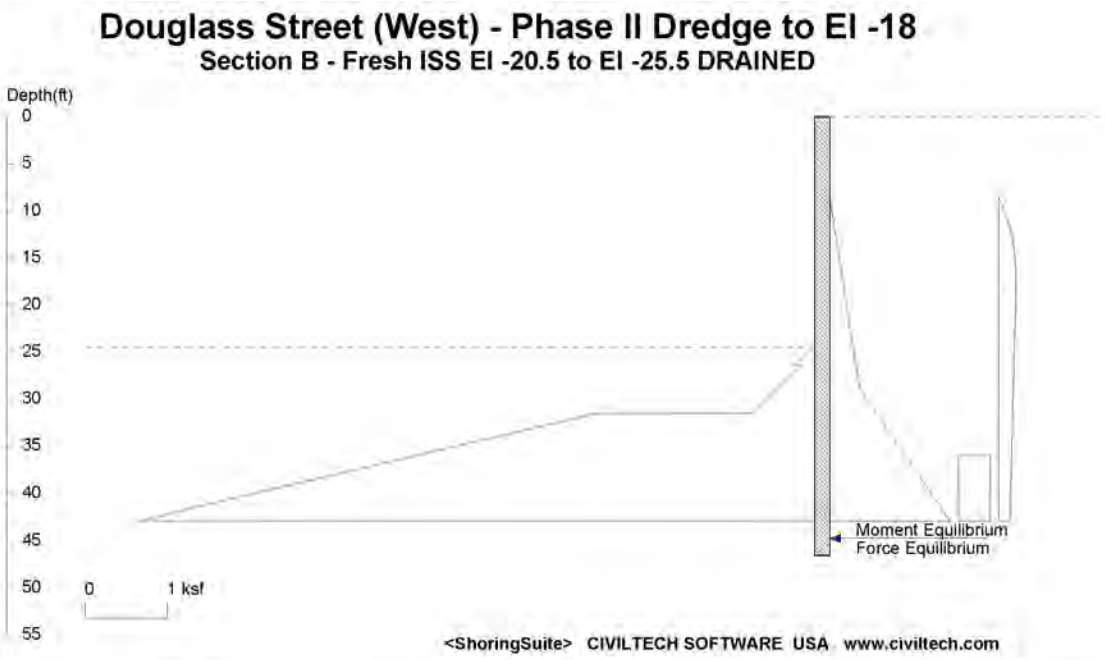
Passive Pressure Data - Drained Analysis										
Elev.	Depth	Soil	Soil σ_v Cum (ksf)	H_20 σ_v Cum (ksf)	Surcharge (psf)	Su (psf)	Gradient (kcf)	ΔP (ksf)	P_1 (Ksf)	P_2 (ksf)
6.00	0.00	Ground Surface	0.0	0.0					0.000	0.000
-18.50	24.50	Canal Bottom	0.0	0.0			0.000	0.000	0.000	0.000
-20.50	26.50	Native Alluvial	35.2	124.8	0.0		0.129	0.258	0.000	0.258
-25.50	31.50	Fresh ISS	323.2	436.8	160.0	0.0	0.120	0.600	0.160	0.760
-94.00	100.00	Glacial	4611.3	4711.2	2624.9		0.486	33.305	2.625	35.930

Passive Pressure Data - Undrained Analysis							
Elev.	Depth	Soil	Strata Thickness	R x K_p	γ_T	γ_w	γ'
6.00	0.00	Ground Surface					
-18.50	24.50	Canal Bottom	24.50	0.00	0	0	0
-20.50	26.50	Native Alluvial	2.00	0.00	80	62.4	17.6
-25.50	31.50	Fresh ISS	5.00	0.00	120	62.4	57.6
-94.00	100.00	Glacial	68.50	6.77	125	62.4	62.6

Passive Pressure Data - Undrained Analysis										
Elev.	Depth	Soil	Soil σ_v Cum (ksf)	H_20 σ_v Cum (ksf)	Surcharge (psf)	Su (psf)	Gradient (kcf)	ΔP (ksf)	P_1 (Ksf)	P_2 (ksf)
6.00	0.00	Ground Surface	0.0	0.0					0.000	0.000
-18.50	24.50	Canal Bottom	0.0	0.0			0.000	0.000	0.000	0.000
-20.50	26.50	Native Alluvial	35.2	124.8	0.0	250.0	0.080	0.160	0.250	0.410
-25.50	31.50	Fresh ISS	323.2	436.8	160.0	0.0	0.120	0.600	0.160	0.760
-94.00	100.00	Glacial	4611.3	4711.2	2624.9		0.486	33.305	2.625	35.930

Note: For this analysis, the native alluvial soils were modelled as soft sediment to account for the disturbance due to the ISS installation process.

Analysis Summary – Douglass Street Section B, South of Flushing Tunnel, Phase II
Cantilever Analysis - Drained



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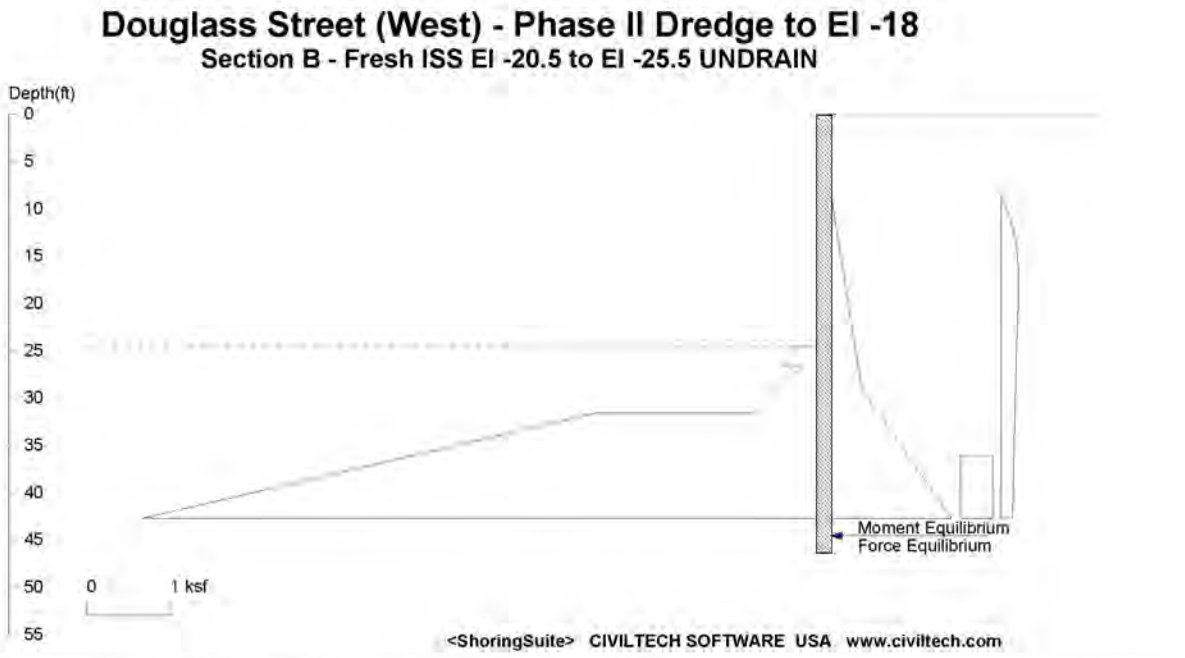
File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section B Phase II Bous Douglas Street DRAINE

Wall Height=24.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=22.07 Min. Pile Length=46.57
MOMENT IN PILE: Max. Moment=85.20 per Pile Spacing=1.0 at Depth=35.17

PILE SELECTION:
Request Min. Section Modulus = 31.0 in3/ft=1665.67 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 1.24(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

Analysis Summary – Douglass Street Section B, South of Flushing Tunnel, Phase II
Cantilever Analysis - Undrained



Licensed to 4324324234 3424343 Date: 1/10/2020
File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section B Phase II Bous Douglas Street UNDRA

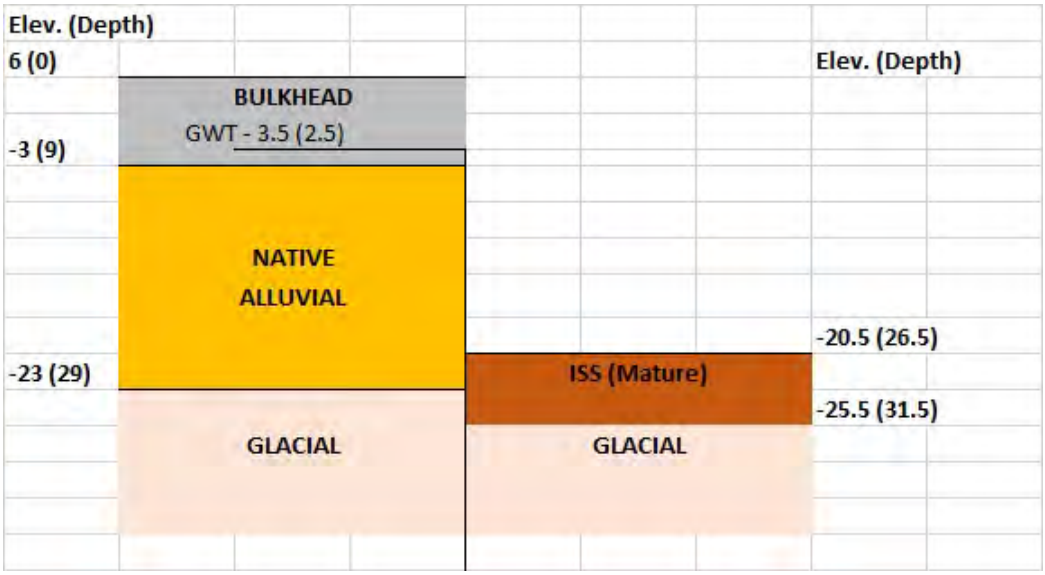
Wall Height=24.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=21.80 Min. Pile Length=46.30
MOMENT IN PILE: Max. Moment=82.21 per Pile Spacing=1.0 at Depth=35.03

PILE SELECTION:
Request Min. Section Modulus = 29.9 in3/ft=1607.20 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 1.20(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

Note: APTIM reviewed the soil borings in the Fulton Street RDWP (Reference 11) taken in the canal in the vicinity of Douglass Street. The average SPT N-value between El -30 (tip of timber piles) and El -46 (16 feet below the timber pile tip elevation) is 30 which is considered a dense granular soil. With the planned use of the Giken push method of installation, APTIM does not consider installing sheet pile 16 feet below the Flushing Tunnel and bulkhead wall timber pile tip elevations a settlement concern. APTIM also believes this method of installation will minimize if not eliminate the potential for exposing the tops of the Flushing Tunnel timber piles, another potential settlement concern.

Section B (South of Tunnel) - Phase III Dredge to El. -20.5



Active (Upland) Side

Depth	Soil	Strata Thickness	Ka	γ_T	γ_W	P_2 (pcf)	P_2 (kcf)	P_2 Cum (kcf)
0								
0	BULKHEAD	0	0.26	120		0.00	0	0
9	BULKHEAD	0	0.26	120	62.4	0.00	0.000	0.000
29	Native Alluvial	20	0.34	115	62.4	357.68	0.358	0.358
100	Glacial	71	0.26	125	62.4	5,586.00	5.586	5.944

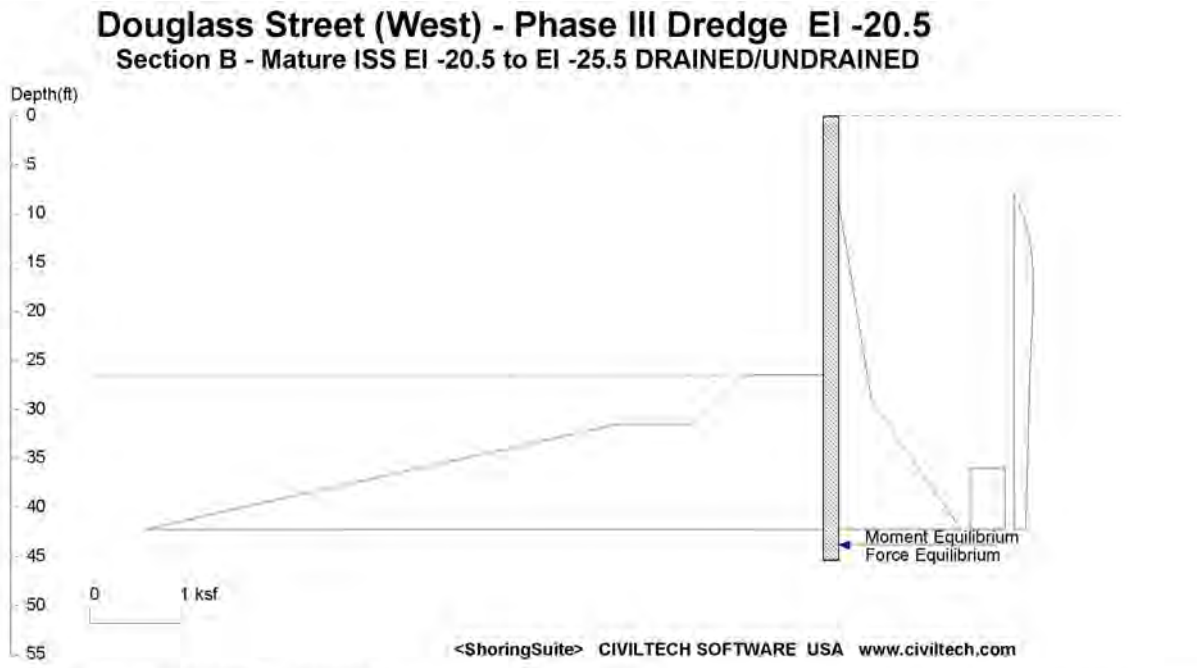
Passive Pressure Data - Drained/Undrained Analysis

Elev.	Depth	Soil	Strata Thickness	R x K_p	γ_T	γ_w	γ'
6.00	0.00	Ground Surface					
-20.50	26.50	Canal Bottom	26.50	0.00	0	0	0
-25.50	31.50	Mature ISS	5.00	0.00	120	62.4	57.6
-94.00	100.00	Glacial	68.50	6.77	125	62.4	62.6

Passive Pressure Data - Drained/Undrained Analysis

Elev.	Depth	Soil	Soil σ_v Cum (ksf)	H_20 σ_v Cum (ksf)	Surcharge (psf)	Su (psf)	Gradient (kcf)	ΔP (ksf)	P_1 (Ksf)	P_2 (ksf)
6.00	0.00	Ground Surface	0.0	0.0					0.000	0.000
-20.50	26.50	Canal Bottom	0.0	0.0			0.000	0.000	0.000	0.000
-25.50	31.50	Mature ISS	288.0	312.0	0.0	860.0	0.120	0.600	0.860	1.460
-94.00	100.00	Glacial	4576.1	4586.4	2261.8		0.486	33.305	2.262	35.567

Analysis Summary – Douglass Street Section B, South of Flushing Tunnel, Phase III Cantilever Drained/Undrained Analysis



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File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section B Phase III Bous Douglas Street DRAIN

Wall Height=26.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=18.87 Min. Pile Length=45.37
MOMENT IN PILE: Max. Moment=75.24 per Pile Spacing=1.0 at Depth=34.39

PILE SELECTION:
Request Min. Section Modulus = 27.4 in3/ft=1470.81 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 1.44(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

Note: The bulkhead depth for Section B is governed by the Phase II analysis.

Bulkhead Structural Analysis Check

Check Results of Bulkhead Analysis to ensure that Sheet Pile Stresses and Deflections are within allowable limits. This portion of the analysis will be based on the worst case Drained or Undrained loading conditon (unless otherwise as noted below)

Allowable deflections will be based upon a maximum deflection criteria of L / 150 where L is equivalent to the distance from the mudline to the top of the bulkhead. Stresses in the sheetpile bulkheads due to moment will be checked against AISC criteria which calls for an allowble bending stress of 0.66 x F_y.

Input Data

F_y	=	50.0 ksi	ASTM A572, Grade 50 Steel
F_b	=	0.66 * Fy	
	=	33.0 ksi	
L_{top}	=	6.00	Top of Bulkhead Elevation
$(L_{bot})_{AII}$	=	-18.50	Mudline Elevation, Section A (Phase II)
$(L_{wall})_{AII}$	=	L_{top} - $(L_{bot})_{AII}$	Wall Height, Section A
	=	24.50 ft	
$(\Delta_{allow})_{AII}$	=	L_{wall} / 150	
	=	1.96 in	
$(L_{bot})_{AIII}$	=	-22.00	Mudline Elevation, Section A (Phase III)
$(L_{wall})_{AIII}$	=	L_{top} - $(L_{bot})_{AIII}$	Wall Height, Section A
	=	28.00 ft	
$(\Delta_{allow})_{AIII}$	=	L_{wall} / 150	
	=	2.24 in	
$(L_{bot})_{BII}$	=	-18.50	Mudline Elevation, Section B (Phase II)
$(L_{wall})_{BII}$	=	L_{top} - $(L_{bot})_{BII}$	Wall Height, Section B
	=	24.50 ft	
$(\Delta_{allow})_B$	=	L_{wall} / 150	
	=	1.96 in	

$(L_{bot})_{BIII}$ = -20.50 Mudline Elevation, Section B (Phase III)

$(L_{wall})_{BIII}$ = L_{top} - $(L_{bot})_{BIII}$ Wall Height, Section B

= 26.50 ft

$(\Delta_{allow})_{BIII}$ = L_{wall} / 150

= 2.12 in

Section A (Flushing Tunnel) Analysis

For Cantilever Bulkhead Analysis - Phase II Dredge Depth w/ NAS Modelled as Soft Sediment & Fresh ISS

Δ_{cant} = 0.33 in =< $(\Delta_{allow})_{AII}$ - OK Based on Undrained Analysis (See Page 29)

S_{cant} = 66.8 in^3 Elastic Section Modulus, AZ 36-700N

M_{cant} = 0.00 k-ft

f_b = M_{cant} / S_{cant}

0.00 ksi =< F_b - OK

For Cantilever Bulkhead Analysis - Phase III Dredge Depth w/ Mature ISS

Δ_{cant} = 0.27 in =< $(\Delta_{allow})_{AIII}$ - OK

S_{cant} = 66.8 in^3 Elastic Section Modulus, AZ 36-700N

M_{cant} = 0.02 k-ft

f_b = M_{cant} / S_{cant}

0.00 ksi =< F_b - OK

Section B (South of Flushing Tunnel) Analysis

For Cantilever Bulkhead Analysis - Phase II Dredge Depth w/ NAS Modelled and Soft Sediment & Fresh ISS

Δ_{cant} = 1.24 in =< $(\Delta_{allow})_B$ - OK

S_{cant} = 66.8 in^3 Elastic Section Modulus, AZ36-700N

M_{cant} = 85.2 k-ft

f_b = M_{cant} / S_{cant}

15.31 ksi =< F_b - OK

For Cantilever Bulkhead Analysis - Phase III Dredge Depth w/ Mature ISS

Δ_{cant} = 1.44 in =< $(\Delta_{allow})_B$ - OK

S_{cant} = 66.8 in^3 Elastic Section Modulus, AZ36-700N

M_{cant} = 75.24 k-ft

f_b = M_{cant} / S_{cant}

13.52 ksi =< F_b - OK

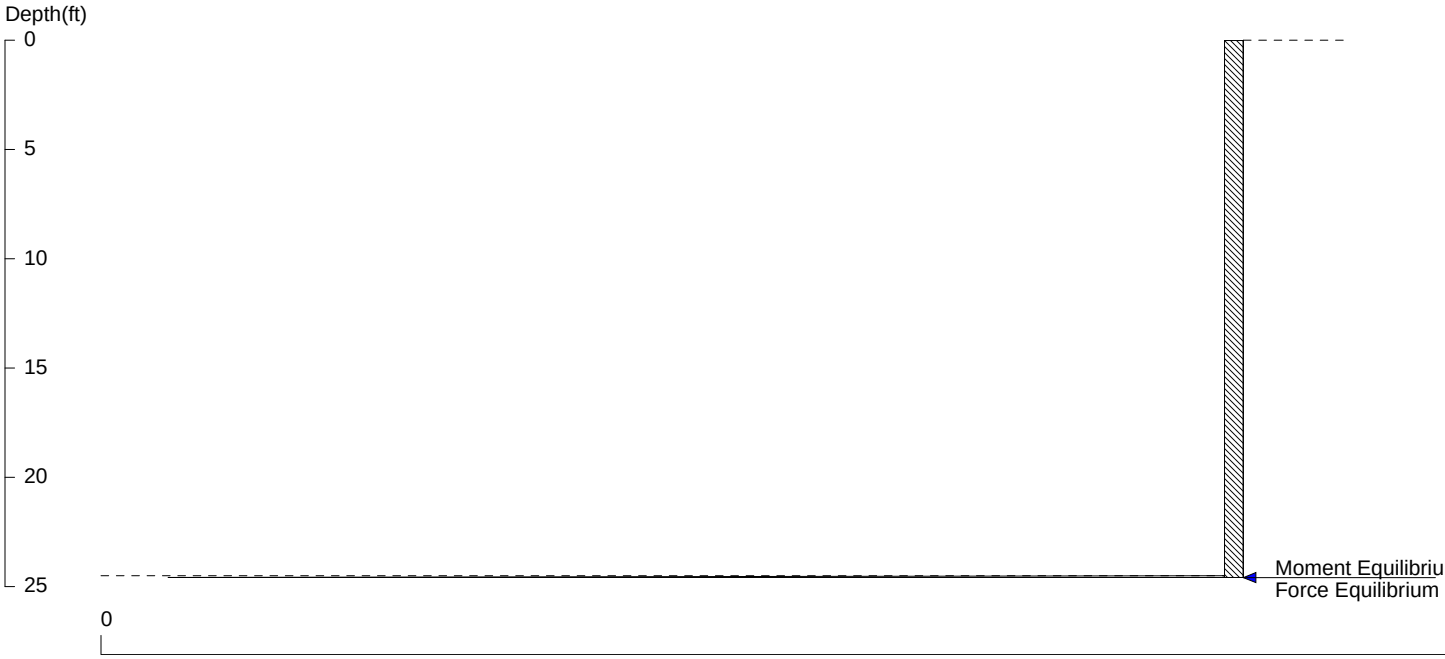
14 Global Slope Stability Analysis

No global slope stability analysis was performed for Douglass Street. As the pile supported Flushing Tunnel underlies the majority of this parcel, the bulkhead wall is effectively anchored against rotation due to the fact that the tunnel (and its associated valve chambers and piping) extends into, and is anchored by, the upland soils for a significant distance away from the edge of the canal.

ATTACHMENT A: SHEET PILE WALL ANALYSES – SECTIONS A & SECTION B

Douglass Street (West) Section A - Phase II Dredge

Fresh ISS El -22 to El -27 DRAINED Revised Moundin



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File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section A Phase II Fresh ISS DRAINED Rev Mo

Wall Height=24.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=0.10 (5~10ft is recommended!!!) Min. Pile Length=24.60
MOMENT IN PILE: Max. Moment=0.00 per Pile Spacing=1.0 at Depth=24.56

PILE SELECTION:
Request Min. Section Modulus = 0.0 in3/ft=0.00 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 19.48(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	27	0.000	0.000000
*	Sur-	charge		

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.3

Z1	P1	Z2	P2	Slope
24.5	0	28	0.451	0.1289

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	1.00
2	24.50	1.00

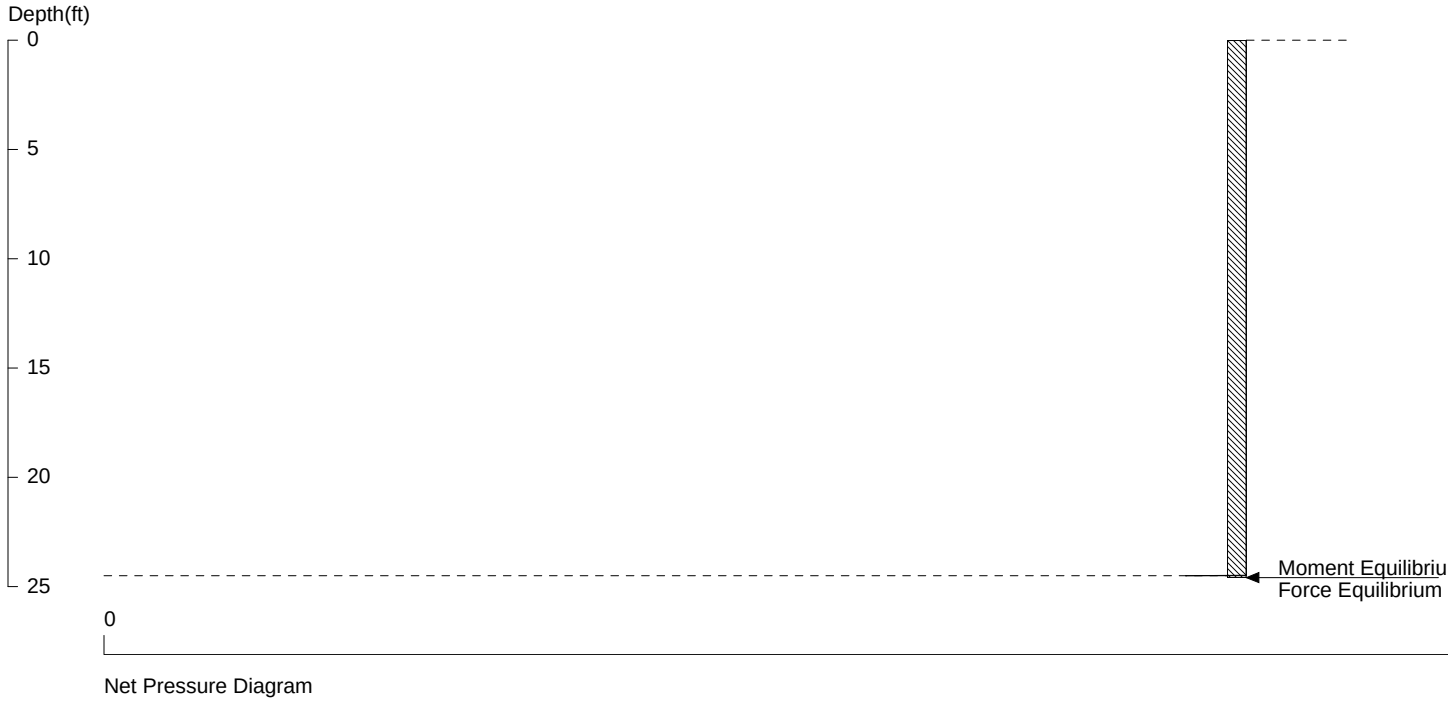
PASSIVE SPACING:

No.	Z depth	Spacing
1	0.00	1.00

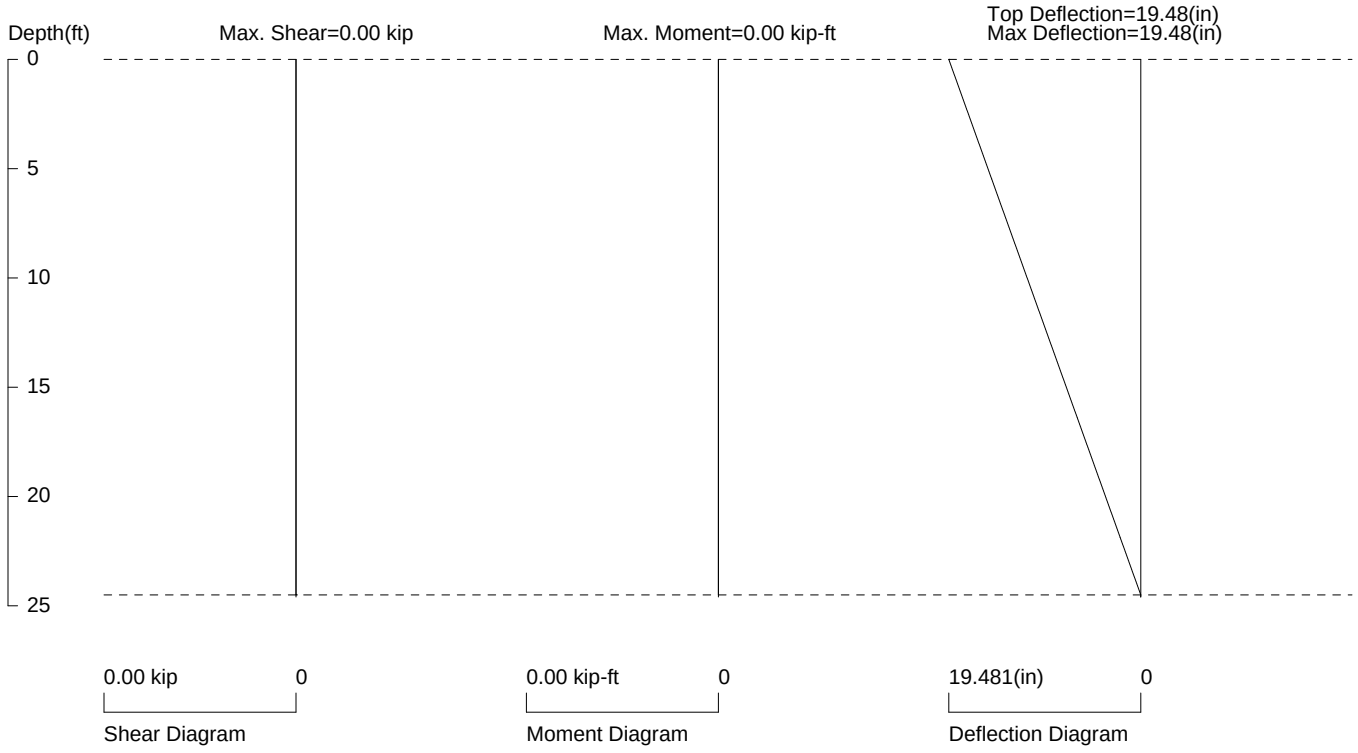
UNITS: Width,Spacing,Diameter,Length,and Depth - ft; Force - kip; Moment - kip-ft
Friction,Bearing,and Pressure - ksf; Pres. Slope - kip/ft3; Deflection - in

Douglass Street (West) Section A - Phase II Dredge

Fresh ISS El -22 to El -27 DRAINED Revised Moundin



Net Pressure Diagram



Shear Diagram | Moment Diagram | Deflection Diagram

PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 1.0 foot or meter

User Input I: E (ksi)=29000.0, I (in4)/foot=656.2

File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section A Phase II Fresh ISS DRAINED Rev Mounding.sh8

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SHORING WALL CALCULATION SUMMARY
The leading shoring design and calculation software

www.civiltech.com

****

ShoringSuite Software is developed by CivilTech Software, Bellevue, WA, USA.
The calculation method is based on the following references:

1. FHWA 98-011, FHWA-RD-97-130, FHWA SA 96-069, FHWA-IF-99-015
2. STEEL SHEET PILING DESIGN MANUAL by Pile Buck Inc., 1987
3. DESIGN MANUAL DM-7 (NAVFAC), Department of the Navy, May 1982
4. TRENCHING AND SHORING MANUAL Revision 12, California Department of Transportation, January 2000
6. EARTH SUPPORT SYSTEM & RETAINING STRUCTURES, Pile Buck Inc. 2002
5. DESIGN OF SHEET PILE WALLS, EM 1110-2-2504, U.S. Army Corps of Engineers, 31 March 1994
7. EARTH RETENTION SYSTEMS HANDBOOK, Alan Macnab, McGraw-Hill. 2002
8. Temporary Structures in Construction, Robert T. Ratay (Co-author of Chapter 7: John J. Peirce), McGraw-Hill. 2012
9. AASHTO HB-17, American Association of State and Highway Transportation Officials, 2 September 2002

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

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Date: 1/10/2020 File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section A Phase II Fresh ISS DRAINED Rev Mounding.sh8

Title: Douglass Street (West) Section A - Phase II Dredge
Subtitle: Fresh ISS El -22 to El -27 DRAINED Revised Moundin

**********INPUT DATA**********

Wall Type: 1. Sheet Pile
- Wall Height: 24.50
- Pile Diameter: 1.00
- Pile Spacing: 1.00
- Factor of Safety (F.S.): 1.30

Lateral Support Type (Braces): 1. No
- Top Brace Increase (Multi-Bracing): Add 15%*

Embedment Option: 1. Yes
- Friction at Pile Tip: No

Pile Properties:
- Steel Strength, Fy: 50 ksi = 345 MPa
- Allowable Fb/Fy: 0.66
- Elastic Module, E: 29000.00
- Moment of Inertia, I: 656.2
- User Input Pile:

* DRIVING PRESSURE (ACTIVE, WATER, & SURCHARGE) *

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	0	0	27	0.000	0.000000
2	27	0.000	100	5.743	0.078671
3	36	0.594	100	0.594	0.000000
4	*	Sur-	charge		
5	27.000	0.000	28.500	0.019	0.012703
6	28.500	0.019	30.000	0.038	0.012452
7	30.000	0.038	33.000	0.056	0.005983
8	33.000	0.056	36.000	0.073	0.005636
9	36.000	0.073	39.000	0.088	0.005204
10	39.000	0.088	42.000	0.102	0.004708
11	42.000	0.102	45.000	0.115	0.004172
12	45.000	0.115	48.000	0.126	0.003616
13	48.000	0.126	51.000	0.135	0.003059
14	51.000	0.135	54.000	0.142	0.002517
15	54.000	0.142	57.000	0.148	0.002002
16	57.000	0.148	60.000	0.153	0.001522
17	60.000	0.153	66.000	0.156	0.000542
18	66.000	0.156	72.000	0.158	0.000344
19	72.000	0.158	78.000	0.159	0.000169
20	78.000	0.159	84.000	0.159	0.000016
21	84.000	0.159	90.000	0.159	-0.000117
22	90.000	0.159	96.000	0.157	-0.000230
23	96.000	0.157	102.000	0.155	-0.000325
24	102.000	0.155	108.000	0.153	-0.000405
25	108.000	0.153	114.000	0.147	-0.000993
26	114.000	0.147	120.000	0.140	-0.001159

* PASSIVE PRESSURE *

The pressures below will be divided by a Factor of Safety =1.3

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	24.5	0	28	0.451	0.1289
2	28	0.280	33	0.880	0.1200
3	33	2.897	100	35.47	0.4862

