Case No. _____

In the

Supreme Court

of the

State of Nevada

DEKKER/PERICH/SABATINI LTD.,
NEVADA BY DESIGN, LLC d/b/a NEVADA BY DESIGN,
MELROY ENGINEERING, INC. d/b/a MSA ENGINEERING CONSULTANTS,
JW ZUNINO & ASSOCIATES, LLC, and
NINYO & MOORE, GEOTECHNICAL CONSULTANTS,

Petitioners,

vs.

THE EIGHTH JUDICIAL DISTRICT COURT,
STATE OF NEVADA,
CLARK COUNTY, and
THE HONORABLE TREVOR ATKIN,

Respondents,

CITY OF NORTH LAS VEGAS,

Real Party in Interest.

FROM DECISIONS OF THE EIGHTH JUDICIAL DISTRICT COURT,
CLARK COUNTY, NEVADA
CASE NO. A-19-798346-C
HONORABLE TREVOR ATKIN · DEPARTMENT 8 · PHONE: (702) 671-4338

PETITIONERS'APPENDIX TO
PETITION FOR WRIT OF MANDAMUS OR,
ALTERNATIVELY, PROHIBITION

VOLUME 12

JOHN T. WENDLAND, ESQ. (Nevada Bar No. 7207)
ANTHONY D. PLATT, ESQ. (Nevada Bar No. 9652)
WEIL & DRAGE, APC
861 Coronado Center Drive, Suite 231
Henderson, NV 89052
(702) 314-1905 • Fax (702) 314-1909
jwendland@weildrage.com
aplatt@weildrage.com
Attorneys for Petitioners, DEKKER/PERICH/SABATINI LTD. and NEVADA BY DESIGN, LLC d/b/a NEVADA BY DESIGN

Jeremy R. Kilber, Esq. (Nevada Bar No. 10643)
WEIL & DRAGE, APC
861 Coronado Center Drive, Suite 231
Henderson, NV 89052
(702) 314-1905 • Fax (702) 314-1909
jkilber@weildrage.com
Attorney for Petitioner, MSA ENGINEERING CONSULTANTS

Dylan P. Todd, Esq. (Nevada Bar No. 10456)
Lee H. Gorlin, Esq. (Nevada Bar No. 13879)
FORAN GLENNON PALANDECH PONZI & RUDLOFF PC
2200 Paseo Verde Parkway, Suite 280
Henderson, NV 89052
(702) 827-1510 • Fax (312) 863-5099
dtodd@fgppr.com
lgorlin@fgppr.com
Attorneys for Petitioner, JW ZUNINO & ASSOCIATES, LLC

Jorge A. Ramirez, Esq. (Nevada Bar No. 6787)
Harry Peetris, Esq. (Nevada Bar No. 6448)
Jonathan C. Pattillo, Esq. (Nevada Bar No. 13929)
WILSON ELSER MOSKOWITZ EDELMAN & DICKER, LLP
6689 Las Vegas Blvd. South, Suite 200
Las Vegas, NV 89119
(702) 727-1400 • Fax (702) 727-1401
jorge.ramirez@wilsonelser.com
harry.peetris@wilsonelser.com
jonathan.pattillo@wilsonelser.com
Attorneys for Petitioner, NINYO & MOORE GEOTECHNICAL CONSULTANTS

CHRONOLOGICAL INDEX - APPENDIX OF EXHIBITS

Exhibit:	Volume:	Bates: PET.APP.	Date:	Description:
10	12	001697 – 001832	12/11/2017	Exhibit 5 – American Geotechnical Inc's Geotechnical Investigation
	12	001833 – 001836	1988 - Present	Exhibit 6 – American Geotechnical Inc. Resume of Edred T. Marsh, Principal Geotechnical Engineer
	12	001837 – 001838	07/03/2019	Exhibit 7 – Declaration of Edred T. Marsh, P.E.
	12	001839 – 001840	10/17/2007	Exhibit 8 – Ninyo & Moore Letter to Dekker/Perich/Sabatini re Review of 95 Percent Bid Set Construction Documents

ALPHABETICAL INDEX - APPENDIX OF EXHIBITS

Exhibit:	Vol.:	Bates: PET.APP.	Date:	Description:
10	**11**	**001560 – 001562**	**08/20/2019 1:34 PM**	**City of North Las Vegas' Appendix of Exhibits to Opposition to Dekker/Perich/Sabatini, Ltd.'s Motion to Dismiss**
	11	001563 – 001580	07/11/2019	Exhibit 1 – City of North Las Vegas' Complaint
	11	001581 – 001614	02/07/2007	Exhibit 1 – Professional Architectural Services Agreement
	11	001615 – 001680	08/29/2007	Exhibit 2 – Ninyo & Moore's Geotechnical Evaluation
	11	001681 – 001694	01/30/2008	Exhibit 3 – City of North Las Vegas' Letter to Richardson Construction Inc re Construction Contract
	11	001695 – 001696	07/13/2009	Exhibit 4 – Notice of Completion
	12	001697 – 001832	12/11/2017	Exhibit 5 – American Geotechnical Inc's Geotechnical Investigation
	12	001833 – 001836	1988 - Present	Exhibit 6 – American Geotechnical Inc. Resume of Edred T. Marsh, Principal Geotechnical Engineer
	12	001837 – 001838	07/03/2019	Exhibit 7 – Declaration of Edred T. Marsh, P.E.
	12	001839 – 001840	10/17/2007	Exhibit 8 – Ninyo & Moore Letter to Dekker/Perich/Sabatini re Review of 95 Percent Bid Set Construction Documents
	13	001841 – 002053	11/02/2007	Exhibit 9 - Dekker/Perich/Sabatini's Structural Calculations
	14	002054 – 002131	11/02/2007	Exhibit 9 - Dekker/Perich/Sabatini's Structural Calculations
	14	002132 – 002210	11/10/2007	Exhibit 10 - Plans / Record Drawings
8	**7**	**000847 – 000849**	**08/20/2019 1:24 PM**	**City of North Las Vegas' Appendix of Exhibits to Opposition to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultant's Motion to Dismiss or in the Alternative, Motion for Summary Judgment**
	7	000850 – 000867	07/11/2019	Exhibit 1 – City of North Las Vegas' Complaint

	7	000868 – 000901	02/07/2007	Exhibit 1 – Professional Architectural Services Agreement
	7	000902 – 000967	08/29/2007	Exhibit 2 – Ninyo & Moore's Geotechnical Evaluation
	7	000968 – 000981	01/30/2008	Exhibit 3 – City of North Las Vegas' Letter to Richardson Construction Inc re Construction Contract
	7	000982 – 000983	07/13/2009	Exhibit 4 – Notice of Completion
	8	000984 – 001119	12/11/2017	Exhibit 5 – American Geotechnical Inc's Geotechnical Investigation
	8	001120 – 001123	1988 - Present	Exhibit 6 – American Geotechnical Inc's Resume of Edred T. Marsh, Principal Geotechnical Engineer
	8	001124 – 001125	07/03/2019	Exhibit 7 – Declaration of Edred T. Marsh, P.E.
	8	001126 – 001127	10/17/2007	Exhibit 8 – Ninyo & Moore Letter to Dekker/Perich/Sabatini re Review of 95 Percent Bid Set Construction Documents
	9	001128 – 001340	11/02/2007	Exhibit 9 - Dekker/Perich/Sabatini's Structural Calculations
	10	001341 – 001418	11/02/2007	Exhibit 9 - Dekker/Perich/Sabatini's Structural Calculations
	10	001419 – 001497	11/10/2007	Exhibit 10 - Plans / Record Drawings
	10	001498 – 001513	2019	Exhibit 2 – Assembly Bill 421 – 80th Session 2019
	10	001514 – 001546	05/15/2019	Exhibit 3 - Minutes of the Senate Committee on Judiciary, 80th Legislature
1	**1**	**000001 – 000017**	**07/11/2019 4:35 PM**	**City of North Las Vegas' Complaint Against Defendants – Exempt from Arbitration Under N.A.R. 3(A): Seeks Damages in Excess of $50,000**
	1	000018 – 000051	02/07/2007	Exhibit 1 – Professional Architectural Services Agreement
	1	000052 – 000117	08/29/2007	Exhibit 2 – Ninyo & Moore's Geotechnical Evaluation
	1	000118 – 000131	01/30/2008	Exhibit 3 – City of North Las Vegas' Letter to Richardson Construction Inc re Construction Contract
	1	000132 – 000133	07/13/2009	Exhibit 4 – Notice of Completion

	2	000134 – 000269	12/11/2017	Exhibit 5 – American Geotechnical Inc's Geotechnical Investigation
	2	000270 – 000273	1988 - Present	Exhibit 6 – American Geotechnical Inc. Resume of Edred T. Marsh, Principal Geotechnical Engineer
	2	000274 – 000275	07/03/2019	Exhibit 7 – Declaration of Edred T. Marsh, P.E.
	2	000276 – 000277	10/17/2007	Exhibit 8 – Ninyo & Moore Letter to Dekker/Perich/Sabatini re Review of 95 Percent Bid Set Construction Documents
	3	000278 – 000491	11/02/2007	Exhibit 9 - Dekker/Perich/Sabatini's Structural Calculations
	4	000492 – 000568	11/02/2007	Exhibit 9 - Dekker/Perich/Sabatini's Structural Calculations
	4	000569 – 000647	11/10/2007	Exhibit 10 - Plans / Record Drawings
18	**15**	**002307 – 002312**	**09/26/2019**	**City of North Las Vegas' Limited Opposition to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Change Date of Hearing on Motion to Dismiss or, in the Alternative, Motion for Summary Judgment on Order Shortening Time**
	15	002313 – 002318	09/26/2019	Exhibit 1 – Register of Actions Case A-19-798346-C
	15	002319 – 002320	09/20/2019	Exhibit 2 – Weil & Drage, APC's Letter to All Counsel re Hearing of Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' on Motion to Dismiss or, in the Alternative, Motion for Summary Judgment on September 27, 2019
25	**15**	**002407 – 002421**	**11/13/2019 11:58 AM**	**City of North Las Vegas' Motion to Alter Judgment**
	15	002422 – 002430	10/17/2019	Exhibit 1 - Notice of Entry of Order Granting Nevada by Design, LLC d/b/a Nevada By Design Engineering Consultants' Motion to Dismiss or, in the alternative, Motion for Summary Judgment and All Joinders to the Same
	15	002431 – 002448	07/11/2019	Exhibit 2 – City of North Las Vegas' Complaint

	15	002449 – 002455	09/30/2019	Exhibit 3 - Order Granting Nevada by Design, LLC d/b/a Nevada By Design Engineering Consultants' Motion to Change Date
	15	002456 – 002471	2019	Exhibit 4 - Assembly Bill 421 – 80th Session 2019
	16	002472 – 002504	05/15/2019	Exhibit 5 - Minutes of the Senate Committee on Judiciary – Eightieth Session
	16	002505 – 002510	09/30/2019	Exhibit 6 - Richardson Construction, Inc. and The Guarantee Company of North America USA's Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
	16	002511 – 002514	09/30/2019	Exhibit 7 - JW Zunino & Associates LLC's Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
6	**6**	**000821 – 000826**	**08/15/2019 5:02 PM**	**City of North Las Vegas' Motion to Strike and Opposition to Jackson Family Partnership LLC d/b/a Stargate Plumbing's Motion to Dismiss**
	6	000827 – 000828	08/06/2019	Exhibit 1 – Affidavit/Declaration of Service to Jackson Family Partnership LLC d/b/a Stargate Plumbing
62	**20**	**003467 – 003470**	**04/02/2020 4:21 PM**	**City of North Las Vegas' Notice of Entry of Decision and Order Denying Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss**
	20	003471 – 003480	04/02/2020	Exhibit 1 - Order Denying Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss
66	**21**	**003589 – 003592**	**05/05/2020 3:48 PM**	**City of North Las Vegas' Notice of Entry of Decision and Order Denying Richardson Construction, Inc. and The Guarantee Company of North America USA's Motion to Dismiss / Motion for Summary Judgment Based on Laches and All Joinders**
	21	003593 – 003597	05/05/2020	Exhibit 1 – Court's Decision and Order Denying Richardson Construction, Inc. and The Guarantee Company of North America USA's Motion to Dismiss / Motion for Summary Judgment Based on Laches and All Joinders

46	**18**	**003064 – 003067**	**01/24/2020 3:55 PM**	**City of North Las Vegas' Notice of Entry of Decision and Order Granting Its Motion to Alter Judgment**
	18	003068 – 003073	01/23/2020	Exhibit 1 – Court's Decision and Order
9	**11**	**001547 – 001559**	**08/20/2019 1:34 PM**	**City of North Las Vegas' Opposition to Dekker/Perich/Sabatini, Ltd.'s Motion to Dismiss**
52	**19**	**003255 – 003274**	**02/17/2020 4:39 PM**	**City of North Las Vegas' Opposition to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' and Joinders Motion to Dismiss on Order Shortening Time**
60	**20**	**003409 – 003413**	**03/16/2020 4:57 PM**	**City of North Las Vegas' Opposition to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion for Clarification Regarding Court's Minute Order Denying Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss Brought Pursuant to NRS 11.258, on Order Shortening Time**
	20	003414 – 003415	03/13/2020	Exhibit 1 – Email re Proposed Order Denying MSA's Motion to Dismiss on NRS 11.258
	20	003416 – 003425	Undated	Exhibit 2 – Order Denying Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss
	20	003426 – 003428	03/16/2020	Exhibit 3 – Email re Request to Withdraw Motion for Clarification on Order Shortening Time Without Prejudice
7	**6**	**000829 – 000846**	**08/20/2019 1:24 PM**	**City of North Las Vegas' Opposition to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultant's Motion to Dismiss or, in the Alternative, Motion for Summary Judgement**
45	**18**	**003047 – 003063**	**12/19/2019 4:59 PM**	**City of North Las Vegas' Reply in Support of Its Motion to Alter Judgment**

20	**15**	**002326 – 002330**	**09/27/2019 4:18 PM**	**City of North Las Vegas' Surreply to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Change Date of Hearing on Motion to Dismiss or, in the Alternative, Motion for Summary Judgment on Order Shortening Time**
61	**20**	**003429 – 003466**	**03/30/2020 3:09 PM**	**Court Recorder's Transcript of Hearing re All Pending Motions, March 10, 2020**
63	**20**	**003481 – 003491**	**04/10/2020 3:04 PM**	**Court Recorder's Transcript of Hearing re All Pending Motions, March 17, 2020**
23	**15**	**002339 – 002398**	**10/10/2019 1:20 PM**	**Recorder's Transcript of Hearing Re: All Pending Motions, September 30, 2019**
65	**21**	**003541 – 003588**	**04/21/2020 8:19 AM**	**Court Recorder's Transcript of Proceedings re All Pending Motions, February 20, 2020**
64	**21**	**003492 – 003540**	**04/21/2020 8:19 AM**	**Court Recorder's Transcript of Proceedings re City of North Las Vegas' Motion to Alter Judgment, January 21, 2020**
29	**16**	**002678 – 002681**	**11/26/2019 12:35 PM**	**Dekker/Perich/Sabatini, Ltd.'s Joinder to JW Zunino & Associates LLC's Opposition to City of North Las Vegas' Motion to Alter**
49	**19**	**003147 – 003154**	**02/04/2020 3:11 PM**	**Dekker/Perich/Sabatini, Ltd.'s Joinder to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss on Order Shortening Time**
3	**5**	**000718 – 000720**	**08/06/2019 2:44 PM**	**Dekker/Perich/Sabatini, Ltd.'s Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, In the Alternative, Motion for Summary Judgment**

28	**16**	**002651 – 002660**	**11/26/2019 12:28 PM**	**Dekker/Perich/Sabatini, Ltd.'s Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Opposition to Motion to Alter Judgment; Opposition by Incorporation and Request to Reset Prior Motion to Dismiss**
	16	002659 – 002664	10/15/2019	Exhibit 1 – Order Granting Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment and all Joinders to Same
	16	002665 – 002677	08/06/2019	Exhibit 2 – Dekker/Perich/Sabatini, Ltd.'s Motion to Dismiss
4	**6**	**000721 – 000735**	**08/06/2019 2:44 PM**	**Dekker/Perich/Sabatini, Ltd.'s Motion to Dismiss**
	6	000734 – 000751	07/11/2019	Exhibit A – City of North Las Vegas' Complaint
	6	000752 – 000786	02/07/2007	Exhibit B – City of North Las Vegas' Complaint Exhibit 1 – Professional Architectural Services Agreement
	6	000787 – 000789	07/11/2019	Exhibit C – Affidavit of Aleema A. Dhalla, Esq.
	6	000790 – 000793	1988 – Present	Exhibit D – American Geotechnical, Inc.'s Resume of Edred T. Marsh, Principal Geotechnical Engineer
	6	000794 – 000801	03/23/2007	Exhibit E - Excerpts from Legislative History of N.R.S. 11.258
	6	000802 – 000803	07/03/2019	Exhibit F – Declaration of Edred T. Marsh, P.E.
	6	000804 – 000817	12/11/2017	Exhibit G - American Geotechnical, Inc's Geotechnical Investigation
13	**14**	**002219 – 002232**	**08/28/2019 8:48 AM**	**Dekker/Perich/Sabatini, Ltd.'s Reply to City of North Las Vegas' Opposition to Its Motion to Dismiss**
53	**19**	**003275 – 003285**	**02/18/2020 3:00 PM**	**Dekker/Perich/Sabatini, Ltd.'s Reply to City of North Las Vegas' Opposition to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' and Joinders to Motion to Dismiss on Order Shortening Time**
	19	003286 – 003287	07/03/2019	Exhibit A – Declaration of Edred T. Marsh, P.E.

	19	003288 – 003294	07/11/2019	Exhibit B – City of North Las Vegas' Complaint
12	**14**	**002214 – 002218**	**08/26/2019 4:15 PM**	**Jackson Family Partnership LLC d/b/a Stargate Plumbing's Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, In the Alternative, Motion for Summary Judgment**
36	**18**	**002894 – 002900**	**12/02/2019 2:22 PM**	**Jackson Family Partnership LLC d/b/a Stargate Plumbing's Joinder to JW Zunino & Associates LLC's Opposition to Motion to Alter Judgment with Supplemental Points and Authorities**
7	**18**	**002901 – 002907**	**12/02/2019 2:22 PM**	**Jackson Family Partnership LLC d/b/a Stargate Plumbing's Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Opposition to City of North Las Vegas' Motion to Alter Judgment with Supplemental Points and Authorities**
2	**18**	**003037 – 003039**	**12/03/2019 10:01 AM**	**JW Zunino & Associates LLC's Joinder to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Opposition to Motion to Alter Judgment**
50	**19**	**003155 – 003166**	**02/07/2020 3:04 PM**	**JW Zunino & Associates LLC's Joinder to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss on Order Shortening Time**
22	**15**	**002336 – 002338**	**09/30/2019 4:35 PM**	**JW Zunino & Associates LLC's Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment**
31	**17**	**002686 – 002688**	**11/27/2019 10:43 AM**	**JW Zunino & Associates LLC's Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Opposition to Motion to Alter Judgment**
38	**18**	**002908 – 002910**	**12/02/2019 2:34 PM**	**JW Zunino & Associates LLC's Joinder to Richardson Construction, Inc. and The Guarantee Company of North America USA's Opposition to Motion to Alter Judgment**

26	**16**	**002515 – 002527**	**11/25/2019 5:02 PM**	**JW Zunino & Associates LLC's Opposition to City of North Las Vegas' Motion to Alter Judgment**
	16	002528 – 002530	10/09/2019	Exhibit A – Affidavit of Rita Tuttle
57	**20**	**003385 – 003391**	**02/19/2020 11:29 AM**	**JW Zunino & Associates LLC's Reply to City of North Las Vegas' Opposition to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss on Order Shortening Time**
5	**6**	**000818 – 000820**	**08/08/2019 1:32 PM**	**Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Joinder to Nevada By Design, LLC d/b/a Nevada By Design Engineering Consultants' Motion to Dismiss or, In the Alternative, Motion for Summary Judgment**
40	**18**	**003029 – 003032**	**12/02/2019 3:19 PM**	**Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Joinder to JW Zunino & Associates, LLC's Opposition to City of North Las Vegas' Motion to Alter Judgment**
41	**18**	**003033 – 003036**	**12/02/2019 3:19 PM**	**Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Joinder to Nevada By Design, LLC d/b/a Nevada By Design Engineering Consultants' Opposition to City of North Las Vegas' Motion to Alter Judgment**
39	**18**	**002911 – 002936**	**12/02/2019 3:19 PM**	**Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Opposition to Motion to Alter Judgment**
	18	002937 – 002941	10/15/2019	Exhibit 1 – Order Granting Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment and all Joinders to Same
	18	002942 – 002960	08/20/2019	Exhibit 2 – City of North Las Vegas' Opposition to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
	18	002961 – 003021	10/10/2019	Exhibit 3 – Court Recorder's Transcript of Hearing: All Pending Motions

	18	003022 – 003024	10/15/2019	Exhibit 4 – Order Granting Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Change Date of Haring on Motion to Dismiss or, in the Alternative, Motion for Summary Judgment on Order Shortening Time
	18	003025 – 003028	08/05/2019	Exhibit 5 – Cover Sheet Filings of: Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment; Dekker/Perich/Sabatini, Ltd.'s Motion to Dismiss; and Melroy Engineering, Inc. d/b/a MSA Engineering Consultants Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
7	**18**	**003074 – 003090**	**02/04/2020 12:14 PM**	**Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss on Order Shortening Time**
	19	003091 – 003108	07/11/2019	Exhibit A – City of North Las Vegas' Complaint
	19	003110 – 003111	07/11/019	Exhibit B – Affidavit of Aleema A. Dhalla, Esq.
	19	003112 – 003115	1988 - Present	Exhibit C – American Geotechnical Inc's Resume of Edred T. Marsh, Principal Geotechnical Engineer
	19	003116 – 003123	03/23/2007	Exhibit D – Legislative History of 11.258 Senate Bill 243
	19	003124 – 003137	12/11/2017	Exhibit E – American Geotechnical Inc's Geotechnical Investigation
	19	003138 – 003139	07/03/2019	Exhibit F – Declaration of Edred T. Marsh, P.E.
59	**20**	**003399 – 003408**	**03/16/2020 8:58 AM**	**Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion for Clarification Regarding Court's Minute Order Denying Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss Brought Pursuant to NRS 11.258, on Order Shortening Time**

55	**20**	**003308 – 003318**	**02/18/2020 5:02 PM**	**Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Reply to City of North Las Vegas' Opposition to Its Motion to Dismiss**
	20	003319 – 003325	02/12/2020	Exhibit 1 – Notice of Entry of Order Granting Kittrell Garlock and Associates, Architects, AIA, Ltd.'s Motion to Dismiss; Kittrell Garlock and Associates, Architects, AIA, Ltd.'s Motion to Dismiss City of North Las Vegas' Complaint
	20	003326 – 003340	11/22/2019	Kittrell Garlock and Associates, Architects, AIA, Ltd.'s Motion to Dismiss City of Las Vegas' Complaint
	20	003341 - 003347	11/06/2019	Exhibit A – City of North Las Vegas' Complaint
	20	003348 – 003353	N/A	Exhibit B – Michael Panish Expert Witness & Consultants Construction Systems Curriculum Vitae
	20	003354 – 003361	03/23/2007	Exhibit C - Legislative History of 11.258 Senate Bill 243
	20	003362 – 003366	12/09/2019	A-19-804979-C Kelli Nash' Opposition to Defendant's Motion to Dismiss its Complaint
	20	003367 – 003373	12/26/2019	A-19-804979 Kittrell Garlock and Associates, Architects, AIA, Ltd.'s Reply to Kelly Nash's Opposition to its Motion to Dismiss Kelly Nash's Complaint
	20	003374 – 003378	10/15/2019	Exhibit 1 – Stipulation and Order to Dismiss Kittrell Garlock and Associates, AIA, Ltd.
30	**16**	**002682 – 002685**	**11/26/2019 12:43 PM**	**Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Joinder to JW Zunino & Associates LLC's Opposition to City of North Las Vegas' Motion to Alter**
48	**19**	**003140 – 003146**	**02/04/2020 3:09 PM**	**Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Joinder to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss on Order Shortening Time**

