

Case No. _____

In the
Supreme Court
of the
State of Nevada

Electronically Filed
Jul 15 2020 10:50 a.m.
Elizabeth A. Brown
Clerk of Supreme Court

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 4

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CHRONOLOGICAL INDEX - APPENDIX OF EXHIBITS

Exhibit:	Volume:	Bates: PET.APP.	Date:	Description:
1	4	000492 – 000568	11/02/2007	<u>Exhibit 9</u> - Dekker/Perich/Sabatini's Structural Calculations
	4	000569 – 000647	11/10/2007	<u>Exhibit 10</u> - Plans / Record Drawings

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	<u>Exhibit 1</u> – City of North Las Vegas’ Complaint
	11	001581 – 001614	02/07/2007	<u>Exhibit 1</u> – Professional Architectural Services Agreement
	11	001615 – 001680	08/29/2007	<u>Exhibit 2</u> – Ninyo & Moore’s Geotechnical Evaluation
	11	001681 – 001694	01/30/2008	<u>Exhibit 3</u> – City of North Las Vegas’ Letter to Richardson Construction Inc re Construction Contract
	11	001695 – 001696	07/13/2009	<u>Exhibit 4</u> – Notice of Completion
	12	001697 – 001832	12/11/2017	<u>Exhibit 5</u> – American Geotechnical Inc’s Geotechnical Investigation
	12	001833 – 001836	1988 - Present	<u>Exhibit 6</u> – American Geotechnical Inc. Resume of Edred T. Marsh, Principal Geotechnical Engineer
	12	001837 – 001838	07/03/2019	<u>Exhibit 7</u> – Declaration of Edred T. Marsh, P.E.
	12	001839 – 001840	10/17/2007	<u>Exhibit 8</u> – Ninyo & Moore Letter to Dekker/Perich/Sabatini re Review of 95 Percent Bid Set Construction Documents
	13	001841 – 002053	11/02/2007	<u>Exhibit 9</u> - Dekker/Perich/Sabatini’s Structural Calculations
	14	002054 – 002131	11/02/2007	<u>Exhibit 9</u> - Dekker/Perich/Sabatini’s Structural Calculations
	14	002132 – 002210	11/10/2007	<u>Exhibit 10</u> - 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	<u>Exhibit 1</u> – City of North Las Vegas’ Complaint

	7	000868 – 000901	02/07/2007	<u>Exhibit 1</u> – Professional Architectural Services Agreement
	7	000902 – 000967	08/29/2007	<u>Exhibit 2</u> – Ninyo & Moore’s Geotechnical Evaluation
	7	000968 – 000981	01/30/2008	<u>Exhibit 3</u> – City of North Las Vegas’ Letter to Richardson Construction Inc re Construction Contract
	7	000982 – 000983	07/13/2009	<u>Exhibit 4</u> – Notice of Completion
	8	000984 – 001119	12/11/2017	<u>Exhibit 5</u> – American Geotechnical Inc’s Geotechnical Investigation
	8	001120 – 001123	1988 - Present	<u>Exhibit 6</u> – American Geotechnical Inc’s Resume of Edred T. Marsh, Principal Geotechnical Engineer
	8	001124 – 001125	07/03/2019	<u>Exhibit 7</u> – Declaration of Edred T. Marsh, P.E.
	8	001126 – 001127	10/17/2007	<u>Exhibit 8</u> – Ninyo & Moore Letter to Dekker/Perich/Sabatini re Review of 95 Percent Bid Set Construction Documents
	9	001128 – 001340	11/02/2007	<u>Exhibit 9</u> - Dekker/Perich/Sabatini’s Structural Calculations
	10	001341 – 001418	11/02/2007	<u>Exhibit 9</u> - Dekker/Perich/Sabatini’s Structural Calculations
	10	001419 – 001497	11/10/2007	<u>Exhibit 10</u> - Plans / Record Drawings
	10	001498 – 001513	2019	<u>Exhibit 2</u> – Assembly Bill 421 – 80 th Session 2019
	10	001514 – 001546	05/15/2019	<u>Exhibit 3</u> - 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	<u>Exhibit 1</u> – Professional Architectural Services Agreement
	1	000052 – 000117	08/29/2007	<u>Exhibit 2</u> – Ninyo & Moore’s Geotechnical Evaluation
	1	000118 – 000131	01/30/2008	<u>Exhibit 3</u> – City of North Las Vegas’ Letter to Richardson Construction Inc re Construction Contract
	1	000132 – 000133	07/13/2009	<u>Exhibit 4</u> – Notice of Completion

	2	000134 – 000269	12/11/2017	<u>Exhibit 5</u> – American Geotechnical Inc’s Geotechnical Investigation
	2	000270 – 000273	1988 - Present	<u>Exhibit 6</u> – American Geotechnical Inc. Resume of Edred T. Marsh, Principal Geotechnical Engineer
	2	000274 – 000275	07/03/2019	<u>Exhibit 7</u> – Declaration of Edred T. Marsh, P.E.
	2	000276 – 000277	10/17/2007	<u>Exhibit 8</u> – Ninyo & Moore Letter to Dekker/Perich/Sabatini re Review of 95 Percent Bid Set Construction Documents
	3	000278 – 000491	11/02/2007	<u>Exhibit 9</u> - Dekker/Perich/Sabatini’s Structural Calculations
	4	000492 – 000568	11/02/2007	<u>Exhibit 9</u> - Dekker/Perich/Sabatini’s Structural Calculations
	4	000569 – 000647	11/10/2007	<u>Exhibit 10</u> - 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	<u>Exhibit 1</u> – Register of Actions Case A-19-798346-C
	15	002319 – 002320	09/20/2019	<u>Exhibit 2</u> – 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	<u>Exhibit 1</u> - 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	<u>Exhibit 2</u> – City of North Las Vegas’ Complaint

	15	002449 – 002455	09/30/2019	<u>Exhibit 3</u> - Order Granting Nevada by Design, LLC d/b/a Nevada By Design Engineering Consultants' Motion to Change Date
	15	002456 – 002471	2019	<u>Exhibit 4</u> - Assembly Bill 421 – 80 th Session 2019
	16	002472 – 002504	05/15/2019	<u>Exhibit 5</u> - Minutes of the Senate Committee on Judiciary – Eightieth Session
	16	002505 – 002510	09/30/2019	<u>Exhibit 6</u> - 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	<u>Exhibit 7</u> - 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	<u>Exhibit 1</u> – 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	<u>Exhibit 1</u> - 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	<u>Exhibit 1</u> – 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	<u>Exhibit 1</u> – 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	<u>Exhibit 1</u> – Email re Proposed Order Denying MSA’s Motion to Dismiss on NRS 11.258
	20	003416 – 003425	Undated	<u>Exhibit 2</u> – Order Denying Melroy Engineering, Inc. d/b/a MSA Engineering Consultants’ Motion to Dismiss
	20	003426 – 003428	03/16/2020	<u>Exhibit 3</u> – 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	<u>Exhibit 1</u> – 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	<u>Exhibit 2</u> – 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	<u>Exhibit A</u> – City of North Las Vegas’ Complaint
	6	000752 – 000786	02/07/2007	<u>Exhibit B</u> – City of North Las Vegas’ Complaint <u>Exhibit 1</u> – Professional Architectural Services Agreement
	6	000787 – 000789	07/11/2019	<u>Exhibit C</u> – Affidavit of Aleema A. Dhalla, Esq.
	6	000790 – 000793	1988 – Present	<u>Exhibit D</u> – American Geotechnical, Inc.’s Resume of Edred T. Marsh, Principal Geotechnical Engineer
	6	000794 – 000801	03/23/2007	<u>Exhibit E</u> - Excerpts from Legislative History of N.R.S. 11.258
	6	000802 – 000803	07/03/2019	<u>Exhibit F</u> – Declaration of Edred T. Marsh, P.E.
	6	000804 – 000817	12/11/2017	<u>Exhibit G</u> - 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	<u>Exhibit A</u> – Declaration of Edred T. Marsh, P.E.

	19	003288 – 003294	07/11/2019	<u>Exhibit B</u> – 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	<u>Exhibit A</u> – 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	<u>Exhibit 1</u> – 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	<u>Exhibit 2</u> – 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	<u>Exhibit 3</u> – Court Recorder's Transcript of Hearing: All Pending Motions

	18	003022 – 003024	10/15/2019	<u>Exhibit 4</u> – 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	<u>Exhibit 5</u> – 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	<u>Exhibit A</u> – City of North Las Vegas' Complaint
	19	003110 – 003111	07/11/019	<u>Exhibit B</u> – Affidavit of Aleema A. Dhalla, Esq.
	19	003112 – 003115	1988 - Present	<u>Exhibit C</u> – American Geotechnical Inc's Resume of Edred T. Marsh, Principal Geotechnical Engineer
	19	003116 – 003123	03/23/2007	<u>Exhibit D</u> – Legislative History of 11.258 Senate Bill 243
	19	003124 – 003137	12/11/2017	<u>Exhibit E</u> – American Geotechnical Inc's Geotechnical Investigation
	19	003138 – 003139	07/03/2019	<u>Exhibit F</u> – 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	<u>Exhibit 1</u> – 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	<u>Exhibit A</u> – City of North Las Vegas’ Complaint
	20	003348 – 003353	N/A	<u>Exhibit B</u> – Michael Panish Expert Witness & Consultants Construction Systems Curriculum Vitae
	20	003354 – 003361	03/23/2007	<u>Exhibit C</u> - 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	<u>Exhibit 1</u> – 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	<u>Exhibit A</u> – Clerk of the Court’s Notice of Hearing
	15	002295 – 002296	09/06/2019	<u>Exhibit B</u> – Court’s Notice of Rescheduling Motions to Dismiss and Joinders
	15	002297 – 002202	09/09/2019	<u>Exhibit C</u> – Emails re Rescheduling of Hearing
	15	002203 – 002304	09/10/2019	<u>Exhibit D</u> – Emails re Rescheduling of Hearing
	15	002305 – 002306	N/A	<u>Exhibit E</u> – 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	<u>Exhibit A</u> – City of North Las Vegas’ Complaint
	5	000682 – 000684	07/13/2009	<u>Exhibit B</u> – City of North Las Vegas’ Complaint Exhibit 4 Notice of Completion
	5	000685 – 000690	03/25/2019	<u>Exhibit C</u> - Nevada Legislature Website (80 th Session) Concerning the “Effective Date” of the AB 421
	5	000691 – 000693	07/11/2019	<u>Exhibit D</u> – Aleem A. Dhalla, Esq.’s Affidavit of Merit Attached to City of North Las Vegas’ Complaint
	5	000694 – 000707	12/11/2017	<u>Exhibit E</u> - American Geotechnical, Inc’s Geotechnical Investigation
	5	000708 – 000709	07/03/2019	<u>Exhibit F</u> – Declaration of Edred T. Marsh, P.E.
	5	000710 – 000717	03/23/2007	<u>Exhibit G</u> – 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	<u>Exhibit 1</u> – 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	<u>Exhibit 2</u> – 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	<u>Exhibit 3</u> – Court Recorder’s Transcript of Hearing: All Pending Motions
	16	002644 – 002646	10/15/2019	<u>Exhibit 4</u> – 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	<u>Exhibit 5</u> - 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	<u>Exhibit A</u> – Assembly Bill No. 221 – Committee on Judiciary 80 th Session (2019)
	14	002256 – 002257	2019	<u>Exhibit B</u> – 80 th Session (2019)
	15	002258 – 002271	12/11/2017	<u>Exhibit C</u> – 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	<u>Exhibit A</u> – Ninyo & Moore’s Geotechnical Evaluation
	19	003241 – 003254	12/11/2017	<u>Exhibit B</u> – 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	<u>Exhibit A</u> – City of North Las Vegas' Complaint
	17	002724 – 002740	08/05/2019	<u>Exhibit B</u> - 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	<u>Exhibit A</u> – City of North Las Vegas' Complaint
	17	002759 – 002761	07/13/2009	<u>Exhibit B</u> – City of North Las Vegas' Complaint Exhibit 4 Notice of Completion
	17	002762 – 002767	03/25/2019	<u>Exhibit C</u> – AB421
	17	002768 – 002770	07/11/2019	<u>Exhibit D</u> – Affidavit of Aleema A. Dhalla, Esq.
	17	002771 – 002784	12/11/2017	<u>Exhibit E</u> – American Geotechnical Inc's Geotechnical Investigation
	17	002785 – 002786	07/03/2019	<u>Exhibit F</u> – Declaration of Edred T. Marsh, P.E.
	17	002787 – 002794	03/23/2007	<u>Exhibit G</u> – Senate Bill 243 - 11.258
	17	002795 – 002796	08/06/2019	<u>Exhibit C</u> – Clerk of the Court's Notice of Hearing
	17	002797 – 002815	08/20/2019	<u>Exhibit D</u> – 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	<u>Exhibit E</u> – Richardson Construction, Inc.'s and The Guarantee Company of North America USA's Motion to Dismiss

17	002823 – 002824	09/06/2019	<u>Exhibit F</u> – Clerk of the Court’s Notice of Hearing
17	002825 – 002831	11/27/2019	<u>Exhibit G</u> – Register of Actions
17	002832 – 002833	09/10/2019	<u>Exhibit H</u> – Emails re Rescheduling of Hearing
17	002834 – 002846	09/18/2019	<u>Exhibit I</u> - 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	<u>Exhibit A</u> – Clerk of the Court’s Notice of Hearing
17	002849 – 002850	09/06/2019	<u>Exhibit B</u> – Court’s Notice of Rescheduling Motions to Dismiss and Joinders
17	002851 – 002856	09/09/019	<u>Exhibit C</u> – Emails re Rescheduling of Hearing
17	002857 – 002858	09/10/2019	<u>Exhibit D</u> – Emails re Rescheduling of Hearing
17	002859 – 002860	N/A	<u>Exhibit E</u> – Las Vegas Law Offices of Snell & Wilmer
17	002861 – 002862	09/20/2019	<u>Exhibit J</u> – 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	<u>Exhibit K</u> - 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	<u>Exhibit L</u> – Register of Actions A-19-798346-C
17	002872 – 002874	11/27/2019	<u>Exhibit M</u> – Register of Actions A-19-798346-C
17	002875 – 002880	09/30/3019	<u>Exhibit N</u> – 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	<u>Exhibit O</u> – 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
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Project: N. 4th St. Station #53
 Report No: 07502-01
 Date: LATERAL
 By: ACE Date: 03/10/04
 Checked: JN
 Date: 04/10/04

ANCHORAGE TO MASONRY WALLS OUT OF PLANE

Per ASCE 7-05: 12.11.2 ANCHORAGE OF
 MASONRY STRUCTURAL WALLS TO FLEXIBLE
 DIAPHRAGMS.

$$F_p = 0.8 S_o S I W_p \quad [12.11-1]$$

$$= 0.8 (0.681) (1.5) W_p$$

$$F_p = 0.817 W_p$$

Roof Anchorage For Area 2' Walls

CMU weight = 99 pcf (+ 5 cfm/cf)

- Along Gable end 3' High Roof (El. +29'-0")

$$W_p = 99 \text{ pcf} (6 \text{ ft} \times 10.67 \text{ ft}) = 6,408 \text{ lbs}$$

← Tributary Area Weight

$$F_p = 0.817 (6,408 \text{ lbs}) = 5,237 \text{ lbs}$$

For 5/8" ϕ Anchor Bolts @ 24" oc w/ Simpson
 SET High Strength Epoxy Adhesive

$$V_{allow} = 3,420 \text{ lbs} \times 3 \times 0.8 = 8,208 \text{ lbs}$$

← 6'24" oc

Allow F_p is OK

USE 5/8" ϕ Anchor @ 24" oc



- Along Girders 3 Low Roof (E. = 10.8°)

$$W_p = 94 \text{ psf} (6 \text{ ft} \times 10.33 \text{ ft}) = 5,826 \text{ lbs}$$

$$F_p = 0.817 (5,826 \text{ lbs}) = 4,760 \text{ lbs}$$

→ USE 3/8" ϕ ANCHORS @ 24" oc w/ SIMPSON SET HIGH STRENGTH EPOXY ADHESIVE.

$$V_{allow} = 5,826 \text{ lbs} \times 3 \times 0.8 = 8,208 \text{ lbs} > 4,760 \text{ lbs} \quad \therefore \text{OK}$$

- Along Girders 4 High Roof (E. = 10.8°)

$$W_p = 94 \text{ psf} (6 \text{ ft} \times 13 \text{ ft}) = 9,588 \text{ lbs}$$

$$F_p = 0.817 (9,588) = 7,833 \text{ lbs}$$

+ Per BC 2006 - 16.05.3.2, Equation 16-21

$$\frac{F_p}{A} = \frac{7,833 \text{ lbs}}{1.1} = 5,556 \text{ lbs}$$

→ USE 3/8" ϕ ANCHORS @ 24" oc w/ SIMPSON SET HIGH STRENGTH EPOXY ADHESIVE.

$$V_{allow} = 8,208 \text{ lbs} > 5,556 \text{ lbs} \quad \therefore \text{OK}$$

- Along Girders 4 Low Roof

Non-Bearing. 134 Inspection OK

ROOF ANCHORAGE FOR AREA 3 WELLS

8' CONCRETE WEIGHT & COL PSP

- Along Gridline 2

$$W_p = 6 \text{ psl} (6 \text{ ft} \times 11.33 \text{ ft}) = 4.147 \text{ lbs}$$

$$F_{pr} = 0.817 (4.147 \text{ lbs}) = 3.388 \text{ lbs}$$

→ USE 3/8" ANCHORS @ 14" ON W/ S. ANCHORS
SET IN STRENGTH & POLY ADHESIVE.

$$V_{allow} = 8.108 \text{ lbs} > 3.388 \text{ lbs} \quad \underline{\underline{OK}}$$

- Along Gridline 5

Now Braking ∴ Inspection OK

Tension and Shear Loads for Threaded Rod Anchors in 3-Inch Lightweight, Single-Span Concrete and Normal-Weight Broad Flat Slab CMU



Rod Dia. in.	Rod Dia. mm	Embedment Depth in.	Embedment Depth mm	Tension in.	Tension mm	Single-Span Slab CMU Allowable Loads Based on 28-Day Strength			
						Tension		Shear	
						Minimum No. Rods	Allowable No. Rods	Minimum No. Rods	Allowable No. Rods
Minimum Embedment Depth: 12-in. (305 mm) in 3-in. (76 mm) Slab CMU (See Figure 1)									
3/8	9.5	12	305	12	305	2	2	2	2
1/2	12.5	18	457	18	457	2	2	2	2
5/8	15.5	24	609	24	609	2	2	2	2
3/4	19.0	30	762	30	762	2	2	2	2
1	25.4	36	914	36	914	2	2	2	2

Fig. 1: See page 1 for details on the use of this table.



