COGGINS & SONS, INC.

Caisson Drilling, Excavation Shoring, Tieback Anchors

RCRBD
Record Set
TC
06/07/2021

CALCULATIONS
ANCHORS THROUGH EXISTING WALL

for

PROJECT NO. - 5776
SSRA - BASE AREA IMPROVEMENTS
2305 MOUNT WERNER CIRCLE
STEAMBOAT SPRINGS, CO 80487

Prepared for

CLIENT: SAUNDERS CONSTRUCTION, INC.
ADDRESS: 86 INVERNESS PLACE NORTH
CITY: ENGLEWOOD STATE: COLORADO

PH. 303-699-9000

Prepared By:
JOHN H. HART, PE, D.GE
COGGINS & SONS, INC.

COLORADO LICENSED
JOHN HYDE HART
35740
6/4/21
PROFESSIONAL ENGINEER

DATE: JUNE 4, 2021

COGGINS & SONS, INC.

Caisson Drilling, Excavation Shoring, Tieback Anchors

CALCULATIONS
SUBMITTAL INDEX

for

PROJECT NO. - 5776
PROJECT: STEAMBOAT BASE AREA

ITEM NO.	DESCRIPTION	PAGES
1	GEOTECHNICAL INFORMATION	S1.0 - S1.5
2	EARTH PRESSURE AND ANCHOR LOADING	S2.0 - S2.2
3	BEARING PLATE	S3.0
4		
5		
6		
7		
8		
9		
10		

APPENDIX "A" REFERENCE MATERIAL AND CODES

9512 Titan Park Circle • Littleton, Colorado 80125 • (303) 791-9911 • FAX (303) 791-0967

S1.0

NorthWest Colorado Consultants, Inc.

Geotechnical / Environmental Engineering • Materials Testing

December 30, 2020

DRAFT

Steamboat Ski & Resort Corp.
Attn: Jim Schneider
2305 Mt. Werner Circle
Steamboat Springs, CO 80487

Job Number: 20-12000

Subject: Subsoil and Foundation Investigation, Steamboat Base Area Redevelopment, Steamboat Springs, Colorado.

Jim,

This report presents the results of the Subsoil and Foundation Investigation for the proposed Steamboat Base Area Redevelopment project within the Steamboat Ski & Resort located at 2305 Mt. Werner Circle in Steamboat Springs, Colorado. The approximate location of the project site is shown in Figure #1.

NWCC, Inc. (NWCC) scope of our work included obtaining data from observations made at the site, logging of seven test holes, sampling of the probable foundation soils, and laboratory testing of the samples obtained. This report presents recommendations for economically feasible and safe type foundations, as well as allowable soil pressures and other design and construction considerations that are advisable, but not necessarily routine to quality design and building practices.

For design purposes, NWCC has assumed that building loads will be moderate to high, typical of this type of commercial construction. If loadings or conditions are significantly different from those above, NWCC should be notified to reevaluate recommendations in this report.

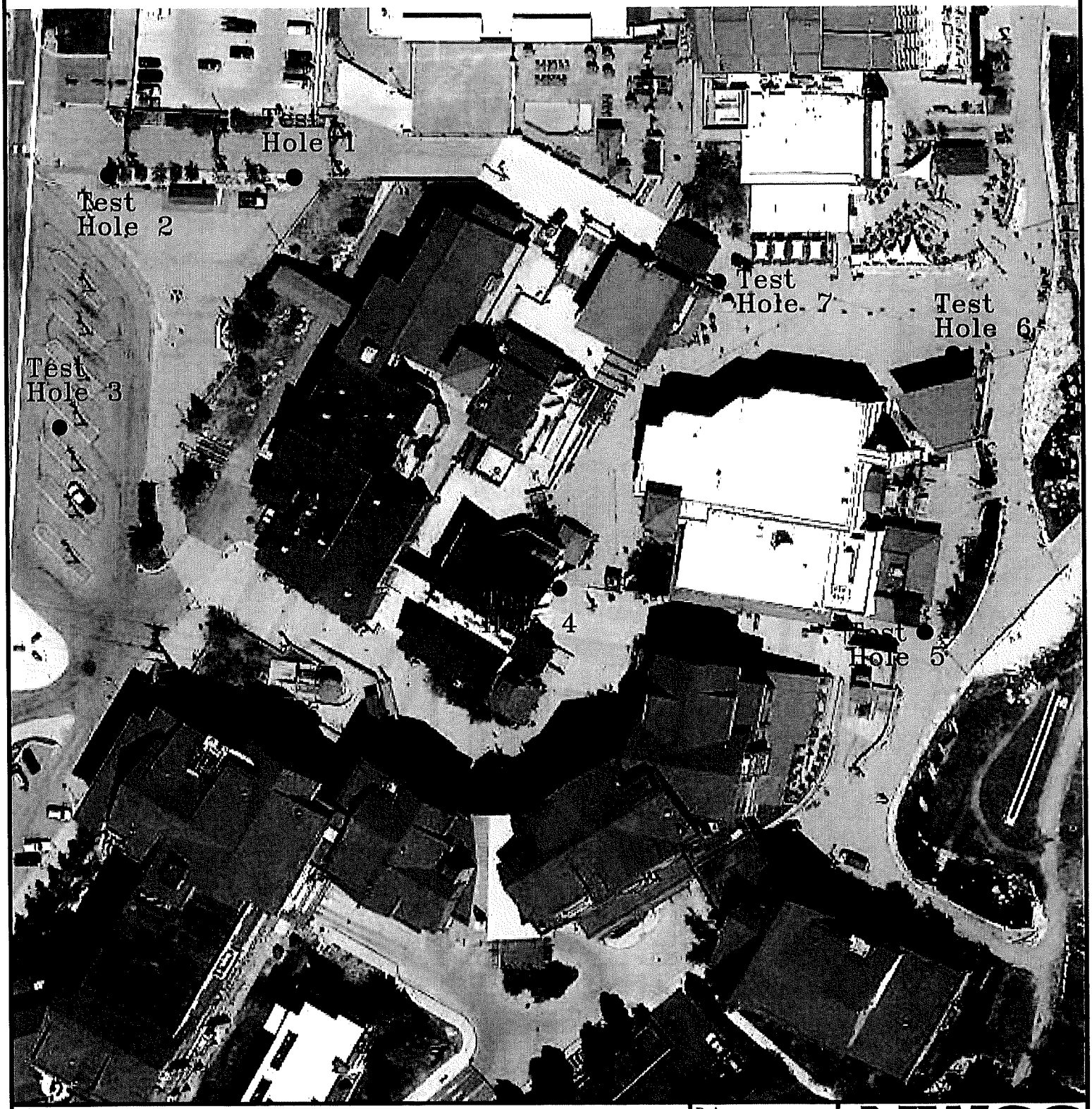
Proposed Construction: NWCC understands the first phase of the project will consist of the demolition of two of the existing buildings within the existing ski area base and the construction of two new buildings to be named the Promenade and Building B.