17	**15**	**002282 – 002292**	**09/18/2019 3:07 PM**	**Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Change Date of Hearing on Motion to Dismiss or, in the Alternative, Motion for Summary Judgment on Order Shortening Time**
	15	002293 – 002294	08/06/2019	Exhibit A – Clerk of the Court's Notice of Hearing
	15	002295 – 002296	09/06/2019	Exhibit B – Court's Notice of Rescheduling Motions to Dismiss and Joinders
	15	002297 – 002202	09/09/2019	Exhibit C – Emails re Rescheduling of Hearing
	15	002203 – 002304	09/10/2019	Exhibit D – Emails re Rescheduling of Hearing
	15	002305 – 002306	N/A	Exhibit E – Las Vegas Law Offices of Snell & Wilmer
2	**5**	**000648 – 000663**	**08/05/2019 4:15 PM**	**Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment**
	5	000664 – 000681	07/11/2019	Exhibit A – City of North Las Vegas' Complaint
	5	000682 – 000684	07/13/2009	Exhibit B – City of North Las Vegas' Complaint Exhibit 4 Notice of Completion
	5	000685 – 000690	03/25/2019	Exhibit C - Nevada Legislature Website (80th Session) Concerning the "Effective Date" of the AB 421
	5	000691 – 000693	07/11/2019	Exhibit D – Aleem A. Dhalla, Esq.'s Affidavit of Merit Attached to City of North Las Vegas' Complaint
	5	000694 – 000707	12/11/2017	Exhibit E - American Geotechnical, Inc's Geotechnical Investigation
	5	000708 – 000709	07/03/2019	Exhibit F – Declaration of Edred T. Marsh, P.E.
	5	000710 – 000717	03/23/2007	Exhibit G – Excerpts from Legislative History of N.R.S. 11.258
24	**15**	**002399 – 002406**	**10/17/2019 10:08 AM**	**Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Notice of Entry of Order Granting Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment and All Joinders to Same**

27	**16**	**002531 – 002558**	**11/26/2019 11:17 PM**	**Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Opposition to Motion to Alter Judgment**
	16	002559 – 002563	10/15/2019	Exhibit 1 – Order Granting Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment and all Joinders to Same
	16	002564 – 002582	08/20/2019	Exhibit 2 – City of North Las Vegas' Opposition to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
	16	002583 – 002643	10/10/2019	Exhibit 3 – Court Recorder's Transcript of Hearing: All Pending Motions
	16	002644 – 002646	10/15/2019	Exhibit 4 – Order Granting Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Change Date of Hearing on Motion to Dismiss or, in the Alternative, Motion for Summary Judgment on Order Shortening Time
	16	002647 – 002650	08/05/2019	Exhibit 5 - Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
			08/06/2019	Dekker/Perich/Sabatini, Ltd.'s Motion to Dismiss
			08/08/2019	Melroy Engineering, Inc. d/b/a MSA Engineering Consultants Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
19	**15**	**002321 – 002325**	**09/26/2019 5:16 PM**	**Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Reply to City of North Las Vegas' Limited Opposition to Motion to Change Date of Hearing**
54	**20**	**003295 – 003307**	**02/18/2020 3:57 PM**	**Nevada by Design, LLC d/b/a Nevada By Design Engineering Consultants' Reply to City of North Las Vegas' Opposition to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' and Joinders to Motion to Dismiss on Order Shortening Time**

14	**14**	**002233 – 002249**	**8/28/2019 9:02 AM**	**Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Rely to City of North Las Vegas' Opposition to Motion to Dismiss or, in the Alternative, Motion for Summary Judgement**
	14	002250 – 002255	07/01/019	Exhibit A – Assembly Bill No. 221 – Committee on Judiciary 80th Session (2019)
	14	002256 – 002257	2019	Exhibit B – 80th Session (2019)
	15	002258 – 002271	12/11/2017	Exhibit C – American Geotechnical Inc's Geotechnical Investigation
35	**17**	**002891 – 002893**	**12/02/2019 1:54PM**	**Ninyo & Moore, Geotechnical Consultants' Joinder to JW Zunino & Associates LLC's Opposition to City of North Las Vegas' Motion to Alter Judgment**
44	**18**	**003044 – 003046**	**12/06/2019 10:08 AM**	**Ninyo & Moore, Geotechnical Consultants' Joinder to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Opposition to Motion to Alter Judgment With Respect to Statute of Repose Arguments**
51	**19**	**003167 – 003174**	**02/07/2020 3:36 PM**	**Ninyo & Moore, Geotechnical Consultants' Joinder to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss on Order Shortening Time**
	19	003175 – 003240	08/29/2007	Exhibit A – Ninyo & Moore's Geotechnical Evaluation
	19	003241 – 003254	12/11/2017	Exhibit B – American Geotechnical Inc's Geotechnical Investigation
11	**14**	**002211 – 002213**	**08/23/2019 10:02 AM**	**Ninyo & Moore, Geotechnical Consultants' Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, In the Alternative, Motion for Summary Judgment**
15	**15**	**002272 – 002274**	**09/06/2019 12:14 PM**	**Ninyo & Moore, Geotechnical Consultants' Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, In the Alternative, Motion for Summary Judgment**

34	**17**	**002888 – 002890**	**12/02/2019 1:54 PM**	**Ninyo & Moore, Geotechnical Consultants' Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Opposition to City of North Las Vegas' Motion to Alter Judgment**
58	**20**	**003392 – 003398**	**02/19/2020 2:56 PM**	**Ninyo & Moore, Geotechnical Consultants' Reply to City of North Las Vegas Opposition to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' and Joinders to Motion to Dismiss on Order Shortening Time**
32	**17**	**002689 – 002693**	**11/27/2019 1:15 PM**	**Paffenbarger & Walden, LLC and P & W Bonds, LLC's Joinder in (1) Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Opposition to Motion to Alter Judgment; and (2) JW Zunino & Associates LLC Opposition to Motion to Alter Judgment**
43	**18**	**003040 – 003043**	**12/04/2019 8:35 AM**	**Paffenbarger & Walden, LLC and P & W Bonds, LLC's Joinder in (1) Richardson Construction, Inc. and The Guarantee Company of North America USA's Opposition to Motion to Alter Judgment; and (2) Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Opposition to Motion to Alter Judgment**
16	**15**	**002275 – 002281**	**09/13/2019 4:22 PM**	**Paffenbarger & Walden, LLC and P & W Bonds, LLC's Limited Joinder in Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment**
21	**15**	**002331 – 002335**	**09/30/2019 11:29 AM**	**Richardson Construction, Inc. and The Guarantee Company of North America USA's Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment**

56	**20**	**003379 – 003384**	**02/18/2020 5:06 PM**	**Richardson Construction, Inc. and The Guarantee Company of North America USA's Limited Response to Melroy Engineering, Inc. d/b/a MSA Engineering Consultants' Motion to Dismiss on Order Shortening Times and All Joinder Thereto**
33	**17**	**002694 – 002887**	**11/27/2019 4:51 PM**	**Richardson Construction, Inc. and The Guarantee Company of North America USA's Opposition to Motion to Alter Judgment and Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Opposition to Motion to Alter Judgment**
	17	002706 – 002723	07/11/2019	Exhibit A – City of North Las Vegas' Complaint
	17	002724 – 002740	08/05/2019	Exhibit B - Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
	17	002741 – 002758	07/11/2019	Exhibit A – City of North Las Vegas' Complaint
	17	002759 – 002761	07/13/2009	Exhibit B – City of North Las Vegas' Complaint Exhibit 4 Notice of Completion
	17	002762 – 002767	03/25/2019	Exhibit C – AB421
	17	002768 – 002770	07/11/2019	Exhibit D – Affidavit of Aleema A. Dhalla, Esq.
	17	002771 – 002784	12/11/2017	Exhibit E – American Geotechnical Inc's Geotechnical Investigation
	17	002785 – 002786	07/03/2019	Exhibit F – Declaration of Edred T. Marsh, P.E.
	17	002787 – 002794	03/23/2007	Exhibit G – Senate Bill 243 - 11.258
	17	002795 – 002796	08/06/2019	Exhibit C – Clerk of the Court's Notice of Hearing
	17	002797 – 002815	08/20/2019	Exhibit D – City of North Las Vegas' Opposition to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
	17	002816 – 002822	09/04/2019	Exhibit E – Richardson Construction, Inc.'s and The Guarantee Company of North America USA's Motion to Dismiss

	17	002823 – 002824	09/06/2019	Exhibit F – Clerk of the Court's Notice of Hearing
	17	002825 – 002831	11/27/2019	Exhibit G – Register of Actions
	17	002832 – 002833	09/10/2019	Exhibit H – Emails re Rescheduling of Hearing
	17	002834 – 002846	09/18/2019	Exhibit I - Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Change Date of Hearing of Motion to Dismiss or, in the Alternative, Motion for Summary Judgment
	17	002847 – 002848	08/06/2019	Exhibit A – Clerk of the Court's Notice of Hearing
	17	002849 – 002850	09/06/2019	Exhibit B – Court's Notice of Rescheduling Motions to Dismiss and Joinders
	17	002851 – 002856	09/09/019	Exhibit C – Emails re Rescheduling of Hearing
	17	002857 – 002858	09/10/2019	Exhibit D – Emails re Rescheduling of Hearing
	17	002859 – 002860	N/A	Exhibit E – Las Vegas Law Offices of Snell & Wilmer
	17	002861 – 002862	09/20/2019	Exhibit J – Weil & Drage, APC Letter to All Counsel re Hearing of Nevada By Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment on September 27, 2019
	17	002863 – 002868	09/26/2019	Exhibit K - Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Reply to City of North Las Vegas' Limited Opposition to Motion to Change Date of Hearing
	17	002869 – 002871	11/27/2019	Exhibit L – Register of Actions A-19-798346-C
	17	002872 – 002874	11/27/2019	Exhibit M – Register of Actions A-19-798346-C
	17	002875 – 002880	09/30/3019	Exhibit N – Richardson Construction, Inc. and The Guarantee Company of North America USA's Joinder to Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Dismiss or, in the Alternative, Motion for Summary Judgment

	17	002281 – 002887	10/17/2019	Exhibit O – Notice of Entry of Order Granting Nevada by Design, LLC d/b/a Nevada by Design Engineering Consultants' Motion to Change Date of Haring on Motion to Dismiss or, in the Alternative, Motion for Summary Judgment on Order Shortening Time

EXHIBIT 5

GEOTECHNICAL INVESTIGATION

FIRE STATION 53

2804 W. Gowan Road
North Las Vegas, Nevada

December 11, 2017
FN 40779-01

Corporate Office:
22725 Old Canal Rd.
Yorba Linda, CA 92887

2640 Financial Court
Suite A
San Diego, CA 92117

3100 Fite Circle
Suite 103
Sacramento, CA 95827

5600 Spring Mtn. Rd.
Suite 201
Las Vegas, NV 89146

American Geotechnical Inc.
GEOTECHNICAL ENGINEERING / MATERIALS TESTING & INSPECTION

WWW.AMGT.COM

American Geotechnical, Inc.
GEOTECHNICAL ENGINEERING / MATERIALS TESTING & INSPECTION

December 11, 2017 File No. 40779-01

Mr. Dale Daffern
CITY OF NORTH LAS VEGAS
50 E. Brooks Avenue
North Las Vegas, Nevada 89030

Subject: **GEOTECHNICAL INVESTIGATION**
FIRE STATION 53
2804 W. Gowan Road
North Las Vegas, Nevada

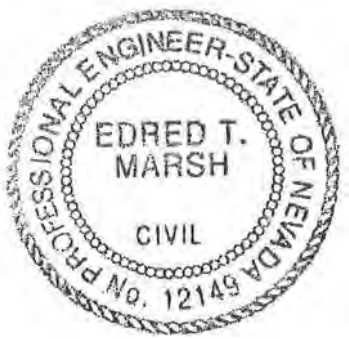
Dear Mr. Daffern:

In accordance with your authorization, American Geotechnical has performed a geotechnical investigation of the site. The purpose of this investigation was to evaluate the site geotechnical conditions and to determine the probable cause(s) of the existing distress to the building and surrounding appurtenances and to provide remedial recommendations for improvement of adverse site conditions. Our findings, conclusions, and recommendations for remedial repairs are presented below. We have included concept repair plans and the backup calculations that we believe are adequate to provide to specialty contractors for determining preliminary cost estimates for remedial work at the site. These concept repair plans can be revised after a discussion of the final intentions are determined for the project going forward. If final repair plans are desired, our office or an engineering firm of your choice can prepare final repair drawings for remediation. It is recommended that a meeting take place to discuss these findings and recommendations. These concept repair recommendations can be revised as needed based on the results of the outcome of a meeting with the concerned parties.

American Geotechnical and the undersigned appreciate the opportunity to work with you on this project. Should you have any questions regarding the information contained herein, please do not hesitate to contact us.

Respectfully submitted,

AMERICAN GEOTECHNICAL, INC.



Edred T. Marsh
Principal Engineer
P.E. 12149

Alva (Arumugam) Alvappillai
Principal Engineer

AA/ETM: km

Distribution: Mr. Dale Daffern *Via E-Mail Only*

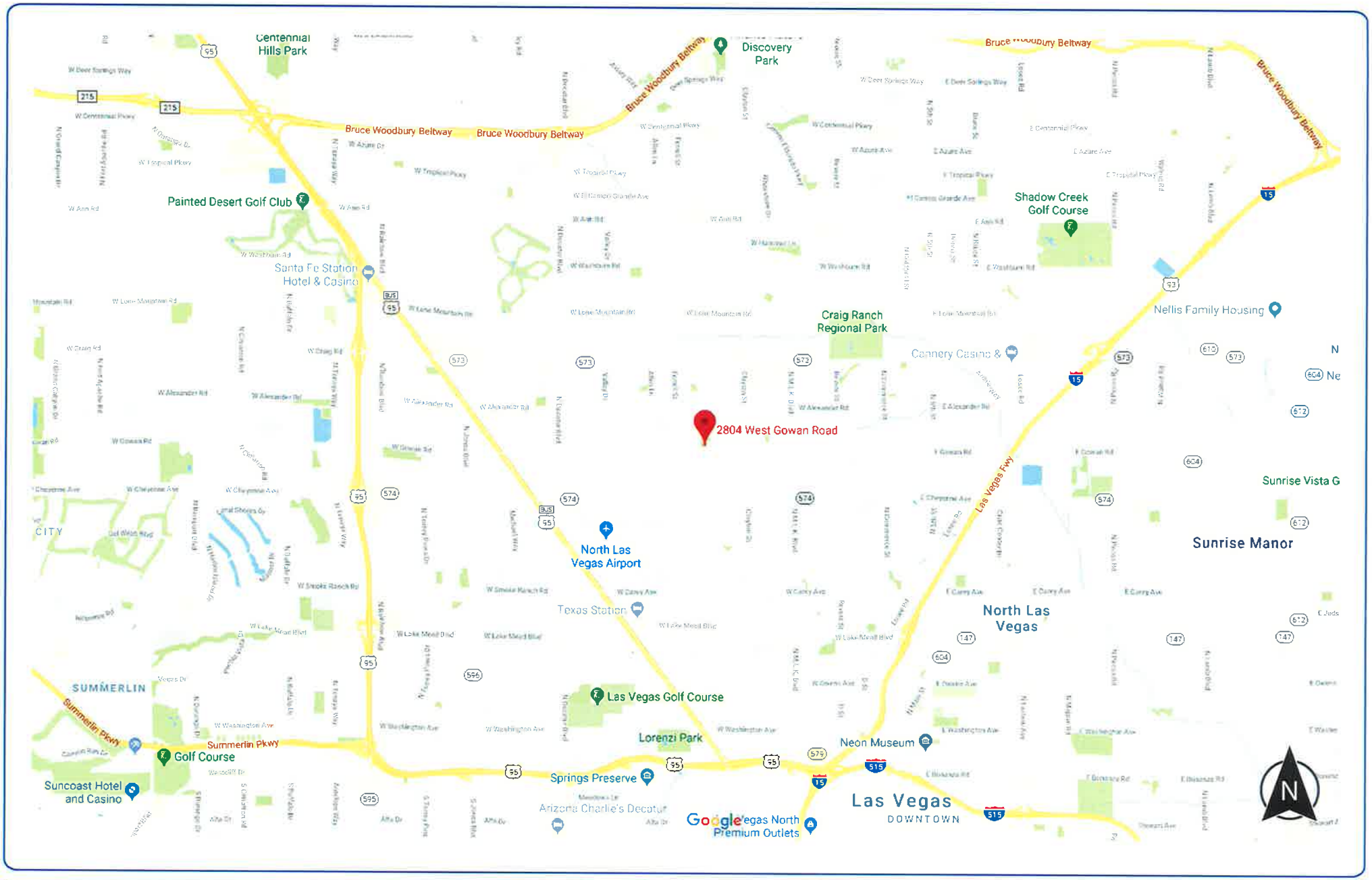
1.0 SCOPE OF WORK

The scope of work performed during this investigation included the following:

- Visual review and photo documentation of the site conditions;
- A manometer floor-level survey of the east portion of the building;
- Subsurface exploration consisting of the excavation of a test pit (AGTP-1) and drilling of three small-diameter borings (AGSB-1, AGSB-2 and AGSB-3);
- Collection of relatively undisturbed and bulk samples of representative materials encountered in the borings and test pit excavation;
- Laboratory testing of soil samples obtained during the subsurface effort;
- Engineering analyses of field and laboratory data; and,
- Preparation of this report summarizing our field investigation, findings, conclusions, and remedial recommendations.

2.0 SITE DESCRIPTION AND HISTORY

The site is located on the north side of W. Gowan Road and is presently occupied with a single-story fire station building and associated appurtenant improvements on a relatively level pad. The building has masonry as well as metal stud bearing walls and is supported on isolated shallow pad and continuous foundation footings. The interior of the building has a conventional slab-on-grade floor system. The front of the building faces south to W. Gowan Road and a 4 to 4 ½ foot high masonry retaining wall is located around the southeast corner of the building. Exterior improvements include a concrete driveway and parking areas as well as typical desert landscaping around the building. A site location map is shown on **Plate 1** and an aerial view of the site is presented on **Plate 2**.



AMERICAN GEOTECHNICAL, INC.
22725 Old Canal Road, Yorba Linda, CA 92887
(714) 685-3900 (714) 685-3909
www.amgt.com

TITLE: **SITE LOCATION MAP**
2804 West Gowan Rd., N. Las Vegas, AZ

SCALE:	DATE:	FILE NO.:
N.T.S	DEC 2017	4[illegible]1.001703

PLATE **1**

LEGEND

AGSB-3	Approximate Location of Small Diameter Boring
AGTP-1	Approximate Location of Test Pit

AMERICAN GEOTECHNICAL, INC.
22725 Old Canal Road, Yorba Linda, CA 92887
(714) 685-3900 (714) 685-3909
www.amgt.com

TITLE: **Aerial View/Test Location Map**
2804 West Gowan Rd., N. Las Vegas, AZ

SCALE:	DATE:	FILE NO.:
N.T.S	DEC 2017	46779-01

PLATE **2**

Based on our review of available documents, Ninyo & Moore performed the preliminary geotechnical investigation for the project and provided recommendations for the design and construction of the site improvements. According to the Ninyo & Moore report dated May 11, 2007, the site was underlain by about 1.5 feet of fill over native alluvial soil. They recommended that the fill as well as surficial loose native soils be removed and replaced with a structural fill for the building pad. The recommended thickness of the structural fill was 36 inches below building foundations or 48 inches below existing grades. As we understand, the grading for the project was performed in the latter part of 2007 or early 2008 followed by the construction of the building and other site improvements.

Distress to the building in the form of wall cracks and separations, and some interior slab cracking was observed and reported after the construction for the project. In addition, damage to exterior appurtenant structures was noted and brought to our attention. Most of the damage was concentrated along the eastern portion of the building as well as the front south east portion of the lot.

3.0 OBSERVED DAMAGE

Our review indicated various cracks and separations mainly in the eastern portion of the building and surrounding exterior areas. Separations in the masonry walls were documented up to 1 to 1 ½ inches in width. Up to ½ inch wide cracks were also noted in the exterior stucco walls. The building was also found to have separations up to ½ to 1 inch from the exterior flatwork. The interior of the building possessed a concentration of cracking along the eastern side of the structure. Wall cracks ranging from 1/32 to 1/62 inch in width were documented and slab cracks were also documented through the interior floor slab where the steep transitions occurred in the manometer floor level survey. Representative photographs taken at the time of our review are presented in **Appendix B** for reference.

4.0 FLOOR-LEVEL SURVEY

During our site review, a manometer floor-level survey was conducted in the main portion of the structure that had been affected. The purpose of this survey was to evaluate the relative levelness of the foundation system. A manometer is a single-reservoir, direct-reading device commonly used for the purpose of measuring floor elevations. At the free end of the manometer device, water within the clear plastic tubing moves up and down with respect to an inverted scale to allow for the direct reading of elevation changes. The device has a sharp point fixed to the bottom of the scale, which can easily penetrate carpet without damage.

Measurements were taken at close intervals and corrected for varying floor heights and thickness of floor coverings. All point readings have been based on the same datum. By evaluating the different readings, floor deformation can be easily determined by conventional contouring techniques. The attached **Plate 3** presents the results of the manometer survey. As shown, the maximum difference in elevation across the floor is approximately 3.3 inches. The contour pattern indicates a clear downward deformation of the floor toward the east side of the building. On average, most foundation systems are constructed within ½ of an inch level. The measured floor differential is considered excessive and appears to be related to differential settlement along the eastern portion of the structure along with expansive soil influence.

5.0 SUBSURFACE INVESTIGATION

Our subsurface investigation included he excavation of a test pit (AGTP-1) and drilling of three small-diameter borings (AGSB-1 through AGSB-3).

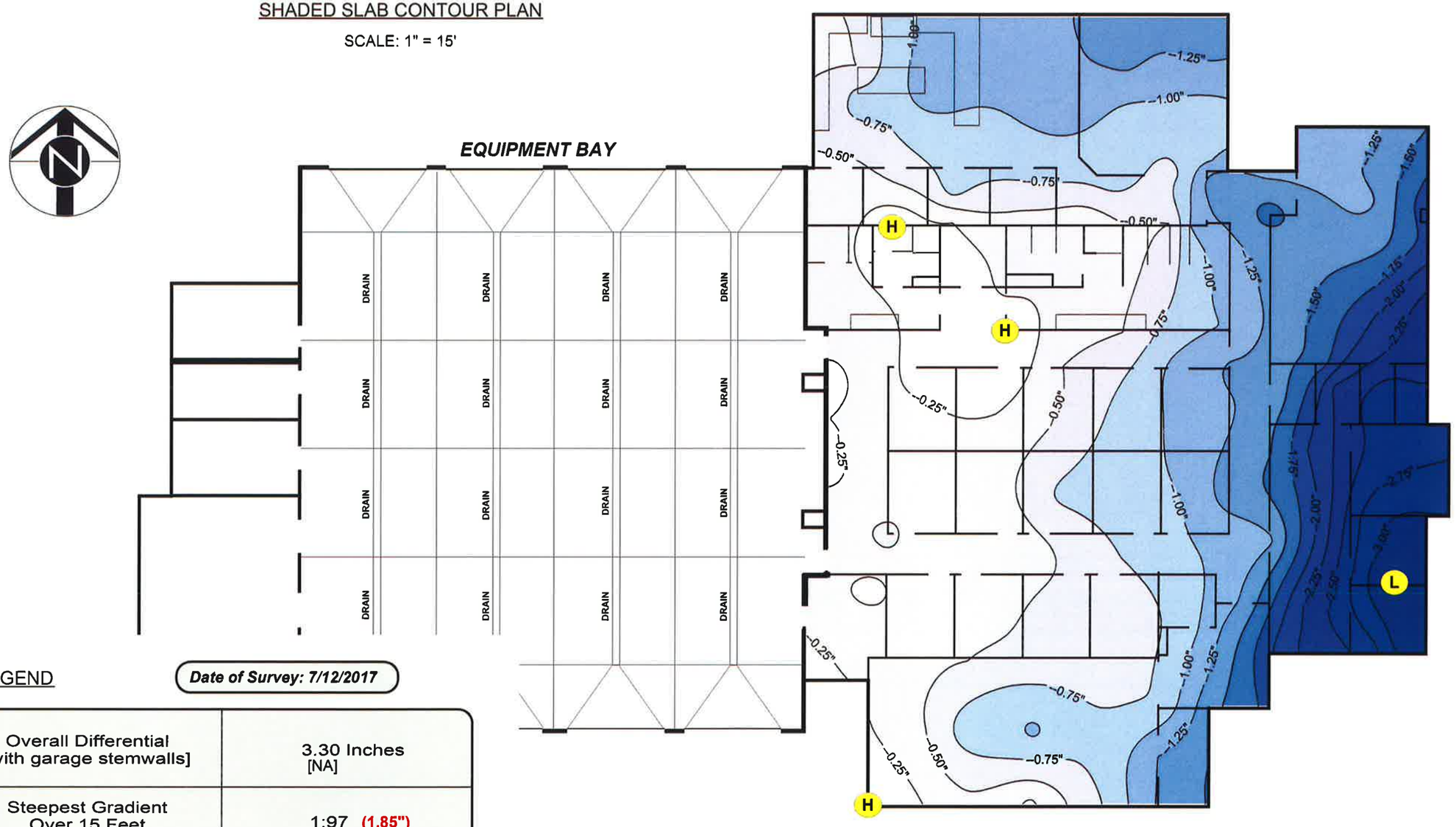
Test pit AGTP-1 was excavated on the east side of the building between the building foundation and the top of an exterior retaining wall. The excavation was terminated at 8.5 feet below ground surface at the top of a very hard and well cemented soil layer. Fill material consisting generally of a stiff sandy clay was documented for the entire depth of the excavation. The building footing exposed within the excavation was found to have approximately 21 inches of embedment into the soil. Up to a 1.0 inch deep void was also observed directly below the footing and the subgrade soil.