1. Threaded rods must comply with ASTM A 307 minimums.
2. Tables for 3-Inch wide CMU Slab CMU, Type II concrete masonry units conforming to UMC Standard 21-4 or ASTM C200.
3. The masonry units, when grouted, must be fully grouted with grout complying with UMC Section 2102.4. Grout is prepared in accordance with Section 2102.2 of the UMC and UMC Standard 21-13. The minimum specified compressive strength of grout is 4,000 psi (27.6 MPa).
4. Embedment depth is measured from the concrete face of the concrete masonry unit.
5. Allowable loads may be increased 10% for short-term loading due to wind forces or seismic forces when permitted by code.
6. Refer to the Seismic Performance Chart for allowable load adjustment for seismicity.
7. The tabulated allowable loads are based on a safety factor of 1.5 for installations under the UMC. For installations under 21-4 and 21-13, use a safety factor of 1.4. For use in other applications, use tabulated allowable loads by 1.40.
8. Refer to allowable load adjustment factors for wall thickness, edge distance and spacing of 12-in. (305 mm).

Positive and Tension Loads for Threaded Rod Anchors in 3-Inch and 4-Inch Lightweight, Medium Weight and Normal-Weight Broad Flat Slab CMU Rebar Installed in Cell Opening (Top of Wall) See Figure 2



Rod Dia. in.	Rod Dia. mm	Embedment Depth in.	Embedment Depth mm	Tension in.	Tension mm	4-Inch Slab CMU Allowable Loads Based on 28-Day Strength			
						Tension		Shear	
						Minimum No. Rods	Allowable No. Rods	Minimum No. Rods	Allowable No. Rods
Allowable Loads and Shear Values (ksi) (MPa) (Concrete Loads)									
3/8	9.5	12	305	12	305	2	2	2	2
1/2	12.5	18	457	18	457	2	2	2	2
5/8	15.5	24	609	24	609	2	2	2	2
3/4	19.0	30	762	30	762	2	2	2	2
1	25.4	36	914	36	914	2	2	2	2
Allowable Tension and Shear Values (ksi) (MPa) (Concrete Loads)									
3/8	9.5	12	305	12	305	2	2	2	2
1/2	12.5	18	457	18	457	2	2	2	2
5/8	15.5	24	609	24	609	2	2	2	2
3/4	19.0	30	762	30	762	2	2	2	2
1	25.4	36	914	36	914	2	2	2	2

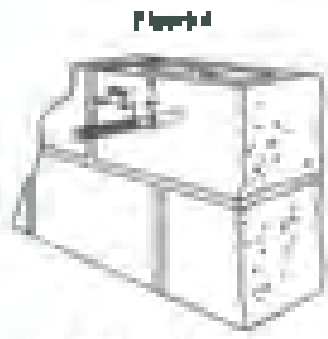


1. Single-Span Slab CMU, Type II concrete masonry units conforming to UMC Standard 21-4 or ASTM C200.
2. The masonry units, when grouted, must be fully grouted with grout complying with UMC Section 2102.4. Grout is prepared in accordance with Section 2102.2 of the UMC and UMC Standard 21-13. The minimum specified compressive strength of grout is 4,000 psi (27.6 MPa).
3. Embedment depth is measured from the concrete face of the concrete masonry unit.
4. Allowable loads may be increased 10% for short-term loading due to wind forces or seismic forces when permitted by code.
5. Refer to the Seismic Performance Chart for allowable load adjustment for seismicity.
6. The tabulated allowable loads are based on a safety factor of 1.5 for installations under the UMC. For installations under 21-4 and 21-13, use a safety factor of 1.4. For use in other applications, use tabulated allowable loads by 1.40.
7. Refer to allowable load adjustment factors for wall thickness, edge distance and spacing of 12-in. (305 mm).

Tension and Shear Loads for Threaded Rod Anchors in 4-Inch Lightweight, Medium Weight and Normal-Weight Broad Flat Slab CMU



Rod Dia. in.	Rod Dia. mm	Embedment Depth in.	Embedment Depth mm	Tension in.	Tension mm	4-Inch Slab CMU Allowable Loads Based on 28-Day Strength			
						Tension		Shear	
						Minimum No. Rods	Allowable No. Rods	Minimum No. Rods	Allowable No. Rods
Minimum Embedment Depth: 12-in. (305 mm) in 4-Inch Slab CMU (See Figure 3)									
3/8	9.5	12	305	12	305	2	2	2	2
1/2	12.5	18	457	18	457	2	2	2	2
5/8	15.5	24	609	24	609	2	2	2	2
3/4	19.0	30	762	30	762	2	2	2	2
1	25.4	36	914	36	914	2	2	2	2



1. Threaded rods must comply with ASTM A 307 minimums.
2. Tables for 4-Inch wide CMU Slab CMU, Type II concrete masonry units conforming to UMC Standard 21-4 or ASTM C200.
3. The masonry units, when grouted, must be fully grouted with grout complying with UMC Section 2102.4. Grout is prepared in accordance with Section 2102.2 of the UMC and UMC Standard 21-13. The minimum specified compressive strength of grout is 4,000 psi (27.6 MPa).
4. Embedment depth is measured from the concrete face of the concrete masonry unit.
5. Allowable loads may be increased 10% for short-term loading due to wind forces or seismic forces when permitted by code.
6. Refer to the Seismic Performance Chart for allowable load adjustment for seismicity.
7. The tabulated allowable loads are based on a safety factor of 1.5 for installations under the UMC. For installations under 21-4 and 21-13, use a safety factor of 1.4. For use in other applications, use tabulated allowable loads by 1.40.
8. Refer to allowable load adjustment factors for wall thickness, edge distance and spacing of 12-in. (305 mm).

Mechanical Unit Anchorage

* ASCE 7-05, SECTION 13.3

$$F_p = 0.4 a_p S_{os} W_p \left(1 + 2 \frac{z}{R} \right) \quad [13.3-1]$$

$$\left(\frac{R_p}{I_p} \right)$$

$$0.3 S_{os} a_p W_p < F_p < 1.6 S_{os} a_p W_p$$

$$S_{os} = 0.681$$

$$a_p = 1.25$$

$$W_p = 900 \text{ lbs}$$

$$a_p = 1.0$$

$$R_p = 2.5$$

$$F_p = 0.4 (1.0) (0.681) (900) \left(1 + 2 \left(\frac{1}{2.5} \right) \right)$$

$$F_p = 363.74 \text{ lbs}$$

$$0.3 (0.681) (1.25) (900) < F_p < 1.6 (0.681) (1.25) (900)$$

$$229.8 < F_p < 1,225.8 \quad \therefore \underline{OK}$$

$$\underline{\underline{F_p = 363.74 \text{ lbs}}}$$

ALVO Station #53
 04503-01
 MICH. UNIT ANCHORAGE
 L18 10/10/02
 L18

Overturning Moment:

$$M_o = F_o h = (370 \text{ lbs})(12 \text{ ft}) = 4440 \text{ lb-ft}$$

Resisting Moment:

$$M_R = W_o \frac{B}{2} = 900 \text{ lbs} \times \frac{2 \text{ ft}}{2} = 900 \text{ lb-ft}$$

$$\frac{M_o}{M_R} = \frac{4440 \text{ lb-ft}}{900 \text{ lb-ft}} = 4.93 > 1.0 \text{ : OK}$$

NO UPLIFT, ONLY NEGATIVE MOMENT FOR SIZING BOLTS

USE 3/8" x 20 BOLT x 24" or (max)
 TO CONNECT THE UNIT TO THE CURB.

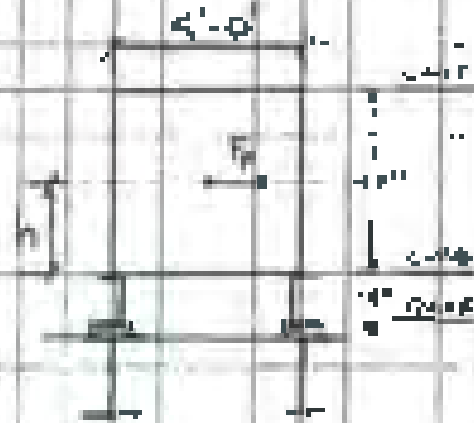
$$V_{unit} = \frac{370 \text{ lbs}}{6 \text{ bolts}} = 62 \text{ lbs/bolt}$$

3 bolts on each side of curb (length of curb = 6'-0")

USE 1/2" x 10 W10, 2' x 24" or
 TO CONNECT THE CURB TO THE CHANNEL

$$F_{allow} = (0.9)(60)(2)(6.2) = 11.1 \text{ K} > 37 \text{ K : OK}$$

Y_B [7'-2"] W10



ESG Evaluation Service, Inc.
www.esg-eval.com

Headquarters Office: 1000 Highway 101 West, Suite 200, Carlsbad, CA 92008-4800
Regional Office: 1000 Highway 101 West, Suite 200, San Diego, CA 92108-4800
Regional Office: 1000 Highway 101 West, Suite 200, San Jose, CA 95128-4800

DIVISION 05—CONCRETE Section 05111—Concrete Anchoring

SYSTEM: H-ANCHOR™
Supplier: Galfast—Aluminum Anchors

REPORT NUMBER

SYSTEM STRONG-TIE COMPANY, INC.
1000 STREET 1, SAN JOSE, CA 95128-4800
SAN JOSE, CA 95128-4800
www.strong-tie.com

EVALUATION SUBJECT

FIELD NO. BENCH MARK

1.1 Installation Notes

Compliance with the following notes:

- 1060 International Building Code® (2000 IBC)
- 7050 International Residential Code® (2003 IRC)
- 2003 International Building Code® (2003 IBC)
- 2003 International Residential Code® (2003 IRC)
- 1997 Uniform Building Code® (UBC)

Product Description

Details

2.0 UNCL

The H-ANCHOR system is for installation in precast holes in normal-weight concrete, structural steel-lightweight concrete or masonry block, and fully grouted concrete masonry wall construction.

The H-ANCHOR system profile is an alternative to that of the H-ANCHOR system shown in IBC Section 1912 and UBC Section 1903.1. The system is permitted to be used in applications regulated by the IBC, provided an engineered design is submitted in accordance with IBC Section 1903.1.2.

2.1 DESCRIPTION

2.1.1 Materials

2.1.1.1 The H-ANCHOR system (the H-ANCHOR system) is a carbon steel threaded anchor with a non-ferrous head. The system anchor is manufactured from high tensile steel complying with AISC 360M Grade 50 and has a zinc or electrocoat coating of zinc in accordance with ASTM A 153, Class B, Type 1.

Three H-ANCHOR anchors are available per nominal $\frac{1}{2}$, $\frac{3}{4}$, $1\frac{1}{2}$, and $2\frac{1}{2}$ inch (12.7, 19.1, 38.1 and 63.5 mm) diameters and with various lengths for multiple embedments as noted in the table in this report. Refer to Figure 1 for an illustration of a typical system anchor.

2.1.1.2 Normal-weight Concrete: Concrete must be non-proprietary normal-weight concrete having a minimum compressive strength as specified in Section 1912.1 of the IBC, Section 1903.1 of the UBC, or as noted in the table in this report; otherwise, it must be the same as anchor installation. Minimum concrete strength is $\frac{1}{3}$ times the anchor embedment at the location of anchor installation.

2.1.1.3 Structural Steel-lightweight Concrete-Wall Masonry Assembly

2.1.1.3.1 Metal Deck: The metal deck shall be minimum 16 gauge (0.058 inch (1.49 mm) thick) galvanized steel, galvanized steel conforming to ASTM A 653/A 653M with a minimum plate strength of 30 ksi (207 MPa) or a minimum ultimate strength of 45 ksi (310 MPa). Figure 2 illustrates required metal-deck bottom-flute dimensions: a minimum of 4½ inches (114 mm) wide, a maximum of 3 inches (76 mm) deep, and with a minimum spacing of 12 inches (305 mm) between decks having greater bottom-flute widths and deeper spacing shall be permitted.

2.1.1.3.2 Concrete Wall: The structural steel-lightweight concrete wall must have a minimum 3,000 psi (207 MPa) compressive strength at time of anchor installation. Requirements for structural steel-lightweight concrete wall comply with Section 1912.1 of AISC 360 or UBC Section 1903.1. Minimum concrete thickness shall be from the top flange to 1½ inches (38 mm). Refer to Figure 2.

2.1.1.4 Grout-filled Concrete Masonry: When other walls are required, the compressive strength of masonry f_m of 20 ksi shall be a minimum of 1,500 psi (103 MPa). Fully grouted masonry walls shall be constructed from the following materials:

2.1.1.4.1 Concrete Masonry Units (CMU): CMU must be minimum Grade 8 Type 3, lightweight, medium-weight, or normal-weight conforming to ASTM C 90 or UBC Standard 1914. The maximum allowable nominal size of the CMU shall be 8 inches (203 mm) wide by 8 inches (203 mm) high by 16 inches (406 mm) long. f_m shall be 1,500 psi.

2.1.1.4.2 Grout: Grout shall comply with IBC Section 1912.1.4 or UBC Section 1903.1.4, or UBC Section 1912.1.4, as applicable. Alternatively, the grout shall have a minimum compressive strength when tested in accordance with ASTM C 1018 equal to the specified strength. The test shall not be less than 1,500 psi (103 MPa).

2.1.1.4.3 Mortar: Mortar shall comply with IBC Section 1912.1.4, UBC Section 1903.1, or UBC Section 1912.1.4 and UBC Standard 1914 as applicable. The mortar shall have a minimum compressive strength of 1,500 psi (103 MPa).

Comments January 2007

ESG Evaluation Service, Inc. is not a certified engineering firm. It is not responsible for the design, construction, or installation of the system or for the safety of the system. It is not responsible for the safety of the system. It is not responsible for the safety of the system. It is not responsible for the safety of the system.



2.2 Design

2.2.1 **Design of Anchors Installed in the Top or Bottom of Structural Self-Supporting Concrete Pillar Masonry Walls** Allowable tensile and shear loads for anchors installed in self-supporting concrete pillars (including masonry design) use of the anchors to resist tension and bending loads, such as those produced by wind-sucking negative lateral wind suction is beyond the scope of this report.

2.2.2 **Design of Anchors in Reinforced-concrete Concrete Masonry Walls and Other Walls for Resistance to Compressive Forces** are noted in Tables 2 through 6. Tension and shear capacity requirements are noted in Tables 1 through 8. Allowable load resistance factors noted in Table 2 are applicable only to the allowable loads noted in Tables 3 and 4.

Allowable loads for anchors installed in normal-weight concrete subjected to combined shear and tension forces shall be determined by the following equation:

$$\frac{P_u}{\phi_t} + \frac{V_u}{\phi_v} \leq \phi_c A_n f_{tcr}$$

where

- P_u = Applied service tension load
- V_u = Allowable service shear load
- V_c = Applied service shear load
- V_n = Allowable service shear load

2.2.3 **Design of Anchors Installed in the Top or Bottom of Structural Self-Supporting Concrete Pillar Masonry Walls** Allowable tensile and shear loads and spacing and edge distance requirements for anchors installed in the top or bottom of structural self-supporting concrete pillar masonry walls are noted in Table 7. Refer to Figure 2 for applied geometry details.