The existing Gondola building will be demolished and reconstructed as the Promenade. We understand the Promenade will be a composite steel-framed or mild reinforced concrete elevated slab structure with the main level at the existing grade and one level below expected to extend approximately 14 feet below the existing grade. It is anticipated the Promenade may have additional floors built above the main level in the future. We understand the maximum column dead load for this building is anticipated to be approximately 375 kips and the maximum anticipated column dead load plus live load for this building is approximately 750 kips. Wall loads are anticipated to be on the order of 15 kips per foot.

S1.1

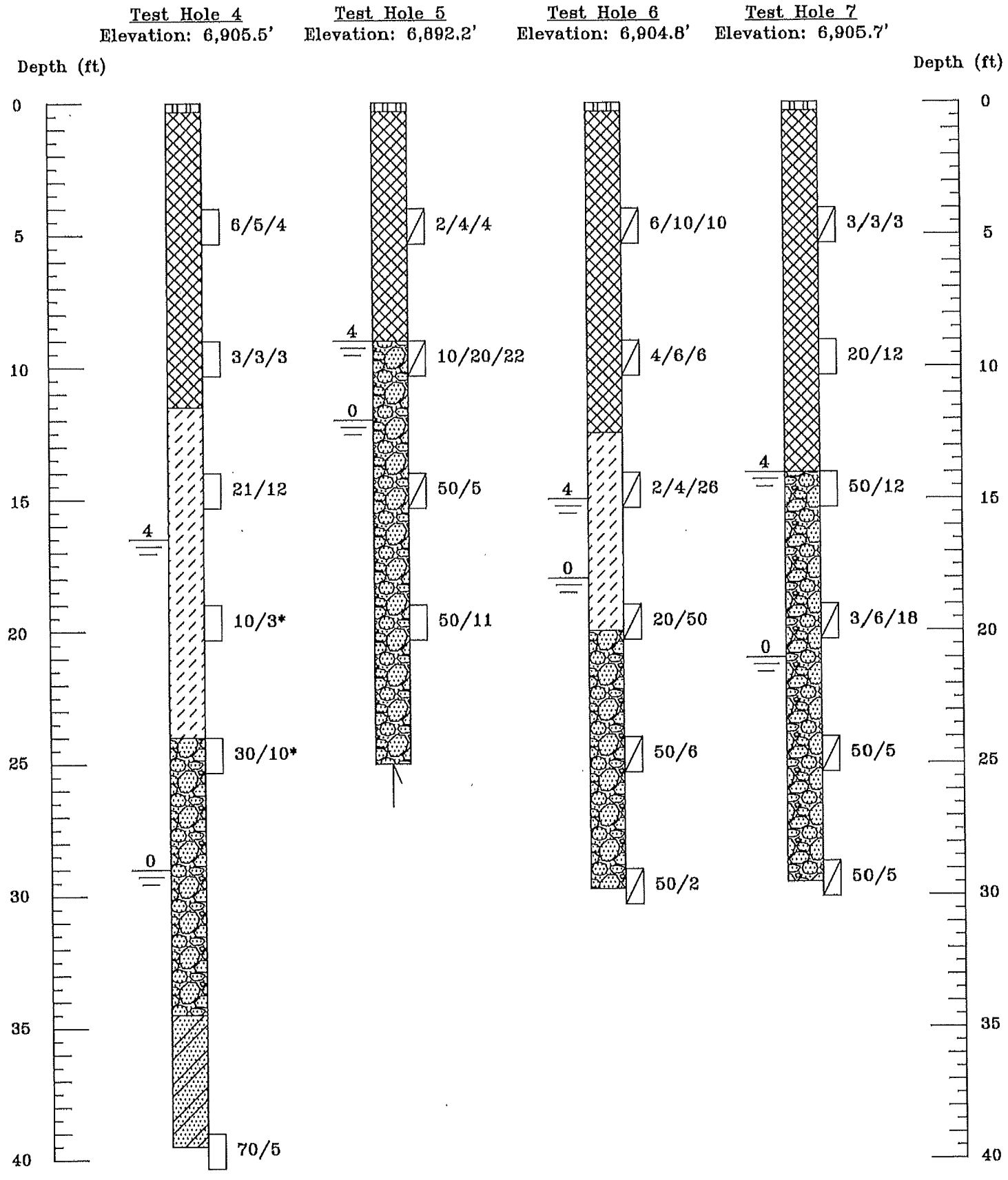
N

NOT TO SCALE



Title: SITE PLAN–LOCATION OF TEST HOLES		Date: 12/18/2020	NWCC North West Colorado Consultants, Inc. Geotechnical / Environmental Engineering • Materials Testing
Job Name: Steamboat Base Area Redevelopment		Job No. 20–12000	(970)879-7888 • Fax (970)879-7891 2580 Copper Ridge Drive • P.O. Box 775226 Steamboat Springs, Colorado 80477
Location: Steamboat Ski Area, Steamboat Springs, Colorado		Figure #2	

S1.2



Title: LOGS OF EXPLORATORY TEST HOLES		Date: 12/18/2020	
Job Name: Steamboat Base Area Redevelopment		Job No. 20-12000	
Location: Steamboat Ski Area, Steamboat Springs, Colorado		Figure #4	

NWCC
North West Colorado Consultants, Inc.
Geotechnical / Environmental Engineering - Materials Testing
(970)879-7668 · Fax (970)879-7691
2580 Copper Ridge Drive · P.O. Box 775226
Steamboat Springs, Colorado 80477

LEGEND:

BRICK PAVER UNDERLAIN BY: WELDED WIRE MESH, SNOWMELT LINE AND LEVELING SAND.

ASPHALT PAVEMENT.

FILL: Aggregate Base Course and Subbase Aggregate.

FILL: Sandy clays to clayey sands, low to moderately plastic, fine to coarse grained with gravels and occasional cobbles and boulders, soft to very stiff to loose to medium dense, slightly moist to very moist and gray to dark brown.

CLAYS: Slightly sandy to very sandy, low to moderately plastic, fine to coarse grained with gravels and occasional cobbles, soft to stiff, moist to wet and light brown to brown.