The borings AGSB-1, AGSB-2 and AGSB-3 were drilled within the planter areas located in the east, north and west sides of the building, respectively. The borings were advanced to a maximum depth of approximately 46.5 feet from the ground surface. The materials encountered in all of our borings included silty and sandy clay materials. In boring AGSB-1, a stiff to hard layer was encountered between 2.5 and 4 feet below ground surface. However, below this layer and to a depth of 28 feet, there were interbedded soft to firm silty and sandy clay layers. Below 28 feet, the materials were found to be generally firm to stiff. Similar interbedded soft and stiff soil layers were also encountered in borings AGSB-2 and AGSB-3.

Representative samples of subsurface materials were collected and forwarded to the laboratory for the purpose of estimating material properties for the use in subsequent engineering evaluations. The approximate locations of the test pit and borings are shown on **Plate 2**. Detailed logs are presented in **Appendix C**.

SHADED SLAB CONTOUR PLAN

SCALE: 1" = 15'



LEGEND

Date of Survey: 7/12/2017

Overall Differential [with garage stemwalls]	3.30 Inches [NA]
Steepest Gradient Over 15 Feet	1:97 (1.85")
1.6"	Contours are of relative elevation in inches
7.5 •	Survey Point / Relative elevation
L	Low Point
H	High Point
	Areas that exceeds 1/300 ratio
	Areas that exceeds 1/240 ratio

MANOMETER SURVEY
FIRE STATION #53

F.N. 40779.01
Fire Station #53

PLATE 3

American Geotechnical Inc.
(800)275-4436

6.0 LABORATORY TESTING

Laboratory testing was performed on samples collected during our field exploration. Samples were tested for the purpose of estimating material properties for the use in subsequent engineering evaluations. Laboratory tests included in-situ moisture/density, maximum density and optimum moisture content, expansion index, swell/collapse potential, direct shear testing and chemical testing. A summary of our laboratory test results is presented in **Appendix D**. As shown in this summary, the soil underlying the site has high expansion characteristics with an Expansion Index (EI) value of 118. Test results also indicate collapse (settlement) potential of site soils.

7.0 CONCLUSIONS

Excessive damage exists generally along the eastern and southeastern portions of the site. The existing distress includes various wall cracks and separations, slab cracking and damage to appurtenant structures. Excessive slab/foundation deformation exists in this area, which corresponds to the damaged areas.

Based on the results of the investigation of the site, it is our opinion that the existing distress to the building and surrounding appurtenant structures is due to a combination of excessive differential settlement and expansive soil activity. As discussed, the soil underlying the site includes interbedded layers of loose and stiff alluvial materials. Laboratory testing of soil samples retrieved from the site indicates that the loose soil layers have collapse or settlement potential when saturated. Settlement occurs as a result of the stresses imposed and most significant stresses usually result from the weight of the structure as well as the self-weight of the earth materials. Settlement can be aggravated by introduction of water to the subsoil. At the site, an up to 4 ½ foot high retaining wall exists near the southeast portion of the building. The building foundation is located in or within the retaining wall backfill. It appears that settlement of retaining wall backfill and/or fill beneath the retaining wall and main structure is also contributing to the damage observed.

The surface soil at the site was found to possess high expansive characteristics. Soil with a significant clay fraction tends to possess expansive characteristics. Expansive soil heaves when water is introduced and shrinks as it dries. Progressive heaving and shrinking associated with moisture changes in the expansive soil can also cause foundation settlement. The existing distress to the building as well as separations in the exterior flatwork appears to be partly related to expansive soil influences. The slab/foundation system and appurtenant structures are not considered adequate for the expansive soil conditions present at the site.

8.0 REMEDIAL RECOMMENDATIONS

The building at the site is likely to be impacted by continuing settlement and expansive soil influences. In order to reduce future problems, we recommend that the eastern portion of the building be underpinned by using a pile-grade beam system. The best method is to underpin the entire interior and exterior building foundations to below depths affected by the soil influences. However, realizing some risk, this underpinning can be limited to the perimeter footing in conjunction with releveling of the affected building area by mud jacking or foam/grout injection. We recommend that the releveling be performed first followed by the underpinning of the perimeter footings. The releveling effort should result in no more than a maximum of 1.0 inch overall differential between the highest and lowest points. The steepest local gradient for floor level tolerance should be limited to 1/4-inch over any 10-foot distance. The contractor should perform elevation surveys before and after the releveling to confirm the levelness of the building floor and provide to the project engineer for review. The contractor would be responsible for selecting grouting locations; however, we recommend that injection points not to exceed 8 feet from center to center. Care should also be taken not to damage the existing utilities and foundation elements during releveling process.

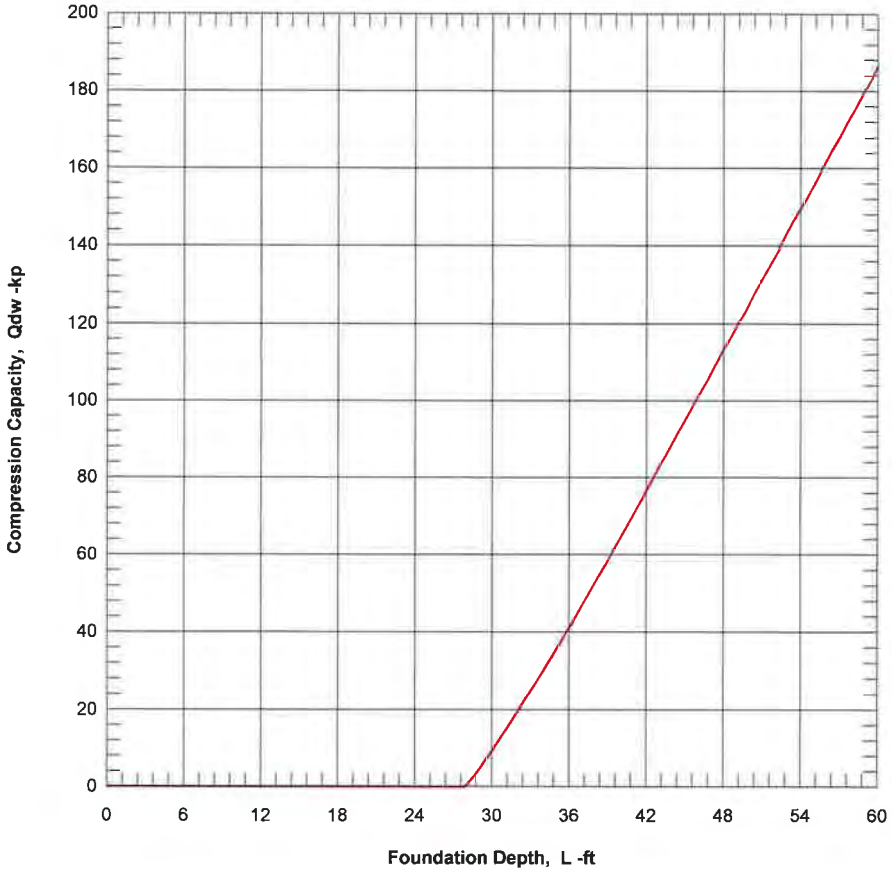
A minimum pile diameter of 2 feet is recommended for the underpinning. The pile spacing should be at least three times the pile diameter. Vertical pile capacity for an isolated, 2-foot diameter friction pile is presented on **Plate 4**. Capacities for other pile sizes can be determined in direct proportion to pile diameters. As shown on Plate 4, the compression capacity of piles within the upper 28 feet is neglected due to the presence of loose soil layers. In determining the pile capacity, end bearing has also been ignored.

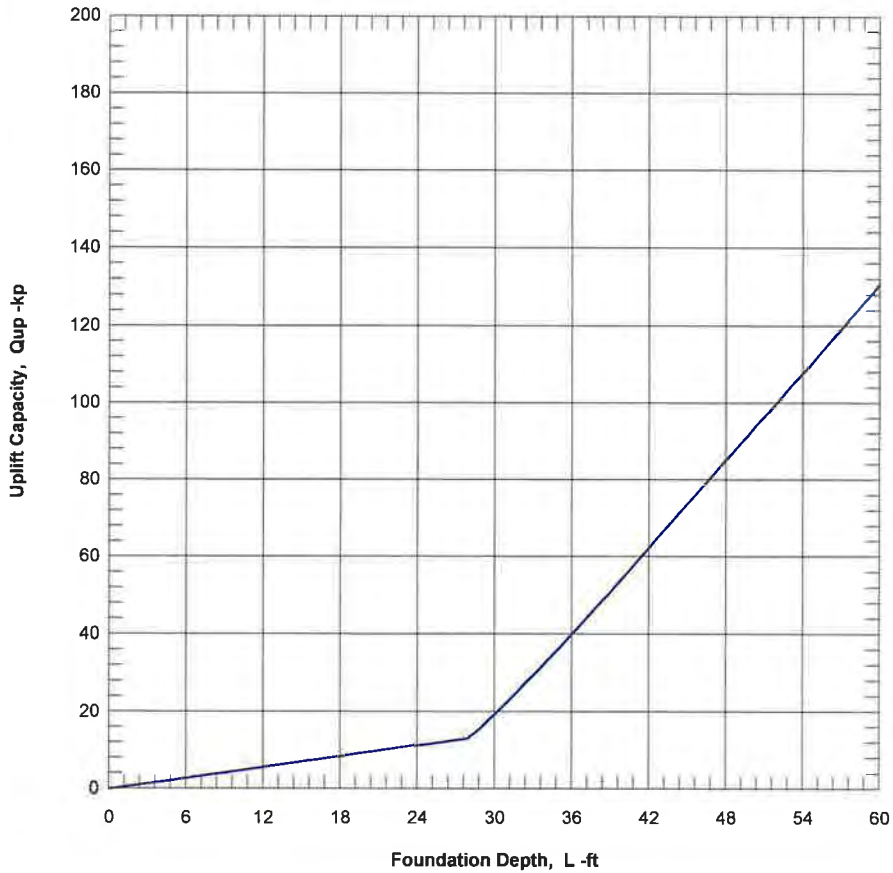
For friction piles, care should be taken to ream the pile excavation within the bearing zone in order to clean the excavation side walls of any smear resulting from drilling operations. The bottom of the excavation should be kept free of loose or sloughed material. It should be noted that hard drilling conditions may be encountered during construction of the piles due to the presence of hard cemented soil layers.

After completion of releveling and underpinning of the building, the interior slab should be reviewed and all slab cracks be treated with full-depth epoxy injection. A detailed description of the recommended construction sequence is presented in **Appendix E**.

As requested, we have also performed a preliminary structural design of the underpinning system. A preliminary repair plan/detail as well as supporting structural calculations is also presented in Appendix E.

ALLOWABLE CAPACITY vs FOUNDATION DEPTH





In addition to the building repairs, the damaged exterior flatwork, including those affected by the proposed underpinning work, should be replaced. It is recommended that the new slab sections should be a minimum of 6 inches thick and reinforced with No. 4 bars at 12 inches on center, both ways. An approximately 4-inch thick layer of free-draining crushed rock base (e.g., 3/4 inch rock) is recommended below the slab and on top of subgrade. The crushed rock should have no more than ten percent passing the 3/4 inch sieve or more than three percent passing the No. 200 sieve. For larger slab areas, such as patio slabs, minimum 24-inch deep and 18-inch wide cut-off walls should be provided along the edges of the slabs. Movement of slabs adjacent to structures can be mitigated by doweling slabs to perimeter footings. Doweling should consist of No. 4 bars bent around the exterior footing reinforcement. Dowels should be extended at least 2 feet into the exterior slabs. Doweling should be spaced consistent with the reinforcement schedule for the slab. With doweling, 3/8-inch minimum thickness expansion joint material should be provided. Where expansion joint material is provided, it should be held down about 3/8-inch below the surface. The expansion joints should be finished with a color matched, flowing, flexible sealer (e.g., pool deck compound) sanded to add mortar-like texture. As an option to doweling, an architectural separation could be provided between the main structure and abutting appurtenant improvements.

9.0 CONCRETE

Laboratory testing indicated that the surface soil at the site has severe levels of sulfates and as such, sulfate-resistant concrete is required for the project. The concrete for all construction should utilize Type-V cement with a maximum 0.45-water/cementitious ratio. Limited use (subject to approval of mix designs) of a water-reducing agent may be included to increase workability. The concrete should be properly cured to minimize risk of shrinkage cracking. One-inch hard rock mixes should be provided.

10.0 CORROSION

In addition to sulfate, Chloride, pH, and resistivity tests of near-surface site soil were performed. The test results presented in **Appendix D** indicate that the metals (embedded and non-embedded) bear significant corrosion risk. Appropriate design considerations should be made for the risk of damage from this corrosion.

11.0 REMARKS

Only a portion of subsurface conditions have been reviewed and evaluated. Conclusions, recommendations, and other information contained in this report are based upon the assumptions that subsurface conditions do not vary appreciably between and adjacent to the observation points. Although no significant variation is anticipated, it must be recognized that variations can occur.

This report has been prepared for the sole use and benefit of our client. The intent of this report is to advise our client on geotechnical matters involving the proposed improvements. It should be understood that the geotechnical consulting provided and the contents of this report are not perfect. Any errors or omissions noted by any party reviewing this report, and/or any other geotechnical aspect of the project, should be reported to this office in a timely fashion.

Other consultants could arrive at different conclusions and recommendations. Typically, "minimum" recommendations have been presented. Although some risk will always remain, lower risk of future problems would usually result if more restrictive criteria were adopted. Final decisions on matters presented are the responsibility of the client and/or the governing agencies. No warranties in any respect are made as to the performance of the project.

APPENDIX A - REFERENCES

1. "Geotechnical Evaluation, Proposed Fire Station 53, West Gowan Road near Simmons Street, North Las Vegas, Nevada," By Ninyo & Moore dated May 11, 2007 (Project No. 302288001).

2. "Review of 95 Percent Bid Set Construction Documents, Proposed Fire Station 53, West Gowan Road near Simmons Street, North Las Vegas, Nevada," By Ninyo & Moore dated October 17, 2007 (Project No. 302288001).

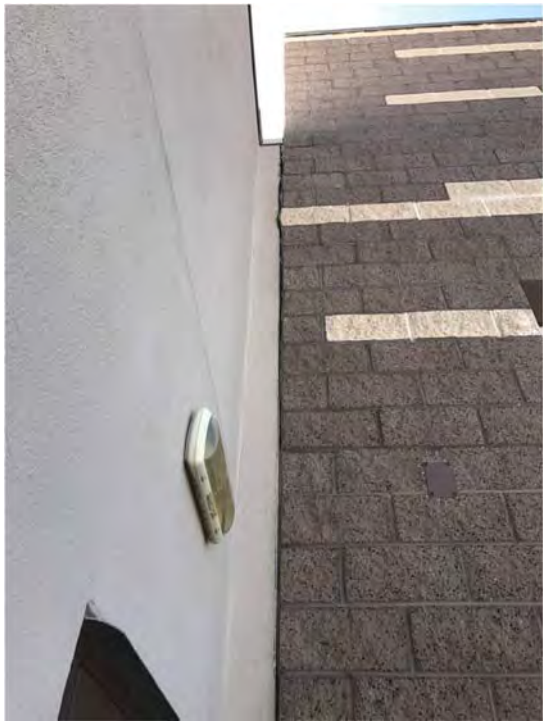
3. "Structural Calculations, City of North Las Vegas, Fire Station 53," by Dekker, Perich and Sabatini, dated November 2, 2007.

4. Structural Plans by Dekker, Perich and Sabatini, latest revision 12/05/07.

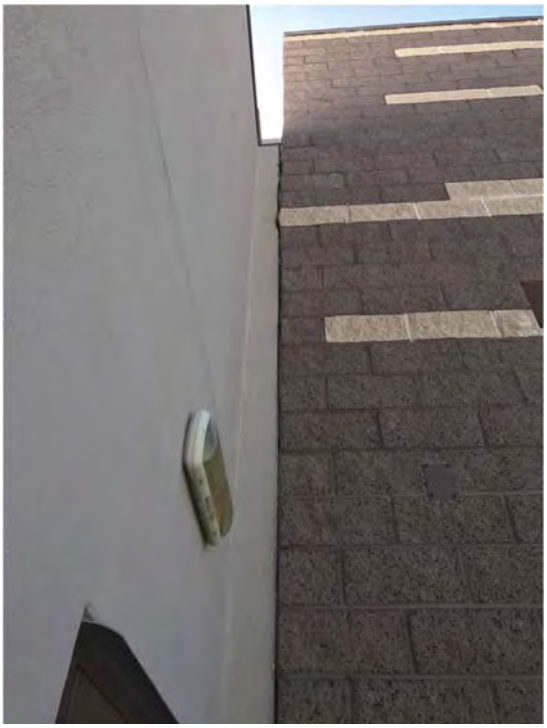
APPENDIX B – SITE INSPECTION NOTES AND PHOTOGRAPHS

Site Review - ETM 04-19-17 (1)

Site Review - ETM 04-19-17 (2)



Site Review - ETM 04-19-17 (3)



Site Review - ETM 04-19-17 (4)

Site Review - ETM 04-19-17 (5)

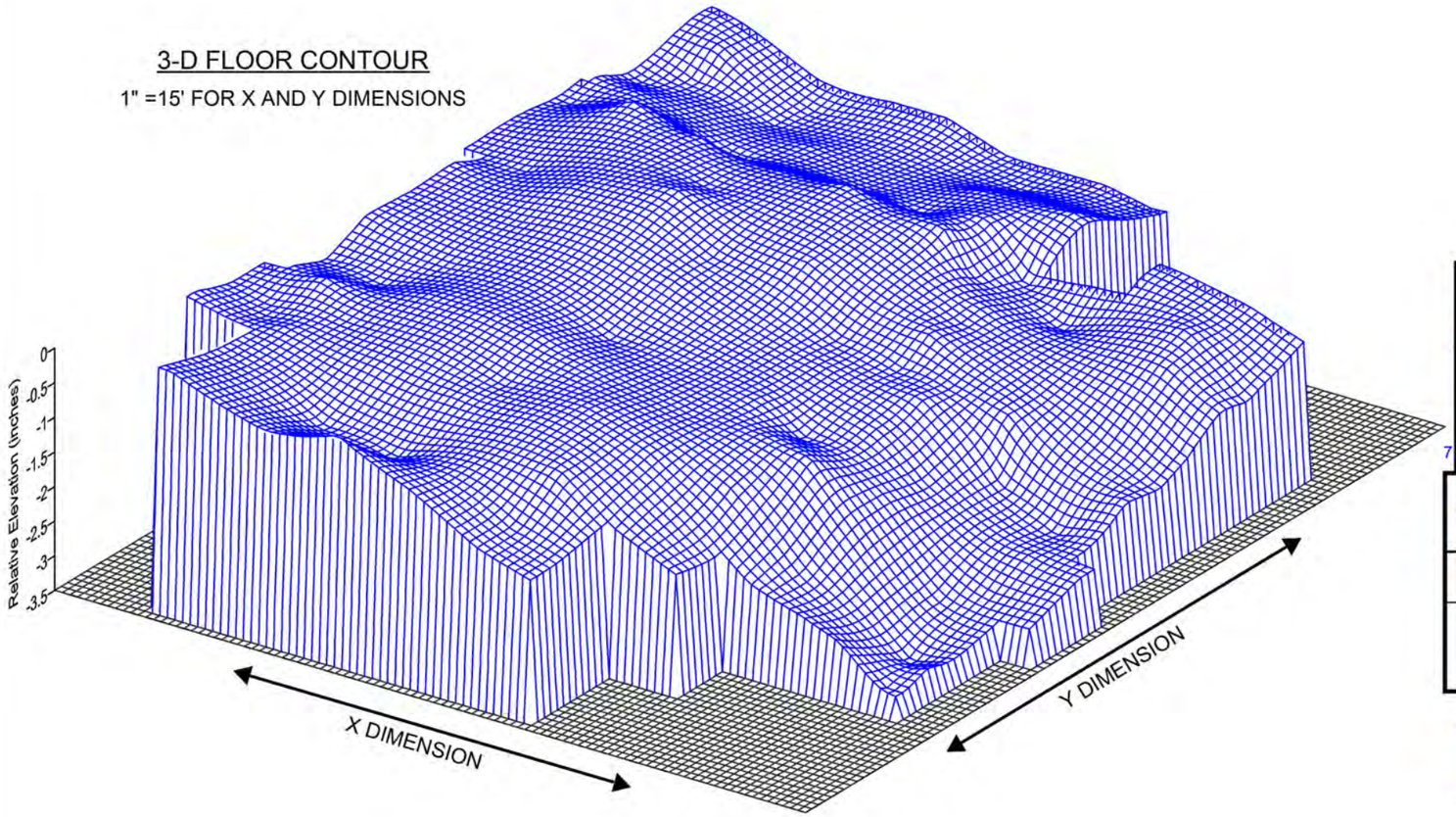
Site Review - ETM 04-19-17 (6)

Site Review - ETM 04-19-17 (7)

Site Review - ETM 04-19-17 (8)

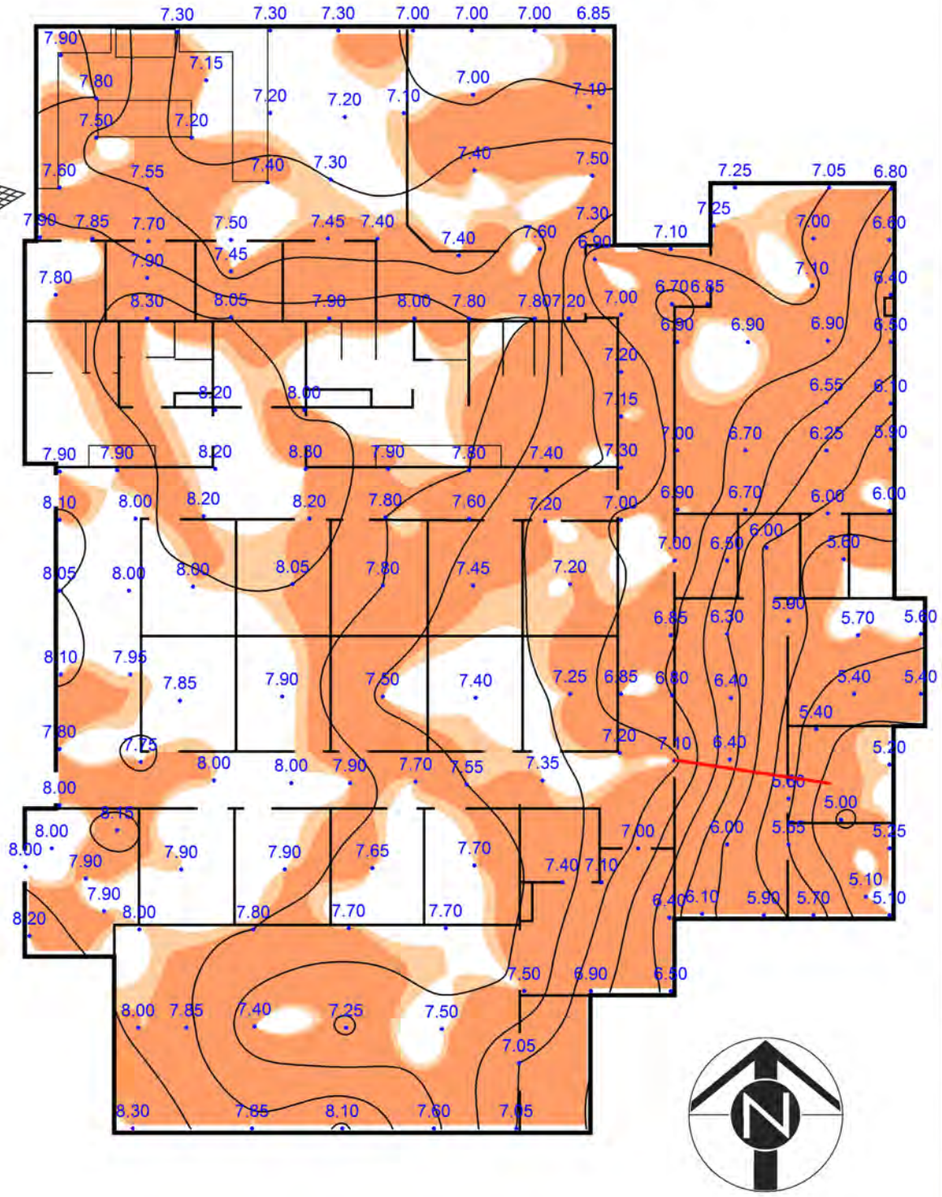
3-D FLOOR CONTOUR

1" =15' FOR X AND Y DIMENSIONS



SLAB DEFLECTION PLAN

SCALE: 1" = 15'