* ACTIVE SPACE *

No.	Z depth	Spacing
1	0.00	1.00
2	24.50	1.00

* PASSIVE SPACE *

No.	Z depth	Spacing

```
-------------------------------------------------------------------------
 1      0.00            1.00
-------------------------------------------------------------------------
*For Tieback:  Input1 = Diameter;  Input2 = Bond Strength
*For Plate:  Input1 = Diameter;  Input2 = Allowable Pressure
*For Deadman:  Input1 = Horz. Width;  Input2 = Passive Pressure;
*For Sheet Pile Anchor:  Input1 = Horz. Width;  Input2 = Passive Slope;


*******************************CALCULATION*********************************

   The calculated moment and shear are per pile spacing.  Sheet piles are per one
foot or meter; Soldier piles are per pile.

   Top Pressures start at depth =  0.00


         |      D1=0.00
         |
         |
         |
      ==|==    D2=24.50
         |
         |
         |      D3=24.60

        D1 - TOP DEPTH
        D2 - EXCAVATION BASE
        D3 - PILE TIP

   MOMENT equilibrium   AT DEPTH=24.58  WITH EMBEDMENT OF 0.08
   FORCE equilibrium   AT DEPTH=24.60  WITH EMBEDMENT OF 0.10

   The program calculates an embedment for moment equilibrium, then increase the
embedment by 1.2


*********************************RESULTS***********************************

* EMBEDMENT Notes *
Based on USS Design Manual, first calculate embedment for moment equilibrium, then
increased the embedment to get the design depth.
The embedment for moment equilibrium is 0.08
The program calculates an embedment for moment equilibrium, then increase the
embedment by 1.2
The total desigh embedment is 0.10
 5~10ft minimum embedment is recommended!!!

Embedment Information:
If 20% increased, the total design embedment is 0.10
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If 30% increased, the total design embedment is 0.11
If 40% increased, the total design embedment is 0.11
If 50% increased, the total design embedment is 0.12

* MOMENT IN PILE (per pile spacing)*
Pile Spacing: sheet piles are one foot or one meter; soldier piles are one pile.
Overall Maximum Moment = 0.00 at 24.56
Maximum Shear = 0.00
Moment and Shear are per pile spacing: 1.0 foot or meter

* VERTICAL LOADING *
Vertical Loading from Braces = 0.00
Vertical Loading from External Load = 0.00
Total Vertical Loading = 0.00

* DEFLECTION *
I (in4)/foot=656.20
Top deflection = 19.481(in)
Max. deflection = 19.481(in)

********PRESSURE, LOAD, SHEAR, MOMENT, AND DEFLECTION v.s. DEPTH************

The shear and moment are per single soldier pile (secant/tangent pile) or one foot of sheet pile (concrete wall). The deflection is based on users input pile below:
User Input I (Moment of Inertia)
Elastic Module, E (ksi)= 29000.00
Moment of Inertia, I (in4)/foot= 656.2

PRESS. - Sum of all pressures (Net pressure). (Active) direction is positive
LOAD - Liner load (force per unit depth) = Pressures multiply by acting space

No	DEPTH ft	PRESS. ksf	LOAD kip/ft	SHEAR kip	MOMENT kip-ft	DEFLECTION in
1	0.00	0.00	0.00	0.00	0.00	19.481
2	0.03	0.00	0.00	0.00	0.00	19.459
3	0.05	0.00	0.00	0.00	0.00	19.438
4	0.08	0.00	0.00	0.00	0.00	19.416
5	0.11	0.00	0.00	0.00	0.00	19.394
6	0.14	0.00	0.00	0.00	0.00	19.372
7	0.16	0.00	0.00	0.00	0.00	19.351
8	0.19	0.00	0.00	0.00	0.00	19.329
9	0.22	0.00	0.00	0.00	0.00	19.307
10	0.25	0.00	0.00	0.00	0.00	19.285
11	0.27	0.00	0.00	0.00	0.00	19.264

12	0.30	0.00	0.00	0.00	0.00	19.242
13	0.33	0.00	0.00	0.00	0.00	19.220
14	0.36	0.00	0.00	0.00	0.00	19.198
15	0.38	0.00	0.00	0.00	0.00	19.177
16	0.41	0.00	0.00	0.00	0.00	19.155
17	0.44	0.00	0.00	0.00	0.00	19.133
18	0.46	0.00	0.00	0.00	0.00	19.111
19	0.49	0.00	0.00	0.00	0.00	19.090
20	0.52	0.00	0.00	0.00	0.00	19.068
21	0.55	0.00	0.00	0.00	0.00	19.046
22	0.57	0.00	0.00	0.00	0.00	19.024
23	0.60	0.00	0.00	0.00	0.00	19.003
24	0.63	0.00	0.00	0.00	0.00	18.981
25	0.66	0.00	0.00	0.00	0.00	18.959
26	0.68	0.00	0.00	0.00	0.00	18.937
27	0.71	0.00	0.00	0.00	0.00	18.916
28	0.74	0.00	0.00	0.00	0.00	18.894
29	0.77	0.00	0.00	0.00	0.00	18.872
30	0.79	0.00	0.00	0.00	0.00	18.850
31	0.82	0.00	0.00	0.00	0.00	18.829
32	0.85	0.00	0.00	0.00	0.00	18.807
33	0.88	0.00	0.00	0.00	0.00	18.785
34	0.90	0.00	0.00	0.00	0.00	18.764
35	0.93	0.00	0.00	0.00	0.00	18.742
36	0.96	0.00	0.00	0.00	0.00	18.720
37	0.98	0.00	0.00	0.00	0.00	18.698
38	1.01	0.00	0.00	0.00	0.00	18.677
39	1.04	0.00	0.00	0.00	0.00	18.655
40	1.07	0.00	0.00	0.00	0.00	18.633
41	1.09	0.00	0.00	0.00	0.00	18.611
42	1.12	0.00	0.00	0.00	0.00	18.590
43	1.15	0.00	0.00	0.00	0.00	18.568
44	1.18	0.00	0.00	0.00	0.00	18.546
45	1.20	0.00	0.00	0.00	0.00	18.524
46	1.23	0.00	0.00	0.00	0.00	18.503
47	1.26	0.00	0.00	0.00	0.00	18.481
48	1.29	0.00	0.00	0.00	0.00	18.459
49	1.31	0.00	0.00	0.00	0.00	18.437
50	1.34	0.00	0.00	0.00	0.00	18.416
51	1.37	0.00	0.00	0.00	0.00	18.394
52	1.39	0.00	0.00	0.00	0.00	18.372
53	1.42	0.00	0.00	0.00	0.00	18.350
54	1.45	0.00	0.00	0.00	0.00	18.329
55	1.48	0.00	0.00	0.00	0.00	18.307
56	1.50	0.00	0.00	0.00	0.00	18.285
57	1.53	0.00	0.00	0.00	0.00	18.263
58	1.56	0.00	0.00	0.00	0.00	18.242
59	1.59	0.00	0.00	0.00	0.00	18.220
60	1.61	0.00	0.00	0.00	0.00	18.198
61	1.64	0.00	0.00	0.00	0.00	18.176

62	1.67	0.00	0.00	0.00	0.00	18.155
63	1.70	0.00	0.00	0.00	0.00	18.133
64	1.72	0.00	0.00	0.00	0.00	18.111
65	1.75	0.00	0.00	0.00	0.00	18.090
66	1.78	0.00	0.00	0.00	0.00	18.068
67	1.81	0.00	0.00	0.00	0.00	18.046
68	1.83	0.00	0.00	0.00	0.00	18.024
69	1.86	0.00	0.00	0.00	0.00	18.003
70	1.89	0.00	0.00	0.00	0.00	17.981
71	1.91	0.00	0.00	0.00	0.00	17.959
72	1.94	0.00	0.00	0.00	0.00	17.937
73	1.97	0.00	0.00	0.00	0.00	17.916
74	2.00	0.00	0.00	0.00	0.00	17.894
75	2.02	0.00	0.00	0.00	0.00	17.872
76	2.05	0.00	0.00	0.00	0.00	17.850
77	2.08	0.00	0.00	0.00	0.00	17.829
78	2.11	0.00	0.00	0.00	0.00	17.807
79	2.13	0.00	0.00	0.00	0.00	17.785
80	2.16	0.00	0.00	0.00	0.00	17.763
81	2.19	0.00	0.00	0.00	0.00	17.742
82	2.22	0.00	0.00	0.00	0.00	17.720
83	2.24	0.00	0.00	0.00	0.00	17.698
84	2.27	0.00	0.00	0.00	0.00	17.676
85	2.30	0.00	0.00	0.00	0.00	17.655
86	2.32	0.00	0.00	0.00	0.00	17.633
87	2.35	0.00	0.00	0.00	0.00	17.611
88	2.38	0.00	0.00	0.00	0.00	17.589
89	2.41	0.00	0.00	0.00	0.00	17.568
90	2.43	0.00	0.00	0.00	0.00	17.546
91	2.46	0.00	0.00	0.00	0.00	17.524
92	2.49	0.00	0.00	0.00	0.00	17.502
93	2.52	0.00	0.00	0.00	0.00	17.481
94	2.54	0.00	0.00	0.00	0.00	17.459
95	2.57	0.00	0.00	0.00	0.00	17.437
96	2.60	0.00	0.00	0.00	0.00	17.416
97	2.63	0.00	0.00	0.00	0.00	17.394
98	2.65	0.00	0.00	0.00	0.00	17.372
99	2.68	0.00	0.00	0.00	0.00	17.350
100	2.71	0.00	0.00	0.00	0.00	17.329
101	2.73	0.00	0.00	0.00	0.00	17.307
102	2.76	0.00	0.00	0.00	0.00	17.285
103	2.79	0.00	0.00	0.00	0.00	17.263
104	2.82	0.00	0.00	0.00	0.00	17.242
105	2.84	0.00	0.00	0.00	0.00	17.220
106	2.87	0.00	0.00	0.00	0.00	17.198
107	2.90	0.00	0.00	0.00	0.00	17.176
108	2.93	0.00	0.00	0.00	0.00	17.155
109	2.95	0.00	0.00	0.00	0.00	17.133
110	2.98	0.00	0.00	0.00	0.00	17.111
111	3.01	0.00	0.00	0.00	0.00	17.089

112	3.04	0.00	0.00	0.00	0.00	17.068
113	3.06	0.00	0.00	0.00	0.00	17.046
114	3.09	0.00	0.00	0.00	0.00	17.024
115	3.12	0.00	0.00	0.00	0.00	17.002
116	3.15	0.00	0.00	0.00	0.00	16.981
117	3.17	0.00	0.00	0.00	0.00	16.959
118	3.20	0.00	0.00	0.00	0.00	16.937
119	3.23	0.00	0.00	0.00	0.00	16.915
120	3.25	0.00	0.00	0.00	0.00	16.894
121	3.28	0.00	0.00	0.00	0.00	16.872
122	3.31	0.00	0.00	0.00	0.00	16.850
123	3.34	0.00	0.00	0.00	0.00	16.828
124	3.36	0.00	0.00	0.00	0.00	16.807
125	3.39	0.00	0.00	0.00	0.00	16.785
126	3.42	0.00	0.00	0.00	0.00	16.763
127	3.45	0.00	0.00	0.00	0.00	16.742
128	3.47	0.00	0.00	0.00	0.00	16.720
129	3.50	0.00	0.00	0.00	0.00	16.698
130	3.53	0.00	0.00	0.00	0.00	16.676
131	3.56	0.00	0.00	0.00	0.00	16.655
132	3.58	0.00	0.00	0.00	0.00	16.633
133	3.61	0.00	0.00	0.00	0.00	16.611
134	3.64	0.00	0.00	0.00	0.00	16.589
135	3.66	0.00	0.00	0.00	0.00	16.568
136	3.69	0.00	0.00	0.00	0.00	16.546
137	3.72	0.00	0.00	0.00	0.00	16.524
138	3.75	0.00	0.00	0.00	0.00	16.502
139	3.77	0.00	0.00	0.00	0.00	16.481
140	3.80	0.00	0.00	0.00	0.00	16.459
141	3.83	0.00	0.00	0.00	0.00	16.437
142	3.86	0.00	0.00	0.00	0.00	16.415
143	3.88	0.00	0.00	0.00	0.00	16.394
144	3.91	0.00	0.00	0.00	0.00	16.372
145	3.94	0.00	0.00	0.00	0.00	16.350
146	3.97	0.00	0.00	0.00	0.00	16.328
147	3.99	0.00	0.00	0.00	0.00	16.307
148	4.02	0.00	0.00	0.00	0.00	16.285
149	4.05	0.00	0.00	0.00	0.00	16.263
150	4.07	0.00	0.00	0.00	0.00	16.241
151	4.10	0.00	0.00	0.00	0.00	16.220
152	4.13	0.00	0.00	0.00	0.00	16.198
153	4.16	0.00	0.00	0.00	0.00	16.176
154	4.18	0.00	0.00	0.00	0.00	16.154
155	4.21	0.00	0.00	0.00	0.00	16.133
156	4.24	0.00	0.00	0.00	0.00	16.111
157	4.27	0.00	0.00	0.00	0.00	16.089
158	4.29	0.00	0.00	0.00	0.00	16.067
159	4.32	0.00	0.00	0.00	0.00	16.046
160	4.35	0.00	0.00	0.00	0.00	16.024
161	4.38	0.00	0.00	0.00	0.00	16.002

162	4.40	0.00	0.00	0.00	0.00	15.981
163	4.43	0.00	0.00	0.00	0.00	15.959
164	4.46	0.00	0.00	0.00	0.00	15.937
165	4.49	0.00	0.00	0.00	0.00	15.915
166	4.51	0.00	0.00	0.00	0.00	15.894
167	4.54	0.00	0.00	0.00	0.00	15.872
168	4.57	0.00	0.00	0.00	0.00	15.850
169	4.59	0.00	0.00	0.00	0.00	15.828
170	4.62	0.00	0.00	0.00	0.00	15.807
171	4.65	0.00	0.00	0.00	0.00	15.785
172	4.68	0.00	0.00	0.00	0.00	15.763
173	4.70	0.00	0.00	0.00	0.00	15.741
174	4.73	0.00	0.00	0.00	0.00	15.720
175	4.76	0.00	0.00	0.00	0.00	15.698
176	4.79	0.00	0.00	0.00	0.00	15.676
177	4.81	0.00	0.00	0.00	0.00	15.654
178	4.84	0.00	0.00	0.00	0.00	15.633
179	4.87	0.00	0.00	0.00	0.00	15.611
180	4.90	0.00	0.00	0.00	0.00	15.589
181	4.92	0.00	0.00	0.00	0.00	15.567
182	4.95	0.00	0.00	0.00	0.00	15.546
183	4.98	0.00	0.00	0.00	0.00	15.524
184	5.00	0.00	0.00	0.00	0.00	15.502
185	5.03	0.00	0.00	0.00	0.00	15.480
186	5.06	0.00	0.00	0.00	0.00	15.459
187	5.09	0.00	0.00	0.00	0.00	15.437
188	5.11	0.00	0.00	0.00	0.00	15.415
189	5.14	0.00	0.00	0.00	0.00	15.393
190	5.17	0.00	0.00	0.00	0.00	15.372
191	5.20	0.00	0.00	0.00	0.00	15.350
192	5.22	0.00	0.00	0.00	0.00	15.328
193	5.25	0.00	0.00	0.00	0.00	15.307
194	5.28	0.00	0.00	0.00	0.00	15.285
195	5.31	0.00	0.00	0.00	0.00	15.263
196	5.33	0.00	0.00	0.00	0.00	15.241
197	5.36	0.00	0.00	0.00	0.00	15.220
198	5.39	0.00	0.00	0.00	0.00	15.198
199	5.42	0.00	0.00	0.00	0.00	15.176
200	5.44	0.00	0.00	0.00	0.00	15.154
201	5.47	0.00	0.00	0.00	0.00	15.133
202	5.50	0.00	0.00	0.00	0.00	15.111
203	5.52	0.00	0.00	0.00	0.00	15.089
204	5.55	0.00	0.00	0.00	0.00	15.067
205	5.58	0.00	0.00	0.00	0.00	15.046
206	5.61	0.00	0.00	0.00	0.00	15.024
207	5.63	0.00	0.00	0.00	0.00	15.002
208	5.66	0.00	0.00	0.00	0.00	14.980
209	5.69	0.00	0.00	0.00	0.00	14.959
210	5.72	0.00	0.00	0.00	0.00	14.937
211	5.74	0.00	0.00	0.00	0.00	14.915

212	5.77	0.00	0.00	0.00	0.00	14.893
213	5.80	0.00	0.00	0.00	0.00	14.872
214	5.83	0.00	0.00	0.00	0.00	14.850
215	5.85	0.00	0.00	0.00	0.00	14.828
216	5.88	0.00	0.00	0.00	0.00	14.806
217	5.91	0.00	0.00	0.00	0.00	14.785
218	5.93	0.00	0.00	0.00	0.00	14.763
219	5.96	0.00	0.00	0.00	0.00	14.741
220	5.99	0.00	0.00	0.00	0.00	14.719
221	6.02	0.00	0.00	0.00	0.00	14.698
222	6.04	0.00	0.00	0.00	0.00	14.676
223	6.07	0.00	0.00	0.00	0.00	14.654
224	6.10	0.00	0.00	0.00	0.00	14.633
225	6.13	0.00	0.00	0.00	0.00	14.611
226	6.15	0.00	0.00	0.00	0.00	14.589
227	6.18	0.00	0.00	0.00	0.00	14.567
228	6.21	0.00	0.00	0.00	0.00	14.546
229	6.24	0.00	0.00	0.00	0.00	14.524
230	6.26	0.00	0.00	0.00	0.00	14.502
231	6.29	0.00	0.00	0.00	0.00	14.480
232	6.32	0.00	0.00	0.00	0.00	14.459
233	6.34	0.00	0.00	0.00	0.00	14.437
234	6.37	0.00	0.00	0.00	0.00	14.415
235	6.40	0.00	0.00	0.00	0.00	14.393
236	6.43	0.00	0.00	0.00	0.00	14.372
237	6.45	0.00	0.00	0.00	0.00	14.350
238	6.48	0.00	0.00	0.00	0.00	14.328
239	6.51	0.00	0.00	0.00	0.00	14.306
240	6.54	0.00	0.00	0.00	0.00	14.285
241	6.56	0.00	0.00	0.00	0.00	14.263
242	6.59	0.00	0.00	0.00	0.00	14.241
243	6.62	0.00	0.00	0.00	0.00	14.219
244	6.65	0.00	0.00	0.00	0.00	14.198
245	6.67	0.00	0.00	0.00	0.00	14.176
246	6.70	0.00	0.00	0.00	0.00	14.154
247	6.73	0.00	0.00	0.00	0.00	14.132
248	6.76	0.00	0.00	0.00	0.00	14.111
249	6.78	0.00	0.00	0.00	0.00	14.089
250	6.81	0.00	0.00	0.00	0.00	14.067
251	6.84	0.00	0.00	0.00	0.00	14.045
252	6.86	0.00	0.00	0.00	0.00	14.024
253	6.89	0.00	0.00	0.00	0.00	14.002
254	6.92	0.00	0.00	0.00	0.00	13.980
255	6.95	0.00	0.00	0.00	0.00	13.959
256	6.97	0.00	0.00	0.00	0.00	13.937
257	7.00	0.00	0.00	0.00	0.00	13.915
258	7.03	0.00	0.00	0.00	0.00	13.893
259	7.06	0.00	0.00	0.00	0.00	13.872
260	7.08	0.00	0.00	0.00	0.00	13.850
261	7.11	0.00	0.00	0.00	0.00	13.828

262	7.14	0.00	0.00	0.00	0.00	13.806
263	7.17	0.00	0.00	0.00	0.00	13.785
264	7.19	0.00	0.00	0.00	0.00	13.763
265	7.22	0.00	0.00	0.00	0.00	13.741
266	7.25	0.00	0.00	0.00	0.00	13.719
267	7.27	0.00	0.00	0.00	0.00	13.698
268	7.30	0.00	0.00	0.00	0.00	13.676
269	7.33	0.00	0.00	0.00	0.00	13.654
270	7.36	0.00	0.00	0.00	0.00	13.632
271	7.38	0.00	0.00	0.00	0.00	13.611
272	7.41	0.00	0.00	0.00	0.00	13.589
273	7.44	0.00	0.00	0.00	0.00	13.567
274	7.47	0.00	0.00	0.00	0.00	13.545
275	7.49	0.00	0.00	0.00	0.00	13.524
276	7.52	0.00	0.00	0.00	0.00	13.502
277	7.55	0.00	0.00	0.00	0.00	13.480
278	7.58	0.00	0.00	0.00	0.00	13.458
279	7.60	0.00	0.00	0.00	0.00	13.437
280	7.63	0.00	0.00	0.00	0.00	13.415
281	7.66	0.00	0.00	0.00	0.00	13.393
282	7.69	0.00	0.00	0.00	0.00	13.371
283	7.71	0.00	0.00	0.00	0.00	13.350
284	7.74	0.00	0.00	0.00	0.00	13.328
285	7.77	0.00	0.00	0.00	0.00	13.306
286	7.79	0.00	0.00	0.00	0.00	13.285
287	7.82	0.00	0.00	0.00	0.00	13.263
288	7.85	0.00	0.00	0.00	0.00	13.241
289	7.88	0.00	0.00	0.00	0.00	13.219
290	7.90	0.00	0.00	0.00	0.00	13.198
291	7.93	0.00	0.00	0.00	0.00	13.176
292	7.96	0.00	0.00	0.00	0.00	13.154
293	7.99	0.00	0.00	0.00	0.00	13.132
294	8.01	0.00	0.00	0.00	0.00	13.111
295	8.04	0.00	0.00	0.00	0.00	13.089
296	8.07	0.00	0.00	0.00	0.00	13.067
297	8.10	0.00	0.00	0.00	0.00	13.045
298	8.12	0.00	0.00	0.00	0.00	13.024
299	8.15	0.00	0.00	0.00	0.00	13.002
300	8.18	0.00	0.00	0.00	0.00	12.980
301	8.20	0.00	0.00	0.00	0.00	12.958
302	8.23	0.00	0.00	0.00	0.00	12.937
303	8.26	0.00	0.00	0.00	0.00	12.915
304	8.29	0.00	0.00	0.00	0.00	12.893
305	8.31	0.00	0.00	0.00	0.00	12.871
306	8.34	0.00	0.00	0.00	0.00	12.850
307	8.37	0.00	0.00	0.00	0.00	12.828
308	8.40	0.00	0.00	0.00	0.00	12.806
309	8.42	0.00	0.00	0.00	0.00	12.784
310	8.45	0.00	0.00	0.00	0.00	12.763
311	8.48	0.00	0.00	0.00	0.00	12.741

312	8.51	0.00	0.00	0.00	0.00	12.719
313	8.53	0.00	0.00	0.00	0.00	12.697
314	8.56	0.00	0.00	0.00	0.00	12.676
315	8.59	0.00	0.00	0.00	0.00	12.654
316	8.61	0.00	0.00	0.00	0.00	12.632
317	8.64	0.00	0.00	0.00	0.00	12.611
318	8.67	0.00	0.00	0.00	0.00	12.589
319	8.70	0.00	0.00	0.00	0.00	12.567
320	8.72	0.00	0.00	0.00	0.00	12.545
321	8.75	0.00	0.00	0.00	0.00	12.524
322	8.78	0.00	0.00	0.00	0.00	12.502
323	8.81	0.00	0.00	0.00	0.00	12.480
324	8.83	0.00	0.00	0.00	0.00	12.458
325	8.86	0.00	0.00	0.00	0.00	12.437
326	8.89	0.00	0.00	0.00	0.00	12.415
327	8.92	0.00	0.00	0.00	0.00	12.393
328	8.94	0.00	0.00	0.00	0.00	12.371
329	8.97	0.00	0.00	0.00	0.00	12.350
330	9.00	0.00	0.00	0.00	0.00	12.328
331	9.03	0.00	0.00	0.00	0.00	12.306
332	9.05	0.00	0.00	0.00	0.00	12.284
333	9.08	0.00	0.00	0.00	0.00	12.263
334	9.11	0.00	0.00	0.00	0.00	12.241
335	9.13	0.00	0.00	0.00	0.00	12.219
336	9.16	0.00	0.00	0.00	0.00	12.197
337	9.19	0.00	0.00	0.00	0.00	12.176
338	9.22	0.00	0.00	0.00	0.00	12.154
339	9.24	0.00	0.00	0.00	0.00	12.132
340	9.27	0.00	0.00	0.00	0.00	12.110
341	9.30	0.00	0.00	0.00	0.00	12.089
342	9.33	0.00	0.00	0.00	0.00	12.067
343	9.35	0.00	0.00	0.00	0.00	12.045
344	9.38	0.00	0.00	0.00	0.00	12.023
345	9.41	0.00	0.00	0.00	0.00	12.002
346	9.44	0.00	0.00	0.00	0.00	11.980
347	9.46	0.00	0.00	0.00	0.00	11.958
348	9.49	0.00	0.00	0.00	0.00	11.936
349	9.52	0.00	0.00	0.00	0.00	11.915
350	9.54	0.00	0.00	0.00	0.00	11.893
351	9.57	0.00	0.00	0.00	0.00	11.871
352	9.60	0.00	0.00	0.00	0.00	11.850
353	9.63	0.00	0.00	0.00	0.00	11.828
354	9.65	0.00	0.00	0.00	0.00	11.806
355	9.68	0.00	0.00	0.00	0.00	11.784
356	9.71	0.00	0.00	0.00	0.00	11.763
357	9.74	0.00	0.00	0.00	0.00	11.741
358	9.76	0.00	0.00	0.00	0.00	11.719
359	9.79	0.00	0.00	0.00	0.00	11.697
360	9.82	0.00	0.00	0.00	0.00	11.676
361	9.85	0.00	0.00	0.00	0.00	11.654

362	9.87	0.00	0.00	0.00	0.00	11.632
363	9.90	0.00	0.00	0.00	0.00	11.610
364	9.93	0.00	0.00	0.00	0.00	11.589
365	9.95	0.00	0.00	0.00	0.00	11.567
366	9.98	0.00	0.00	0.00	0.00	11.545
367	10.01	0.00	0.00	0.00	0.00	11.523
368	10.04	0.00	0.00	0.00	0.00	11.502
369	10.06	0.00	0.00	0.00	0.00	11.480
370	10.09	0.00	0.00	0.00	0.00	11.458
371	10.12	0.00	0.00	0.00	0.00	11.436
372	10.15	0.00	0.00	0.00	0.00	11.415
373	10.17	0.00	0.00	0.00	0.00	11.393
374	10.20	0.00	0.00	0.00	0.00	11.371
375	10.23	0.00	0.00	0.00	0.00	11.349
376	10.26	0.00	0.00	0.00	0.00	11.328
377	10.28	0.00	0.00	0.00	0.00	11.306
378	10.31	0.00	0.00	0.00	0.00	11.284
379	10.34	0.00	0.00	0.00	0.00	11.262
380	10.37	0.00	0.00	0.00	0.00	11.241
381	10.39	0.00	0.00	0.00	0.00	11.219
382	10.42	0.00	0.00	0.00	0.00	11.197
383	10.45	0.00	0.00	0.00	0.00	11.176
384	10.47	0.00	0.00	0.00	0.00	11.154
385	10.50	0.00	0.00	0.00	0.00	11.132
386	10.53	0.00	0.00	0.00	0.00	11.110
387	10.56	0.00	0.00	0.00	0.00	11.089
388	10.58	0.00	0.00	0.00	0.00	11.067
389	10.61	0.00	0.00	0.00	0.00	11.045
390	10.64	0.00	0.00	0.00	0.00	11.023
391	10.67	0.00	0.00	0.00	0.00	11.002
392	10.69	0.00	0.00	0.00	0.00	10.980
393	10.72	0.00	0.00	0.00	0.00	10.958
394	10.75	0.00	0.00	0.00	0.00	10.936
395	10.78	0.00	0.00	0.00	0.00	10.915
396	10.80	0.00	0.00	0.00	0.00	10.893
397	10.83	0.00	0.00	0.00	0.00	10.871
398	10.86	0.00	0.00	0.00	0.00	10.849
399	10.88	0.00	0.00	0.00	0.00	10.828
400	10.91	0.00	0.00	0.00	0.00	10.806
401	10.94	0.00	0.00	0.00	0.00	10.784
402	10.97	0.00	0.00	0.00	0.00	10.762
403	10.99	0.00	0.00	0.00	0.00	10.741
404	11.02	0.00	0.00	0.00	0.00	10.719
405	11.05	0.00	0.00	0.00	0.00	10.697
406	11.08	0.00	0.00	0.00	0.00	10.675
407	11.10	0.00	0.00	0.00	0.00	10.654
408	11.13	0.00	0.00	0.00	0.00	10.632
409	11.16	0.00	0.00	0.00	0.00	10.610
410	11.19	0.00	0.00	0.00	0.00	10.588
411	11.21	0.00	0.00	0.00	0.00	10.567

412	11.24	0.00	0.00	0.00	0.00	10.545
413	11.27	0.00	0.00	0.00	0.00	10.523
414	11.30	0.00	0.00	0.00	0.00	10.502
415	11.32	0.00	0.00	0.00	0.00	10.480
416	11.35	0.00	0.00	0.00	0.00	10.458
417	11.38	0.00	0.00	0.00	0.00	10.436
418	11.40	0.00	0.00	0.00	0.00	10.415
419	11.43	0.00	0.00	0.00	0.00	10.393
420	11.46	0.00	0.00	0.00	0.00	10.371
421	11.49	0.00	0.00	0.00	0.00	10.349
422	11.51	0.00	0.00	0.00	0.00	10.328
423	11.54	0.00	0.00	0.00	0.00	10.306
424	11.57	0.00	0.00	0.00	0.00	10.284
425	11.60	0.00	0.00	0.00	0.00	10.262
426	11.62	0.00	0.00	0.00	0.00	10.241
427	11.65	0.00	0.00	0.00	0.00	10.219
428	11.68	0.00	0.00	0.00	0.00	10.197
429	11.71	0.00	0.00	0.00	0.00	10.175
430	11.73	0.00	0.00	0.00	0.00	10.154
431	11.76	0.00	0.00	0.00	0.00	10.132
432	11.79	0.00	0.00	0.00	0.00	10.110
433	11.81	0.00	0.00	0.00	0.00	10.088
434	11.84	0.00	0.00	0.00	0.00	10.067
435	11.87	0.00	0.00	0.00	0.00	10.045
436	11.90	0.00	0.00	0.00	0.00	10.023
437	11.92	0.00	0.00	0.00	0.00	10.001
438	11.95	0.00	0.00	0.00	0.00	9.980
439	11.98	0.00	0.00	0.00	0.00	9.958
440	12.01	0.00	0.00	0.00	0.00	9.936
441	12.03	0.00	0.00	0.00	0.00	9.914
442	12.06	0.00	0.00	0.00	0.00	9.893
443	12.09	0.00	0.00	0.00	0.00	9.871
444	12.12	0.00	0.00	0.00	0.00	9.849
445	12.14	0.00	0.00	0.00	0.00	9.828
446	12.17	0.00	0.00	0.00	0.00	9.806
447	12.20	0.00	0.00	0.00	0.00	9.784
448	12.22	0.00	0.00	0.00	0.00	9.762
449	12.25	0.00	0.00	0.00	0.00	9.741
450	12.28	0.00	0.00	0.00	0.00	9.719
451	12.31	0.00	0.00	0.00	0.00	9.697
452	12.33	0.00	0.00	0.00	0.00	9.675
453	12.36	0.00	0.00	0.00	0.00	9.654
454	12.39	0.00	0.00	0.00	0.00	9.632
455	12.42	0.00	0.00	0.00	0.00	9.610
456	12.44	0.00	0.00	0.00	0.00	9.588
457	12.47	0.00	0.00	0.00	0.00	9.567
458	12.50	0.00	0.00	0.00	0.00	9.545
459	12.53	0.00	0.00	0.00	0.00	9.523
460	12.55	0.00	0.00	0.00	0.00	9.501
461	12.58	0.00	0.00	0.00	0.00	9.480

462	12.61	0.00	0.00	0.00	0.00	9.458
463	12.64	0.00	0.00	0.00	0.00	9.436
464	12.66	0.00	0.00	0.00	0.00	9.414
465	12.69	0.00	0.00	0.00	0.00	9.393
466	12.72	0.00	0.00	0.00	0.00	9.371
467	12.74	0.00	0.00	0.00	0.00	9.349
468	12.77	0.00	0.00	0.00	0.00	9.327
469	12.80	0.00	0.00	0.00	0.00	9.306
470	12.83	0.00	0.00	0.00	0.00	9.284
471	12.85	0.00	0.00	0.00	0.00	9.262
472	12.88	0.00	0.00	0.00	0.00	9.240
473	12.91	0.00	0.00	0.00	0.00	9.219
474	12.94	0.00	0.00	0.00	0.00	9.197
475	12.96	0.00	0.00	0.00	0.00	9.175
476	12.99	0.00	0.00	0.00	0.00	9.154
477	13.02	0.00	0.00	0.00	0.00	9.132
478	13.05	0.00	0.00	0.00	0.00	9.110
479	13.07	0.00	0.00	0.00	0.00	9.088
480	13.10	0.00	0.00	0.00	0.00	9.067
481	13.13	0.00	0.00	0.00	0.00	9.045
482	13.15	0.00	0.00	0.00	0.00	9.023
483	13.18	0.00	0.00	0.00	0.00	9.001
484	13.21	0.00	0.00	0.00	0.00	8.980
485	13.24	0.00	0.00	0.00	0.00	8.958
486	13.26	0.00	0.00	0.00	0.00	8.936
487	13.29	0.00	0.00	0.00	0.00	8.914
488	13.32	0.00	0.00	0.00	0.00	8.893
489	13.35	0.00	0.00	0.00	0.00	8.871
490	13.37	0.00	0.00	0.00	0.00	8.849
491	13.40	0.00	0.00	0.00	0.00	8.827
492	13.43	0.00	0.00	0.00	0.00	8.806
493	13.46	0.00	0.00	0.00	0.00	8.784
494	13.48	0.00	0.00	0.00	0.00	8.762
495	13.51	0.00	0.00	0.00	0.00	8.740
496	13.54	0.00	0.00	0.00	0.00	8.719
497	13.56	0.00	0.00	0.00	0.00	8.697
498	13.59	0.00	0.00	0.00	0.00	8.675
499	13.62	0.00	0.00	0.00	0.00	8.653
500	13.65	0.00	0.00	0.00	0.00	8.632
501	13.67	0.00	0.00	0.00	0.00	8.610
502	13.70	0.00	0.00	0.00	0.00	8.588
503	13.73	0.00	0.00	0.00	0.00	8.566
504	13.76	0.00	0.00	0.00	0.00	8.545
505	13.78	0.00	0.00	0.00	0.00	8.523
506	13.81	0.00	0.00	0.00	0.00	8.501
507	13.84	0.00	0.00	0.00	0.00	8.479
508	13.87	0.00	0.00	0.00	0.00	8.458
509	13.89	0.00	0.00	0.00	0.00	8.436
510	13.92	0.00	0.00	0.00	0.00	8.414
511	13.95	0.00	0.00	0.00	0.00	8.393

512	13.98	0.00	0.00	0.00	0.00	8.371
513	14.00	0.00	0.00	0.00	0.00	8.349
514	14.03	0.00	0.00	0.00	0.00	8.327
515	14.06	0.00	0.00	0.00	0.00	8.306
516	14.08	0.00	0.00	0.00	0.00	8.284
517	14.11	0.00	0.00	0.00	0.00	8.262
518	14.14	0.00	0.00	0.00	0.00	8.240
519	14.17	0.00	0.00	0.00	0.00	8.219
520	14.19	0.00	0.00	0.00	0.00	8.197
521	14.22	0.00	0.00	0.00	0.00	8.175
522	14.25	0.00	0.00	0.00	0.00	8.153
523	14.28	0.00	0.00	0.00	0.00	8.132
524	14.30	0.00	0.00	0.00	0.00	8.110
525	14.33	0.00	0.00	0.00	0.00	8.088
526	14.36	0.00	0.00	0.00	0.00	8.066
527	14.39	0.00	0.00	0.00	0.00	8.045
528	14.41	0.00	0.00	0.00	0.00	8.023
529	14.44	0.00	0.00	0.00	0.00	8.001
530	14.47	0.00	0.00	0.00	0.00	7.979
531	14.49	0.00	0.00	0.00	0.00	7.958
532	14.52	0.00	0.00	0.00	0.00	7.936
533	14.55	0.00	0.00	0.00	0.00	7.914
534	14.58	0.00	0.00	0.00	0.00	7.892
535	14.60	0.00	0.00	0.00	0.00	7.871
536	14.63	0.00	0.00	0.00	0.00	7.849
537	14.66	0.00	0.00	0.00	0.00	7.827
538	14.69	0.00	0.00	0.00	0.00	7.805
539	14.71	0.00	0.00	0.00	0.00	7.784
540	14.74	0.00	0.00	0.00	0.00	7.762
541	14.77	0.00	0.00	0.00	0.00	7.740
542	14.80	0.00	0.00	0.00	0.00	7.719
543	14.82	0.00	0.00	0.00	0.00	7.697
544	14.85	0.00	0.00	0.00	0.00	7.675
545	14.88	0.00	0.00	0.00	0.00	7.653
546	14.91	0.00	0.00	0.00	0.00	7.632
547	14.93	0.00	0.00	0.00	0.00	7.610
548	14.96	0.00	0.00	0.00	0.00	7.588
549	14.99	0.00	0.00	0.00	0.00	7.566
550	15.01	0.00	0.00	0.00	0.00	7.545
551	15.04	0.00	0.00	0.00	0.00	7.523
552	15.07	0.00	0.00	0.00	0.00	7.501
553	15.10	0.00	0.00	0.00	0.00	7.479
554	15.12	0.00	0.00	0.00	0.00	7.458
555	15.15	0.00	0.00	0.00	0.00	7.436
556	15.18	0.00	0.00	0.00	0.00	7.414
557	15.21	0.00	0.00	0.00	0.00	7.392
558	15.23	0.00	0.00	0.00	0.00	7.371
559	15.26	0.00	0.00	0.00	0.00	7.349
560	15.29	0.00	0.00	0.00	0.00	7.327
561	15.32	0.00	0.00	0.00	0.00	7.305

562	15.34	0.00	0.00	0.00	0.00	7.284
563	15.37	0.00	0.00	0.00	0.00	7.262
564	15.40	0.00	0.00	0.00	0.00	7.240
565	15.42	0.00	0.00	0.00	0.00	7.218
566	15.45	0.00	0.00	0.00	0.00	7.197
567	15.48	0.00	0.00	0.00	0.00	7.175
568	15.51	0.00	0.00	0.00	0.00	7.153
569	15.53	0.00	0.00	0.00	0.00	7.131
570	15.56	0.00	0.00	0.00	0.00	7.110
571	15.59	0.00	0.00	0.00	0.00	7.088
572	15.62	0.00	0.00	0.00	0.00	7.066
573	15.64	0.00	0.00	0.00	0.00	7.045
574	15.67	0.00	0.00	0.00	0.00	7.023
575	15.70	0.00	0.00	0.00	0.00	7.001
576	15.73	0.00	0.00	0.00	0.00	6.979
577	15.75	0.00	0.00	0.00	0.00	6.958
578	15.78	0.00	0.00	0.00	0.00	6.936
579	15.81	0.00	0.00	0.00	0.00	6.914
580	15.83	0.00	0.00	0.00	0.00	6.892
581	15.86	0.00	0.00	0.00	0.00	6.871
582	15.89	0.00	0.00	0.00	0.00	6.849
583	15.92	0.00	0.00	0.00	0.00	6.827
584	15.94	0.00	0.00	0.00	0.00	6.805
585	15.97	0.00	0.00	0.00	0.00	6.784
586	16.00	0.00	0.00	0.00	0.00	6.762
587	16.03	0.00	0.00	0.00	0.00	6.740
588	16.05	0.00	0.00	0.00	0.00	6.718
589	16.08	0.00	0.00	0.00	0.00	6.697
590	16.11	0.00	0.00	0.00	0.00	6.675
591	16.14	0.00	0.00	0.00	0.00	6.653
592	16.16	0.00	0.00	0.00	0.00	6.631
593	16.19	0.00	0.00	0.00	0.00	6.610
594	16.22	0.00	0.00	0.00	0.00	6.588
595	16.25	0.00	0.00	0.00	0.00	6.566
596	16.27	0.00	0.00	0.00	0.00	6.544
597	16.30	0.00	0.00	0.00	0.00	6.523
598	16.33	0.00	0.00	0.00	0.00	6.501
599	16.35	0.00	0.00	0.00	0.00	6.479
600	16.38	0.00	0.00	0.00	0.00	6.457
601	16.41	0.00	0.00	0.00	0.00	6.436
602	16.44	0.00	0.00	0.00	0.00	6.414
603	16.46	0.00	0.00	0.00	0.00	6.392
604	16.49	0.00	0.00	0.00	0.00	6.371
605	16.52	0.00	0.00	0.00	0.00	6.349
606	16.55	0.00	0.00	0.00	0.00	6.327
607	16.57	0.00	0.00	0.00	0.00	6.305
608	16.60	0.00	0.00	0.00	0.00	6.284
609	16.63	0.00	0.00	0.00	0.00	6.262
610	16.66	0.00	0.00	0.00	0.00	6.240
611	16.68	0.00	0.00	0.00	0.00	6.218

612	16.71	0.00	0.00	0.00	0.00	6.197
613	16.74	0.00	0.00	0.00	0.00	6.175
614	16.76	0.00	0.00	0.00	0.00	6.153
615	16.79	0.00	0.00	0.00	0.00	6.131
616	16.82	0.00	0.00	0.00	0.00	6.110
617	16.85	0.00	0.00	0.00	0.00	6.088
618	16.87	0.00	0.00	0.00	0.00	6.066
619	16.90	0.00	0.00	0.00	0.00	6.044
620	16.93	0.00	0.00	0.00	0.00	6.023
621	16.96	0.00	0.00	0.00	0.00	6.001
622	16.98	0.00	0.00	0.00	0.00	5.979
623	17.01	0.00	0.00	0.00	0.00	5.957
624	17.04	0.00	0.00	0.00	0.00	5.936
625	17.07	0.00	0.00	0.00	0.00	5.914
626	17.09	0.00	0.00	0.00	0.00	5.892
627	17.12	0.00	0.00	0.00	0.00	5.870
628	17.15	0.00	0.00	0.00	0.00	5.849
629	17.18	0.00	0.00	0.00	0.00	5.827
630	17.20	0.00	0.00	0.00	0.00	5.805
631	17.23	0.00	0.00	0.00	0.00	5.783
632	17.26	0.00	0.00	0.00	0.00	5.762
633	17.28	0.00	0.00	0.00	0.00	5.740
634	17.31	0.00	0.00	0.00	0.00	5.718
635	17.34	0.00	0.00	0.00	0.00	5.697
636	17.37	0.00	0.00	0.00	0.00	5.675
637	17.39	0.00	0.00	0.00	0.00	5.653
638	17.42	0.00	0.00	0.00	0.00	5.631
639	17.45	0.00	0.00	0.00	0.00	5.610
640	17.48	0.00	0.00	0.00	0.00	5.588
641	17.50	0.00	0.00	0.00	0.00	5.566
642	17.53	0.00	0.00	0.00	0.00	5.544
643	17.56	0.00	0.00	0.00	0.00	5.523
644	17.59	0.00	0.00	0.00	0.00	5.501
645	17.61	0.00	0.00	0.00	0.00	5.479
646	17.64	0.00	0.00	0.00	0.00	5.457
647	17.67	0.00	0.00	0.00	0.00	5.436
648	17.69	0.00	0.00	0.00	0.00	5.414
649	17.72	0.00	0.00	0.00	0.00	5.392
650	17.75	0.00	0.00	0.00	0.00	5.370
651	17.78	0.00	0.00	0.00	0.00	5.349
652	17.80	0.00	0.00	0.00	0.00	5.327
653	17.83	0.00	0.00	0.00	0.00	5.305
654	17.86	0.00	0.00	0.00	0.00	5.283
655	17.89	0.00	0.00	0.00	0.00	5.262
656	17.91	0.00	0.00	0.00	0.00	5.240
657	17.94	0.00	0.00	0.00	0.00	5.218
658	17.97	0.00	0.00	0.00	0.00	5.196
659	18.00	0.00	0.00	0.00	0.00	5.175
660	18.02	0.00	0.00	0.00	0.00	5.153
661	18.05	0.00	0.00	0.00	0.00	5.131

662	18.08	0.00	0.00	0.00	0.00	5.109
663	18.10	0.00	0.00	0.00	0.00	5.088
664	18.13	0.00	0.00	0.00	0.00	5.066
665	18.16	0.00	0.00	0.00	0.00	5.044
666	18.19	0.00	0.00	0.00	0.00	5.022
667	18.21	0.00	0.00	0.00	0.00	5.001
668	18.24	0.00	0.00	0.00	0.00	4.979
669	18.27	0.00	0.00	0.00	0.00	4.957
670	18.30	0.00	0.00	0.00	0.00	4.936
671	18.32	0.00	0.00	0.00	0.00	4.914
672	18.35	0.00	0.00	0.00	0.00	4.892
673	18.38	0.00	0.00	0.00	0.00	4.870
674	18.41	0.00	0.00	0.00	0.00	4.849
675	18.43	0.00	0.00	0.00	0.00	4.827
676	18.46	0.00	0.00	0.00	0.00	4.805
677	18.49	0.00	0.00	0.00	0.00	4.783
678	18.52	0.00	0.00	0.00	0.00	4.762
679	18.54	0.00	0.00	0.00	0.00	4.740
680	18.57	0.00	0.00	0.00	0.00	4.718
681	18.60	0.00	0.00	0.00	0.00	4.696
682	18.62	0.00	0.00	0.00	0.00	4.675
683	18.65	0.00	0.00	0.00	0.00	4.653
684	18.68	0.00	0.00	0.00	0.00	4.631
685	18.71	0.00	0.00	0.00	0.00	4.609
686	18.73	0.00	0.00	0.00	0.00	4.588
687	18.76	0.00	0.00	0.00	0.00	4.566
688	18.79	0.00	0.00	0.00	0.00	4.544
689	18.82	0.00	0.00	0.00	0.00	4.522
690	18.84	0.00	0.00	0.00	0.00	4.501
691	18.87	0.00	0.00	0.00	0.00	4.479
692	18.90	0.00	0.00	0.00	0.00	4.457
693	18.93	0.00	0.00	0.00	0.00	4.435
694	18.95	0.00	0.00	0.00	0.00	4.414
695	18.98	0.00	0.00	0.00	0.00	4.392
696	19.01	0.00	0.00	0.00	0.00	4.370
697	19.03	0.00	0.00	0.00	0.00	4.348
698	19.06	0.00	0.00	0.00	0.00	4.327
699	19.09	0.00	0.00	0.00	0.00	4.305
700	19.12	0.00	0.00	0.00	0.00	4.283
701	19.14	0.00	0.00	0.00	0.00	4.262
702	19.17	0.00	0.00	0.00	0.00	4.240
703	19.20	0.00	0.00	0.00	0.00	4.218
704	19.23	0.00	0.00	0.00	0.00	4.196
705	19.25	0.00	0.00	0.00	0.00	4.175
706	19.28	0.00	0.00	0.00	0.00	4.153
707	19.31	0.00	0.00	0.00	0.00	4.131
708	19.34	0.00	0.00	0.00	0.00	4.109
709	19.36	0.00	0.00	0.00	0.00	4.088
710	19.39	0.00	0.00	0.00	0.00	4.066
711	19.42	0.00	0.00	0.00	0.00	4.044

712	19.45	0.00	0.00	0.00	0.00	4.022
713	19.47	0.00	0.00	0.00	0.00	4.001
714	19.50	0.00	0.00	0.00	0.00	3.979
715	19.53	0.00	0.00	0.00	0.00	3.957
716	19.55	0.00	0.00	0.00	0.00	3.935
717	19.58	0.00	0.00	0.00	0.00	3.914
718	19.61	0.00	0.00	0.00	0.00	3.892
719	19.64	0.00	0.00	0.00	0.00	3.870
720	19.66	0.00	0.00	0.00	0.00	3.848
721	19.69	0.00	0.00	0.00	0.00	3.827
722	19.72	0.00	0.00	0.00	0.00	3.805
723	19.75	0.00	0.00	0.00	0.00	3.783
724	19.77	0.00	0.00	0.00	0.00	3.761
725	19.80	0.00	0.00	0.00	0.00	3.740
726	19.83	0.00	0.00	0.00	0.00	3.718
727	19.86	0.00	0.00	0.00	0.00	3.696
728	19.88	0.00	0.00	0.00	0.00	3.674
729	19.91	0.00	0.00	0.00	0.00	3.653
730	19.94	0.00	0.00	0.00	0.00	3.631
731	19.96	0.00	0.00	0.00	0.00	3.609
732	19.99	0.00	0.00	0.00	0.00	3.587
733	20.02	0.00	0.00	0.00	0.00	3.566
734	20.05	0.00	0.00	0.00	0.00	3.544
735	20.07	0.00	0.00	0.00	0.00	3.522
736	20.10	0.00	0.00	0.00	0.00	3.501
737	20.13	0.00	0.00	0.00	0.00	3.479
738	20.16	0.00	0.00	0.00	0.00	3.457
739	20.18	0.00	0.00	0.00	0.00	3.435
740	20.21	0.00	0.00	0.00	0.00	3.414
741	20.24	0.00	0.00	0.00	0.00	3.392
742	20.27	0.00	0.00	0.00	0.00	3.370
743	20.29	0.00	0.00	0.00	0.00	3.348
744	20.32	0.00	0.00	0.00	0.00	3.327
745	20.35	0.00	0.00	0.00	0.00	3.305
746	20.37	0.00	0.00	0.00	0.00	3.283
747	20.40	0.00	0.00	0.00	0.00	3.261
748	20.43	0.00	0.00	0.00	0.00	3.240
749	20.46	0.00	0.00	0.00	0.00	3.218
750	20.48	0.00	0.00	0.00	0.00	3.196
751	20.51	0.00	0.00	0.00	0.00	3.174
752	20.54	0.00	0.00	0.00	0.00	3.153
753	20.57	0.00	0.00	0.00	0.00	3.131
754	20.59	0.00	0.00	0.00	0.00	3.109
755	20.62	0.00	0.00	0.00	0.00	3.087
756	20.65	0.00	0.00	0.00	0.00	3.066
757	20.68	0.00	0.00	0.00	0.00	3.044
758	20.70	0.00	0.00	0.00	0.00	3.022
759	20.73	0.00	0.00	0.00	0.00	3.000
760	20.76	0.00	0.00	0.00	0.00	2.979
761	20.79	0.00	0.00	0.00	0.00	2.957

762	20.81	0.00	0.00	0.00	0.00	2.935
763	20.84	0.00	0.00	0.00	0.00	2.913
764	20.87	0.00	0.00	0.00	0.00	2.892
765	20.89	0.00	0.00	0.00	0.00	2.870
766	20.92	0.00	0.00	0.00	0.00	2.848
767	20.95	0.00	0.00	0.00	0.00	2.827
768	20.98	0.00	0.00	0.00	0.00	2.805
769	21.00	0.00	0.00	0.00	0.00	2.783
770	21.03	0.00	0.00	0.00	0.00	2.761
771	21.06	0.00	0.00	0.00	0.00	2.740
772	21.09	0.00	0.00	0.00	0.00	2.718
773	21.11	0.00	0.00	0.00	0.00	2.696
774	21.14	0.00	0.00	0.00	0.00	2.674
775	21.17	0.00	0.00	0.00	0.00	2.653
776	21.20	0.00	0.00	0.00	0.00	2.631
777	21.22	0.00	0.00	0.00	0.00	2.609
778	21.25	0.00	0.00	0.00	0.00	2.587
779	21.28	0.00	0.00	0.00	0.00	2.566
780	21.30	0.00	0.00	0.00	0.00	2.544
781	21.33	0.00	0.00	0.00	0.00	2.522
782	21.36	0.00	0.00	0.00	0.00	2.500
783	21.39	0.00	0.00	0.00	0.00	2.479
784	21.41	0.00	0.00	0.00	0.00	2.457
785	21.44	0.00	0.00	0.00	0.00	2.435
786	21.47	0.00	0.00	0.00	0.00	2.413
787	21.50	0.00	0.00	0.00	0.00	2.392
788	21.52	0.00	0.00	0.00	0.00	2.370
789	21.55	0.00	0.00	0.00	0.00	2.348
790	21.58	0.00	0.00	0.00	0.00	2.326
791	21.61	0.00	0.00	0.00	0.00	2.305
792	21.63	0.00	0.00	0.00	0.00	2.283
793	21.66	0.00	0.00	0.00	0.00	2.261
794	21.69	0.00	0.00	0.00	0.00	2.239
795	21.72	0.00	0.00	0.00	0.00	2.218
796	21.74	0.00	0.00	0.00	0.00	2.196
797	21.77	0.00	0.00	0.00	0.00	2.174
798	21.80	0.00	0.00	0.00	0.00	2.152
799	21.82	0.00	0.00	0.00	0.00	2.131
800	21.85	0.00	0.00	0.00	0.00	2.109
801	21.88	0.00	0.00	0.00	0.00	2.087
802	21.91	0.00	0.00	0.00	0.00	2.066
803	21.93	0.00	0.00	0.00	0.00	2.044
804	21.96	0.00	0.00	0.00	0.00	2.022
805	21.99	0.00	0.00	0.00	0.00	2.000
806	22.02	0.00	0.00	0.00	0.00	1.979
807	22.04	0.00	0.00	0.00	0.00	1.957
808	22.07	0.00	0.00	0.00	0.00	1.935
809	22.10	0.00	0.00	0.00	0.00	1.913
810	22.13	0.00	0.00	0.00	0.00	1.892
811	22.15	0.00	0.00	0.00	0.00	1.870

812	22.18	0.00	0.00	0.00	0.00	1.848
813	22.21	0.00	0.00	0.00	0.00	1.826
814	22.23	0.00	0.00	0.00	0.00	1.805
815	22.26	0.00	0.00	0.00	0.00	1.783
816	22.29	0.00	0.00	0.00	0.00	1.761
817	22.32	0.00	0.00	0.00	0.00	1.739
818	22.34	0.00	0.00	0.00	0.00	1.718
819	22.37	0.00	0.00	0.00	0.00	1.696
820	22.40	0.00	0.00	0.00	0.00	1.674
821	22.43	0.00	0.00	0.00	0.00	1.652
822	22.45	0.00	0.00	0.00	0.00	1.631
823	22.48	0.00	0.00	0.00	0.00	1.609
824	22.51	0.00	0.00	0.00	0.00	1.587
825	22.54	0.00	0.00	0.00	0.00	1.565
826	22.56	0.00	0.00	0.00	0.00	1.544
827	22.59	0.00	0.00	0.00	0.00	1.522
828	22.62	0.00	0.00	0.00	0.00	1.500
829	22.64	0.00	0.00	0.00	0.00	1.478
830	22.67	0.00	0.00	0.00	0.00	1.457
831	22.70	0.00	0.00	0.00	0.00	1.435
832	22.73	0.00	0.00	0.00	0.00	1.413
833	22.75	0.00	0.00	0.00	0.00	1.392
834	22.78	0.00	0.00	0.00	0.00	1.370
835	22.81	0.00	0.00	0.00	0.00	1.348
836	22.84	0.00	0.00	0.00	0.00	1.326
837	22.86	0.00	0.00	0.00	0.00	1.305
838	22.89	0.00	0.00	0.00	0.00	1.283
839	22.92	0.00	0.00	0.00	0.00	1.261
840	22.95	0.00	0.00	0.00	0.00	1.239
841	22.97	0.00	0.00	0.00	0.00	1.218
842	23.00	0.00	0.00	0.00	0.00	1.196
843	23.03	0.00	0.00	0.00	0.00	1.174
844	23.06	0.00	0.00	0.00	0.00	1.152
845	23.08	0.00	0.00	0.00	0.00	1.131
846	23.11	0.00	0.00	0.00	0.00	1.109
847	23.14	0.00	0.00	0.00	0.00	1.087
848	23.16	0.00	0.00	0.00	0.00	1.065
849	23.19	0.00	0.00	0.00	0.00	1.044
850	23.22	0.00	0.00	0.00	0.00	1.022
851	23.25	0.00	0.00	0.00	0.00	1.000
852	23.27	0.00	0.00	0.00	0.00	0.978
853	23.30	0.00	0.00	0.00	0.00	0.957
854	23.33	0.00	0.00	0.00	0.00	0.935
855	23.36	0.00	0.00	0.00	0.00	0.913
856	23.38	0.00	0.00	0.00	0.00	0.891
857	23.41	0.00	0.00	0.00	0.00	0.870
858	23.44	0.00	0.00	0.00	0.00	0.848
859	23.47	0.00	0.00	0.00	0.00	0.826
860	23.49	0.00	0.00	0.00	0.00	0.804
861	23.52	0.00	0.00	0.00	0.00	0.783

862	23.55	0.00	0.00	0.00	0.00	0.761
863	23.57	0.00	0.00	0.00	0.00	0.739
864	23.60	0.00	0.00	0.00	0.00	0.717
865	23.63	0.00	0.00	0.00	0.00	0.696
866	23.66	0.00	0.00	0.00	0.00	0.674
867	23.68	0.00	0.00	0.00	0.00	0.652
868	23.71	0.00	0.00	0.00	0.00	0.631
869	23.74	0.00	0.00	0.00	0.00	0.609
870	23.77	0.00	0.00	0.00	0.00	0.587
871	23.79	0.00	0.00	0.00	0.00	0.565
872	23.82	0.00	0.00	0.00	0.00	0.544
873	23.85	0.00	0.00	0.00	0.00	0.522
874	23.88	0.00	0.00	0.00	0.00	0.500
875	23.90	0.00	0.00	0.00	0.00	0.478
876	23.93	0.00	0.00	0.00	0.00	0.457
877	23.96	0.00	0.00	0.00	0.00	0.435
878	23.99	0.00	0.00	0.00	0.00	0.413
879	24.01	0.00	0.00	0.00	0.00	0.391
880	24.04	0.00	0.00	0.00	0.00	0.370
881	24.07	0.00	0.00	0.00	0.00	0.348
882	24.09	0.00	0.00	0.00	0.00	0.326
883	24.12	0.00	0.00	0.00	0.00	0.304
884	24.15	0.00	0.00	0.00	0.00	0.283
885	24.18	0.00	0.00	0.00	0.00	0.261
886	24.20	0.00	0.00	0.00	0.00	0.239
887	24.23	0.00	0.00	0.00	0.00	0.217
888	24.26	0.00	0.00	0.00	0.00	0.196
889	24.29	0.00	0.00	0.00	0.00	0.174
890	24.31	0.00	0.00	0.00	0.00	0.152
891	24.34	0.00	0.00	0.00	0.00	0.130
892	24.37	0.00	0.00	0.00	0.00	0.109
893	24.40	0.00	0.00	0.00	0.00	0.087
894	24.42	0.00	0.00	0.00	0.00	0.065
895	24.45	0.00	0.00	0.00	0.00	0.043
896	24.48	0.00	0.00	0.00	0.00	0.022
897	24.50	0.00	0.00	0.00	0.00	0.000
898	24.53	0.00	0.00	0.00	0.00	0.004
899	24.56	-0.01	-0.01	0.00	0.00	0.009

The above data can be selected using mouse, then copy and paste into Excel to create graphics

Douglass Street (West) Section A - Phase II Dredge

Fresh ISS El -22 to El -27 UNDRAINED Revised Mound

Licensed to 4324324234 3424343 Date: 1/10/2020

File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section A Phase II Fresh ISS UNDRAINED Rev

Wall Height=24.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=0.10 (5~10ft is recommended!!!) Min. Pile Length=24.60
MOMENT IN PILE: Max. Moment=0.00 per Pile Spacing=1.0 at Depth=24.56

PILE SELECTION:
Request Min. Section Modulus = 0.0 in3/ft=0.01 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 0.33(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	27	0.000	0.000000
*	Sur-	charge		

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.3

Z1	P1	Z2	P2	Slope
24.5	0.250	28	0.530	0.0800

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	1.00
2	24.50	1.00

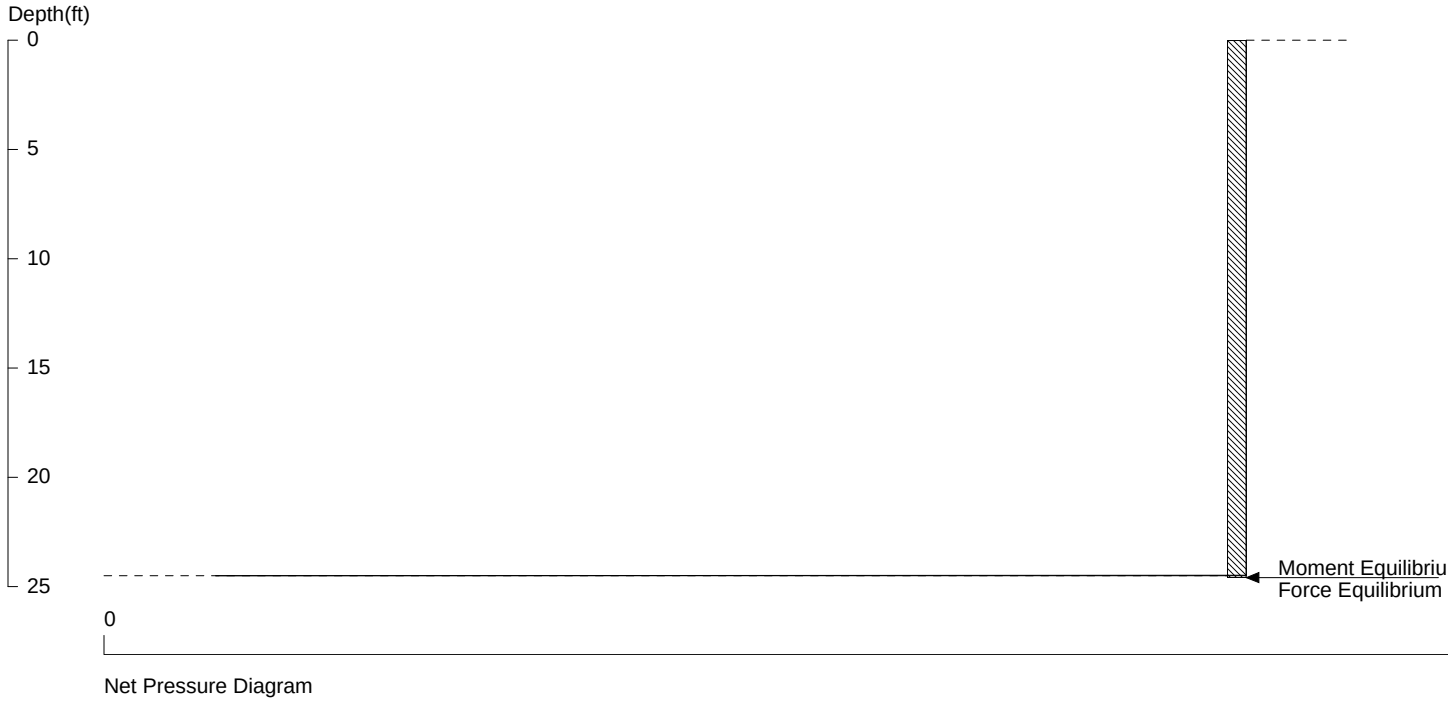
PASSIVE SPACING:

No.	Z depth	Spacing
1	0.00	1.00

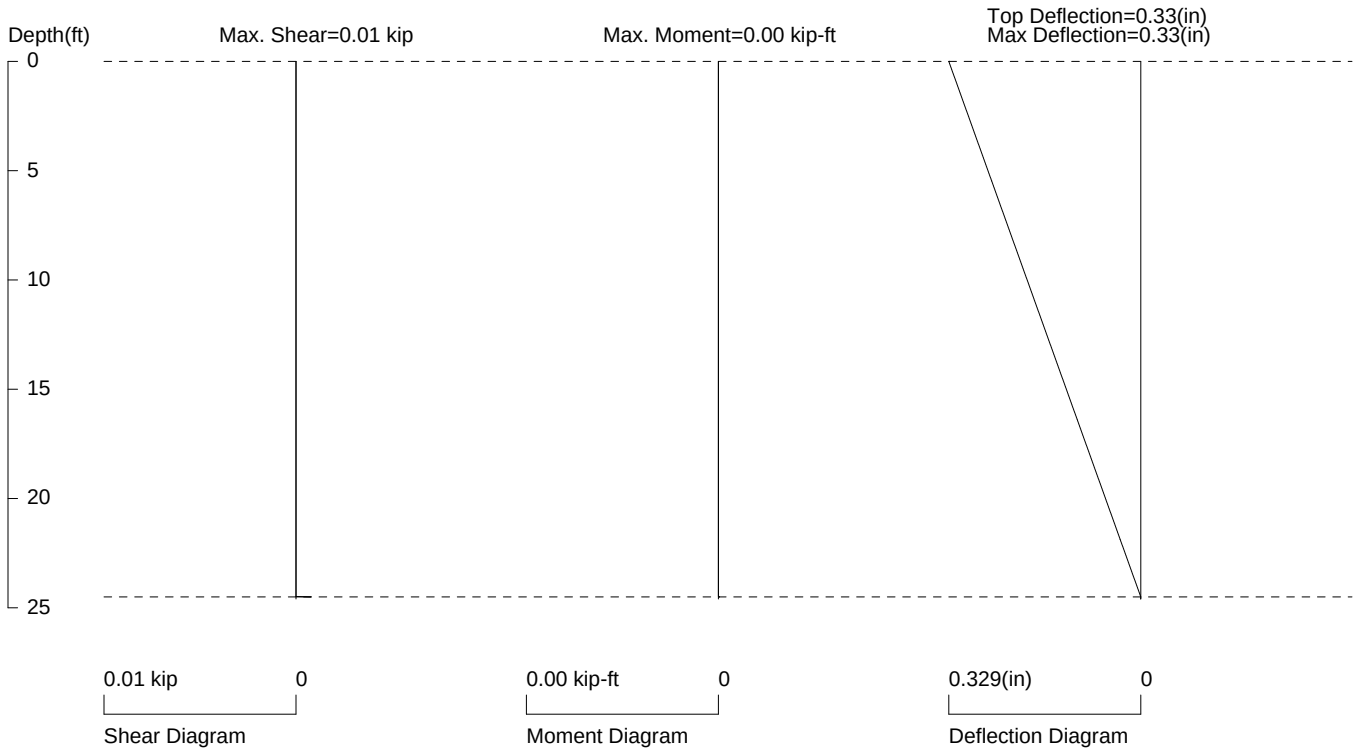
UNITS: Width,Spacing,Diameter,Length,and Depth - ft; Force - kip; Moment - kip-ft
Friction,Bearing,and Pressure - ksf; Pres. Slope - kip/ft3; Deflection - in

Douglass Street (West) Section A - Phase II Dredge

Fresh ISS El -22 to El -27 UNDRAINED Revised Mound



Net Pressure Diagram



Shear Diagram Moment Diagram Deflection Diagram

PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 1.0 foot or meter

User Input I: E (ksi)=29000.0, I (in4)/foot=656.2

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****

SHORING WALL CALCULATION SUMMARY
The leading shoring design and calculation software

www.civiltech.com

****

ShoringSuite Software is developed by CivilTech Software, Bellevue, WA, USA.
The calculation method is based on the following references:

1. FHWA 98-011, FHWA-RD-97-130, FHWA SA 96-069, FHWA-IF-99-015
2. STEEL SHEET PILING DESIGN MANUAL by Pile Buck Inc., 1987
3. DESIGN MANUAL DM-7 (NAVFAC), Department of the Navy, May 1982
4. TRENCHING AND SHORING MANUAL Revision 12, California Department of Transportation, January 2000
6. EARTH SUPPORT SYSTEM & RETAINING STRUCTURES, Pile Buck Inc. 2002
5. DESIGN OF SHEET PILE WALLS, EM 1110-2-2504, U.S. Army Corps of Engineers, 31 March 1994
7. EARTH RETENTION SYSTEMS HANDBOOK, Alan Macnab, McGraw-Hill. 2002
8. Temporary Structures in Construction, Robert T. Ratay (Co-author of Chapter 7: John J. Peirce), McGraw-Hill. 2012
9. AASHTO HB-17, American Association of State and Highway Transportation Officials, 2 September 2002

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

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Date: 1/10/2020 File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section A Phase II Fresh ISS UNDRAINED Rev Mounding.sh8

Title: Douglass Street (West) Section A - Phase II Dredge
Subtitle: Fresh ISS El -22 to El -27 UNDRAINED Revised Mound

**********INPUT DATA**********

Wall Type: 1. Sheet Pile
- Wall Height: 24.50
- Pile Diameter: 1.00
- Pile Spacing: 1.00
- Factor of Safety (F.S.): 1.30

Lateral Support Type (Braces): 1. No
- Top Brace Increase (Multi-Bracing): Add 15%*

Embedment Option: 1. Yes
- Friction at Pile Tip: No

Pile Properties:
- Steel Strength, Fy: 50 ksi = 345 MPa
- Allowable Fb/Fy: 0.66
- Elastic Module, E: 29000.00
- Moment of Inertia, I: 656.2
- User Input Pile:

* DRIVING PRESSURE (ACTIVE, WATER, & SURCHARGE) *

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	0	0	27	0.000	0.000000
2	27	0.000	100	5.743	0.078671
3	36	0.594	100	0.594	0.000000
4	*	Sur-	charge		
5	27.000	0.000	28.500	0.019	0.012703
6	28.500	0.019	30.000	0.038	0.012452
7	30.000	0.038	33.000	0.056	0.005983
8	33.000	0.056	36.000	0.073	0.005636
9	36.000	0.073	39.000	0.088	0.005204
10	39.000	0.088	42.000	0.102	0.004708
11	42.000	0.102	45.000	0.115	0.004172
12	45.000	0.115	48.000	0.126	0.003616
13	48.000	0.126	51.000	0.135	0.003059
14	51.000	0.135	54.000	0.142	0.002517
15	54.000	0.142	57.000	0.148	0.002002
16	57.000	0.148	60.000	0.153	0.001522
17	60.000	0.153	66.000	0.156	0.000542
18	66.000	0.156	72.000	0.158	0.000344
19	72.000	0.158	78.000	0.159	0.000169
20	78.000	0.159	84.000	0.159	0.000016
21	84.000	0.159	90.000	0.159	-0.000117
22	90.000	0.159	96.000	0.157	-0.000230
23	96.000	0.157	102.000	0.155	-0.000325
24	102.000	0.155	108.000	0.153	-0.000405
25	108.000	0.153	114.000	0.147	-0.000993
26	114.000	0.147	120.000	0.140	-0.001159

* PASSIVE PRESSURE *

The pressures below will be divided by a Factor of Safety =1.3

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	24.5	0.250	28	0.530	0.0800
2	28	0.280	33	0.880	0.1200
3	33	2.897	100	35.47	0.4862

* ACTIVE SPACE *

No.	Z depth	Spacing
1	0.00	1.00
2	24.50	1.00

* PASSIVE SPACE *

No.	Z depth	Spacing

```
-------------------------------------------------------------------------
 1      0.00            1.00
-------------------------------------------------------------------------
*For Tieback:  Input1 = Diameter;  Input2 = Bond Strength
*For Plate:  Input1 = Diameter;  Input2 = Allowable Pressure
*For Deadman:  Input1 = Horz. Width;  Input2 = Passive Pressure;
*For Sheet Pile Anchor:  Input1 = Horz. Width;  Input2 = Passive Slope;


*******************************CALCULATION*********************************

   The calculated moment and shear are per pile spacing.  Sheet piles are per one
foot or meter; Soldier piles are per pile.