Anchors installed in the top of structural self-supporting concrete pillar masonry walls shall be designed using the following design provisions. Anchors tension and shear loads may be increased by 30% percent when using the ultimate limit load combinations in accordance with Section 405.3.2 of the NBC or Section 412.3.2 of the CBC for use in earthquake loading conditions. Alternatively, the load combinations in NBC Section 405.3.2 may be multiplied by a factor of 0.75.

Anchors installed in the bottom of structural self-supporting concrete pillar masonry walls shall be designed using the following design provisions.

Allowable tension loads for anchors shall be determined only as permitted by 30% percent when using the ultimate limit load combinations in accordance with Section 405.3.2 of the NBC or Section 412.3.2 of the CBC for use in earthquake loading conditions. Alternatively, the load combinations in NBC Section 405.3.2 may be multiplied by a factor of 0.75.

Allowable shear loads for anchors shall be determined only as permitted when using the ultimate limit load combinations in accordance with Section 405.3.2 of the NBC or Section 412.3.2 of the CBC for use in earthquake loading conditions.

Allowable loads for anchors installed only the top in bottom of structural self-supporting concrete pillar masonry walls shall be determined in combined shear and tension forces shall be determined by the following equation:

$$\frac{P_u}{\phi_t} + \frac{V_u}{\phi_v} \leq \phi_c A_n f_{tcr}$$

where

- P_u = Applied service tension load
- V_u = Allowable service shear load
- V_c = Applied service shear load
- V_n = Allowable service shear load

2.2.4 **Design of Anchors Installed in Fully Grouted CMU Masonry Walls** Allowable tensile and shear loads for anchors installed in the face of fully grouted CMU masonry walls are noted in Table 8 for anchors complying with the CBC or NBC and Table 9 for anchors complying with the NBC. The allowable tension and shear loads for anchors installed in the grouted cells, the cavity wall of CMU walls, and horizontal masonry (and joints of fully grouted CMU) masonry and construction Allowable loads for anchors installed in the surface layer joint in the end of the fully grouted CMU wall are outside the scope of this report. Edge and end distances, and spacing requirements for anchors installed in the face of fully grouted CMU masonry walls as shown in Figure 3, are noted in Tables 10 and 11. Allowable load reduction factors for anchors installed in masonry walls and end distances, and reduced spacing, are noted in Tables 12 and 13.

Allowable tension and shear loads for 1/2-inch and 3/8-inch (12.7 mm and 9.5 mm) anchors installed in the top of fully grouted concrete masonry walls (CMU) grouted cores and CMU walls are noted in Table 14 for anchors installed in masonry complying with the CBC or NBC, and Table 15 for anchors installed in masonry complying with the NBC.

When using the ultimate limit load combinations in NBC Section 405.3.2 or NBC Section 412.3.2 for design of anchors installed in the face and the top of fully grouted CMU masonry walls, only be increased by 30% percent. However, the load combinations in NBC Section 405.3.2 may be multiplied by a factor of 0.75.

Allowable loads for anchors installed in the face of fully grouted CMU masonry walls subjected to combined shear and tension forces shall be determined by the following equation:

$$\frac{P_u}{\phi_t} + \frac{V_u}{\phi_v} \leq \phi_c A_n f_{tcr}$$

where

- P_u = Applied service tension load
- V_u = Allowable service shear load
- V_c = Applied service shear load
- V_n = Allowable service shear load

2.3 INSTALLATION

2.3.1 General

Figure H2 shows anchors shall be installed by drilling a hole into the substrate using a carbide-tipped pre-drill bit and the substrate with a carbide-tipped drill bit. The hole shall be 1/2 inch (12.7 mm) in diameter and the nominal diameter of the anchor. The hole is drilled to the specified depth (depth plus 1/2 inch (12.7 mm)). Drill and clean the hole and the removed by using pliers, compressed air. The H2 shows anchor shall be placed into the hole to the required embedment using a pocket wrench or power torque wrench.

2.3.2 **Anchors Installed in Fully Grouted CMU Masonry Walls** Anchors installed in the face of fully grouted CMU masonry walls shall be installed in the face of fully grouted CMU masonry walls as shown in Figure 3, are noted in Tables 10 and 11.

construction shall be finished at the same stage of the C&U work (jacking, setting and grouting of piles), and the Portland Cement Mortar shall, as indicated by the shaded areas in Figure 3. Additionally, finished to a 1:1 sand: fine crushed stone joint, as the sand and stone of a C&U unit, as indicated in the non-shaded areas in Figure 3, are suitable for the same of the stone.

For anchors installed in the face of fully grouted concrete masonry walls (CMU), grouted concrete (CGM) must be placed against the wall face and the masonry edge and are shown in Tables 11 and 12 and shown in Figure 4. Anchors installed in the masonry head joint are outside the scope of this report.

4. Explain the importance of the following factors in the development of a country's economy:

Continuous special measures shall be provided where required by the Tabled in Part Installation report. Special measures under the NBC are also shall conform to NBC Section 1.304, under the NBC special measures shall be in accordance with NBC Section 1.301.

For Ductwork installed with applied tape/joint, the following items are acceptable, shall be measured however type and distribution, ductwork type and suitable compressive strength for anchors installed in concrete, masonry wall type and compliance with AS/NZS 15:1991 for joint and corner compressive strength, and (after required) necessary pipe compression strength, and an air and compliance with AS/NZS 15:1991 and fastener embedment, spacing, and edge and end distances. The specialist shall inspect and verify that anchor installation complies with the evaluation report and design strength. Company's patented resistor from above.

[illegible]

The Time HD Brown Archery described in this report covers only, in an extreme comparison to what is specified in the order form in Section 1.5 of the report, subject to the following conditions:

- 6.1 **ANCHORS AND EMBEDDED ARE EMBEDDED IN ACCORDANCE WITH THE REPORT AND THE MANUFACTURER'S SUBMITTED REINFORCING DETAILINGS.**
- 6.2 **ANCHORS EMBEDDED IN FURTHER-UPPER DECKING TO TRANSFER LIVE, DEAD AND SEISMICALLY INDUCED ACCELERATIONS SHALL BE IN ACCORDANCE WITH SECTIONS 3.3.3 AND 3.3.4 TO 3.3.10.**
- 6.3 **ANCHORS EMBEDDED FOR THE TOP OF COLUMN OF STRUCTURE AND LIGHTWEIGHT CONCRETE FILLD FRAME-CORE ASSEMBLIES TO DEVELOP FULL TENSILE AND COMPRESSION LOAD APPLICATIONS SHALL BE IN ACCORDANCE WITH SECTION 3.3.3.**
- 6.4 **ANCHORS EMBEDDED IN THE BASE OF THE WALL OF FULLY GRADED (GFI) REINFORCY WALLS TO DEVELOP FULL, TENSILE, AND SEISMICALLY LOAD APPLICATIONS SHALL BE IN ACCORDANCE WITH SECTION 3.3.4.**
- 6.5 **WALLS W/C OR W/O GFI: Joints of the structure in special seismic zones or categories in SEISMIC ZONE 2 of the report. When using the basic load considerations in accordance with SBC Section 1805.3.1.1, additional loads are not permitted to be increased for wind loading. When using the alternative basic load considerations in SBC Section 1805.3.2 For seismic wind loads, the allowable stress and moment shall be increased 25 percent or the allowable basic wind moment shall be increased by a factor of 1.25.**
- 6.6 **WALLS W/C OR W/O GFI: After using the basic load considerations in accordance with SBC Section 1805.3.1.1, additional loads are not permitted to be increased by applying wind moment loading. When using the alternative basic load considerations in SBC Section**

FIGURE 3.3 Fuel transfer means or other means, by alternative means and various means for various uses permitted to be improved by 2011, percent, as they improve. (Note: Data for 2011 are not available.)

- [illegible]

§ 1.7 There are ICC-ES acceptance criteria for evaluating the performance of bolts, anchors in cracked concrete is unavailable at this time, the use of anchors is limited to installation in uncracked concrete. Cracking occurs after $\xi > \xi_c$ due to service loads or displacements.

§ 1.8 Anchors are installed in accordance with notes provided with Uni-Seal-epoxy masonry drill bits complying with ANSI B212.13-1998, and tying the device BarBolt to the nominal diameter of the anchor.

§ 1.14 Engineers demonstrating that the applied loads are less than the ultimate loads described in test report shall be submitted to the building official. The specifications shall be prepared by a registered design professional whose credentials are needed by the project or the jurisdiction in which the project is to be constructed.

§ 1.18 Special inspections, when required, shall be provided in accordance with Section 4.2.

§ 1.19 Anchors shall be tested in dry, master unit.

§ 1.17 The Titan HD epoxy anchors are manufactured by Simpson Strong-Tie Company at a facility in Brampton, Ontario, Canada, under a quality control program with inspection by CFI Consulting (USA-USA).

4.4 EVIDENCE SUBMITTED

§ 1.1 CFI is in compliance with the ICC-ES Acceptance Criteria for Fastened Fasteners (Bolted Anchors) in Concrete and Masonry (AC108) under test 300, including the following special notes.

§ 1.1.1 Anchors installed in normal weight concrete. Effects of edge distance on tension and shear performance.

(Test Series 4, 5, 9, 1, 2, 10, 11, and 12 of AC108), effects of spacing on tension and shear performance (Test Series 8 and 13 of AC108), ultimate load tests (Test Series 10 and 20 of AC108) and seismic performance tests (Section 4.5 of AC108).

§ 1.2 Anchors installed in the top and bottom of structural reinforced concrete and masonry members. Effects of edge distance on tension and shear performance (Test Series 4 and 5 of AC108) and seismic performance tests (Section 4.5 of AC108).

§ 1.3 Anchors installed in the face of fully grouted CMU masonry wall construction. Effects of edge distance on tension and shear performance (Test Series 4, 5, 13 and 14 of AC108) and seismic performance tests (Section 4.5 of AC108).

§ 1.4 Anchors installed in the face of fully grouted CMU masonry wall construction with a minimum 1% steel reinforcement. Effects on tension and shear performance (Test Series 4 and 13 of AC108) and seismic performance tests (Section 4.5 of AC108).

§ 1.5 A quality control manual.

7.0 SUBMITTALS

Titan HD epoxy anchors packaging is marked with the Simpson Strong-Tie Company name, product name (Titan HD), anchor diameter and length, the name or logo of the inspection agency (CFI Consulting) and the installation report number (USA-USA). In addition, the 4 symbols and anchor length (in inches) is stamped on the front of each batch label.

L-14



FIGURE 1—FACILE TYPING BOARD ARCHIVE

TABLE 1—SPACING AND EDGE DISTANCE REQUIREMENTS FOR TYPING BOARD ARCHIVE
(Distances Indicated in International Centimeters)^a

ARCHIVE CLASSIFICATION (TYPE)	MINIMUM SPACING OR EDGE DISTANCE (mm)	EDGE DISTANCE (mm)			SPACING (mm)	
		Top/Bottom	Inner	Front/Back or Outer	SPACING TO INNER	
		Critical Edge Distance, C_{cr}	Critical Edge Distance, C_{cr}	Minimum Edge Distance, C_{min}	Critical Spacing, S_{cr}	Minimum Spacing, S_{min}
1	15	1	1	1	1	1
	20					
2	15	1	1	1	1	1
	20					
	25					
3	15	1	1	1	1	1
	20					
	25					
4	15	1	1	1	1	1
	20					
	25					

For 800, 1 inch = 25.4 mm.

^aThe spacing and edge distance requirements in this table are applicable only to Tables 3 and 4.^bThe critical edge and spacing distances are for full stroke capacity, and the minimum edge and spacing distances are for reduced stroke capacity. See Table 1 for application and indicator factors for stroke limited as indicated, and for the critical edge spacing to tape for stroke limited coding.TABLE 2—LOAD REDUCTION FACTORS FOR TYPING BOARD ARCHIVE
(Distances Indicated in International Centimeters)^a

ARCHIVE CLASSIFICATION (TYPE)	MINIMUM SPACING OR EDGE DISTANCE (mm)	EDGE DISTANCE (mm)			SPACING (mm)		
		Spacing or Edge	Top/Bottom	Inner	Top/Bottom or Inner	Front/Back	Outer
		Critical Edge Distance, C_{cr}	Minimum Edge Distance, C_{min}	Minimum Edge Distance, C_{min}	Critical Spacing, S_{cr}	Minimum Spacing, S_{min}	Minimum Spacing, S_{min}
1	15	1.0	1.00	0.50	1.0	0.50	0.75
	20		0.75	0.25		0.50	0.75
2	15	1.0	0.50	0.25	1.0	0.50	0.75
	20		0.25	0.00		0.50	0.75
	25		0.25	0.00		0.50	0.75
3	15	1.0	0.25	0.00	1.0	0.50	0.75
	20		0.00	0.00		0.50	0.75
	25		0.00	0.00		0.50	0.75
4	15	1.0	0.00	0.00	1.0	0.50	0.75
	20		0.00	0.00		0.50	0.75
	25		0.00	0.00		0.50	0.75

For 800, 1 inch = 25.4 mm.

^aThe edge distance factors in this table are applicable only to the elements made shown in Tables 3 and 4.^bDistances for stroke limited spacing, edge distance, top/Bottom, inner, front/Back, and outer are spacing or edge distance are indicated, minimum and reduced stroke capacity. See Table 1 for application and indicator factors for stroke limited as indicated, and for the critical edge spacing to tape for stroke limited coding. Load reduction factors for stroke limited as indicated, and for the critical edge spacing to tape for stroke limited coding.

[illegible]

Machine Diameter (mm)	Shell Int. Diameter (mm)	Minimum Compression Depth (mm)	Cavity Wall Thickness (mm)	Cavity Length (mm)	Mold Filled With Special Insulation			Installed Without Special Insulation		
					Compressive Strength, f_c (psi)			Cavity Strength, f_r (psi)		
					100%	200%	300%	100%	200%	300%
1	1	f_{c1}	1	4	100%	100%	100%	100%	100%	100%
		200%			200%	200%	200%	200%	200%	
2	2	f_{c2}	2	8	100%	100%	100%	100%	100%	100%
		200%			200%	200%	200%	200%	200%	
3	3	f_{c3}	3	12	100%	100%	100%	100%	100%	100%
		200%			200%	200%	200%	200%	200%	
4	4	f_{c4}	4	16	100%	100%	100%	100%	100%	100%
		200%			200%	200%	200%	200%	200%	
5	5	f_{c5}	5	20	100%	100%	100%	100%	100%	100%
		200%			200%	200%	200%	200%	200%	

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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The effect of environmental loading conditions on engine loads may be assessed in accordance with Section 4.2.

1. **Author:** [Name]

edge distance and spacing and comply with Table 1

*The 2003 paid loads are for another year of its normal weight

¹ www.fishbase.org. Accessed 10 January 2012.

*Transmittance data for samples with other fine particles (e.g., kaolinite) will require special procedures, as will low- β fluid beds (e.g., air fluidization).

[illegible]

**7. Find a suitable phrase to use for this ad before making
an initial contact with the company.**

INCHES DIACTION (mm)	ORILL BY DIACTION ² (mm)	VERTICAL CORRECTION ³ DIPPER (mm)	VERTICAL BASIC CORRECTION ⁴ (mm)	VERTICAL BY AGING ⁵ DIPPER	ALL OPERABLE BEARING LOCATIONS (mm)		
					Corrosion Penetration, P, (mm)		
					0.000	0.000	0.000
1/2	1/2	P ₁	P ₂	d	P ₁ 000	P ₁ 000	P ₁ 000
		P ₁ 000			P ₁ 000	P ₁ 000	
1/2	1/2	P ₂	P ₂	d	P ₂ 000	P ₂ 000	P ₂ 000
		P ₂			P ₂ 000	P ₂ 000	
		P ₂			P ₂ 000	P ₂ 000	
1/2	1/2	P ₃	P ₃	d	P ₃ 000	P ₃ 000	P ₃ 000
		P ₃			P ₃ 000	P ₃ 000	
		P ₃			P ₃ 000	P ₃ 000	
1/2	1/2	P ₄	P ₄	d	P ₄ 000	P ₄ 000	P ₄ 000
		P ₄			P ₄ 000	P ₄ 000	
		P ₄			P ₄ 000	P ₄ 000	
1/2	1/2	P ₅	P ₅	d	P ₅ 000	P ₅ 000	P ₅ 000
		P ₅			P ₅ 000	P ₅ 000	
		P ₅			P ₅ 000	P ₅ 000	

Figure 1

The effect of waterborne and/or added formaldehyde on the growth of *Trichoderma* in comparison with *Penicillium* is shown in Table II.