LEGEND

Date of Survey: 7/12/2017

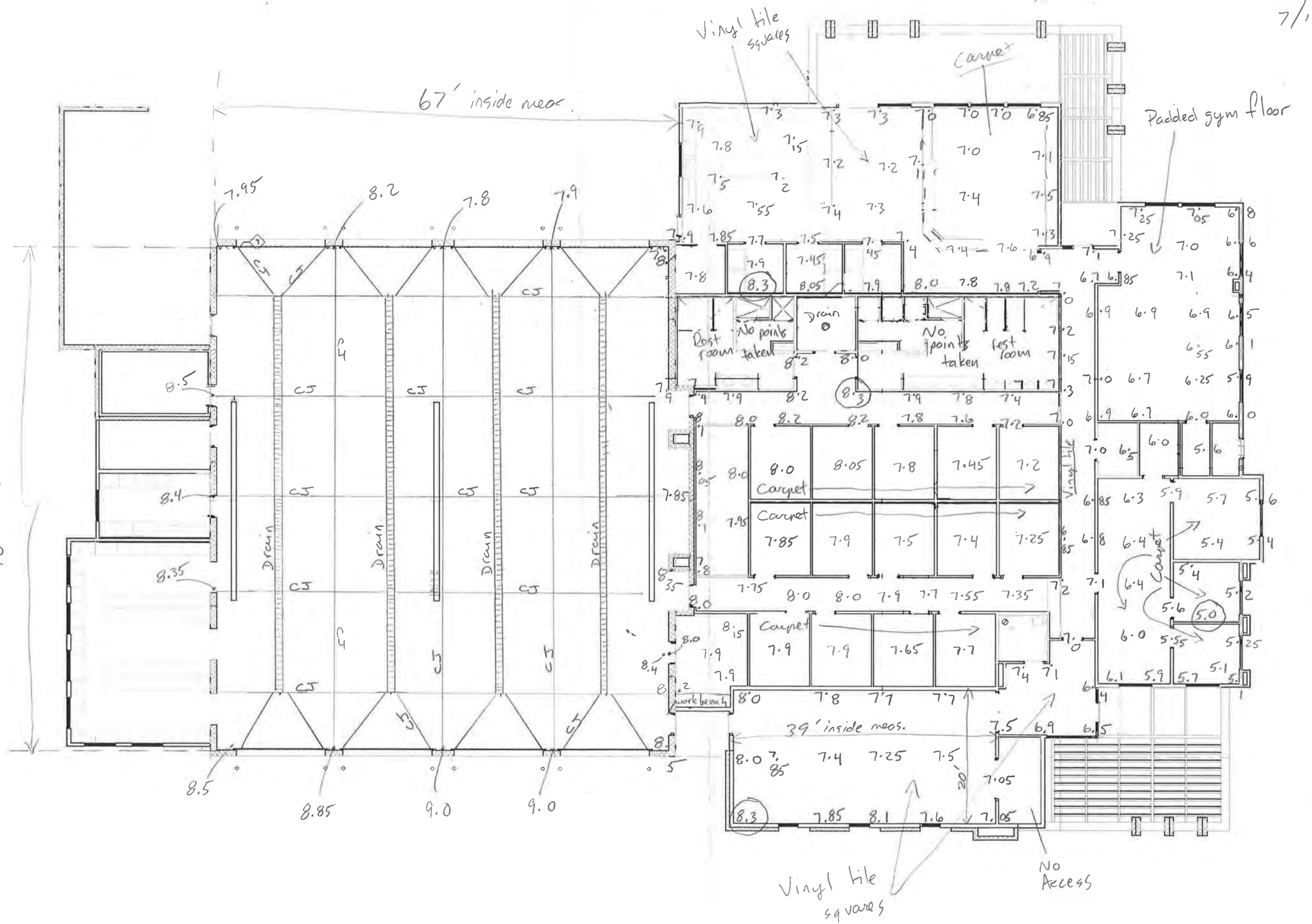
Overall Differential [with garage stemwalls]	3.30 Inches [NA]
Steepest Gradient Over 15 Feet	1:97 (1.85")
1.6"	Contours are of relative elevation in inches
7.5	Survey Point / Relative elevation
L	Low Point
H	High Point
	Areas that exceeds 1/300 ratio
	Areas that exceeds 1/240 ratio

F.N. 40779.01
Fire Station #53

MANOMETER SURVEY
FIRE STATION #53

American Geotechnical Inc.
(800)275-4436

40779.01 F.S. #53
7/12/17 JS



FIRE STATION NO. 53
FN 40779.01
2804 W. GOWAN RD.
7/12/17 EL

PHOTO NOTES:

1-1) ADDRESS PLAQUE
1-2) ADDRESS
1-3) FRONT SIGN
1-4) FRONT OVERVIEW
1-5) " "
1-6) ENT "
1-7) SIDE "
1-8) " "
1-9) REAR "
1-10) " "
1-11) " "
1-12) SIDE "
1-13) >1/2" VERT SEP AT ROOF
1-14) >1/2" " " " "
1-15) 71" SEP AND GRIND DOWN OF FW
1-16) =1/4" CRK IN BW
1-17) PAT CRKING AT FTG
1-18) COMP BUCKLE IN FW
1-19) " " " "
1-20) >1/2" CRK @ WW JT
1-21) >1/2" " " " "
1-22) >1/2" VERT DISP OF WW PANELS
1-23) >1" SEP & =1/2" OBL EXT STUCCRK AT ROOF
1-24) =1/2" SEP OF MEZZANINE
1-25) =1/2" " AT ROOF
1-26) =1/2" " " "

N

0 30ft
Approx. Scale:

FIRE STATION NO. 53
FN 40779.01
2804 W. GOWAN RD.
7/12/17 EL

PHOTO NOTES CONT:

1-59) INT OVERVIEW
1-60) " "
1-61) " "
1-62) " "
1-63) " "
1-64) " "
1-65) " "
1-66) ≈1/16" CRK IN FLOOR TILE
1-67) ≈1/64" " " " "
1-68) ≈1/2" VERT DISP OF SLAB PANELS
1-69) CRKING IN GAR PANELS ≤1/16" TYP
1-70) " " " " " "

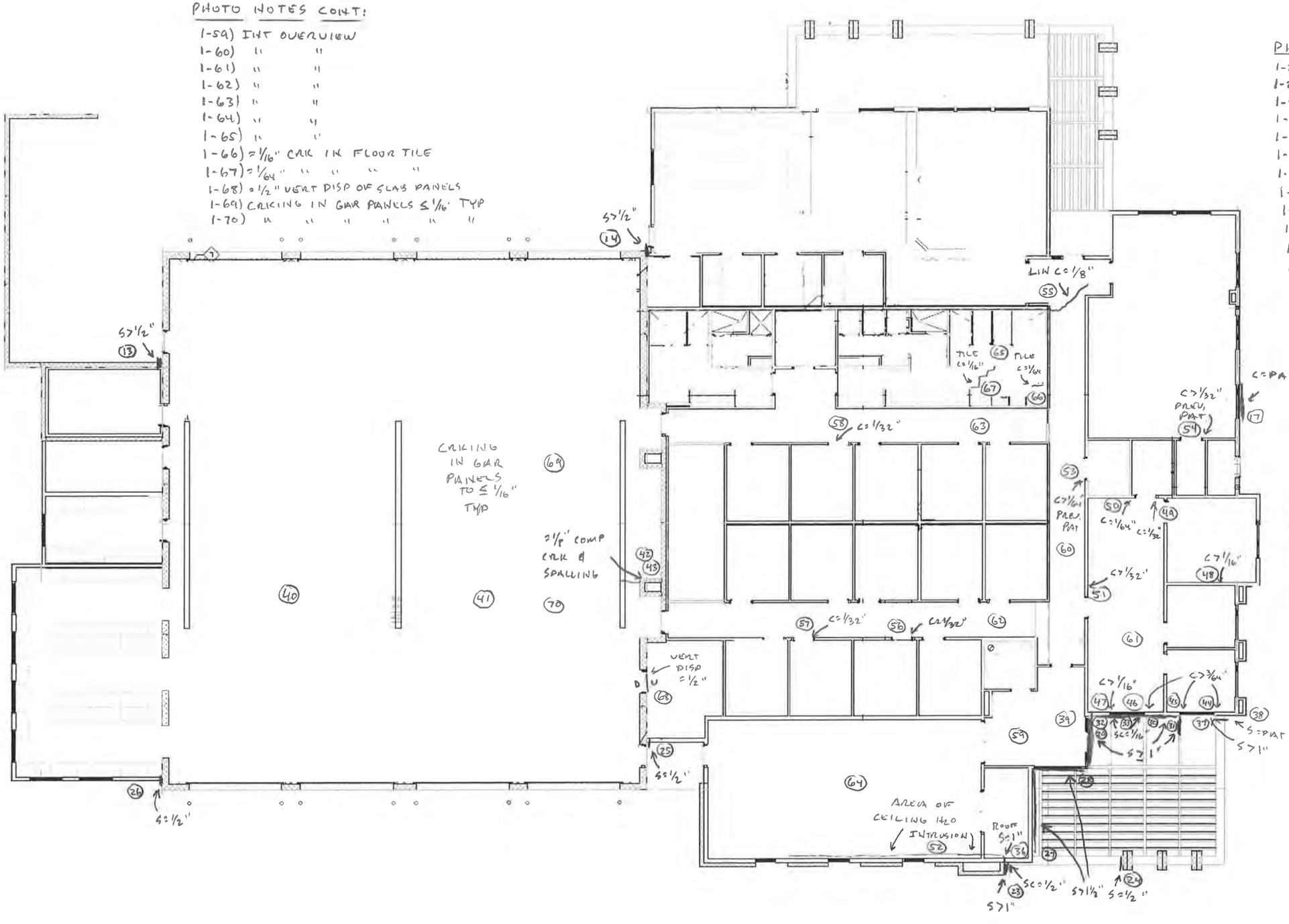
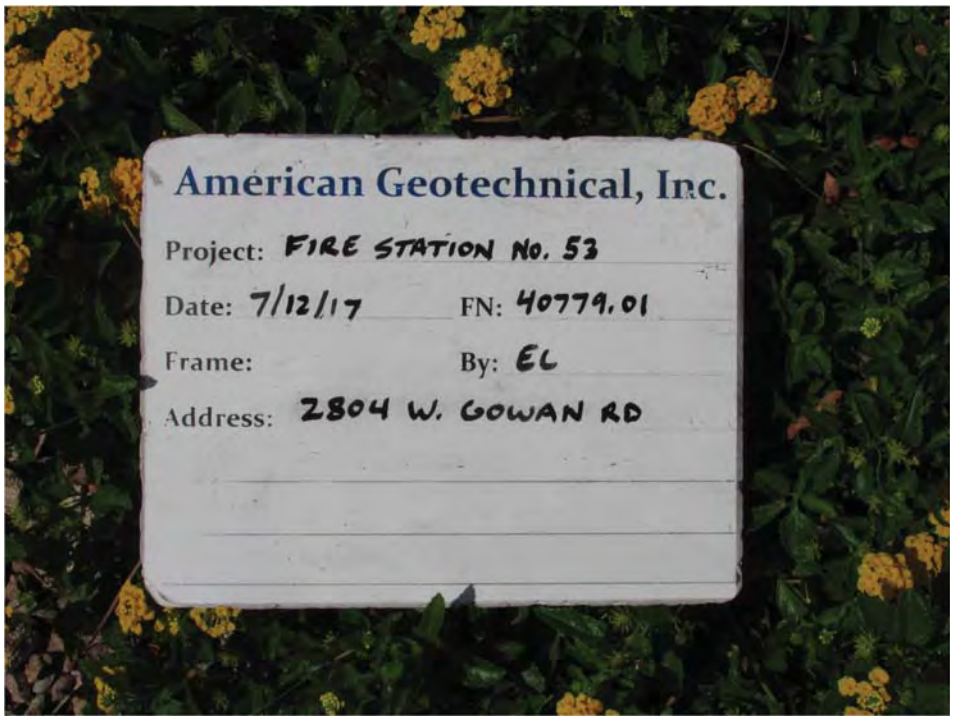


PHOTO NOTES CONT.

1-27) >1 1/2" SEP AT BLDG
1-28) >1 1/2" " " "
1-29) >1" " " "
1-30) ≈1" " " "
1-31) ≈1" " " PLANTER
1-32) ≈1/16" OBL EXT STUC CRK
1-33) ≈1/16" " " " "
1-34) ROOF OVERVIEW
1-35) " "
1-36) ≈1" SEP AT CHIMNEY FLASHING
1-37) >1" " OF MEZZANINE
1-38) PAT MEZZANINE BEAM SEP
1-39) PAT STUC ABOVE WEEP SCREED, ROOF
1-40) GAR OVERVIEW
1-41) " "
1-42) ≈1/8" COMP CRK & SPALLING IN MASONRY GAR WALL
C=PAT
1-43) ≈1/8" " " " "
" " " "
1-44) >3/64" HORIZ WALL CRK
1-45) >3/64" OBL " "
1-46) >3/64" HORIZ " "
1-47) >1/16" OBL " "
1-48) >1/16" VERT " "
1-49) ≈1/32" HORIZ " "
1-50) ≈1/64" " " "
1-51) >1/32" VERT " "
1-52) AREA OF CEILING H2O INTRUSION
1-53) >1/64" VERT WALL CRK, PREV. PAT.
1-54) >1/32" HORIZ " " , " "
1-55) ≈1/8" CRK IN LIN FLOORING
1-56) ≈1/32" VERT WALL CRK
1-57) ≈1/32" " " "
1-58) ≈1/32" " " "



Site Review - EL 07-12-17 (1)

Site Review - EL 07-12-17 (2)

Site Review - EL 07-12-17 (3)

Site Review - EL 07-12-17 (4)

Site Review - EL 07-12-17 (5)

Site Review - EL 07-12-17 (6)

Site Review - EL 07-12-17 (7)

Site Review - EL 07-12-17 (8)

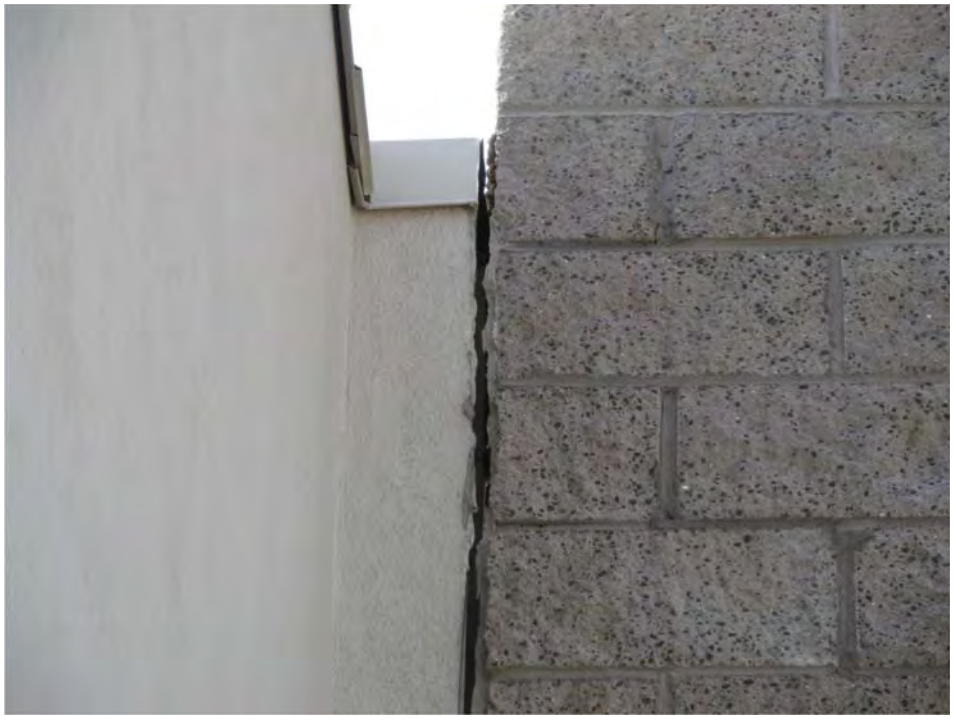
Site Review - EL 07-12-17 (9)

Site Review - EL 07-12-17 (10)

Site Review - EL 07-12-17 (11)

Site Review - EL 07-12-17 (12)

Site Review - EL 07-12-17 (13)



Site Review - EL 07-12-17 (14)

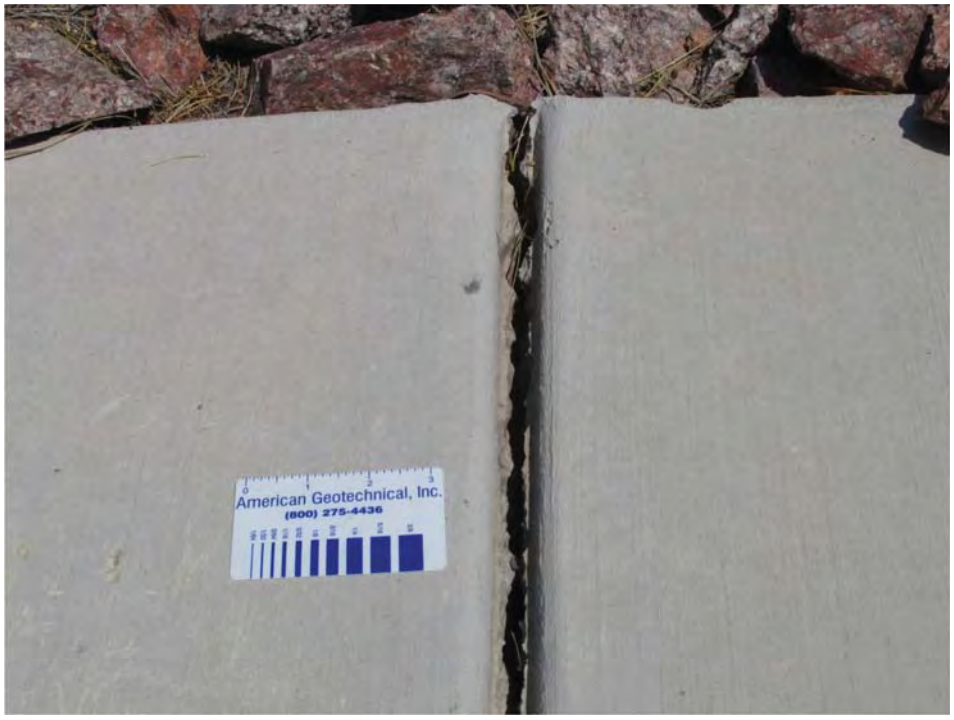
Site Review - EL 07-12-17 (15)

Site Review - EL 07-12-17 (16)

Site Review - EL 07-12-17 (17)

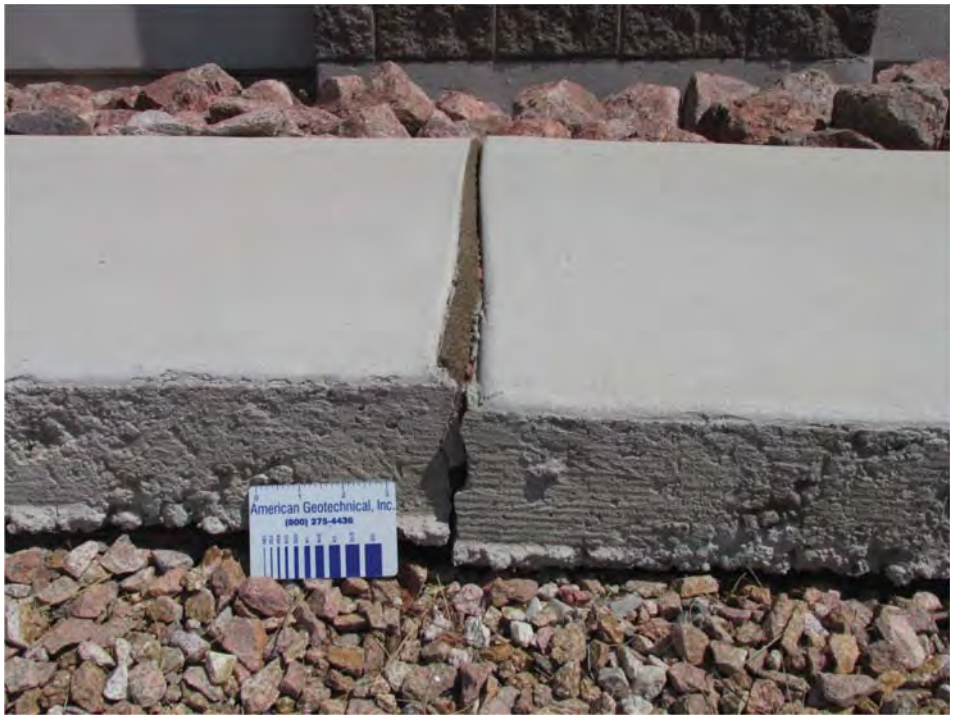
Site Review - EL 07-12-17 (18)

Site Review - EL 07-12-17 (19)



Site Review - EL 07-12-17 (20)

Site Review - EL 07-12-17 (21)



Site Review - EL 07-12-17 (22)

Site Review - EL 07-12-17 (23)

Site Review - EL 07-12-17 (24)

Site Review - EL 07-12-17 (25)

Site Review - EL 07-12-17 (26)

Site Review - EL 07-12-17 (27)

Site Review - EL 07-12-17 (28)

Site Review - EL 07-12-17 (29)

Site Review - EL 07-12-17 (30)

Site Review - EL 07-12-17 (31)

Site Review - EL 07-12-17 (32)

Site Review - EL 07-12-17 (33)

Site Review - EL 07-12-17 (34)

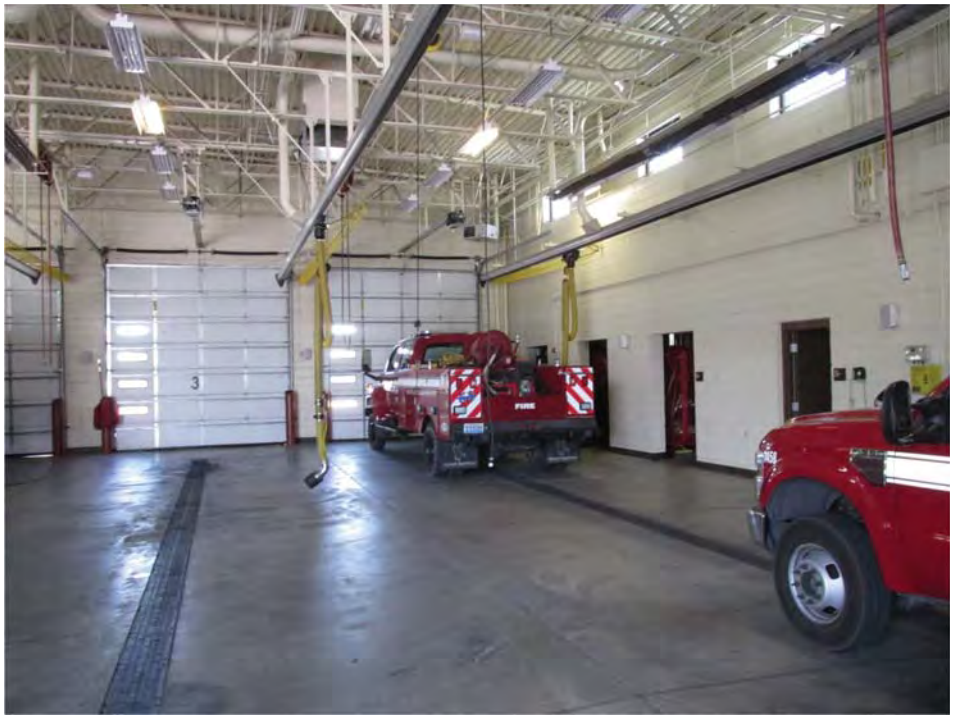
Site Review - EL 07-12-17 (35)

Site Review - EL 07-12-17 (36)

Site Review - EL 07-12-17 (37)

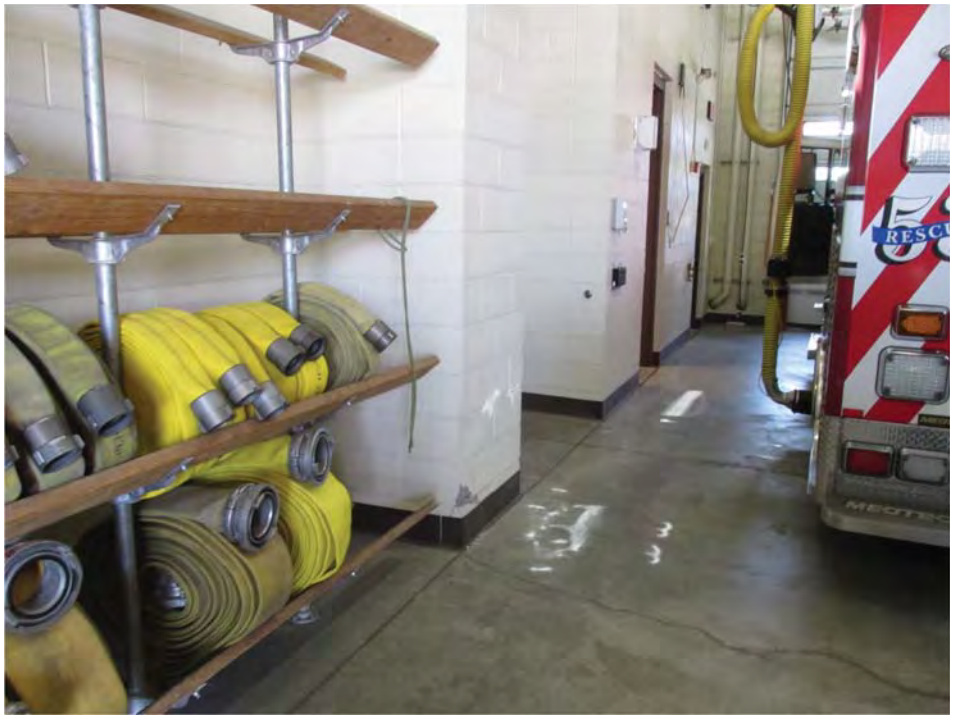
Site Review - EL 07-12-17 (38)