   Top Pressures start at depth =  0.00


         |      D1=0.00
         |
         |
         |
      ==|==    D2=24.50
         |
         |
         |      D3=24.60

        D1 - TOP DEPTH
        D2 - EXCAVATION BASE
        D3 - PILE TIP

   MOMENT equilibrium   AT DEPTH=24.58  WITH EMBEDMENT OF 0.08
   FORCE equilibrium   AT DEPTH=24.60  WITH EMBEDMENT OF 0.10

   The program calculates an embedment for moment equilibrium, then increase the
embedment by 1.2


*********************************RESULTS***********************************

* EMBEDMENT Notes *
Based on USS Design Manual, first calculate embedment for moment equilibrium, then
increased the embedment to get the design depth.
The embedment for moment equilibrium is 0.08
The program calculates an embedment for moment equilibrium, then increase the
embedment by 1.2
The total desigh embedment is 0.10
 5~10ft minimum embedment is recommended!!!

Embedment Information:
If 20% increased, the total design embedment is 0.10
```

If 30% increased, the total design embedment is 0.11
If 40% increased, the total design embedment is 0.11
If 50% increased, the total design embedment is 0.12

* MOMENT IN PILE (per pile spacing)*
Pile Spacing: sheet piles are one foot or one meter; soldier piles are one pile.
Overall Maximum Moment = 0.00 at 24.56
Maximum Shear = 0.01
Moment and Shear are per pile spacing: 1.0 foot or meter

* VERTICAL LOADING *
Vertical Loading from Braces = 0.00
Vertical Loading from External Load = 0.00
Total Vertical Loading = 0.00

* DEFLECTION *
I (in4)/foot=656.20
Top deflection = 0.329(in)
Max. deflection = 0.329(in)

********PRESSURE, LOAD, SHEAR, MOMENT, AND DEFLECTION v.s. DEPTH************

The shear and moment are per single soldier pile (secant/tangent pile) or one foot of sheet pile (concrete wall). The deflection is based on users input pile below:
User Input I (Moment of Inertia)
Elastic Module, E (ksi)= 29000.00
Moment of Inertia, I (in4)/foot= 656.2

PRESS. - Sum of all pressures (Net pressure). (Active) direction is positive
LOAD - Liner load (force per unit depth) = Pressures multiply by acting space

No	DEPTH ft	PRESS. ksf	LOAD kip/ft	SHEAR kip	MOMENT kip-ft	DEFLECTION in
1	0.00	0.00	0.00	0.00	0.00	0.329
2	0.03	0.00	0.00	0.00	0.00	0.328
3	0.05	0.00	0.00	0.00	0.00	0.328
4	0.08	0.00	0.00	0.00	0.00	0.328
5	0.11	0.00	0.00	0.00	0.00	0.327
6	0.14	0.00	0.00	0.00	0.00	0.327
7	0.16	0.00	0.00	0.00	0.00	0.327
8	0.19	0.00	0.00	0.00	0.00	0.326
9	0.22	0.00	0.00	0.00	0.00	0.326
10	0.25	0.00	0.00	0.00	0.00	0.326
11	0.27	0.00	0.00	0.00	0.00	0.325

12	0.30	0.00	0.00	0.00	0.00	0.325
13	0.33	0.00	0.00	0.00	0.00	0.324
14	0.36	0.00	0.00	0.00	0.00	0.324
15	0.38	0.00	0.00	0.00	0.00	0.324
16	0.41	0.00	0.00	0.00	0.00	0.323
17	0.44	0.00	0.00	0.00	0.00	0.323
18	0.46	0.00	0.00	0.00	0.00	0.323
19	0.49	0.00	0.00	0.00	0.00	0.322
20	0.52	0.00	0.00	0.00	0.00	0.322
21	0.55	0.00	0.00	0.00	0.00	0.322
22	0.57	0.00	0.00	0.00	0.00	0.321
23	0.60	0.00	0.00	0.00	0.00	0.321
24	0.63	0.00	0.00	0.00	0.00	0.320
25	0.66	0.00	0.00	0.00	0.00	0.320
26	0.68	0.00	0.00	0.00	0.00	0.320
27	0.71	0.00	0.00	0.00	0.00	0.319
28	0.74	0.00	0.00	0.00	0.00	0.319
29	0.77	0.00	0.00	0.00	0.00	0.319
30	0.79	0.00	0.00	0.00	0.00	0.318
31	0.82	0.00	0.00	0.00	0.00	0.318
32	0.85	0.00	0.00	0.00	0.00	0.317
33	0.88	0.00	0.00	0.00	0.00	0.317
34	0.90	0.00	0.00	0.00	0.00	0.317
35	0.93	0.00	0.00	0.00	0.00	0.316
36	0.96	0.00	0.00	0.00	0.00	0.316
37	0.98	0.00	0.00	0.00	0.00	0.316
38	1.01	0.00	0.00	0.00	0.00	0.315
39	1.04	0.00	0.00	0.00	0.00	0.315
40	1.07	0.00	0.00	0.00	0.00	0.315
41	1.09	0.00	0.00	0.00	0.00	0.314
42	1.12	0.00	0.00	0.00	0.00	0.314
43	1.15	0.00	0.00	0.00	0.00	0.313
44	1.18	0.00	0.00	0.00	0.00	0.313
45	1.20	0.00	0.00	0.00	0.00	0.313
46	1.23	0.00	0.00	0.00	0.00	0.312
47	1.26	0.00	0.00	0.00	0.00	0.312
48	1.29	0.00	0.00	0.00	0.00	0.312
49	1.31	0.00	0.00	0.00	0.00	0.311
50	1.34	0.00	0.00	0.00	0.00	0.311
51	1.37	0.00	0.00	0.00	0.00	0.311
52	1.39	0.00	0.00	0.00	0.00	0.310
53	1.42	0.00	0.00	0.00	0.00	0.310
54	1.45	0.00	0.00	0.00	0.00	0.309
55	1.48	0.00	0.00	0.00	0.00	0.309
56	1.50	0.00	0.00	0.00	0.00	0.309
57	1.53	0.00	0.00	0.00	0.00	0.308
58	1.56	0.00	0.00	0.00	0.00	0.308
59	1.59	0.00	0.00	0.00	0.00	0.308
60	1.61	0.00	0.00	0.00	0.00	0.307
61	1.64	0.00	0.00	0.00	0.00	0.307

62	1.67	0.00	0.00	0.00	0.00	0.306
63	1.70	0.00	0.00	0.00	0.00	0.306
64	1.72	0.00	0.00	0.00	0.00	0.306
65	1.75	0.00	0.00	0.00	0.00	0.305
66	1.78	0.00	0.00	0.00	0.00	0.305
67	1.81	0.00	0.00	0.00	0.00	0.305
68	1.83	0.00	0.00	0.00	0.00	0.304
69	1.86	0.00	0.00	0.00	0.00	0.304
70	1.89	0.00	0.00	0.00	0.00	0.304
71	1.91	0.00	0.00	0.00	0.00	0.303
72	1.94	0.00	0.00	0.00	0.00	0.303
73	1.97	0.00	0.00	0.00	0.00	0.302
74	2.00	0.00	0.00	0.00	0.00	0.302
75	2.02	0.00	0.00	0.00	0.00	0.302
76	2.05	0.00	0.00	0.00	0.00	0.301
77	2.08	0.00	0.00	0.00	0.00	0.301
78	2.11	0.00	0.00	0.00	0.00	0.301
79	2.13	0.00	0.00	0.00	0.00	0.300
80	2.16	0.00	0.00	0.00	0.00	0.300
81	2.19	0.00	0.00	0.00	0.00	0.299
82	2.22	0.00	0.00	0.00	0.00	0.299
83	2.24	0.00	0.00	0.00	0.00	0.299
84	2.27	0.00	0.00	0.00	0.00	0.298
85	2.30	0.00	0.00	0.00	0.00	0.298
86	2.32	0.00	0.00	0.00	0.00	0.298
87	2.35	0.00	0.00	0.00	0.00	0.297
88	2.38	0.00	0.00	0.00	0.00	0.297
89	2.41	0.00	0.00	0.00	0.00	0.297
90	2.43	0.00	0.00	0.00	0.00	0.296
91	2.46	0.00	0.00	0.00	0.00	0.296
92	2.49	0.00	0.00	0.00	0.00	0.295
93	2.52	0.00	0.00	0.00	0.00	0.295
94	2.54	0.00	0.00	0.00	0.00	0.295
95	2.57	0.00	0.00	0.00	0.00	0.294
96	2.60	0.00	0.00	0.00	0.00	0.294
97	2.63	0.00	0.00	0.00	0.00	0.294
98	2.65	0.00	0.00	0.00	0.00	0.293
99	2.68	0.00	0.00	0.00	0.00	0.293
100	2.71	0.00	0.00	0.00	0.00	0.293
101	2.73	0.00	0.00	0.00	0.00	0.292
102	2.76	0.00	0.00	0.00	0.00	0.292
103	2.79	0.00	0.00	0.00	0.00	0.291
104	2.82	0.00	0.00	0.00	0.00	0.291
105	2.84	0.00	0.00	0.00	0.00	0.291
106	2.87	0.00	0.00	0.00	0.00	0.290
107	2.90	0.00	0.00	0.00	0.00	0.290
108	2.93	0.00	0.00	0.00	0.00	0.290
109	2.95	0.00	0.00	0.00	0.00	0.289
110	2.98	0.00	0.00	0.00	0.00	0.289
111	3.01	0.00	0.00	0.00	0.00	0.288

112	3.04	0.00	0.00	0.00	0.00	0.288
113	3.06	0.00	0.00	0.00	0.00	0.288
114	3.09	0.00	0.00	0.00	0.00	0.287
115	3.12	0.00	0.00	0.00	0.00	0.287
116	3.15	0.00	0.00	0.00	0.00	0.287
117	3.17	0.00	0.00	0.00	0.00	0.286
118	3.20	0.00	0.00	0.00	0.00	0.286
119	3.23	0.00	0.00	0.00	0.00	0.286
120	3.25	0.00	0.00	0.00	0.00	0.285
121	3.28	0.00	0.00	0.00	0.00	0.285
122	3.31	0.00	0.00	0.00	0.00	0.284
123	3.34	0.00	0.00	0.00	0.00	0.284
124	3.36	0.00	0.00	0.00	0.00	0.284
125	3.39	0.00	0.00	0.00	0.00	0.283
126	3.42	0.00	0.00	0.00	0.00	0.283
127	3.45	0.00	0.00	0.00	0.00	0.283
128	3.47	0.00	0.00	0.00	0.00	0.282
129	3.50	0.00	0.00	0.00	0.00	0.282
130	3.53	0.00	0.00	0.00	0.00	0.282
131	3.56	0.00	0.00	0.00	0.00	0.281
132	3.58	0.00	0.00	0.00	0.00	0.281
133	3.61	0.00	0.00	0.00	0.00	0.280
134	3.64	0.00	0.00	0.00	0.00	0.280
135	3.66	0.00	0.00	0.00	0.00	0.280
136	3.69	0.00	0.00	0.00	0.00	0.279
137	3.72	0.00	0.00	0.00	0.00	0.279
138	3.75	0.00	0.00	0.00	0.00	0.279
139	3.77	0.00	0.00	0.00	0.00	0.278
140	3.80	0.00	0.00	0.00	0.00	0.278
141	3.83	0.00	0.00	0.00	0.00	0.277
142	3.86	0.00	0.00	0.00	0.00	0.277
143	3.88	0.00	0.00	0.00	0.00	0.277
144	3.91	0.00	0.00	0.00	0.00	0.276
145	3.94	0.00	0.00	0.00	0.00	0.276
146	3.97	0.00	0.00	0.00	0.00	0.276
147	3.99	0.00	0.00	0.00	0.00	0.275
148	4.02	0.00	0.00	0.00	0.00	0.275
149	4.05	0.00	0.00	0.00	0.00	0.275
150	4.07	0.00	0.00	0.00	0.00	0.274
151	4.10	0.00	0.00	0.00	0.00	0.274
152	4.13	0.00	0.00	0.00	0.00	0.273
153	4.16	0.00	0.00	0.00	0.00	0.273
154	4.18	0.00	0.00	0.00	0.00	0.273
155	4.21	0.00	0.00	0.00	0.00	0.272
156	4.24	0.00	0.00	0.00	0.00	0.272
157	4.27	0.00	0.00	0.00	0.00	0.272
158	4.29	0.00	0.00	0.00	0.00	0.271
159	4.32	0.00	0.00	0.00	0.00	0.271
160	4.35	0.00	0.00	0.00	0.00	0.270
161	4.38	0.00	0.00	0.00	0.00	0.270

162	4.40	0.00	0.00	0.00	0.00	0.270
163	4.43	0.00	0.00	0.00	0.00	0.269
164	4.46	0.00	0.00	0.00	0.00	0.269
165	4.49	0.00	0.00	0.00	0.00	0.269
166	4.51	0.00	0.00	0.00	0.00	0.268
167	4.54	0.00	0.00	0.00	0.00	0.268
168	4.57	0.00	0.00	0.00	0.00	0.268
169	4.59	0.00	0.00	0.00	0.00	0.267
170	4.62	0.00	0.00	0.00	0.00	0.267
171	4.65	0.00	0.00	0.00	0.00	0.266
172	4.68	0.00	0.00	0.00	0.00	0.266
173	4.70	0.00	0.00	0.00	0.00	0.266
174	4.73	0.00	0.00	0.00	0.00	0.265
175	4.76	0.00	0.00	0.00	0.00	0.265
176	4.79	0.00	0.00	0.00	0.00	0.265
177	4.81	0.00	0.00	0.00	0.00	0.264
178	4.84	0.00	0.00	0.00	0.00	0.264
179	4.87	0.00	0.00	0.00	0.00	0.264
180	4.90	0.00	0.00	0.00	0.00	0.263
181	4.92	0.00	0.00	0.00	0.00	0.263
182	4.95	0.00	0.00	0.00	0.00	0.262
183	4.98	0.00	0.00	0.00	0.00	0.262
184	5.00	0.00	0.00	0.00	0.00	0.262
185	5.03	0.00	0.00	0.00	0.00	0.261
186	5.06	0.00	0.00	0.00	0.00	0.261
187	5.09	0.00	0.00	0.00	0.00	0.261
188	5.11	0.00	0.00	0.00	0.00	0.260
189	5.14	0.00	0.00	0.00	0.00	0.260
190	5.17	0.00	0.00	0.00	0.00	0.259
191	5.20	0.00	0.00	0.00	0.00	0.259
192	5.22	0.00	0.00	0.00	0.00	0.259
193	5.25	0.00	0.00	0.00	0.00	0.258
194	5.28	0.00	0.00	0.00	0.00	0.258
195	5.31	0.00	0.00	0.00	0.00	0.258
196	5.33	0.00	0.00	0.00	0.00	0.257
197	5.36	0.00	0.00	0.00	0.00	0.257
198	5.39	0.00	0.00	0.00	0.00	0.257
199	5.42	0.00	0.00	0.00	0.00	0.256
200	5.44	0.00	0.00	0.00	0.00	0.256
201	5.47	0.00	0.00	0.00	0.00	0.255
202	5.50	0.00	0.00	0.00	0.00	0.255
203	5.52	0.00	0.00	0.00	0.00	0.255
204	5.55	0.00	0.00	0.00	0.00	0.254
205	5.58	0.00	0.00	0.00	0.00	0.254
206	5.61	0.00	0.00	0.00	0.00	0.254
207	5.63	0.00	0.00	0.00	0.00	0.253
208	5.66	0.00	0.00	0.00	0.00	0.253
209	5.69	0.00	0.00	0.00	0.00	0.253
210	5.72	0.00	0.00	0.00	0.00	0.252
211	5.74	0.00	0.00	0.00	0.00	0.252

212	5.77	0.00	0.00	0.00	0.00	0.251
213	5.80	0.00	0.00	0.00	0.00	0.251
214	5.83	0.00	0.00	0.00	0.00	0.251
215	5.85	0.00	0.00	0.00	0.00	0.250
216	5.88	0.00	0.00	0.00	0.00	0.250
217	5.91	0.00	0.00	0.00	0.00	0.250
218	5.93	0.00	0.00	0.00	0.00	0.249
219	5.96	0.00	0.00	0.00	0.00	0.249
220	5.99	0.00	0.00	0.00	0.00	0.248
221	6.02	0.00	0.00	0.00	0.00	0.248
222	6.04	0.00	0.00	0.00	0.00	0.248
223	6.07	0.00	0.00	0.00	0.00	0.247
224	6.10	0.00	0.00	0.00	0.00	0.247
225	6.13	0.00	0.00	0.00	0.00	0.247
226	6.15	0.00	0.00	0.00	0.00	0.246
227	6.18	0.00	0.00	0.00	0.00	0.246
228	6.21	0.00	0.00	0.00	0.00	0.246
229	6.24	0.00	0.00	0.00	0.00	0.245
230	6.26	0.00	0.00	0.00	0.00	0.245
231	6.29	0.00	0.00	0.00	0.00	0.244
232	6.32	0.00	0.00	0.00	0.00	0.244
233	6.34	0.00	0.00	0.00	0.00	0.244
234	6.37	0.00	0.00	0.00	0.00	0.243
235	6.40	0.00	0.00	0.00	0.00	0.243
236	6.43	0.00	0.00	0.00	0.00	0.243
237	6.45	0.00	0.00	0.00	0.00	0.242
238	6.48	0.00	0.00	0.00	0.00	0.242
239	6.51	0.00	0.00	0.00	0.00	0.242
240	6.54	0.00	0.00	0.00	0.00	0.241
241	6.56	0.00	0.00	0.00	0.00	0.241
242	6.59	0.00	0.00	0.00	0.00	0.240
243	6.62	0.00	0.00	0.00	0.00	0.240
244	6.65	0.00	0.00	0.00	0.00	0.240
245	6.67	0.00	0.00	0.00	0.00	0.239
246	6.70	0.00	0.00	0.00	0.00	0.239
247	6.73	0.00	0.00	0.00	0.00	0.239
248	6.76	0.00	0.00	0.00	0.00	0.238
249	6.78	0.00	0.00	0.00	0.00	0.238
250	6.81	0.00	0.00	0.00	0.00	0.237
251	6.84	0.00	0.00	0.00	0.00	0.237
252	6.86	0.00	0.00	0.00	0.00	0.237
253	6.89	0.00	0.00	0.00	0.00	0.236
254	6.92	0.00	0.00	0.00	0.00	0.236
255	6.95	0.00	0.00	0.00	0.00	0.236
256	6.97	0.00	0.00	0.00	0.00	0.235
257	7.00	0.00	0.00	0.00	0.00	0.235
258	7.03	0.00	0.00	0.00	0.00	0.235
259	7.06	0.00	0.00	0.00	0.00	0.234
260	7.08	0.00	0.00	0.00	0.00	0.234
261	7.11	0.00	0.00	0.00	0.00	0.233

262	7.14	0.00	0.00	0.00	0.00	0.233
263	7.17	0.00	0.00	0.00	0.00	0.233
264	7.19	0.00	0.00	0.00	0.00	0.232
265	7.22	0.00	0.00	0.00	0.00	0.232
266	7.25	0.00	0.00	0.00	0.00	0.232
267	7.27	0.00	0.00	0.00	0.00	0.231
268	7.30	0.00	0.00	0.00	0.00	0.231
269	7.33	0.00	0.00	0.00	0.00	0.230
270	7.36	0.00	0.00	0.00	0.00	0.230
271	7.38	0.00	0.00	0.00	0.00	0.230
272	7.41	0.00	0.00	0.00	0.00	0.229
273	7.44	0.00	0.00	0.00	0.00	0.229
274	7.47	0.00	0.00	0.00	0.00	0.229
275	7.49	0.00	0.00	0.00	0.00	0.228
276	7.52	0.00	0.00	0.00	0.00	0.228
277	7.55	0.00	0.00	0.00	0.00	0.228
278	7.58	0.00	0.00	0.00	0.00	0.227
279	7.60	0.00	0.00	0.00	0.00	0.227
280	7.63	0.00	0.00	0.00	0.00	0.226
281	7.66	0.00	0.00	0.00	0.00	0.226
282	7.69	0.00	0.00	0.00	0.00	0.226
283	7.71	0.00	0.00	0.00	0.00	0.225
284	7.74	0.00	0.00	0.00	0.00	0.225
285	7.77	0.00	0.00	0.00	0.00	0.225
286	7.79	0.00	0.00	0.00	0.00	0.224
287	7.82	0.00	0.00	0.00	0.00	0.224
288	7.85	0.00	0.00	0.00	0.00	0.224
289	7.88	0.00	0.00	0.00	0.00	0.223
290	7.90	0.00	0.00	0.00	0.00	0.223
291	7.93	0.00	0.00	0.00	0.00	0.222
292	7.96	0.00	0.00	0.00	0.00	0.222
293	7.99	0.00	0.00	0.00	0.00	0.222
294	8.01	0.00	0.00	0.00	0.00	0.221
295	8.04	0.00	0.00	0.00	0.00	0.221
296	8.07	0.00	0.00	0.00	0.00	0.221
297	8.10	0.00	0.00	0.00	0.00	0.220
298	8.12	0.00	0.00	0.00	0.00	0.220
299	8.15	0.00	0.00	0.00	0.00	0.219
300	8.18	0.00	0.00	0.00	0.00	0.219
301	8.20	0.00	0.00	0.00	0.00	0.219
302	8.23	0.00	0.00	0.00	0.00	0.218
303	8.26	0.00	0.00	0.00	0.00	0.218
304	8.29	0.00	0.00	0.00	0.00	0.218
305	8.31	0.00	0.00	0.00	0.00	0.217
306	8.34	0.00	0.00	0.00	0.00	0.217
307	8.37	0.00	0.00	0.00	0.00	0.217
308	8.40	0.00	0.00	0.00	0.00	0.216
309	8.42	0.00	0.00	0.00	0.00	0.216
310	8.45	0.00	0.00	0.00	0.00	0.215
311	8.48	0.00	0.00	0.00	0.00	0.215

312	8.51	0.00	0.00	0.00	0.00	0.215
313	8.53	0.00	0.00	0.00	0.00	0.214
314	8.56	0.00	0.00	0.00	0.00	0.214
315	8.59	0.00	0.00	0.00	0.00	0.214
316	8.61	0.00	0.00	0.00	0.00	0.213
317	8.64	0.00	0.00	0.00	0.00	0.213
318	8.67	0.00	0.00	0.00	0.00	0.213
319	8.70	0.00	0.00	0.00	0.00	0.212
320	8.72	0.00	0.00	0.00	0.00	0.212
321	8.75	0.00	0.00	0.00	0.00	0.211
322	8.78	0.00	0.00	0.00	0.00	0.211
323	8.81	0.00	0.00	0.00	0.00	0.211
324	8.83	0.00	0.00	0.00	0.00	0.210
325	8.86	0.00	0.00	0.00	0.00	0.210
326	8.89	0.00	0.00	0.00	0.00	0.210
327	8.92	0.00	0.00	0.00	0.00	0.209
328	8.94	0.00	0.00	0.00	0.00	0.209
329	8.97	0.00	0.00	0.00	0.00	0.208
330	9.00	0.00	0.00	0.00	0.00	0.208
331	9.03	0.00	0.00	0.00	0.00	0.208
332	9.05	0.00	0.00	0.00	0.00	0.207
333	9.08	0.00	0.00	0.00	0.00	0.207
334	9.11	0.00	0.00	0.00	0.00	0.207
335	9.13	0.00	0.00	0.00	0.00	0.206
336	9.16	0.00	0.00	0.00	0.00	0.206
337	9.19	0.00	0.00	0.00	0.00	0.206
338	9.22	0.00	0.00	0.00	0.00	0.205
339	9.24	0.00	0.00	0.00	0.00	0.205
340	9.27	0.00	0.00	0.00	0.00	0.204
341	9.30	0.00	0.00	0.00	0.00	0.204
342	9.33	0.00	0.00	0.00	0.00	0.204
343	9.35	0.00	0.00	0.00	0.00	0.203
344	9.38	0.00	0.00	0.00	0.00	0.203
345	9.41	0.00	0.00	0.00	0.00	0.203
346	9.44	0.00	0.00	0.00	0.00	0.202
347	9.46	0.00	0.00	0.00	0.00	0.202
348	9.49	0.00	0.00	0.00	0.00	0.201
349	9.52	0.00	0.00	0.00	0.00	0.201
350	9.54	0.00	0.00	0.00	0.00	0.201
351	9.57	0.00	0.00	0.00	0.00	0.200
352	9.60	0.00	0.00	0.00	0.00	0.200
353	9.63	0.00	0.00	0.00	0.00	0.200
354	9.65	0.00	0.00	0.00	0.00	0.199
355	9.68	0.00	0.00	0.00	0.00	0.199
356	9.71	0.00	0.00	0.00	0.00	0.199
357	9.74	0.00	0.00	0.00	0.00	0.198
358	9.76	0.00	0.00	0.00	0.00	0.198
359	9.79	0.00	0.00	0.00	0.00	0.197
360	9.82	0.00	0.00	0.00	0.00	0.197
361	9.85	0.00	0.00	0.00	0.00	0.197

362	9.87	0.00	0.00	0.00	0.00	0.196
363	9.90	0.00	0.00	0.00	0.00	0.196
364	9.93	0.00	0.00	0.00	0.00	0.196
365	9.95	0.00	0.00	0.00	0.00	0.195
366	9.98	0.00	0.00	0.00	0.00	0.195
367	10.01	0.00	0.00	0.00	0.00	0.195
368	10.04	0.00	0.00	0.00	0.00	0.194
369	10.06	0.00	0.00	0.00	0.00	0.194
370	10.09	0.00	0.00	0.00	0.00	0.193
371	10.12	0.00	0.00	0.00	0.00	0.193
372	10.15	0.00	0.00	0.00	0.00	0.193
373	10.17	0.00	0.00	0.00	0.00	0.192
374	10.20	0.00	0.00	0.00	0.00	0.192
375	10.23	0.00	0.00	0.00	0.00	0.192
376	10.26	0.00	0.00	0.00	0.00	0.191
377	10.28	0.00	0.00	0.00	0.00	0.191
378	10.31	0.00	0.00	0.00	0.00	0.190
379	10.34	0.00	0.00	0.00	0.00	0.190
380	10.37	0.00	0.00	0.00	0.00	0.190
381	10.39	0.00	0.00	0.00	0.00	0.189
382	10.42	0.00	0.00	0.00	0.00	0.189
383	10.45	0.00	0.00	0.00	0.00	0.189
384	10.47	0.00	0.00	0.00	0.00	0.188
385	10.50	0.00	0.00	0.00	0.00	0.188
386	10.53	0.00	0.00	0.00	0.00	0.188
387	10.56	0.00	0.00	0.00	0.00	0.187
388	10.58	0.00	0.00	0.00	0.00	0.187
389	10.61	0.00	0.00	0.00	0.00	0.186
390	10.64	0.00	0.00	0.00	0.00	0.186
391	10.67	0.00	0.00	0.00	0.00	0.186
392	10.69	0.00	0.00	0.00	0.00	0.185
393	10.72	0.00	0.00	0.00	0.00	0.185
394	10.75	0.00	0.00	0.00	0.00	0.185
395	10.78	0.00	0.00	0.00	0.00	0.184
396	10.80	0.00	0.00	0.00	0.00	0.184
397	10.83	0.00	0.00	0.00	0.00	0.184
398	10.86	0.00	0.00	0.00	0.00	0.183
399	10.88	0.00	0.00	0.00	0.00	0.183
400	10.91	0.00	0.00	0.00	0.00	0.182
401	10.94	0.00	0.00	0.00	0.00	0.182
402	10.97	0.00	0.00	0.00	0.00	0.182
403	10.99	0.00	0.00	0.00	0.00	0.181
404	11.02	0.00	0.00	0.00	0.00	0.181
405	11.05	0.00	0.00	0.00	0.00	0.181
406	11.08	0.00	0.00	0.00	0.00	0.180
407	11.10	0.00	0.00	0.00	0.00	0.180
408	11.13	0.00	0.00	0.00	0.00	0.179
409	11.16	0.00	0.00	0.00	0.00	0.179
410	11.19	0.00	0.00	0.00	0.00	0.179
411	11.21	0.00	0.00	0.00	0.00	0.178

412	11.24	0.00	0.00	0.00	0.00	0.178
413	11.27	0.00	0.00	0.00	0.00	0.178
414	11.30	0.00	0.00	0.00	0.00	0.177
415	11.32	0.00	0.00	0.00	0.00	0.177
416	11.35	0.00	0.00	0.00	0.00	0.177
417	11.38	0.00	0.00	0.00	0.00	0.176
418	11.40	0.00	0.00	0.00	0.00	0.176
419	11.43	0.00	0.00	0.00	0.00	0.175
420	11.46	0.00	0.00	0.00	0.00	0.175
421	11.49	0.00	0.00	0.00	0.00	0.175
422	11.51	0.00	0.00	0.00	0.00	0.174
423	11.54	0.00	0.00	0.00	0.00	0.174
424	11.57	0.00	0.00	0.00	0.00	0.174
425	11.60	0.00	0.00	0.00	0.00	0.173
426	11.62	0.00	0.00	0.00	0.00	0.173
427	11.65	0.00	0.00	0.00	0.00	0.173
428	11.68	0.00	0.00	0.00	0.00	0.172
429	11.71	0.00	0.00	0.00	0.00	0.172
430	11.73	0.00	0.00	0.00	0.00	0.171
431	11.76	0.00	0.00	0.00	0.00	0.171
432	11.79	0.00	0.00	0.00	0.00	0.171
433	11.81	0.00	0.00	0.00	0.00	0.170
434	11.84	0.00	0.00	0.00	0.00	0.170
435	11.87	0.00	0.00	0.00	0.00	0.170
436	11.90	0.00	0.00	0.00	0.00	0.169
437	11.92	0.00	0.00	0.00	0.00	0.169
438	11.95	0.00	0.00	0.00	0.00	0.168
439	11.98	0.00	0.00	0.00	0.00	0.168
440	12.01	0.00	0.00	0.00	0.00	0.168
441	12.03	0.00	0.00	0.00	0.00	0.167
442	12.06	0.00	0.00	0.00	0.00	0.167
443	12.09	0.00	0.00	0.00	0.00	0.167
444	12.12	0.00	0.00	0.00	0.00	0.166
445	12.14	0.00	0.00	0.00	0.00	0.166
446	12.17	0.00	0.00	0.00	0.00	0.166
447	12.20	0.00	0.00	0.00	0.00	0.165
448	12.22	0.00	0.00	0.00	0.00	0.165
449	12.25	0.00	0.00	0.00	0.00	0.164
450	12.28	0.00	0.00	0.00	0.00	0.164
451	12.31	0.00	0.00	0.00	0.00	0.164
452	12.33	0.00	0.00	0.00	0.00	0.163
453	12.36	0.00	0.00	0.00	0.00	0.163
454	12.39	0.00	0.00	0.00	0.00	0.163
455	12.42	0.00	0.00	0.00	0.00	0.162
456	12.44	0.00	0.00	0.00	0.00	0.162
457	12.47	0.00	0.00	0.00	0.00	0.161
458	12.50	0.00	0.00	0.00	0.00	0.161
459	12.53	0.00	0.00	0.00	0.00	0.161
460	12.55	0.00	0.00	0.00	0.00	0.160
461	12.58	0.00	0.00	0.00	0.00	0.160

462	12.61	0.00	0.00	0.00	0.00	0.160
463	12.64	0.00	0.00	0.00	0.00	0.159
464	12.66	0.00	0.00	0.00	0.00	0.159
465	12.69	0.00	0.00	0.00	0.00	0.159
466	12.72	0.00	0.00	0.00	0.00	0.158
467	12.74	0.00	0.00	0.00	0.00	0.158
468	12.77	0.00	0.00	0.00	0.00	0.157
469	12.80	0.00	0.00	0.00	0.00	0.157
470	12.83	0.00	0.00	0.00	0.00	0.157
471	12.85	0.00	0.00	0.00	0.00	0.156
472	12.88	0.00	0.00	0.00	0.00	0.156
473	12.91	0.00	0.00	0.00	0.00	0.156
474	12.94	0.00	0.00	0.00	0.00	0.155
475	12.96	0.00	0.00	0.00	0.00	0.155
476	12.99	0.00	0.00	0.00	0.00	0.155
477	13.02	0.00	0.00	0.00	0.00	0.154
478	13.05	0.00	0.00	0.00	0.00	0.154
479	13.07	0.00	0.00	0.00	0.00	0.153
480	13.10	0.00	0.00	0.00	0.00	0.153
481	13.13	0.00	0.00	0.00	0.00	0.153
482	13.15	0.00	0.00	0.00	0.00	0.152
483	13.18	0.00	0.00	0.00	0.00	0.152
484	13.21	0.00	0.00	0.00	0.00	0.152
485	13.24	0.00	0.00	0.00	0.00	0.151
486	13.26	0.00	0.00	0.00	0.00	0.151
487	13.29	0.00	0.00	0.00	0.00	0.150
488	13.32	0.00	0.00	0.00	0.00	0.150
489	13.35	0.00	0.00	0.00	0.00	0.150
490	13.37	0.00	0.00	0.00	0.00	0.149
491	13.40	0.00	0.00	0.00	0.00	0.149
492	13.43	0.00	0.00	0.00	0.00	0.149
493	13.46	0.00	0.00	0.00	0.00	0.148
494	13.48	0.00	0.00	0.00	0.00	0.148
495	13.51	0.00	0.00	0.00	0.00	0.148
496	13.54	0.00	0.00	0.00	0.00	0.147
497	13.56	0.00	0.00	0.00	0.00	0.147
498	13.59	0.00	0.00	0.00	0.00	0.146
499	13.62	0.00	0.00	0.00	0.00	0.146
500	13.65	0.00	0.00	0.00	0.00	0.146
501	13.67	0.00	0.00	0.00	0.00	0.145
502	13.70	0.00	0.00	0.00	0.00	0.145
503	13.73	0.00	0.00	0.00	0.00	0.145
504	13.76	0.00	0.00	0.00	0.00	0.144
505	13.78	0.00	0.00	0.00	0.00	0.144
506	13.81	0.00	0.00	0.00	0.00	0.144
507	13.84	0.00	0.00	0.00	0.00	0.143
508	13.87	0.00	0.00	0.00	0.00	0.143
509	13.89	0.00	0.00	0.00	0.00	0.142
510	13.92	0.00	0.00	0.00	0.00	0.142
511	13.95	0.00	0.00	0.00	0.00	0.142

512	13.98	0.00	0.00	0.00	0.00	0.141
513	14.00	0.00	0.00	0.00	0.00	0.141
514	14.03	0.00	0.00	0.00	0.00	0.141
515	14.06	0.00	0.00	0.00	0.00	0.140
516	14.08	0.00	0.00	0.00	0.00	0.140
517	14.11	0.00	0.00	0.00	0.00	0.139
518	14.14	0.00	0.00	0.00	0.00	0.139
519	14.17	0.00	0.00	0.00	0.00	0.139
520	14.19	0.00	0.00	0.00	0.00	0.138
521	14.22	0.00	0.00	0.00	0.00	0.138
522	14.25	0.00	0.00	0.00	0.00	0.138
523	14.28	0.00	0.00	0.00	0.00	0.137
524	14.30	0.00	0.00	0.00	0.00	0.137
525	14.33	0.00	0.00	0.00	0.00	0.137
526	14.36	0.00	0.00	0.00	0.00	0.136
527	14.39	0.00	0.00	0.00	0.00	0.136
528	14.41	0.00	0.00	0.00	0.00	0.135
529	14.44	0.00	0.00	0.00	0.00	0.135
530	14.47	0.00	0.00	0.00	0.00	0.135
531	14.49	0.00	0.00	0.00	0.00	0.134
532	14.52	0.00	0.00	0.00	0.00	0.134
533	14.55	0.00	0.00	0.00	0.00	0.134
534	14.58	0.00	0.00	0.00	0.00	0.133
535	14.60	0.00	0.00	0.00	0.00	0.133
536	14.63	0.00	0.00	0.00	0.00	0.132
537	14.66	0.00	0.00	0.00	0.00	0.132
538	14.69	0.00	0.00	0.00	0.00	0.132
539	14.71	0.00	0.00	0.00	0.00	0.131
540	14.74	0.00	0.00	0.00	0.00	0.131
541	14.77	0.00	0.00	0.00	0.00	0.131
542	14.80	0.00	0.00	0.00	0.00	0.130
543	14.82	0.00	0.00	0.00	0.00	0.130
544	14.85	0.00	0.00	0.00	0.00	0.130
545	14.88	0.00	0.00	0.00	0.00	0.129
546	14.91	0.00	0.00	0.00	0.00	0.129
547	14.93	0.00	0.00	0.00	0.00	0.128
548	14.96	0.00	0.00	0.00	0.00	0.128
549	14.99	0.00	0.00	0.00	0.00	0.128
550	15.01	0.00	0.00	0.00	0.00	0.127
551	15.04	0.00	0.00	0.00	0.00	0.127
552	15.07	0.00	0.00	0.00	0.00	0.127
553	15.10	0.00	0.00	0.00	0.00	0.126
554	15.12	0.00	0.00	0.00	0.00	0.126
555	15.15	0.00	0.00	0.00	0.00	0.126
556	15.18	0.00	0.00	0.00	0.00	0.125
557	15.21	0.00	0.00	0.00	0.00	0.125
558	15.23	0.00	0.00	0.00	0.00	0.124
559	15.26	0.00	0.00	0.00	0.00	0.124
560	15.29	0.00	0.00	0.00	0.00	0.124
561	15.32	0.00	0.00	0.00	0.00	0.123

562	15.34	0.00	0.00	0.00	0.00	0.123
563	15.37	0.00	0.00	0.00	0.00	0.123
564	15.40	0.00	0.00	0.00	0.00	0.122
565	15.42	0.00	0.00	0.00	0.00	0.122
566	15.45	0.00	0.00	0.00	0.00	0.121
567	15.48	0.00	0.00	0.00	0.00	0.121
568	15.51	0.00	0.00	0.00	0.00	0.121
569	15.53	0.00	0.00	0.00	0.00	0.120
570	15.56	0.00	0.00	0.00	0.00	0.120
571	15.59	0.00	0.00	0.00	0.00	0.120
572	15.62	0.00	0.00	0.00	0.00	0.119
573	15.64	0.00	0.00	0.00	0.00	0.119
574	15.67	0.00	0.00	0.00	0.00	0.119
575	15.70	0.00	0.00	0.00	0.00	0.118
576	15.73	0.00	0.00	0.00	0.00	0.118
577	15.75	0.00	0.00	0.00	0.00	0.117
578	15.78	0.00	0.00	0.00	0.00	0.117
579	15.81	0.00	0.00	0.00	0.00	0.117
580	15.83	0.00	0.00	0.00	0.00	0.116
581	15.86	0.00	0.00	0.00	0.00	0.116
582	15.89	0.00	0.00	0.00	0.00	0.116
583	15.92	0.00	0.00	0.00	0.00	0.115
584	15.94	0.00	0.00	0.00	0.00	0.115
585	15.97	0.00	0.00	0.00	0.00	0.115
586	16.00	0.00	0.00	0.00	0.00	0.114
587	16.03	0.00	0.00	0.00	0.00	0.114
588	16.05	0.00	0.00	0.00	0.00	0.113
589	16.08	0.00	0.00	0.00	0.00	0.113
590	16.11	0.00	0.00	0.00	0.00	0.113
591	16.14	0.00	0.00	0.00	0.00	0.112
592	16.16	0.00	0.00	0.00	0.00	0.112
593	16.19	0.00	0.00	0.00	0.00	0.112
594	16.22	0.00	0.00	0.00	0.00	0.111
595	16.25	0.00	0.00	0.00	0.00	0.111
596	16.27	0.00	0.00	0.00	0.00	0.110
597	16.30	0.00	0.00	0.00	0.00	0.110
598	16.33	0.00	0.00	0.00	0.00	0.110
599	16.35	0.00	0.00	0.00	0.00	0.109
600	16.38	0.00	0.00	0.00	0.00	0.109
601	16.41	0.00	0.00	0.00	0.00	0.109
602	16.44	0.00	0.00	0.00	0.00	0.108
603	16.46	0.00	0.00	0.00	0.00	0.108
604	16.49	0.00	0.00	0.00	0.00	0.108
605	16.52	0.00	0.00	0.00	0.00	0.107
606	16.55	0.00	0.00	0.00	0.00	0.107
607	16.57	0.00	0.00	0.00	0.00	0.106
608	16.60	0.00	0.00	0.00	0.00	0.106
609	16.63	0.00	0.00	0.00	0.00	0.106
610	16.66	0.00	0.00	0.00	0.00	0.105
611	16.68	0.00	0.00	0.00	0.00	0.105

612	16.71	0.00	0.00	0.00	0.00	0.105
613	16.74	0.00	0.00	0.00	0.00	0.104
614	16.76	0.00	0.00	0.00	0.00	0.104
615	16.79	0.00	0.00	0.00	0.00	0.104
616	16.82	0.00	0.00	0.00	0.00	0.103
617	16.85	0.00	0.00	0.00	0.00	0.103
618	16.87	0.00	0.00	0.00	0.00	0.102
619	16.90	0.00	0.00	0.00	0.00	0.102
620	16.93	0.00	0.00	0.00	0.00	0.102
621	16.96	0.00	0.00	0.00	0.00	0.101
622	16.98	0.00	0.00	0.00	0.00	0.101
623	17.01	0.00	0.00	0.00	0.00	0.101
624	17.04	0.00	0.00	0.00	0.00	0.100
625	17.07	0.00	0.00	0.00	0.00	0.100
626	17.09	0.00	0.00	0.00	0.00	0.099
627	17.12	0.00	0.00	0.00	0.00	0.099
628	17.15	0.00	0.00	0.00	0.00	0.099
629	17.18	0.00	0.00	0.00	0.00	0.098
630	17.20	0.00	0.00	0.00	0.00	0.098
631	17.23	0.00	0.00	0.00	0.00	0.098
632	17.26	0.00	0.00	0.00	0.00	0.097
633	17.28	0.00	0.00	0.00	0.00	0.097
634	17.31	0.00	0.00	0.00	0.00	0.097
635	17.34	0.00	0.00	0.00	0.00	0.096
636	17.37	0.00	0.00	0.00	0.00	0.096
637	17.39	0.00	0.00	0.00	0.00	0.095
638	17.42	0.00	0.00	0.00	0.00	0.095
639	17.45	0.00	0.00	0.00	0.00	0.095
640	17.48	0.00	0.00	0.00	0.00	0.094
641	17.50	0.00	0.00	0.00	0.00	0.094
642	17.53	0.00	0.00	0.00	0.00	0.094
643	17.56	0.00	0.00	0.00	0.00	0.093
644	17.59	0.00	0.00	0.00	0.00	0.093
645	17.61	0.00	0.00	0.00	0.00	0.092
646	17.64	0.00	0.00	0.00	0.00	0.092
647	17.67	0.00	0.00	0.00	0.00	0.092
648	17.69	0.00	0.00	0.00	0.00	0.091
649	17.72	0.00	0.00	0.00	0.00	0.091
650	17.75	0.00	0.00	0.00	0.00	0.091
651	17.78	0.00	0.00	0.00	0.00	0.090
652	17.80	0.00	0.00	0.00	0.00	0.090
653	17.83	0.00	0.00	0.00	0.00	0.090
654	17.86	0.00	0.00	0.00	0.00	0.089
655	17.89	0.00	0.00	0.00	0.00	0.089
656	17.91	0.00	0.00	0.00	0.00	0.088
657	17.94	0.00	0.00	0.00	0.00	0.088
658	17.97	0.00	0.00	0.00	0.00	0.088
659	18.00	0.00	0.00	0.00	0.00	0.087
660	18.02	0.00	0.00	0.00	0.00	0.087
661	18.05	0.00	0.00	0.00	0.00	0.087

662	18.08	0.00	0.00	0.00	0.00	0.086
663	18.10	0.00	0.00	0.00	0.00	0.086
664	18.13	0.00	0.00	0.00	0.00	0.086
665	18.16	0.00	0.00	0.00	0.00	0.085
666	18.19	0.00	0.00	0.00	0.00	0.085
667	18.21	0.00	0.00	0.00	0.00	0.084
668	18.24	0.00	0.00	0.00	0.00	0.084
669	18.27	0.00	0.00	0.00	0.00	0.084
670	18.30	0.00	0.00	0.00	0.00	0.083
671	18.32	0.00	0.00	0.00	0.00	0.083
672	18.35	0.00	0.00	0.00	0.00	0.083
673	18.38	0.00	0.00	0.00	0.00	0.082
674	18.41	0.00	0.00	0.00	0.00	0.082
675	18.43	0.00	0.00	0.00	0.00	0.081
676	18.46	0.00	0.00	0.00	0.00	0.081
677	18.49	0.00	0.00	0.00	0.00	0.081
678	18.52	0.00	0.00	0.00	0.00	0.080
679	18.54	0.00	0.00	0.00	0.00	0.080
680	18.57	0.00	0.00	0.00	0.00	0.080
681	18.60	0.00	0.00	0.00	0.00	0.079
682	18.62	0.00	0.00	0.00	0.00	0.079
683	18.65	0.00	0.00	0.00	0.00	0.079
684	18.68	0.00	0.00	0.00	0.00	0.078
685	18.71	0.00	0.00	0.00	0.00	0.078
686	18.73	0.00	0.00	0.00	0.00	0.077
687	18.76	0.00	0.00	0.00	0.00	0.077
688	18.79	0.00	0.00	0.00	0.00	0.077
689	18.82	0.00	0.00	0.00	0.00	0.076
690	18.84	0.00	0.00	0.00	0.00	0.076
691	18.87	0.00	0.00	0.00	0.00	0.076
692	18.90	0.00	0.00	0.00	0.00	0.075
693	18.93	0.00	0.00	0.00	0.00	0.075
694	18.95	0.00	0.00	0.00	0.00	0.075
695	18.98	0.00	0.00	0.00	0.00	0.074
696	19.01	0.00	0.00	0.00	0.00	0.074
697	19.03	0.00	0.00	0.00	0.00	0.073
698	19.06	0.00	0.00	0.00	0.00	0.073
699	19.09	0.00	0.00	0.00	0.00	0.073
700	19.12	0.00	0.00	0.00	0.00	0.072
701	19.14	0.00	0.00	0.00	0.00	0.072
702	19.17	0.00	0.00	0.00	0.00	0.072
703	19.20	0.00	0.00	0.00	0.00	0.071
704	19.23	0.00	0.00	0.00	0.00	0.071
705	19.25	0.00	0.00	0.00	0.00	0.070
706	19.28	0.00	0.00	0.00	0.00	0.070
707	19.31	0.00	0.00	0.00	0.00	0.070
708	19.34	0.00	0.00	0.00	0.00	0.069
709	19.36	0.00	0.00	0.00	0.00	0.069
710	19.39	0.00	0.00	0.00	0.00	0.069
711	19.42	0.00	0.00	0.00	0.00	0.068

712	19.45	0.00	0.00	0.00	0.00	0.068
713	19.47	0.00	0.00	0.00	0.00	0.068
714	19.50	0.00	0.00	0.00	0.00	0.067
715	19.53	0.00	0.00	0.00	0.00	0.067
716	19.55	0.00	0.00	0.00	0.00	0.066
717	19.58	0.00	0.00	0.00	0.00	0.066
718	19.61	0.00	0.00	0.00	0.00	0.066
719	19.64	0.00	0.00	0.00	0.00	0.065
720	19.66	0.00	0.00	0.00	0.00	0.065
721	19.69	0.00	0.00	0.00	0.00	0.065
722	19.72	0.00	0.00	0.00	0.00	0.064
723	19.75	0.00	0.00	0.00	0.00	0.064
724	19.77	0.00	0.00	0.00	0.00	0.063
725	19.80	0.00	0.00	0.00	0.00	0.063
726	19.83	0.00	0.00	0.00	0.00	0.063
727	19.86	0.00	0.00	0.00	0.00	0.062
728	19.88	0.00	0.00	0.00	0.00	0.062
729	19.91	0.00	0.00	0.00	0.00	0.062
730	19.94	0.00	0.00	0.00	0.00	0.061
731	19.96	0.00	0.00	0.00	0.00	0.061
732	19.99	0.00	0.00	0.00	0.00	0.061
733	20.02	0.00	0.00	0.00	0.00	0.060
734	20.05	0.00	0.00	0.00	0.00	0.060
735	20.07	0.00	0.00	0.00	0.00	0.059
736	20.10	0.00	0.00	0.00	0.00	0.059
737	20.13	0.00	0.00	0.00	0.00	0.059
738	20.16	0.00	0.00	0.00	0.00	0.058
739	20.18	0.00	0.00	0.00	0.00	0.058
740	20.21	0.00	0.00	0.00	0.00	0.058
741	20.24	0.00	0.00	0.00	0.00	0.057
742	20.27	0.00	0.00	0.00	0.00	0.057
743	20.29	0.00	0.00	0.00	0.00	0.057
744	20.32	0.00	0.00	0.00	0.00	0.056
745	20.35	0.00	0.00	0.00	0.00	0.056
746	20.37	0.00	0.00	0.00	0.00	0.055
747	20.40	0.00	0.00	0.00	0.00	0.055
748	20.43	0.00	0.00	0.00	0.00	0.055
749	20.46	0.00	0.00	0.00	0.00	0.054
750	20.48	0.00	0.00	0.00	0.00	0.054
751	20.51	0.00	0.00	0.00	0.00	0.054
752	20.54	0.00	0.00	0.00	0.00	0.053
753	20.57	0.00	0.00	0.00	0.00	0.053
754	20.59	0.00	0.00	0.00	0.00	0.052
755	20.62	0.00	0.00	0.00	0.00	0.052
756	20.65	0.00	0.00	0.00	0.00	0.052
757	20.68	0.00	0.00	0.00	0.00	0.051
758	20.70	0.00	0.00	0.00	0.00	0.051
759	20.73	0.00	0.00	0.00	0.00	0.051
760	20.76	0.00	0.00	0.00	0.00	0.050
761	20.79	0.00	0.00	0.00	0.00	0.050

762	20.81	0.00	0.00	0.00	0.00	0.050
763	20.84	0.00	0.00	0.00	0.00	0.049
764	20.87	0.00	0.00	0.00	0.00	0.049
765	20.89	0.00	0.00	0.00	0.00	0.048
766	20.92	0.00	0.00	0.00	0.00	0.048
767	20.95	0.00	0.00	0.00	0.00	0.048
768	20.98	0.00	0.00	0.00	0.00	0.047
769	21.00	0.00	0.00	0.00	0.00	0.047
770	21.03	0.00	0.00	0.00	0.00	0.047
771	21.06	0.00	0.00	0.00	0.00	0.046
772	21.09	0.00	0.00	0.00	0.00	0.046
773	21.11	0.00	0.00	0.00	0.00	0.046
774	21.14	0.00	0.00	0.00	0.00	0.045
775	21.17	0.00	0.00	0.00	0.00	0.045
776	21.20	0.00	0.00	0.00	0.00	0.044
777	21.22	0.00	0.00	0.00	0.00	0.044
778	21.25	0.00	0.00	0.00	0.00	0.044
779	21.28	0.00	0.00	0.00	0.00	0.043
780	21.30	0.00	0.00	0.00	0.00	0.043
781	21.33	0.00	0.00	0.00	0.00	0.043
782	21.36	0.00	0.00	0.00	0.00	0.042
783	21.39	0.00	0.00	0.00	0.00	0.042
784	21.41	0.00	0.00	0.00	0.00	0.041
785	21.44	0.00	0.00	0.00	0.00	0.041
786	21.47	0.00	0.00	0.00	0.00	0.041
787	21.50	0.00	0.00	0.00	0.00	0.040
788	21.52	0.00	0.00	0.00	0.00	0.040
789	21.55	0.00	0.00	0.00	0.00	0.040
790	21.58	0.00	0.00	0.00	0.00	0.039
791	21.61	0.00	0.00	0.00	0.00	0.039
792	21.63	0.00	0.00	0.00	0.00	0.039
793	21.66	0.00	0.00	0.00	0.00	0.038
794	21.69	0.00	0.00	0.00	0.00	0.038
795	21.72	0.00	0.00	0.00	0.00	0.037
796	21.74	0.00	0.00	0.00	0.00	0.037
797	21.77	0.00	0.00	0.00	0.00	0.037
798	21.80	0.00	0.00	0.00	0.00	0.036
799	21.82	0.00	0.00	0.00	0.00	0.036
800	21.85	0.00	0.00	0.00	0.00	0.036
801	21.88	0.00	0.00	0.00	0.00	0.035
802	21.91	0.00	0.00	0.00	0.00	0.035
803	21.93	0.00	0.00	0.00	0.00	0.035
804	21.96	0.00	0.00	0.00	0.00	0.034
805	21.99	0.00	0.00	0.00	0.00	0.034
806	22.02	0.00	0.00	0.00	0.00	0.033
807	22.04	0.00	0.00	0.00	0.00	0.033
808	22.07	0.00	0.00	0.00	0.00	0.033
809	22.10	0.00	0.00	0.00	0.00	0.032
810	22.13	0.00	0.00	0.00	0.00	0.032
811	22.15	0.00	0.00	0.00	0.00	0.032

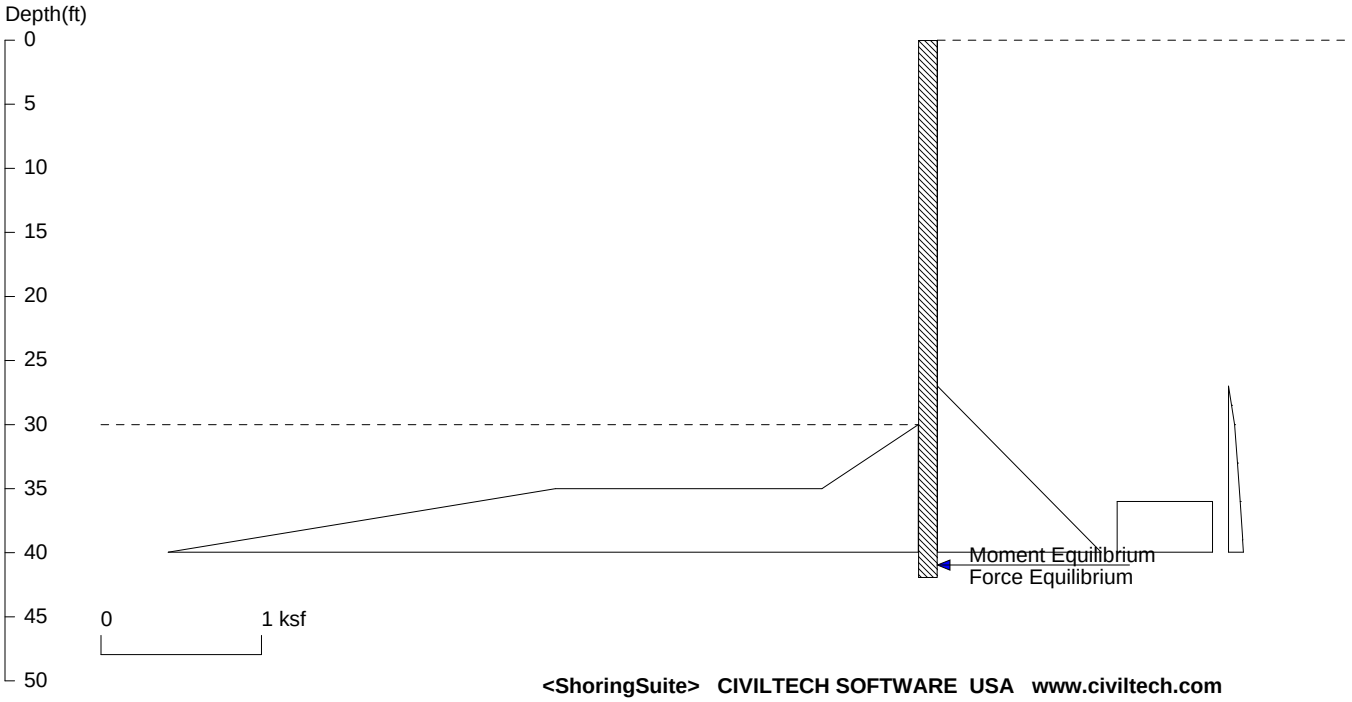
812	22.18	0.00	0.00	0.00	0.00	0.031
813	22.21	0.00	0.00	0.00	0.00	0.031
814	22.23	0.00	0.00	0.00	0.00	0.030
815	22.26	0.00	0.00	0.00	0.00	0.030
816	22.29	0.00	0.00	0.00	0.00	0.030
817	22.32	0.00	0.00	0.00	0.00	0.029
818	22.34	0.00	0.00	0.00	0.00	0.029
819	22.37	0.00	0.00	0.00	0.00	0.029
820	22.40	0.00	0.00	0.00	0.00	0.028
821	22.43	0.00	0.00	0.00	0.00	0.028
822	22.45	0.00	0.00	0.00	0.00	0.028
823	22.48	0.00	0.00	0.00	0.00	0.027
824	22.51	0.00	0.00	0.00	0.00	0.027
825	22.54	0.00	0.00	0.00	0.00	0.026
826	22.56	0.00	0.00	0.00	0.00	0.026
827	22.59	0.00	0.00	0.00	0.00	0.026
828	22.62	0.00	0.00	0.00	0.00	0.025
829	22.64	0.00	0.00	0.00	0.00	0.025
830	22.67	0.00	0.00	0.00	0.00	0.025
831	22.70	0.00	0.00	0.00	0.00	0.024
832	22.73	0.00	0.00	0.00	0.00	0.024
833	22.75	0.00	0.00	0.00	0.00	0.023
834	22.78	0.00	0.00	0.00	0.00	0.023
835	22.81	0.00	0.00	0.00	0.00	0.023
836	22.84	0.00	0.00	0.00	0.00	0.022
837	22.86	0.00	0.00	0.00	0.00	0.022
838	22.89	0.00	0.00	0.00	0.00	0.022
839	22.92	0.00	0.00	0.00	0.00	0.021
840	22.95	0.00	0.00	0.00	0.00	0.021
841	22.97	0.00	0.00	0.00	0.00	0.021
842	23.00	0.00	0.00	0.00	0.00	0.020
843	23.03	0.00	0.00	0.00	0.00	0.020
844	23.06	0.00	0.00	0.00	0.00	0.019
845	23.08	0.00	0.00	0.00	0.00	0.019
846	23.11	0.00	0.00	0.00	0.00	0.019
847	23.14	0.00	0.00	0.00	0.00	0.018
848	23.16	0.00	0.00	0.00	0.00	0.018
849	23.19	0.00	0.00	0.00	0.00	0.018
850	23.22	0.00	0.00	0.00	0.00	0.017
851	23.25	0.00	0.00	0.00	0.00	0.017
852	23.27	0.00	0.00	0.00	0.00	0.017
853	23.30	0.00	0.00	0.00	0.00	0.016
854	23.33	0.00	0.00	0.00	0.00	0.016
855	23.36	0.00	0.00	0.00	0.00	0.015
856	23.38	0.00	0.00	0.00	0.00	0.015
857	23.41	0.00	0.00	0.00	0.00	0.015
858	23.44	0.00	0.00	0.00	0.00	0.014
859	23.47	0.00	0.00	0.00	0.00	0.014
860	23.49	0.00	0.00	0.00	0.00	0.014
861	23.52	0.00	0.00	0.00	0.00	0.013

862	23.55	0.00	0.00	0.00	0.00	0.013
863	23.57	0.00	0.00	0.00	0.00	0.012
864	23.60	0.00	0.00	0.00	0.00	0.012
865	23.63	0.00	0.00	0.00	0.00	0.012
866	23.66	0.00	0.00	0.00	0.00	0.011
867	23.68	0.00	0.00	0.00	0.00	0.011
868	23.71	0.00	0.00	0.00	0.00	0.011
869	23.74	0.00	0.00	0.00	0.00	0.010
870	23.77	0.00	0.00	0.00	0.00	0.010
871	23.79	0.00	0.00	0.00	0.00	0.010
872	23.82	0.00	0.00	0.00	0.00	0.009
873	23.85	0.00	0.00	0.00	0.00	0.009
874	23.88	0.00	0.00	0.00	0.00	0.008
875	23.90	0.00	0.00	0.00	0.00	0.008
876	23.93	0.00	0.00	0.00	0.00	0.008
877	23.96	0.00	0.00	0.00	0.00	0.007
878	23.99	0.00	0.00	0.00	0.00	0.007
879	24.01	0.00	0.00	0.00	0.00	0.007
880	24.04	0.00	0.00	0.00	0.00	0.006
881	24.07	0.00	0.00	0.00	0.00	0.006
882	24.09	0.00	0.00	0.00	0.00	0.006
883	24.12	0.00	0.00	0.00	0.00	0.005
884	24.15	0.00	0.00	0.00	0.00	0.005
885	24.18	0.00	0.00	0.00	0.00	0.004
886	24.20	0.00	0.00	0.00	0.00	0.004
887	24.23	0.00	0.00	0.00	0.00	0.004
888	24.26	0.00	0.00	0.00	0.00	0.003
889	24.29	0.00	0.00	0.00	0.00	0.003
890	24.31	0.00	0.00	0.00	0.00	0.003
891	24.34	0.00	0.00	0.00	0.00	0.002
892	24.37	0.00	0.00	0.00	0.00	0.002
893	24.40	0.00	0.00	0.00	0.00	0.001
894	24.42	0.00	0.00	0.00	0.00	0.001
895	24.45	0.00	0.00	0.00	0.00	0.001
896	24.48	0.00	0.00	0.00	0.00	0.000
897	24.50	-0.25	-0.25	0.00	0.00	0.000
898	24.53	-0.25	-0.25	-0.01	0.00	0.000
899	24.56	-0.25	-0.25	-0.01	0.00	0.000

The above data can be selected using mouse, then copy and paste into Excel to create graphics

Douglass Street (West) Section A - Phase II REVISED

Fresh ISS El -24 to El -29 DRAINED Rev Mounding



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Wall Height=30.0 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=11.95 Min. Pile Length=41.95
MOMENT IN PILE: Max. Moment=7.00 per Pile Spacing=1.0 at Depth=36.59

PILE SELECTION:
Request Min. Section Modulus = 2.5 in3/ft=136.83 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 2.76(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	27	0.000	0.000000
27	0.000	100	5.743	0.078671
36	0.594	100	0.594	0.000000
*	Sur-	charge		
27.000	0.000	28.500	0.019	0.012703
28.500	0.019	30.000	0.038	0.012452
30.000	0.038	33.000	0.056	0.005983
33.000	0.056	36.000	0.073	0.005636
36.000	0.073	39.000	0.088	0.005204
39.000	0.088	42.000	0.102	0.004708

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.3

Z1	P1	Z2	P2	Slope
30	0	35	0.600	0.1200
35	2.262	100	33.86	0.4862

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	1.00
2	30.00	1.00

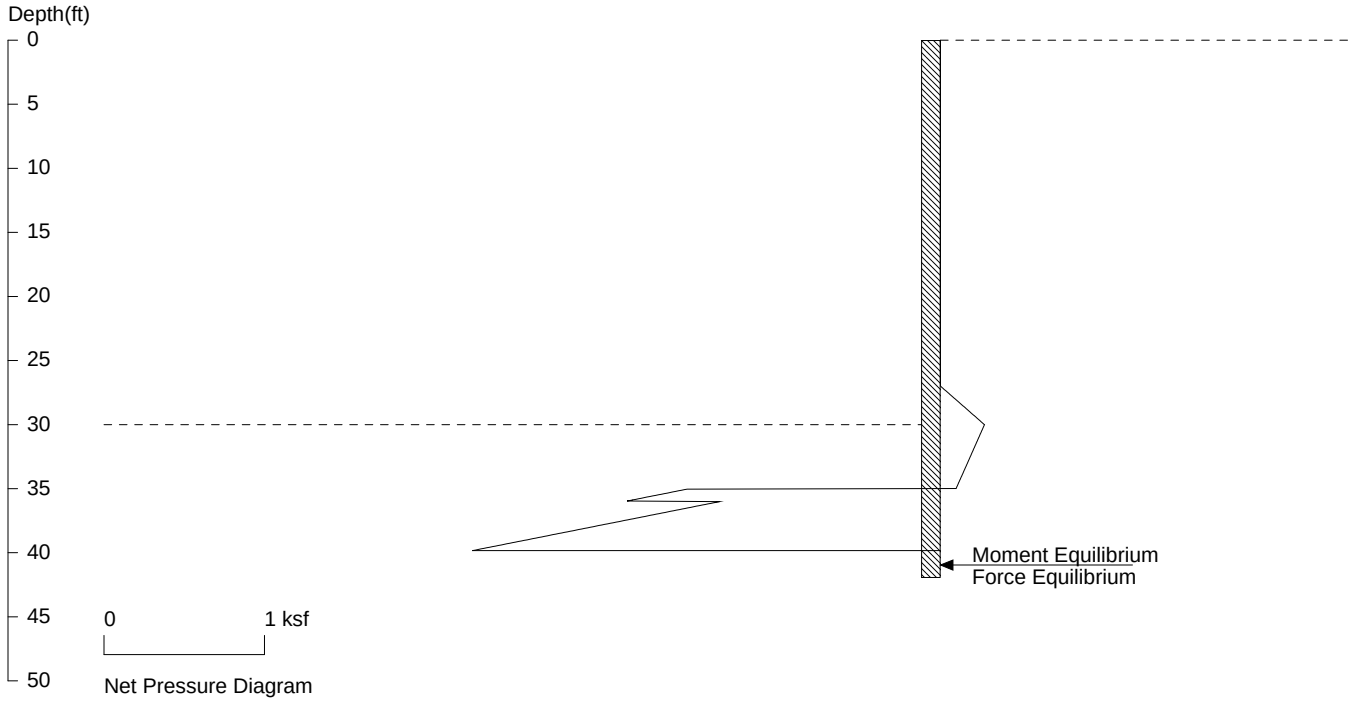
PASSIVE SPACING:

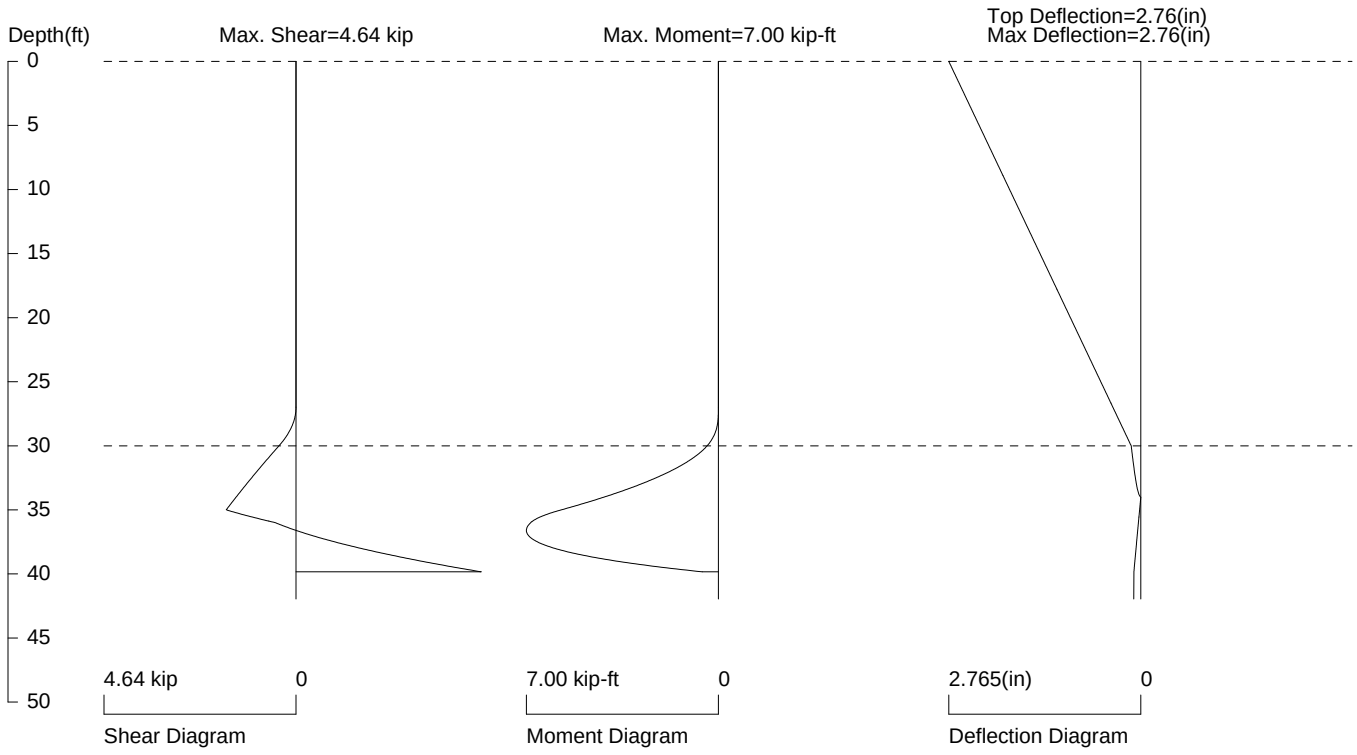
No.	Z depth	Spacing
1	0.00	1.00

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

Douglass Street (West) Section A - Phase II REVISED

Fresh ISS El -24 to El -29 DRAINED Rev Mounding





PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 1.0 foot or meter

User Input I: E (ksi)=29000.0, I (in4)/foot=656.2

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**************************************************************************

                        SHORING WALL CALCULATION SUMMARY
                  The leading shoring design and calculation software
                        Software Copyright by CivilTech Software
                              www.civiltech.com

**************************************************************************
ShoringSuite Software is developed by CivilTech Software, Bellevue, WA, USA.
The calculation method is based on the following references:
    1. FHWA 98-011, FHWA-RD-97-130, FHWA SA 96-069, FHWA-IF-99-015
    2. STEEL SHEET PILING DESIGN MANUAL by Pile Buck Inc., 1987
    3. DESIGN MANUAL DM-7 (NAVFAC), Department of the Navy, May 1982
    4. TRENCHING AND SHORING MANUAL Revision 12, California Department of
       Transportation, January 2000
    6. EARTH SUPPORT SYSTEM & RETAINING STRUCTURES, Pile Buck Inc. 2002
    5. DESIGN OF SHEET PILE WALLS, EM 1110-2-2504, U.S. Army Corps of Engineers, 31
March 1994
    7. EARTH RETENTION SYSTEMS HANDBOOK, Alan Macnab, McGraw-Hill. 2002
    8. Temporary Structures in Construction, Robert T. Ratay (Co-author of Chapter
7: John J. Peirce), McGraw-Hill. 2012
    9. AASHTO HB-17, American Association of State and Highway Transportation
Officials, 2 September 2002

UNITS:   Width/Spacing/Diameter/Length/Depth - ft, Force - kip, Moment - kip-ft,
Friction/Bearing/Pressure - ksf, Pres. Slope - kip/ft3, Deflection - in
--------------------------------------------------------------------------
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Date: 1/10/2020  File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street
(W)\Section A Phase II Fresh ISS REVISED DRAINED.sh8

Title: Douglass Street (West) Section A - Phase II REVISED
Subtitle: Fresh ISS El -24 to El -29 DRAINED Rev Mounding

**********************************INPUT DATA**********************************
Wall Type: 1. Sheet Pile
        Wall Height: 30.00
        Pile Diameter: 1.00
        Pile Spacing: 1.00
        Factor of Safety (F.S.): 1.30
Lateral Support Type (Braces): 1. No
        Top Brace Increase (Multi-Bracing): Add 15%*
Embedment Option: 1. Yes
        Friction at Pile Tip: No
Pile Properties:
        Steel Strength, Fy:  50 ksi = 345 MPa
        Allowable Fb/Fy: 0.66
        Elastic Module, E: 29000.00
        Moment of Inertia, I: 656.2
        User Input Pile:
```