Keywords: adolescents; self-esteem; social support; coping strategies

[illegible]

The physical maps are for authors' use only. They are not to be used for any other purpose, including reproduction or distribution.

¹ Another possibility of such a result with factor 1 is of course that

* *Journal of Management Education* 32(10):1139-1152, 2008. © 2008 Sage Publications

TABLE 1005C—ALLOWABLE TENSILE LOADS FOR STEEL-PIPE BOLTERS INSTALLED IN THE TOP SURFACE OF NORMAL-WEIGHT CONCRETE

ANCHOR CHARACTER CLASS	DEVL. INT CHARACTER CLASS	MINIMUM CONCRETE STRENGTH (PSI)	MINIMUM EDGE OR SPACING (INCHES)	MINIMUM END DISTANCE (INCHES)	CORREL. SPACING (INCHES)	ALLOWABLE TENSILE LOAD PARALLEL TO THE CONCRETE SURFACE (POUNDS)
1	1	4000	4	4	8	1,000
		4500				1,250
		5000				1,500
2	2	4000	4	4	8	1,250
		5000				1,500

For 100 ° F max. < 25.0 mm, 1 ksi < 6.88 N, 1 psi < 0.07 N/mm².

For steel or earthquake loading conditions, allowable loads may be adjusted in accordance with Section 5.5.

Minimum concrete thickness is 12 inches from the anchor embedment.

Minimum cover over edge and end distances, and other spacing parameters and maximum of the following apply.

The indicated loads are for anchors installed in normal-weight concrete having a minimum compressive strength f'_c as shown in anchor installation.

The steel bolt diameter shall be equal to the nominal diameter of the anchor. Anchor installation shall comply with Section 5.5 in the report.

Allowable loads shall not be exceeded when the anchors are installed with special inspection.

TABLE 1005D—ALLOWABLE TENSILE LOADS FOR STEEL-PIPE BOLTERS INSTALLED IN THE TOP SURFACE OF NORMAL-WEIGHT CONCRETE FOR STEEL-PIPE BOLTER CLASS 1

ANCHOR CHARACTER CLASS	DEVL. INT CHARACTER CLASS	MINIMUM ANCHOR CLASS (MIN. EMBED. INCHES)	MINIMUM CONCRETE STRENGTH (PSI)	ANCHOR LOCATION (Inches)		ALLOWABLE TENSILE LOADS (POUNDS)			
				Edge and Distance	End Distance	Concrete Compressive Strength, f'_c			
						$f'_c = 4,000$ psi		$f'_c = 4,500$ psi	
						For steel with Special Inspection ¹	For steel without Special Inspection ²	For steel with Special Inspection ¹	For steel without Special Inspection ²
1	1	12	4	4	8	1,000	1,000	1,250	1,250
2	2	10	4	4	4	1,250	1,250	1,500	1,500

For 100 ° F max. < 25.0 mm, 1 ksi < 6.88 N, 1 psi < 0.07 N/mm².

For steel or earthquake loading conditions, allowable loads may be adjusted in accordance with Section 5.5.

Minimum concrete thickness is 12 inches.

Minimum cover over edge and end distances, and other spacing parameters and maximum of the following apply.

The indicated loads are for anchors installed in normal-weight concrete having a minimum compressive strength f'_c as shown in the report. For steel with Special Inspection.

Anchor installation shall comply with Section 5.5 of the report.

Minimum cover over edge and end distances and spacing parameters in the following table.

These anchors shall not be installed only when the anchors are installed with special inspection as per Section 5.5 in the report.

These anchors shall not be installed when the anchors are installed without special inspection.

TABLE 1—ANCHORAGE REQUIREMENTS FOR TYPICAL ROOF ANCHORS
 INSTALLED ON TOP OR BOTTOM OF STRUCTURAL SAND-LIGHTWEIGHT CONCRETE ($f'_c = 3,000$ psi)
 AND REINFORCED CONCRETE

ANCHOR TYPE	ANCHOR SIZE (IN.)	MINIMUM ANCHOR EMBEDMENT DEPTH (IN.)	ANCHOR LOCATION/DRILL			ALLOWABLE LOADS (KIP)		
			Edge Distance		Spacing	Tension		Shear
			Minimum	Control		Vertical (per Embedment)	Horizontal (per Embedment)	
ANCHORS INSTALLED IN THE TOP OF STRUCTURAL SAND-LIGHTWEIGHT CONCRETE AND REINFORCED CONCRETE								
1	1/2	12	8	4	4	44	100	1.00
2	3/4	18	8	4	4	60	130	1.30
3	1	24	12	6	6	76	170	1.70
ANCHORS INSTALLED IN BOTTOM FLAT OF STRUCTURAL SAND-LIGHTWEIGHT CONCRETE AND REINFORCED CONCRETE								
1	1/2	12	1 1/2	1/2	8	1.00	875	1.00
2	3/4	18	1 1/2	1/2	8	1.40	875	1.40
3	1	24	1 1/2	1/2	8	2.00	1,175	2.00

For all Tensile = 1.5 times V, V = 4.45 K, 1 psi = 0.007 MPa.

1. The assembly shall consist of a metal deck and structural sand-lightweight concrete fill.

- The steel deck shall be steel conforming to ASTM A 568 Grade 50 with a minimum yield strength of 50,000 psi and minimum tensile strength of 60,000 psi, and shall have a minimum thickness of 5/16 in. (3.9 mm) for 1/2 in. (12.7 mm) anchors and 3/16 in. (4.8 mm) for 3/4 in. (19.1 mm) anchors. The steel deck shall have a minimum thickness of 5/16 in. (3.9 mm) for 1/2 in. (12.7 mm) anchors and 3/4 in. (19.1 mm) for 3/4 in. (19.1 mm) anchors. The steel deck shall have a minimum thickness of 5/16 in. (3.9 mm) for 1/2 in. (12.7 mm) anchors and 3/4 in. (19.1 mm) for 3/4 in. (19.1 mm) anchors.

- The structural sand-lightweight concrete shall have a minimum concrete compressive strength, f'_c , at the time of anchor installation of 3,000 psi, and shall have a minimum thickness of 2 in. (51 mm) measured from the top flange. Refer to Figure 2.

Anchor installation shall comply with Section 4.3 of this report.

Anchor edge distance and spacing shall comply with calculated limits, per AISC applications.

Type of anchors supplied in the top or bottom of structural sand-lightweight concrete and metal deck assemblies shall be permitted to resist axial or shear loads only and shall comply with Section 4.3.3 for design requirements for anchors. Refer to Figure 2 for details of the assembly and to Section 4.3 for details of the assembly.

These design loads are applicable only when the anchors are installed with minimum embedment as set forth in Section 4.3 of this report.

These design loads are applicable for anchors installed without special lap joints.

Anchor and steel deck are to be installed with a minimum embedment.

Anchor and steel deck are to be installed with a minimum embedment. Refer to Figure 2 for details of the assembly and to Section 4.3 for details of the assembly.

Anchor and steel deck are to be installed with a minimum embedment. Refer to Figure 2 for details of the assembly and to Section 4.3 for details of the assembly.

- 1. Refer to Figure 2 for details of the assembly.
- 2. Refer to Figure 2 for details of the assembly.
- 3. Refer to Figure 2 for details of the assembly.

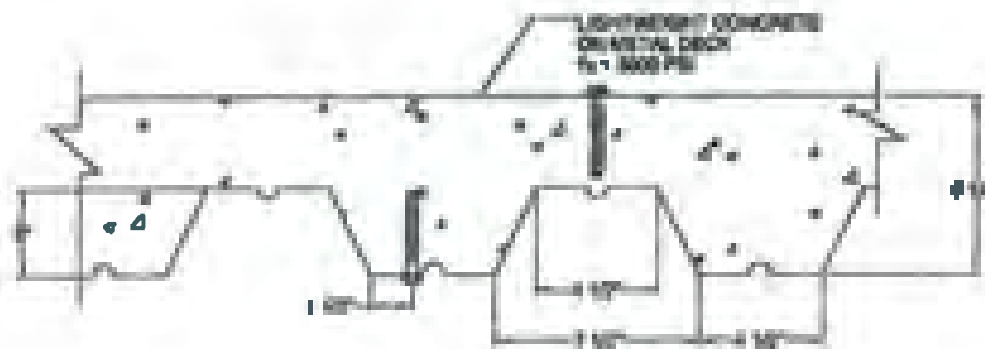


FIGURE 2—TYPICAL ROOF ANCHOR INSTALLATION IN THE TOP AND BOTTOM OF A STRUCTURAL SAND-LIGHTWEIGHT CONCRETE AND REINFORCED CONCRETE

TABLE 10—SPEC AND THE ALLOWABLE TENSILE AND SHEAR STRESS FOR STEEL AND ALUMINUM ANCHORS INSTALLED IN THE FACE OF CONCRETE OR MASONRY WALLS

ANCHOR DIA. d_A (in.)	DRILL DIA. d_h (in.)	MIN. EMBEDMENT f_{em} (in.)	ANCHOR LOCATION DEPENDENT				ANCHOR DISTANCES TO CENTERLINE OF CANTILEVERED WALL OR EDGE OF WALL	
			Edge Distance		Spacing		Top edge	End edge
			CRITICAL d_{ec}	MINIMUM d_{em}	CRITICAL s_{ec}	MINIMUM s_{em}		
1/2	3/4	8"	4	4	4	3	48"	8"
3/4	1	8"	12	8	8	4	48"	12"
1	1 1/4	8"	18	12	12	8	120"	24"
1 1/4	1 3/4	8"	12	12	12	8	120"	24"

For 100% concrete, f_{em} and f_{ec} are 12" and 12" respectively. For 100% steel, f_{em} and f_{ec} are 12" and 12" respectively.

Anchor and rebar spacing requirements of 12" between bars are based on the fact that the 12" spacing is the maximum spacing between bars in a concrete wall.

The 48" and 120" spacing requirements are based on the diameter of the anchor. Anchor spacing requirements are based on the fact that the 48" and 120" spacing requirements are based on the diameter of the anchor.

Anchor and rebar spacing requirements are based on the diameter of the anchor.

Typical wall spacing requirements are based on the diameter of the anchor. The 48" and 120" spacing requirements are based on the diameter of the anchor. The 48" and 120" spacing requirements are based on the diameter of the anchor.

Typical wall spacing requirements are based on the diameter of the anchor. The 48" and 120" spacing requirements are based on the diameter of the anchor. The 48" and 120" spacing requirements are based on the diameter of the anchor.

Typical wall spacing requirements are based on the diameter of the anchor. The 48" and 120" spacing requirements are based on the diameter of the anchor. The 48" and 120" spacing requirements are based on the diameter of the anchor.

For steel or composite (concrete) walls, the 48" and 120" spacing requirements are based on the diameter of the anchor.

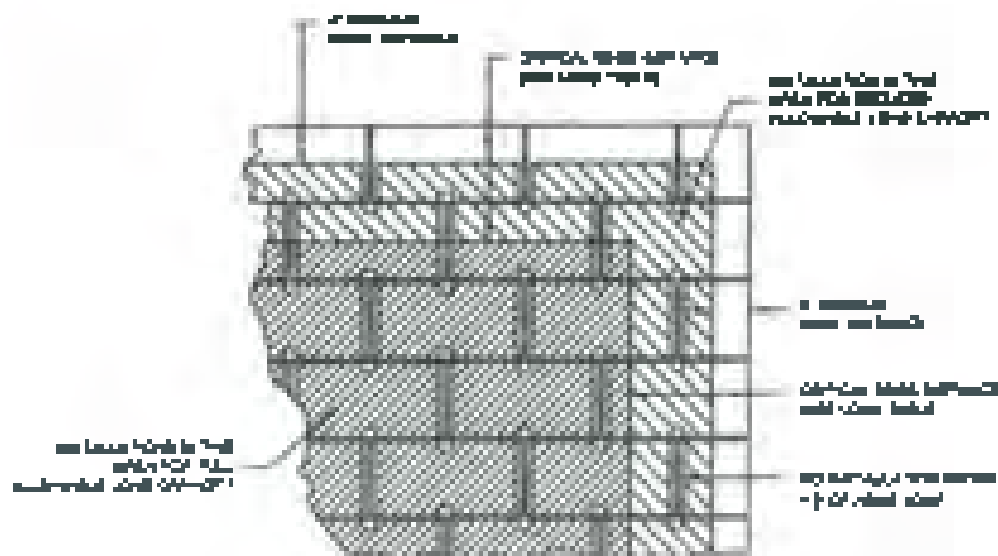


FIGURE 10—TYPICAL REINFORCEMENT ANCHORS INSTALLED IN THE FACE OF CONCRETE OR MASONRY WALLS. ALL REINFORCEMENT SHALL BE CORROSION RESISTANT. SEE FIGURES 4, 5, AND 6.

TABLE 10—TENSION AND SHEAR LOADS FOR FITTED BOLT ANCHORS INSTALLED IN THE FACE OF CONCRETE OR MASONRY WALL CONSTRUCTION

ANCHOR DIA. ¹ (in.)	BOLT DIA. (in.)	BOLT STRENGTH ² (ksi)	ANCHOR LOCATION ³ (inches)				ALLOWABLE LOADS BASED ON ANCHORS INSTALLED AT SPACING ⁴ & COVER ⁵ REQUIREMENTS, s_{min} AND s_{max} (kip)		
			Edge Distance		Spacing		Tension		Shear ⁶
			CRITICAL, e_{min}	MINIMUM, e_{max}	CRITICAL, s_{min}	MINIMUM, s_{max}	Supplied with Embedment Development ⁷	Supplied with Embedment Development ⁷	
$\frac{1}{2}$	$\frac{1}{2}$	36	12	4	9	3	900	900	1.00
$\frac{3}{4}$	$\frac{3}{4}$	54	12	4	9	4	1350	1350	1.50
$\frac{1}{2}$	$\frac{1}{2}$	45	12	4	12	6	1.00	900	1.50
$\frac{3}{4}$	$\frac{3}{4}$	67.5	12	4	12	6	1.50	1.35	2.25

For 301 1 inch = 25.4 mm, 1 psi = 0.006895 kPa, 1 kip = 4.448 kN.

¹Anchor shall be installed a maximum of 1 $\frac{1}{2}$ inches from vertical face of wall and 1 inch from bottom of wall to the centerline and concrete cover requirements.

²For 301 1/2 diameter shall be equal to the tensile strength of the anchor. Anchor strength shall comply with Section 4.3 of this code.

³Embedment depth is measured from the outside face of the masonry.

⁴Critical and minimum edge distances, e_{min} and e_{max} , respectively, shall comply with this table. Refer to Figure 1. Center and minimum spacing, s_{min} and s_{max} , respectively shall comply with this table. Critical and minimum edge and spacing distances are only for anchors meeting minimum or clear loads. Refer to Table 8 for allowable tension and shear load reduction factors for anchors meeting minimum and/or maximum edge distances, and in Table 12 for anchors meeting minimum critical and minimum loading.

⁵Supplied loads are for anchors installed in fully grouted masonry and concrete, consisting of concrete, Type I, lightweight, medium weight or normal weight, graded and, concrete masonry units (CMUs) conforming to UBC Standard 21-4. Masonry shall be fully grouted with mortar grout having a minimum compressive strength of 1,000 psi, and complying with UBC Section 2102.4. Mortar shall comply with UBC Section 2102.5 and UBC Standard 21-11 and shall have a minimum masonry compressive strength of 1,000 psi. The specified compressive strength of masonry, f'_m at 28 days shall be a minimum of 1,000 psi.

⁶For wind or earthquake loading conditions, allowable loads may be adjusted in accordance with Section 4.4.

⁷These allowable tension loads are based on a factor of safety of 4.0 and special inspection being provided during anchor installation. Refer to Section 4.3 of this code.

⁸These supplied allowable tension loads are applicable for anchors meeting special anchor requirements and are based on a factor of safety of 4.0.

⁹These allowable shear loads are based on a factor of safety of 4.0 and special inspection being provided during anchor installation.

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TABLE 8—LOAD REDUCTION FACTORS FOR HYBRID BOREHOLE ANCHORS INSTALLED BETWEEN CRITICAL AND MINIMUM BOREHOLE DEPTHS (Anchors Installed in the Face of Drilled CMU Masonry Walls)^{a,b}

ANCHOR DEPTH (in.)	MINIMUM DEPTH (DEPTH, d_p , MINUS)	LOAD REDUCTION FACTORS FOR ANCHORS INSTALLED IN ^c				
		CRACK SLIP CRACKS, C_{sl}	MINIMUM CRACK DEPTHS, C_{md}			
			Tension or Shear Load	Edge Load Spacing		
				Transverse to Edge	Along Face of Edge	Parallel to Edge
4	16	1.0	1.0	0.14	0.40	0.77
6	24	1.0	1.0	0.20	0.70	0.88
8	32	1.0	0.83	0.30	0.80	0.90
10	40	1.0	0.80	0.35	0.80	0.90

For (a), 1 inch = 25.4 mm.