Site Review - EL 07-12-17 (39)



Site Review - EL 07-12-17 (40)

Site Review - EL 07-12-17 (41)



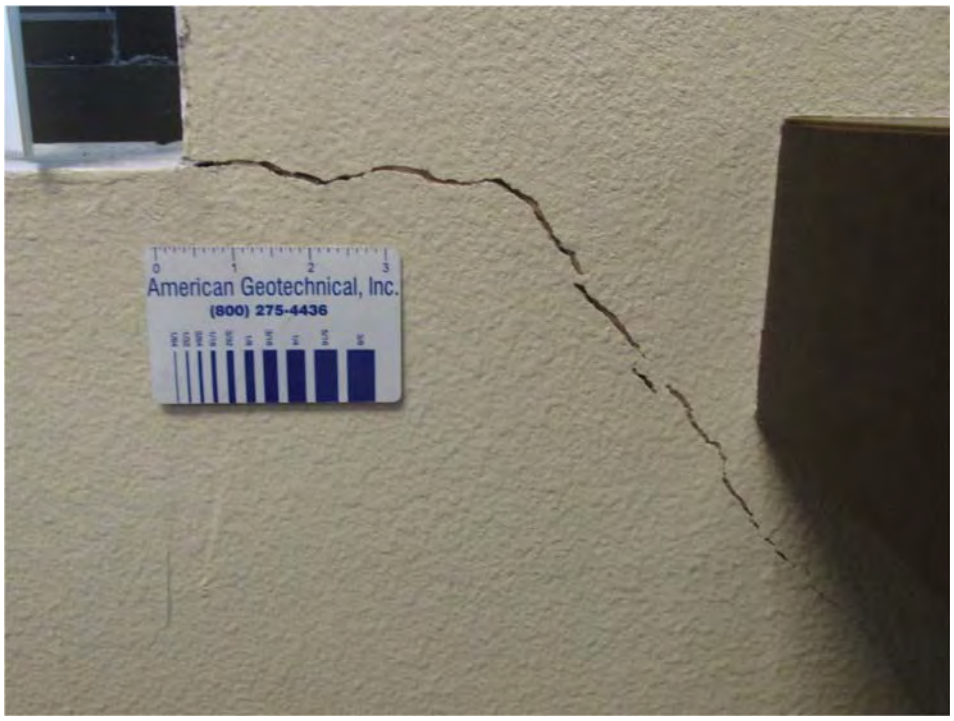
Site Review - EL 07-12-17 (42)

Site Review - EL 07-12-17 (43)

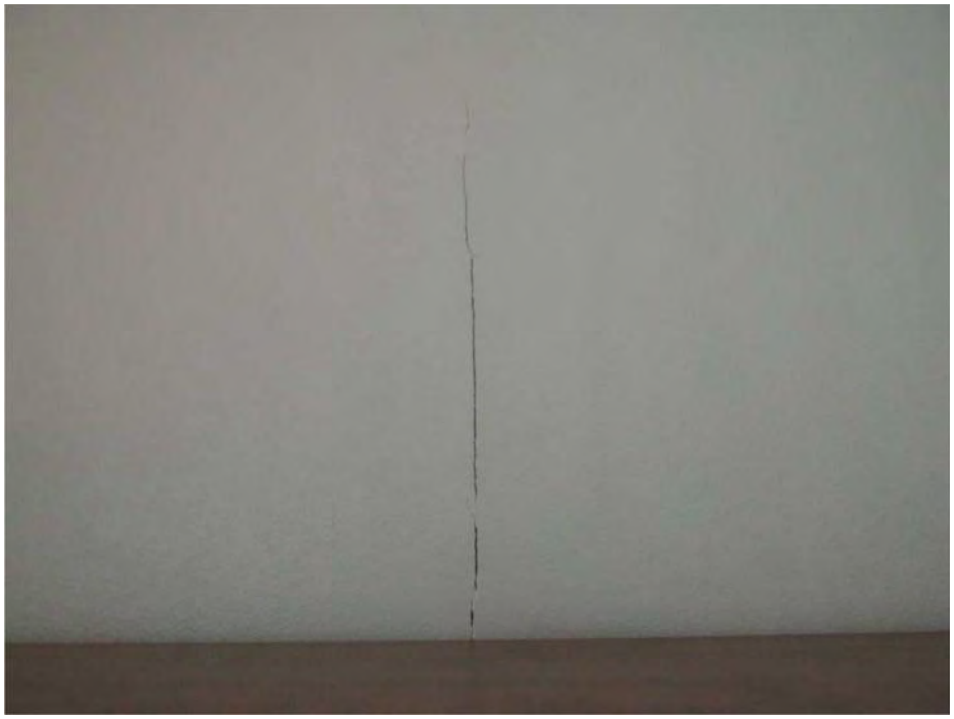
Site Review - EL 07-12-17 (44)

Site Review - EL 07-12-17 (45)

Site Review - EL 07-12-17 (46)



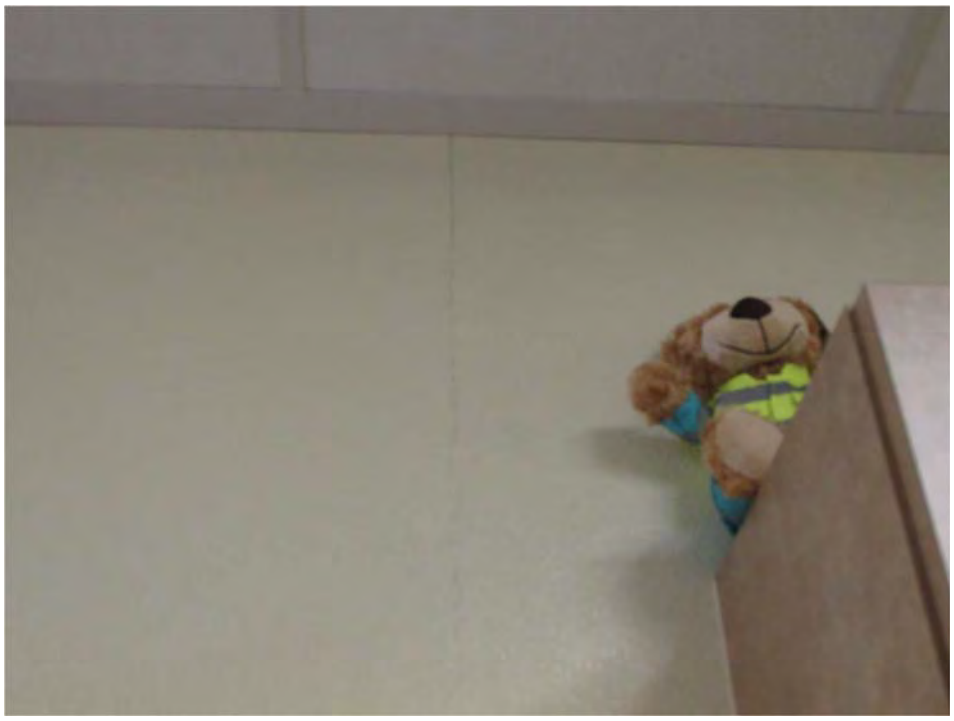
Site Review - EL 07-12-17 (47)



Site Review - EL 07-12-17 (48)

Site Review - EL 07-12-17 (49)

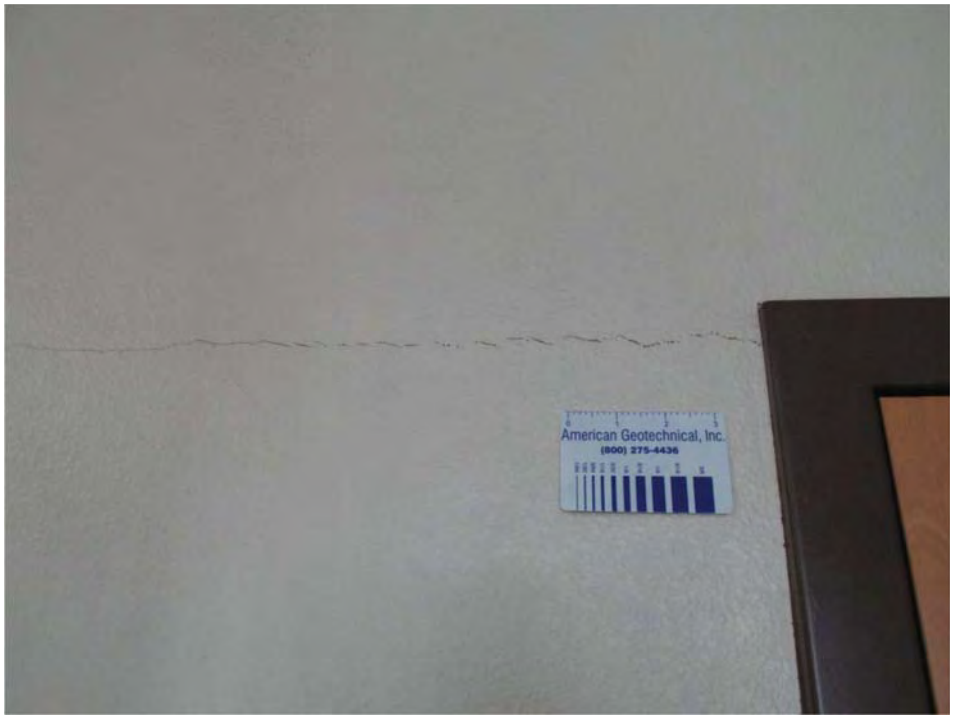
Site Review - EL 07-12-17 (50)



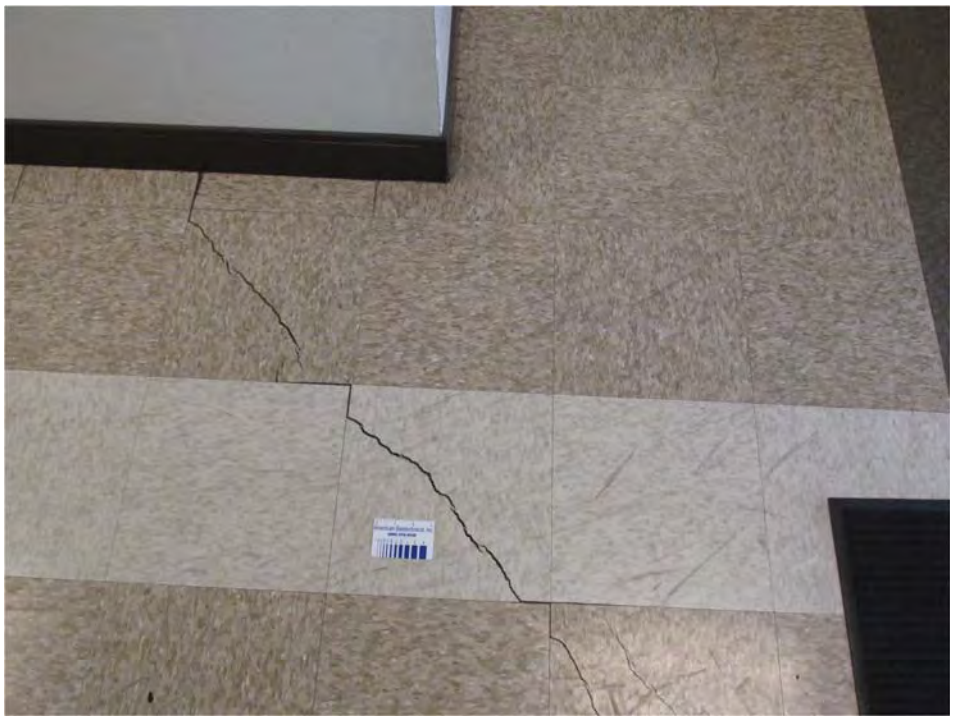
Site Review - EL 07-12-17 (51)

Site Review - EL 07-12-17 (52)

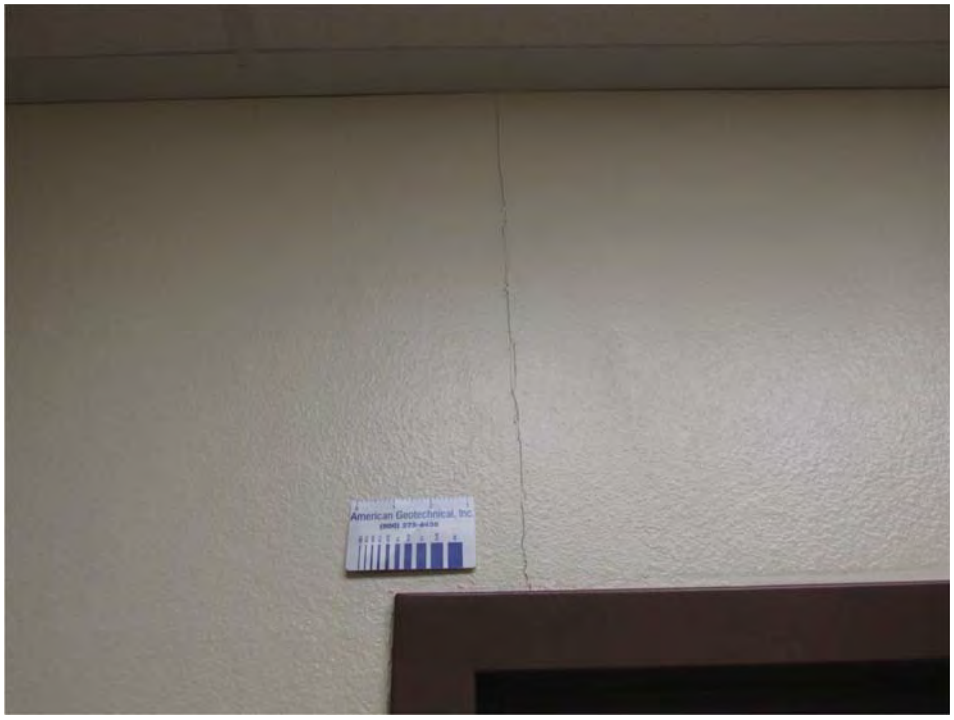
Site Review - EL 07-12-17 (53)



Site Review - EL 07-12-17 (54)



Site Review - EL 07-12-17 (55)

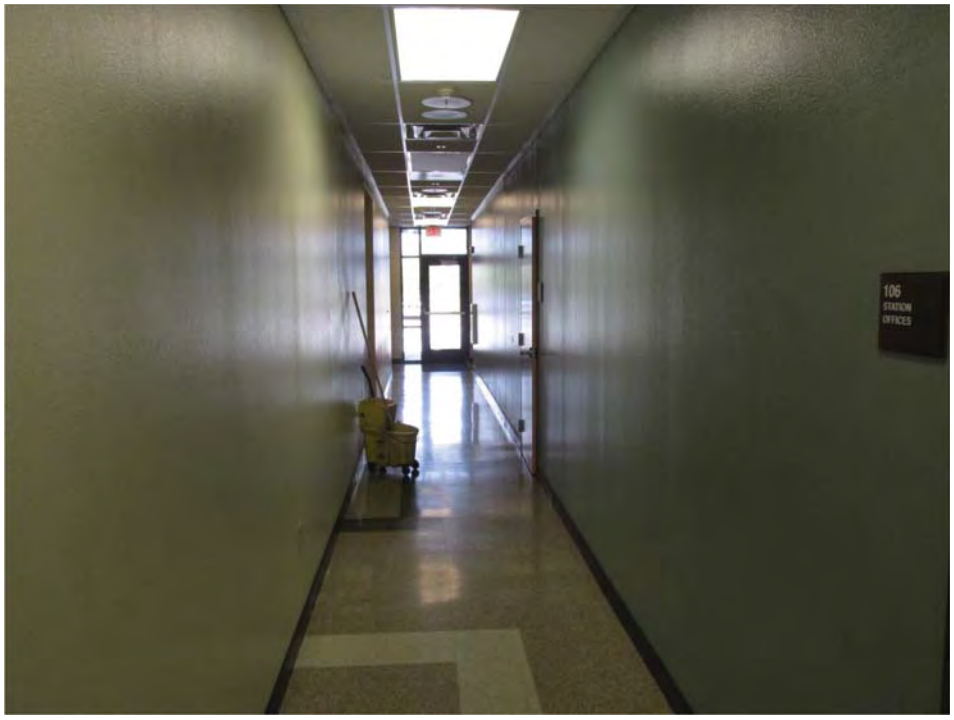


Site Review - EL 07-12-17 (56)

Site Review - EL 07-12-17 (57)

Site Review - EL 07-12-17 (58)

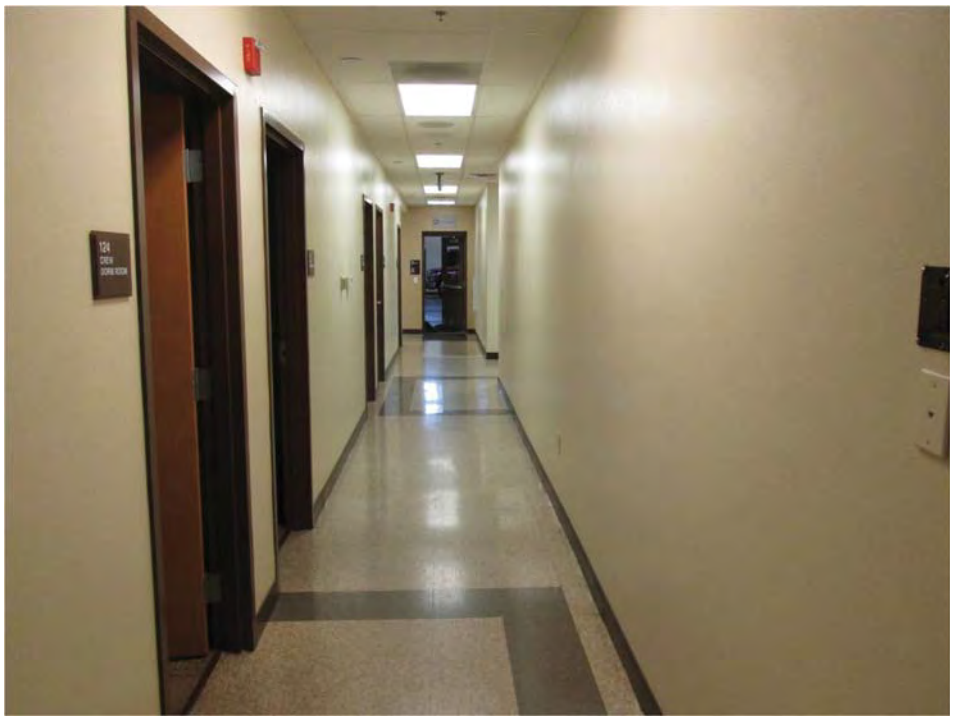
Site Review - EL 07-12-17 (59)



Site Review - EL 07-12-17 (60)

Site Review - EL 07-12-17 (61)

Site Review - EL 07-12-17 (62)



Site Review - EL 07-12-17 (63)

Site Review - EL 07-12-17 (64)

Site Review - EL 07-12-17 (65)

Site Review - EL 07-12-17 (66)

Site Review - EL 07-12-17 (67)

Site Review - EL 07-12-17 (68)

Site Review - EL 07-12-17 (69)

Site Review - EL 07-12-17 (70)

American Geotechnical
SOIL, FOUNDATION AND GEOLOGIC STUDIES
5764 Pacific Center Blvd. Suite 112 • San Diego CA 92121 • (858) 450-4040 • Fax (858) 457-0814

BY: EL FILE NO.: 40779.01

DATE: 8/15/17 PROJECT: FIRE STATION 53 SHEET: 1 / 7

DESCRIPTION: 2804 W GOWAN RD.

ADDITIONAL PHOTOS:

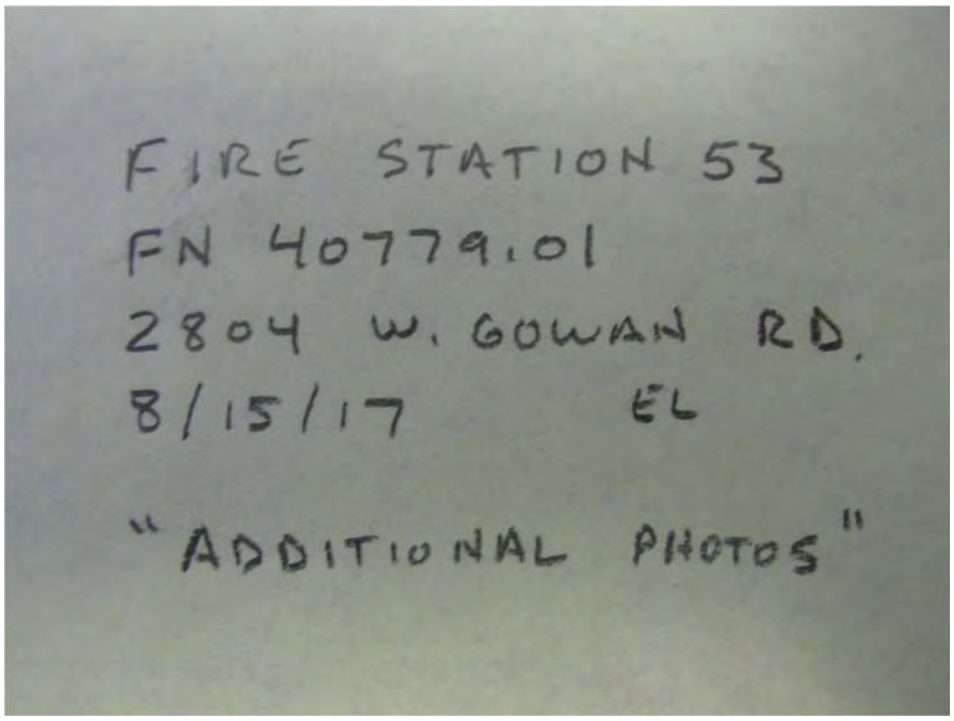
Z-1) ADDRESS PLAQUE

Z-2) ADDRESS

Z-3) SE CORNER OF BLDG

↓

Z-13) " " " "



Site Review - EL 08-15-17 (1)

Site Review - EL 08-15-17 (2)

Site Review - EL 08-15-17 (3)

Site Review - EL 08-15-17 (4)

Site Review - EL 08-15-17 (5)

Site Review - EL 08-15-17 (6)

Site Review - EL 08-15-17 (7)

Site Review - EL 08-15-17 (8)

Site Review - EL 08-15-17 (9)

Site Review - EL 08-15-17 (10)

Site Review - EL 08-15-17 (11)

Site Review - EL 08-15-17 (12)

Site Review - EL 08-15-17 (13)

APPENDIX C - BORING LOGS AND PHOTOGRAPHS

Boring No:	**AGSB-1**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	46.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
0									
							SC-CL		2.5' – 4.0' No sample retrieved, very dense
	X		50 for 3"						
5	X		24	88.5	16.4		SC-CL		5.0' – 6.5' Native soil: sandy clay w/ gypsum, med brown, firm, slightly moist
	X		9	67.1	42.1				7.5' – 9.0' Sandy clay, medium reddish brown, moist, soft
10	X		12	76.5	31.4				10' – 11.5' Clayey fine sand, medium reddish brown, moist, slightly dense with pin porosity
	X		4	73	31.7		CL-ML		12.5'–14' Silty clay, medium brown, moist, soft, mottled with weathered caliche, beige, moist, soft
15	X		7	70.6	40.6				15'– 16.5' Sandy clay, medium brown to medium reddish brown, moist, soft
	X		12	86.6	24.9				17.5'–19.0' Caliche, weathered, beige, moist, firm
20									

Notes:

Plate C1

Boring No:	**AGSB-1**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	2 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	46.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
20	X		16	100.4	12.9				20'–21.5' Caliche, weathered, beige, slightly moist, firm to stiff
	X		11	62.1	38.8		CL-ML		22.5'–24' Silty clay, medium reddish brown, moist, soft
25	X		11	75.8	19.1				25'– 26.5' Same as above
	X		50		9.9		SC-CL		27.5' – 29' Sandy clay, medium brown, slightly moist, soft, mottled w/ caliche
30	X		13	86.2	21.3				30' – 31.5' Sandy clay, medium brown, slightly moist, firm mottled w/ caliche
35	X		18	94.3	11.6		CL-ML		35' – 36.5' Silty clay, light brown, slightly moist to moist, firm
40									

Notes:

Plate C2

Boring No:	**AGSB-1**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	3 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	46.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
40	X		35	103.5	15.9		CL-ML		40' – 41.5' Silty clay, medium reddish brown, moist, mottled w/ caliche
45	X		24	91.5	15.8				45' – 46.5' Same as above
									Boring terminated at 46.5 ft. No ground water. Backfilled with soil cuttings
50									
55									
60									

Notes:

Plate C3

Boring No:	**AGSB-2**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 2
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	28 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
0							SC-CL		
5	X		12	104.6	12.4		SC-CL		5' – 6.5' Native soil: sandy clay/clay fine sand, medium to dark brown, slightly moist, firm/medium dense, mottled w/ caliche
10	X		6	53.1	43.5				10' – 11.5' Same as above, except no caliche
15	X		31	95.6	8.5				15' – 16.5' Caliche mottled w/ silty fine sand, medium brown, slightly moist, medium dense with pin porosity
20									

Notes:

Plate C4

Boring No:	**AGSB-2**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 2
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	28 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
20	X		9	78.2	12.3		SC-CL		20' – 21.5' Sandy clay, medium brown to dark brown, moist, soft, w/ pin porosity
25	X		77 for 8"	106.3	8.2				25' – 26.5' Caliche, white, well cemented, slightly moist, very dense 26.5' – 28' Same as above
30									Boring terminated at 28' due to thick layer of well cemented caliche (refusal at 28') No ground water; backfilled withsoil cuttings
35									
40									

Notes:

Plate C5

Boring No:	**AGSB-3**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	41.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
0							SC-CL		
5	X		30	99	7.6				5'– 6.5' Fill-sandy clay, medium brown, slightly moist, firm, mottled w/ caliche and gravel
10	X		17	79	12.8				10' – 11.5' Native soil: sandy clay, medium brown, slightly moist, firm, mottled w/ caliche
15	X		12	87.2	15.9				15' – 16.5' Sandy clay, light brown to medium brown, moist, firm w/ pin. por., mottled with thin layers of caliche and silty fine sand
20									

Notes:

Plate C6

Boring No:	**AGSB-3**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	2 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	41.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
20	X		2	53.7	35.7		CL-ML		20' – 21.5' Silty clay, medium brown to dark brown, moist, soft, mottled w/ weathered caliche
25	X		11	53.7	47.8		CL-CH		25' – 26.5' Fat clay, medium brown, very moist, soft to firm
30	X		59 for 11"	88.2	17.1				30'– 31.5' Caliche, beige, slightly moist, medium to well cemented, very dense, mottled with silty clay, medium brown, moist, soft to firm
35	X		50 for 5"						35'– 36.5' No sample retrieved, very dense
40									

Notes:

Plate C7

Boring No:	**AGSB-3**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	3 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	41.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
40	X		46	117.7	8.2		CL-ML		40' – 41.5' Silty clay, reddish brown, moist, soft, mottled with well cemented caliche
45									Boring terminated at 41.5'
									No ground water; backfilled with soil cuttings.
50									
55									
60									

Notes:

Plate C8

Test Pit No. :	**AGTP-1**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 1
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	9/5/2017
Estimated Surface Elev.	+/- feet	End:	9/6/2017
Total Depth (ft.)	8.5 +/- feet	Initials:	EL
Excavation/Drill Rig Type	Hand Excavation		

Depth (feet)	Sample Type: Sample	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
0							SC-CL		0-8.5' **Fill** Sandy clay mottled w/ caliche, 1/2" to 1" diameter caliche nodules type, light brown, slightly moist, very stiff, loose pea gravel on east side of test pit at 0.4" to 2.5', about 1" void directly beneath building footing
	SC			112.27	9.6				
	SC	■		111.3	11.3				
5	SC			104.8	12.3				
	SC	■		121	11.4				
									@8.5' Caliche, white well cemented, very hard, excavation terminated at 8.5' (caliche)
10									

Notes:

SC = Sand Cone

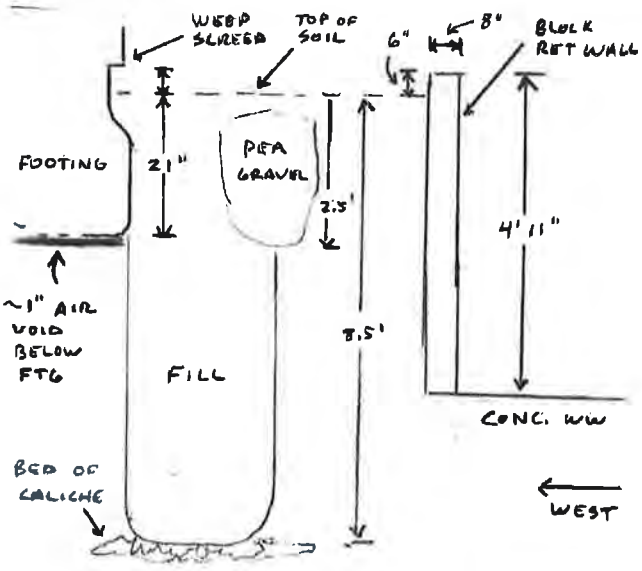


Plate C9

Boring No:	**AGSB-1**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	46.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
0									
							SC-CL		2.5' – 4.0' No sample retrieved, very dense
	X		50 for 3"						
5	X		24	88.5	16.4		SC-CL		5.0' – 6.5' Native soil: sandy clay w/ gypsum, med brown, firm, slightly moist
	X		9	67.1	42.1				7.5' – 9.0' Sandy clay, medium reddish brown, moist, soft
10	X		12	76.5	31.4				10' – 11.5' Clayey fine sand, medium reddish brown, moist, slightly dense with pin porosity
	X		4	73	31.7		CL-ML		12.5'–14' Silty clay, medium brown, moist, soft, mottled with weathered caliche, beige, moist, soft
15	X		7	70.6	40.6				15'– 16.5' Sandy clay, medium brown to medium reddish brown, moist, soft
	X		12	86.6	24.9				17.5'–19.0' Caliche, weathered, beige, moist, firm
20									

Notes:

Plate C1

American Geotechnical, Inc.
GEOTECHNICAL ENGINEERING / MATERIALS TESTING & INSPECTION

Boring No:	**AGSB-1**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	2 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	46.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
20	X		16	100.4	12.9				20'–21.5' Caliche, weathered, beige, slightly moist, firm to stiff
	X		11	62.1	38.8		CL-ML		22.5'–24' Silty clay, medium reddish brown, moist, soft
25	X		11	75.8	19.1				25'– 26.5' Same as above
	X		50		9.9		SC-CL		27.5' – 29' Sandy clay, medium brown, slightly moist, soft, mottled w/ caliche
30	X		13	86.2	21.3				30' – 31.5' Sandy clay, medium brown, slightly moist, firm mottled w/ caliche
35	X		18	94.3	11.6		CL-ML		35' – 36.5' Silty clay, light brown, slightly moist to moist, firm
40									

Notes:

Plate C2

Boring No:	**AGSB-1**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	3 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	46.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
40	X		35	103.5	15.9		CL-ML		40' – 41.5' Silty clay, medium reddish brown, moist, mottled w/ caliche
45	X		24	91.5	15.8				45' – 46.5' Same as above
									Boring terminated at 46.5 ft. No ground water. Backfilled with soil cuttings
50									
55									
60									

Notes:

Plate C3

BORING LOG

Project/Client: FIRESTATION 53 F.N.: 40779.01

Location: 2804 W. GOWAN RD Date: 10/26/17

Estimated Surface Elevation (ft): — Total depth (ft): 46.5' Rig Type 6" HSA

Depth (Feet)	Sample Type	Sample Depth	Blow Count	Field Description By: EL Surface Conditions: GRAVEL PLANTER AREA Subsurface Conditions: FORMATION: Classification, color, moisture, tightness, etc.
	R	2.5'-4'	50→3"	2.5'-4.0' NO SAMPLE RETRIEVED, V. DENSE
	R	5'-6.5'	47 14 10	5.0'-6.5' NAT SOIL: SANDY CLAY W/ GYPSUM, MED BRN, FIRM, SLT MOIST
	R	7.5'-9'	3 4 5	7.5'-9.0' SANDY CLAY, MED REDDISH BRN, MOIST, SOFT
	R	10'-11.5'	4 6 6	10.0'-11.5' CLAYEY FINE SAND, MED REDDISH BRN, MOIST, SLT DENSE, W/ PIN. POR.
	R	12.5'-14'	4 3 1	12.5'-14.0' SILTY CLAY, MED BRN, MOIST, SOFT, MOTTLED W/ WEATHERED CALICHE, BEIGE, MOIST, SOFT
	R	15'-16.5'	4 3 4	15.0'-16.5' SANDY CLAY, MED BRN TO MED REDDISH BRN, MOIST, SOFT
	R	17.5'-19'	4 5 7	17.5'-19.0' CALICHE, WEATHERED, BEIGE, MOIST, FIRM
	R	20'-21.5'	21 9 7	20.0'-21.5' CALICHE, WEATHERED, BEIGE, SLT MOIST, FIRM TO STIFF
	R	22.5'-24'	10 6 5	22.5'-24.0' SILTY CLAY, MED REDDISH BRN, MOIST, SOFT
	R	25'-26.5'	3 6 5	25.0'-26.5' SAME AS ABOVE
	R	27.5'-29'	8 10 40	27.5'-29.0' SANDY CLAY, MED BRN, SLT MOIST, SOFT, MOTTLED W/ CALICHE
	R	30'-31.5'	18 9 4	30.0'-31.5' SANDY CLAY, MED BRN, SLT MOIST, FIRM, MOTTLED W/ CALICHE
	R	35'-36.5'	4 6 12	35.0'-36.5' SILTY CLAY, LT BRN, SLT MOIST TO MOIST, FIRM
	R	40'-41.5'	16 10 25	40.0'-41.5' SILTY CLAY, MED REDDISH BRN, MOIST, MOTTLED W/ CALICHE
	R	45'-46.5'	8 13 11	45.0'-46.5' SAME AS ABOVE

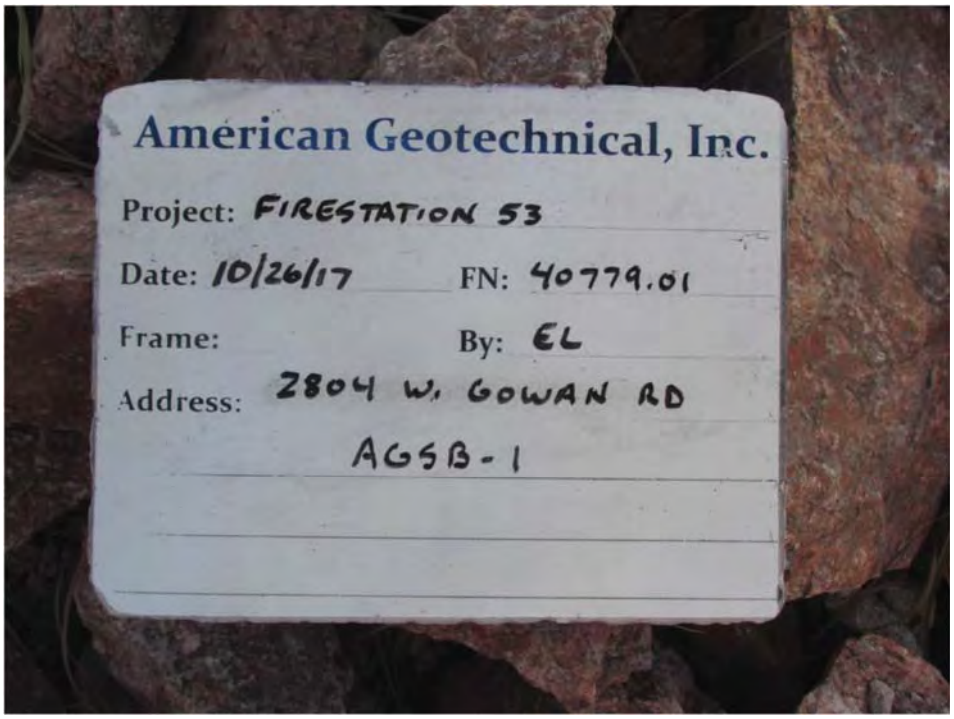
Note: LB TAKEN @ 5'-20'
SEE SUBSURFACE LOCATION MAP FOR BORING LOCATION

AGSB-1

AMERICAN GEOTECHNICAL BORING LOG:

PHOTO NOTES:

1-1) ADDRESS PLAQUE
1-2) ADDRESS
1-3) → 1-15) AGSB-1



2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (1)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (2)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (3)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (4)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (5)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (6)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (7)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (8)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (9)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (10)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (11)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (12)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (13)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (14)

2804 W Gowan Rd, AGSB-1 - EL 10-26-17 (15)

Boring No:	**AGSB-2**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 2
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	28 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
0							SC-CL		
5	X		12	104.6	12.4		SC-CL		5' – 6.5' Native soil: sandy clay/clay fine sand, medium to dark brown, slightly moist, firm/medium dense, mottled w/ caliche
10	X		6	53.1	43.5				10' – 11.5' Same as above, except no caliche
15	X		31	95.6	8.5				15' – 16.5' Caliche mottled w/ silty fine sand, medium brown, slightly moist, medium dense with pin porosity
20									

Notes:

Plate C4

Boring No:	**AGSB-2**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 2
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	28 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
20	X		9	78.2	12.3		SC-CL		20' – 21.5' Sandy clay, medium brown to dark brown, moist, soft, w/ pin porosity
25	X		77 for 8"	106.3	8.2				25' – 26.5' Caliche, white, well cemented, slightly moist, very dense 26.5' – 28' Same as above
30									Boring terminated at 28' due to thick layer of well cemented caliche (refusal at 28') No ground water; backfilled withsoil cuttings
35									
40									

Notes:

Plate C5

BORING LOG

Project/Client: FIRESTATION 53 F.N.: 40779.01

Location: 2804 W GOWAN RD Date: 10/26/17

Estimated Surface Elevation (ft): – Total depth (ft): 28' Rig Type 6" HSA

Depth (Feet)	Sample Type	Sample Depth	Blow Count	Field Description By: EL
				Surface Conditions: GRAVEL PLANTER AREA
				Subsurface Conditions: FORMATION: Classification, color, moisture, tightness, etc.
	R	5'-6.5'	2 7 7 5	5.0'-6.5' NAT SOIL: SANDY CLAY / CLAY FINE SAND, MED BRN TO DRK BRN, SLT MOIST, FIRM/MED DENSE, MOTTLED W/ CALICHE
	R	10'-11.5'	4 3 3	10.0'-11.5' SAME AS ABOVE EXCEPT NO CALICHE
	R	15'-16.5'	10 15 16	15.0'-16.5' CALICHE MOTTLED W/ SILTY FINE SAND, MED BRN, SLT MOIST, MED DENSE W/ PIN POR
	R	20'-21.5'	2 3 6	20.0'-21.5' SANDY CLAY, MED BRN TO DRK BRN, MOIST, SOFT, W/ PIN. POR.
	R	25'-26.5'	7 27 50→2"	25.0'-26.5' CALICHE, WHITE, WELL CEMENTED, SLT MOIST. V. DENSE
	–	–	–	26.5'-28.0' SAME AS ABOVE
				BORING TERMINATED AT 28' DUE TO THICK LAYER OF WELL CEMENTED CALICHE (REFUSAL AT 28')

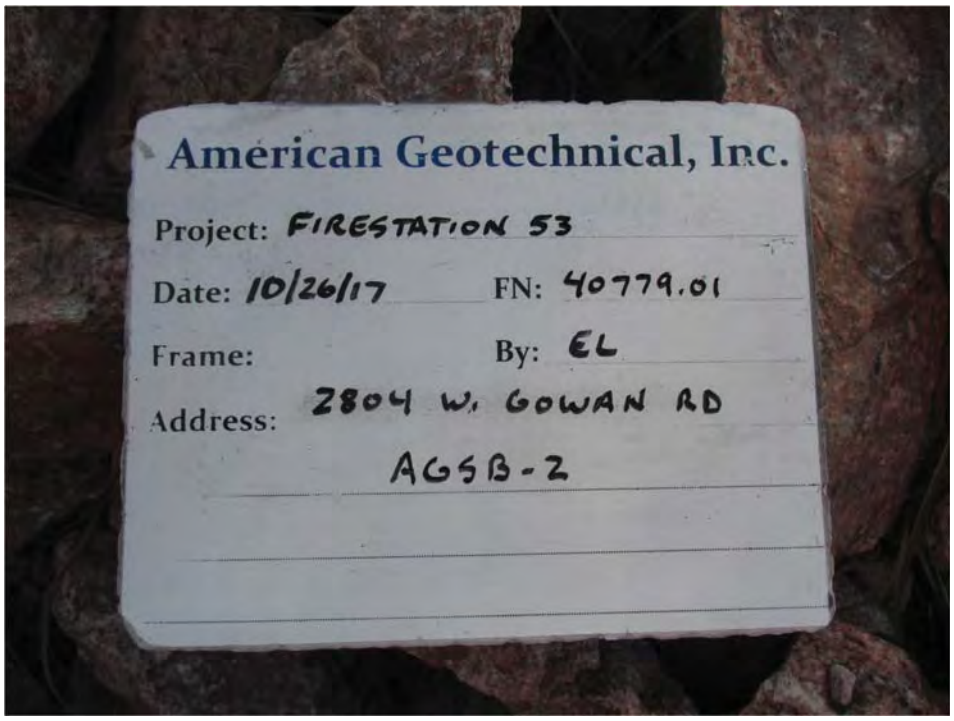
Note: LB TAKEN @ 10'-20'

SEE SUBSURFACE LOCATION MAP FOR BORING LOCATION

AMERICAN GEOTECHNICAL BORING LOG.: AGSB-2

PHOTO NOTES:

2-1) ADDRESS PLAQUE
2-2) ADDRESS
2-3) → 2-12) AGSB-2



2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (1)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (2)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (3)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (4)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (5)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (6)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (7)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (8)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (9)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (10)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (11)

2804 W Gowan Rd, AGSB-2 - EL 10-26-17 (12)

Boring No:	**AGSB-3**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	41.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
0							SC-CL		
5	X		30	99	7.6				5'– 6.5' Fill-sandy clay, medium brown, slightly moist, firm, mottled w/ caliche and gravel
10	X		17	79	12.8				10' – 11.5' Native soil: sandy clay, medium brown, slightly moist, firm, mottled w/ caliche
15	X		12	87.2	15.9				15' – 16.5' Sandy clay, light brown to medium brown, moist, firm w/ pin. por., mottled with thin layers of caliche and silty fine sand
20									

Notes:

Plate C6

Boring No:	**AGSB-3**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	2 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	41.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
20	X		2	53.7	35.7		CL-ML		20' – 21.5' Silty clay, medium brown to dark brown, moist, soft, mottled w/ weathered caliche
25	X		11	53.7	47.8		CL-CH		25' – 26.5' Fat clay, medium brown, very moist, soft to firm
30	X		59 for 11"	88.2	17.1				30'– 31.5' Caliche, beige, slightly moist, medium to well cemented, very dense, mottled with silty clay, medium brown, moist, soft to firm
35	X		50 for 5"						35'– 36.5' No sample retrieved, very dense
40									

Notes:

Plate C7

Boring No:	**AGSB-3**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	3 of 3
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	10/26/2017
Estimated Surface Elev.	+/- feet	End:	10/26/2017
Total Depth (ft.)	41.5 +/- feet	Initials:	EL
Drill Rig Type (hammer, drop, etc.)	Hollow Stem Auger, 140 # hammer, 30" drop		
Boring Diameter, Groundwater, etc.	8" dia., no groundwater		

Depth (feet)	Sample Type: INTACT	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
40	X		46	117.7	8.2		CL-ML		40' – 41.5' Silty clay, reddish brown, moist, soft, mottled with well cemented caliche
									Boring terminated at 41.5'
									No ground water; backfilled with soil cuttings.
45									
50									
55									
60									

Notes:

Plate C8

BORING LOG

Project/Client: FIRESTATION 53 F.N.: 40779.01

Location: 2804 W. GOWAN RD Date: 10/26/17

Estimated Surface Elevation (ft): - Total depth (ft): 41.5' Rig Type 6" HSA

Depth (Feet)	Sample Type	Sample Depth	Blow Count	Field Description By: EL
				Surface Conditions: GRAVEL PLANTER AREA
				Subsurface Conditions: FORMATION: Classification, color, moisture, tightness, etc.
	R	5'-6.5'	19 15 15	5.0'-6.5' FILL: SANDY CLAY, MED BRN, SLT MOIST, FIRM, MOTTLED W/ CALICHE & GRAVEL
	R	10'-10.5'	17 8 9	10.0'-11.5' NAT SOIL: SANDY CLAY, MED BRN, SLT MOIST, FIRM, MOTTLED W/ CALICHE
	R	15'-15.5'	11 5 7	15.0'-16.5' SANDY CLAY, LT BRN TO MED BRN, MOIST, FIRM W/ PIN POR, MOTTLED W/ THIN LAYERS OF CALICHE & SILTY FINE SAND
	R	20'-21.5'	1 1 1	20.0-21.5' SILTY CLAY, MED BRN TO DRK BRN, MOIST, SOFT, MOTTLED W/ WEATHERED CALICHE
	R	25'-26.5'	6 7 4	25.0'-26.5' FAT CLAY, MED BRN, V. MOIST, SOFT TO FIRM
	R	30'-31.5'	8 9 50→5"	30.0'-31.5' CALICHE, BEIGE, SLT MOIST, MED TO WELL CEMENTED, V. DENSE, MOTTLED W/ SILTY CLAY, MED BRN, MOIST, SOFT TO FIRM
	R	35'-35.5'	50→5"	35.0'-36.5' NO SAMPLE RETRIEVED, V. DENSE
	R	40'-41.5'	10 21 25	40.0'-41.5' SILTY CLAY, REDDISH BRN, MOIST, SOFT, MOTTLED W/ WELL CEMENTED CALICHE

Note: LB TAKEN @ 10'-25'

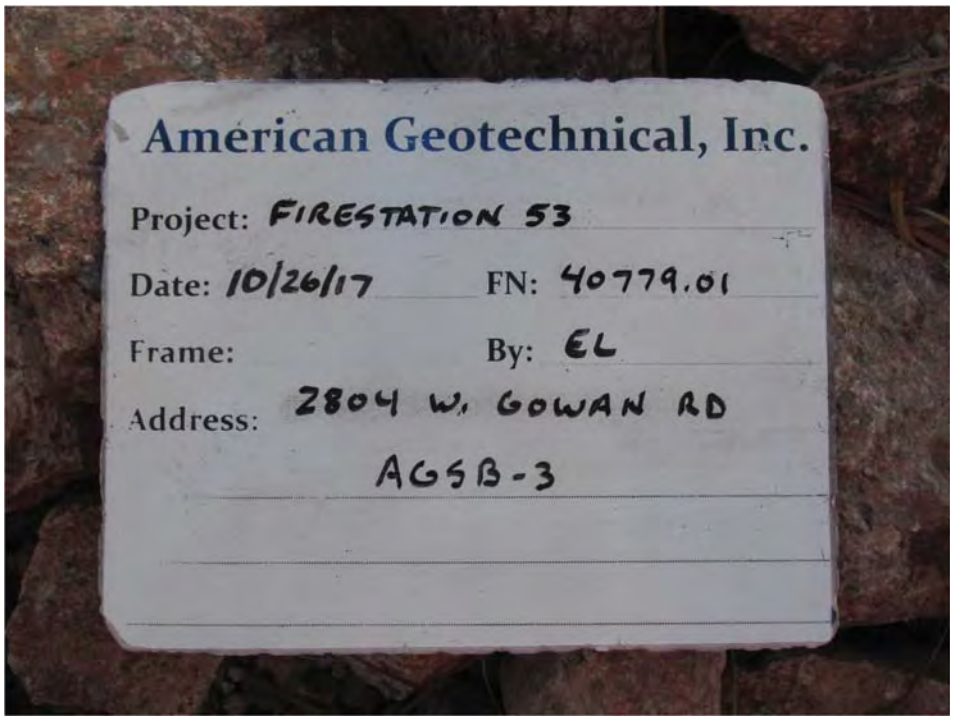
SEE SUBSURFACE LOCATION MAP FOR BORING LOCATION

AGSB-3

AMERICAN GEOTECHNICAL BORING LOG:

PHOTO NOTES:

3-1) ADDRESS PLAQUE
3-2) ADDRESS
3-3) → 3-8) AGSB-3



2804 W Gowan Rd, AGSB-3 - EL 10-26-17 (1)

2804 W Gowan Rd, AGSB-3 - EL 10-26-17 (2)

2804 W Gowan Rd, AGSB-3 - EL 10-26-17 (3)

2804 W Gowan Rd, AGSB-3 - EL 10-26-17 (4)

2804 W Gowan Rd, AGSB-3 - EL 10-26-17 (5)

2804 W Gowan Rd, AGSB-3 - EL 10-26-17 (6)

2804 W Gowan Rd, AGSB-3 - EL 10-26-17 (7)

2804 W Gowan Rd, AGSB-3 - EL 10-26-17 (8)

Test Pit No. :	**AGTP-1**	**FN:**	**40779-01**
Project Name:	Fire Station 53	Sheet:	1 of 1
Location:	2804 W. Gowan Road, North Las Vegas, Nevada	Start:	9/5/2017
Estimated Surface Elev.	+/- feet	End:	9/6/2017
Total Depth (ft.)	8.5 +/- feet	Initials:	EL
Excavation/Drill Rig Type	Hand Excavation		

Depth (feet)	Sample Type: Sample	Sample Type: BULK	Blow Counts	Dry Unit Wt (PCF)	Moisture Content (%)	Laboatory Tests	USCS Symbol	Graphic Log	Field Description
									Surface Condition: Planter
									Subsurface Conditions: FORMATION; Color, Classification, Moisture content, density/stiffness, etc.
0							SC-CL		0-8.5' **Fill** Sandy clay mottled w/ caliche, 1/2" to 1" diameter caliche nodules type, light brown, slightly moist, very stiff, loose pea gravel on east side of test pit at 0.4" to 2.5', about 1" void directly beneath building footing
	SC			112.27	9.6				
	SC			111.3	11.3				
5	SC			104.8	12.3				
	SC			121	11.4				
10									@8.5' Caliche, white well cemented, very hard, excavation terminated at 8.5' (caliche)

Notes:

SC = Sand Cone

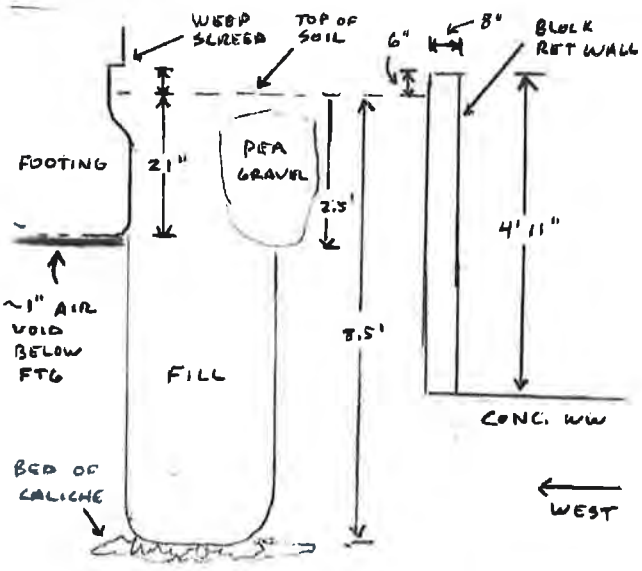


Plate C9

Test Pit No. AGTP - 1

File No. 40779.01

Sheet: 1/1

Project Name: FIRESTATION 53

Date: 9/5/17, 9/6/17

Location: 2804 W. GOWAN RD.