* DRIVING PRESSURE (ACTIVE, WATER, & SURCHARGE) *

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	0	0	27	0.000	0.000000
2	27	0.000	100	5.743	0.078671
3	36	0.594	100	0.594	0.000000
4	*	Sur-	charge		
5	27.000	0.000	28.500	0.019	0.012703
6	28.500	0.019	30.000	0.038	0.012452
7	30.000	0.038	33.000	0.056	0.005983
8	33.000	0.056	36.000	0.073	0.005636
9	36.000	0.073	39.000	0.088	0.005204
10	39.000	0.088	42.000	0.102	0.004708
11	42.000	0.102	45.000	0.115	0.004172
12	45.000	0.115	48.000	0.126	0.003616
13	48.000	0.126	51.000	0.135	0.003059
14	51.000	0.135	54.000	0.142	0.002517
15	54.000	0.142	57.000	0.148	0.002002
16	57.000	0.148	60.000	0.153	0.001522
17	60.000	0.153	66.000	0.156	0.000542
18	66.000	0.156	72.000	0.158	0.000344
19	72.000	0.158	78.000	0.159	0.000169
20	78.000	0.159	84.000	0.159	0.000016
21	84.000	0.159	90.000	0.159	-0.000117
22	90.000	0.159	96.000	0.157	-0.000230
23	96.000	0.157	102.000	0.155	-0.000325
24	102.000	0.155	108.000	0.153	-0.000405
25	108.000	0.153	114.000	0.147	-0.000993
26	114.000	0.147	120.000	0.140	-0.001159

* PASSIVE PRESSURE *

The pressures below will be divided by a Factor of Safety =1.3

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	30	0	35	0.600	0.1200
2	35	2.262	100	33.86	0.4862

* ACTIVE SPACE *

No.	Z depth	Spacing
1	0.00	1.00
2	30.00	1.00

* PASSIVE SPACE *

No.	Z depth	Spacing

```
 1      0.00            1.00
--------------------------------------------------------------------------------
*For Tieback:  Input1 = Diameter;  Input2 = Bond Strength
*For Plate:  Input1 = Diameter;  Input2 = Allowable Pressure
*For Deadman:  Input1 = Horz. Width;  Input2 = Passive Pressure;
*For Sheet Pile Anchor:  Input1 = Horz. Width;  Input2 = Passive Slope;


*******************************CALCULATION*********************************

   The calculated moment and shear are per pile spacing.  Sheet piles are per one
foot or meter; Soldier piles are per pile.

   Top Pressures start at depth =  0.00


        |      D1=0.00
        |
        |
        |
      ==|==    D2=30.00
        |
        |
        |      D3=41.95

        D1 - TOP DEPTH
        D2 - EXCAVATION BASE
        D3 - PILE TIP

   MOMENT equilibrium   AT DEPTH=39.96  WITH EMBEDMENT OF 9.96
   FORCE equilibrium   AT DEPTH=41.95  WITH EMBEDMENT OF 11.95

   The program calculates an embedment for moment equilibrium, then increase the
embedment by 1.2


*********************************RESULTS***********************************

* EMBEDMENT Notes *
Based on USS Design Manual, first calculate embedment for moment equilibrium, then
increased the embedment to get the design depth.
The embedment for moment equilibrium is 9.96
The program calculates an embedment for moment equilibrium, then increase the
embedment by 1.2
The total desigh embedment is 11.95

Embedment Information:
If 20% increased, the total design embedment is 11.95
If 30% increased, the total design embedment is 12.95
If 40% increased, the total design embedment is 13.95
```

If 50% increased, the total design embedment is 14.94

* MOMENT IN PILE (per pile spacing)*
Pile Spacing: sheet piles are one foot or one meter; soldier piles are one pile.
Overall Maximum Moment = 7.00 at 36.59
Maximum Shear = 4.64
Moment and Shear are per pile spacing: 1.0 foot or meter

* VERTICAL LOADING *
Vertical Loading from Braces = 0.00
Vertical Loading from External Load = 0.00
Total Vertical Loading = 0.00

* DEFLECTION *
I (in4)/foot=656.20
Top deflection = 2.765(in)
Max. deflection = 2.765(in)

********PRESSURE, LOAD, SHEAR, MOMENT, AND DEFLECTION v.s. DEPTH**********

The shear and moment are per single soldier pile (secant/tangent pile) or one foot of sheet pile (concrete wall). The deflection is based on users input pile below:
User Input I (Moment of Inertia)
Elastic Module, E (ksi)= 29000.00
Moment of Inertia, I (in4)/foot= 656.2

PRESS. - Sum of all pressures (Net pressure). (Active) direction is positive
LOAD - Liner load (force per unit depth) = Pressures multiply by acting space

No	DEPTH ft	PRESS. ksf	LOAD kip/ft	SHEAR kip	MOMENT kip-ft	DEFLECTION in
1	0.00	0.00	0.00	0.00	0.00	2.765
2	0.04	0.00	0.00	0.00	0.00	2.761
3	0.09	0.00	0.00	0.00	0.00	2.757
4	0.13	0.00	0.00	0.00	0.00	2.753
5	0.18	0.00	0.00	0.00	0.00	2.749
6	0.22	0.00	0.00	0.00	0.00	2.745
7	0.27	0.00	0.00	0.00	0.00	2.741
8	0.31	0.00	0.00	0.00	0.00	2.737
9	0.36	0.00	0.00	0.00	0.00	2.734
10	0.40	0.00	0.00	0.00	0.00	2.730
11	0.44	0.00	0.00	0.00	0.00	2.726
12	0.49	0.00	0.00	0.00	0.00	2.722
13	0.53	0.00	0.00	0.00	0.00	2.718

14	0.58	0.00	0.00	0.00	0.00	2.714
15	0.62	0.00	0.00	0.00	0.00	2.710
16	0.67	0.00	0.00	0.00	0.00	2.706
17	0.71	0.00	0.00	0.00	0.00	2.702
18	0.76	0.00	0.00	0.00	0.00	2.699
19	0.80	0.00	0.00	0.00	0.00	2.695
20	0.84	0.00	0.00	0.00	0.00	2.691
21	0.89	0.00	0.00	0.00	0.00	2.687
22	0.93	0.00	0.00	0.00	0.00	2.683
23	0.98	0.00	0.00	0.00	0.00	2.679
24	1.02	0.00	0.00	0.00	0.00	2.675
25	1.07	0.00	0.00	0.00	0.00	2.671
26	1.11	0.00	0.00	0.00	0.00	2.667
27	1.16	0.00	0.00	0.00	0.00	2.664
28	1.20	0.00	0.00	0.00	0.00	2.660
29	1.24	0.00	0.00	0.00	0.00	2.656
30	1.29	0.00	0.00	0.00	0.00	2.652
31	1.33	0.00	0.00	0.00	0.00	2.648
32	1.38	0.00	0.00	0.00	0.00	2.644
33	1.42	0.00	0.00	0.00	0.00	2.640
34	1.47	0.00	0.00	0.00	0.00	2.636
35	1.51	0.00	0.00	0.00	0.00	2.632
36	1.56	0.00	0.00	0.00	0.00	2.628
37	1.60	0.00	0.00	0.00	0.00	2.625
38	1.64	0.00	0.00	0.00	0.00	2.621
39	1.69	0.00	0.00	0.00	0.00	2.617
40	1.73	0.00	0.00	0.00	0.00	2.613
41	1.78	0.00	0.00	0.00	0.00	2.609
42	1.82	0.00	0.00	0.00	0.00	2.605
43	1.87	0.00	0.00	0.00	0.00	2.601
44	1.91	0.00	0.00	0.00	0.00	2.597
45	1.96	0.00	0.00	0.00	0.00	2.593
46	2.00	0.00	0.00	0.00	0.00	2.590
47	2.05	0.00	0.00	0.00	0.00	2.586
48	2.09	0.00	0.00	0.00	0.00	2.582
49	2.13	0.00	0.00	0.00	0.00	2.578
50	2.18	0.00	0.00	0.00	0.00	2.574
51	2.22	0.00	0.00	0.00	0.00	2.570
52	2.27	0.00	0.00	0.00	0.00	2.566
53	2.31	0.00	0.00	0.00	0.00	2.562
54	2.36	0.00	0.00	0.00	0.00	2.558
55	2.40	0.00	0.00	0.00	0.00	2.555
56	2.45	0.00	0.00	0.00	0.00	2.551
57	2.49	0.00	0.00	0.00	0.00	2.547
58	2.53	0.00	0.00	0.00	0.00	2.543
59	2.58	0.00	0.00	0.00	0.00	2.539
60	2.62	0.00	0.00	0.00	0.00	2.535
61	2.67	0.00	0.00	0.00	0.00	2.531
62	2.71	0.00	0.00	0.00	0.00	2.527
63	2.76	0.00	0.00	0.00	0.00	2.523

64	2.80	0.00	0.00	0.00	0.00	2.520
65	2.85	0.00	0.00	0.00	0.00	2.516
66	2.89	0.00	0.00	0.00	0.00	2.512
67	2.93	0.00	0.00	0.00	0.00	2.508
68	2.98	0.00	0.00	0.00	0.00	2.504
69	3.02	0.00	0.00	0.00	0.00	2.500
70	3.07	0.00	0.00	0.00	0.00	2.496
71	3.11	0.00	0.00	0.00	0.00	2.492
72	3.16	0.00	0.00	0.00	0.00	2.488
73	3.20	0.00	0.00	0.00	0.00	2.484
74	3.25	0.00	0.00	0.00	0.00	2.481
75	3.29	0.00	0.00	0.00	0.00	2.477
76	3.33	0.00	0.00	0.00	0.00	2.473
77	3.38	0.00	0.00	0.00	0.00	2.469
78	3.42	0.00	0.00	0.00	0.00	2.465
79	3.47	0.00	0.00	0.00	0.00	2.461
80	3.51	0.00	0.00	0.00	0.00	2.457
81	3.56	0.00	0.00	0.00	0.00	2.453
82	3.60	0.00	0.00	0.00	0.00	2.449
83	3.65	0.00	0.00	0.00	0.00	2.446
84	3.69	0.00	0.00	0.00	0.00	2.442
85	3.73	0.00	0.00	0.00	0.00	2.438
86	3.78	0.00	0.00	0.00	0.00	2.434
87	3.82	0.00	0.00	0.00	0.00	2.430
88	3.87	0.00	0.00	0.00	0.00	2.426
89	3.91	0.00	0.00	0.00	0.00	2.422
90	3.96	0.00	0.00	0.00	0.00	2.418
91	4.00	0.00	0.00	0.00	0.00	2.414
92	4.05	0.00	0.00	0.00	0.00	2.411
93	4.09	0.00	0.00	0.00	0.00	2.407
94	4.13	0.00	0.00	0.00	0.00	2.403
95	4.18	0.00	0.00	0.00	0.00	2.399
96	4.22	0.00	0.00	0.00	0.00	2.395
97	4.27	0.00	0.00	0.00	0.00	2.391
98	4.31	0.00	0.00	0.00	0.00	2.387
99	4.36	0.00	0.00	0.00	0.00	2.383
100	4.40	0.00	0.00	0.00	0.00	2.379
101	4.45	0.00	0.00	0.00	0.00	2.376
102	4.49	0.00	0.00	0.00	0.00	2.372
103	4.53	0.00	0.00	0.00	0.00	2.368
104	4.58	0.00	0.00	0.00	0.00	2.364
105	4.62	0.00	0.00	0.00	0.00	2.360
106	4.67	0.00	0.00	0.00	0.00	2.356
107	4.71	0.00	0.00	0.00	0.00	2.352
108	4.76	0.00	0.00	0.00	0.00	2.348
109	4.80	0.00	0.00	0.00	0.00	2.344
110	4.85	0.00	0.00	0.00	0.00	2.340
111	4.89	0.00	0.00	0.00	0.00	2.337
112	4.93	0.00	0.00	0.00	0.00	2.333
113	4.98	0.00	0.00	0.00	0.00	2.329

114	5.02	0.00	0.00	0.00	0.00	2.325
115	5.07	0.00	0.00	0.00	0.00	2.321
116	5.11	0.00	0.00	0.00	0.00	2.317
117	5.16	0.00	0.00	0.00	0.00	2.313
118	5.20	0.00	0.00	0.00	0.00	2.309
119	5.25	0.00	0.00	0.00	0.00	2.305
120	5.29	0.00	0.00	0.00	0.00	2.302
121	5.33	0.00	0.00	0.00	0.00	2.298
122	5.38	0.00	0.00	0.00	0.00	2.294
123	5.42	0.00	0.00	0.00	0.00	2.290
124	5.47	0.00	0.00	0.00	0.00	2.286
125	5.51	0.00	0.00	0.00	0.00	2.282
126	5.56	0.00	0.00	0.00	0.00	2.278
127	5.60	0.00	0.00	0.00	0.00	2.274
128	5.65	0.00	0.00	0.00	0.00	2.270
129	5.69	0.00	0.00	0.00	0.00	2.267
130	5.74	0.00	0.00	0.00	0.00	2.263
131	5.78	0.00	0.00	0.00	0.00	2.259
132	5.82	0.00	0.00	0.00	0.00	2.255
133	5.87	0.00	0.00	0.00	0.00	2.251
134	5.91	0.00	0.00	0.00	0.00	2.247
135	5.96	0.00	0.00	0.00	0.00	2.243
136	6.00	0.00	0.00	0.00	0.00	2.239
137	6.05	0.00	0.00	0.00	0.00	2.235
138	6.09	0.00	0.00	0.00	0.00	2.232
139	6.14	0.00	0.00	0.00	0.00	2.228
140	6.18	0.00	0.00	0.00	0.00	2.224
141	6.22	0.00	0.00	0.00	0.00	2.220
142	6.27	0.00	0.00	0.00	0.00	2.216
143	6.31	0.00	0.00	0.00	0.00	2.212
144	6.36	0.00	0.00	0.00	0.00	2.208
145	6.40	0.00	0.00	0.00	0.00	2.204
146	6.45	0.00	0.00	0.00	0.00	2.200
147	6.49	0.00	0.00	0.00	0.00	2.196
148	6.54	0.00	0.00	0.00	0.00	2.193
149	6.58	0.00	0.00	0.00	0.00	2.189
150	6.62	0.00	0.00	0.00	0.00	2.185
151	6.67	0.00	0.00	0.00	0.00	2.181
152	6.71	0.00	0.00	0.00	0.00	2.177
153	6.76	0.00	0.00	0.00	0.00	2.173
154	6.80	0.00	0.00	0.00	0.00	2.169
155	6.85	0.00	0.00	0.00	0.00	2.165
156	6.89	0.00	0.00	0.00	0.00	2.161
157	6.94	0.00	0.00	0.00	0.00	2.158
158	6.98	0.00	0.00	0.00	0.00	2.154
159	7.02	0.00	0.00	0.00	0.00	2.150
160	7.07	0.00	0.00	0.00	0.00	2.146
161	7.11	0.00	0.00	0.00	0.00	2.142
162	7.16	0.00	0.00	0.00	0.00	2.138
163	7.20	0.00	0.00	0.00	0.00	2.134

164	7.25	0.00	0.00	0.00	0.00	2.130
165	7.29	0.00	0.00	0.00	0.00	2.126
166	7.34	0.00	0.00	0.00	0.00	2.123
167	7.38	0.00	0.00	0.00	0.00	2.119
168	7.42	0.00	0.00	0.00	0.00	2.115
169	7.47	0.00	0.00	0.00	0.00	2.111
170	7.51	0.00	0.00	0.00	0.00	2.107
171	7.56	0.00	0.00	0.00	0.00	2.103
172	7.60	0.00	0.00	0.00	0.00	2.099
173	7.65	0.00	0.00	0.00	0.00	2.095
174	7.69	0.00	0.00	0.00	0.00	2.091
175	7.74	0.00	0.00	0.00	0.00	2.088
176	7.78	0.00	0.00	0.00	0.00	2.084
177	7.82	0.00	0.00	0.00	0.00	2.080
178	7.87	0.00	0.00	0.00	0.00	2.076
179	7.91	0.00	0.00	0.00	0.00	2.072
180	7.96	0.00	0.00	0.00	0.00	2.068
181	8.00	0.00	0.00	0.00	0.00	2.064
182	8.05	0.00	0.00	0.00	0.00	2.060
183	8.09	0.00	0.00	0.00	0.00	2.056
184	8.14	0.00	0.00	0.00	0.00	2.052
185	8.18	0.00	0.00	0.00	0.00	2.049
186	8.22	0.00	0.00	0.00	0.00	2.045
187	8.27	0.00	0.00	0.00	0.00	2.041
188	8.31	0.00	0.00	0.00	0.00	2.037
189	8.36	0.00	0.00	0.00	0.00	2.033
190	8.40	0.00	0.00	0.00	0.00	2.029
191	8.45	0.00	0.00	0.00	0.00	2.025
192	8.49	0.00	0.00	0.00	0.00	2.021
193	8.54	0.00	0.00	0.00	0.00	2.017
194	8.58	0.00	0.00	0.00	0.00	2.014
195	8.62	0.00	0.00	0.00	0.00	2.010
196	8.67	0.00	0.00	0.00	0.00	2.006
197	8.71	0.00	0.00	0.00	0.00	2.002
198	8.76	0.00	0.00	0.00	0.00	1.998
199	8.80	0.00	0.00	0.00	0.00	1.994
200	8.85	0.00	0.00	0.00	0.00	1.990
201	8.89	0.00	0.00	0.00	0.00	1.986
202	8.94	0.00	0.00	0.00	0.00	1.982
203	8.98	0.00	0.00	0.00	0.00	1.979
204	9.02	0.00	0.00	0.00	0.00	1.975
205	9.07	0.00	0.00	0.00	0.00	1.971
206	9.11	0.00	0.00	0.00	0.00	1.967
207	9.16	0.00	0.00	0.00	0.00	1.963
208	9.20	0.00	0.00	0.00	0.00	1.959
209	9.25	0.00	0.00	0.00	0.00	1.955
210	9.29	0.00	0.00	0.00	0.00	1.951
211	9.34	0.00	0.00	0.00	0.00	1.947
212	9.38	0.00	0.00	0.00	0.00	1.944
213	9.42	0.00	0.00	0.00	0.00	1.940