SANDS AND GRAVELS: Silty to clayey, low to non-plastic, fine to coarse grained with cobbles and boulders, medium dense to very dense, moist to wet and brown to gray.

CLAYSTONE BEDROCK: Sandy to very sandy to silty, low to moderately plastic, fine to medium grained with occasional gravels, weathered to very hard, slightly moist to moist and light brown in color.

Drive Sample, 2-inch I.D. California Liner Sampler.

Drive Sample, Split Spoon Sampler.

35/12 Drive Sample Blow Count, indicates 35 blows of a 140-pound hammer falling 30 inches were required to drive the sampler 12 inches.
*Indicates hammer was bouncing on a suspected cobble or boulder.

3/5/20 Drive Sample Blow Count, indicates split spoon sampler with 3,5, and 20 blows of a 140-pound hammer falling 30 inches were required to drive the sampler 6 inches.

0,4,5 Indicates depth at which groundwater was encountered when measured at time of drill and when measured 4 or 5 days after drilling.

Indicates depth at which practical rig refusal was encountered in very dense cobbles and boulders.

Title: LEGEND AND NOTES	Date: 12/18/2020	NWCC Northwest Colorado Consultants, Inc. Geotechnical / Environmental Engineering · Materials Testing
Job Name: Steamboat Base Area Redevelopment	Job No. 20-12000	(970)879-7888 · Fax (970)879-7691 2580 Copper Ridge Drive · P.O. Box 775226 Steamboat Springs, Colorado 80477
Location: Steamboat Ski Area, Steamboat Springs, Colorado	Figure #5	

NWCC, Inc.

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

SAMPLE LOCATION		NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	ATTERBERG LIMITS		GRADATION		PERCENT PASSING No. 200 SIEVE	UNCONFINED COMPRESSIVE STRENGTH (psf)	SOIL or BEDROCK DESCRIPTION	UNIFIED SOIL CLASS.
TEST HOLE	DEPTH (feet)			LIQUID LIMIT (%)	PLASTICITY INDEX (%)	GRAVEL (%)	SAND (%)				
1	9	14.6	103.1	27	9	1	29	70		Claystone Bedrock	CL
2	19	10.7	118.0	36	22	1	27	72	26,350	Claystone Bedrock	CL
3	4	13.8	114.2	39	23	0	19	81		Claystone Bedrock	CL
4	14	22.7	102.3	39	23	0	20	80		Sandy Clay	CL
4	24	11.4		22	3	4	76	20		Silty Sand	SM
4	39	16.0	110.3	28	10	0	36	64	16,190	Claystone Bedrock	CL
5	14	14.5			NP	7	80	13		Silty Sand	SM
5	19	11.4			NP	38	56	6		Very Gravelly Sand	SP
6	4	20.8		26	9	21	45	34		FILL: Clayey Gravelly Sand	SC
6	14	18.0		26	10	11	50	39		Very Clayey Sand	SC
7	9	19.1	104.1	28	10	4	20	76		FILL: Sandy Clay	CL
7	19	16.5		24	9	18	52	30		Gravelly Clayey Sand	SC
7	29	14.1		22	3	34	51	15		Gravelly Silty Sand	SM

NP = Non Plastic

JOB NUMBER: 20-12000

S1.4

COGGINS & SONS, INC.
PH. (303) 791-9911 FAX (303) 791-0967
CAISSON DRILLING
EARTH RETENTION
TIE BACK ANCHORS

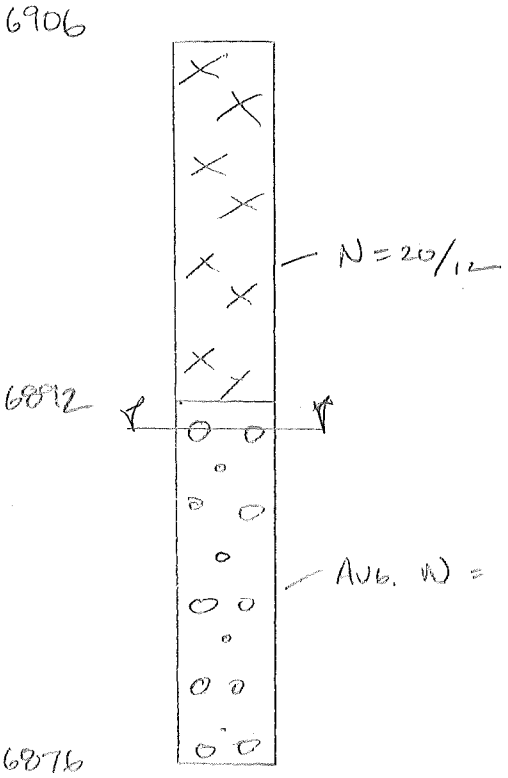
Name J. HANT

PROJECT: STEAMBOAT PROJECT NO.: 5776

SUBJECT: GEOTECH DATE:

REFER TO: NORTHWEST COLORADO CONSULTANTS, INC.
SUBSOIL AND FOUNDATION INVESTIGATION 12/30/20
JOB # 20-12000

TEST HOLE #7



γ_d = 104.1 #/FT³
W = 19.1
-200 = 76
$\gamma_{DRY\ SOIL}$ = 124 #/FT³

NO SPECIFIC TESTING TO DETERMINE SHEAR STRENGTH OF SOIL. WILL HAVE TO USE CORRELATIONS FROM BLOW COUNTS AND EXPERIENCE IN THE AREA.

WILL USE THE FOLLOWING:

γ_{EARTH} = 125 #/FT³
ϕ = 34°
C = 0 #/FT²

COGGINS & SONS, INC.
PH. (303) 791-9911 FAX (303) 791-0967
CAISSON DRILLING
EARTH RETENTION
TIE BACK ANCHORS

Name J. HART

PROJECT: STEAM BOAT PROJECT NO.: 5776

SUBJECT: GEOTECH DATE:

EARTH PRESSURE

$E_P = .65\ K_a\ \gamma\ H$

$K_a = \tan^2(45 - \phi/2) = .283$

$\gamma = 125\ \#/FT^3$

$H = 16\ FT$

$E_P = .65\ (.283)\ (125\ \#/FT^3)\ (16\ FT)$

$E_P = 368\ \#/FT^2$

$E_P = 368\ \#/FT^2\ (8\ FT) = \underline{2.9\ K/FT}$

DETERMINE ANCHOR LOAD ON WALL

REFER TO FOLLOWING SPREADSHEET

ANCHOR LOAD = 30 K WILL USE 40 K ∴ OK

ANCHOR DIA. = 1.00 in WILL USE 1.00 in ∴ OK

BOND LNGTH = 12 FT WILL USE 20 FT ∴ OK

UNBOND LNGTH = 7 FT WILL USE 12 FT ∴ OK

STEAMBOAT SPRINGS ANCHORS THROUGH EXISTING WALL
H = 16 FEET

LOAD PER FOOT (K/FT)	TOTAL HEIGHT (FT)	DEPTH TO TIEBACK (FT)	SPAN LENGTH (FT)	DIP ANGLE
2.9	16	7	9	20

ϕ =	34
Ka =	0.283
γ =	125
Ep =	23
SURCHARGE =	
SPACING =	8

34.2

TIEBACK LOAD (K)	EXCAVA. LOAD	ZERO SHEAR
(K)	(K)	(ft from bot)
28.5	2.6	3.2

MOMENT SUPPORT	MOMENT CANT.	SECTION MODULUS
(K-ft)	(K-ft)	(in^3)
5.8	34.2	11.14

HEIGHT (FT)
16

USE SHAPE

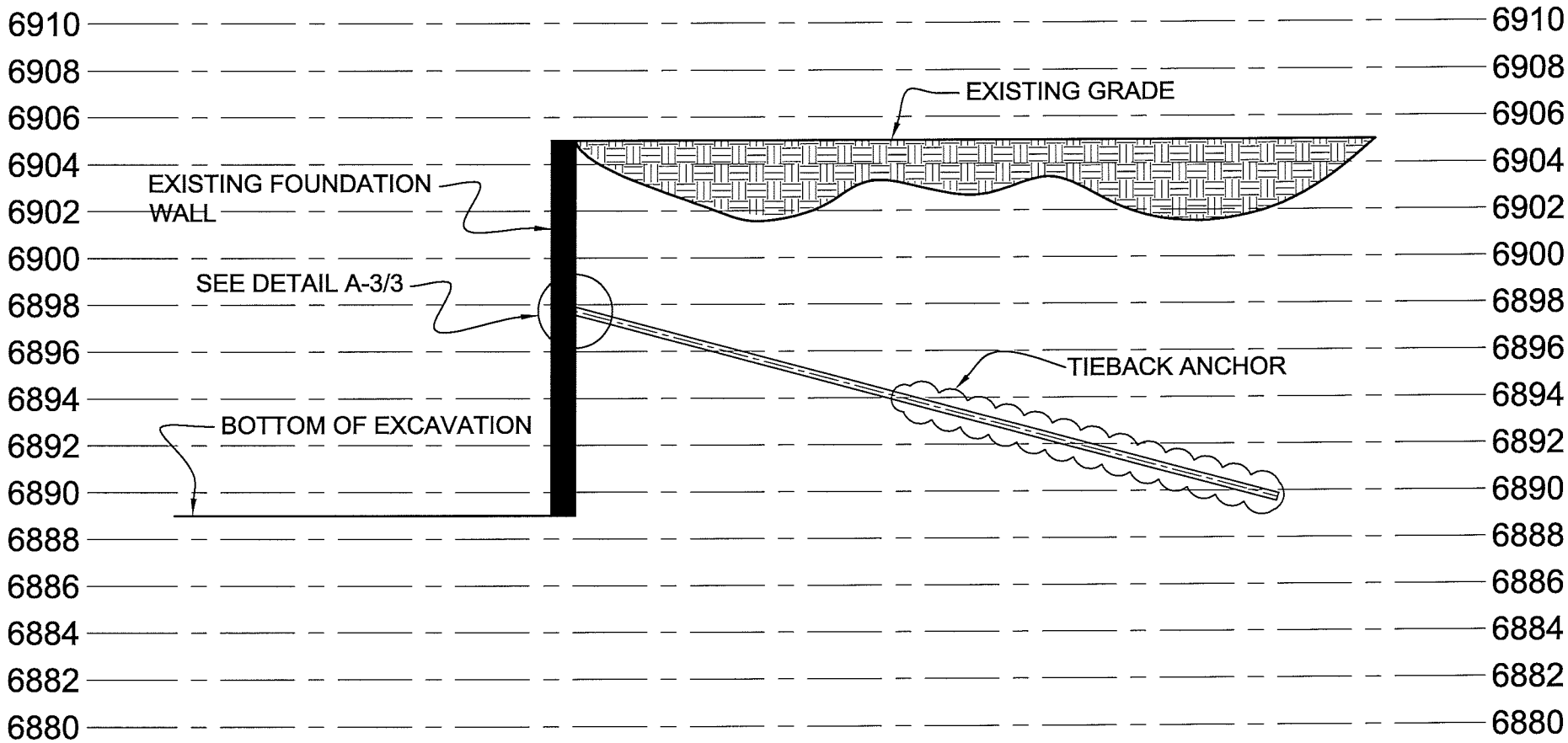
LOAD
35
70
105
140

USE STRAND	USE BAR (GRADE 150)
1	1.000

TIEBACK LOAD (K)
30

SOIL SKIN FRICTION		DIA. OF HOLE (in.)	DIA. INCREASE	ADJ. DIA. HOLE (in)	TIEBACK		BOND LENGTH (ft)	LOAD PER FOOT (K/ft)
(psi)	(psf)				LOAD (K)	1.2 LOAD (K)		
15	2160	5.25	1.0	5.25	30.28	36.33	**12**	3.0

WALL HT. (ft)	ANCHOR (ft)	DIP ANGLE	FAILURE ANG.	BETA ANGLE	THETA ANGLE	GAMMA ANGLE	LENGTH B (ft)	LENGTH B' (ft)	UNBOND LEN. (ft)
16	9	20	62	28	70	82	4.27	2.85	**7**



CROSS SECTION ANCHOR #8

NOT TO SCALE

S2.2

COGGINS & SONS, INC.
PH. (303) 791-9911 FAX (303) 791-0967
CAISSON DRILLING
EARTH RETENTION
TIE BACK ANCHORS

Name J. HALT

PROJECT: STEAMBOAT PROJECT NO.: 5776

SUBJECT: BEARING PLATE DATE:

53.0

ANCHOR LOAD = 40 K

BEARING PLATE = 15 in x 15 in

CONE HOLE = 7 in

$$\text{PLATE AREA} = (15\text{ in})(15\text{ in}) = 225\text{ in}^2$$

$$\text{CONE HOLE AREA} = \frac{\pi(7\text{ in})^2}{4} = 38\text{ in}^2$$

$$225\text{ in}^2 - 38\text{ in}^2 = 187\text{ in}^2$$

$$\frac{40000\ \#}{187\text{ in}^2} = 213\ \#/\text{in}^2$$

CONCRETE STRENGTH = 3000 #/in² (MINIMUM)

3000 #/in² > 213 #/in² ∴ OK

APPENDIX "A"

REFERENCE MATERIAL AND CODES

I. EARTH RETENTION DESIGN REFERENCE DOCUMENTS & BIBLIOGRAPHY

II. REFERENCE DESIGN CODES AND STANDARDS

COGGINS & SONS, INC., EARTH RETENTION DESIGN REFERENCE MATERIALS DECEMBER 31, 2015,
BY JOHN H. HART, P.E., D.GE, JAMES V. WARNICK, JR., P.E.