Total Depth: 8.5' Rig Type: HAND EX 4 Est. Surface Elevation: —

LIMITED ACCESS 4" AUGER

Depth in Feet	Sample Type: Intact	Sample Type: Bulk	Field Description (By: EC)
0.0			Surface Conditions: COBBLE & BOULDERS IN PLANTER AREA
			Subsurface Conditions: FORMATION: Classification, color, moisture, tightness, etc.
			0-8.5' FILL: SANDY CLAY MOTTLED W/ CALICHE. ½" TO 1" DIA CALICHE NODULES TYP. LT BRN, SLT MOIST, V. STIFF. LOOSE PEA GRAVEL ON EAST SIDE OF TEST PIT AT 0.4' TO 2.5', ~1" VOID DIRECTLY BENEATH BLDG FTG.
			@ 8.5' CALICHE, WHITE WELL CEMENTED V. HARD, EXCAVATION TERMINATED AT 8.5' (CALICHE)
			PHOTO NOTES:
			1-1) ADDRESS PLAQUE
			1-2) ADDRESS
			1-3) → 1-25) AGTP-1

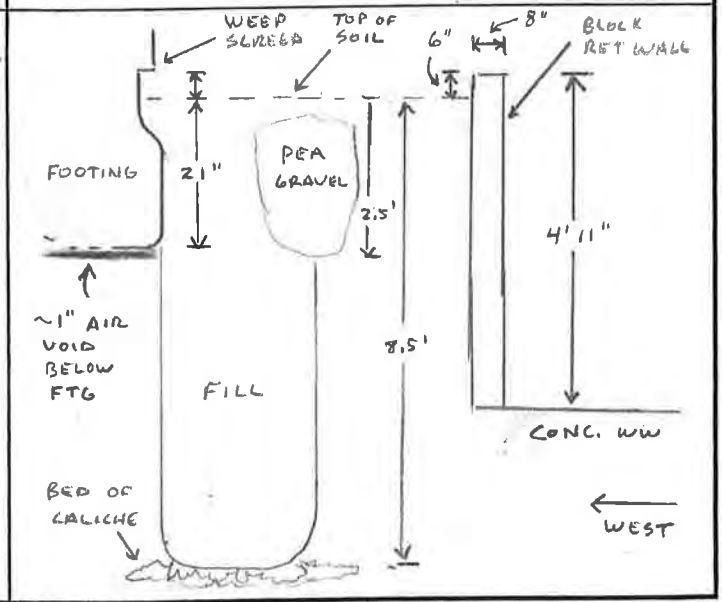
Location

SEE SUBSURFACE LOCATION MAP

SAMPLES TAKEN:

- SC @ 2.0'
- SC @ 4.0'
- SC @ 6.0'
- SC @ 8.0'
- LB @ 3'-4'
- LB @ 7.5'-8'

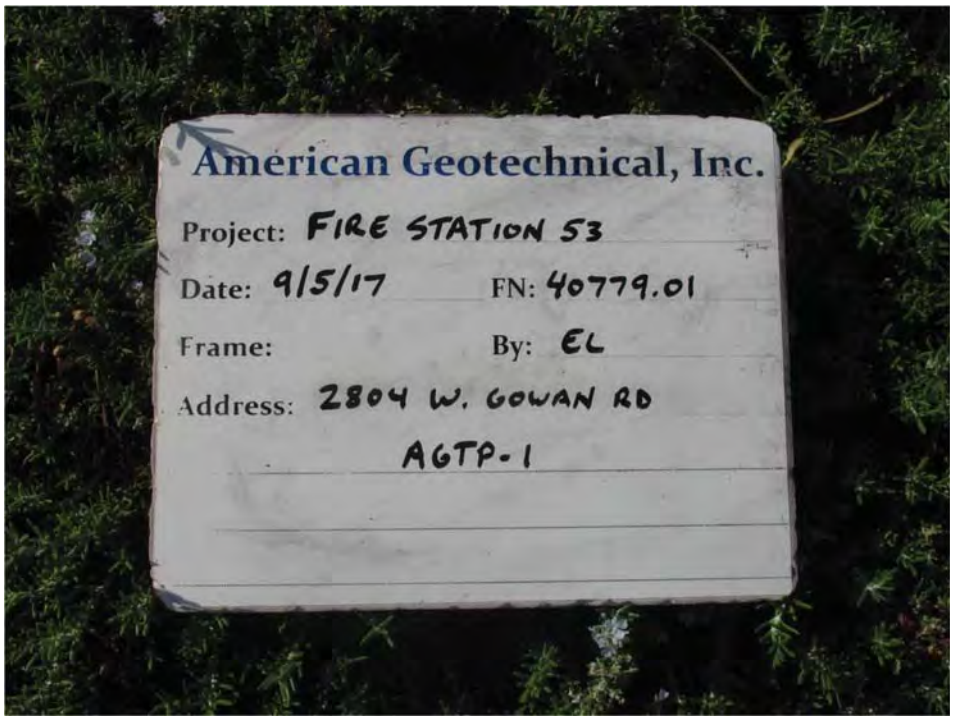
Profile



American Geotechnical

Explanation: Shelby; Ring Sampler; Sand Cone; Large Bag; Medium Bag

AGTP - 1



2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (1)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (2)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (3)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (4)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (5)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (6)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (7)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (8)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (9)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (10)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (11)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (12)

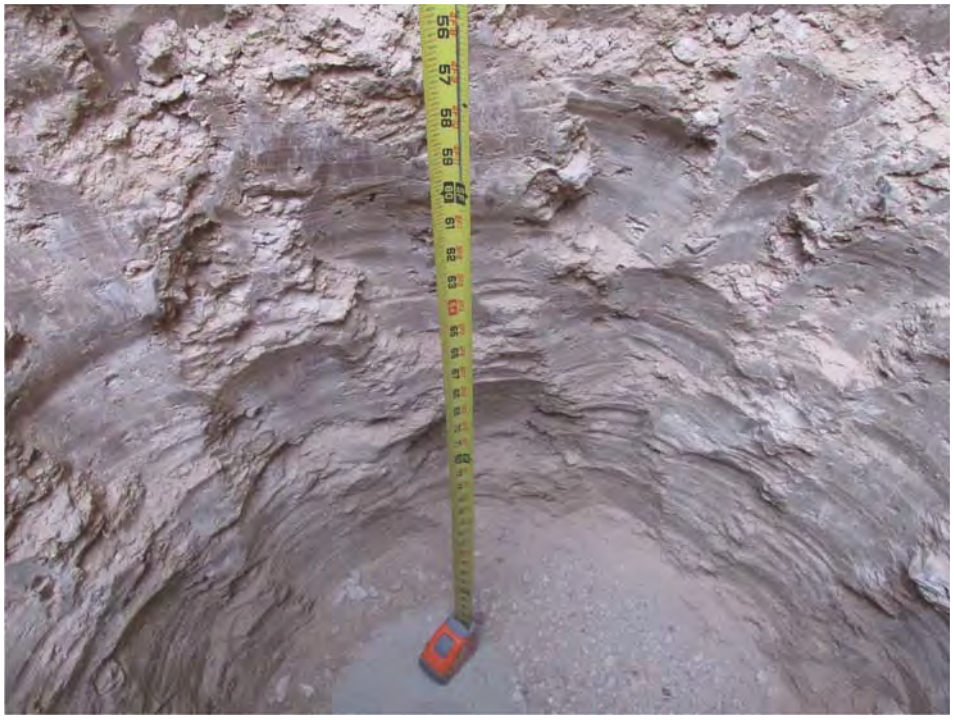
2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (13)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (14)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (15)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (16)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (17)

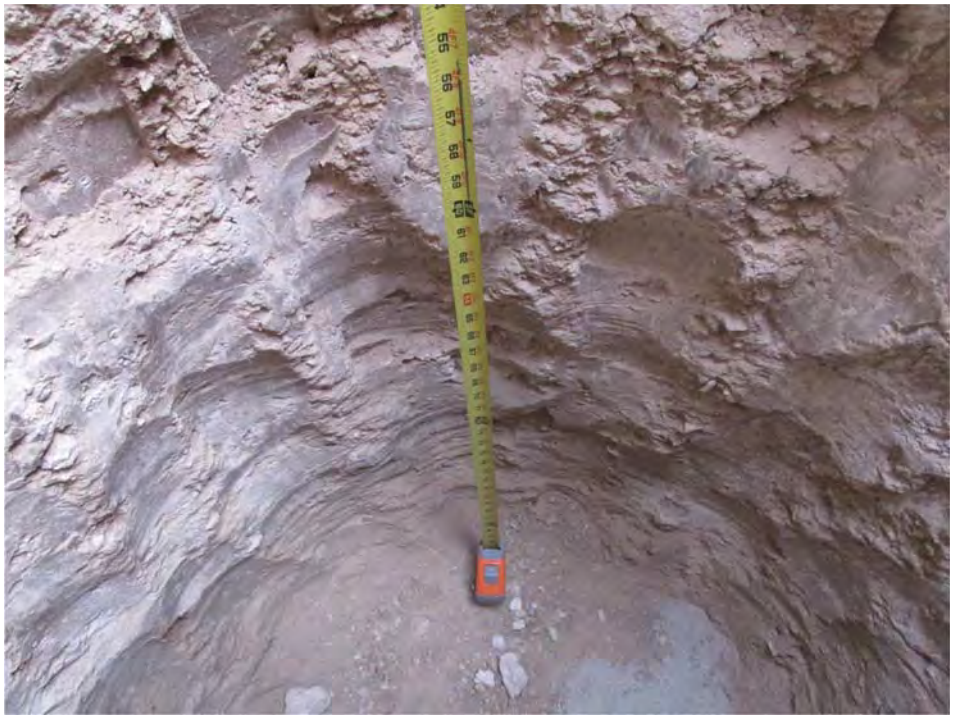


2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (18)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (19)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (20)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (21)



2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (22)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (23)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (24)

2804 W Gowan Rd, AGTP-1 - EL 9-5-17 (25)

APPENDIX D - SUMMARY OF LABORATORY DATA

TABLE D1 - Laboratory Testing Summary

Project: Fire Station 53
File No.: 40779-01

Excavation ID	Sample Depth (feet)	Moisture Content (%)	Dry Density (pcf)	Saturation (%) S.G.=2.7	Max. Density (pcf)	Opt. Moisture Content (%)	Expansion Index	Swell (+) / Collapse(-) (%)	CHEMICAL ANALYSIS			
									Resistivity (Ohm-cm)	Chloride (%)	Sulfate (%)	pH
AGSB-1	5-20	-	-	-	117.4	12.7	118	-	210	0.165	0.24	8.75
	5-6.5	16.4	88.5	49	-	-	-	-0.05%@600 psf	-	-	-	-
	7.5-9	42.1	67.1	75	-	-	-	-0.25%@900 psf	-	-	-	-
	10-11.5	31.4	76.5	71	-	-	-	-	-	-	-	-
	12.5-14	31.7	73.0	65	-	-	-	-0.1%@1500 psf	-	-	-	-
	15-16.5	40.6	70.6	79	-	-	-	-	-	-	-	-
	17.5-19	24.9	86.6	71	-	-	-	-0.15%@2100 psf	-	-	-	-
	20-21.5	12.9	100.4	51	-	-	-	-	-	-	-	-
	22.5-24	38.8	62.1	61	-	-	-	-2.3%@2700 psf	-	-	-	-
	25-26.5	19.1	75.8	42	-	-	-	-1.3%@3000 psf	-	-	-	-
	27.5-29	9.9	-	-	-	-	-	-	-	-	-	-
	30-31.5	21.3	86.2	60	-	-	-	-	-	-	-	-
	35-36.5	11.6	94.3	40	-	-	-	-	-	-	-	-
	40-41.5	15.9	103.5	68	-	-	-	-	-	-	-	-
	45-46.5	15.8	91.5	51	-	-	-	-	-	-	-	-
AGSB-2	5-6.5	12.4	104.6	55	-	-	-	-	-	-	-	-
	10-10.5	43.5	53.1	54	-	-	-	-	-	-	-	-
	15-15.5	8.5	95.6	30	-	-	-	-	-	-	-	-
	20-21.5	12.3	78.2	29	-	-	-	-	-	-	-	-
	25-26.5	8.2	106.3	38	-	-	-	-	-	-	-	-
AGSB-3	5-6.5	7.6	99.0	29	-	-	-	-	-	-	-	-
	10-10.5	12.8	79.0	30	-	-	-	-	-	-	-	-
	15-15.5	15.9	87.2	46	-	-	-	-	-	-	-	-
	20-21.5	35.7	53.7	45	-	-	-	-	-	-	-	-
	25-26.5	47.8	53.7	60	-	-	-	-	-	-	-	-
	30-31.5	17.1	88.2	51	-	-	-	-	-	-	-	-
	40-41.5	8.2	117.7	51	-	-	-	-	-	-	-	-

American Geotechnical, Inc.
GEOTECHNICAL ENGINEERING / MATERIALS TESTING & INSPECTION

TABLE D2 - Laboratory Testing Summary

Project: Fire Station 53
File No.: 40779-01

Excavation ID	Sample Depth (feet)	Moisture Content (%)	Dry Density (pcf)	Saturation (%) S.G.=2.7	Max. Density (pcf)	Opt. Moisture Content (%)	Relative Compaction
AGTP-1	3-4	-	-	-	128.0	9.2	-
	7.5-8	-	-	-	124.1	12.5	-
	2	9.6	112.3*	52	-	-	87.7
	4	11.3	111.3*	59	-	-	87.0
	6	12.3	104.8*	55	-	-	84.4
	8	11.4	121.0*	78	-	-	97.5

* - Sand Cone Test

Notes:

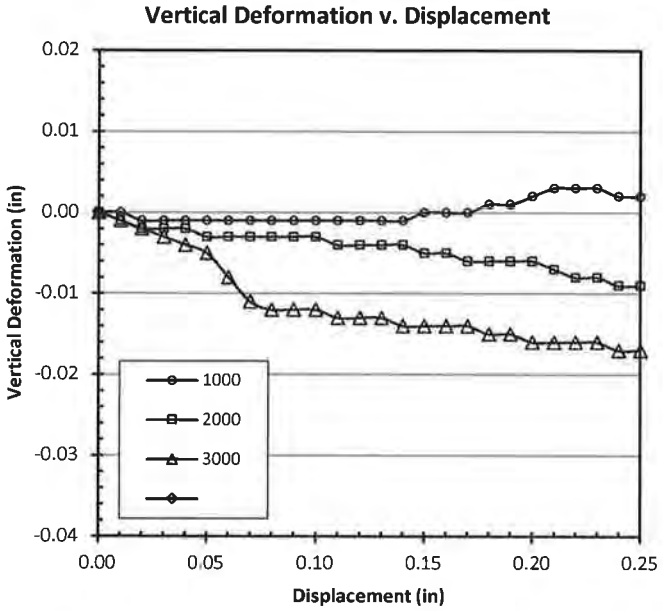
Sulfates (%) (multiply by 10,000 to get mg/kg)		Chlorides (%) (multiply by 10,000 to get mg/kg)		Resistivity (ohm-cm)	
0.00 - 0.10	Negligible	0.001 - 0.0025	Slightly Corrosive	Under 1,000	Extreamly Corrosive
0.10 - 0.20	Moderate	0.0025 - 0.01	Moderately Corrosive	1,000 - 3,000	Highly Corrosive
0.20 - 2.00	Severe	0.01 - 0.05	Very Corrosive	3,000 - 5,000	Corrosive
Over 2.00	Very Severe	Over 0.05	Extremely Corrosive	5,000-10,000	Moderatively Corrosive
Sulfate directly affect concrete by chemical reactions.		Chlorides affect metal reinforcements, piping, and other metal components by corrosion.		10,000 - 20,000	Mildly Corrosive
				>20,000	Non-corrosive
				Resistivity indicates how corrosive soil can be.	
pH is a measure of how acidic/basic water is. The range goes from 0 - 14, with 7 being neutral (e.g. pure water). pHs of less than 7 indicate acidity, whereas a pH of greater than 7 indicates a base. pH is really a measure of the relative amount of free hydrogen and hydroxyl ions in the water. Higher the acidic/base conditions higher the corrosiveness.					
Note:Corrosion risk should not be based on soil test results alone. The characteristics of the at-risk improvements should be considered along with environmental influences that may affect corroion risk.					

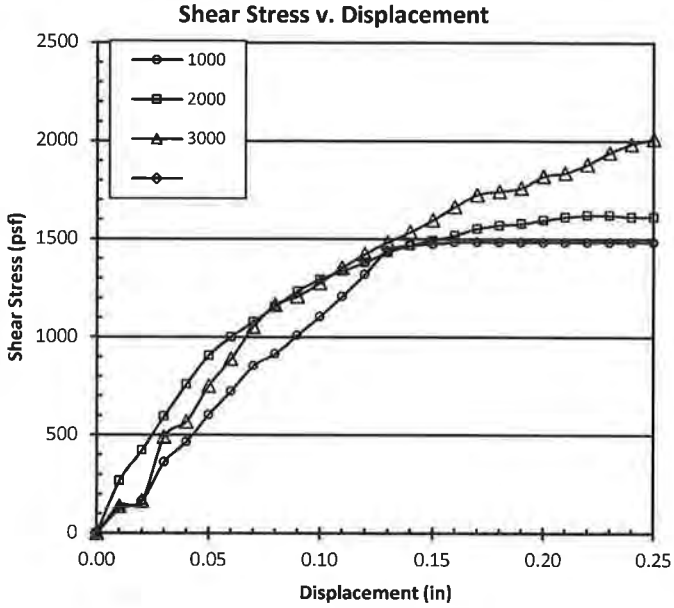
American Geotechnical, Inc.
GEOTECHNICAL ENGINEERING / MATERIALS TESTING & INSPECTION

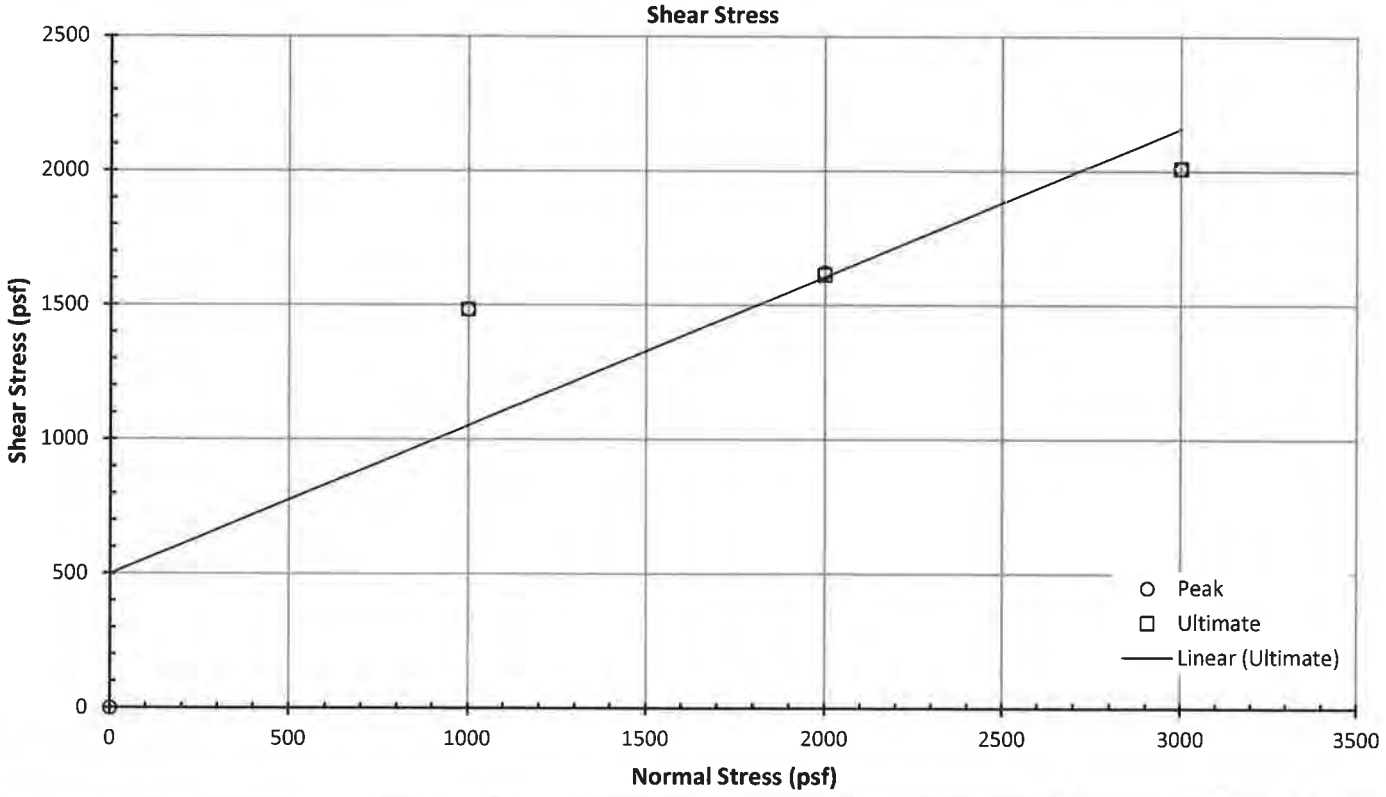
Samples Tested	1	2	3	
Boring ID	AGSB-1	AGSB-1	AGSB-1	
Depth (in/ft.)	7.5'-9'	17.5'-19'	25'-26.5'	
Initial Dry Density (pcf)	67.1	86.6	75.8	
Initial Moisture Content (%)	42.1	24.9	19.1	
Normal Stress (psf)	1000	2000	3000	
Maximum Shear Stress (psf)	1484	1622	2010	
Ultimate Shear Stress (psf)	1484	1613	2010	
ASTM D3080 Soil Type	Intact	Intact	Intact	

	Peak	Ultim.
Friction, phi (Deg)	29	29
Cohesion (psf)	500	500

Sample Type:	Intact
Method:	Drained
Consolidation:	Yes
Saturation:	Yes
Strain Rate (in/min):	0.01







American Geotechnical, Inc.	DIRECT SHEAR TEST RESULTS Fire Station 53 2804 W. Gowan Dr.,	F.N.: 40779-01 Date: Nov 2017	Plate D 1

APPENDIX E - PRELIMINARY REPAIR PLAN/CALCULATIONS

LEGEND

- 2'Ø PILES, 36' DEEP (PILE # 9, 11 & 15)
- 2'Ø PILES, 32' DEEP (PILE # 1-8, 10, 12-14 & 16-20)

PILE #

Relevel by mudjacking or foam/grout injection. See notes.