^aThe CRACK SLIP CRACKS IN THE MINIMUM DEPTH ARE DEFINED AS CRACKS THAT OCCUR IN TABLE 8, 10, AND 11.

^bCRACK DEPTHS ARE DEFINED AS MINIMUM CRACK DEPTHS TO FACE FOR CRACKS THAT ARE SPACING IN EDGE DEPTHS ARE MEASURED SEPARATELY AND MUST PLUS CRACK DEPTHS TO MINIMUM DEPTH OF CRACK TO EDGE DEPTH CRACK DEPTHS TO FACE AND CRACK DEPTHS TO MINIMUM DEPTH ARE OBTAINED BY SUM CRACK DEPTHS.

TABLE 9—LOAD REDUCTION FACTORS FOR HYBRID BOREHOLE ANCHORS INSTALLED BETWEEN CRITICAL AND MINIMUM DEPTHS (Anchors Installed in the Face of Drilled CMU Masonry Walls)^{a,b}

ANCHOR DEPTH (in.)	MINIMUM DEPTH (DEPTH, d_p , MINUS)	LOAD REDUCTION FACTORS FOR ANCHORS INSTALLED IN ^c		
		CRACK SLIP CRACKS, C_{sl}	MINIMUM CRACK DEPTHS, C_{md}	
			Tension or Shear Load	Edge Load Spacing
4	16	1.0	0.81	0.80
6	24	1.0	0.80	0.80
8	32	1.0	0.80	0.80
10	40	1.0	0.80	0.80

For (a), 1 inch = 25.4 mm.

^aThe same reduction factors in this table are applicable to the reduction loads shown in Tables 8, 10, and 11.

^bCRACK DEPTHS ARE DEFINED AS MINIMUM CRACK DEPTHS TO FACE FOR CRACKS THAT ARE SPACING IN EDGE DEPTHS ARE MEASURED SEPARATELY AND MUST PLUS CRACK DEPTHS TO MINIMUM DEPTH OF CRACK TO EDGE DEPTH CRACK DEPTHS TO FACE AND CRACK DEPTHS TO MINIMUM DEPTH ARE OBTAINED BY SUM CRACK DEPTHS.

TABLE 10—RCC AND RC ALL-GRADE TENSION AND SHEAR LOADS FOR HYBRID BOREHOLE ANCHORS INSTALLED IN THE FACE OF DRILLED CMU Masonry Walls^{a,b}

ANCHOR TYPE (in.)	DEPTH (in.)	MIN. CRACK DEPTHS (in.)	ANCHOR LOCATION (in.)			RCC AND RC ALL-GRADE LOADS ^c (kips)		
			CRACK SLIP CRACKS	MINIMUM CRACK DEPTHS	MINIMUM CRACK DEPTHS	Tension	Shear	
							Parallel to Edge of Masonry Wall	Perpendicular to Edge of Masonry Wall
4	4	16	16	16	16	0.14	0.14	0.77
6	6	24	16	16	16	0.20	0.70	0.88

For (a), 1 inch = 25.4 mm, 1 pound = 4.45 N, 1 psi = 0.00689 MPa.

^aThe minimum cracks and shear loads in Table 10 are applicable to all anchors installed in concrete, regardless of the RCC or RC.

^bCRACK DEPTHS AND CRACK DEPTHS ARE MEASURED FROM THE CRACK SURFACE TO THE EDGE AND END OF THE CMU MASONRY WALL, RESPECTIVELY. CRACK DEPTHS IN TABLE 10 ARE MEASURED FROM THE CRACK SURFACE TO THE CRACK SURFACE. CRACK DEPTHS IN THE CRACK DEPTHS ARE MEASURED FROM THE CRACK SURFACE TO THE CRACK SURFACE.

^cThe reduction loads in Table 10 are for anchors meeting steel reinforcement and concrete. For anchors meeting steel reinforcement and concrete, the reduction loads may be adjusted in accordance with Section 4.4.

^dFor (a), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (b), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (c), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (d), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (e), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (f), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (g), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (h), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (i), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (j), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (k), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (l), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (m), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (n), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (o), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (p), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (q), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (r), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (s), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (t), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (u), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (v), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (w), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (x), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (y), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (z), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater.

^eFor (a), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (b), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (c), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (d), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (e), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (f), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (g), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (h), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (i), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (j), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (k), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (l), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (m), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (n), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (o), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (p), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (q), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (r), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (s), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (t), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (u), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (v), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (w), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (x), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (y), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater. For (z), Grade 60, Type II, lightweight, medium weight, or normal weight concrete masonry units (CMU) with compressive strength of 1,500 psi (10.3 MPa) or greater.

TABLE 1—LWC ALLOWABLE TENSILE AND TENSILE LOADS FOR STEEL-REINFORCED CONCRETE
INSTALLATION ON TOP OF EXISTING WALL CONSTRUCTION

ENR-1.008

APPROX. CBL Cure	CBL HT CBL Depth	LWC CBL Depth	ANCHOR (CBL TENSILE TENSILE)			LWC ALLOWABLE TENSILE STRENGTH			
			TENSILE CBL Tensile	TENSILE CBL Tensile	TENSILE Tensile	Tensile		Tensile	
						Installed CBL Tensile	Installed CBL Tensile	Installed CBL Tensile	Installed CBL Tensile
1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2

For 100:1 mix = 20.0 MPa, 1 pound = 4.45 N, 1 psi = 6.89 kPa

The minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in structures regulated by the LWC. Concrete shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure and, respectively, shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure. The minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure.

The minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure. The minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure.

Tensile strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure. The minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure. The minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure.

Allowable concrete strength shall be based on a safety factor of 1.5. Special inspection for concrete installation shall be required.

Minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure. The minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure.

Minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure. The minimum concrete strength shall be 100:1 mix (100:1 mix) for concrete installed in the upper and lower of the CBL structure.



FIGURE 4—CRACK AND THE CRACKS FOR THE STEEL-REINFORCED CONCRETE
INSTALLATION ON TOP OF EXISTING WALL CONSTRUCTION

TABLE 13—MINIMUM REQUIREMENTS FOR CONCRETE

CONCRETE	MINIMUM REQUIREMENTS FOR CONCRETE
100:1 mix	100:1 mix
100:1 mix	100:1 mix
100:1 mix	100:1 mix
100:1 mix	100:1 mix
100:1 mix	100:1 mix

TABLE 2- ALLOWABLE LOADS FOR BOLT HEAD SPACINGS

INSTALLATION METHOD OF BOLT CONNECTION	Fasteners			Allowable Load (lbs.)		
	Spacing of Bolt Pegs	Type of Bolt Head	Vertical Bolt	Upset	Parallel to Plate	Perpendicular to Plate
Typical B&B installation with bolt heads attached to the side of the plate	1 - 4 - 6	1 - 2 - 4	1 - 2 - 4	100	100	100
Alternate B&B installation with bolt heads attached to the bottom of the plate, bolt heads attached to the top of the plate	1 - 4 - 6	1 - 2 - 4	1 - 2 - 4	100	100	100

Form 8-27 11-2-1-11

Minimum load for bolt head spacing is 100 lbs. per bolt head. Spacing is measured from the center of the bolt head to the center of the next bolt head.

Minimum load for bolt head spacing is 100 lbs. per bolt head. Spacing is measured from the center of the bolt head to the center of the next bolt head. The load for the bolt head spacing is 100 lbs. per bolt head. The load for the bolt head spacing is 100 lbs. per bolt head.

Minimum load for bolt head spacing is 100 lbs. per bolt head. Spacing is measured from the center of the bolt head to the center of the next bolt head.

Load for bolt head spacing is 100 lbs. per bolt head. Spacing is measured from the center of the bolt head to the center of the next bolt head.

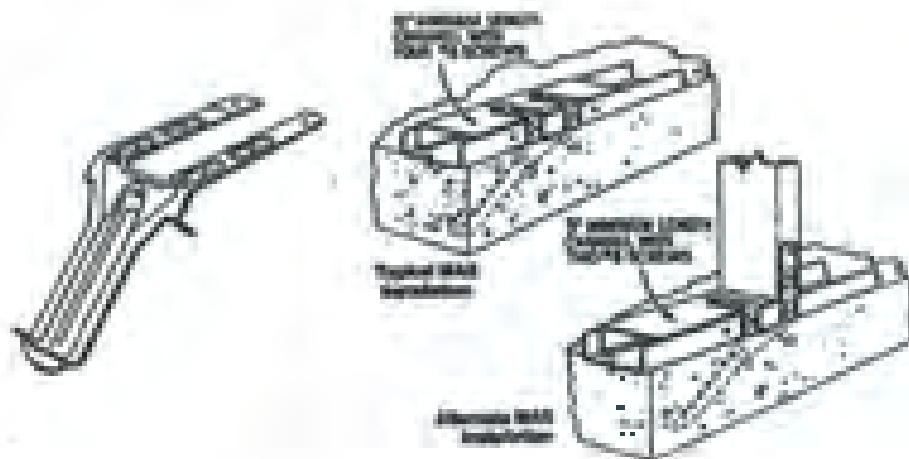


Table 7. Additional Loads for 4000 POLYPROPYLENE ARCHES

Arch Type	Arch Dimensions			Arch Span Feet/Meters	Arch Spacing per Span/Center-to-Center			Arch Height Feet/Meters
	H	W	L		Arch Spacing per Span/Center-to-Center			
					to Base of the Arch from Bottom Chord	to Top Feet/Meters	to Top Feet/Meters	
Single	12	12	12	12	12	12	12	
Double	24	24	24	24	24	24	24	
Triple	36	36	36	36	36	36	36	

For 4000 POLYPROPYLENE ARCHES, 12' Span to 12' Span

Arch type and span and dimensions must be specified by the engineer of record.

Arch type and span and dimensions are given in feet or meters. Loading is considered with 4000 POLYPROPYLENE ARCHES. The arch type and span and dimensions are given in feet or meters.

Arch type and span and dimensions are given in feet or meters. Loading is considered with 4000 POLYPROPYLENE ARCHES.

Arch type and span and dimensions are given in feet or meters. Loading is considered with 4000 POLYPROPYLENE ARCHES.

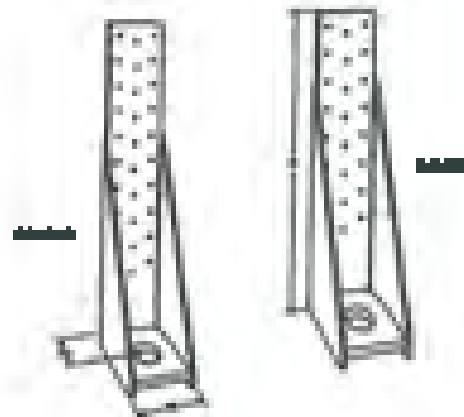


Table 8. Additional Loads for 4000 POLYPROPYLENE ARCHES

Arch Type	Arch Dimensions		Arch Spacing per Span			Arch Spacing per Span		Arch Height Feet/Meters
	Span	Width	H	W	L	to Base of the Arch from Bottom Chord	to Top	
Single	12	12	12	12	12	12	12	12
Double	24	24	24	24	24	24	24	24

For 4000 POLYPROPYLENE ARCHES, 12' Span to 12' Span

Arch type and span, length and dimensions must be specified by the engineer of record.

Arch type and span, length and dimensions are given in feet or meters. Loading is considered with 4000 POLYPROPYLENE ARCHES. The arch type and span and dimensions are given in feet or meters.

Arch type and span and dimensions are given in feet or meters.

Arch type and span and dimensions are given in feet or meters. Loading is considered with 4000 POLYPROPYLENE ARCHES.

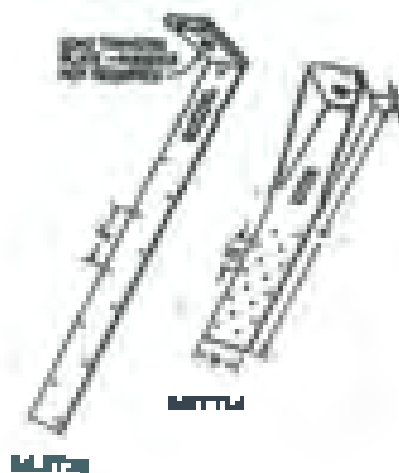


TABLE 1-1. ALLOWABLE LOADS FOR L-SHAPED MEMBERS SPUNNING

MEMBER TYPE	SPUNNING POSITION	SCHEDULE (INCH)	ALLOWABLE LOADS (KIPS)	
			P_u	M_u
L40	1	1-1/2	100	10
L30	1	1-1/2	100	10
L20	1	1-1/2	100	10
SPUNNING	1	1-1/2	100	10
SPUNNING	1	1-1/2	100	10

For L40, L30 and L20, P_u is 100 kips, M_u is 10 kips-ft.

Load duration factor is 1.0.

Maximum moment shall not be less than 10 kips-ft and not more than 10 kips-ft.

P_u and M_u shall be in kips and kips-ft, respectively. P_u and M_u shall be based on 1/2 inch thick L40, L30 and L20 members.

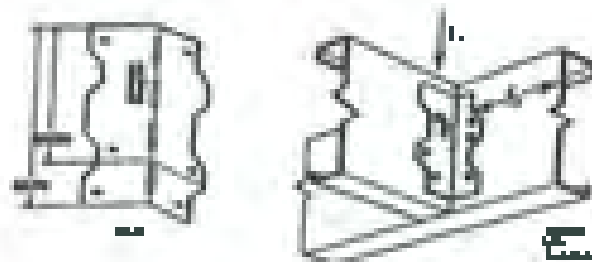


TABLE 1-2. ALLOWABLE LOADS FOR L-SHAPED MEMBERS SPUNNING

MEMBER TYPE	SPUNNING POSITION			MAX. MOMENT (KIPS-FT)	ALLOWABLE LOADS (KIPS)	
	P_u	M_u	L		P_u	M_u
L40	1	1	1	1-1/2	100	10
L30	1	1	1	1-1/2	100	10

For L40, L30 and L20, P_u is 100 kips, M_u is 10 kips-ft.

Load duration factor is 1.0.

P_u and M_u shall be in kips and kips-ft, respectively. P_u and M_u shall be based on 1/2 inch thick L40, L30 and L20 members.

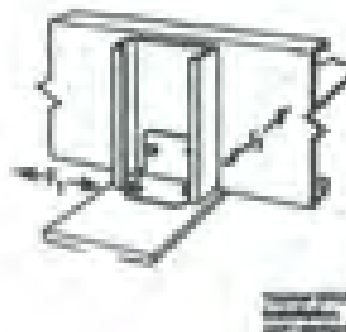


TABLE 10—RECOMMENDED LOADS FOR 10' MAX SPAN COIL SPRINGS

Model No.	Dimensions				Allowable springing deflection		Allowable vehicle load (weight and distribution) for consideration purposes			
	Footprint		Full Strength (k)	90% Strength (k)	R	L	For 10' max span, using 10' max load		For 10' max span, using 10' max load	
	Length	Width					Vehicle weight	Vehicle load (k)	Vehicle load (k)	Vehicle load (k)
SPR-10	10'	10'	10	9	10	10	10,000	1,000	—	—
SPR-12	12'	12'	12	10.8	12	12	12,000	1,200	—	—
SPR-14	14'	14'	14	12.6	14	14	14,000	1,400	—	—
SPR-16	16'	16'	16	14.4	16	16	16,000	1,600	—	—
SPR-18	18'	18'	18	16.2	18	18	18,000	1,800	1,800	1,800
SPR-20	20'	20'	20	18.0	20	20	20,000	2,000	2,000	2,000
SPR-22	22'	22'	22	19.8	22	22	22,000	2,200	2,200	2,200
SPR-24	24'	24'	24	21.6	24	24	24,000	2,400	2,400	2,400
SPR-26	26'	26'	26	23.4	26	26	26,000	2,600	2,600	2,600
SPR-28	28'	28'	28	25.2	28	28	28,000	2,800	2,800	2,800
SPR-30	30'	30'	30	27.0	30	30	30,000	3,000	3,000	3,000
SPR-32	32'	32'	32	28.8	32	32	32,000	3,200	3,200	3,200
SPR-34	34'	34'	34	30.6	34	34	34,000	3,400	3,400	3,400
SPR-36	36'	36'	36	32.4	36	36	36,000	3,600	3,600	3,600
SPR-38	38'	38'	38	34.2	38	38	38,000	3,800	3,800	3,800
SPR-40	40'	40'	40	36.0	40	40	40,000	4,000	4,000	4,000

Notes: 1. All dimensions are in feet. 2. All dimensions are in feet. 3. All dimensions are in feet.

These loads are based on the assumption of a uniform load across the entire length of the spring. The actual load may vary depending on the specific application and the distribution of the load.