EARTH RETENTION DESIGN REFERENCE DOCUMENTS & BIBLIOGRAPHY

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35) PROPRIETARY DATA GATHERED BY COGGINS THROUGH IN-HOUSE RESEARCH

SAUNDERS

TRANSMITTAL

No. 00001207

Saunders Construction, LLC
86 Inverness Place North
Englewood, CO 80112

PROJECT: Steamboat - BV BP Promenade and Goldwalk

DATE: 05/27/2021

TO: Coggins & Sons, Inc.
9512 Titan Park Cir
Littleton, CO 80125

RE: 3-315000-1-Excavation and Support

ATTN: John Hart

JOB: 2001502104

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
☐ Shop Drawings	☐ Review	☐ Reviewed
☐ Letter	☐ Your Use	☐ Reviewed w/ Corrections Noted
☐ LEED	☐ As Requested	☐ Resubmit
☐ Product Data		☐ Submit
☐ Plans		☐ Returned
☐ Samples	**SENT VIA:**	☐ Returned for Corrections
☐ Specifications	☑ Attached	☑ Due Date: 06/17/2021
☐ Other:	☐ Separate Cover Via:	

Item	*Package*	*Code*	*Rev.*	*Copies*	*Date*	*Description*	*Status*
Submittal	3-315000-1	BP3_315000.01	1		05/27/2021	Excavation Support and Protection - Shop Drawings	No Exception Taken

NOTES: Please review (BP3_315000_01_Excavation_and_Support_NET). Please release all material and communicate immediate to SCI if schedule poses any issue.

SAUNDERS

SUBMITTED FOR GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS EXCEPT AS NOTED. REVIEW OF THIS SUBMITTAL DOES NOT RELEASE THE SUBCONTRACTOR OF ITS RESPONSIBILITY TO CONFORM WITH THE PLANS AND SPECIFICATIONS NOR DOES THIS REVIEW RELEASE THE SUBCONTRACTOR FROM VERIFYING THE ACCURACY OF QUANTITIES AND FIELD DIMENSIONS.

Submittal Package Number:
BP3_315000_01_Excavation_and_Support_NET for
Reviewed/No Exceptions Taken
Signed: Alec Hallman
Date: 05/27/2021
SAUNDERS CONSTRUCTION, INC.

Alec Hallman

CC: Reno Romagnoli / Saunders Construction, LLC

SAUNDERS

TRANSMITTAL

No. 00001117

Saunders Construction, LLC
86 Inverness Place North
Englewood, CO 80112

PROJECT: Steamboat - BV BP Promenade and Goldwalk

DATE: 05/17/2021

TO: M. Arthur Gensler, Jr. and Associates, Inc.
1225 17th Street, # 150
Denver, CO 80202

RE: 3-315000-1-Excavation and Support

ATTN: Jacob Apple

JOB: 2001502104

WE ARE SENDING:	SUBMITTED FOR:	ACTION TAKEN:
☑ Shop Drawings	☑ Review	☐ Reviewed
☐ Letter	☐ Your Use	☐ Reviewed w/ Corrections Noted
☐ LEED	☐ As Requested	☐ Resubmit
☐ Product Data		☐ Submit
☐ Plans		☐ Returned
☐ Samples	**SENT VIA:**	☐ Returned for Corrections
☐ Specifications	☑ Attached	☑ Due Date: 06/07/2021
☐ Other:	☐ Separate Cover Via:	

Item	*Package*	*Code*	*Rev.*	*Copies*	*Date*	*Description*	*Status*
Submittal	3-315000-1	BP3_315000.01	1		05/17/2021	Excavation Support and Protection - Shop Drawings	For Review

NOTES: Please review (BP3_315000_01_Excavation_and_Support_FR)

CC: Geoffrey Brooksher / M. Arthur Gensler, Jr. and Ass

Signed: _____
Alec Hallman

Submittal Review Sheet

****PLEASE USE THE SPACES BELOW FOR COMMENTS AND STAMPS****

SAUNDERS

SUBMITTED FOR GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS EXCEPT AS NOTED. REVIEW OF THIS SUBMITTAL DOES NOT RELEASE THE SUBCONTRACTOR OF ITS RESPONSIBILITY TO CONFORM WITH THE PLANS AND SPECIFICATIONS NOR DOES THIS REVIEW RELEASE THE SUBCONTRACTOR FROM VERIFYING THE ACCURACY OF QUANTITIES AND FIELD DIMENSIONS.

Submittal Package Number:
BP3_315000_01_Excavation_and_Support_FR for Review
Signed: Alec Hallman
Date: 05/17/2021
SAUNDERS CONSTRUCTION, INC.

MARTIN/MARTIN, INC

RECEIVED FOR RECORD ONLY

Date Received: 5/17/2021
Reviewer: achen

Gensler **SUBMITTAL REVIEW**

- ☐ **NO EXCEPTIONS TAKEN.**
- ☐ **MAKE CORRECTIONS AS NOTED.** Resubmittal not required unless Contractor cannot comply with corrections noted.
- ☐ **REVISE AS NOTED AND RESUBMIT.**
- ☐ **RESUBMIT PROPERLY.** Submittal not reviewed for reasons noted.
- ☐ **NOT REVIEWED.** Submittal not required by Contract Documents.
- ☒ **RECEIVED FOR CLIENT'S RECORD ONLY.** Submittal not reviewed.

Gensler has reviewed this Submittal, but only for the purpose of checking for conformance with the design intent expressed in the Contract Documents. Gensler's action on a specific item does not indicate approval of an assembly of which the item is a component, nor of an item as delivered and installed if it does not conform to the Contract Documents.

Contractor is responsible for checking for deviations between this Submittal and differing information or conditions in the Contract Documents and field conditions; for determining or substantiating the accuracy and completeness of other details such as dimensions and quantities; for substantiating instructions for installation or performance of equipment or systems designed by Contractor; for construction means, methods, techniques, schedules, sequences, procedures, and fabrication processes; for errors and omissions in Submittals; for coordination of the Work of the trades, safety precautions and performing the Work in a safe and satisfactory manner and in conformance with the Contract Documents.