214	9.47	0.00	0.00	0.00	0.00	1.936
215	9.51	0.00	0.00	0.00	0.00	1.932
216	9.56	0.00	0.00	0.00	0.00	1.928
217	9.60	0.00	0.00	0.00	0.00	1.924
218	9.65	0.00	0.00	0.00	0.00	1.920
219	9.69	0.00	0.00	0.00	0.00	1.916
220	9.74	0.00	0.00	0.00	0.00	1.912
221	9.78	0.00	0.00	0.00	0.00	1.908
222	9.83	0.00	0.00	0.00	0.00	1.905
223	9.87	0.00	0.00	0.00	0.00	1.901
224	9.91	0.00	0.00	0.00	0.00	1.897
225	9.96	0.00	0.00	0.00	0.00	1.893
226	10.00	0.00	0.00	0.00	0.00	1.889
227	10.05	0.00	0.00	0.00	0.00	1.885
228	10.09	0.00	0.00	0.00	0.00	1.881
229	10.14	0.00	0.00	0.00	0.00	1.877
230	10.18	0.00	0.00	0.00	0.00	1.873
231	10.23	0.00	0.00	0.00	0.00	1.870
232	10.27	0.00	0.00	0.00	0.00	1.866
233	10.31	0.00	0.00	0.00	0.00	1.862
234	10.36	0.00	0.00	0.00	0.00	1.858
235	10.40	0.00	0.00	0.00	0.00	1.854
236	10.45	0.00	0.00	0.00	0.00	1.850
237	10.49	0.00	0.00	0.00	0.00	1.846
238	10.54	0.00	0.00	0.00	0.00	1.842
239	10.58	0.00	0.00	0.00	0.00	1.838
240	10.63	0.00	0.00	0.00	0.00	1.835
241	10.67	0.00	0.00	0.00	0.00	1.831
242	10.71	0.00	0.00	0.00	0.00	1.827
243	10.76	0.00	0.00	0.00	0.00	1.823
244	10.80	0.00	0.00	0.00	0.00	1.819
245	10.85	0.00	0.00	0.00	0.00	1.815
246	10.89	0.00	0.00	0.00	0.00	1.811
247	10.94	0.00	0.00	0.00	0.00	1.807
248	10.98	0.00	0.00	0.00	0.00	1.803
249	11.03	0.00	0.00	0.00	0.00	1.800
250	11.07	0.00	0.00	0.00	0.00	1.796
251	11.11	0.00	0.00	0.00	0.00	1.792
252	11.16	0.00	0.00	0.00	0.00	1.788
253	11.20	0.00	0.00	0.00	0.00	1.784
254	11.25	0.00	0.00	0.00	0.00	1.780
255	11.29	0.00	0.00	0.00	0.00	1.776
256	11.34	0.00	0.00	0.00	0.00	1.772
257	11.38	0.00	0.00	0.00	0.00	1.768
258	11.43	0.00	0.00	0.00	0.00	1.764
259	11.47	0.00	0.00	0.00	0.00	1.761
260	11.51	0.00	0.00	0.00	0.00	1.757
261	11.56	0.00	0.00	0.00	0.00	1.753
262	11.60	0.00	0.00	0.00	0.00	1.749
263	11.65	0.00	0.00	0.00	0.00	1.745

264	11.69	0.00	0.00	0.00	0.00	1.741
265	11.74	0.00	0.00	0.00	0.00	1.737
266	11.78	0.00	0.00	0.00	0.00	1.733
267	11.83	0.00	0.00	0.00	0.00	1.729
268	11.87	0.00	0.00	0.00	0.00	1.726
269	11.91	0.00	0.00	0.00	0.00	1.722
270	11.96	0.00	0.00	0.00	0.00	1.718
271	12.00	0.00	0.00	0.00	0.00	1.714
272	12.05	0.00	0.00	0.00	0.00	1.710
273	12.09	0.00	0.00	0.00	0.00	1.706
274	12.14	0.00	0.00	0.00	0.00	1.702
275	12.18	0.00	0.00	0.00	0.00	1.698
276	12.23	0.00	0.00	0.00	0.00	1.694
277	12.27	0.00	0.00	0.00	0.00	1.691
278	12.31	0.00	0.00	0.00	0.00	1.687
279	12.36	0.00	0.00	0.00	0.00	1.683
280	12.40	0.00	0.00	0.00	0.00	1.679
281	12.45	0.00	0.00	0.00	0.00	1.675
282	12.49	0.00	0.00	0.00	0.00	1.671
283	12.54	0.00	0.00	0.00	0.00	1.667
284	12.58	0.00	0.00	0.00	0.00	1.663
285	12.63	0.00	0.00	0.00	0.00	1.659
286	12.67	0.00	0.00	0.00	0.00	1.656
287	12.71	0.00	0.00	0.00	0.00	1.652
288	12.76	0.00	0.00	0.00	0.00	1.648
289	12.80	0.00	0.00	0.00	0.00	1.644
290	12.85	0.00	0.00	0.00	0.00	1.640
291	12.89	0.00	0.00	0.00	0.00	1.636
292	12.94	0.00	0.00	0.00	0.00	1.632
293	12.98	0.00	0.00	0.00	0.00	1.628
294	13.03	0.00	0.00	0.00	0.00	1.624
295	13.07	0.00	0.00	0.00	0.00	1.620
296	13.11	0.00	0.00	0.00	0.00	1.617
297	13.16	0.00	0.00	0.00	0.00	1.613
298	13.20	0.00	0.00	0.00	0.00	1.609
299	13.25	0.00	0.00	0.00	0.00	1.605
300	13.29	0.00	0.00	0.00	0.00	1.601
301	13.34	0.00	0.00	0.00	0.00	1.597
302	13.38	0.00	0.00	0.00	0.00	1.593
303	13.43	0.00	0.00	0.00	0.00	1.589
304	13.47	0.00	0.00	0.00	0.00	1.585
305	13.52	0.00	0.00	0.00	0.00	1.582
306	13.56	0.00	0.00	0.00	0.00	1.578
307	13.60	0.00	0.00	0.00	0.00	1.574
308	13.65	0.00	0.00	0.00	0.00	1.570
309	13.69	0.00	0.00	0.00	0.00	1.566
310	13.74	0.00	0.00	0.00	0.00	1.562
311	13.78	0.00	0.00	0.00	0.00	1.558
312	13.83	0.00	0.00	0.00	0.00	1.554
313	13.87	0.00	0.00	0.00	0.00	1.550

314	13.92	0.00	0.00	0.00	0.00	1.547
315	13.96	0.00	0.00	0.00	0.00	1.543
316	14.00	0.00	0.00	0.00	0.00	1.539
317	14.05	0.00	0.00	0.00	0.00	1.535
318	14.09	0.00	0.00	0.00	0.00	1.531
319	14.14	0.00	0.00	0.00	0.00	1.527
320	14.18	0.00	0.00	0.00	0.00	1.523
321	14.23	0.00	0.00	0.00	0.00	1.519
322	14.27	0.00	0.00	0.00	0.00	1.515
323	14.32	0.00	0.00	0.00	0.00	1.512
324	14.36	0.00	0.00	0.00	0.00	1.508
325	14.40	0.00	0.00	0.00	0.00	1.504
326	14.45	0.00	0.00	0.00	0.00	1.500
327	14.49	0.00	0.00	0.00	0.00	1.496
328	14.54	0.00	0.00	0.00	0.00	1.492
329	14.58	0.00	0.00	0.00	0.00	1.488
330	14.63	0.00	0.00	0.00	0.00	1.484
331	14.67	0.00	0.00	0.00	0.00	1.480
332	14.72	0.00	0.00	0.00	0.00	1.476
333	14.76	0.00	0.00	0.00	0.00	1.473
334	14.80	0.00	0.00	0.00	0.00	1.469
335	14.85	0.00	0.00	0.00	0.00	1.465
336	14.89	0.00	0.00	0.00	0.00	1.461
337	14.94	0.00	0.00	0.00	0.00	1.457
338	14.98	0.00	0.00	0.00	0.00	1.453
339	15.03	0.00	0.00	0.00	0.00	1.449
340	15.07	0.00	0.00	0.00	0.00	1.445
341	15.12	0.00	0.00	0.00	0.00	1.441
342	15.16	0.00	0.00	0.00	0.00	1.438
343	15.20	0.00	0.00	0.00	0.00	1.434
344	15.25	0.00	0.00	0.00	0.00	1.430
345	15.29	0.00	0.00	0.00	0.00	1.426
346	15.34	0.00	0.00	0.00	0.00	1.422
347	15.38	0.00	0.00	0.00	0.00	1.418
348	15.43	0.00	0.00	0.00	0.00	1.414
349	15.47	0.00	0.00	0.00	0.00	1.410
350	15.52	0.00	0.00	0.00	0.00	1.406
351	15.56	0.00	0.00	0.00	0.00	1.403
352	15.60	0.00	0.00	0.00	0.00	1.399
353	15.65	0.00	0.00	0.00	0.00	1.395
354	15.69	0.00	0.00	0.00	0.00	1.391
355	15.74	0.00	0.00	0.00	0.00	1.387
356	15.78	0.00	0.00	0.00	0.00	1.383
357	15.83	0.00	0.00	0.00	0.00	1.379
358	15.87	0.00	0.00	0.00	0.00	1.375
359	15.92	0.00	0.00	0.00	0.00	1.371
360	15.96	0.00	0.00	0.00	0.00	1.368
361	16.00	0.00	0.00	0.00	0.00	1.364
362	16.05	0.00	0.00	0.00	0.00	1.360
363	16.09	0.00	0.00	0.00	0.00	1.356

364	16.14	0.00	0.00	0.00	0.00	1.352
365	16.18	0.00	0.00	0.00	0.00	1.348
366	16.23	0.00	0.00	0.00	0.00	1.344
367	16.27	0.00	0.00	0.00	0.00	1.340
368	16.32	0.00	0.00	0.00	0.00	1.336
369	16.36	0.00	0.00	0.00	0.00	1.332
370	16.40	0.00	0.00	0.00	0.00	1.329
371	16.45	0.00	0.00	0.00	0.00	1.325
372	16.49	0.00	0.00	0.00	0.00	1.321
373	16.54	0.00	0.00	0.00	0.00	1.317
374	16.58	0.00	0.00	0.00	0.00	1.313
375	16.63	0.00	0.00	0.00	0.00	1.309
376	16.67	0.00	0.00	0.00	0.00	1.305
377	16.72	0.00	0.00	0.00	0.00	1.301
378	16.76	0.00	0.00	0.00	0.00	1.297
379	16.80	0.00	0.00	0.00	0.00	1.294
380	16.85	0.00	0.00	0.00	0.00	1.290
381	16.89	0.00	0.00	0.00	0.00	1.286
382	16.94	0.00	0.00	0.00	0.00	1.282
383	16.98	0.00	0.00	0.00	0.00	1.278
384	17.03	0.00	0.00	0.00	0.00	1.274
385	17.07	0.00	0.00	0.00	0.00	1.270
386	17.12	0.00	0.00	0.00	0.00	1.266
387	17.16	0.00	0.00	0.00	0.00	1.262
388	17.21	0.00	0.00	0.00	0.00	1.259
389	17.25	0.00	0.00	0.00	0.00	1.255
390	17.29	0.00	0.00	0.00	0.00	1.251
391	17.34	0.00	0.00	0.00	0.00	1.247
392	17.38	0.00	0.00	0.00	0.00	1.243
393	17.43	0.00	0.00	0.00	0.00	1.239
394	17.47	0.00	0.00	0.00	0.00	1.235
395	17.52	0.00	0.00	0.00	0.00	1.231
396	17.56	0.00	0.00	0.00	0.00	1.227
397	17.61	0.00	0.00	0.00	0.00	1.224
398	17.65	0.00	0.00	0.00	0.00	1.220
399	17.69	0.00	0.00	0.00	0.00	1.216
400	17.74	0.00	0.00	0.00	0.00	1.212
401	17.78	0.00	0.00	0.00	0.00	1.208
402	17.83	0.00	0.00	0.00	0.00	1.204
403	17.87	0.00	0.00	0.00	0.00	1.200
404	17.92	0.00	0.00	0.00	0.00	1.196
405	17.96	0.00	0.00	0.00	0.00	1.192
406	18.01	0.00	0.00	0.00	0.00	1.188
407	18.05	0.00	0.00	0.00	0.00	1.185
408	18.09	0.00	0.00	0.00	0.00	1.181
409	18.14	0.00	0.00	0.00	0.00	1.177
410	18.18	0.00	0.00	0.00	0.00	1.173
411	18.23	0.00	0.00	0.00	0.00	1.169
412	18.27	0.00	0.00	0.00	0.00	1.165
413	18.32	0.00	0.00	0.00	0.00	1.161

414	18.36	0.00	0.00	0.00	0.00	1.157
415	18.41	0.00	0.00	0.00	0.00	1.153
416	18.45	0.00	0.00	0.00	0.00	1.150
417	18.49	0.00	0.00	0.00	0.00	1.146
418	18.54	0.00	0.00	0.00	0.00	1.142
419	18.58	0.00	0.00	0.00	0.00	1.138
420	18.63	0.00	0.00	0.00	0.00	1.134
421	18.67	0.00	0.00	0.00	0.00	1.130
422	18.72	0.00	0.00	0.00	0.00	1.126
423	18.76	0.00	0.00	0.00	0.00	1.122
424	18.81	0.00	0.00	0.00	0.00	1.118
425	18.85	0.00	0.00	0.00	0.00	1.115
426	18.89	0.00	0.00	0.00	0.00	1.111
427	18.94	0.00	0.00	0.00	0.00	1.107
428	18.98	0.00	0.00	0.00	0.00	1.103
429	19.03	0.00	0.00	0.00	0.00	1.099
430	19.07	0.00	0.00	0.00	0.00	1.095
431	19.12	0.00	0.00	0.00	0.00	1.091
432	19.16	0.00	0.00	0.00	0.00	1.087
433	19.21	0.00	0.00	0.00	0.00	1.083
434	19.25	0.00	0.00	0.00	0.00	1.080
435	19.29	0.00	0.00	0.00	0.00	1.076
436	19.34	0.00	0.00	0.00	0.00	1.072
437	19.38	0.00	0.00	0.00	0.00	1.068
438	19.43	0.00	0.00	0.00	0.00	1.064
439	19.47	0.00	0.00	0.00	0.00	1.060
440	19.52	0.00	0.00	0.00	0.00	1.056
441	19.56	0.00	0.00	0.00	0.00	1.052
442	19.61	0.00	0.00	0.00	0.00	1.048
443	19.65	0.00	0.00	0.00	0.00	1.044
444	19.69	0.00	0.00	0.00	0.00	1.041
445	19.74	0.00	0.00	0.00	0.00	1.037
446	19.78	0.00	0.00	0.00	0.00	1.033
447	19.83	0.00	0.00	0.00	0.00	1.029
448	19.87	0.00	0.00	0.00	0.00	1.025
449	19.92	0.00	0.00	0.00	0.00	1.021
450	19.96	0.00	0.00	0.00	0.00	1.017
451	20.01	0.00	0.00	0.00	0.00	1.013
452	20.05	0.00	0.00	0.00	0.00	1.009
453	20.09	0.00	0.00	0.00	0.00	1.006
454	20.14	0.00	0.00	0.00	0.00	1.002
455	20.18	0.00	0.00	0.00	0.00	0.998
456	20.23	0.00	0.00	0.00	0.00	0.994
457	20.27	0.00	0.00	0.00	0.00	0.990
458	20.32	0.00	0.00	0.00	0.00	0.986
459	20.36	0.00	0.00	0.00	0.00	0.982
460	20.41	0.00	0.00	0.00	0.00	0.978
461	20.45	0.00	0.00	0.00	0.00	0.974
462	20.49	0.00	0.00	0.00	0.00	0.971
463	20.54	0.00	0.00	0.00	0.00	0.967

464	20.58	0.00	0.00	0.00	0.00	0.963
465	20.63	0.00	0.00	0.00	0.00	0.959
466	20.67	0.00	0.00	0.00	0.00	0.955
467	20.72	0.00	0.00	0.00	0.00	0.951
468	20.76	0.00	0.00	0.00	0.00	0.947
469	20.81	0.00	0.00	0.00	0.00	0.943
470	20.85	0.00	0.00	0.00	0.00	0.939
471	20.90	0.00	0.00	0.00	0.00	0.936
472	20.94	0.00	0.00	0.00	0.00	0.932
473	20.98	0.00	0.00	0.00	0.00	0.928
474	21.03	0.00	0.00	0.00	0.00	0.924
475	21.07	0.00	0.00	0.00	0.00	0.920
476	21.12	0.00	0.00	0.00	0.00	0.916
477	21.16	0.00	0.00	0.00	0.00	0.912
478	21.21	0.00	0.00	0.00	0.00	0.908
479	21.25	0.00	0.00	0.00	0.00	0.904
480	21.30	0.00	0.00	0.00	0.00	0.901
481	21.34	0.00	0.00	0.00	0.00	0.897
482	21.38	0.00	0.00	0.00	0.00	0.893
483	21.43	0.00	0.00	0.00	0.00	0.889
484	21.47	0.00	0.00	0.00	0.00	0.885
485	21.52	0.00	0.00	0.00	0.00	0.881
486	21.56	0.00	0.00	0.00	0.00	0.877
487	21.61	0.00	0.00	0.00	0.00	0.873
488	21.65	0.00	0.00	0.00	0.00	0.869
489	21.70	0.00	0.00	0.00	0.00	0.865
490	21.74	0.00	0.00	0.00	0.00	0.862
491	21.78	0.00	0.00	0.00	0.00	0.858
492	21.83	0.00	0.00	0.00	0.00	0.854
493	21.87	0.00	0.00	0.00	0.00	0.850
494	21.92	0.00	0.00	0.00	0.00	0.846
495	21.96	0.00	0.00	0.00	0.00	0.842
496	22.01	0.00	0.00	0.00	0.00	0.838
497	22.05	0.00	0.00	0.00	0.00	0.834
498	22.10	0.00	0.00	0.00	0.00	0.830
499	22.14	0.00	0.00	0.00	0.00	0.827
500	22.18	0.00	0.00	0.00	0.00	0.823
501	22.23	0.00	0.00	0.00	0.00	0.819
502	22.27	0.00	0.00	0.00	0.00	0.815
503	22.32	0.00	0.00	0.00	0.00	0.811
504	22.36	0.00	0.00	0.00	0.00	0.807
505	22.41	0.00	0.00	0.00	0.00	0.803
506	22.45	0.00	0.00	0.00	0.00	0.799
507	22.50	0.00	0.00	0.00	0.00	0.795
508	22.54	0.00	0.00	0.00	0.00	0.792
509	22.58	0.00	0.00	0.00	0.00	0.788
510	22.63	0.00	0.00	0.00	0.00	0.784
511	22.67	0.00	0.00	0.00	0.00	0.780
512	22.72	0.00	0.00	0.00	0.00	0.776
513	22.76	0.00	0.00	0.00	0.00	0.772

514	22.81	0.00	0.00	0.00	0.00	0.768
515	22.85	0.00	0.00	0.00	0.00	0.764
516	22.90	0.00	0.00	0.00	0.00	0.760
517	22.94	0.00	0.00	0.00	0.00	0.757
518	22.98	0.00	0.00	0.00	0.00	0.753
519	23.03	0.00	0.00	0.00	0.00	0.749
520	23.07	0.00	0.00	0.00	0.00	0.745
521	23.12	0.00	0.00	0.00	0.00	0.741
522	23.16	0.00	0.00	0.00	0.00	0.737
523	23.21	0.00	0.00	0.00	0.00	0.733
524	23.25	0.00	0.00	0.00	0.00	0.729
525	23.30	0.00	0.00	0.00	0.00	0.725
526	23.34	0.00	0.00	0.00	0.00	0.721
527	23.38	0.00	0.00	0.00	0.00	0.718
528	23.43	0.00	0.00	0.00	0.00	0.714
529	23.47	0.00	0.00	0.00	0.00	0.710
530	23.52	0.00	0.00	0.00	0.00	0.706
531	23.56	0.00	0.00	0.00	0.00	0.702
532	23.61	0.00	0.00	0.00	0.00	0.698
533	23.65	0.00	0.00	0.00	0.00	0.694
534	23.70	0.00	0.00	0.00	0.00	0.690
535	23.74	0.00	0.00	0.00	0.00	0.686
536	23.78	0.00	0.00	0.00	0.00	0.683
537	23.83	0.00	0.00	0.00	0.00	0.679
538	23.87	0.00	0.00	0.00	0.00	0.675
539	23.92	0.00	0.00	0.00	0.00	0.671
540	23.96	0.00	0.00	0.00	0.00	0.667
541	24.01	0.00	0.00	0.00	0.00	0.663
542	24.05	0.00	0.00	0.00	0.00	0.659
543	24.10	0.00	0.00	0.00	0.00	0.655
544	24.14	0.00	0.00	0.00	0.00	0.651
545	24.19	0.00	0.00	0.00	0.00	0.648
546	24.23	0.00	0.00	0.00	0.00	0.644
547	24.27	0.00	0.00	0.00	0.00	0.640
548	24.32	0.00	0.00	0.00	0.00	0.636
549	24.36	0.00	0.00	0.00	0.00	0.632
550	24.41	0.00	0.00	0.00	0.00	0.628
551	24.45	0.00	0.00	0.00	0.00	0.624
552	24.50	0.00	0.00	0.00	0.00	0.620
553	24.54	0.00	0.00	0.00	0.00	0.616
554	24.59	0.00	0.00	0.00	0.00	0.613
555	24.63	0.00	0.00	0.00	0.00	0.609
556	24.67	0.00	0.00	0.00	0.00	0.605
557	24.72	0.00	0.00	0.00	0.00	0.601
558	24.76	0.00	0.00	0.00	0.00	0.597
559	24.81	0.00	0.00	0.00	0.00	0.593
560	24.85	0.00	0.00	0.00	0.00	0.589
561	24.90	0.00	0.00	0.00	0.00	0.585
562	24.94	0.00	0.00	0.00	0.00	0.581
563	24.99	0.00	0.00	0.00	0.00	0.577

564	25.03	0.00	0.00	0.00	0.00	0.574
565	25.07	0.00	0.00	0.00	0.00	0.570
566	25.12	0.00	0.00	0.00	0.00	0.566
567	25.16	0.00	0.00	0.00	0.00	0.562
568	25.21	0.00	0.00	0.00	0.00	0.558
569	25.25	0.00	0.00	0.00	0.00	0.554
570	25.30	0.00	0.00	0.00	0.00	0.550
571	25.34	0.00	0.00	0.00	0.00	0.546
572	25.39	0.00	0.00	0.00	0.00	0.542
573	25.43	0.00	0.00	0.00	0.00	0.539
574	25.47	0.00	0.00	0.00	0.00	0.535
575	25.52	0.00	0.00	0.00	0.00	0.531
576	25.56	0.00	0.00	0.00	0.00	0.527
577	25.61	0.00	0.00	0.00	0.00	0.523
578	25.65	0.00	0.00	0.00	0.00	0.519
579	25.70	0.00	0.00	0.00	0.00	0.515
580	25.74	0.00	0.00	0.00	0.00	0.511
581	25.79	0.00	0.00	0.00	0.00	0.507
582	25.83	0.00	0.00	0.00	0.00	0.504
583	25.87	0.00	0.00	0.00	0.00	0.500
584	25.92	0.00	0.00	0.00	0.00	0.496
585	25.96	0.00	0.00	0.00	0.00	0.492
586	26.01	0.00	0.00	0.00	0.00	0.488
587	26.05	0.00	0.00	0.00	0.00	0.484
588	26.10	0.00	0.00	0.00	0.00	0.480
589	26.14	0.00	0.00	0.00	0.00	0.476
590	26.19	0.00	0.00	0.00	0.00	0.472
591	26.23	0.00	0.00	0.00	0.00	0.469
592	26.27	0.00	0.00	0.00	0.00	0.465
593	26.32	0.00	0.00	0.00	0.00	0.461
594	26.36	0.00	0.00	0.00	0.00	0.457
595	26.41	0.00	0.00	0.00	0.00	0.453
596	26.45	0.00	0.00	0.00	0.00	0.449
597	26.50	0.00	0.00	0.00	0.00	0.445
598	26.54	0.00	0.00	0.00	0.00	0.441
599	26.59	0.00	0.00	0.00	0.00	0.437
600	26.63	0.00	0.00	0.00	0.00	0.433
601	26.67	0.00	0.00	0.00	0.00	0.430
602	26.72	0.00	0.00	0.00	0.00	0.426
603	26.76	0.00	0.00	0.00	0.00	0.422
604	26.81	0.00	0.00	0.00	0.00	0.418
605	26.85	0.00	0.00	0.00	0.00	0.414
606	26.90	0.00	0.00	0.00	0.00	0.410
607	26.94	0.00	0.00	0.00	0.00	0.406
608	26.99	0.00	0.00	0.00	0.00	0.402
609	27.03	0.00	0.00	0.00	0.00	0.398
610	27.07	0.01	0.01	0.00	0.00	0.395
611	27.12	0.01	0.01	0.00	0.00	0.391
612	27.16	0.01	0.01	0.00	0.00	0.387
613	27.21	0.02	0.02	0.00	0.00	0.383

614	27.25	0.02	0.02	0.00	0.00	0.379
615	27.30	0.03	0.03	0.00	0.00	0.375
616	27.34	0.03	0.03	0.01	0.00	0.371
617	27.39	0.04	0.04	0.01	0.00	0.367
618	27.43	0.04	0.04	0.01	0.00	0.363
619	27.47	0.04	0.04	0.01	0.00	0.360
620	27.52	0.05	0.05	0.01	0.00	0.356
621	27.56	0.05	0.05	0.01	0.00	0.352
622	27.61	0.06	0.06	0.02	0.00	0.348
623	27.65	0.06	0.06	0.02	0.00	0.344
624	27.70	0.06	0.06	0.02	0.01	0.340
625	27.74	0.07	0.07	0.03	0.01	0.336
626	27.79	0.07	0.07	0.03	0.01	0.332
627	27.83	0.08	0.08	0.03	0.01	0.328
628	27.88	0.08	0.08	0.03	0.01	0.325
629	27.92	0.08	0.08	0.04	0.01	0.321
630	27.96	0.09	0.09	0.04	0.01	0.317
631	28.01	0.09	0.09	0.05	0.02	0.313
632	28.05	0.10	0.10	0.05	0.02	0.309
633	28.10	0.10	0.10	0.06	0.02	0.305
634	28.14	0.10	0.10	0.06	0.02	0.301
635	28.19	0.11	0.11	0.06	0.03	0.297
636	28.23	0.11	0.11	0.07	0.03	0.293
637	28.28	0.12	0.12	0.07	0.03	0.289
638	28.32	0.12	0.12	0.08	0.04	0.286
639	28.36	0.12	0.12	0.09	0.04	0.282
640	28.41	0.13	0.13	0.09	0.04	0.278
641	28.45	0.13	0.13	0.10	0.05	0.274
642	28.50	0.14	0.14	0.10	0.05	0.270
643	28.54	0.14	0.14	0.11	0.06	0.266
644	28.59	0.14	0.14	0.11	0.06	0.262
645	28.63	0.15	0.15	0.12	0.07	0.258
646	28.68	0.15	0.15	0.13	0.07	0.254
647	28.72	0.16	0.16	0.14	0.08	0.251
648	28.76	0.16	0.16	0.14	0.08	0.247
649	28.81	0.17	0.17	0.15	0.09	0.243
650	28.85	0.17	0.17	0.16	0.10	0.239
651	28.90	0.17	0.17	0.16	0.10	0.235
652	28.94	0.18	0.18	0.17	0.11	0.231
653	28.99	0.18	0.18	0.18	0.12	0.227
654	29.03	0.19	0.19	0.19	0.13	0.223
655	29.08	0.19	0.19	0.20	0.14	0.219
656	29.12	0.19	0.19	0.21	0.15	0.216
657	29.16	0.20	0.20	0.21	0.15	0.212
658	29.21	0.20	0.20	0.22	0.16	0.208
659	29.25	0.21	0.21	0.23	0.17	0.204
660	29.30	0.21	0.21	0.24	0.18	0.200
661	29.34	0.21	0.21	0.25	0.20	0.196
662	29.39	0.22	0.22	0.26	0.21	0.192
663	29.43	0.22	0.22	0.27	0.22	0.188

664	29.48	0.23	0.23	0.28	0.23	0.184
665	29.52	0.23	0.23	0.29	0.24	0.181
666	29.56	0.23	0.23	0.30	0.26	0.177
667	29.61	0.24	0.24	0.31	0.27	0.173
668	29.65	0.24	0.24	0.32	0.28	0.169
669	29.70	0.25	0.25	0.33	0.30	0.165
670	29.74	0.25	0.25	0.34	0.31	0.161
671	29.79	0.25	0.25	0.35	0.33	0.157
672	29.83	0.26	0.26	0.37	0.35	0.153
673	29.88	0.26	0.26	0.38	0.36	0.149
674	29.92	0.27	0.27	0.39	0.38	0.145
675	29.96	0.27	0.27	0.40	0.40	0.142
676	30.01	0.27	0.27	0.41	0.41	0.138
677	30.05	0.27	0.27	0.43	0.43	0.137
678	30.10	0.27	0.27	0.44	0.45	0.136
679	30.14	0.27	0.27	0.45	0.47	0.135
680	30.19	0.27	0.27	0.46	0.49	0.134
681	30.23	0.27	0.27	0.47	0.51	0.133
682	30.28	0.26	0.26	0.49	0.53	0.132
683	30.32	0.26	0.26	0.50	0.56	0.131
684	30.36	0.26	0.26	0.51	0.58	0.130
685	30.41	0.26	0.26	0.52	0.60	0.129
686	30.45	0.26	0.26	0.53	0.63	0.128
687	30.50	0.26	0.26	0.55	0.65	0.127
688	30.54	0.25	0.25	0.56	0.67	0.126
689	30.59	0.25	0.25	0.57	0.70	0.125
690	30.63	0.25	0.25	0.58	0.72	0.124
691	30.68	0.25	0.25	0.59	0.75	0.123
692	30.72	0.25	0.25	0.61	0.78	0.122
693	30.76	0.25	0.25	0.62	0.80	0.121
694	30.81	0.25	0.25	0.63	0.83	0.120
695	30.85	0.24	0.24	0.64	0.86	0.119
696	30.90	0.24	0.24	0.65	0.89	0.118
697	30.94	0.24	0.24	0.67	0.92	0.117
698	30.99	0.24	0.24	0.68	0.95	0.116
699	31.03	0.24	0.24	0.69	0.98	0.115
700	31.08	0.24	0.24	0.70	1.01	0.114
701	31.12	0.23	0.23	0.71	1.04	0.113
702	31.17	0.23	0.23	0.72	1.07	0.112
703	31.21	0.23	0.23	0.74	1.11	0.111
704	31.25	0.23	0.23	0.75	1.14	0.110
705	31.30	0.23	0.23	0.76	1.17	0.109
706	31.34	0.23	0.23	0.77	1.21	0.108
707	31.39	0.22	0.22	0.78	1.24	0.107
708	31.43	0.22	0.22	0.80	1.28	0.105
709	31.48	0.22	0.22	0.81	1.31	0.104
710	31.52	0.22	0.22	0.82	1.35	0.103
711	31.57	0.22	0.22	0.83	1.38	0.102
712	31.61	0.22	0.22	0.84	1.42	0.101
713	31.65	0.22	0.22	0.85	1.46	0.100

714	31.70	0.21	0.21	0.87	1.50	0.099
715	31.74	0.21	0.21	0.88	1.54	0.098
716	31.79	0.21	0.21	0.89	1.58	0.097
717	31.83	0.21	0.21	0.90	1.62	0.096
718	31.88	0.21	0.21	0.91	1.66	0.095
719	31.92	0.21	0.21	0.92	1.70	0.093
720	31.97	0.20	0.20	0.93	1.74	0.092
721	32.01	0.20	0.20	0.95	1.78	0.091
722	32.05	0.20	0.20	0.96	1.82	0.090
723	32.10	0.20	0.20	0.97	1.86	0.089
724	32.14	0.20	0.20	0.98	1.91	0.088
725	32.19	0.20	0.20	0.99	1.95	0.086
726	32.23	0.20	0.20	1.00	2.00	0.085
727	32.28	0.19	0.19	1.01	2.04	0.084
728	32.32	0.19	0.19	1.03	2.09	0.083
729	32.37	0.19	0.19	1.04	2.13	0.082
730	32.41	0.19	0.19	1.05	2.18	0.080
731	32.45	0.19	0.19	1.06	2.23	0.079
732	32.50	0.19	0.19	1.07	2.27	0.078
733	32.54	0.18	0.18	1.08	2.32	0.077
734	32.59	0.18	0.18	1.09	2.37	0.075
735	32.63	0.18	0.18	1.11	2.42	0.074
736	32.68	0.18	0.18	1.12	2.47	0.073
737	32.72	0.18	0.18	1.13	2.52	0.072
738	32.77	0.18	0.18	1.14	2.57	0.070
739	32.81	0.17	0.17	1.15	2.62	0.069
740	32.85	0.17	0.17	1.16	2.67	0.067
741	32.90	0.17	0.17	1.17	2.72	0.066
742	32.94	0.17	0.17	1.18	2.77	0.065
743	32.99	0.17	0.17	1.20	2.83	0.063
744	33.03	0.17	0.17	1.21	2.88	0.062
745	33.08	0.17	0.17	1.22	2.93	0.060
746	33.12	0.16	0.16	1.23	2.99	0.059
747	33.17	0.16	0.16	1.24	3.04	0.057
748	33.21	0.16	0.16	1.25	3.10	0.055
749	33.25	0.16	0.16	1.26	3.16	0.054
750	33.30	0.16	0.16	1.27	3.21	0.052
751	33.34	0.16	0.16	1.28	3.27	0.050
752	33.39	0.15	0.15	1.30	3.33	0.048
753	33.43	0.15	0.15	1.31	3.38	0.047
754	33.48	0.15	0.15	1.32	3.44	0.045
755	33.52	0.15	0.15	1.33	3.50	0.042
756	33.57	0.15	0.15	1.34	3.56	0.040
757	33.61	0.15	0.15	1.35	3.62	0.038
758	33.65	0.14	0.14	1.36	3.68	0.036
759	33.70	0.14	0.14	1.37	3.74	0.033
760	33.74	0.14	0.14	1.38	3.80	0.030
761	33.79	0.14	0.14	1.39	3.86	0.027
762	33.83	0.14	0.14	1.40	3.93	0.023
763	33.88	0.14	0.14	1.42	3.99	0.019

764	33.92	0.14	0.14	1.43	4.05	0.015
765	33.97	0.13	0.13	1.44	4.12	0.008
766	34.01	0.13	0.13	1.45	4.18	0.000
767	34.05	0.13	0.13	1.46	4.24	0.001
768	34.10	0.13	0.13	1.47	4.31	0.002
769	34.14	0.13	0.13	1.48	4.37	0.002
770	34.19	0.13	0.13	1.49	4.44	0.003
771	34.23	0.12	0.12	1.50	4.51	0.004
772	34.28	0.12	0.12	1.51	4.57	0.005
773	34.32	0.12	0.12	1.52	4.64	0.005
774	34.37	0.12	0.12	1.53	4.71	0.006
775	34.41	0.12	0.12	1.54	4.78	0.007
776	34.45	0.12	0.12	1.56	4.85	0.008
777	34.50	0.11	0.11	1.57	4.92	0.008
778	34.54	0.11	0.11	1.58	4.99	0.009
779	34.59	0.11	0.11	1.59	5.06	0.010
780	34.63	0.11	0.11	1.60	5.13	0.011
781	34.68	0.11	0.11	1.61	5.20	0.012
782	34.72	0.11	0.11	1.62	5.27	0.012
783	34.77	0.10	0.10	1.63	5.34	0.013
784	34.81	0.10	0.10	1.64	5.42	0.014
785	34.85	0.10	0.10	1.65	5.49	0.015
786	34.90	0.10	0.10	1.66	5.56	0.015
787	34.94	0.10	0.10	1.67	5.64	0.016
788	34.99	0.10	0.10	1.68	5.71	0.017
789	35.03	-1.58	-1.58	1.65	5.79	0.018
790	35.08	-1.60	-1.60	1.60	5.86	0.018
791	35.12	-1.61	-1.61	1.56	5.93	0.019
792	35.17	-1.63	-1.63	1.51	6.00	0.020
793	35.21	-1.65	-1.65	1.46	6.06	0.021
794	35.26	-1.67	-1.67	1.41	6.13	0.022
795	35.30	-1.69	-1.69	1.36	6.19	0.022
796	35.34	-1.70	-1.70	1.31	6.25	0.023
797	35.39	-1.72	-1.72	1.26	6.30	0.024
798	35.43	-1.74	-1.74	1.21	6.36	0.025
799	35.48	-1.76	-1.76	1.15	6.41	0.025
800	35.52	-1.78	-1.78	1.10	6.46	0.026
801	35.57	-1.79	-1.79	1.05	6.51	0.027
802	35.61	-1.81	-1.81	0.99	6.55	0.028
803	35.66	-1.83	-1.83	0.94	6.60	0.028
804	35.70	-1.85	-1.85	0.88	6.64	0.029
805	35.74	-1.86	-1.86	0.83	6.68	0.030
806	35.79	-1.88	-1.88	0.77	6.71	0.031
807	35.83	-1.90	-1.90	0.72	6.74	0.031
808	35.88	-1.92	-1.92	0.66	6.77	0.032
809	35.92	-1.94	-1.94	0.60	6.80	0.033
810	35.97	-1.95	-1.95	0.54	6.83	0.034
811	36.01	-1.38	-1.38	0.49	6.85	0.035
812	36.06	-1.40	-1.40	0.46	6.87	0.035
813	36.10	-1.41	-1.41	0.42	6.89	0.036

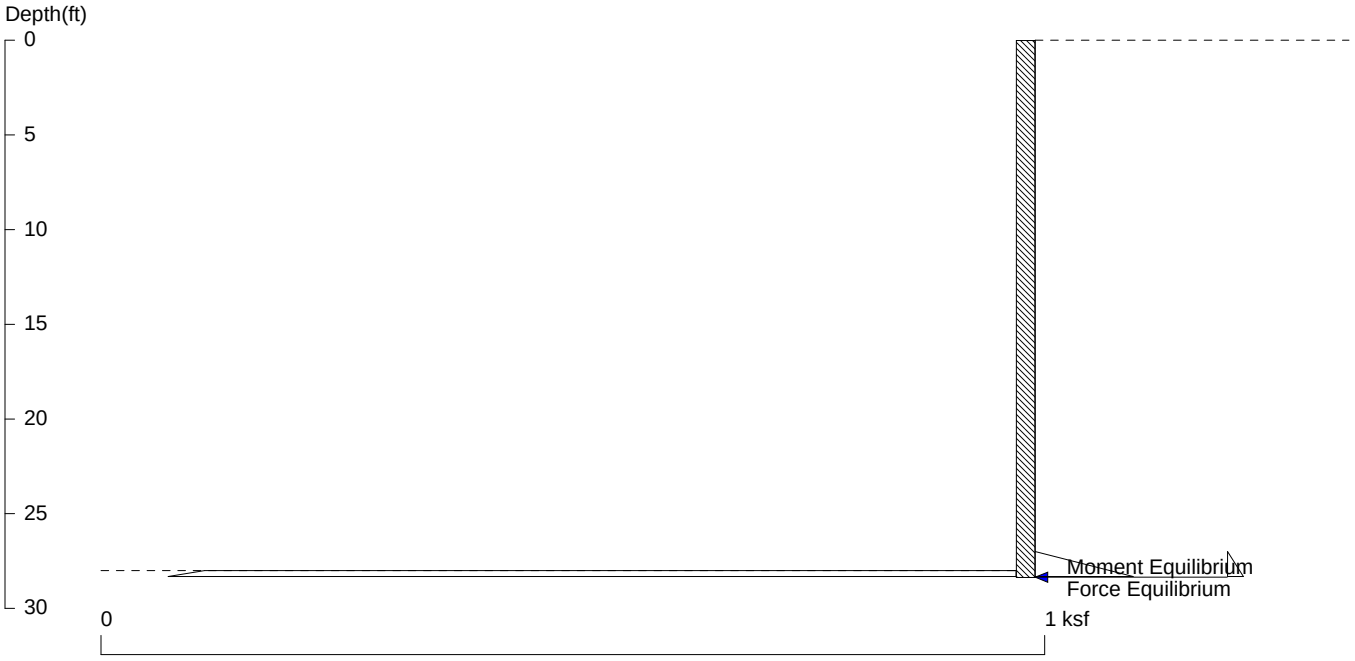
814	36.14	-1.43	-1.43	0.39	6.91	0.037
815	36.19	-1.45	-1.45	0.35	6.93	0.038
816	36.23	-1.47	-1.47	0.32	6.94	0.038
817	36.28	-1.48	-1.48	0.28	6.95	0.039
818	36.32	-1.50	-1.50	0.24	6.97	0.040
819	36.37	-1.52	-1.52	0.21	6.97	0.041
820	36.41	-1.54	-1.54	0.17	6.98	0.041
821	36.46	-1.56	-1.56	0.13	6.99	0.042
822	36.50	-1.57	-1.57	0.09	6.99	0.043
823	36.54	-1.59	-1.59	0.05	7.00	0.044
824	36.59	-1.61	-1.61	0.01	7.00	0.044
825	36.63	-1.63	-1.63	-0.03	7.00	0.045
826	36.68	-1.65	-1.65	-0.07	7.00	0.046
827	36.72	-1.66	-1.66	-0.11	6.99	0.047
828	36.77	-1.68	-1.68	-0.16	6.99	0.047
829	36.81	-1.70	-1.70	-0.20	6.98	0.048
830	36.86	-1.72	-1.72	-0.24	6.97	0.049
831	36.90	-1.74	-1.74	-0.29	6.96	0.050
832	36.94	-1.75	-1.75	-0.33	6.94	0.050
833	36.99	-1.77	-1.77	-0.38	6.93	0.051
834	37.03	-1.79	-1.79	-0.42	6.91	0.052
835	37.08	-1.81	-1.81	-0.47	6.89	0.053
836	37.12	-1.82	-1.82	-0.52	6.87	0.054
837	37.17	-1.84	-1.84	-0.56	6.84	0.054
838	37.21	-1.86	-1.86	-0.61	6.82	0.055
839	37.26	-1.88	-1.88	-0.66	6.79	0.056
840	37.30	-1.90	-1.90	-0.71	6.76	0.057
841	37.34	-1.91	-1.91	-0.76	6.73	0.057
842	37.39	-1.93	-1.93	-0.81	6.69	0.058
843	37.43	-1.95	-1.95	-0.86	6.66	0.059
844	37.48	-1.97	-1.97	-0.91	6.62	0.060
845	37.52	-1.99	-1.99	-0.96	6.57	0.060
846	37.57	-2.00	-2.00	-1.02	6.53	0.061
847	37.61	-2.02	-2.02	-1.07	6.48	0.062
848	37.66	-2.04	-2.04	-1.12	6.43	0.063
849	37.70	-2.06	-2.06	-1.18	6.38	0.063
850	37.74	-2.08	-2.08	-1.23	6.33	0.064
851	37.79	-2.09	-2.09	-1.29	6.27	0.065
852	37.83	-2.11	-2.11	-1.35	6.22	0.066
853	37.88	-2.13	-2.13	-1.40	6.15	0.066
854	37.92	-2.15	-2.15	-1.46	6.09	0.067
855	37.97	-2.16	-2.16	-1.52	6.02	0.068
856	38.01	-2.18	-2.18	-1.58	5.96	0.069
857	38.06	-2.20	-2.20	-1.64	5.88	0.069
858	38.10	-2.22	-2.22	-1.70	5.81	0.070
859	38.14	-2.24	-2.24	-1.76	5.73	0.071
860	38.19	-2.25	-2.25	-1.82	5.65	0.072
861	38.23	-2.27	-2.27	-1.88	5.57	0.072
862	38.28	-2.29	-2.29	-1.94	5.49	0.073
863	38.32	-2.31	-2.31	-2.00	5.40	0.074

864	38.37	-2.33	-2.33	-2.07	5.31	0.075
865	38.41	-2.34	-2.34	-2.13	5.22	0.075
866	38.46	-2.36	-2.36	-2.19	5.12	0.076
867	38.50	-2.38	-2.38	-2.26	5.02	0.077
868	38.54	-2.40	-2.40	-2.32	4.92	0.078
869	38.59	-2.41	-2.41	-2.39	4.81	0.078
870	38.63	-2.43	-2.43	-2.46	4.71	0.079
871	38.68	-2.45	-2.45	-2.52	4.60	0.080
872	38.72	-2.47	-2.47	-2.59	4.48	0.081
873	38.77	-2.49	-2.49	-2.66	4.37	0.081
874	38.81	-2.50	-2.50	-2.73	4.25	0.082
875	38.86	-2.52	-2.52	-2.80	4.12	0.083
876	38.90	-2.54	-2.54	-2.87	4.00	0.084
877	38.94	-2.56	-2.56	-2.94	3.87	0.084
878	38.99	-2.58	-2.58	-3.01	3.74	0.085
879	39.03	-2.59	-2.59	-3.08	3.60	0.086
880	39.08	-2.61	-2.61	-3.15	3.46	0.087
881	39.12	-2.63	-2.63	-3.23	3.32	0.087
882	39.17	-2.65	-2.65	-3.30	3.17	0.088
883	39.21	-2.67	-2.67	-3.37	3.03	0.089
884	39.26	-2.68	-2.68	-3.45	2.87	0.090
885	39.30	-2.70	-2.70	-3.52	2.72	0.090
886	39.35	-2.72	-2.72	-3.60	2.56	0.091
887	39.39	-2.74	-2.74	-3.68	2.40	0.092
888	39.43	-2.76	-2.76	-3.75	2.23	0.093
889	39.48	-2.77	-2.77	-3.83	2.07	0.093
890	39.52	-2.79	-2.79	-3.91	1.89	0.094
891	39.57	-2.81	-2.81	-3.99	1.72	0.095
892	39.61	-2.83	-2.83	-4.07	1.54	0.096
893	39.66	-2.85	-2.85	-4.15	1.36	0.096
894	39.70	-2.86	-2.86	-4.23	1.17	0.097
895	39.75	-2.88	-2.88	-4.31	0.98	0.098
896	39.79	-2.90	-2.90	-4.39	0.79	0.099
897	39.83	-2.92	-2.92	-4.47	0.59	0.099
898	39.88	-2.93	-2.93	-4.55	0.39	0.100
899	39.92	-2.95	-2.95	-4.64	0.19	0.101

The above data can be selected using mouse, then copy and paste into Excel to create graphics

Douglass Street (West) Section A - Phase III

Mature ISS El -22 to El -27 DRAINED/UNDRAINED



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File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Douglass Street Section A Phase III Mature ISS

Wall Height=28.0 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=0.38 (5~10ft is recommended!!!) Min. Pile Length=28.38
MOMENT IN PILE: Max. Moment=0.02 per Pile Spacing=1.0 at Depth=28.07

PILE SELECTION:
Request Min. Section Modulus = 0.0 in3/ft=0.33 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 0.27(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	27	0.000	0.000000
27	0.000	100	5.743	0.078671
*	Sur-	charge		
27.000	0.000	28.500	0.019	0.012703

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.3

Z1	P1	Z2	P2	Slope
28	0.860	33	1.460	0.1200

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	1.00
2	28.00	1.00

PASSIVE SPACING:

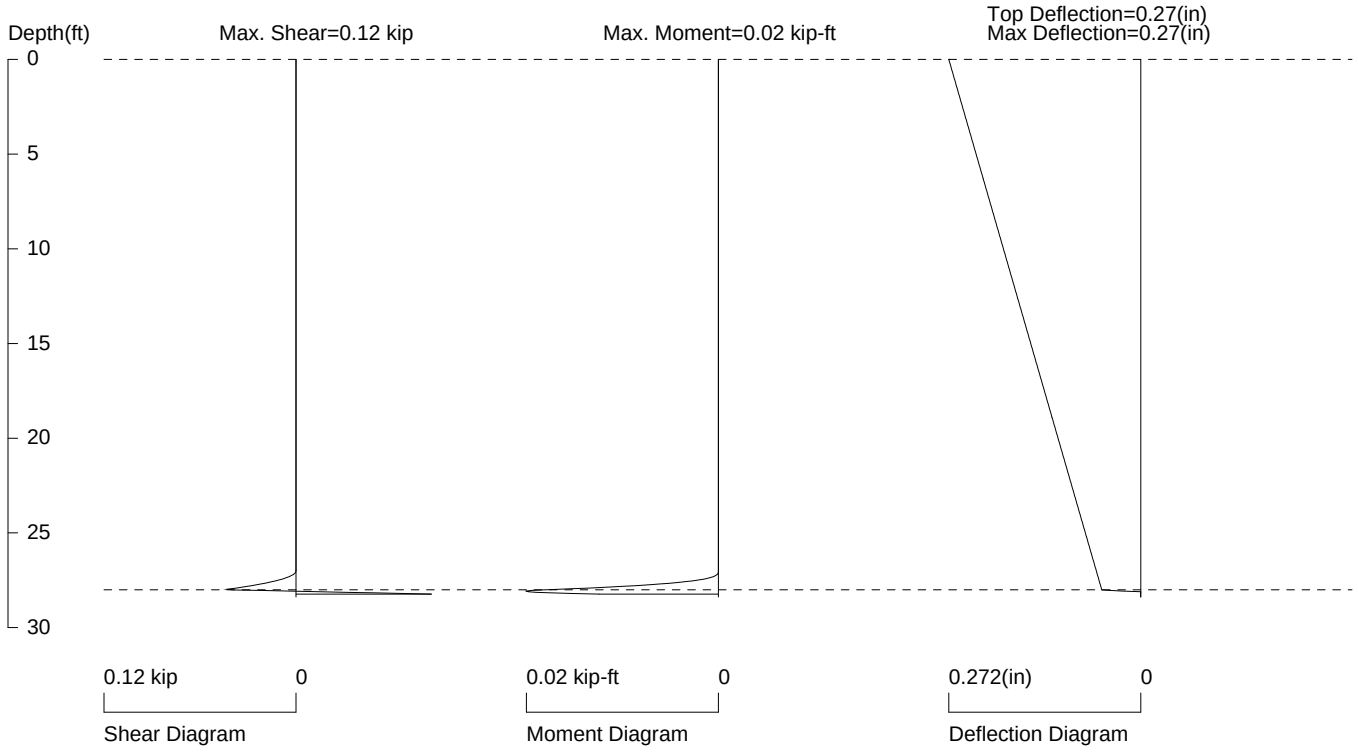
No.	Z depth	Spacing
1	0.00	1.00

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

Douglass Street (West) Section A - Phase III

Mature ISS El -22 to El -27 DRAINED/UNDRAINED

Net Pressure Diagram



Shear Diagram Moment Diagram Deflection Diagram

PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 1.0 foot or meter

User Input I: E (ksi)=29000.0, I (in4)/foot=656.2

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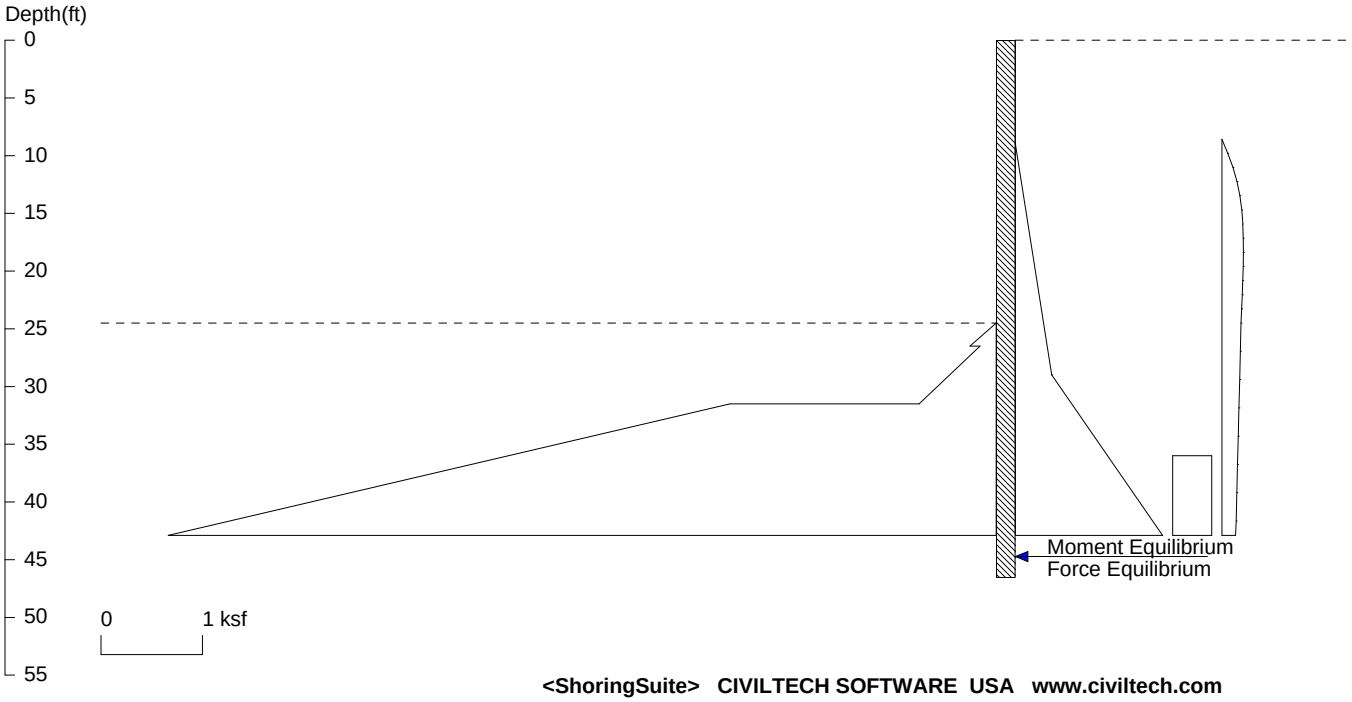
Douglass Street (West) - Phase II Dredge to El -18