The loads are based on the assumption of a uniform load across the entire length of the spring. The actual load may vary depending on the specific application and the distribution of the load.

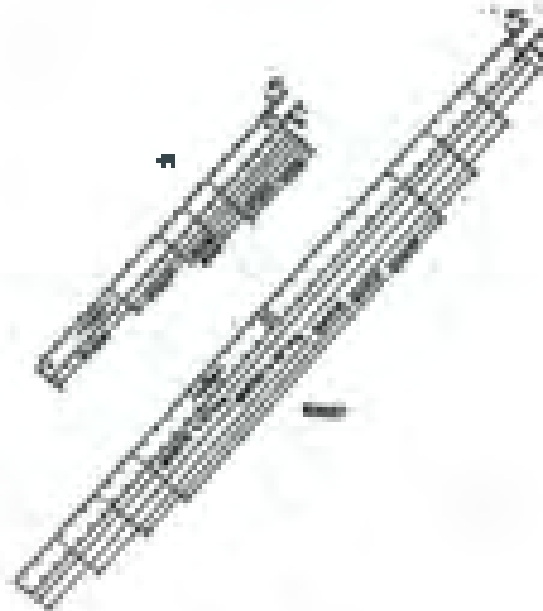


Table 1. Recommended design load and design stress for steel reinforcement

Material, psi	STEEL				Design Load, kips	Design strength ratio based on provisions of concrete design		Design stress ratio
	F _y		Tensile Strength F _t	Tensile Strength F _t		Tensile Strength F _t		
	Grade	Yield				For 10 Bars 100% Ratio	For 10 Bars 100% Ratio	
Grade 60	60	60	75	75	1.0	1.0	1.0	
Grade 70	70	70	85	85	1.0	1.0	1.0	
Grade 80	80	80	95	95	1.0	1.0	1.0	
Grade 90	90	90	105	105	1.0	1.0	1.0	
Grade 100	100	100	115	115	1.0	1.0	1.0	
Grade 110	110	110	125	125	1.0	1.0	1.0	

Notes: 1. For 10 Bars 100% Ratio, 10 Bars 100% Ratio, 10 Bars 100% Ratio.

2. Design stress ratio based on provisions of concrete design for steel reinforcement. Design stress ratio is based on design stress ratio for steel reinforcement.

3. Design stress ratio based on provisions of concrete design for steel reinforcement. Design stress ratio is based on design stress ratio for steel reinforcement.

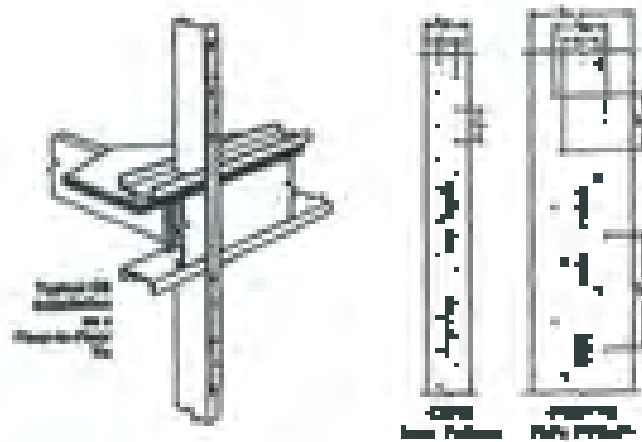


Table 1. Material Properties

Material	Properties		Units	
	Young's Modulus	Poisson's Ratio	Stress	Strain
Aluminum	70,000	0.33	MPa	mm/mm
Steel	200,000	0.30	MPa	mm/mm
Carbon Fiber	140,000	0.28	MPa	mm/mm
Kevlar	130,000	0.35	MPa	mm/mm
Fiberglass	70,000	0.22	MPa	mm/mm
Concrete	30,000	0.20	MPa	mm/mm
Brick	15,000	0.20	MPa	mm/mm
Wood	10,000	0.30	MPa	mm/mm
Plastic	2,000	0.35	MPa	mm/mm
Glass	70,000	0.20	MPa	mm/mm

Table 1. Material Properties

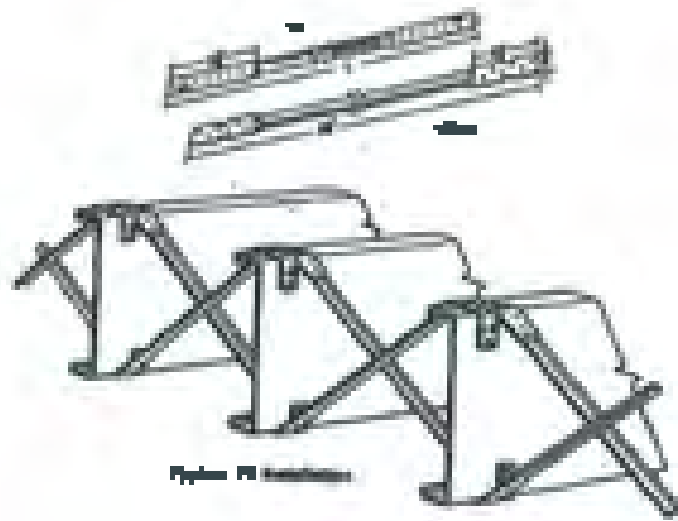


TABLE 1. ALLOWABLE LOADS FOR THE STEEL STRAP POLYMER BARRIER SYSTEMS FOR VARIOUS BEAMS.

STEEL BEAM TYPE	STEEL STRAP TYPE	STEEL STRAP BEAM		L BEAM	ALLOWABLE LOADS (kN)	ALLOWABLE WEIGHT (kg/m ²)										
		STEEL STRAP BEAM	STEEL STRAP BEAM			Steel Beam			Steel Beam			Steel Beam				
						L ₁ beam			L ₂ beam			L ₃ beam				
						L ₁ beam	L ₂ beam	L ₃ beam	L ₁ beam	L ₂ beam	L ₃ beam	L ₁ beam	L ₂ beam	L ₃ beam		
ST-100	1	100%	100%	1	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000		
ST-100-2	2	100%	100%	2	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000		
ST-100-3	3	100%	100%	3	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000		
ST-100-4	4	100%	100%	4	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000		
ST-100-5	5	100%	100%	5	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000		
ST-100-6	6	100%	100%	6	6000	6000	6000	6000	6000	6000	6000	6000	6000	6000		

Note: L₁ = 1000 mm, L₂ = 2000 mm, L₃ = 3000 mm, L₄ = 4000 mm, L₅ = 5000 mm, L₆ = 6000 mm.

*The allowable load for the steel strap polymer barrier system (ST-100) system is shown in the table above.

*The steel beam is shown in the table above for use in emergency loading in accordance with LBC Section 10.1.2.3 and LBC Section 10.1.2.4, with the steel beam shown in the table above.

*Temporary loading shall not be ST-100 system. Instead of a permanent steel beam.

The ST-100 and ST-100-2 are certified to be tested in the ST-100 system for use in the ST-100 system. The ST-100 system is shown in the table above.

a) The allowable load for the ST-100 system with 100-inch edge distance is 1000 kg/m² concrete is 1000 kg.

b) The allowable load for the ST-100 system with 100-inch edge distance is 1000 kg/m² concrete is 1000 kg.

*Loads are based on attachment of the ST-100 system to steel beam. Steel beam is shown in the table above. The ST-100 system is shown in the table above. The ST-100 system is shown in the table above. The ST-100 system is shown in the table above.

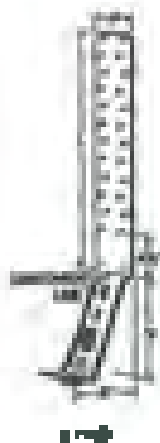


Figure 1

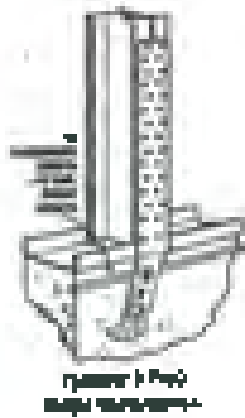


Figure 2



Figure 3

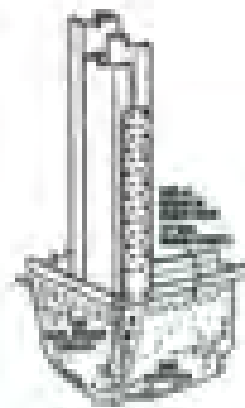


Figure 4

Page 10 of 10

Maximum thickness of the CF from plastic insulation shall be 2.02% wet.

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TABLE 78—ADJUSTABLE LOADS FOR THE SUCTS-14 JAW¹ 14

MODEL NO.	SUCTS (Capacity: 6000)			MAXIMUM STRESS (psi)
	Top	Face	Base	
Forward Tension				
SUCTS-14 (Min.)	1 - 50	3 - 500	4 - 500	1.250
SUCTS-14 (Max.)	1 - 50	4 - 500	1 - 500	1.500
Reverse Tension				
SUCTS-14	1 - 50	3 - 500	4 - 500	500

For 50, 100, and 150 lbs.

¹Adjustable loads are listed for the SUCTS-14 jaw. The maximum is one known test machine having a minimum distance of 1/4 inch over Face 10 (grip) and minimum results are per strength of 50 and 100 lbs, respectively.

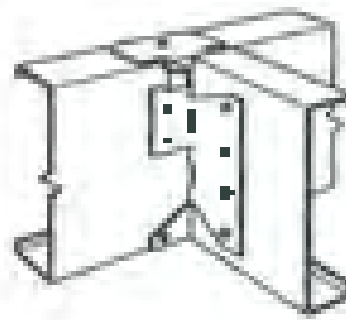
²Steel loader shall be loaded in forward and backward and the steel joint shall be adjusted to the SUCTS-14 (Min.) or (Max.) capacity.

³Adjustable load for SUCTS-14 (Min.) is 5000 lbs. and for SUCTS-14 (Max.) is 6000 lbs. and the capacity is 10000 lbs.

⁴Adjustable load for SUCTS-14 (Max.) is 6000 lbs. and the capacity is 10000 lbs. and the capacity is 10000 lbs.



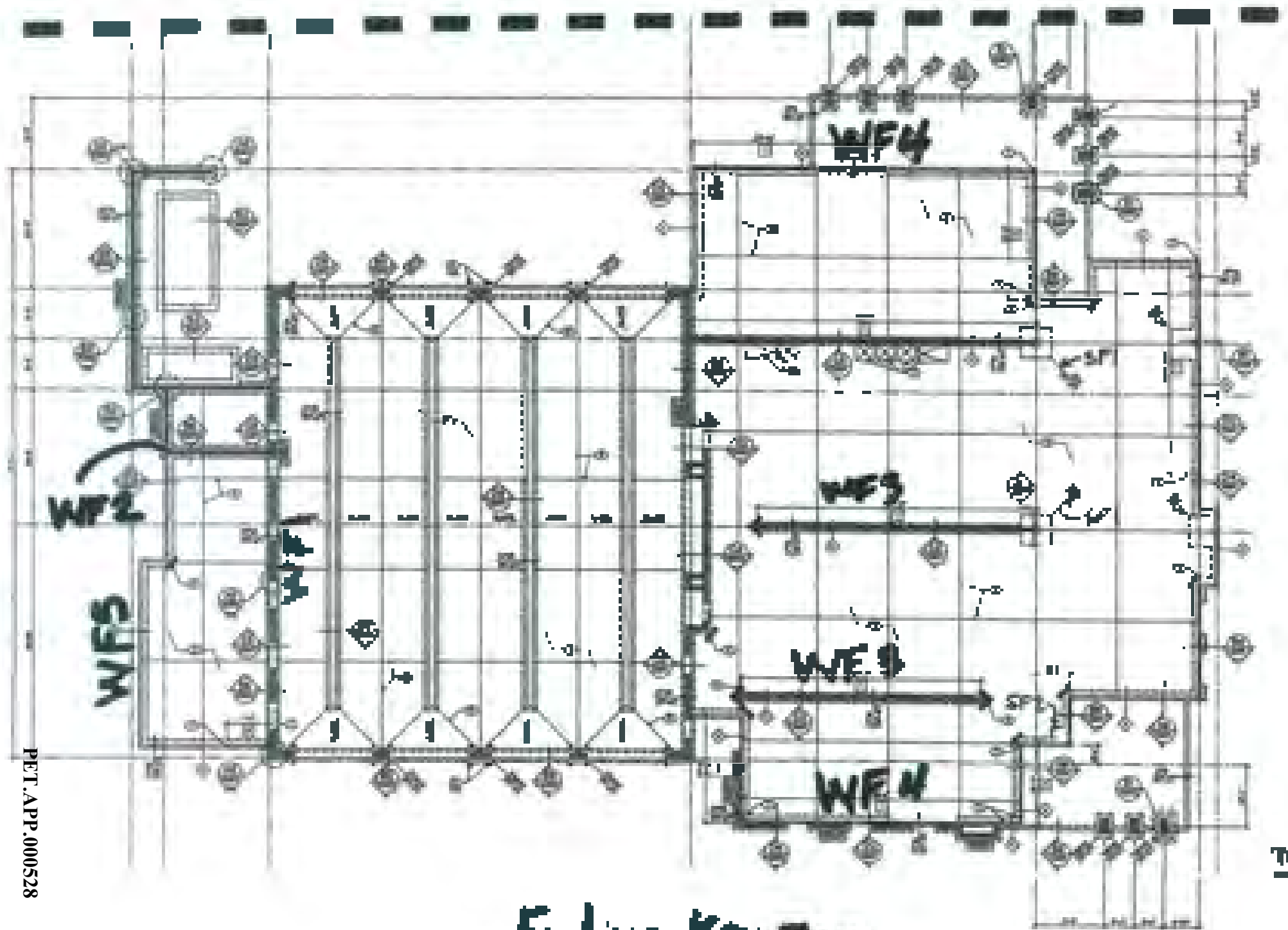
SUCTS-14

SUCTS-14 ASSEMBLY WITH STEEL
LOADER

STRUCTURAL CALCULATIONS

**City Of North Las Vegas
Fire Station 53
North Las Vegas, NV**

Foundations



Feeding Key Plan

Wall Footing - WF1

Loads:

- Roofs : $\left. \begin{array}{l} W_{Ro} = 9.5 \text{ p.f.} \\ W_{LL} = 9.5 \text{ p.f.} \end{array} \right\} \text{ from Wall Design W2}$
- Wall : $W_{Wall} = 9.1 \text{ p.f.} \times 2.33 \text{ ft} = 2.570 \text{ p.f.}$
- Total $\begin{array}{l} W_{Ro} = 9.5 + 2.570 = 3.485 \text{ p.f.} \\ W_{LL} = 9.5 = 9.5 \text{ p.f.} \end{array}$

* Per Soil Report by NINTO & Moxie, DATED 02/1/07

Allow. Bearing Pressure = 1,100 p.s.f.