If more than one submittal review stamp appears on this Submittal, the most stringent action and notations thereon apply. Signature of a submittal review stamp by Gensler or a consultant does not imply that it has reviewed work not within its professional discipline or scope of services.

v1 3/2012

By: 26254 **Date:** Thu May 27, 2021

Project No: 03.7835.000

Submittal: BP3_315000_01_Excavation_and_Support_FR MM G

//gensler.ad/Projects/03/03.7835.000/Documentation/6/6S/BP3/

TIEBACK BEAM AND LAGGING GENERAL NOTES

1. DESIGN BASIS:
   A. 2015 INTERNATIONAL BUILDING CODE.
   B. EXCAVATION BRACING IS DESIGNED TO BE TEMPORARY SUPPORT.
   C. THE EARTH RETENTION SYSTEM IS DESIGNED TO ACCOMMODATE NORMAL CONSTRUCTION SURCHARGE (250 PSF) OF MATERIAL AND LIGHT TRUCKS AT A MINIMUM DISTANCE OF 4 FEET FROM THE FACE OF THE EARTH RETENTION. THE EARTH RETENTION HAS NOT BEEN DESIGNED FOR HEAVY POINT LOADS SUCH AS: CRANES (TRUCK OR OUTRIGGER), EXCAVATORS, CONCRETE PUMP TRUCKS, OR LARGE STOCKPILES.

2. REFERENCE CODES:
   A. AISC STEEL MANUAL, THIRTEENTH EDITION
   B. ACI 318-08 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
   C. PUBLICATION NO. FHWA-IF-99-015 "GROUND ANCHORS AND ANCHORED SYSTEMS"

3. FOUNDATION:
   A. SOIL INFORMATION WAS DERIVED FROM THE GEOTECHNICAL ENGINEERING REPORT TITLED PREPARED BY NORTHWEST COLORADO CONSULTANTS, INC. (NWCC JOB NUMBER: 20-12000) DATED 12/30/2020. ✓ REVISED 4/22/21

4. MATERIALS:
   A. BAR ANCHORS:
      ALL BARS TO BE GRADE 150 THREADED REINFORCING BARS OR GRADE 75 THREADED REINFORCING BARS. DIAMETER OF BARS SPECIFIED ON TIEBACK SCHEDULES.
   B. GROUT:
      PRESSURE INJECTED GROUT SHALL BE PORTLAND CEMENT TYPE I AND WATER MIX, WITH A WATER TO CEMENT RATIO NOT EXCEEDING 0.45.

5. GRID LINE DIMENSIONS ON EARTH RETENTION DRAWINGS SHALL BE VERIFIED BY CONTRACTOR PRIOR TO BEGINNING WORK.

6. PROCEDURE:
   A. ALL UTILITIES WITH EQUIPMENT OR FACILITIES SERVING AN AREA WITHIN 300 FEET OF THE PLANNED EXCAVATION SHALL BE NOTIFIED NOT LATER THAN 2 DAYS PRIOR TO SOLDIER BEAM INSTALLATION THAT SUCH WORK IS TO TAKE PLACE.

7. ENGINEERS APPROVAL MUST BE SECURED FOR ALL SUBSTITUTIONS.

8. THE REQUIREMENTS OF THE LATEST EDITION OF THE "OSHA CONSTRUCTION STANDARDS" SHALL BE COMPLIED WITH BY ALL CONTRACTORS, FABRICATORS AND SUPPLIERS.

9. BACKFILL BETWEEN BRACING AND COMPLETED STRUCTURE SHALL BE PLACED AND COMPACTED AS REQUIRED BY SPECIFICATIONS OF THE PROJECT ENGINEER.

TEST PROCEDURE

EQUIPMENT:
- STRESSING EQUIPMENT USED FOR TESTING SHALL HAVE A CURRENT (LESS THAN 12 MONTHS OLD) CALIBRATION CERTIFICATE, WITH CALIBRATION CURVES BEING MADE AVAILABLE FOR REVIEW, UPON REQUEST.
- ANCHOR MOVEMENTS IN A DIRECTION COLLINEAR TO THE LINE OF ACTION OF THE ANCHOR SHALL BE RECORDED BY A DIAL GAUGE WITH A MINIMUM RESOLUTION OF 0.001 INCHES.

METHODOLOGY:
- ALL ANCHORS SHALL BE PROOF TESTED.
- ONCE A LOAD INCREMENT HAS BEEN OBTAINED, THE LOAD SHALL BE HELD ONLY LONG ENOUGH TO GET A STABLE READING. WHEN 1.33 P TEST LOAD IS REACHED, THE LOAD SHALL BE HELD FOR A TOTAL OF 10 MINUTES WITH MOVEMENT READINGS TAKEN AT 1, 2, 3, 4, 5, 7, & 10 MINUTES.
- IF, DURING THIS TEN MINUTE INCREMENT, THE LOAD CANNOT BE MAINTAINED OR THE ANCHOR MOVEMENT UNDER CONSTANT LOAD EXCEEDS 0.040 INCHES, THE LOAD TEST SHALL BE CONTINUED TO 60 MINUTES WITH READINGS AT 20, 30, 40, 50, & 60 MINUTES. IF THE DIFFERENCE BETWEEN 6 AND 60 MINUTES IS LESS THAN 0.080 INCHES, THE ANCHOR IS ACCEPTABLE, PROCEED TO THE LOCKOFF LOAD. IF THE DIFFERENCE IS GREATER THAN 0.080 INCHES, THE RATING OF THE ANCHOR SHALL BE RECORDED AS 50% OF THE LARGEST LOAD MAINTAINED, AND ADDITIONAL ANCHORS SHALL BE PLACED TO PROVIDE THE INTENDED CAPACITY OF THE ANCHOR.

PROOF TESTING PROCEDURE

EQUIPMENT AND METHODOLOGY:
PROOF TESTING SHALL BE CARRIED OUT FOR EACH ANCHOR WHICH IS NOT TO BE PERFORMANCE TESTED. TESTING EQUIPMENT AND METHODOLOGY IS THE SAME AS PERFORMANCE TESTING EXCEPT THAT THE LOADING SCHEDULE BE AS FOLLOWS:

PROOF TEST LOADING SEQUENCE	
INCREMENT	LOAD
1	AL
2	0.25 P
3	0.50 P
4	0.75 P
5	1.00 P
6	1.20 P
LOCKOFF	1.00 P

AS WITH PERFORMANCE TESTING, ANY ANCHOR WHICH FAILS PROOF TESTING SHALL BE RATED AT 50 PERCENT OF THE PREVIOUS LOAD SUCCESSFULLY SUSTAINED, AND ADDITIONAL ANCHORS SHALL BE PLACED AS REQUIRED.