Section B - Fresh ISS El -20.5 to El -25.5 DRAINED



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File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section B Phase II Bous Douglas Street DRAINE

Wall Height=24.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=22.07 Min. Pile Length=46.57
MOMENT IN PILE: Max. Moment=85.20 per Pile Spacing=1.0 at Depth=35.17

PILE SELECTION:
Request Min. Section Modulus = 31.0 in3/ft=1665.67 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 1.24(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	9	0	0.000000
9	0	29	0.358	0.017900
29	0.358	100	5.944	0.078676
36	0.385	100	0.385	0.000000
*	Sur-	charge		
8.575	0.000	9.800	0.058	0.047049
9.800	0.058	11.025	0.109	0.041548
11.025	0.109	12.250	0.149	0.032732
12.250	0.149	13.475	0.177	0.023303
13.475	0.177	14.700	0.196	0.015054
14.700	0.196	15.925	0.206	0.008623
15.925	0.206	17.150	0.211	0.003933
17.150	0.211	18.375	0.212	0.000640
18.375	0.212	19.600	0.210	-0.001621
19.600	0.210	20.825	0.206	-0.003150
20.825	0.206	22.050	0.201	-0.004168
22.050	0.201	23.275	0.195	-0.004830
23.275	0.195	24.500	0.188	-0.005243

24.500	0.188	26.950	0.182	-0.002740
26.950	0.182	29.400	0.175	-0.002797
29.400	0.175	31.850	0.168	-0.002809
31.850	0.168	34.300	0.161	-0.002789
34.300	0.161	36.750	0.154	-0.002746
36.750	0.154	39.200	0.148	-0.002686
39.200	0.148	41.650	0.141	-0.002615
41.650	0.141	44.100	0.129	-0.004984
44.100	0.129	46.550	0.118	-0.004629
46.550	0.118	49.000	0.107	-0.004264

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.3

Z1	P1	Z2	P2	Slope
24.5	0	26.5	0.258	0.1290
26.5	0.160	31.5	0.760	0.1200
31.5	2.625	100	35.93	0.4862

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	1.00
2	24.50	1.00

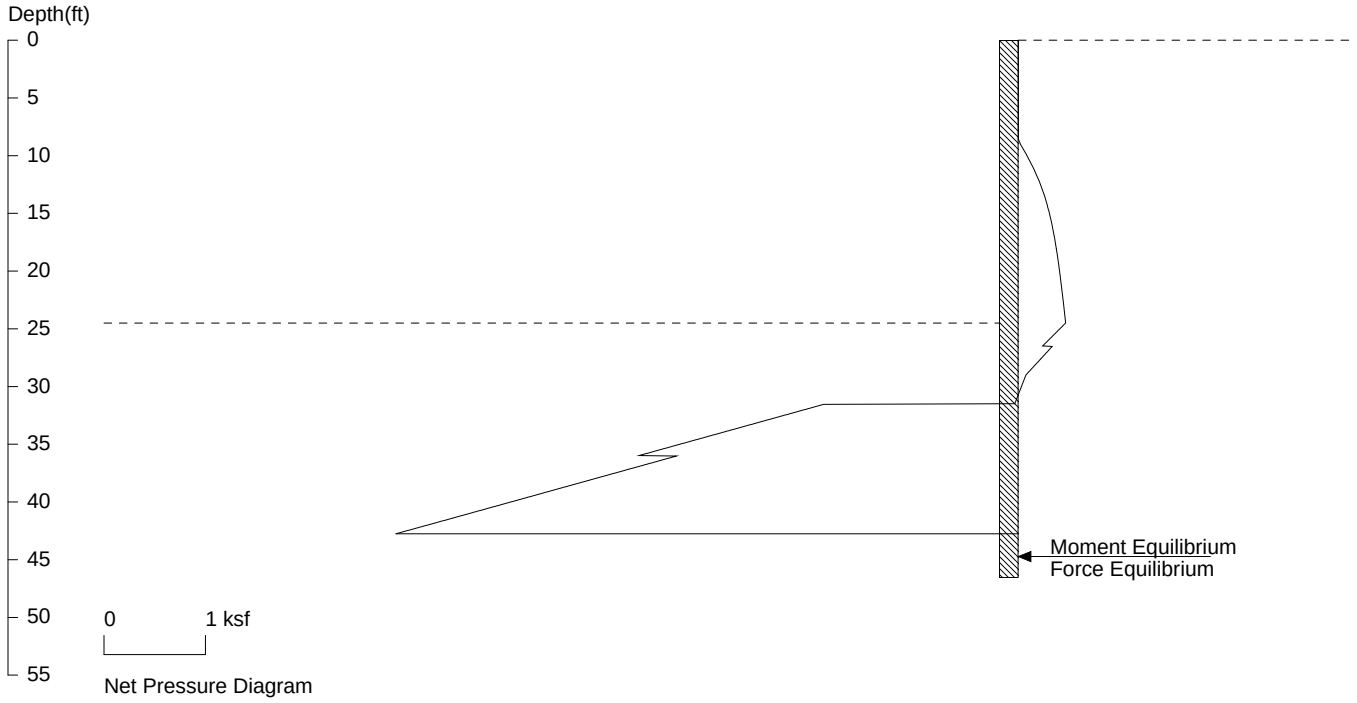
PASSIVE SPACING:

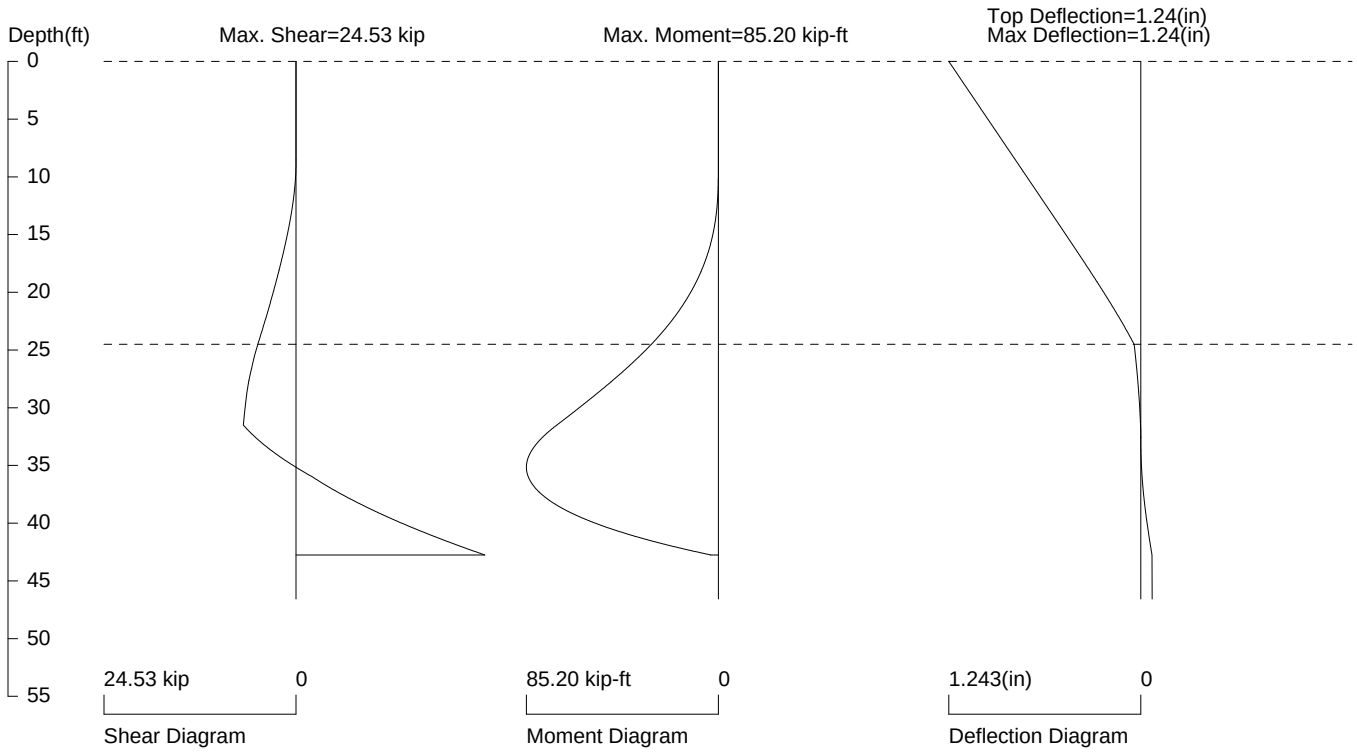
No.	Z depth	Spacing
1	0.00	1.00

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

Douglass Street (West) - Phase II Dredge to El -18

Section B - Fresh ISS El -20.5 to El -25.5 DRAINED





PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 1.0 foot or meter

User Input I: E (ksi)=29000.0, I (in4)/foot=656.2

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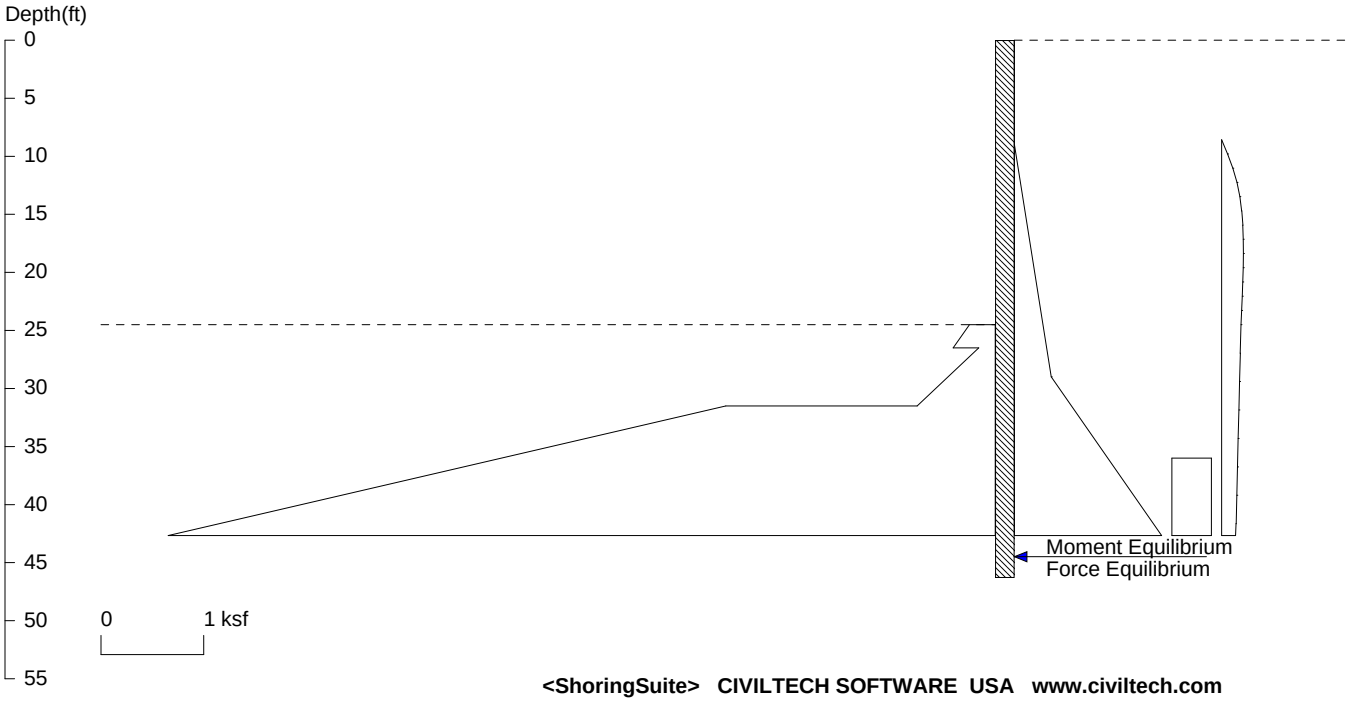
Douglass Street (West) - Phase II Dredge to El -18

Section B - Fresh ISS El -20.5 to El -25.5 UNDRAIN



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File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section B Phase II Bous Douglas Street UNDRA

Wall Height=24.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=21.80 Min. Pile Length=46.30
MOMENT IN PILE: Max. Moment=82.21 per Pile Spacing=1.0 at Depth=35.03

PILE SELECTION:
Request Min. Section Modulus = 29.9 in3/ft=1607.20 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 1.20(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	9	0	0.000000
9	0	29	0.358	0.017900
29	0.358	100	5.944	0.078676
36	0.385	100	0.385	0.000000
*	Sur-	charge		
8.575	0.000	9.800	0.058	0.047049
9.800	0.058	11.025	0.109	0.041548
11.025	0.109	12.250	0.149	0.032732
12.250	0.149	13.475	0.177	0.023303
13.475	0.177	14.700	0.196	0.015054
14.700	0.196	15.925	0.206	0.008623
15.925	0.206	17.150	0.211	0.003933
17.150	0.211	18.375	0.212	0.000640
18.375	0.212	19.600	0.210	-0.001621
19.600	0.210	20.825	0.206	-0.003150
20.825	0.206	22.050	0.201	-0.004168
22.050	0.201	23.275	0.195	-0.004830
23.275	0.195	24.500	0.188	-0.005243

24.500	0.188	26.950	0.182	-0.002740
26.950	0.182	29.400	0.175	-0.002797
29.400	0.175	31.850	0.168	-0.002809
31.850	0.168	34.300	0.161	-0.002789
34.300	0.161	36.750	0.154	-0.002746
36.750	0.154	39.200	0.148	-0.002686
39.200	0.148	41.650	0.141	-0.002615
41.650	0.141	44.100	0.129	-0.004984
44.100	0.129	46.550	0.118	-0.004629

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.3

Z1	P1	Z2	P2	Slope
24.5	0.250	26.5	0.410	0.0800
26.5	0.160	31.5	0.760	0.1200
31.5	2.625	100	35.93	0.4862

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	1.00
2	24.50	1.00

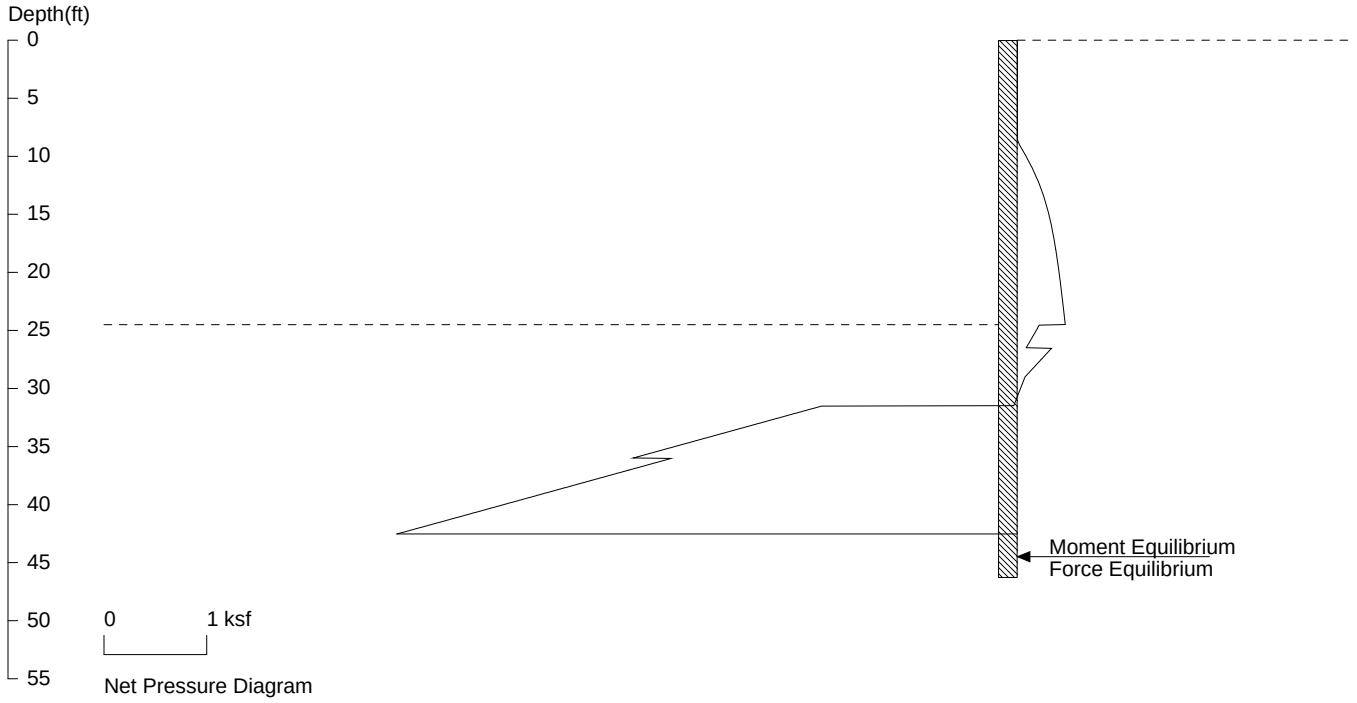
PASSIVE SPACING:

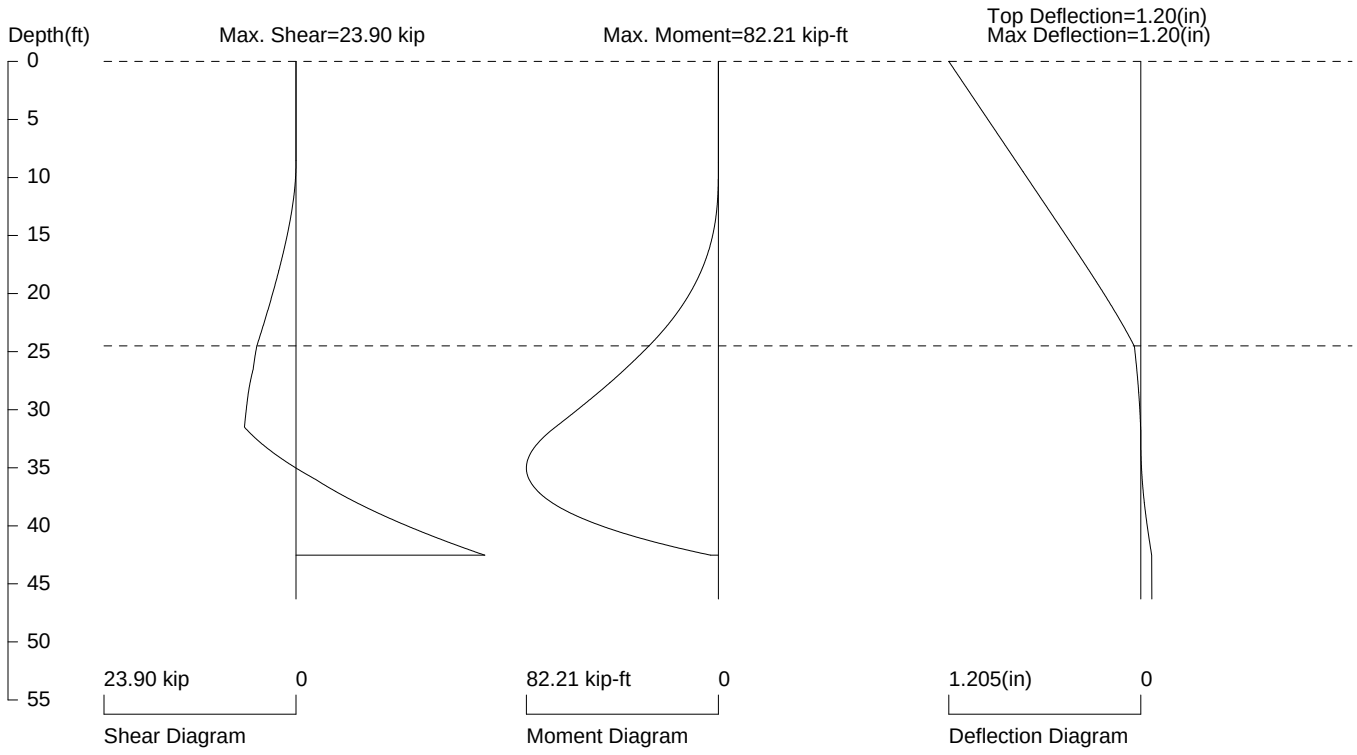
No.	Z depth	Spacing
1	0.00	1.00

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

Douglass Street (West) - Phase II Dredge to El -18

Section B - Fresh ISS El -20.5 to El -25.5 UNDRAIN





PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 1.0 foot or meter

User Input I: E (ksi)=29000.0, I (in4)/foot=656.2

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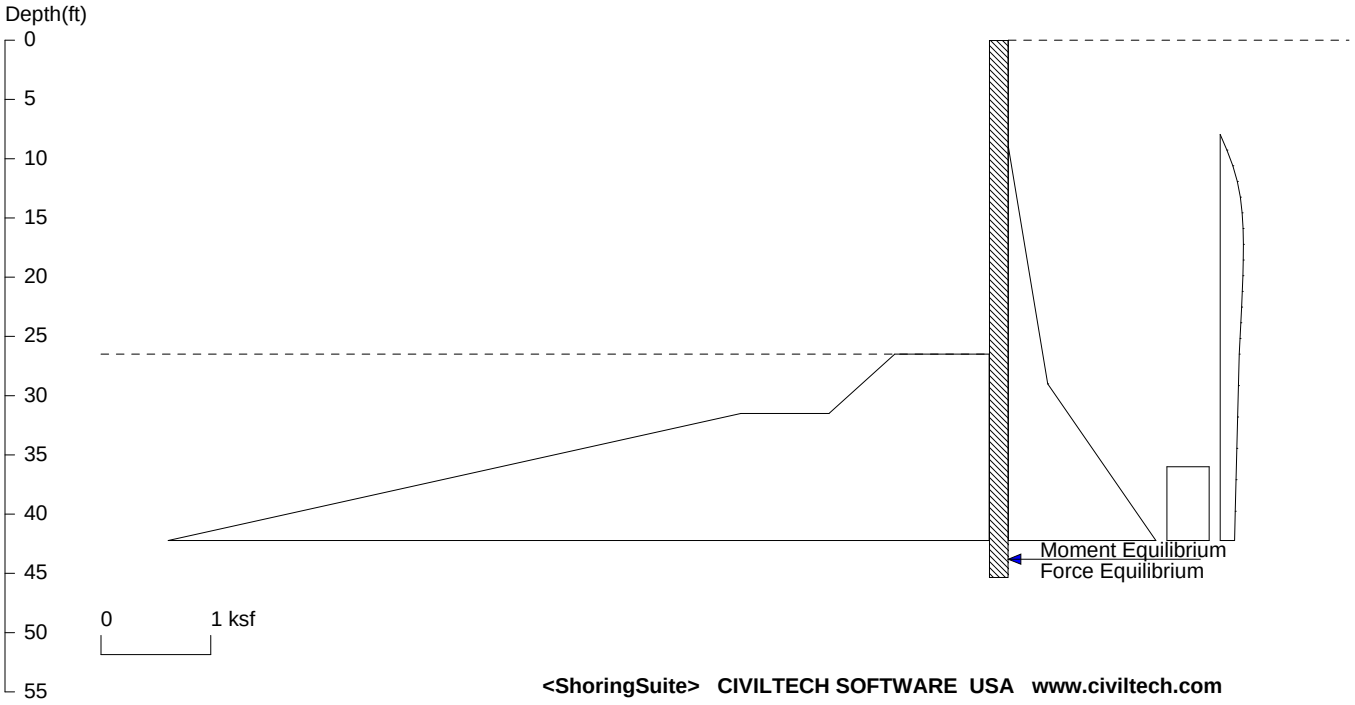
Douglass Street (West) - Phase III Dredge El -20.5

Section B - Mature ISS El -20.5 to El -25.5 DRAINED/UNDRAINED



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File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section B Phase III Bous Douglas Street DRAINE

Wall Height=26.5 Pile Diameter=1.0 Pile Spacing=1.0 Wall Type: 1. Sheet Pile

PILE LENGTH: Min. Embedment=18.87 Min. Pile Length=45.37
MOMENT IN PILE: Max. Moment=75.24 per Pile Spacing=1.0 at Depth=34.39

PILE SELECTION:
Request Min. Section Modulus = 27.4 in3/ft=1470.81 cm3/m, Fy= 50 ksi = 345 MPa, Fb/Fy=0.66
User Input I (Moment of Inertia):
Top Deflection = 1.44(in) based on E (ksi)=29000.00 and I (in4)/foot=656.2

DRIVING PRESSURES (ACTIVE, WATER, & SURCHARGE):

Z1	P1	Z2	P2	Slope
0	0	9	0	0.000000
9	0	29	0.358	0.017900
29	0.358	100	5.944	0.074480
36	0.385	100	0.385	0.000000
*	Sur-	charge		
7.950	0.000	9.275	0.062	0.046883
9.275	0.062	10.600	0.116	0.040568
10.600	0.116	11.925	0.157	0.030780
11.925	0.157	13.250	0.184	0.020791
13.250	0.184	14.575	0.201	0.012488
14.575	0.201	15.900	0.209	0.006331
15.900	0.209	17.225	0.212	0.002044
17.225	0.212	18.550	0.211	-0.000840
18.550	0.211	19.875	0.207	-0.002741
19.875	0.207	21.200	0.202	-0.003972
21.200	0.202	22.525	0.196	-0.004751
22.525	0.196	23.850	0.189	-0.005222
23.850	0.189	25.175	0.181	-0.005483

25.175	0.181	26.500	0.174	-0.005600
26.500	0.174	29.150	0.167	-0.002807
29.150	0.167	31.800	0.159	-0.002780
31.800	0.159	34.450	0.152	-0.002727
34.450	0.152	37.100	0.145	-0.002657
37.100	0.145	39.750	0.138	-0.002575
39.750	0.138	42.400	0.131	-0.002485
42.400	0.131	45.050	0.119	-0.004681
45.050	0.119	47.700	0.108	-0.004287

PASSIVE PRESSURES: Pressures below will be divided by a Factor of Safety =1.3

Z1	P1	Z2	P2	Slope
26.5	0.860	31.5	1.460	0.1200
31.5	2.262	100	35.567	0.4862

ACTIVE SPACING:

No.	Z depth	Spacing
1	0.00	1.00
2	26.50	1.00

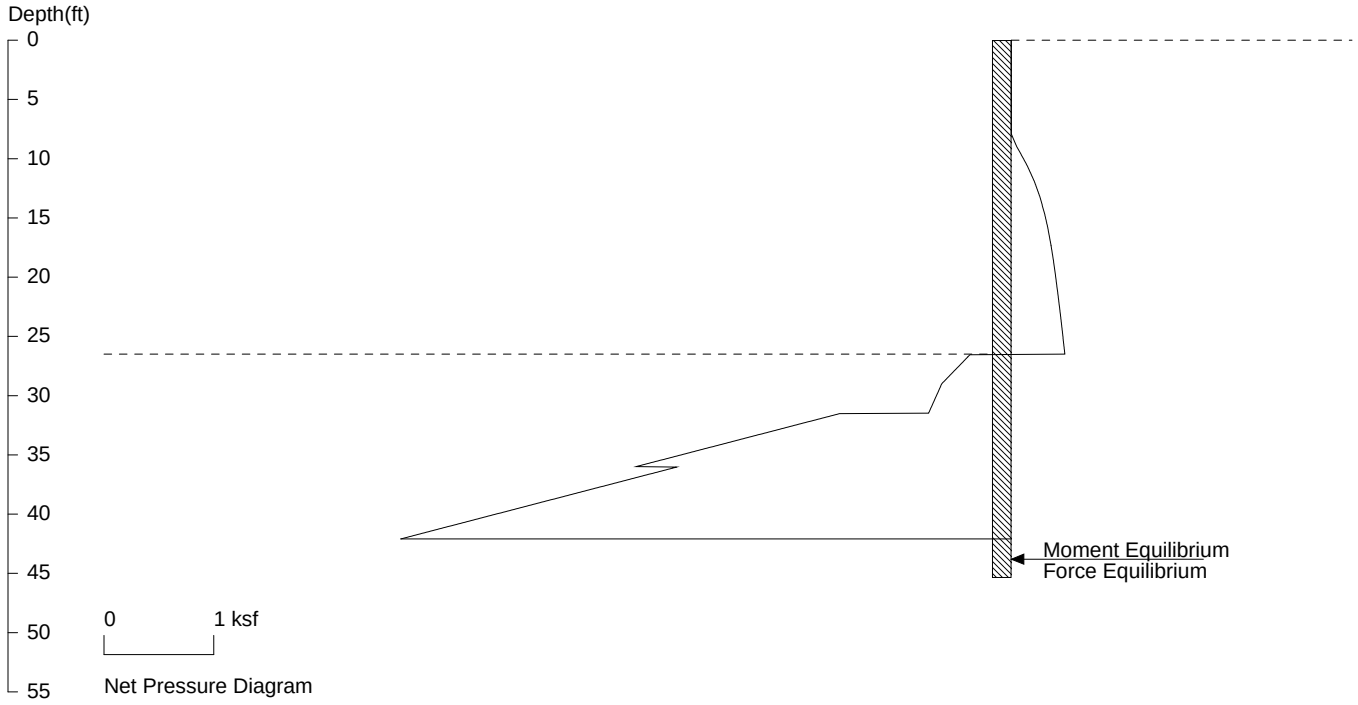
PASSIVE SPACING:

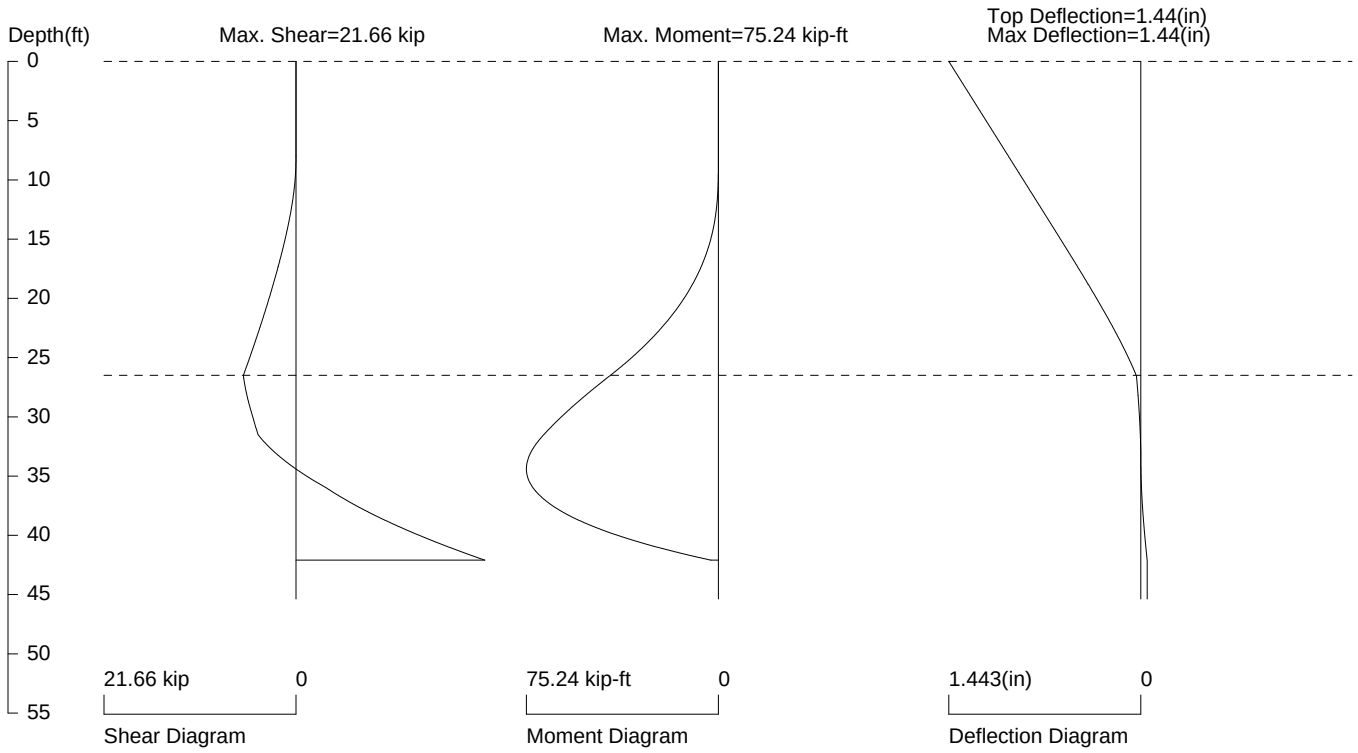
No.	Z depth	Spacing
1	0.00	1.00

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

Douglass Street (West) - Phase III Dredge El -20.5

Section B - Mature ISS El -20.5 to El -25.5 DRAINED/UNDRAINED





PRESSURE, SHEAR, MOMENT, AND DEFLECTION DIAGRAMS

Based on pile spacing: 1.0 foot or meter

User Input I: E (ksi)=29000.0, I (in4)/foot=656.2

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SHORING WALL CALCULATION SUMMARY
The leading shoring design and calculation software

www.civiltech.com

****
ShoringSuite Software is developed by CivilTech Software, Bellevue, WA, USA.
The calculation method is based on the following references:
1. FHWA 98-011, FHWA-RD-97-130, FHWA SA 96-069, FHWA-IF-99-015
2. STEEL SHEET PILING DESIGN MANUAL by Pile Buck Inc., 1987
3. DESIGN MANUAL DM-7 (NAVFAC), Department of the Navy, May 1982
4. TRENCHING AND SHORING MANUAL Revision 12, California Department of Transportation, January 2000
6. EARTH SUPPORT SYSTEM & RETAINING STRUCTURES, Pile Buck Inc. 2002
5. DESIGN OF SHEET PILE WALLS, EM 1110-2-2504, U.S. Army Corps of Engineers, 31 March 1994
7. EARTH RETENTION SYSTEMS HANDBOOK, Alan Macnab, McGraw-Hill. 2002
8. Temporary Structures in Construction, Robert T. Ratay (Co-author of Chapter 7: John J. Peirce), McGraw-Hill. 2012
9. AASHTO HB-17, American Association of State and Highway Transportation Officials, 2 September 2002

UNITS: Width/Spacing/Diameter/Length/Depth - ft, Force - kip, Moment - kip-ft, Friction/Bearing/Pressure - ksf, Pres. Slope - kip/ft3, Deflection - in
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Date: 1/10/2020 File: C:\Users\afb58\OneDrive\Desktop\EPA Review\Douglass Street (W)\Section B Phase III Bous Douglas Street DRAINED.sh8

Title: Douglass Street (West) - Phase III Dredge El -20.5
Subtitle: Section B - Mature ISS El -20.5 to El -25.5 DRAINED/UNDRAINED

**********INPUT DATA**********
Wall Type: 1. Sheet Pile
Wall Height: 26.50
Pile Diameter: 1.00
Pile Spacing: 1.00
Factor of Safety (F.S.): 1.30
Lateral Support Type (Braces): 1. No
Top Brace Increase (Multi-Bracing): Add 15%*
Embedment Option: 1. Yes
Friction at Pile Tip: No
Pile Properties:
Steel Strength, Fy: 50 ksi = 345 MPa
Allowable Fb/Fy: 0.66
Elastic Module, E: 29000.00
Moment of Inertia, I: 656.2
User Input Pile:

* DRIVING PRESSURE (ACTIVE, WATER, & SURCHARGE) *

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	0	0	9	0	0.000000
2	9	0	29	0.358	0.017900
3	29	0.358	100	5.944	0.074480
4	36	0.385	100	0.385	0.000000
5	*	Sur-	charge		
6	7.950	0.000	9.275	0.062	0.046883
7	9.275	0.062	10.600	0.116	0.040568
8	10.600	0.116	11.925	0.157	0.030780
9	11.925	0.157	13.250	0.184	0.020791
10	13.250	0.184	14.575	0.201	0.012488
11	14.575	0.201	15.900	0.209	0.006331
12	15.900	0.209	17.225	0.212	0.002044
13	17.225	0.212	18.550	0.211	-0.000840
14	18.550	0.211	19.875	0.207	-0.002741
15	19.875	0.207	21.200	0.202	-0.003972
16	21.200	0.202	22.525	0.196	-0.004751
17	22.525	0.196	23.850	0.189	-0.005222
18	23.850	0.189	25.175	0.181	-0.005483
19	25.175	0.181	26.500	0.174	-0.005600
20	26.500	0.174	29.150	0.167	-0.002807
21	29.150	0.167	31.800	0.159	-0.002780
22	31.800	0.159	34.450	0.152	-0.002727
23	34.450	0.152	37.100	0.145	-0.002657
24	37.100	0.145	39.750	0.138	-0.002575
25	39.750	0.138	42.400	0.131	-0.002485
26	42.400	0.131	45.050	0.119	-0.004681
27	45.050	0.119	47.700	0.108	-0.004287
28	47.700	0.108	50.350	0.097	-0.003897
29	50.350	0.097	53.000	0.088	-0.003524
30	53.000	0.088	58.300	0.080	-0.001588
31	58.300	0.080	63.600	0.072	-0.001427
32	63.600	0.072	68.900	0.065	-0.001280
33	68.900	0.065	74.200	0.059	-0.001147
34	74.200	0.059	79.500	0.054	-0.001028
35	79.500	0.054	84.800	0.049	-0.000920
36	84.800	0.049	90.100	0.041	-0.001563
37	90.100	0.041	95.400	0.034	-0.001258
38	95.400	0.034	100.700	0.029	-0.001016
39	100.700	0.029	106.000	0.024	-0.000825

* PASSIVE PRESSURE *

The pressures below will be divided by a Factor of Safety =1.3

No.	Z1 top	Top Pres.	Z2 bottom	Bottom Pres.	Slope
1	26.5	0.860	31.5	1.460	0.1200

2	31.5	2.262	100	35.567	0.4862

* ACTIVE SPACE *

No.	Z depth	Spacing
1	0.00	1.00
2	26.50	1.00

* PASSIVE SPACE *

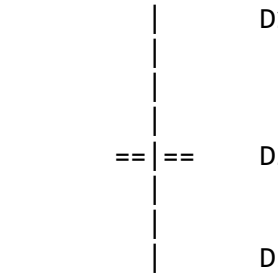
No.	Z depth	Spacing
1	0.00	1.00

*For Tieback: Input1 = Diameter; Input2 = Bond Strength
*For Plate: Input1 = Diameter; Input2 = Allowable Pressure
*For Deadman: Input1 = Horz. Width; Input2 = Passive Pressure;
*For Sheet Pile Anchor: Input1 = Horz. Width; Input2 = Passive Slope;

**********CALCULATION**********

The calculated moment and shear are per pile spacing. Sheet piles are per one foot or meter; Soldier piles are per pile.

Top Pressures start at depth = 0.00



D1 - TOP DEPTH
D2 - EXCAVATION BASE
D3 - PILE TIP

MOMENT equilibrium AT DEPTH=42.23 WITH EMBEDMENT OF 15.73
FORCE equilibrium AT DEPTH=45.37 WITH EMBEDMENT OF 18.87

The program calculates an embedment for moment equilibrium, then increase the embedment by 1.2

**********RESULTS**********

```
* EMBEDMENT Notes *
Based on USS Design Manual, first calculate embedment for moment equilibrium, then
increased the embedment to get the design depth.
The embedment for moment equilibrium is 15.73
The program calculates an embedment for moment equilibrium, then increase the
embedment by 1.2
The total desigh embedment is 18.87

Embedment Information:
If 20% increased, the total design embedment is 18.87
If 30% increased, the total design embedment is 20.45
If 40% increased, the total design embedment is 22.02
If 50% increased, the total design embedment is 23.59


* MOMENT IN PILE (per pile spacing)*
Pile Spacing:  sheet piles are one foot or one meter; soldier piles are one pile.
Overall Maximum Moment = 75.24 at 34.39
Maximum Shear = 21.66
Moment and Shear are per pile spacing: 1.0 foot or meter

* VERTICAL LOADING *
Vertical Loading from Braces = 0.00
Vertical Loading from External Load = 0.00
Total Vertical Loading = 0.00



* DEFLECTION *
   I (in4)/foot=656.20
   Top deflection = 1.443(in)
   Max. deflection = 1.443(in)

********PRESSURE, LOAD, SHEAR, MOMENT, AND DEFLECTION v.s. DEPTH************

The shear and moment are per single soldier pile (secant/tangent pile) or one foot
of sheet pile (concrete wall). The deflection is based on users input pile below:
        User Input I (Moment of Inertia)
        Elastic Module,  E (ksi)= 29000.00
        Moment of Inertia,  I (in4)/foot= 656.2

        PRESS. - Sum of all pressures (Net pressure). (Active) direction is
positive
        LOAD - Liner load (force per unit depth) = Pressures multiply by acting
space

        No      DEPTH   PRESS.  LOAD    SHEAR   MOMENT  DEFLECTION
                ft      ksf     kip/ft  kip     kip-ft  in
        ------------------------------------------------------------
```

1	0.00	0.00	0.00	0.00	0.00	1.443
2	0.05	0.00	0.00	0.00	0.00	1.441
3	0.09	0.00	0.00	0.00	0.00	1.438
4	0.14	0.00	0.00	0.00	0.00	1.435
5	0.19	0.00	0.00	0.00	0.00	1.433
6	0.23	0.00	0.00	0.00	0.00	1.430
7	0.28	0.00	0.00	0.00	0.00	1.428
8	0.33	0.00	0.00	0.00	0.00	1.425
9	0.38	0.00	0.00	0.00	0.00	1.422
10	0.42	0.00	0.00	0.00	0.00	1.420
11	0.47	0.00	0.00	0.00	0.00	1.417
12	0.52	0.00	0.00	0.00	0.00	1.414
13	0.56	0.00	0.00	0.00	0.00	1.412
14	0.61	0.00	0.00	0.00	0.00	1.409
15	0.66	0.00	0.00	0.00	0.00	1.407
16	0.70	0.00	0.00	0.00	0.00	1.404
17	0.75	0.00	0.00	0.00	0.00	1.401
18	0.80	0.00	0.00	0.00	0.00	1.399
19	0.85	0.00	0.00	0.00	0.00	1.396
20	0.89	0.00	0.00	0.00	0.00	1.393
21	0.94	0.00	0.00	0.00	0.00	1.391
22	0.99	0.00	0.00	0.00	0.00	1.388
23	1.03	0.00	0.00	0.00	0.00	1.385
24	1.08	0.00	0.00	0.00	0.00	1.383
25	1.13	0.00	0.00	0.00	0.00	1.380
26	1.17	0.00	0.00	0.00	0.00	1.378
27	1.22	0.00	0.00	0.00	0.00	1.375
28	1.27	0.00	0.00	0.00	0.00	1.372
29	1.32	0.00	0.00	0.00	0.00	1.370
30	1.36	0.00	0.00	0.00	0.00	1.367
31	1.41	0.00	0.00	0.00	0.00	1.364
32	1.46	0.00	0.00	0.00	0.00	1.362
33	1.50	0.00	0.00	0.00	0.00	1.359
34	1.55	0.00	0.00	0.00	0.00	1.357
35	1.60	0.00	0.00	0.00	0.00	1.354
36	1.64	0.00	0.00	0.00	0.00	1.351
37	1.69	0.00	0.00	0.00	0.00	1.349
38	1.74	0.00	0.00	0.00	0.00	1.346
39	1.79	0.00	0.00	0.00	0.00	1.343
40	1.83	0.00	0.00	0.00	0.00	1.341
41	1.88	0.00	0.00	0.00	0.00	1.338
42	1.93	0.00	0.00	0.00	0.00	1.335
43	1.97	0.00	0.00	0.00	0.00	1.333
44	2.02	0.00	0.00	0.00	0.00	1.330
45	2.07	0.00	0.00	0.00	0.00	1.328
46	2.11	0.00	0.00	0.00	0.00	1.325
47	2.16	0.00	0.00	0.00	0.00	1.322
48	2.21	0.00	0.00	0.00	0.00	1.320
49	2.25	0.00	0.00	0.00	0.00	1.317
50	2.30	0.00	0.00	0.00	0.00	1.314

51	2.35	0.00	0.00	0.00	0.00	1.312
52	2.40	0.00	0.00	0.00	0.00	1.309
53	2.44	0.00	0.00	0.00	0.00	1.307
54	2.49	0.00	0.00	0.00	0.00	1.304
55	2.54	0.00	0.00	0.00	0.00	1.301
56	2.58	0.00	0.00	0.00	0.00	1.299
57	2.63	0.00	0.00	0.00	0.00	1.296
58	2.68	0.00	0.00	0.00	0.00	1.293
59	2.72	0.00	0.00	0.00	0.00	1.291
60	2.77	0.00	0.00	0.00	0.00	1.288
61	2.82	0.00	0.00	0.00	0.00	1.285
62	2.87	0.00	0.00	0.00	0.00	1.283
63	2.91	0.00	0.00	0.00	0.00	1.280
64	2.96	0.00	0.00	0.00	0.00	1.278
65	3.01	0.00	0.00	0.00	0.00	1.275
66	3.05	0.00	0.00	0.00	0.00	1.272
67	3.10	0.00	0.00	0.00	0.00	1.270
68	3.15	0.00	0.00	0.00	0.00	1.267
69	3.19	0.00	0.00	0.00	0.00	1.264
70	3.24	0.00	0.00	0.00	0.00	1.262
71	3.29	0.00	0.00	0.00	0.00	1.259
72	3.34	0.00	0.00	0.00	0.00	1.257
73	3.38	0.00	0.00	0.00	0.00	1.254
74	3.43	0.00	0.00	0.00	0.00	1.251
75	3.48	0.00	0.00	0.00	0.00	1.249
76	3.52	0.00	0.00	0.00	0.00	1.246
77	3.57	0.00	0.00	0.00	0.00	1.243
78	3.62	0.00	0.00	0.00	0.00	1.241
79	3.66	0.00	0.00	0.00	0.00	1.238
80	3.71	0.00	0.00	0.00	0.00	1.235
81	3.76	0.00	0.00	0.00	0.00	1.233
82	3.81	0.00	0.00	0.00	0.00	1.230
83	3.85	0.00	0.00	0.00	0.00	1.228
84	3.90	0.00	0.00	0.00	0.00	1.225
85	3.95	0.00	0.00	0.00	0.00	1.222
86	3.99	0.00	0.00	0.00	0.00	1.220
87	4.04	0.00	0.00	0.00	0.00	1.217
88	4.09	0.00	0.00	0.00	0.00	1.214
89	4.13	0.00	0.00	0.00	0.00	1.212
90	4.18	0.00	0.00	0.00	0.00	1.209
91	4.23	0.00	0.00	0.00	0.00	1.207
92	4.27	0.00	0.00	0.00	0.00	1.204
93	4.32	0.00	0.00	0.00	0.00	1.201
94	4.37	0.00	0.00	0.00	0.00	1.199
95	4.42	0.00	0.00	0.00	0.00	1.196
96	4.46	0.00	0.00	0.00	0.00	1.193
97	4.51	0.00	0.00	0.00	0.00	1.191
98	4.56	0.00	0.00	0.00	0.00	1.188
99	4.60	0.00	0.00	0.00	0.00	1.185
100	4.65	0.00	0.00	0.00	0.00	1.183