- Additional Soil Bearing Increases:

Width : $2 \text{ ft} \times 300 \frac{\text{p.s.f.}}{\text{ft}} = 600 \text{ p.s.f.}$

Depth : $0.67 \text{ ft} \times 200 \frac{\text{p.s.f.}}{\text{ft}} = 117 \text{ p.s.f.}$

$\therefore 1,100 \text{ p.s.f.} + 600 \text{ p.s.f.} + 117 \text{ p.s.f.} = \underline{1,817 \text{ p.s.f.}}$

- Preliminary Footing Size:

FTG Size = $\frac{3.485 + 9.5 \text{ p.f.}}{1.817 \text{ p.s.f.}} = 2.92 \text{ ft}$

USE
IRV 4'-0" WIDE STRIP FOOTING

- REQUIRED DEPTH:

* PER ACI 318-05 SECT. 15.5 → 11.2 + 1.1 = 11.5

$$W_u = 1.4(3.485) + 1.7(9.8) = 6.935 \text{ k/ft}$$

$$\text{Net Soil Pressure} = \frac{6.935 \text{ k/ft}}{4 \text{ ft}} = 1.609 \text{ k/sf}$$

$$V_n = V_c = 2\sqrt{f_c} b_w d \quad (\text{No Shear Reinf. Req'd})$$

$$\Rightarrow V_u = \phi V_c$$

$$1.609 \text{ k/sf} (5 \text{ ft} - d) = (0.85) 2\sqrt{4500} (12") (12") d$$

$$d = 0.134 \text{ ft} \Rightarrow \text{Too Small}$$

USE 12" THICK FOOTING > 8" OK

$$\Rightarrow c = 12" - 3" (\text{cover}) - 0.5" (\text{bar radius})$$

$$c = 8.5 \text{ in}$$

- FLEXURAL REINFORCEMENT:

$$M_u = (1.609 \text{ k/sf})(1.95 \text{ ft})^2$$

$$= 2.469 \frac{\text{k} \cdot \text{ft}}{\text{ft}}$$

$$R_n (\text{req'd}) = \frac{M_u}{\phi b d^2}$$

$$= \frac{2.469 \text{ k} \cdot \text{ft} (12 \text{ in})}{0.90 (12 \text{ in}) (8.5 \text{ in})^2}$$

$$= 37.89 \text{ psi}$$



$$p = 0.85 f_c \left(1 - \sqrt{1 - \frac{M_u}{0.85 f_c b d^2 \rho}} \right)$$

$$\rho = 0.85 \left(\frac{500 \text{ psi}}{f_c'} \right) \left(1 - \sqrt{1 - \frac{f_y A_s (3.14)}{0.85 f_c' (2.5 \text{ ft}) (14 \text{ in})}} \right)$$

$p = 0.00063 \rightarrow$ USE $p_{crit} = 0.0013$

Min. Rain Area Requirement

$$A_2(m, n) = 0.00186 d = 0.0018(12)(8.5) \\ = 0.1836 \text{ m}^2$$

USE #9 @ 12" OC. TRANS. $u/A_s \leq 0.20 \text{ in}^2$

- EMPLOYING 5 STEELING REINFORCEMENT.

$$A_2(\text{elec}) = 0.001 \text{ ohm} = 0.001 \times (18 \times 12) = 0.216 \text{ ohm}$$

USE $\Delta = \frac{4 \times 10^{-3} \text{ (avg.)}}{D_s} = 1.23 \text{ m}^2$

- REQUIRED DEPTH:

$$W_u = 1.4(1.232) + 1.7(175) = 2.022 \text{ ksf}$$

$$\text{Net Soil Pressure} = \frac{2.022 \text{ ksf}}{2 \text{ ft}} = 1.01 \text{ ksf}$$

$$V_u = V_c = 2 \sqrt{f'_c} b_w d$$

$$V_u = \phi V_c$$

$$1.01(0.67 \text{ ft} - d) = 0.85(2) \sqrt{4500} (12) (12/4) d$$

$$d = 0.039 \text{ ft} \Rightarrow \text{Too Small}$$

USE 12" THICK FOOTING $\geq 8"$ OK

$$d = 8.5 \text{ in}$$

- FLEXURAL REINFORCEMENT:

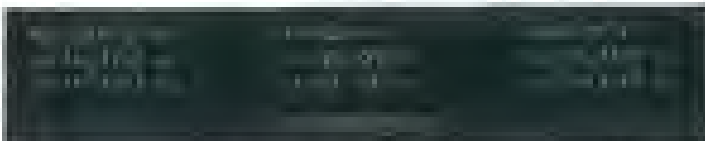
$$M_u = \frac{1.01 \text{ ksf}(0.83 \text{ ft})^2}{2} = 348 \text{ lb-ft}$$

$$R_n (\text{ass'd}) = \frac{M_u}{\phi b d^2} = \frac{348 \text{ lb-ft} (12 \text{ in})}{0.9 (12 \text{ in}) (8.5 \text{ in})^2}$$

$$R_n (\text{ass'd}) = 5.35 \text{ psi}$$

$$\rho = 0.85(4500 \text{ psi}) \left(1 - \sqrt{1 - \frac{348 \times 12}{0.383(12)(8.5)^2(4500)}} \right)$$

$$\rho = 0.000089 \Rightarrow \text{USE } \rho_{\min} = 0.0018$$



Min. REINF. AREA REQUIREMENT

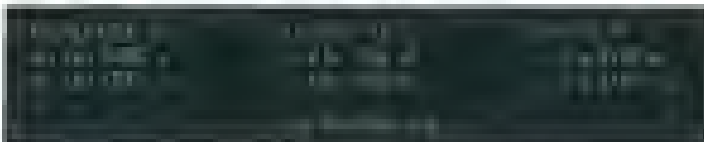
$$\begin{aligned}
 A_s (\text{min}) &= 0.0018 b d = 0.0018 (12)(8.5) \\
 &= 0.1836 \frac{\text{in}^2}{\text{ft}} \quad (\text{SAME AS WF})
 \end{aligned}$$

⇒ USE #4" @ 12" OC TRANS. w/ $A_s = 0.20 \frac{\text{in}^2}{\text{ft}}$

— TEMPERATURE & SHRINKAGE REINFORCEMENT:

$$\begin{aligned}
 A_s (\text{req'd}) &= 0.004 b h = 0.004 (24)(12) \\
 &= 0.40 \text{ in}^2
 \end{aligned}$$

USE 3 - #4" LONG w/ $A_s = 0.58 \text{ in}^2$



WALL FOOTING - WFS

LOADS:

- Roof: $W_{DL} = 10 \text{ psf} \times 29.83 \text{ ft} = 597 \text{ LF}$
 $W_{LL} = 597 \text{ LF}$

- Wall: $W_{wall} = 10 \text{ psf} \times 14.58 \text{ ft} = 146 \text{ LF}$

- TOTAL: $W_{DL} = 743 \text{ LF}$
 $W_{LL} = 597 \text{ LF}$

- ADDITIONAL SOIL BEARING INCREASES:

WIDTH: $0.5 \text{ ft} \times 300 \frac{\text{psf}}{\text{ft}} = 150 \text{ psf}$

- TOTAL AVAILABLE BEARING PRESSURE:

$q_a = 100 \text{ psf} + 150 \text{ psf} = 1,250 \text{ psf}$

- PRELIMINARY FOOTING SIZE:

FTG SIZE = $\frac{743 + 597}{1,250 \text{ psf}} = 1.07 \text{ ft}$

~~USE~~ TRY 2'-0" WIDE STEEL FOOTING

- REQUIRED DEPTH:

$W_u = 1.4(743 \text{ LF}) + 1.7(597 \text{ LF}) = 2,055 \text{ LF}$

NET SOIL PRESSURE = $\frac{2,055 \text{ LF}}{2 \text{ ft}} = 1,028 \text{ psf}$

$$V_n = V_c = 2 \sqrt{f'_c} b_w d$$

$$V_u = \phi V_c$$

$$1.028(8.75 \text{ ft} - d) = (0.85)(2) \sqrt{4500} (.12)(.12) d$$

$$d = 0.05 \text{ ft} \rightarrow \text{TOO SMALL}$$

USE 12" THICK FOOTING > 8" : OK

$$d = 8.5 \text{ in}$$

— FLEXURAL REINFORCEMENT:

$$M_u = \frac{1.028 \text{ ksf} (.95 \text{ ft})^2}{2} = 289 \frac{\text{lb} \cdot \text{ft}}{\text{ft}}$$

$$R_n (\text{req'd}) = \frac{M_u}{\phi b d^2} = \frac{289 \text{ lb} \cdot \text{ft} (12 \text{ in/ft})}{0.9 (12) (8.5 \text{ in})^2}$$

$$= 4.44 \text{ psi}$$

$$\rho = 0.85 (4500 \text{ psi}) \left(1 - \sqrt{1 - \frac{289 \times 12}{0.85 (12) (8.5 \text{ in})^2 (4500)}} \right)$$

$$\approx 0.00012 \text{ (TOO SMALL)}$$

$$\rho = 0.00012 \text{ (TOO SMALL)}$$

$$\rho_{\min} = 0.0018$$

Min REINFORCEMENT AREA REQUIREMENT

$$A_s (\min) = 0.0018 (12) (2.3) = 0.0536 \text{ in}^2$$

⇒ USE #4 @ 12" oc TRANS. w/ $A_s = 0.10 \text{ in}^2/\text{ft}$

— TEMPERATURE & SHRINKAGE REINFORCEMENT:

$$A_s (\text{REQ'D}) = 0.0014 (BA)(12) = 0.40 \text{ in.}^2$$

USE 3 - #4 LONG w/ $A_s = 0.58 \text{ in.}^2$

WALL FOOTING - WF4

LOADS:

— ROOF: $W_{DL} = 20 \text{ psf} \times 14.33 \text{ ft} = 287 \text{ psf}$
 $W_{LL} = \dots = 287 \text{ psf}$

— WALL: $W_{WALL} = 10 \text{ psf} \times 22 \text{ ft} = 220 \text{ psf}$

— TOTAL: $W_{DL} = 507 \text{ psf}$
 $W_{LL} = 287 \text{ psf}$

$$q_a = 1,000 \text{ psf} + (0.67 \text{ ft} \times 300 \text{ psf}) = 1,301 \text{ psf}$$

— PRELIMINARY FOOTING SIZE:

$$\text{FTG. SIZE} = \frac{507 \text{ psf} + 287 \text{ psf}}{1,301 \text{ psf}} = 0.61 \text{ ft}$$

~~USE 1'-8" WIDE TURN-DOWN CONTINUOUS FTG.~~

— REQUIRED DEPTH:

$$W_u = 1.4(507 \text{ psf}) + 1.7(287 \text{ psf}) = 1,200 \text{ psf}$$

USE: 3 - #1² LONG @ A₀ - 0.59 ft²

WALL Footing - WFS

Loads:

- Roof: $W_{DL} = 20 \text{ psf} \times 10.45 \text{ ft} = 209 \text{ plf}$
 $W_{LL} = 115 \text{ psf} \times 10.45 \text{ ft} = 1201 \text{ plf}$
- Wall: $W_{DL} = 10 \text{ psf} \times 10 \text{ ft} = 100 \text{ plf}$
- Total: $W_{DL} = 309 \text{ plf}$
 $W_{LL} = 1201 \text{ plf}$

Total Allowable Bearing Pressure:

$$q_a = 1,100 \text{ psf} + (0.5 \text{ ft} \times 300 \frac{\text{psf}}{\text{ft}}) = 1,250 \text{ psf}$$

- Preliminary Footing Size:

$$\text{Ftg. Size} = \frac{309 \text{ plf} + 1201 \text{ plf}}{1,250 \text{ psf}} = 0.97 \text{ ft}$$

~~USE~~ TRY 1'-4" wide VAN-Down Cont. Ftg.

- Required Depth:

$$W_u = 1.4(309 \text{ plf}) + 1.7(1201 \text{ plf}) = 891 \text{ plf}$$

$$\text{Net Soil Pressure} = \frac{891 \text{ plf}}{1.33 \text{ ft}} = 670 \text{ psf}$$

$$V_n = V_c = 2\sqrt{f_c} b d$$

$$V_u \leq \phi V_c$$

$$690 \text{ psf} (10.83 \text{ ft} - 0) = 0.85(2) \sqrt{4500 \text{ psi}} (12)(12) d$$

$$d = 0.03 \text{ ft (Too Small)}$$

USE 12" THICK FOOTING $\geq 8"$: OK

$$d = 8.5 \text{ in}$$

— FLEXURAL REINFORCEMENT:

$$M_n = \frac{690 \text{ psf} (10.83 \text{ ft})^2}{2} = 231 \frac{\text{lb} \cdot \text{ft}}{\text{ft}}$$

$$R_n (\text{psi}) = \frac{M_n}{\phi b d^2} = \frac{231 \text{ lb} \cdot \text{ft} (12)}{0.9 (12) (8.5)^2}$$

$$= 3.55 \text{ psi}$$

* By Inspection USE $\rho (\text{min}) = 0.0018$

$$A_s (\text{min}) = 0.0018 (12) (8.5) = 0.1836 \text{ in}^2$$

USE $\#4$'s @ 12" OC Trans. w/ $A_s = 0.20 \text{ in}^2$

— TEMPERATURE & SHRINKAGE REINFORCEMENT:

$$A_s (\text{req'd}) = 0.0014 b h = 0.0014 (12 \text{ in}) (12 \text{ in}) = 0.2 \text{ in}^2$$

USE 3- $\#4$'s LONG. w/ $A_s = 0.58 \text{ in}^2$

Column Footing - SF1

Loads

$$\left. \begin{array}{l} P_{DL} = 8.9 \text{ k} \\ P_{LL} = 8.42 \text{ k} \end{array} \right\} \text{ From Column (1) Calculations}$$

- Soil Bearing Increases:

$$\text{Width} = 4 \text{ ft} \times 300 \text{ psf} = 1,200 \text{ psf}$$

- Allow. Bearing Pressure:

$$q_a = 1,100 \text{ psf} + 1,200 \text{ psf} = 2,300 \text{ psf}$$

- Preliminary Footing Size:

$$P_u = 1.4(8.9) + 1.7(8.42 \text{ k}) = 26,774 \text{ lbs}$$

$$\text{Ftg. Size} = \sqrt{\frac{26,774 \text{ lbs}}{2,300 \text{ psf}}} = 3.4 \text{ ft}$$

~~USE~~ IR4 5'-0" ϕ FOOTING

- Check Punching Shear:

$$q_u = \frac{P_u}{LB} = \frac{26,774 \text{ lbs}}{(5 \text{ ft})(5 \text{ ft})} = 1,071 \text{ psf} < 2,300 \text{ psf} \text{ OK}$$

- FACTORED SHEAR AT CRITICAL SECTION:

$$V_u = q_u B x$$

$$= 1.071 \text{ psf} (5 \text{ ft}) (5 \text{ ft})$$

$$= 8,086 \text{ lbs}$$

Per ACI, Eq 11-3

$$\phi V_c = 2 \phi b d \sqrt{f'_c}$$

$$= 2 (0.85) (60 \text{ in}) (8.375 \text{ in}) \sqrt{4500 \text{ psi}}$$

$$\phi V_c = 57,305 \text{ lbs} > V_u \quad \underline{\text{OK}}$$

USE 2' THICK FOOTING w/ $d = 8\frac{3}{8}$ '

- FLEXURAL REINFORCEMENT:

$$M_u = \frac{1.071 \text{ psf} (5 \text{ ft}) (4.708 \text{ ft})^2}{2} = 59,348 \text{ lb-ft}$$

$$\rho = 0.85 f'_c \left(1 - \sqrt{1 - \frac{M_u}{0.353 b d^2 f'_c}} \right)$$

$$\rho = 0.85 (4500 \text{ psi}) \left(1 - \sqrt{1 - \frac{59,348 \text{ (lb-ft)}}{(0.353)(60)(8.375)^2(4500)}} \right)$$

$$\rho = 0.0032 \quad 60,000 \text{ psi}$$



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 Lecturer - Structural Engineering

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$$\rho_{max} = \frac{(0.75)(0.85)(187)}{f_y (187 + f_c)} \quad \left[\text{ACI Appendix B-1} \right]$$

$$= \frac{(0.75)(0.85)(187)(0.85 + 4.5 \text{ ksi})}{60 \text{ ksi} (187 + 60 \text{ ksi})}$$

$$= 0.014 > 0 \quad \therefore \text{OK}$$

$$- A_s (As_{reqd}) = \rho b d = 0.0032 (60 \text{ in}) (1.375 \text{ m})$$

$$= 1.61 \text{ in}^2$$

$$\therefore \text{USE } 6 - \#5 \text{ E.W. w/ } A_s = 1.84 \text{ in}^2 \quad \therefore \text{OK}$$

COLUMN FOOTING - SF2

Loads:

$$\left. \begin{array}{l} P_{DL} = 1,150 \text{ lbs} \\ P_{UL} = 1,040 \text{ lbs} \end{array} \right\} \text{COLUMN C2 REACTIONS}$$

- SOIL BEARING INCREASES:

$$\text{Width: } 2' \times 300 \text{ PSF} = 600 \text{ PSF}$$

- Allow BEARING PRESSURE:

$$q_a = 1,100 \text{ PSF} + 600 \text{ PSF} = 1,700 \text{ PSF}$$

- Preliminary Footing Size:

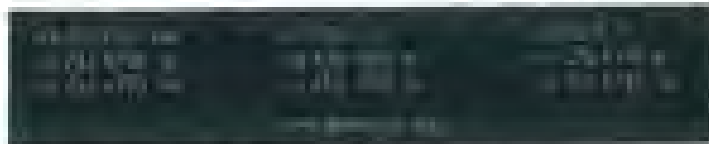
$$P_u = 1.4(1,150 \text{ lbs}) + 1.7(1,040 \text{ lbs}) = 3,378 \text{ \#}$$

$$\text{Ftg. Size} = \sqrt{\frac{3,378 \text{ lbs}}{1,700 \text{ PSF}}} = 4' -$$

TRY 3' - 0" $\square$ FOOTING

- Check PUNCHING SHEAR

$$q_u = \frac{P_u}{BL} = \frac{3,378 \text{ \#}}{(3' \times) (3' -)} = 375 \text{ PSF} < 1,700 \text{ PSF OK}$$



$$\begin{aligned}
 A_s(\text{req'd}) &= \rho b d = 0.0018(30)(8.375) \\
 &= 0.543 \text{ in}^2
 \end{aligned}$$

USE 4 - #5[#] E.W. w/ $A_s = 1.23 \text{ in}^2$: OK

Masonry Plaster Footing at App. Bay

Loads:

$$\begin{aligned} P_{DL} &= 17,329 \text{ lbs} \\ P_{LL} &= 800 \text{ lbs} \end{aligned} \quad \left. \begin{array}{l} \text{10-M MP.1} \\ \text{CALCULATIONS} \end{array} \right\}$$