CONSTRUCTION MONITORING

1. THE EXISTING WALL WILL BE MONITORED HORIZONTALLY DURING CONSTRUCTION.
2. THE CONSTRUCTION MONITORING SHALL BE CONDUCTED ONCE A WEEK WHILE THE EARTH RETENTION IS UNDER CONSTRUCTION.
3. AFTER COGGINS COMPLETION, THE GENERAL CONTRACTOR SHALL MONITOR THE WALL AT LEAST ONCE PER WEEK. THE WEEKLY MONITORING SHALL BE CONTINUED UNTIL THE PERMANENT CONCRETE FOUNDATION WALL IS COMPLETED AND BACKFILLED.
4. IF ANY SUDDEN MOVEMENT OCCURS DURING THE CONSTRUCTION OF EARTH RETENTION, WORK SHALL BE SUSPENDED IMMEDIATELY AND COGGINS & SONS ENGINEERING STAFF SHALL BE IMMEDIATELY NOTIFIED.
5. IF ANY SUDDEN MOVEMENT IS OBSERVED AFTER EARTH RETENTION COMPLETION AND BEFORE FOUNDATION BACKFILL, WORK SHALL BE IMMEDIATELY SUSPENDED AND COGGINS & SONS SHALL BE IMMEDIATELY NOTIFIED.
6. LOGS OF ALL MONITORING SHALL BE PROVIDED TO COGGINS & SONS WEEKLY AS PERFORMED.

COGGINS & SONS, INC.

Caisson Drilling, Excavation Shoring, Tieback Anchors

John H. Hart, P.E., D.GE
Digitally signed by John H. Hart, P.E., D.GE
DN: C=US, E=jhart@cogginsandsons.com, O="Coggins and Sons, Inc.", OU=Engineering, CN="John H. Hart, P.E., D.GE"
Date: 2021.05.17 09:33:40-06'00'

SIGNATURE FLATTED BY ALEC H TO COMBINE PDF WITH TRANSMITTAL

9512 TITAN PARK CIRCLE
LITTLETON, COLORADO 80125
TEL: 303-791-9911
FAX: 303-791-0967

PROPOSED TEMPORARY EARTH RETENTION
SSRC - BASE AREA IMPROVEMENTS
2305 MOUNT WERNER CIRCLE
STEAMBOAT SPRINGS, CO 80487

SHEET NO.	INDEX OF SHEETS
XBS - 1	COVER SHEET
XBS - 2	PLAN VIEW & DETAILS
XBS - 3	ELEVATION VIEWS & DETAILS

FOR
SAUNDERS CONSTRUCTION INC.
86 INVERNESS PLACE NORTH
CENTENNIAL, CO 80112
PH: 303-699-9000

DIMENSIONS OBTAINED FROM BID PACK 3: PRICING AND PROCUREMENT DOCUMENTS DATED 2021.04.02 PRODUCED BY: ✓
- GENSLER (ARCH.)
- LANDMARK CONSULTANTS, INC. (CIVIL)
- MARTIN / MARTIN ENGINEERS (STRUCTURAL)

NO.	DATE	REVISIONS DESCRIPTION

NOTE:
BEFORE CONSTRUCTION COMMENCES, A UTILITY LOCATE MUST BE PERFORMED TO FIELD VERIFY THE LOCATION OF ALL UTILITIES IN THE VICINITY OF THE SITE. THE EARTH RETENTION DESIGN WILL BE REVIEWED AND DRAWINGS REVISED, IF REQUIRED, WHEN FINAL UTILITY LOCATIONS BECOMES AVAILABLE.

COLORADO LICENSED JOHN HYDE HART 38739 5/14/21 PROFESSIONAL ENGINEER

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JOB NO. : 5776
ISSUED: 2021.05.17
DWN BY: JVW

DWG. NO.
XBS-1

SHT. 1 OF 3

LEGEND

- (8) TIEBACK IDENTIFICATION
- —— 5196 —— EXISTING GRADE
- – – 5196 – – PROPOSED EXCAVATION GRADE
- PROPOSED FOUNDATION WALL
- (8) GRID LINE

GRAPHIC SCALE

10 0 5 10 20

(IN FEET)
1 inch = 10 ft.

PROPOSED ANCHOR THROUGH EXISTING WALL

16"X16"GRATE INLET
RIM=6904.32'
12" HDPE INV IN(N)=6899.02'
12" HDPE INV IN(W)=6898.46'
12" HDPE INV OUT(E)=6898.46'

16"X16"GRATE INLET
RIM=6904.69'
12" HDPE INV IN(SW)=6899.03'
12" HDPE INV OUT(NE)=6899.02'

12"X12" GRATE INLET
RIM=6903.72'
12" HDPE INV IN(W)=6897.21'
12" HDPE INV OUT(E)=6897.19

12"X12" GRATE INLET
RIM=6904.96'
12" HDPE INV IN(SW)=6899.30'
12" HDPE INV OUT(NE)=6899.29'

12"X12" GRATE INLET
RIM=6905.10'
12" HDPE INV IN(SW)=6899.60'
12" HDPE INV OUT(NE)=6899.58'

12"X12" GRATE INLET
RIM=6905.33'
12" HDPE INV IN(NE)= 6900.11'
12" HDPE INV OUT(SW)=6900.07

12"X12" GRATE INLET
RIM=6905.43'
12" HDPE INV IN(NE)=6900.35'
12" HDPE INV OUT(SW)=6900.33'

12"X12" GRATE INLET
RIM=6905.28'
INV IN(NE)=6900.94'
INV OUT(S)=6900.93'

16"X16" GRATE INLET
RIM=6905.05'
INV IN(N)=6901.42'
INV OUT(S)=6901.40

12"X12" GRATE INLET
RIM=6904.89'
RIM=6904.89'

12" XST

24'-0"
24'-2"
175'-0"
25'-0"
21'-10"
16'-1"

1.1 2.1 3.1 4.1 5.1 6.1 7.1

1 2 3 4 5 6 7 8

25'-0"