Approximate location of 2'Ø piles.

Existing Column Footing

Reference Map: Foundation Plan by Dekker, Perich, Sabatini Engineering, Sheet No. S1.00, Page 14.

0 15 30

SCALE: 1'=15'

AMERICAN GEOTECHNICAL, INC.
22725 OLD CANAL ROAD, YORBA LINDA, CA 92887
(714) 685-3900 (714) 685-3909
www.amgeotech.com

PROJECT APP.001823

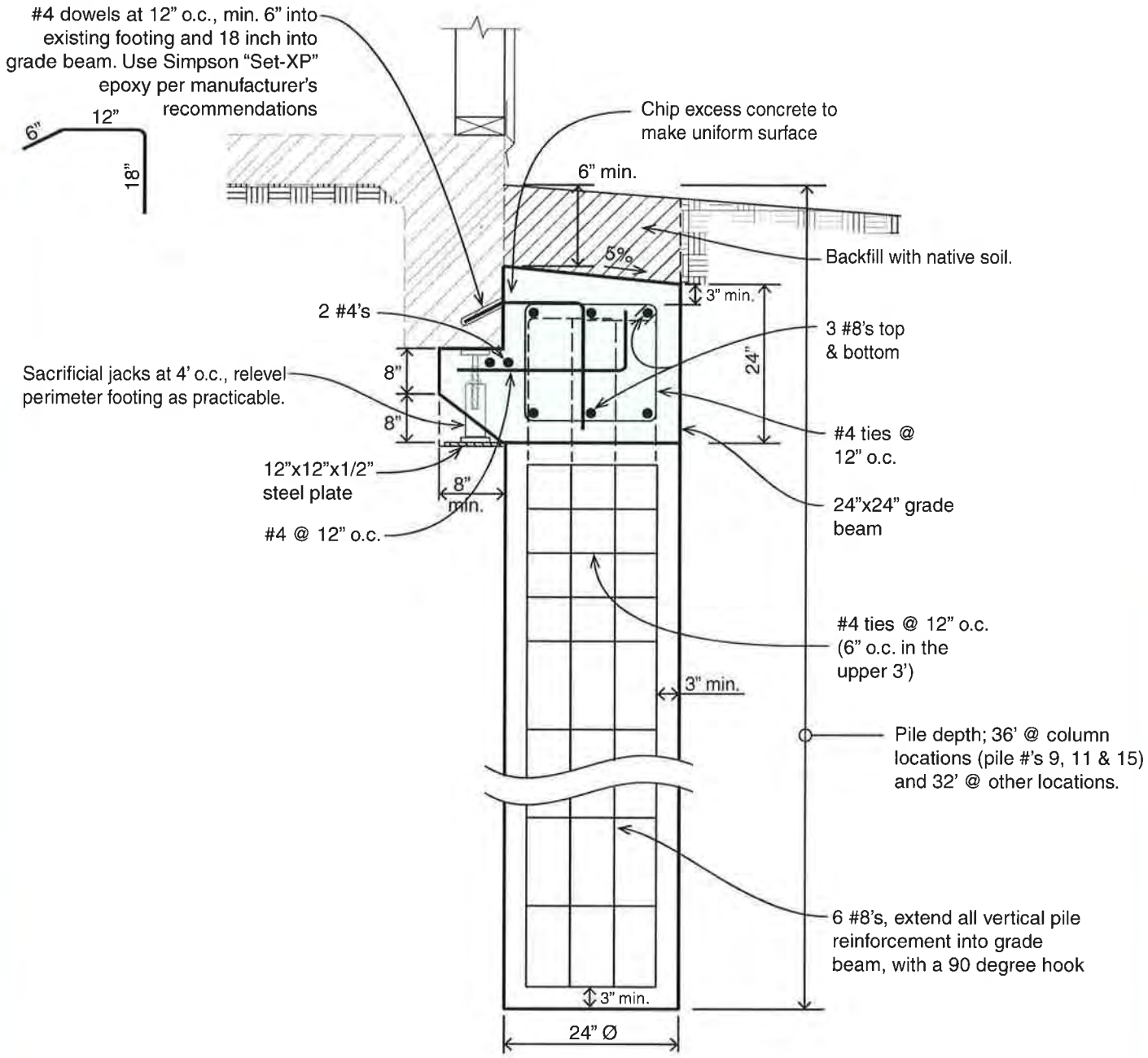
TITLE: **FOUNDATION REPAIR PLAN**
FIRE STATION 53
2800 WEST GOWAN ROAD, NORTH LAS VEGAS, NV 89032

SCALE: 1" = 15'

DATE: DEC 2017

FILE NO.: 40779-01

FIGURE
E1



(A) GRADE BEAM/PILE DETAIL

NOT TO SCALE

AMERICAN GEOTECHNICAL, INC.
22725 Old Canal Road, Yorba Linda, CA 92887
(714) 685-3900 (714) 685-3909
www.amgt.com

GRADE BEAM/PILE DETAIL		
FIRE STATION 53 2800 W. GOWAN ROAD, N. LAS VEGAS, NV 89032		
SCALE: N.T.S	DATE: DEC 2017	FILE NO.: 40779.01

FIGURE
E2

FILE NO: 40779-01 PROJECT: Fire Station 53

DESCRIPTION: Calcs

DATE: 4/17 BY: MAT SHEET: 1

Building Loads (Ref: Structural calculations by Dekker, Perich, Sabatini

Column SF1 – LL = 8.42k
DL = 8.9k
5'x5'x 1' ftg. DL = 5x5x150 = 3,750 # = 3.75k

Total unfactored load = 8.42 + 8.9 + 3.75
= 21.07 = 21.1 k

Column SF2 – DL = 1.15k
LL = 1.04k
2½x2½x1 ftg – DL = 2.5x2.5x150 = 938 ≈ .94k

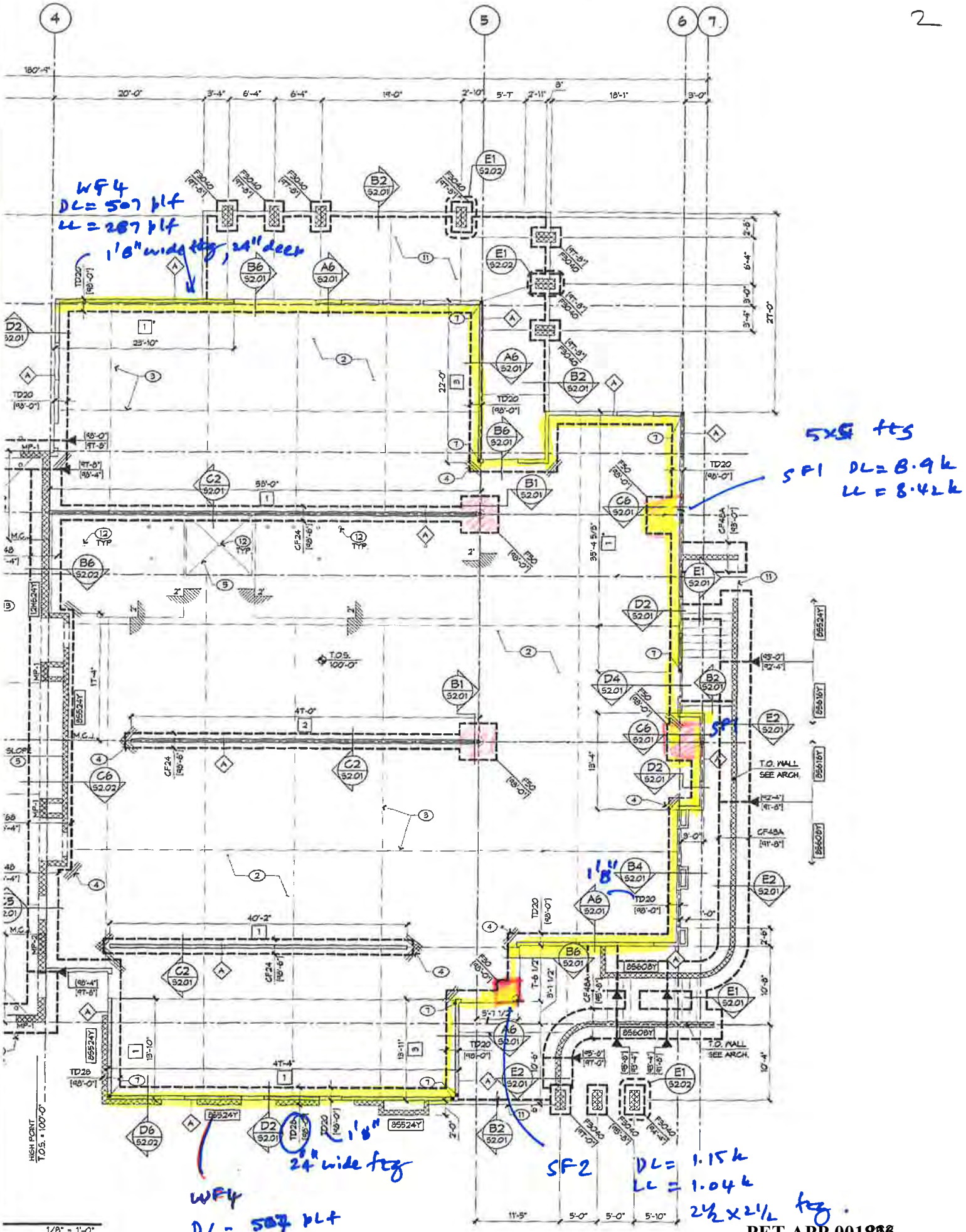
total unfactored load = 1.15 + 1.04 + .94
= 3.13 k = 3.2k

wall load – DL = 507 plf
LL = 287 plf
ftg – 2' deep, 1'8" wide

ftg weight (DL) = 2x 1.7 x 150 = 510 #/ft.

Total unfactored load (w) = 507 + 287 + 510 = 1,304 plf
≈ 1.3 klf

Factored load (w_u) = 1.2x(507 + 510) + 1.6(287)
= 1,680 plf = 1.7 klf


4
5
6
7
WF4
DL = 507 plf
LL = 287 plf
1'8" wide ftg, 24" deep
5x5 ftg
SF1 DL = 8.9k
LL = 8.42k
SF3
1'8"
24" wide ftg
SF2
DL = 1.15k
LL = 1.04k
2½ x 2½ ftg.
WF4
DL = 507 plf
LL = 287 plf
T.O. WALL SEE ARCH.
1/8" = 1'-0"

FILE NO: 40779-01 PROJECT: Fire Station 53

DESCRIPTION: Calcs

DATE: 11/17 BY: AAA SHEET: 3

Pile Design

piles @ existing column ftgs & @ 15' o.c. spacing (max) in other areas. Use 24" piles.

@ column footing SF1 – Column load = 21.1 k
Wall load = 15 x 1.3 = 19.5 k
total load = 21.1 + 19.5 = 40.6 k
Per pile capacity chart, Use 36' deep pile.

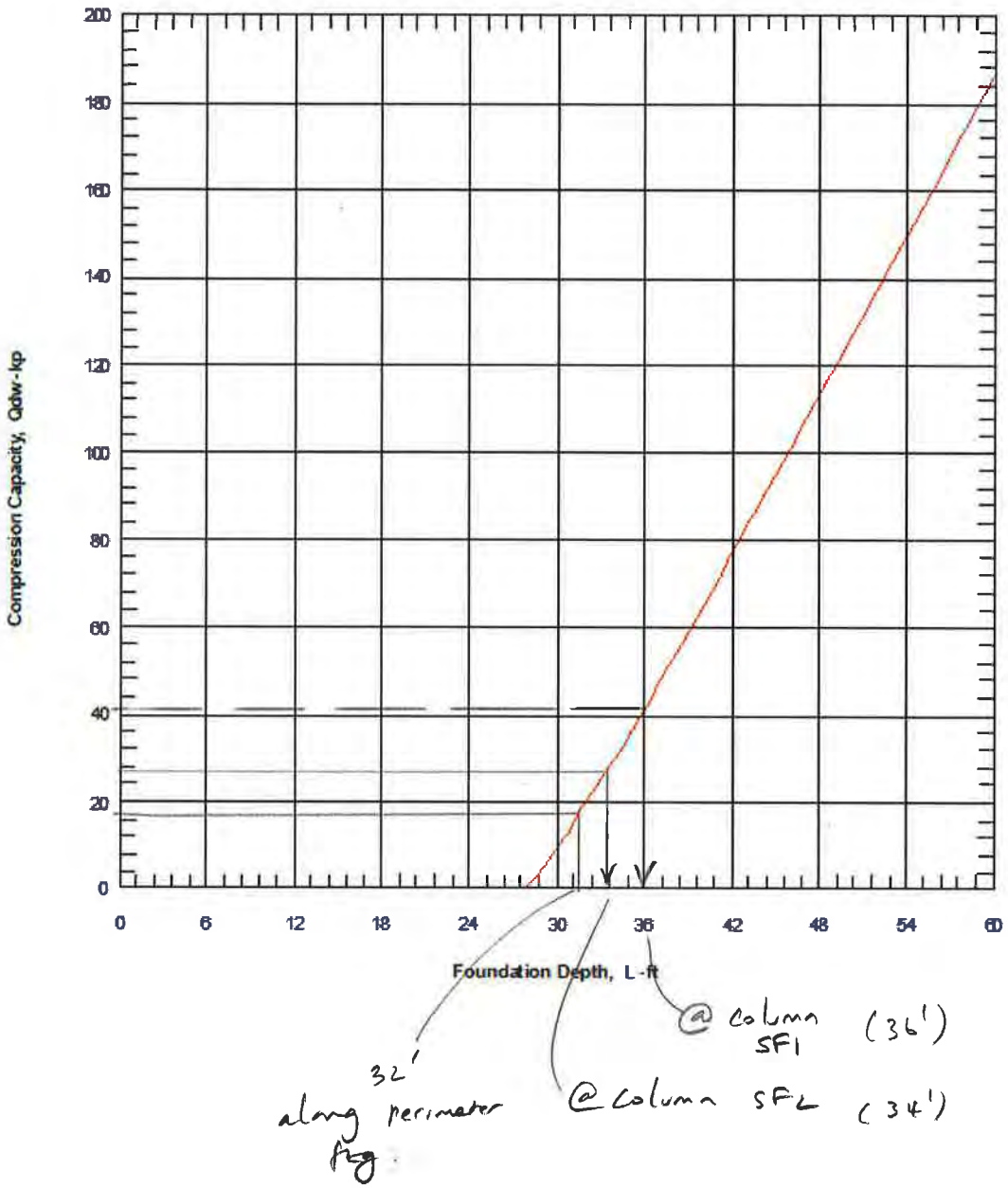
@ column ftg SF2 – Column load = 3.2 k
Wall load = 19.5 k
total load = 22.7 k
Use 34' deep pile.

along perimeter – column load = 19.5 k
Use 32' deep pile.

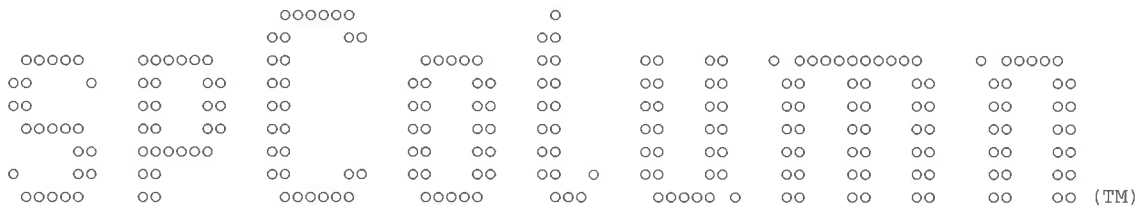
For simplicity, Use 36' deep piles @ columns & 32' deep piles in other areas.

Per attached calcs, Use 6 #8's & #4 ties @ 4"o.c.

4


Compression Capacity, Qdw - kp
200
180
160
140
120
100
80
60
40
20
0
0
6
12
18
24
30
36
42
48
54
60
Foundation Depth, L - ft
@ column SF1 (36')
32'
along perimeter ftg
@ Column SF2 (34')

5



spColumn v5.50 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections

6

General Information:
==========
File Name: C:\Users\alvappillaia\Documents\Fire Station.col
Project: Fire Station
Column:
Code: ACI 318-14

Engineer: AA
Units: English

Run Option: Design
Run Axis: X-axis

Slenderness: Not considered
Column Type: Structural

Material Properties:
==========
Concrete: Standard
f'c = 3 ksi
Ec = 3122.02 ksi
fc = 2.55 ksi
Eps_u = 0.003 in/in
Beta1 = 0.85

Steel: Standard
fy = 60 ksi
Es = 29000 ksi
Eps_yt = 0.00206897 in/in

Section:
==========
Circular: Diameter = 24 in

Gross section area, Ag = 452.389 in^2
Ix = 16286 in^4
rx = 6 in
Xo = 0 in

Iy = 16286 in^4
ry = 6 in
Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Bar selection: Minimum number of bars
Asmin = 0.01 * Ag = 4.52 in^2, Asmax = 0.08 * Ag = 36.19 in^2

Confinement: Tied; #3 ties with #10 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
Pattern: All Sides Equal (Cover to transverse reinforcement)
Total steel area: As = 4.74 in^2 at rho = 1.05%
Minimum clear spacing = 7.13 in

6 #8 Cover = 3 in

Factored Loads and Moments with Corresponding Capacities:
==========
Design/Required ratio PhiMn/Mu >= 1.00

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	41.00	0.00	192.08	999.999	6.39	20.13	0.00645	0.900

*** End of output ***

FILE NO: 4077A-1 PROJECT: Fire Station 53

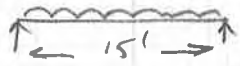
DESCRIPTION: Calcs

DATE: 11/17 BY: MA SHEET: 7

Grade Beam

Use 2'x2' grade beam;

$w_u = 1.7$ k/ft



assume simply supported conditions between piles.

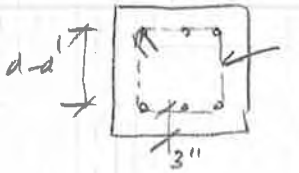
$$M_u = \frac{wL^2}{8} = 1.7 \times \frac{15^2}{8}$$

$$= 47.8 \text{ k-ft}$$

Min. r/f $- (A_s)_{min.} = 0.0033 \times 24 \times 24$

$$= 1.9 \text{ in}^2$$

Use 3 #8's, $A_s = 3 \times 0.79 = 2.37 > 1.9$ — ok.



$d - d' = 24 - 3 \times 2 - 2 \times .2 - 1$

$= 16.6"$

$\phi(M)_n = 0.9 \times 0.79 \times 3 \times 60 \times \frac{16.6}{12}$

$= 177$ k-ft $>> 47.8$ — ok.

∴ Use 3 #8 top & bot. & #4 ties @ 12" o.c.

EXHIBIT 6

American Geotechnical, Inc.
GEOTECHNICAL ENGINEERING / MATERIALS TESTING & INSPECTION

RESUME OF

EDRED T. MARSH

PRINCIPAL GEOTECHNICAL ENGINEER

EMPLOYMENT HISTORY

1999 - Present	Principal Geotechnical Engineer **AMERICAN GEOTECHNICAL, INC.** San Diego, California
1990 -1999	Project/Senior Engineer **AMERICAN GEOTECHNICAL, INC.** San Diego, California
1988 -1990	Staff Engineer **AMERICAN GEOTECHNICAL, INC.** San Diego, California
1988	Engineering Assistant/Laboratory Manager **AMERICAN GEOTECHNICAL, INC.** San Diego, California
1987 -1988	Student Engineer CITY OF CORONADO Coronado, California
EDUCATION	San Diego State University San Diego, CA B.S. in Civil Engineering
POST GRADUATE STUDIES	Advanced Foundation Engineering Advanced Soil Mechanics Open Channel Hydraulics Waste and Wastewater Engineering Research Project on the Effect of Partial Wetting on Compacted Fills

PROFESSIONAL REGISTRATIONS
State of California, Registered Geotechnical Engineer, G.E. 2387
State of California, Civil Engineer, R.C.E. 50315
State of Nevada, Civil Engineer, R.C.E. 12149
State of Colorado, Civil Engineer, R.C.E. 33623
State of Arizona, Civil Engineer, C.E. 41710

PROFESSIONAL AFFILIATIONS
American Society of Civil Engineers
Chi Epsilon National Civil Engineering Honor Society
ACI - American Concrete Institute
PTI- Post-Tensioning Institute
ASTM International

PUBLICATIONS

"The Importance of Communication in the Geotechnical Industry," *Condo Management*, 1992.

"Tri-Axial A-Value Versus Swell or Collapse For Compacted Soils," *American Society of Civil Engineers, Journal of Geotechnical Engineering*, July 1995.

"Common Causes of Retaining Wall Distress: Case Study," *American Society of Civil Engineers, Journal of Performance of Constructed Facilities, Technical Council on Forensic Engineering*, February 1996.

"Seepage and Salt Deposition at the Toe of a Fill Slope," *Environmental & Engineering Geoscience*, Spring 1996.

"Damage and Distortion Criteria for Residential Slab-on-Grade Structures," *American Society of Civil Engineers, Journal of Performance of Constructed Facilities, Technical Council on Forensic Engineering,* July 1999.

"Hydrogeology and Remediation of Shallow Groundwater conditions in Henderson, Las Vegas Valley, Nevada" *AEG News,* July 2007.

PROFESSIONAL EXPERIENCE SUMMARY

Mr. Marsh is the Office Manager and Principal Geotechnical Engineer for American Geotechnical's San Diego and Las Vegas offices. During the course of his professional career, he has become an accomplished leader in the fields of geotechnical, civil, and forensic engineering. He has been involved with projects throughout the southwestern United States. Projects have included hillside developments, deep fill, expansive soil and other sensitive soil sites, infrastructure design and construction consulting, liquefaction and dynamic soil evaluations, slope stability, and landslide evaluation and stabilization, construction material corrosion assessments, concrete problem evaluations, and moisture intrusion studies, among others.

Management responsibilities primarily include training and supervising the engineering, geology, and support-level staff, supervising our soil laboratory, maintaining quality control and necessary licensing and educational information, reviewing proposals and reports, and planning and directing geotechnical and forensic investigations.

Technical abilities include an extensive knowledge of soil mechanics and foundation engineering, and the latest problem-solving techniques and experience related to settlement and expansive soil influence, analysis and design of earth retaining structures, landslide and slope stability, soil dynamics and earthquake engineering, subsurface exploration, soil sampling and in-situ testing, field instrumentation, moisture intrusion and drainage problems, pavement and concrete problems, among other items.

Because of his expertise is geotechnical engineering and other related subjects, Mr. Marsh frequently gives educational presentations for both public and private groups and serves as a professional expert for dispute resolution.

EXHIBIT 7

DECLARATION OF EDRED T. MARSH, P.E.

I, Edred T. Marsh, P.E., declare as follows:

1. I am a principal geotechnical engineer at American Geotechnical, Inc.

2. I am experienced in each discipline which is the subject of my December 11, 2017 report, specifically in the fields of geotechnical, civil, and forensic engineering.

3. My December 11, 2017 report contains my conclusions and the basis for the conclusions.

4. Based on my conclusions, there is a reasonable basis for filing this action.

I declare under penalty of perjury that the foregoing is true and correct.

Dated: July _3rd___, 2019.

Edred T. Marsh, P.E.

EXHIBIT 8

October 17, 2007
Project No. 302288001

Mr. Chris Larsen
Dekker/Perich/Sabatini
6860 Bermuda Drive, Suite 100
Las Vegas, Nevada 89119

Subject: Review of 95 Percent Bid Set Construction Documents
Proposed Fire Station 53
West Gowan Road near Simmons Street
North Las Vegas, Nevada

References: Dekker/Perich/Sabitini 95 Percent Submittal plans titled, "Fire Station 53, City of North Las Vegas, 2800 West Gowan Road, North Las Vegas, Nevada, 89032," dated June 4, 2007.

Dekker/Perich/Sabitini 95 Percent Submittal specifications titled, "Fire Station 53, Department of Public Works, City of North Las Vegas, Nevada, Bid No. 1287, Division 1 through Division 16," dated August 31, 2007.

Ninyo & Moore report titled, "Geotechnical Evaluation, Proposed Fire Station 53, West Gowan Road near Simmons Street, North Las Vegas," dated August 29, 2007.

Dear Mr. Larsen:

As requested, we have reviewed the above-referenced 95 percent bid set construction documents, which were provided by Dekker/Perich/Sabitini for the subject project. The construction documents were reviewed to evaluate their conformance with the geotechnical recommendations provided in the above-referenced geotechnical evaluation report. Based on our review, the bid documents generally are in conformance with the recommendations provided in the referenced report. We appreciate the opportunity to be of continued service to you on this project.

Respectfully submitted,
NINYO & MOORE

Naik Banavathu, P.E.
Project Engineer

PROFESSIONAL ENGINEER STATE OF NEVADA
ERIC D. ELISON
Exp: 12/31/08
CIVIL
No. 14311
10/17/07

Eric D. Elison, P.E.
Chief Geotechnical Engineer

NB/EDE/ltk

Distribution: (5) Addressee

302288001 L.doc