101	4.70	0.00	0.00	0.00	0.00	1.180
102	4.74	0.00	0.00	0.00	0.00	1.178
103	4.79	0.00	0.00	0.00	0.00	1.175
104	4.84	0.00	0.00	0.00	0.00	1.172
105	4.89	0.00	0.00	0.00	0.00	1.170
106	4.93	0.00	0.00	0.00	0.00	1.167
107	4.98	0.00	0.00	0.00	0.00	1.164
108	5.03	0.00	0.00	0.00	0.00	1.162
109	5.07	0.00	0.00	0.00	0.00	1.159
110	5.12	0.00	0.00	0.00	0.00	1.157
111	5.17	0.00	0.00	0.00	0.00	1.154
112	5.21	0.00	0.00	0.00	0.00	1.151
113	5.26	0.00	0.00	0.00	0.00	1.149
114	5.31	0.00	0.00	0.00	0.00	1.146
115	5.36	0.00	0.00	0.00	0.00	1.143
116	5.40	0.00	0.00	0.00	0.00	1.141
117	5.45	0.00	0.00	0.00	0.00	1.138
118	5.50	0.00	0.00	0.00	0.00	1.136
119	5.54	0.00	0.00	0.00	0.00	1.133
120	5.59	0.00	0.00	0.00	0.00	1.130
121	5.64	0.00	0.00	0.00	0.00	1.128
122	5.68	0.00	0.00	0.00	0.00	1.125
123	5.73	0.00	0.00	0.00	0.00	1.122
124	5.78	0.00	0.00	0.00	0.00	1.120
125	5.83	0.00	0.00	0.00	0.00	1.117
126	5.87	0.00	0.00	0.00	0.00	1.114
127	5.92	0.00	0.00	0.00	0.00	1.112
128	5.97	0.00	0.00	0.00	0.00	1.109
129	6.01	0.00	0.00	0.00	0.00	1.107
130	6.06	0.00	0.00	0.00	0.00	1.104
131	6.11	0.00	0.00	0.00	0.00	1.101
132	6.15	0.00	0.00	0.00	0.00	1.099
133	6.20	0.00	0.00	0.00	0.00	1.096
134	6.25	0.00	0.00	0.00	0.00	1.093
135	6.30	0.00	0.00	0.00	0.00	1.091
136	6.34	0.00	0.00	0.00	0.00	1.088
137	6.39	0.00	0.00	0.00	0.00	1.086
138	6.44	0.00	0.00	0.00	0.00	1.083
139	6.48	0.00	0.00	0.00	0.00	1.080
140	6.53	0.00	0.00	0.00	0.00	1.078
141	6.58	0.00	0.00	0.00	0.00	1.075
142	6.62	0.00	0.00	0.00	0.00	1.072
143	6.67	0.00	0.00	0.00	0.00	1.070
144	6.72	0.00	0.00	0.00	0.00	1.067
145	6.76	0.00	0.00	0.00	0.00	1.064
146	6.81	0.00	0.00	0.00	0.00	1.062
147	6.86	0.00	0.00	0.00	0.00	1.059
148	6.91	0.00	0.00	0.00	0.00	1.057
149	6.95	0.00	0.00	0.00	0.00	1.054
150	7.00	0.00	0.00	0.00	0.00	1.051

151	7.05	0.00	0.00	0.00	0.00	1.049
152	7.09	0.00	0.00	0.00	0.00	1.046
153	7.14	0.00	0.00	0.00	0.00	1.043
154	7.19	0.00	0.00	0.00	0.00	1.041
155	7.23	0.00	0.00	0.00	0.00	1.038
156	7.28	0.00	0.00	0.00	0.00	1.036
157	7.33	0.00	0.00	0.00	0.00	1.033
158	7.38	0.00	0.00	0.00	0.00	1.030
159	7.42	0.00	0.00	0.00	0.00	1.028
160	7.47	0.00	0.00	0.00	0.00	1.025
161	7.52	0.00	0.00	0.00	0.00	1.022
162	7.56	0.00	0.00	0.00	0.00	1.020
163	7.61	0.00	0.00	0.00	0.00	1.017
164	7.66	0.00	0.00	0.00	0.00	1.014
165	7.70	0.00	0.00	0.00	0.00	1.012
166	7.75	0.00	0.00	0.00	0.00	1.009
167	7.80	0.00	0.00	0.00	0.00	1.007
168	7.85	0.00	0.00	0.00	0.00	1.004
169	7.89	0.00	0.00	0.00	0.00	1.001
170	7.94	0.00	0.00	0.00	0.00	0.999
171	7.99	0.00	0.00	0.00	0.00	0.996
172	8.03	0.00	0.00	0.00	0.00	0.993
173	8.08	0.01	0.01	0.00	0.00	0.991
174	8.13	0.01	0.01	0.00	0.00	0.988
175	8.17	0.01	0.01	0.00	0.00	0.986
176	8.22	0.01	0.01	0.00	0.00	0.983
177	8.27	0.01	0.01	0.00	0.00	0.980
178	8.32	0.02	0.02	0.00	0.00	0.978
179	8.36	0.02	0.02	0.00	0.00	0.975
180	8.41	0.02	0.02	0.00	0.00	0.972
181	8.46	0.02	0.02	0.01	0.00	0.970
182	8.50	0.03	0.03	0.01	0.00	0.967
183	8.55	0.03	0.03	0.01	0.00	0.964
184	8.60	0.03	0.03	0.01	0.00	0.962
185	8.64	0.03	0.03	0.01	0.00	0.959
186	8.69	0.03	0.03	0.01	0.00	0.957
187	8.74	0.04	0.04	0.01	0.00	0.954
188	8.78	0.04	0.04	0.02	0.00	0.951
189	8.83	0.04	0.04	0.02	0.01	0.949
190	8.88	0.04	0.04	0.02	0.01	0.946
191	8.93	0.05	0.05	0.02	0.01	0.943
192	8.97	0.05	0.05	0.02	0.01	0.941
193	9.02	0.05	0.05	0.03	0.01	0.938
194	9.07	0.05	0.05	0.03	0.01	0.936
195	9.11	0.06	0.06	0.03	0.01	0.933
196	9.16	0.06	0.06	0.03	0.01	0.930
197	9.21	0.06	0.06	0.04	0.02	0.928
198	9.25	0.07	0.07	0.04	0.02	0.925
199	9.30	0.07	0.07	0.04	0.02	0.922
200	9.35	0.07	0.07	0.05	0.02	0.920

201	9.40	0.07	0.07	0.05	0.02	0.917
202	9.44	0.08	0.08	0.05	0.03	0.914
203	9.49	0.08	0.08	0.06	0.03	0.912
204	9.54	0.08	0.08	0.06	0.03	0.909
205	9.58	0.08	0.08	0.07	0.03	0.907
206	9.63	0.09	0.09	0.07	0.04	0.904
207	9.68	0.09	0.09	0.07	0.04	0.901
208	9.72	0.09	0.09	0.08	0.04	0.899
209	9.77	0.10	0.10	0.08	0.05	0.896
210	9.82	0.10	0.10	0.09	0.05	0.893
211	9.87	0.10	0.10	0.09	0.06	0.891
212	9.91	0.10	0.10	0.10	0.06	0.888
213	9.96	0.11	0.11	0.10	0.07	0.886
214	10.01	0.11	0.11	0.11	0.07	0.883
215	10.05	0.11	0.11	0.11	0.08	0.880
216	10.10	0.12	0.12	0.12	0.08	0.878
217	10.15	0.12	0.12	0.12	0.09	0.875
218	10.19	0.12	0.12	0.13	0.09	0.872
219	10.24	0.12	0.12	0.13	0.10	0.870
220	10.29	0.13	0.13	0.14	0.11	0.867
221	10.34	0.13	0.13	0.15	0.11	0.864
222	10.38	0.13	0.13	0.15	0.12	0.862
223	10.43	0.13	0.13	0.16	0.13	0.859
224	10.48	0.14	0.14	0.16	0.13	0.857
225	10.52	0.14	0.14	0.17	0.14	0.854
226	10.57	0.14	0.14	0.18	0.15	0.851
227	10.62	0.15	0.15	0.18	0.16	0.849
228	10.66	0.15	0.15	0.19	0.17	0.846
229	10.71	0.15	0.15	0.20	0.18	0.843
230	10.76	0.15	0.15	0.21	0.19	0.841
231	10.80	0.15	0.15	0.21	0.20	0.838
232	10.85	0.16	0.16	0.22	0.21	0.836
233	10.90	0.16	0.16	0.23	0.22	0.833
234	10.95	0.16	0.16	0.23	0.23	0.830
235	10.99	0.16	0.16	0.24	0.24	0.828
236	11.04	0.17	0.17	0.25	0.25	0.825
237	11.09	0.17	0.17	0.26	0.26	0.822
238	11.13	0.17	0.17	0.27	0.27	0.820
239	11.18	0.17	0.17	0.27	0.29	0.817
240	11.23	0.18	0.18	0.28	0.30	0.815
241	11.27	0.18	0.18	0.29	0.31	0.812
242	11.32	0.18	0.18	0.30	0.33	0.809
243	11.37	0.18	0.18	0.31	0.34	0.807
244	11.42	0.18	0.18	0.32	0.36	0.804
245	11.46	0.19	0.19	0.32	0.37	0.801
246	11.51	0.19	0.19	0.33	0.39	0.799
247	11.56	0.19	0.19	0.34	0.40	0.796
248	11.60	0.19	0.19	0.35	0.42	0.793
249	11.65	0.20	0.20	0.36	0.44	0.791
250	11.70	0.20	0.20	0.37	0.45	0.788

251	11.74	0.20	0.20	0.38	0.47	0.786
252	11.79	0.20	0.20	0.39	0.49	0.783
253	11.84	0.20	0.20	0.40	0.51	0.780
254	11.89	0.21	0.21	0.41	0.53	0.778
255	11.93	0.21	0.21	0.42	0.54	0.775
256	11.98	0.21	0.21	0.43	0.56	0.772
257	12.03	0.21	0.21	0.44	0.59	0.770
258	12.07	0.22	0.22	0.45	0.61	0.767
259	12.12	0.22	0.22	0.46	0.63	0.765
260	12.17	0.22	0.22	0.47	0.65	0.762
261	12.21	0.22	0.22	0.48	0.67	0.759
262	12.26	0.22	0.22	0.49	0.69	0.757
263	12.31	0.22	0.22	0.50	0.72	0.754
264	12.36	0.23	0.23	0.51	0.74	0.751
265	12.40	0.23	0.23	0.52	0.76	0.749
266	12.45	0.23	0.23	0.53	0.79	0.746
267	12.50	0.23	0.23	0.54	0.81	0.744
268	12.54	0.23	0.23	0.55	0.84	0.741
269	12.59	0.24	0.24	0.56	0.87	0.738
270	12.64	0.24	0.24	0.58	0.89	0.736
271	12.68	0.24	0.24	0.59	0.92	0.733
272	12.73	0.24	0.24	0.60	0.95	0.730
273	12.78	0.24	0.24	0.61	0.98	0.728
274	12.82	0.24	0.24	0.62	1.01	0.725
275	12.87	0.25	0.25	0.63	1.04	0.723
276	12.92	0.25	0.25	0.64	1.07	0.720
277	12.97	0.25	0.25	0.66	1.10	0.717
278	13.01	0.25	0.25	0.67	1.13	0.715
279	13.06	0.25	0.25	0.68	1.16	0.712
280	13.11	0.26	0.26	0.69	1.19	0.709
281	13.15	0.26	0.26	0.70	1.22	0.707
282	13.20	0.26	0.26	0.71	1.26	0.704
283	13.25	0.26	0.26	0.73	1.29	0.702
284	13.29	0.26	0.26	0.74	1.32	0.699
285	13.34	0.26	0.26	0.75	1.36	0.696
286	13.39	0.26	0.26	0.76	1.40	0.694
287	13.44	0.27	0.27	0.78	1.43	0.691
288	13.48	0.27	0.27	0.79	1.47	0.688
289	13.53	0.27	0.27	0.80	1.51	0.686
290	13.58	0.27	0.27	0.81	1.54	0.683
291	13.62	0.27	0.27	0.83	1.58	0.681
292	13.67	0.27	0.27	0.84	1.62	0.678
293	13.72	0.27	0.27	0.85	1.66	0.675
294	13.76	0.28	0.28	0.87	1.70	0.673
295	13.81	0.28	0.28	0.88	1.74	0.670
296	13.86	0.28	0.28	0.89	1.78	0.667
297	13.91	0.28	0.28	0.90	1.83	0.665
298	13.95	0.28	0.28	0.92	1.87	0.662
299	14.00	0.28	0.28	0.93	1.91	0.660
300	14.05	0.28	0.28	0.94	1.96	0.657

301	14.09	0.29	0.29	0.96	2.00	0.654
302	14.14	0.29	0.29	0.97	2.05	0.652
303	14.19	0.29	0.29	0.98	2.09	0.649
304	14.23	0.29	0.29	1.00	2.14	0.646
305	14.28	0.29	0.29	1.01	2.19	0.644
306	14.33	0.29	0.29	1.03	2.23	0.641
307	14.38	0.29	0.29	1.04	2.28	0.639
308	14.42	0.30	0.30	1.05	2.33	0.636
309	14.47	0.30	0.30	1.07	2.38	0.633
310	14.52	0.30	0.30	1.08	2.43	0.631
311	14.56	0.30	0.30	1.10	2.48	0.628
312	14.61	0.30	0.30	1.11	2.53	0.626
313	14.66	0.30	0.30	1.12	2.59	0.623
314	14.70	0.30	0.30	1.14	2.64	0.620
315	14.75	0.31	0.31	1.15	2.69	0.618
316	14.80	0.31	0.31	1.17	2.75	0.615
317	14.85	0.31	0.31	1.18	2.80	0.612
318	14.89	0.31	0.31	1.20	2.86	0.610
319	14.94	0.31	0.31	1.21	2.92	0.607
320	14.99	0.31	0.31	1.22	2.97	0.605
321	15.03	0.31	0.31	1.24	3.03	0.602
322	15.08	0.31	0.31	1.25	3.09	0.599
323	15.13	0.31	0.31	1.27	3.15	0.597
324	15.17	0.32	0.32	1.28	3.21	0.594
325	15.22	0.32	0.32	1.30	3.27	0.592
326	15.27	0.32	0.32	1.31	3.33	0.589
327	15.31	0.32	0.32	1.33	3.39	0.586
328	15.36	0.32	0.32	1.34	3.46	0.584
329	15.41	0.32	0.32	1.36	3.52	0.581
330	15.46	0.32	0.32	1.37	3.58	0.579
331	15.50	0.32	0.32	1.39	3.65	0.576
332	15.55	0.32	0.32	1.40	3.71	0.573
333	15.60	0.33	0.33	1.42	3.78	0.571
334	15.64	0.33	0.33	1.43	3.85	0.568
335	15.69	0.33	0.33	1.45	3.91	0.566
336	15.74	0.33	0.33	1.46	3.98	0.563
337	15.78	0.33	0.33	1.48	4.05	0.560
338	15.83	0.33	0.33	1.50	4.12	0.558
339	15.88	0.33	0.33	1.51	4.19	0.555
340	15.93	0.33	0.33	1.53	4.26	0.553
341	15.97	0.33	0.33	1.54	4.34	0.550
342	16.02	0.33	0.33	1.56	4.41	0.547
343	16.07	0.34	0.34	1.57	4.48	0.545
344	16.11	0.34	0.34	1.59	4.56	0.542
345	16.16	0.34	0.34	1.61	4.63	0.540
346	16.21	0.34	0.34	1.62	4.71	0.537
347	16.25	0.34	0.34	1.64	4.78	0.534
348	16.30	0.34	0.34	1.65	4.86	0.532
349	16.35	0.34	0.34	1.67	4.94	0.529
350	16.40	0.34	0.34	1.69	5.02	0.527

351	16.44	0.34	0.34	1.70	5.10	0.524
352	16.49	0.34	0.34	1.72	5.18	0.522
353	16.54	0.35	0.35	1.73	5.26	0.519
354	16.58	0.35	0.35	1.75	5.34	0.516
355	16.63	0.35	0.35	1.77	5.42	0.514
356	16.68	0.35	0.35	1.78	5.51	0.511
357	16.72	0.35	0.35	1.80	5.59	0.509
358	16.77	0.35	0.35	1.82	5.68	0.506
359	16.82	0.35	0.35	1.83	5.76	0.503
360	16.87	0.35	0.35	1.85	5.85	0.501
361	16.91	0.35	0.35	1.87	5.94	0.498
362	16.96	0.35	0.35	1.88	6.02	0.496
363	17.01	0.35	0.35	1.90	6.11	0.493
364	17.05	0.36	0.36	1.92	6.20	0.491
365	17.10	0.36	0.36	1.93	6.29	0.488
366	17.15	0.36	0.36	1.95	6.38	0.485
367	17.19	0.36	0.36	1.97	6.48	0.483
368	17.24	0.36	0.36	1.98	6.57	0.480
369	17.29	0.36	0.36	2.00	6.66	0.478
370	17.33	0.36	0.36	2.02	6.76	0.475
371	17.38	0.36	0.36	2.03	6.85	0.473
372	17.43	0.36	0.36	2.05	6.95	0.470
373	17.48	0.36	0.36	2.07	7.04	0.468
374	17.52	0.36	0.36	2.08	7.14	0.465
375	17.57	0.37	0.37	2.10	7.24	0.462
376	17.62	0.37	0.37	2.12	7.34	0.460
377	17.66	0.37	0.37	2.14	7.44	0.457
378	17.71	0.37	0.37	2.15	7.54	0.455
379	17.76	0.37	0.37	2.17	7.64	0.452
380	17.80	0.37	0.37	2.19	7.74	0.450
381	17.85	0.37	0.37	2.21	7.85	0.447
382	17.90	0.37	0.37	2.22	7.95	0.445
383	17.95	0.37	0.37	2.24	8.06	0.442
384	17.99	0.37	0.37	2.26	8.16	0.439
385	18.04	0.37	0.37	2.28	8.27	0.437
386	18.09	0.37	0.37	2.29	8.38	0.434
387	18.13	0.37	0.37	2.31	8.48	0.432
388	18.18	0.38	0.38	2.33	8.59	0.429
389	18.23	0.38	0.38	2.35	8.70	0.427
390	18.27	0.38	0.38	2.36	8.81	0.424
391	18.32	0.38	0.38	2.38	8.92	0.422
392	18.37	0.38	0.38	2.40	9.04	0.419
393	18.42	0.38	0.38	2.42	9.15	0.417
394	18.46	0.38	0.38	2.43	9.26	0.414
395	18.51	0.38	0.38	2.45	9.38	0.412
396	18.56	0.38	0.38	2.47	9.49	0.409
397	18.60	0.38	0.38	2.49	9.61	0.407
398	18.65	0.38	0.38	2.51	9.73	0.404
399	18.70	0.38	0.38	2.52	9.85	0.402
400	18.74	0.38	0.38	2.54	9.97	0.399

401	18.79	0.39	0.39	2.56	10.08	0.397
402	18.84	0.39	0.39	2.58	10.21	0.394
403	18.89	0.39	0.39	2.60	10.33	0.391
404	18.93	0.39	0.39	2.61	10.45	0.389
405	18.98	0.39	0.39	2.63	10.57	0.386
406	19.03	0.39	0.39	2.65	10.70	0.384
407	19.07	0.39	0.39	2.67	10.82	0.381
408	19.12	0.39	0.39	2.69	10.95	0.379
409	19.17	0.39	0.39	2.71	11.07	0.376
410	19.21	0.39	0.39	2.72	11.20	0.374
411	19.26	0.39	0.39	2.74	11.33	0.371
412	19.31	0.39	0.39	2.76	11.46	0.369
413	19.35	0.39	0.39	2.78	11.59	0.367
414	19.40	0.39	0.39	2.80	11.72	0.364
415	19.45	0.40	0.40	2.82	11.85	0.362
416	19.50	0.40	0.40	2.84	11.99	0.359
417	19.54	0.40	0.40	2.85	12.12	0.357
418	19.59	0.40	0.40	2.87	12.25	0.354
419	19.64	0.40	0.40	2.89	12.39	0.352
420	19.68	0.40	0.40	2.91	12.53	0.349
421	19.73	0.40	0.40	2.93	12.66	0.347
422	19.78	0.40	0.40	2.95	12.80	0.344
423	19.82	0.40	0.40	2.97	12.94	0.342
424	19.87	0.40	0.40	2.99	13.08	0.339
425	19.92	0.40	0.40	3.00	13.22	0.337
426	19.97	0.40	0.40	3.02	13.36	0.334
427	20.01	0.40	0.40	3.04	13.50	0.332
428	20.06	0.40	0.40	3.06	13.65	0.330
429	20.11	0.40	0.40	3.08	13.79	0.327
430	20.15	0.41	0.41	3.10	13.94	0.325
431	20.20	0.41	0.41	3.12	14.08	0.322
432	20.25	0.41	0.41	3.14	14.23	0.320
433	20.29	0.41	0.41	3.16	14.38	0.317
434	20.34	0.41	0.41	3.18	14.53	0.315
435	20.39	0.41	0.41	3.20	14.68	0.312
436	20.44	0.41	0.41	3.21	14.83	0.310
437	20.48	0.41	0.41	3.23	14.98	0.308
438	20.53	0.41	0.41	3.25	15.13	0.305
439	20.58	0.41	0.41	3.27	15.28	0.303
440	20.62	0.41	0.41	3.29	15.44	0.300
441	20.67	0.41	0.41	3.31	15.59	0.298
442	20.72	0.41	0.41	3.33	15.75	0.296
443	20.76	0.41	0.41	3.35	15.91	0.293
444	20.81	0.41	0.41	3.37	16.06	0.291
445	20.86	0.42	0.42	3.39	16.22	0.288
446	20.91	0.42	0.42	3.41	16.38	0.286
447	20.95	0.42	0.42	3.43	16.54	0.284
448	21.00	0.42	0.42	3.45	16.70	0.281
449	21.05	0.42	0.42	3.47	16.87	0.279
450	21.09	0.42	0.42	3.49	17.03	0.276

451	21.14	0.42	0.42	3.51	17.19	0.274
452	21.19	0.42	0.42	3.53	17.36	0.272
453	21.23	0.42	0.42	3.55	17.53	0.269
454	21.28	0.42	0.42	3.57	17.69	0.267
455	21.33	0.42	0.42	3.59	17.86	0.264
456	21.37	0.42	0.42	3.61	18.03	0.262
457	21.42	0.42	0.42	3.63	18.20	0.260
458	21.47	0.42	0.42	3.65	18.37	0.257
459	21.52	0.42	0.42	3.66	18.54	0.255
460	21.56	0.43	0.43	3.68	18.71	0.253
461	21.61	0.43	0.43	3.70	18.89	0.250
462	21.66	0.43	0.43	3.72	19.06	0.248
463	21.70	0.43	0.43	3.74	19.24	0.246
464	21.75	0.43	0.43	3.77	19.41	0.243
465	21.80	0.43	0.43	3.79	19.59	0.241
466	21.84	0.43	0.43	3.81	19.77	0.239
467	21.89	0.43	0.43	3.83	19.95	0.236
468	21.94	0.43	0.43	3.85	20.13	0.234
469	21.99	0.43	0.43	3.87	20.31	0.232
470	22.03	0.43	0.43	3.89	20.49	0.229
471	22.08	0.43	0.43	3.91	20.68	0.227
472	22.13	0.43	0.43	3.93	20.86	0.225
473	22.17	0.43	0.43	3.95	21.04	0.223
474	22.22	0.43	0.43	3.97	21.23	0.220
475	22.27	0.43	0.43	3.99	21.42	0.218
476	22.31	0.44	0.44	4.01	21.61	0.216
477	22.36	0.44	0.44	4.03	21.79	0.213
478	22.41	0.44	0.44	4.05	21.98	0.211
479	22.46	0.44	0.44	4.07	22.17	0.209
480	22.50	0.44	0.44	4.09	22.37	0.207
481	22.55	0.44	0.44	4.11	22.56	0.204
482	22.60	0.44	0.44	4.13	22.75	0.202
483	22.64	0.44	0.44	4.15	22.95	0.200
484	22.69	0.44	0.44	4.17	23.14	0.198
485	22.74	0.44	0.44	4.19	23.34	0.195
486	22.78	0.44	0.44	4.21	23.54	0.193
487	22.83	0.44	0.44	4.23	23.74	0.191
488	22.88	0.44	0.44	4.26	23.93	0.189
489	22.93	0.44	0.44	4.28	24.13	0.186
490	22.97	0.44	0.44	4.30	24.34	0.184
491	23.02	0.44	0.44	4.32	24.54	0.182
492	23.07	0.44	0.44	4.34	24.74	0.180
493	23.11	0.45	0.45	4.36	24.95	0.178
494	23.16	0.45	0.45	4.38	25.15	0.175
495	23.21	0.45	0.45	4.40	25.36	0.173
496	23.25	0.45	0.45	4.42	25.57	0.171
497	23.30	0.45	0.45	4.44	25.77	0.169
498	23.35	0.45	0.45	4.46	25.98	0.167
499	23.40	0.45	0.45	4.49	26.19	0.164
500	23.44	0.45	0.45	4.51	26.40	0.162

501	23.49	0.45	0.45	4.53	26.62	0.160
502	23.54	0.45	0.45	4.55	26.83	0.158
503	23.58	0.45	0.45	4.57	27.04	0.156
504	23.63	0.45	0.45	4.59	27.26	0.154
505	23.68	0.45	0.45	4.61	27.48	0.151
506	23.72	0.45	0.45	4.63	27.69	0.149
507	23.77	0.45	0.45	4.66	27.91	0.147
508	23.82	0.45	0.45	4.68	28.13	0.145
509	23.86	0.45	0.45	4.70	28.35	0.143
510	23.91	0.46	0.46	4.72	28.57	0.141
511	23.96	0.46	0.46	4.74	28.79	0.139
512	24.01	0.46	0.46	4.76	29.02	0.137
513	24.05	0.46	0.46	4.78	29.24	0.135
514	24.10	0.46	0.46	4.81	29.47	0.132
515	24.15	0.46	0.46	4.83	29.69	0.130
516	24.19	0.46	0.46	4.85	29.92	0.128
517	24.24	0.46	0.46	4.87	30.15	0.126
518	24.29	0.46	0.46	4.89	30.38	0.124
519	24.33	0.46	0.46	4.91	30.61	0.122
520	24.38	0.46	0.46	4.94	30.84	0.120
521	24.43	0.46	0.46	4.96	31.07	0.118
522	24.48	0.46	0.46	4.98	31.30	0.116
523	24.52	0.46	0.46	5.00	31.54	0.114
524	24.57	0.46	0.46	5.02	31.77	0.112
525	24.62	0.46	0.46	5.04	32.01	0.110
526	24.66	0.46	0.46	5.07	32.25	0.108
527	24.71	0.47	0.47	5.09	32.49	0.106
528	24.76	0.47	0.47	5.11	32.73	0.104
529	24.80	0.47	0.47	5.13	32.97	0.102
530	24.85	0.47	0.47	5.15	33.21	0.100
531	24.90	0.47	0.47	5.18	33.45	0.098
532	24.95	0.47	0.47	5.20	33.70	0.096
533	24.99	0.47	0.47	5.22	33.94	0.094
534	25.04	0.47	0.47	5.24	34.19	0.092
535	25.09	0.47	0.47	5.26	34.43	0.090
536	25.13	0.47	0.47	5.29	34.68	0.088
537	25.18	0.47	0.47	5.31	34.93	0.086
538	25.23	0.47	0.47	5.33	35.18	0.084
539	25.27	0.47	0.47	5.35	35.43	0.082
540	25.32	0.47	0.47	5.37	35.68	0.080
541	25.37	0.47	0.47	5.40	35.93	0.078
542	25.42	0.47	0.47	5.42	36.19	0.076
543	25.46	0.47	0.47	5.44	36.44	0.074
544	25.51	0.47	0.47	5.46	36.70	0.073
545	25.56	0.48	0.48	5.49	36.96	0.071
546	25.60	0.48	0.48	5.51	37.22	0.069
547	25.65	0.48	0.48	5.53	37.47	0.067
548	25.70	0.48	0.48	5.55	37.73	0.065
549	25.74	0.48	0.48	5.57	38.00	0.063
550	25.79	0.48	0.48	5.60	38.26	0.061

551	25.84	0.48	0.48	5.62	38.52	0.059
552	25.88	0.48	0.48	5.64	38.79	0.058
553	25.93	0.48	0.48	5.66	39.05	0.056
554	25.98	0.48	0.48	5.69	39.32	0.054
555	26.03	0.48	0.48	5.71	39.59	0.052
556	26.07	0.48	0.48	5.73	39.86	0.050
557	26.12	0.48	0.48	5.76	40.13	0.049
558	26.17	0.48	0.48	5.78	40.40	0.047
559	26.21	0.48	0.48	5.80	40.67	0.045
560	26.26	0.48	0.48	5.82	40.94	0.043
561	26.31	0.48	0.48	5.85	41.22	0.041
562	26.35	0.49	0.49	5.87	41.49	0.040
563	26.40	0.49	0.49	5.89	41.77	0.038
564	26.45	0.49	0.49	5.91	42.04	0.036
565	26.50	0.49	0.49	5.94	42.32	0.034
566	26.54	-0.38	-0.38	5.93	42.60	0.033
567	26.59	-0.38	-0.38	5.92	42.88	0.032
568	26.64	-0.39	-0.39	5.91	43.16	0.032
569	26.68	-0.39	-0.39	5.91	43.44	0.032
570	26.73	-0.40	-0.40	5.90	43.71	0.031
571	26.78	-0.40	-0.40	5.89	43.99	0.031
572	26.82	-0.41	-0.41	5.88	44.27	0.031
573	26.87	-0.41	-0.41	5.87	44.54	0.030
574	26.92	-0.42	-0.42	5.86	44.82	0.030
575	26.97	-0.42	-0.42	5.85	45.09	0.029
576	27.01	-0.43	-0.43	5.84	45.37	0.029
577	27.06	-0.43	-0.43	5.83	45.64	0.029
578	27.11	-0.44	-0.44	5.82	45.91	0.028
579	27.15	-0.44	-0.44	5.81	46.19	0.028
580	27.20	-0.45	-0.45	5.80	46.46	0.028
581	27.25	-0.45	-0.45	5.79	46.73	0.027
582	27.29	-0.46	-0.46	5.78	47.00	0.027
583	27.34	-0.46	-0.46	5.77	47.28	0.027
584	27.39	-0.47	-0.47	5.75	47.55	0.026
585	27.44	-0.47	-0.47	5.74	47.82	0.026
586	27.48	-0.48	-0.48	5.73	48.09	0.026
587	27.53	-0.48	-0.48	5.72	48.35	0.025
588	27.58	-0.49	-0.49	5.71	48.62	0.025
589	27.62	-0.49	-0.49	5.70	48.89	0.025
590	27.67	-0.50	-0.50	5.68	49.16	0.024
591	27.72	-0.50	-0.50	5.67	49.42	0.024
592	27.76	-0.51	-0.51	5.66	49.69	0.024
593	27.81	-0.51	-0.51	5.64	49.96	0.023
594	27.86	-0.52	-0.52	5.63	50.22	0.023
595	27.90	-0.52	-0.52	5.62	50.49	0.023
596	27.95	-0.53	-0.53	5.61	50.75	0.022
597	28.00	-0.53	-0.53	5.59	51.01	0.022
598	28.05	-0.53	-0.53	5.58	51.27	0.022
599	28.09	-0.54	-0.54	5.56	51.54	0.021
600	28.14	-0.54	-0.54	5.55	51.80	0.021

601	28.19	-0.55	-0.55	5.54	52.06	0.021
602	28.23	-0.55	-0.55	5.52	52.32	0.020
603	28.28	-0.56	-0.56	5.51	52.58	0.020
604	28.33	-0.56	-0.56	5.49	52.83	0.020
605	28.37	-0.57	-0.57	5.48	53.09	0.019
606	28.42	-0.57	-0.57	5.46	53.35	0.019
607	28.47	-0.58	-0.58	5.45	53.61	0.019
608	28.52	-0.58	-0.58	5.43	53.86	0.018
609	28.56	-0.59	-0.59	5.42	54.12	0.018
610	28.61	-0.59	-0.59	5.40	54.37	0.018
611	28.66	-0.60	-0.60	5.38	54.62	0.018
612	28.70	-0.60	-0.60	5.37	54.88	0.017
613	28.75	-0.61	-0.61	5.35	55.13	0.017
614	28.80	-0.61	-0.61	5.34	55.38	0.017
615	28.84	-0.62	-0.62	5.32	55.63	0.016
616	28.89	-0.62	-0.62	5.30	55.88	0.016
617	28.94	-0.63	-0.63	5.28	56.13	0.016
618	28.99	-0.63	-0.63	5.27	56.37	0.016
619	29.03	-0.64	-0.64	5.25	56.62	0.015
620	29.08	-0.64	-0.64	5.23	56.87	0.015
621	29.13	-0.64	-0.64	5.22	57.11	0.015
622	29.17	-0.64	-0.64	5.20	57.36	0.014
623	29.22	-0.65	-0.65	5.18	57.60	0.014
624	29.27	-0.65	-0.65	5.16	57.84	0.014
625	29.31	-0.65	-0.65	5.15	58.09	0.014
626	29.36	-0.65	-0.65	5.13	58.33	0.013
627	29.41	-0.65	-0.65	5.11	58.57	0.013
628	29.46	-0.66	-0.66	5.09	58.81	0.013
629	29.50	-0.66	-0.66	5.08	59.05	0.013
630	29.55	-0.66	-0.66	5.06	59.29	0.012
631	29.60	-0.66	-0.66	5.04	59.52	0.012
632	29.64	-0.67	-0.67	5.02	59.76	0.012
633	29.69	-0.67	-0.67	5.00	59.99	0.012
634	29.74	-0.67	-0.67	4.99	60.23	0.011
635	29.78	-0.67	-0.67	4.97	60.46	0.011
636	29.83	-0.67	-0.67	4.95	60.70	0.011
637	29.88	-0.68	-0.68	4.93	60.93	0.011
638	29.92	-0.68	-0.68	4.91	61.16	0.010
639	29.97	-0.68	-0.68	4.90	61.39	0.010
640	30.02	-0.68	-0.68	4.88	61.62	0.010
641	30.07	-0.69	-0.69	4.86	61.85	0.010
642	30.11	-0.69	-0.69	4.84	62.08	0.010
643	30.16	-0.69	-0.69	4.82	62.30	0.009
644	30.21	-0.69	-0.69	4.80	62.53	0.009
645	30.25	-0.70	-0.70	4.79	62.75	0.009
646	30.30	-0.70	-0.70	4.77	62.98	0.009
647	30.35	-0.70	-0.70	4.75	63.20	0.008
648	30.39	-0.70	-0.70	4.73	63.42	0.008
649	30.44	-0.70	-0.70	4.71	63.65	0.008
650	30.49	-0.71	-0.71	4.69	63.87	0.008

651	30.54	-0.71	-0.71	4.67	64.09	0.008
652	30.58	-0.71	-0.71	4.66	64.31	0.007
653	30.63	-0.71	-0.71	4.64	64.53	0.007
654	30.68	-0.72	-0.72	4.62	64.74	0.007
655	30.72	-0.72	-0.72	4.60	64.96	0.007
656	30.77	-0.72	-0.72	4.58	65.17	0.007
657	30.82	-0.72	-0.72	4.56	65.39	0.006
658	30.86	-0.72	-0.72	4.54	65.60	0.006
659	30.91	-0.73	-0.73	4.52	65.82	0.006
660	30.96	-0.73	-0.73	4.50	66.03	0.006
661	31.01	-0.73	-0.73	4.49	66.24	0.006
662	31.05	-0.73	-0.73	4.47	66.45	0.006
663	31.10	-0.74	-0.74	4.45	66.66	0.005
664	31.15	-0.74	-0.74	4.43	66.87	0.005
665	31.19	-0.74	-0.74	4.41	67.07	0.005
666	31.24	-0.74	-0.74	4.39	67.28	0.005
667	31.29	-0.75	-0.75	4.37	67.49	0.005
668	31.33	-0.75	-0.75	4.35	67.69	0.004
669	31.38	-0.75	-0.75	4.33	67.90	0.004
670	31.43	-0.75	-0.75	4.31	68.10	0.004
671	31.48	-0.75	-0.75	4.29	68.30	0.004
672	31.52	-1.57	-1.57	4.26	68.50	0.004
673	31.57	-1.59	-1.59	4.21	68.70	0.004
674	31.62	-1.61	-1.61	4.16	68.90	0.004
675	31.66	-1.62	-1.62	4.11	69.09	0.003
676	31.71	-1.64	-1.64	4.06	69.28	0.003
677	31.76	-1.66	-1.66	4.00	69.47	0.003
678	31.80	-1.68	-1.68	3.95	69.66	0.003
679	31.85	-1.70	-1.70	3.90	69.84	0.003
680	31.90	-1.72	-1.72	3.84	70.03	0.003
681	31.95	-1.74	-1.74	3.79	70.21	0.003
682	31.99	-1.76	-1.76	3.73	70.38	0.002
683	32.04	-1.78	-1.78	3.68	70.56	0.002
684	32.09	-1.80	-1.80	3.62	70.73	0.002
685	32.13	-1.82	-1.82	3.56	70.90	0.002
686	32.18	-1.84	-1.84	3.51	71.06	0.002
687	32.23	-1.86	-1.86	3.45	71.23	0.002
688	32.27	-1.88	-1.88	3.39	71.39	0.002
689	32.32	-1.90	-1.90	3.33	71.54	0.002
690	32.37	-1.92	-1.92	3.27	71.70	0.001
691	32.41	-1.94	-1.94	3.21	71.85	0.001
692	32.46	-1.96	-1.96	3.14	72.00	0.001
693	32.51	-1.98	-1.98	3.08	72.15	0.001
694	32.56	-2.00	-2.00	3.02	72.29	0.001
695	32.60	-2.01	-2.01	2.95	72.43	0.001
696	32.65	-2.03	-2.03	2.89	72.57	0.001
697	32.70	-2.05	-2.05	2.82	72.70	0.001
698	32.74	-2.07	-2.07	2.76	72.83	0.001
699	32.79	-2.09	-2.09	2.69	72.96	0.000
700	32.84	-2.11	-2.11	2.62	73.09	0.000

701	32.88	-2.13	-2.13	2.56	73.21	0.000
702	32.93	-2.15	-2.15	2.49	73.33	0.000
703	32.98	-2.17	-2.17	2.42	73.44	0.000
704	33.03	-2.19	-2.19	2.35	73.55	0.000
705	33.07	-2.21	-2.21	2.28	73.66	0.000
706	33.12	-2.23	-2.23	2.21	73.77	0.000
707	33.17	-2.25	-2.25	2.13	73.87	0.000
708	33.21	-2.27	-2.27	2.06	73.97	0.000
709	33.26	-2.29	-2.29	1.99	74.06	0.000
710	33.31	-2.31	-2.31	1.91	74.15	0.000
711	33.35	-2.33	-2.33	1.84	74.24	0.000
712	33.40	-2.35	-2.35	1.76	74.33	0.000
713	33.45	-2.37	-2.37	1.69	74.41	0.000
714	33.50	-2.38	-2.38	1.61	74.49	0.000
715	33.54	-2.40	-2.40	1.53	74.56	0.000
716	33.59	-2.42	-2.42	1.46	74.63	0.000
717	33.64	-2.44	-2.44	1.38	74.70	0.000
718	33.68	-2.46	-2.46	1.30	74.76	0.000
719	33.73	-2.48	-2.48	1.22	74.82	0.000
720	33.78	-2.50	-2.50	1.14	74.87	0.000
721	33.82	-2.52	-2.52	1.06	74.93	0.000
722	33.87	-2.54	-2.54	0.97	74.97	0.000
723	33.92	-2.56	-2.56	0.89	75.02	0.000
724	33.97	-2.58	-2.58	0.81	75.06	0.000
725	34.01	-2.60	-2.60	0.72	75.09	0.000
726	34.06	-2.62	-2.62	0.64	75.13	0.000
727	34.11	-2.64	-2.64	0.55	75.15	0.000
728	34.15	-2.66	-2.66	0.47	75.18	-0.001
729	34.20	-2.68	-2.68	0.38	75.20	-0.001
730	34.25	-2.70	-2.70	0.29	75.21	-0.001
731	34.29	-2.72	-2.72	0.21	75.23	-0.001
732	34.34	-2.74	-2.74	0.12	75.23	-0.001
733	34.39	-2.75	-2.75	0.03	75.24	-0.001
734	34.43	-2.77	-2.77	-0.06	75.24	-0.001
735	34.48	-2.79	-2.79	-0.15	75.23	-0.001
736	34.53	-2.81	-2.81	-0.24	75.22	-0.001
737	34.58	-2.83	-2.83	-0.34	75.21	-0.001
738	34.62	-2.85	-2.85	-0.43	75.19	-0.001
739	34.67	-2.87	-2.87	-0.52	75.17	-0.001
740	34.72	-2.89	-2.89	-0.62	75.14	-0.001
741	34.76	-2.91	-2.91	-0.71	75.11	-0.002
742	34.81	-2.93	-2.93	-0.81	75.07	-0.002
743	34.86	-2.95	-2.95	-0.90	75.03	-0.002
744	34.90	-2.97	-2.97	-1.00	74.99	-0.002
745	34.95	-2.99	-2.99	-1.10	74.94	-0.002
746	35.00	-3.01	-3.01	-1.19	74.89	-0.002
747	35.05	-3.03	-3.03	-1.29	74.83	-0.002
748	35.09	-3.05	-3.05	-1.39	74.77	-0.002
749	35.14	-3.07	-3.07	-1.49	74.70	-0.002
750	35.19	-3.09	-3.09	-1.59	74.63	-0.003

751	35.23	-3.11	-3.11	-1.69	74.55	-0.003
752	35.28	-3.12	-3.12	-1.80	74.47	-0.003
753	35.33	-3.14	-3.14	-1.90	74.38	-0.003
754	35.37	-3.16	-3.16	-2.00	74.29	-0.003
755	35.42	-3.18	-3.18	-2.11	74.19	-0.003
756	35.47	-3.20	-3.20	-2.21	74.09	-0.003
757	35.52	-3.22	-3.22	-2.32	73.98	-0.004
758	35.56	-3.24	-3.24	-2.42	73.87	-0.004
759	35.61	-3.26	-3.26	-2.53	73.76	-0.004
760	35.66	-3.28	-3.28	-2.64	73.64	-0.004
761	35.70	-3.30	-3.30	-2.74	73.51	-0.004
762	35.75	-3.32	-3.32	-2.85	73.38	-0.004
763	35.80	-3.34	-3.34	-2.96	73.24	-0.004
764	35.84	-3.36	-3.36	-3.07	73.10	-0.005
765	35.89	-3.38	-3.38	-3.18	72.95	-0.005
766	35.94	-3.40	-3.40	-3.29	72.80	-0.005
767	35.99	-3.42	-3.42	-3.41	72.64	-0.005
768	36.03	-3.05	-3.05	-3.51	72.48	-0.005
769	36.08	-3.07	-3.07	-3.60	72.31	-0.006
770	36.13	-3.09	-3.09	-3.70	72.14	-0.006
771	36.17	-3.11	-3.11	-3.79	71.97	-0.006
772	36.22	-3.13	-3.13	-3.89	71.79	-0.006
773	36.27	-3.15	-3.15	-3.99	71.60	-0.006
774	36.31	-3.17	-3.17	-4.09	71.41	-0.006
775	36.36	-3.19	-3.19	-4.19	71.22	-0.007
776	36.41	-3.21	-3.21	-4.29	71.02	-0.007
777	36.45	-3.23	-3.23	-4.39	70.81	-0.007
778	36.50	-3.25	-3.25	-4.49	70.61	-0.007
779	36.55	-3.27	-3.27	-4.59	70.39	-0.007
780	36.60	-3.28	-3.28	-4.69	70.17	-0.008
781	36.64	-3.30	-3.30	-4.80	69.95	-0.008
782	36.69	-3.32	-3.32	-4.90	69.72	-0.008
783	36.74	-3.34	-3.34	-5.00	69.49	-0.008
784	36.78	-3.36	-3.36	-5.11	69.25	-0.009
785	36.83	-3.38	-3.38	-5.22	69.01	-0.009
786	36.88	-3.40	-3.40	-5.32	68.76	-0.009
787	36.92	-3.42	-3.42	-5.43	68.51	-0.009
788	36.97	-3.44	-3.44	-5.54	68.25	-0.009
789	37.02	-3.46	-3.46	-5.65	67.99	-0.010
790	37.07	-3.48	-3.48	-5.76	67.72	-0.010
791	37.11	-3.50	-3.50	-5.86	67.45	-0.010
792	37.16	-3.52	-3.52	-5.98	67.17	-0.010
793	37.21	-3.54	-3.54	-6.09	66.89	-0.011
794	37.25	-3.56	-3.56	-6.20	66.60	-0.011
795	37.30	-3.58	-3.58	-6.31	66.31	-0.011
796	37.35	-3.60	-3.60	-6.42	66.01	-0.011
797	37.39	-3.62	-3.62	-6.54	65.70	-0.012
798	37.44	-3.63	-3.63	-6.65	65.39	-0.012
799	37.49	-3.65	-3.65	-6.77	65.08	-0.012
800	37.54	-3.67	-3.67	-6.88	64.76	-0.012

801	37.58	-3.69	-3.69	-7.00	64.43	-0.013
802	37.63	-3.71	-3.71	-7.12	64.10	-0.013
803	37.68	-3.73	-3.73	-7.24	63.76	-0.013
804	37.72	-3.75	-3.75	-7.35	63.42	-0.014
805	37.77	-3.77	-3.77	-7.47	63.07	-0.014
806	37.82	-3.79	-3.79	-7.59	62.72	-0.014
807	37.86	-3.81	-3.81	-7.71	62.36	-0.014
808	37.91	-3.83	-3.83	-7.84	61.99	-0.015
809	37.96	-3.85	-3.85	-7.96	61.62	-0.015
810	38.01	-3.87	-3.87	-8.08	61.24	-0.015
811	38.05	-3.89	-3.89	-8.20	60.86	-0.016
812	38.10	-3.91	-3.91	-8.33	60.47	-0.016
813	38.15	-3.93	-3.93	-8.45	60.08	-0.016
814	38.19	-3.95	-3.95	-8.58	59.68	-0.016
815	38.24	-3.97	-3.97	-8.70	59.27	-0.017
816	38.29	-3.99	-3.99	-8.83	58.86	-0.017
817	38.33	-4.00	-4.00	-8.96	58.44	-0.017
818	38.38	-4.02	-4.02	-9.08	58.02	-0.018
819	38.43	-4.04	-4.04	-9.21	57.59	-0.018
820	38.47	-4.06	-4.06	-9.34	57.15	-0.018
821	38.52	-4.08	-4.08	-9.47	56.71	-0.019
822	38.57	-4.10	-4.10	-9.60	56.26	-0.019
823	38.62	-4.12	-4.12	-9.73	55.81	-0.019
824	38.66	-4.14	-4.14	-9.87	55.35	-0.020
825	38.71	-4.16	-4.16	-10.00	54.88	-0.020
826	38.76	-4.18	-4.18	-10.13	54.41	-0.020
827	38.80	-4.20	-4.20	-10.27	53.93	-0.021
828	38.85	-4.22	-4.22	-10.40	53.45	-0.021
829	38.90	-4.24	-4.24	-10.54	52.95	-0.021
830	38.94	-4.26	-4.26	-10.67	52.46	-0.022
831	38.99	-4.28	-4.28	-10.81	51.95	-0.022
832	39.04	-4.30	-4.30	-10.95	51.44	-0.022
833	39.09	-4.32	-4.32	-11.08	50.92	-0.023
834	39.13	-4.34	-4.34	-11.22	50.40	-0.023
835	39.18	-4.36	-4.36	-11.36	49.87	-0.023
836	39.23	-4.37	-4.37	-11.50	49.33	-0.024
837	39.27	-4.39	-4.39	-11.64	48.79	-0.024
838	39.32	-4.41	-4.41	-11.78	48.24	-0.024
839	39.37	-4.43	-4.43	-11.93	47.68	-0.025
840	39.41	-4.45	-4.45	-12.07	47.12	-0.025
841	39.46	-4.47	-4.47	-12.21	46.55	-0.025
842	39.51	-4.49	-4.49	-12.35	45.97	-0.026
843	39.56	-4.51	-4.51	-12.50	45.39	-0.026
844	39.60	-4.53	-4.53	-12.64	44.80	-0.027
845	39.65	-4.55	-4.55	-12.79	44.20	-0.027
846	39.70	-4.57	-4.57	-12.94	43.59	-0.027
847	39.74	-4.59	-4.59	-13.08	42.98	-0.028
848	39.79	-4.61	-4.61	-13.23	42.36	-0.028
849	39.84	-4.63	-4.63	-13.38	41.74	-0.028
850	39.88	-4.65	-4.65	-13.53	41.11	-0.029

851	39.93	-4.67	-4.67	-13.68	40.47	-0.029
852	39.98	-4.69	-4.69	-13.83	39.82	-0.030
853	40.03	-4.71	-4.71	-13.98	39.17	-0.030
854	40.07	-4.72	-4.72	-14.13	38.51	-0.030
855	40.12	-4.74	-4.74	-14.29	37.84	-0.031
856	40.17	-4.76	-4.76	-14.44	37.17	-0.031
857	40.21	-4.78	-4.78	-14.59	36.48	-0.031
858	40.26	-4.80	-4.80	-14.75	35.79	-0.032
859	40.31	-4.82	-4.82	-14.90	35.10	-0.032
860	40.35	-4.84	-4.84	-15.06	34.39	-0.033
861	40.40	-4.86	-4.86	-15.22	33.68	-0.033
862	40.45	-4.88	-4.88	-15.37	32.96	-0.033
863	40.50	-4.90	-4.90	-15.53	32.24	-0.034
864	40.54	-4.92	-4.92	-15.69	31.50	-0.034
865	40.59	-4.94	-4.94	-15.85	30.76	-0.035
866	40.64	-4.96	-4.96	-16.01	30.02	-0.035
867	40.68	-4.98	-4.98	-16.17	29.26	-0.035
868	40.73	-5.00	-5.00	-16.33	28.50	-0.036
869	40.78	-5.02	-5.02	-16.49	27.73	-0.036
870	40.82	-5.04	-5.04	-16.66	26.95	-0.037
871	40.87	-5.06	-5.06	-16.82	26.16	-0.037
872	40.92	-5.08	-5.08	-16.98	25.37	-0.037
873	40.96	-5.09	-5.09	-17.15	24.56	-0.038
874	41.01	-5.11	-5.11	-17.31	23.76	-0.038
875	41.06	-5.13	-5.13	-17.48	22.94	-0.039
876	41.11	-5.15	-5.15	-17.65	22.11	-0.039
877	41.15	-5.17	-5.17	-17.81	21.28	-0.039
878	41.20	-5.19	-5.19	-17.98	20.44	-0.040
879	41.25	-5.21	-5.21	-18.15	19.59	-0.040
880	41.29	-5.23	-5.23	-18.32	18.73	-0.041
881	41.34	-5.25	-5.25	-18.49	17.87	-0.041
882	41.39	-5.27	-5.27	-18.66	17.00	-0.041
883	41.43	-5.29	-5.29	-18.83	16.12	-0.042
884	41.48	-5.31	-5.31	-19.00	15.23	-0.042
885	41.53	-5.33	-5.33	-19.17	14.33	-0.043
886	41.58	-5.35	-5.35	-19.35	13.43	-0.043
887	41.62	-5.37	-5.37	-19.52	12.51	-0.044
888	41.67	-5.39	-5.39	-19.70	11.59	-0.044
889	41.72	-5.41	-5.41	-19.87	10.66	-0.044
890	41.76	-5.43	-5.43	-20.05	9.73	-0.045
891	41.81	-5.44	-5.44	-20.22	8.78	-0.045
892	41.86	-5.46	-5.46	-20.40	7.83	-0.046
893	41.90	-5.48	-5.48	-20.58	6.86	-0.046
894	41.95	-5.50	-5.50	-20.76	5.89	-0.046
895	42.00	-5.52	-5.52	-20.94	4.91	-0.047
896	42.05	-5.54	-5.54	-21.12	3.92	-0.047
897	42.09	-5.56	-5.56	-21.30	2.93	-0.048
898	42.14	-5.58	-5.58	-21.48	1.92	-0.048
899	42.19	-5.60	-5.60	-21.66	0.91	-0.049

The above data can be selected using mouse, then copy and paste into Excel to create graphics

ATTACHMENT B: LPILE ANALYSES – SECTION B

LPile Analysis

In order to determine whether or not the removal of soil from the canal-side of the existing pile-supported bulkheads (Section B) will impact the sheet pile bulkhead analyses, LPile analyses will be performed to determime the approximate amount of lateral deflection that is expected to occur due to the dredging operations. LPile analyses are not required at Section A as the bulkhead structure is supported by (and restrained by) the Flushing Tunnel.