– 6905 –

BOF 6889.21

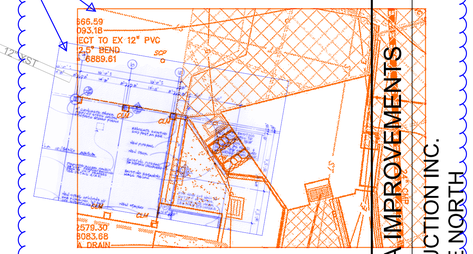
EXISTING WALL

PROPOSED FOOTING AND FOUNDATION WALL

New building foot print extends over existing foundation walls, update plan. (M/M)

Contractor to field verify existing condition. (M/M)

ARCH/EOR. PLEASE CONFIRM SMALL FLAIR IN WALL AS DRAWN



SEE XBS - 3 FOR DEVELOPED ELEVATION VIEW

0'-0" = 6891

EXISTING RETAINING WALL NO ANCHORS REQUIRED

PLAN NORTH

PLAN VIEW

0'-0" = 6891.00

SCALE: 1" = 10'-0"

I H G F E D C B A

20'-9" 20'-6"
20'-9" 20'-10"
20'-9" 20'-7"

25'-0" 20'-0" 30'-0" 15'-0"

COLORADO LICENSED
JOHN HYDE HART
38740
5/14/21
PROFESSIONAL ENGINEER

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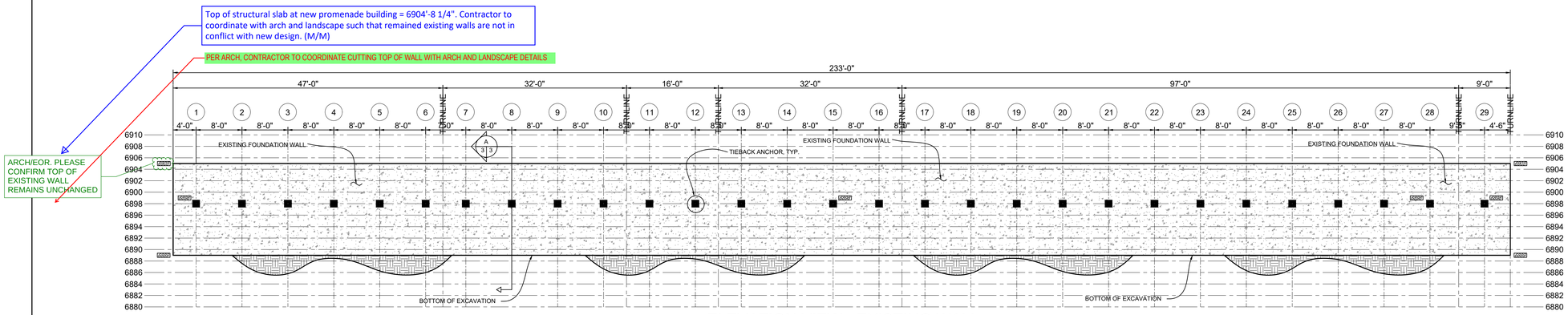
XBS-2



ELEVATION VIEW - EXISTING WALL

NOT TO SCALE

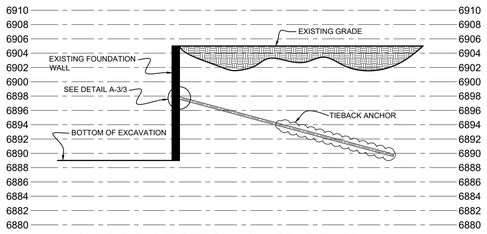
TIEBACK SCHEDULE

SOLDIER BEAM NO.	ROW #	BAR DIA. (IN.)	TAIL LENGTH (FT.)	UNBONDED LENGTH (FT.)	BONDED LENGTH (FT.)	TOTAL LENGTH (FT.)	LOCKOFF FORCE (KIPS)	DIP ANGLE	HEAD DETAIL TYPE
1 - 29	TOP	1.000	1.00	12.00	20.00	33.00	40.0	15.0	PLATE

NOTE:
- SEE ELEVATION VIEW FOR TIEBACK ELEVATION
- ALL BARS GRADE 150

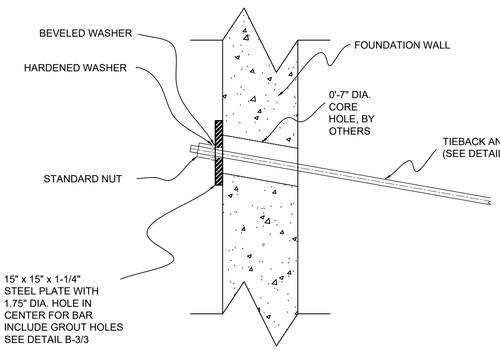
CONSTRUCTION SEQUENCE

1) OTHERS TO DECONSTRUCT EXISTING STRUCTURE
2) OTHERS TO CONSTRUCT OR LEAVE BERM IN BOTTOM OF EXCAVATION SO COGGINS DRILL RIG CAN ACCESS ANCHOR HEAD LOCATIONS
3) OTHERS TO CORE 7 INCH DIAMETER HOLE THROUGH WALL
4) COGGINS TO DRILL AND INSTALL ANCHORS THROUGH EXISTING WALL.
5) COGGINS TO STRESS ANCHORS TO EXISTING WALL
6) OTHERS TO REMOVE BERM AND / OR EXCAVATE TO BOTTOM OF EXCAVATION.



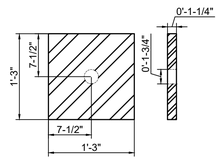
CROSS SECTION ANCHOR #8

NOT TO SCALE



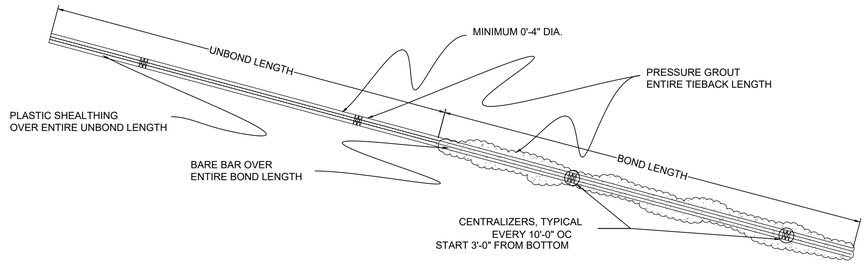
A 3 | 3 DETAIL ANCHOR HEAD

NOT TO SCALE



B 3 | 3 DETAIL BEARING PLATE

NOT TO SCALE



C 3 | 3 DETAIL TIEBACK ANCHOR

NOT TO SCALE

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XBS-3

SHT. 3 OF 3