In order to simulate the removal of soil from the canal-side of the temporary bulkheads the analyses will include "boundary" and soil conditions which are considered to approximate the postulated weakened soil conditions (due to lack of confinement). These conditions are described below:

Piles & Plank with Weak Soil Layers: This analysis assumes that the two piles and timber plank remain fully effective. However, because of the dredging operations, all of the soils above the Phase III dredge elevation will be modelled as weak soils (due to the loss of confining pressure) by reducing the total unit weight of the effected soils to 80 pcf (the total unit weight of Soft Sediment) as noted in Reference 10.

Soil properties that were not stated in References 10 and 12 were derived using Table 1 (Section 2) of Reference 9.

The analysis results are included below.

LPile Input Data

Natural Alluvial Soils

γ_{tot}	=	115.0	pcf	γ'	=	52.6	pcf	ϕ	=	28.0	degrees
γ_{red}	=	80.0	pcf	γ'_{red}	=	17.6	pcf	k	=	65.0	pci

Depth Range

El. -3.00 feet to El. -20.50 feet ==> 0.0 feet to 17.50 feet below the top of pile/bottom of bulkhead (weak layer)

El. -20.50 feet to El. -23.00 feet ==> 17.50 feet to 20.00 feet below the top of pile/bottom of bulkhead (full properties)

Glacial Deposits

γ_{tot}	=	125.0	pcf	γ'	=	62.6	pcf	ϕ	=	34.0	degrees
γ_{red}	=	N/A		γ'_{red}	=	N/A	pcf	k	=	174.0	pci

Depth Range

El. -23.00 feet to El. -53.00 feet ==> 20.00 feet to 50.00 feet below the top of pile/bottom of bulkhead (full properties)

Pile Properties

d	=	12	in	Pile Diameter
C_D	=	0.90		Load Duration Factor (Permanent, Dead Load)
C_t	=	1.00		Temperature Factor
C_{ct}	=	1.00		Condition Treatment Factor
C_F	=	1.00		Size Factor
C_{ls}	=	1.06		Load Sharing Factor (2 Piles)
C_M	=	1.00		Wet Service Fε (per Sect 6.3.3)
F_b	=	850	psi	Per Table 4D - Use Spruce-Pine-Fir, No. 1 Post & Timbers (Note: Table 6A is for ASTM-graded timber piles and does not include a listing for spruce)
F'_b	=	$F_bC_DC_tC_FC_{ls}C_M$		
	=	810.9	psi	
E	=	1,300,000	psi	Per Table 4D - Use Spruce-Pine-Fir, No. 1 Post & Timbers (Note: Table 6A is for ASTM-graded timber piles and does not include a listing for spruce)
E'	=	EC_tC_M		
	=	1,300,000	psi	
s	=	2.5	ft	Pile spacing

Timber Plank Properties

t	=	11.38	in	Specified plank thickness
b	=	2.50	ft	Continuous plank, thus width = pile spacing
	=	30.00	in	
F'_b	=	810.9	psi	Use same values as above
E'	=	1,300,000	psi	Use same values as above

Single Pile Properties

A_1	=	$(\pi d^2/4) / s$	
	=	45.24	in^2 / ft
S_1	=	$(\pi d^3/32) / s$	
	=	67.86	in^3 / ft
I_1	=	$(\pi d^4/64) / s$	
	=	407.15	in^4 / ft

Timber Plank Properties

A_p	=	b x t / s	
	=	136.50	in^2 / ft
S_p	=	$(bt^2/6) / s$	
	=	258.78	in^3 / ft
I_p	=	$(bt^3)/12) / s$	
	=	1471.82	in^4 / ft

Calculate Properties of the Combined Section (2 Piles & Continuous Plank)

$A_{tot} = 2A_1 + A_p$

$= 226.98 \quad in^2 / ft$

$S_{tot} = 2S_1 + S_p$

$= 394.50 \quad in^3 / ft$

$I_{tot} = 2I_1 + I_p$

$= 2286.12 \quad in^4 / ft$

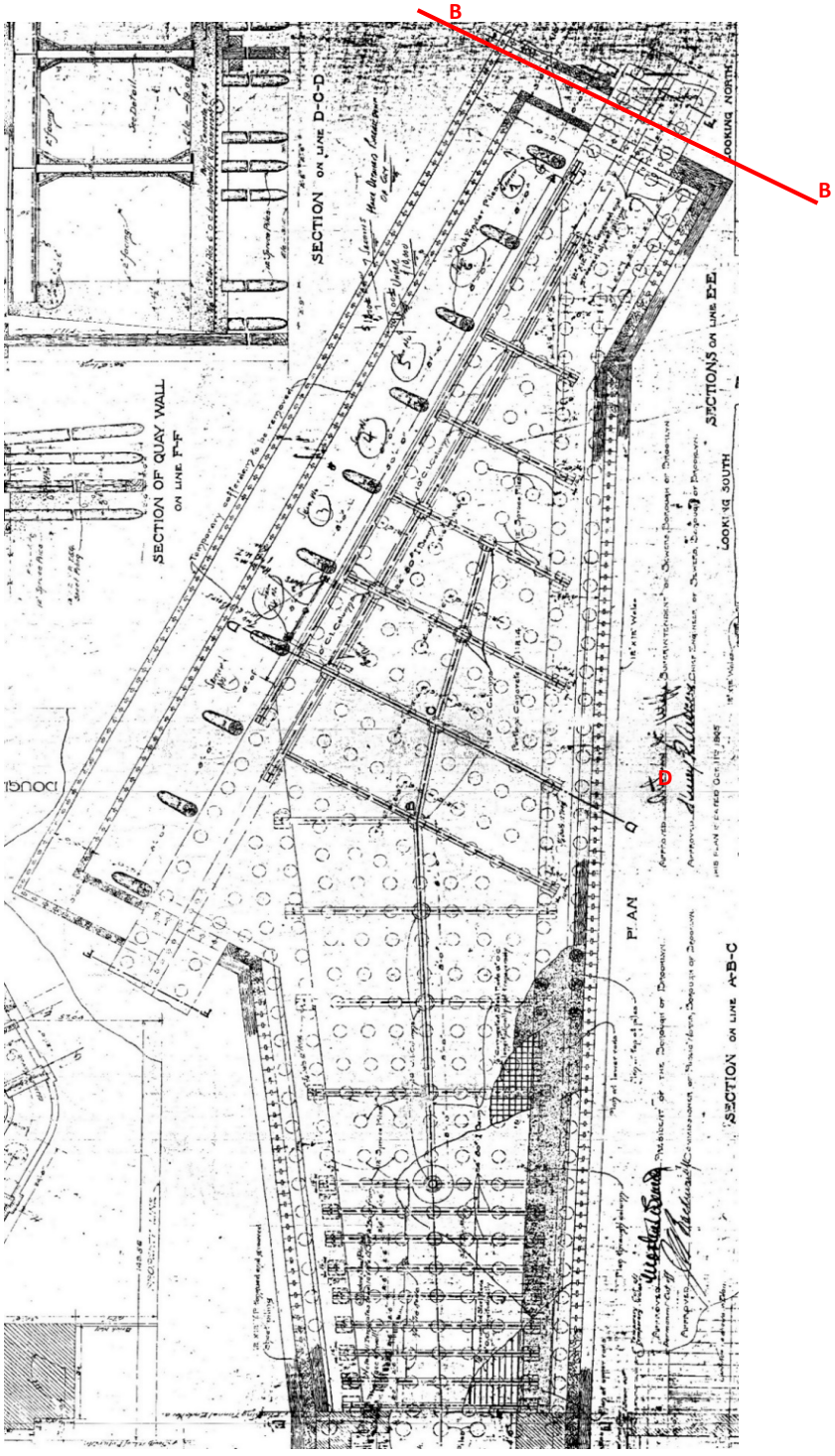
$M_{max} = F'_b \times S_{tot}$

$= 319{,}898 \quad$ in-lbs / ft

CALCULATION NUMBER

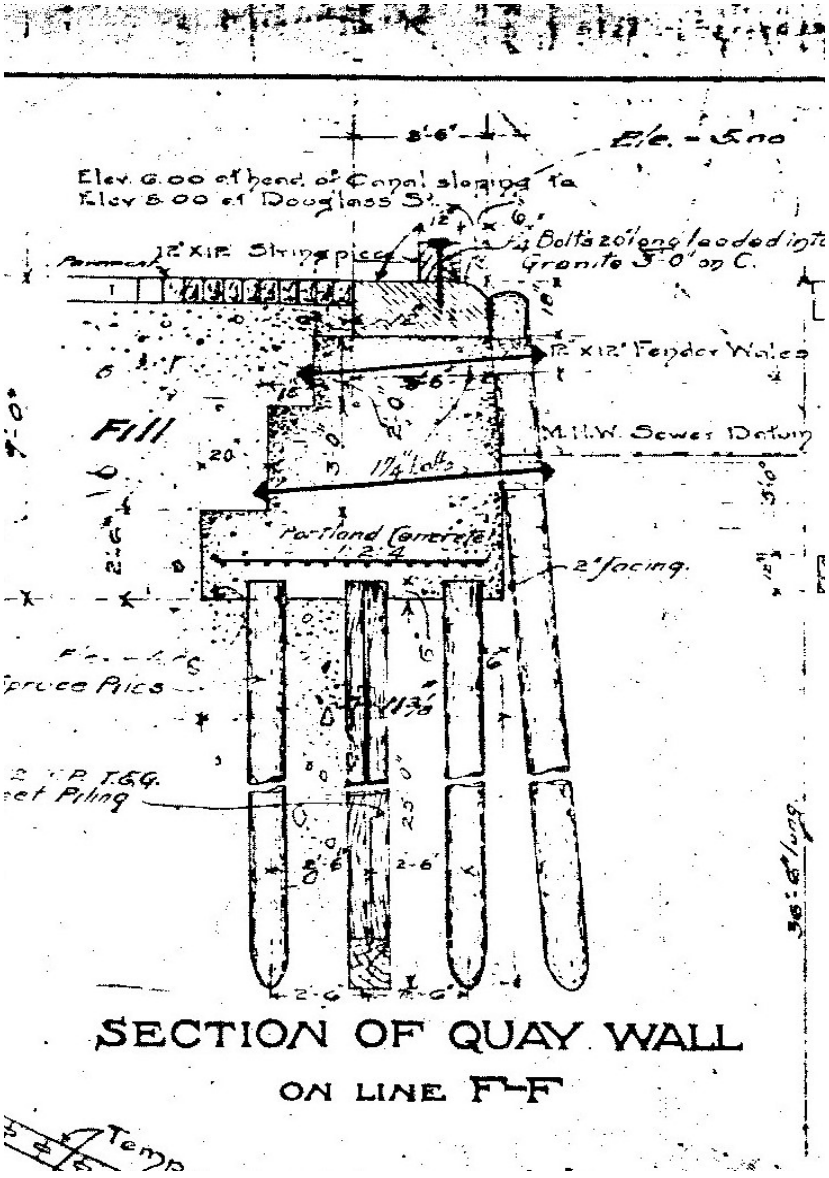
Project No.		Sys/Fun Code		Discipline Code		Document Type		Sequence No.		Revision No.
729221426	--	BH	--	S	--	CAL	--	003	--	E

Calculate Total Weight & Surcharge of Douglass Street Bulkhead @ Sect B-B (Per Unit Width)



Plan - Flushing Tunnel

Calculate Total Weight & Surcharge of Douglass Street Bulkhead (Per Unit Width)



CALCULATION NUMBER										
Project No.		Sys/Fun Code		Discipline Code		Document Type		Sequence No.		Revision No.
729221426	--	BH	--	S	--	CAL	--	003	--	E

Bulkhead Section Plan Dimensions

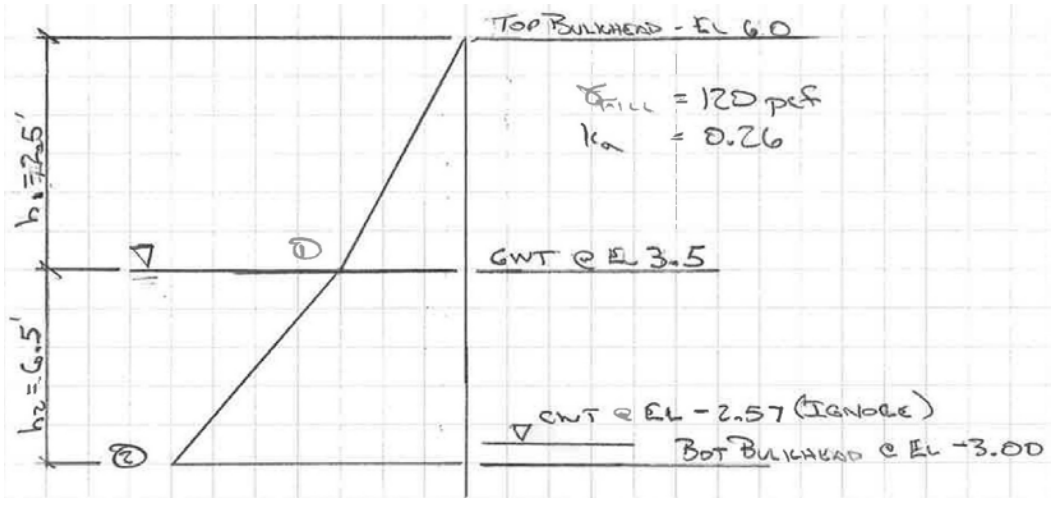
L = 7.42 ft, Distance Outlet to Start of Back Wall @ Sect F-F

W = 1.00 ft, Width at Face of Bulkhead Structure

	No.	Unit Weight	L	W	H	Total Weight
		pcf	ft	ft	ft	kips
Granite Cap	1	175	3.50	1.00	1.50	0.9
Conc Bulkhead 1st Level	1	150	4.50	1.00	2.00	1.4
Conc Bulkhead 2nd Level	1	150	5.75	1.00	3.00	2.6
Conc Bulkhead 3rd Level	1	150	7.42	1.00	2.50	2.8
Brick Paving	1	140	3.92	1.00	0.33	0.2
Fill - Level 1	1	120	2.92	1.00	2.00	0.7
Fill - Level 2	1	120	1.67	1.00	3.00	0.6
Fill - Level 3	1	120	0.00	1.00	2.50	0.0
				Total Weight (kips):		9.1

Calculate Lateral Pressures on Bulkhead Due to Soil

Conservatively assume fill to be present behind full depth of bulkhead wall, and ignore beneficial effects of canal water.



Elev.	Depth	Soil	Strata Thickness	K_a	γ_T	γ_w	γ'	$\gamma_{w\text{-canal}}$	Gradient (kcf)	ΔP_2 (ksf)	P_2 Cum (ksf)
6.0	0.0	Ground Surface									0.000
3.5	2.5	Fill (Above GWT)	2.50	0.26	120	0	120	0	0.031	0.078	0.078
-3.0	9.0	Fill (Below GWT)	6.50	0.26	120	62.4	57.6	0	0.077	0.503	0.581

Calculate Total Pressure on Wall using Data from Table above

h_1 = 2.5 ft
h_2 = 6.5 ft
p_1 = 0.078 ksf
p_2 = 0.581 ksf

k_a = 0.26 Active pressure coefficient for fill
q = 0.250 ksf vehichlar surcharge
q_h = k_a x q horizontal component of vehicular surcharge
= 0.065

H_{tot} = $(0.5 \times h_1 \times p_1) + [0.5 \times (p_1 + p_2) \times h_2] + [q_h \times (h_1 + h_2)]$
= 2.824 klf

P_{tot} = 9.1 klf (from above)

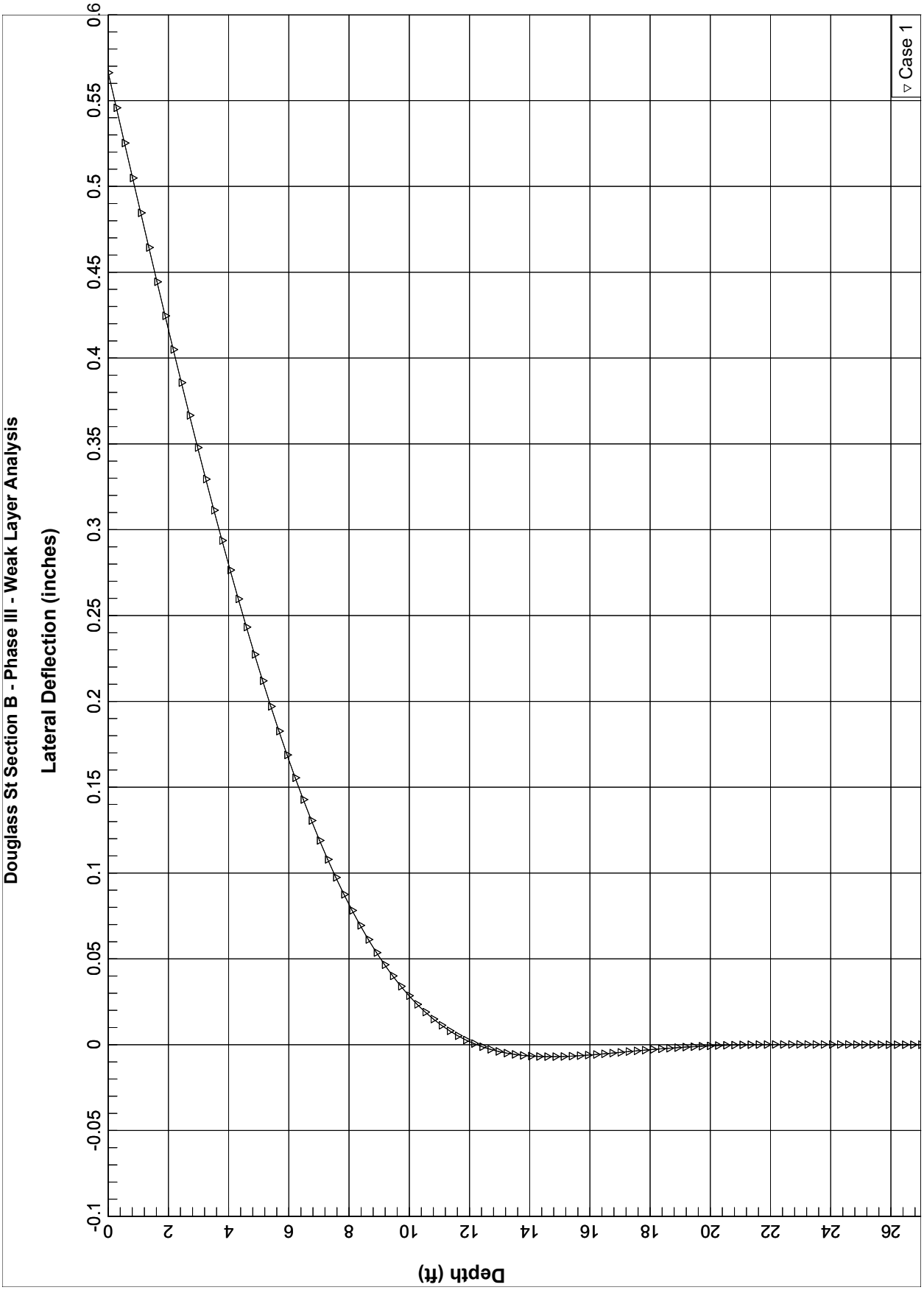
Comparison of LPile Results vs Design Deflections

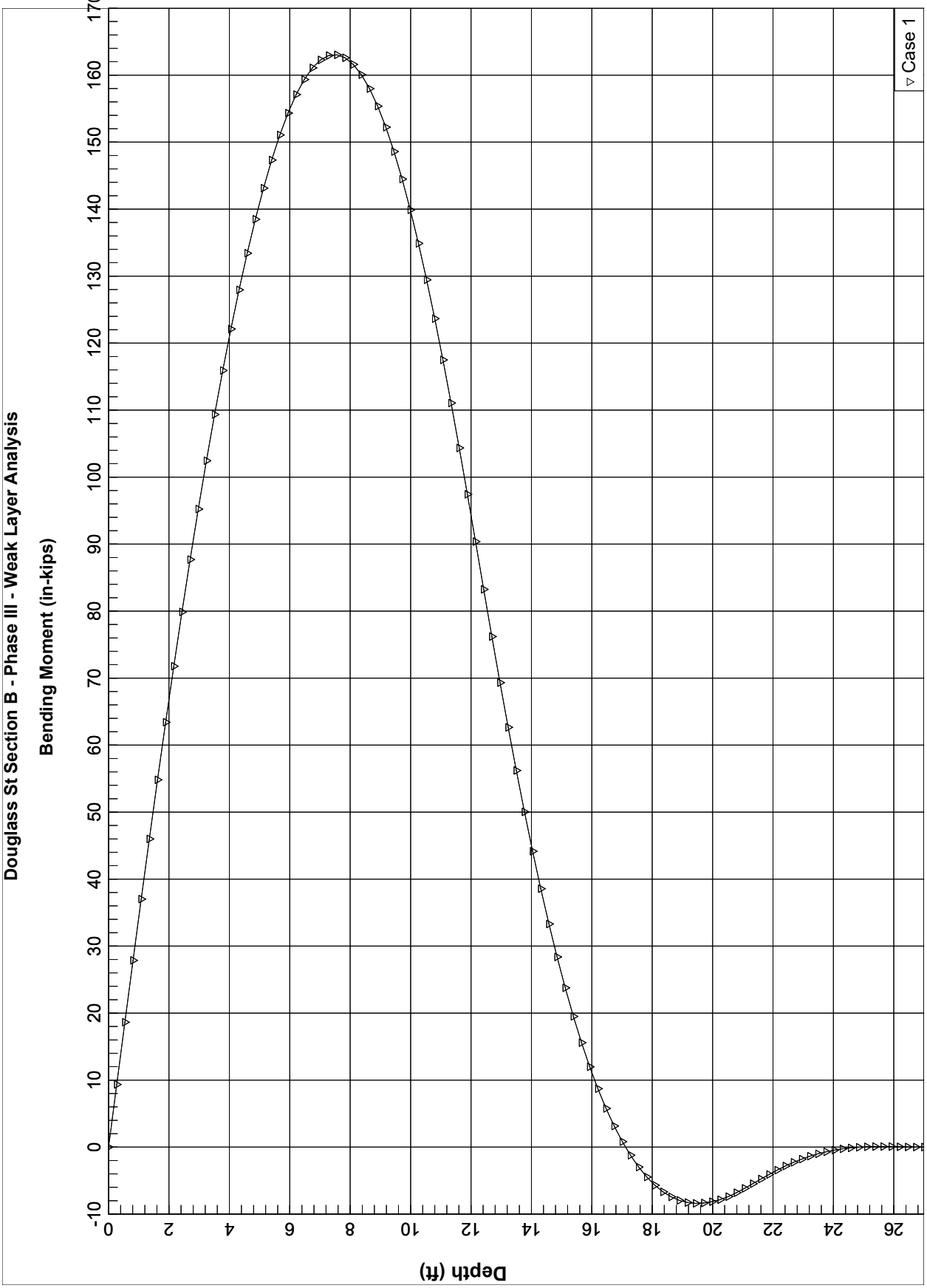
	Sheet Pile Bulkhead Deflection (ShoringSuite)	Exist Bulkhead Deflecton (LPile)
Douglass Street Section B		
Weak Layer Analysis	0.941 in	0.566 in

See Shoring Suite Analysis Report for Section B, Phase III Drained/Unddrained Conditions (Depth = 8.97 ft) in Attachment A.

Conclusion:

As the deflections of the existing bulkhead due to soil loads behind the structure are less than the expected sheet pile bulkhead deflections, it can be concluded that the potential movement of the existing bulkhead will not result in additional load being applied to the sheet pile bulkhead wall.


Douglass St Section B - Phase III - Weak Layer Analysis
Lateral Deflection (inches)
Depth (ft)
-0.1
-0.05
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
0.4
0.45
0.5
0.55
0.6
0
2
4
6
8
10
12
14
16
18
20
22
24
26
Case 1


Douglass St Section B - Phase III - Weak Layer Analysis
Bending Moment (in-kips)
Depth (ft)
Case 1
-10
0
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
0
2
4
6
8
10
12
14
16
18
20
22
24
26

```
================================================================================

                  LPile Plus for Windows, Version 2012-06.037

                Analysis of Individual Piles and Drilled Shafts
               Subjected to Lateral Loading Using the p-y Method

                          © 1985-2012 by Ensoft, Inc.
                              All Rights Reserved

================================================================================

This copy of LPile is licensed to:

Gregory E Brown
APTIM

Serial Number of Security Device:        164279214
Company Name Stored in Security Device:  Chicago Bridge & Iron Company


--------------------------------------------------------------------------------
                            Files Used for Analysis
--------------------------------------------------------------------------------

Path to file locations:        C:\Users\Gregory.Brown\Desktop\LPile Analyses\
Name of input data file:       Douglass Street Section B (Piles & Plank-Weak Ph III Layer)-2020.01.10.lp6d
Name of output report file:    Douglass Street Section B (Piles & Plank-Weak Ph III Layer)-2020.01.10.lp6o
Name of plot output file:      Douglass Street Section B (Piles & Plank-Weak Ph III Layer)-2020.01.10.lp6p
Name of runtime messeage file: Douglass Street Section B (Piles & Plank-Weak Ph III Layer)-2020.01.10.lp6r


--------------------------------------------------------------------------------
                           Date and Time of Analysis
--------------------------------------------------------------------------------

               Date:  January 10, 2020     Time:  14:45:44


--------------------------------------------------------------------------------
                                Problem Title
--------------------------------------------------------------------------------

Project Name: Gowanus RTA-1
```

Job Number: Douglass Street - Section B

Client: Gowanus RTA Trust

Engineer:

Description: Analysis with Weak Phase III Layer

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:
- Analysis does not use p-y multipliers (individual pile or shaft only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

- Number of pile increments	=	100	
- Maximum number of iterations allowed	=	100	
- Deflection tolerance for convergence	=	1.0000E-05	in
- Maximum allowable deflection	=	100.0000	in

Pile Response Output Options:
- Values of pile-head deflection, bending moment, shear force, and

soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1

Pile Structural Properties and Geometry

Total number of pile sections = 1

Total length of pile = 27.00 ft

Depth of ground surface below top of pile = 0.00 ft

Pile diameter values used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	12.0000000
2	27.000000	12.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	= Elastic with Specified Moment Capacity
Cross-sectional Shape	= Embedded Circular Pole
Section Length	= 27.00000000 ft
Top Width	= 12.00000000 in
Bottom Width	= 12.00000000 in
Top Area	= 226.98000000 Sq. in
Bottom Area	= 226.98000000 Sq. in
Moment of Inertia at Top	= 2286.12000000 in^4
Moment of Inertia at Bottom	= 2286.12000000 in^4
Drilled Hole Diameter	= 12.00000000 in
Elastic Modulus	= 1300000. lbs/in^2
Top Plastic Moment Capacity	= 319898. in-lb

Bot Plastic Moment Capacity = 319898. in-lb

Ground Slope and Pile Batter Angles

Ground Slope Angle = 0.000 degrees
= 0.000 radians

Pile Batter Angle = 0.000 degrees
= 0.000 radians

Soil and Rock Layering Information

The soil profile is modelled using 3 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	0.0000 ft
Distance from top of pile to bottom of layer	=	17.50000 ft
Effective unit weight at top of layer	=	17.60000 pcf
Effective unit weight at bottom of layer	=	17.60000 pcf
Friction angle at top of layer	=	28.00000 deg.
Friction angle at bottom of layer	=	28.00000 deg.
Subgrade k at top of layer	=	65.00000 pci
Subgrade k at bottom of layer	=	65.00000 pci

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	17.50000 ft
Distance from top of pile to bottom of layer	=	20.00000 ft
Effective unit weight at top of layer	=	52.60000 pcf
Effective unit weight at bottom of layer	=	52.60000 pcf
Friction angle at top of layer	=	28.00000 deg.
Friction angle at bottom of layer	=	28.00000 deg.
Subgrade k at top of layer	=	65.00000 pci
Subgrade k at bottom of layer	=	65.00000 pci

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	20.00000 ft
Distance from top of pile to bottom of layer	=	50.00000 ft
Effective unit weight at top of layer	=	62.60000 pcf
Effective unit weight at bottom of layer	=	62.60000 pcf
Friction angle at top of layer	=	34.00000 deg.
Friction angle at bottom of layer	=	34.00000 deg.
Subgrade k at top of layer	=	174.00000 pci
Subgrade k at bottom of layer	=	174.00000 pci

(Depth of lowest soil layer extends 23.00 ft below pile tip)

**** Warning - Possible Input Data Error ****

Values entered for effective unit weights of soil were outside
the limits of 0.011574 pci (20 pcf) or 0.0810019 pci (140 pcf)
This data may be erroneous. Please check your data.

Summary of Soil Properties

Layer Num.	Layer Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.	kpy pci
1	Sand (Reese, et al.)	0.00	17.600	28.000	65.000
		17.500	17.600	28.000	65.000
2	Sand (Reese, et al.)	17.500	52.600	28.000	65.000
		20.000	52.600	28.000	65.000
3	Sand (Reese, et al.)	20.000	62.600	34.000	174.000
		50.000	62.600	34.000	174.000

Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Type	Condition 1	Condition 2	Axial Thrust Force, lbs	Compute Top y vs. Pile Length
1	1	V = 2824.00000 lbs	M = 0.0000 in-lbs	9100.00000000	Yes

V = perpendicular shear force applied to pile head
M = bending moment applied to pile head
y = lateral deflection relative to pile axis
S = pile slope relative to original pile batter angle
R = rotational stiffness applie to pile head
Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

---

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Moment-curvature properties were derived from elastic-plastic section properties

---

Computed Values of Pile Loading and Deflection for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 2824.000 lbs
Applied moment at pile head = 0.000 in-lbs
Axial thrust load on pile head = 9100.000 lbs

Depth X feet	Deflect. y inches	Bending Moment in-lbs	Shear Force lbs	Slope S radians	Total Stress psi*	Bending Stiffness lb-in^2	Soil Res. p lb/in	Soil Spr. Es*h lb/inch	Distrib. Lat. Load lb/inch
0.00	0.5663	-5.029E-07	2824.0000	-0.006328	40.0916	2.972E+09	0.000	0.000	0.000
0.270	0.5458	9336.3212	2819.1872	-0.006322	64.5951	2.972E+09	-2.9709	17.6371	0.000
0.540	0.5253	18641.	2804.0857	-0.006307	89.0160	2.972E+09	-6.3511	39.1732	0.000
0.810	0.5049	27879.	2777.7517	-0.006282	113.2603	2.972E+09	-9.9045	63.5593	0.000
1.080	0.4846	37011.	2739.9054	-0.006246	137.2294	2.972E+09	-13.4574	89.9779	0.000
1.350	0.4644	46002.	2690.7771	-0.006201	160.8245	2.972E+09	-16.8687	117.6849	0.000
1.620	0.4444	54813.	2631.0762	-0.006146	183.9511	2.972E+09	-19.9838	145.6953	0.000
1.890	0.4246	63413.	2562.1984	-0.006082	206.5224	2.972E+09	-22.5334	171.9520	0.000
2.160	0.4050	71775.	2485.7893	-0.006008	228.4676	2.972E+09	-24.6327	197.0653	0.000
2.430	0.3857	79876.	2403.4438	-0.005925	249.7280	2.972E+09	-26.1978	220.0968	0.000
2.700	0.3666	87699.	2316.0665	-0.005834	270.2600	2.972E+09	-27.7388	245.1580	0.000
2.970	0.3478	95228.	2224.3122	-0.005734	290.0202	2.972E+09	-28.8996	269.1833	0.000
3.240	0.3294	102450.	2127.7934	-0.005627	308.9763	2.972E+09	-30.6798	301.7357	0.000
3.510	0.3114	109348.	2025.9906	-0.005511	327.0784	2.972E+09	-32.1614	334.6416	0.000
3.780	0.2937	115904.	1920.2287	-0.005388	344.2852	2.972E+09	-33.1237	365.3797	0.000
4.050	0.2765	122109.	1811.6827	-0.005259	360.5696	2.972E+09	-33.8801	397.0464	0.000
4.320	0.2596	127954.	1698.5049	-0.005122	375.9103	2.972E+09	-35.9828	449.0094	0.000
4.590	0.2433	133417.	1578.8175	-0.004980	390.2488	2.972E+09	-37.8984	504.7368	0.000
4.860	0.2274	138478.	1453.2644	-0.004832	403.5319	2.972E+09	-39.6035	564.3273	0.000
5.130	0.2120	143119.	1322.0663	-0.004678	415.7122	2.972E+09	-41.3830	632.5536	0.000
5.400	0.1971	147321.	1184.7984	-0.004520	426.7403	2.972E+09	-43.3503	712.7423	0.000
5.670	0.1827	151063.	1041.3998	-0.004357	436.5616	2.972E+09	-45.1673	801.0899	0.000
5.940	0.1688	154326.	892.4124	-0.004191	445.1257	2.972E+09	-46.8002	898.1497	0.000
6.210	0.1555	157093.	738.4581	-0.004021	452.3874	2.972E+09	-48.2333	1004.8438	0.000
6.480	0.1428	159348.	580.2088	-0.003849	458.3069	2.972E+09	-49.4515	1122.2309	0.000
6.750	0.1306	161080.	418.3822	-0.003674	462.8506	2.972E+09	-50.4414	1251.5335	0.000
7.020	0.1190	162276.	253.7382	-0.003498	465.9909	2.972E+09	-51.1907	1394.1705	0.000
7.290	0.1079	162930.	87.0746	-0.003320	467.7072	2.972E+09	-51.6881	1551.7999	0.000
7.560	0.0974	163036.	-80.7772	-0.003143	467.9857	2.972E+09	-51.9241	1726.3723	0.000
7.830	0.0876	162592.	-248.9559	-0.002965	466.8198	2.972E+09	-51.8900	1920.2014	0.000
8.100	0.0782	161598.	-416.5751	-0.002788	464.2106	2.972E+09	-51.5787	2136.0567	0.000
8.370	0.0695	160057.	-582.7268	-0.002613	460.1667	2.972E+09	-50.9841	2377.2878	0.000
8.640	0.0613	157976.	-746.4851	-0.002440	454.7046	2.972E+09	-50.1013	2647.9954	0.000

8.910	0.0537	155364.	-906.9098	-0.002269	447.8488	2.972E+09	-48.9263	2953.2697	0.000
9.180	0.0466	152233.	-1063.0488	-0.002101	439.6319	2.972E+09	-47.4558	3299.5346	0.000
9.450	0.0401	148599.	-1213.9396	-0.001937	430.0948	2.972E+09	-45.6867	3695.0562	0.000
9.720	0.0340	144481.	-1358.6095	-0.001778	419.2863	2.972E+09	-43.6157	4150.7232	0.000
9.990	0.0285	139900.	-1496.0732	-0.001623	407.2640	2.972E+09	-41.2384	4681.2957	0.000
10.260	0.0235	134882.	-1625.3273	-0.001473	394.0937	2.972E+09	-38.5480	5307.5035	0.000
10.530	0.0190	129455.	-1745.3384	-0.001329	379.8500	2.972E+09	-35.5329	6059.7996	0.000
10.800	0.0149	123650.	-1855.0222	-0.001191	364.6164	2.972E+09	-32.1731	6985.6200	0.000
11.070	0.0113	117504.	-1953.2042	-0.001059	348.4860	2.972E+09	-28.4331	8164.9402	0.000
11.340	0.008058	111056.	-2038.5451	-0.000935	331.5622	2.972E+09	-24.2465	9748.6928	0.000
11.610	0.005226	104350.	-2109.3808	-0.000817	313.9611	2.972E+09	-19.4792	12076.	0.000
11.880	0.002763	97436.	-2163.3046	-0.000707	295.8145	2.972E+09	-13.8070	16192.	0.000
12.150	0.000643	90373.	-2195.2970	-0.000605	277.2793	2.972E+09	-5.9414	29921.	0.000
12.420	-0.001157	83246.	-2190.5979	-0.000510	258.5728	2.972E+09	8.8421	24765.	0.000
12.690	-0.002663	76208.	-2151.7036	-0.000423	240.1028	2.972E+09	15.1667	18454.	0.000
12.960	-0.003900	69328.	-2095.4886	-0.000344	222.0443	2.972E+09	19.5339	16229.	0.000
13.230	-0.004892	62650.	-2026.7661	-0.000272	204.5181	2.972E+09	22.8874	15159.	0.000
13.500	-0.005663	56210.	-1948.3339	-0.000207	187.6172	2.972E+09	25.5275	14606.	0.000
13.770	-0.006235	50037.	-1862.2550	-0.000149	171.4149	2.972E+09	27.6077	14347.	0.000
14.040	-0.006630	44152.	-1770.1917	-9.799E-05	155.9690	2.972E+09	29.2215	14280.	0.000
14.310	-0.006870	38572.	-1673.5511	-5.290E-05	141.3244	2.972E+09	30.4332	14353.	0.000
14.580	-0.006973	33310.	-1573.5595	-1.372E-05	127.5151	2.972E+09	31.2900	14539.	0.000
14.850	-0.006959	28376.	-1471.3059	1.991E-05	114.5651	2.972E+09	31.8295	14820.	0.000
15.120	-0.006844	23775.	-1367.7682	4.834E-05	102.4896	2.972E+09	32.0827	15188.	0.000
15.390	-0.006645	19510.	-1263.8309	7.193E-05	91.2960	2.972E+09	32.0762	15639.	0.000
15.660	-0.006378	15581.	-1160.2970	9.106E-05	80.9845	2.972E+09	31.8337	16172.	0.000
15.930	-0.006055	11986.	-1057.8961	0.000106	71.5487	2.972E+09	31.3767	16788.	0.000
16.200	-0.005691	8719.5727	-957.2907	0.000117	62.9765	2.972E+09	30.7254	17494.	0.000
16.470	-0.005295	5775.6214	-859.0805	0.000125	55.2500	2.972E+09	29.8982	18295.	0.000
16.740	-0.004879	3145.3442	-763.8058	0.000130	48.3467	2.972E+09	28.9133	19201.	0.000
17.010	-0.004452	818.4859	-671.9505	0.000132	42.2398	2.972E+09	27.7875	20225.	0.000
17.280	-0.004021	-1216.6963	-583.9439	0.000132	43.2849	2.972E+09	26.5375	21381.	0.000
17.550	-0.003596	-2973.2591	-499.9316	0.000130	47.8951	2.972E+09	25.3219	22817.	0.000
17.820	-0.003180	-4463.9069	-419.0975	0.000126	51.8073	2.972E+09	24.5757	25036.	0.000
18.090	-0.002781	-5696.4253	-340.9883	0.000120	55.0421	2.972E+09	23.6398	27543.	0.000
18.360	-0.002401	-6680.5990	-266.1953	0.000113	57.6251	2.972E+09	22.5287	30395.	0.000
18.630	-0.002046	-7428.0613	-195.2617	0.000106	59.5868	2.972E+09	21.2575	33668.	0.000
18.900	-0.001716	-7952.1317	-128.6796	9.738E-05	60.9623	2.972E+09	19.8426	37462.	0.000
19.170	-0.001415	-8267.6472	-66.8883	8.854E-05	61.7904	2.972E+09	18.3002	41913.	0.000
19.440	-0.001142	-8390.7890	-10.2750	7.946E-05	62.1136	2.972E+09	16.6463	47212.	0.000
19.710	-0.000900	-8338.9149	38.2495	7.034E-05	61.9774	2.972E+09	13.3071	47919.	0.000
19.980	-0.000687	-8147.0801	76.4911	6.135E-05	61.4739	2.972E+09	10.2988	48602.	0.000
20.250	-0.000502	-7846.8708	118.4577	5.264E-05	60.6860	2.972E+09	15.6066	100695.	0.000
20.520	-0.000345	-7382.5779	161.4498	4.433E-05	59.4675	2.972E+09	10.9318	102522.	0.000

20.790	-0.000215	-6803.2901	190.3701	3.660E-05	57.9471	2.972E+09	6.9202	104348.	0.000
21.060	-0.000108	-6151.1382	207.3299	2.954E-05	56.2355	2.972E+09	3.5488	106175.	0.000
21.330	-2.345E-05	-5461.5341	214.3452	2.321E-05	54.4256	2.972E+09	0.7816	108002.	0.000
21.600	4.211E-05	-4763.5498	213.2989	1.764E-05	52.5937	2.972E+09	-1.4274	109828.	0.000
21.870	9.084E-05	-4080.3972	205.9150	1.282E-05	50.8008	2.972E+09	-3.1305	111655.	0.000
22.140	0.000125	-3429.9765	193.7418	8.722E-06	49.0937	2.972E+09	-4.3838	113481.	0.000
22.410	0.000147	-2825.4644	178.1441	5.313E-06	47.5072	2.972E+09	-5.2445	115308.	0.000
22.680	0.000160	-2275.9161	160.3015	2.532E-06	46.0649	2.972E+09	-5.7695	117135.	0.000
22.950	0.000164	-1786.8602	141.2138	3.173E-07	44.7813	2.972E+09	-6.0131	118961.	0.000
23.220	0.000162	-1360.8695	121.7104	-1.399E-06	43.6633	2.972E+09	-6.0261	120788.	0.000
23.490	0.000155	-998.0942	102.4635	-2.684E-06	42.7112	2.972E+09	-5.8548	122614.	0.000
23.760	0.000144	-696.7476	84.0037	-3.608E-06	41.9203	2.972E+09	-5.5402	124441.	0.000
24.030	0.000131	-453.5377	66.7374	-4.235E-06	41.2820	2.972E+09	-5.1180	126267.	0.000
24.300	0.000117	-264.0398	50.9653	-4.626E-06	40.7846	2.972E+09	-4.6179	128094.	0.000
24.570	0.000101	-123.0098	36.9008	-4.837E-06	40.4145	2.972E+09	-4.0639	129921.	0.000
24.840	8.546E-05	-24.6374	24.6878	-4.918E-06	40.1563	2.972E+09	-3.4749	131747.	0.000
25.110	6.948E-05	37.2572	14.4181	-4.911E-06	40.1894	2.972E+09	-2.8644	133574.	0.000
25.380	5.363E-05	69.0811	6.1466	-4.853E-06	40.2729	2.972E+09	-2.2414	135400.	0.000
25.650	3.803E-05	77.3735	-0.0940	-4.773E-06	40.2947	2.972E+09	-1.6108	137227.	0.000
25.920	2.270E-05	68.7534	-4.2821	-4.694E-06	40.2721	2.972E+09	-0.9744	139053.	0.000
26.190	7.619E-06	49.9021	-6.3974	-4.629E-06	40.2226	2.972E+09	-0.3313	140880.	0.000
26.460	-7.290E-06	27.5714	-6.4139	-4.587E-06	40.1640	2.972E+09	0.3211	142707.	0.000
26.730	-2.210E-05	8.6107	-4.2964	-4.567E-06	40.1142	2.972E+09	0.9860	144533.	0.000
27.000	-3.688E-05	0.000	0.000	-4.562E-06	40.0916	2.972E+09	1.6661	73180.	0.000

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.
  The above values of total stress are computed for combined axial and bending stress in elastic
  sections and do not equal actual stresses in concrete and steel in the range of nonlinear bending.

Output Summary for Load Case No. 1:

```
Pile-head deflection             =      0.5662624 inches
Computed slope at pile head      =     -0.0063275 radians
Maximum bending moment           =        163036. inch-lbs
Maximum shear force              =   2824.0000000 lbs
Depth of maximum bending moment  =     90.7200000 inches below pile head
Depth of maximum shear force     =       0.000000 inches below pile head
Number of iterations             =             14
Number of zero deflection points =              3
```

Pile-head Deflection vs. Pile Length for Load Case 1

Boundary Condition Type 1, Shear and Moment

Shear = 2824. lbs
Moment = 0. in-lbs
Axial Load = 9100. lbs

Pile Length feet	Pile Head Deflection inches	Maximum Moment ln-lbs	Maximum Shear lbs
27.0000	0.5662599	163036.	2824.0000000
25.6500	0.5661478	163031.	2824.0000000
24.3000	0.5661478	163020.	2824.0000000
22.9500	0.5662996	162988.	2824.0000000
21.6000	0.5665962	162952.	2824.0000000
20.2500	0.5668593	162959.	2824.0000000
18.9000	0.5668976	162935.	2824.0000000
17.5500	0.5708103	162419.	2824.0000000
16.2000	0.5907208	160283.	2824.0000000
14.8500	0.6521157	155525.	2824.0000000
13.5000	0.8103158	149361.	-3048.3790648
12.1500	1.3569133	148954.	-3558.6616803

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

| | Pile-head | Pile-head | | Maximum | Maximum |

Load Case No.	Load Type No.	Condition 1 V(lbs) or y(inches)	Condition 2 in-lb, rad., or in-lb/rad.	Axial Loading lbs	Pile-head Deflection inches	Moment in Pile in-lbs	Shear in Pile lbs	Pile-head Rotation radians
1	1	V = 2824.0000	M = 0.000	9100.00000000	0.56626238	163036.	2824.0000	-0.00632754

The analysis ended normally.