- Soil BEARING INCREASES:

$$\text{WIDTH: } 3 \text{ ft} \times 300 \text{ psf} = 900 \text{ psf}$$

- ALLOWABLE BEARING PRESSURE:

$$q_a = 1,100 \text{ psf} + 900 \text{ psf} = 2,000 \text{ psf}$$

- PRELIMINARY FOOTING SIZE:

$$P_u = 1.4(17,329 \text{ lbs}) + 1.7(800 \text{ lbs}) = 26,181 \text{ lbs}$$

$$\text{FTG. SIZE} = \sqrt{\frac{26,181 \text{ lbs}}{2,000 \text{ psf}}} = 3.62 \text{ ft}$$

USE PRY 4'-0" DIA FOOTING

- Check Punching Shear:

$$q_u = \frac{P_u}{L^2} = \frac{26,181 \text{ lbs}}{16 \text{ ft}^2} = 1,636 \text{ psf} < 2,000 \text{ psf} \quad \text{OK}$$



FACTORED SHEAR AT CRITICAL SECTION:

$$V_u = q_u B x$$

$$= 1.636 \text{ psf} (4 \text{ ft}) (1.75 \text{ ft})$$

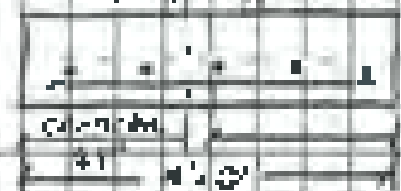
$$V_u = 11,452 \text{ lbs}$$



Per ACI, EQ. 11-3

$$\phi V_c = 2 \phi b d \sqrt{f_c}$$

$$= 2 (0.85) (48 \text{ in}) (8.375 \text{ ft}) \sqrt{4500 \text{ psi}}$$



$$\phi V_c = 45,844 \text{ lbs} > V_u \therefore \text{OK}$$

USE 12" THICK FOOTING w/ d = 8 3/4"

FLEXURAL REINFORCEMENT:

$$M_u = \frac{1.636 \text{ psf} (4 \text{ ft}) (1.5 \text{ ft})^2}{2} = 7,362 \text{ lb-ft}$$

$$\rho = 0.85 f_c \left(1 - \sqrt{1 - \frac{M_u}{0.85 b d^2 f_c}} \right)$$

$$\rho = 0.85 (4500 \text{ psi}) \left(1 - \sqrt{1 - \frac{7,362 \text{ lb-ft} \cdot (12 \text{ in})}{0.85 (48 \text{ in}) (8.375 \text{ ft}) (4500 \text{ psi})}} \right)$$

$$60,000 \text{ psi}$$

$$\rho = 0.00487$$

Dr. J. R. Taylor / Structural
 Project: NUED Station #52
 Page: 09502-01
 Title: Foundations
 Date: AUG 14/16/07
 Scale: F22

$$\rho(\max) = \frac{(0.45)(0.85)(87)(A_s f_c)}{f_y (87 + f_y)}$$

$$= 0.024 > \rho : \underline{OK}$$

$$\rho(\min) = 0.0018 < \rho : \text{USE } \rho(\min)$$

$$A_s(\text{req'd}) = \rho b d = (0.0018)(48 \text{ in})(8.375 \text{ in})$$

$$= 0.729 \text{ in}^2$$

$$\underline{\text{USE 4-}\#5 \text{ E.W. w/ } A_s = 1.23 \text{ in}^2 : \underline{OK}}$$



Division of Public Works
10000 Highway 100
Lawrence, MA 01840
Tel: 978-686-1400
Fax: 978-686-1400

Drawn: 12/10/00
Checked: JLB
Designed: JLB

Job: 12/10/00
Date: 12/10/00

Sheet:

F-13

General Footing Analysis & Design

Page: 1

Description: Trailing Column Footing - F3040

General Information

Case No: 12/10/00 - 12/10/00 - 12/10/00 - 12/10/00 - 12/10/00

Allowable Soil Bearing
Allowable Foundation
Bearing Capacity

1,000.0 psf
1,000.0 psf
1,000.0 psf

Use 12" Square Footing

P_u 1,000.0 psf
 P_y 1,000.0 psf
Concrete weight 150.0 psf
Overturning weight 150.0 psf

Dimensions

Width along X-Y Axis 12.00 in
Length along X-Y Axis 12.00 in
Footing Thickness 12.00 in
Clearance along X-Y Axis 12.00 in
Clearance along X-Y Axis 12.00 in
Clearance along X-Y Axis 12.00 in
Clearance along X-Y Axis 12.00 in
Clearance along X-Y Axis 12.00 in
Clearance along X-Y Axis 12.00 in

Loads

Applied Vertical Load

Dead Load
Live Load
Dead Load

10.00 k
1.00 k
1.00 k

Dead Load
Live Load

10.00 k
1.00 k

Applied Horizontal Load

Dead Load
Live Load
Dead Load

Concrete Retention along X-Y Axis
Concrete Retention along X-Y Axis

Concrete Retention along X-Y Axis
Concrete Retention along X-Y Axis

Concrete Retention along X-Y Axis
Concrete Retention along X-Y Axis

Concrete Retention along X-Y Axis
Concrete Retention along X-Y Axis

Applied Shear

Dead Load
Live Load
Dead Load

Summary

Foundation Design

1.00 k x 1.00 k footing 12.00 in thick w/ concrete support 12.00 x 12.00 in x 12.00 in

Min Soil Pressure
Max Soil Pressure

1.00 k
1.00 k

Min Soil Pressure
Max Soil Pressure

1.00 k
1.00 k

12.00 in of Foundation
12.00 in of Foundation

1.00 k
1.00 k

Min Soil Pressure
Max Soil Pressure

1.00 k
1.00 k

12.00 in of Foundation
12.00 in of Foundation

1.00 k
1.00 k

Min Soil Pressure
Max Soil Pressure

1.00 k
1.00 k

Footing Design

Base Pressure

1.00 k

1.00 k

1.00 k

1.00 k

Trailing Footing

1.00 k

1.00 k

1.00 k

1.00 k

Overturning Footing

1.00 k

1.00 k

1.00 k

1.00 k

1/2 in Left

1.00 k

1.00 k

1.00 k

1.00 k

1/2 in Right

1.00 k

1.00 k

1.00 k

1.00 k

1/2 in Top

1.00 k

1.00 k

1.00 k

1.00 k

1/2 in Bottom

1.00 k

1.00 k

1.00 k

1.00 k

Remarks

1.00 k

1.00 k

1.00 k

1.00 k

1/2 in Left

1.00 k

1.00 k

1.00 k

1.00 k

1/2 in Right

1.00 k

1.00 k

1.00 k

1.00 k

1/2 in Top

1.00 k

1.00 k

1.00 k

1.00 k

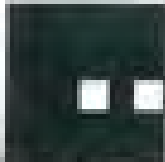
1/2 in Bottom

1.00 k

1.00 k

1.00 k

1.00 k



Petco - Petco Petco
 10000 Broadway, Suite 100
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P24

General Feeding Analysis & Design

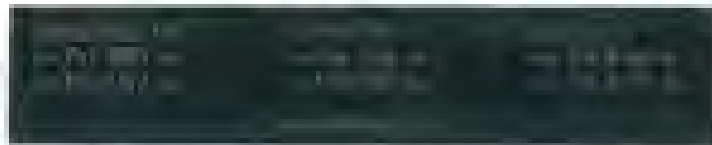
Geography: Traffic Count Feeding - F3040

Feeding Pressure Summary

Location (Left) Feeding Pressure	Left	Right	Top	Bottom
C1 = L1	1.100 10	1.100 10	1.100 10	1.100 10
C1 = L1 = RT	1.100 10	1.100 10	1.100 10	1.100 10
Feeding Pressure (Left) Feeding Pressure				
AC1 C1 = C1	1.100 10	1.100 10	1.100 10	1.100 10
AC1 C1 = C1	1.100 10	1.100 10	1.100 10	1.100 10
AC1 C1 = C1	1.100 10	1.100 10	1.100 10	1.100 10

ACI Factors (see ACI 318-05, Appendix B for additional factors)

ACI Factor	Value	ACI Factor	Value	ACI Factor	Value
ACI Factor 1	1.000	ACI Factor 2	1.000	ACI Factor 3	1.000
ACI Factor 4	1.000	ACI Factor 5	1.000	ACI Factor 6	1.000
ACI Factor 7	1.000	ACI Factor 8	1.000	ACI Factor 9	1.000
ACI Factor 10	1.000	ACI Factor 11	1.000	ACI Factor 12	1.000



App Bay Slab - PCA Concrete Floor on ground

Axle Load = 32k

Wheel spacing = 20" (5d)

Wheel Assembly Spacing = 80" (5)

wheels / Axle = 4

Tire inflation pressure = 110 psi

$$\text{Total Contact area} = \frac{32,000 \text{ lb}}{110} = 2.9 \text{ ft}^2$$

1.100 psi

$$\text{Concrete flexural strength} = FR = 2.5 \sqrt{f_c} = 503 \text{ psi}$$

Factor of Safety = 2.2 → use 3

2. Design Factor = 1.0

$$\text{Concrete Working Stress} = WLS = \frac{FR}{SF \cdot JF} = \frac{503 \text{ psi}}{(2.5)(1)} = 201 \text{ psi}$$

4) See table 3.7 for equivalent load factor determination.

$$F = 2705$$

$$\text{Eq single wheel axle load} = F \cdot A_{\text{wh}} = (2705)(32") = 86.6 \text{ k}$$

6) Sub stress per 100 ft of axle load

$$= \frac{86.6 \text{ k}}{100} = 0.866 \text{ k/ft} = 21 \text{ psi}$$

From fig 5.4 → slab thickness = 6" → 8" SLAB OK

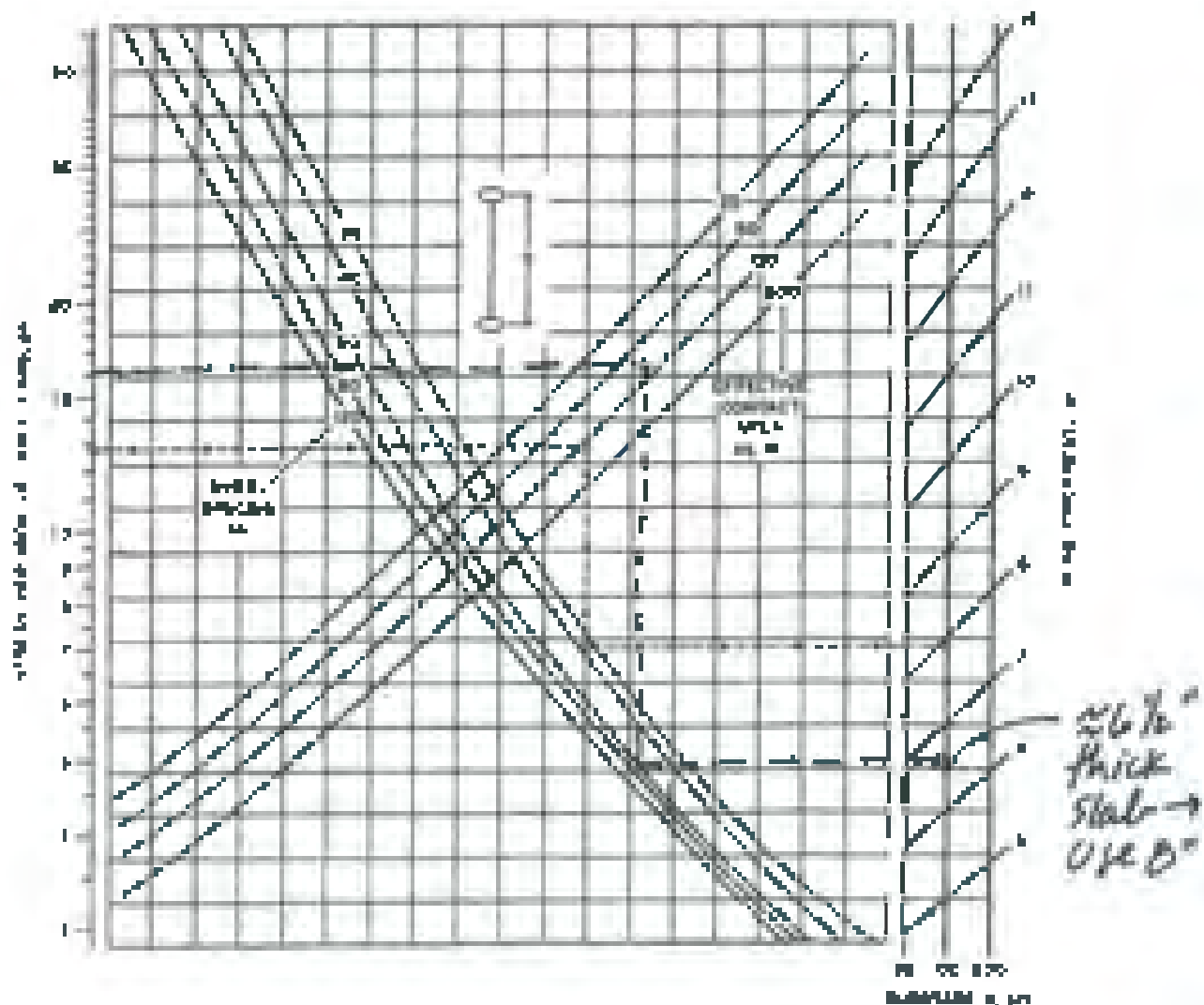
The safety factor or corresponding stress ratio depends on the frequency of the proposed lift-truck loading. Safety factors of 2.0 can be used for crane buckets in the case of large buckets. It might be recommended to use a varying safety factor. Infrared is large number of load operations is expected, a high safety factor can be used (usually 2.5 or higher). In other cases where less traffic is expected, a lower safety factor can be chosen. For bucket lifts it might be 1.5 to 2.0. For conventional lifts, like stair climber bucket storage units, it might be 1.4 to 1.5 (standard and special). The design coefficients require safety in order to be suitable by allowing for stresses from impacts or lower strength concrete and bars. However, reduced safety may apply for load bucket lifts with ECU-Lift structures.

Location of the large majority of runs, axle loads, and wheel spacings at individual tracks is a not practical to provide separate design charts for each vehicle. Conversely, two design charts, Figs. 5-4 and 5-5, have been prepared and can be used for the axle loads and axle-wheel

comparisons of oral industrial trucks offering three designs. Compared with travelling from the new design chain in that order would be reasonable and creating lower costs should be considered drop ability by on the before proceeding with the new design by the project.

Fig. 4-4 is equal steel and natural timber with no tie adjustment with single vertical. The steel is stressed in all six directions working stress per 1,000 lb. of side load. The allowable stress is computed by dividing the concrete flexural strength by the safety factor and, if needed, by the percentage and then dividing this result by the side load in legs (1 leg = 3,300 lb.). The safety factor is derived from concrete stress at the same rate and load exposure, as provided in Table 3-1.

For axles equipped with dual wheels, Page 3-8 and 3-9 are used together to determine the axle load. First, Fig. 3-8 is used to convert the maximum axle load to an equivalent single wheel axle load. The axle load is smaller



THE HIGHER EDUCATION ACT OF 1964

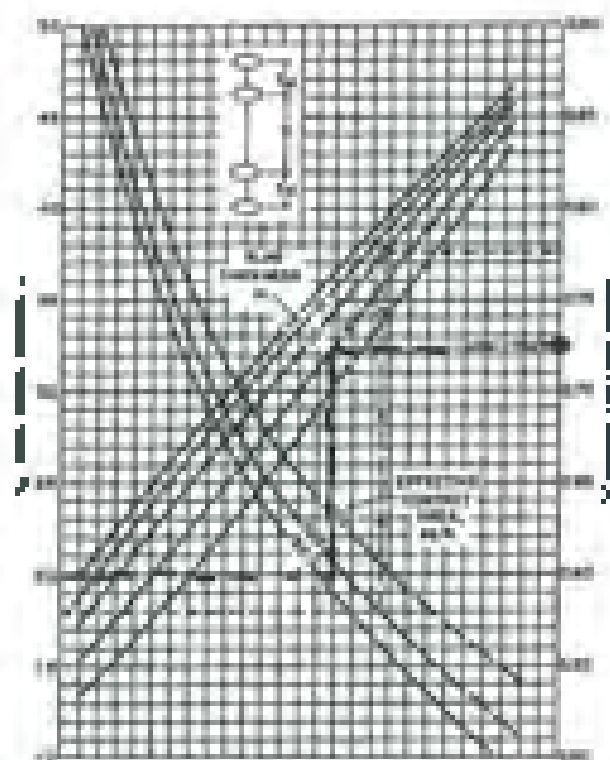


Fig. 3-3. Graph used for girders with round supports

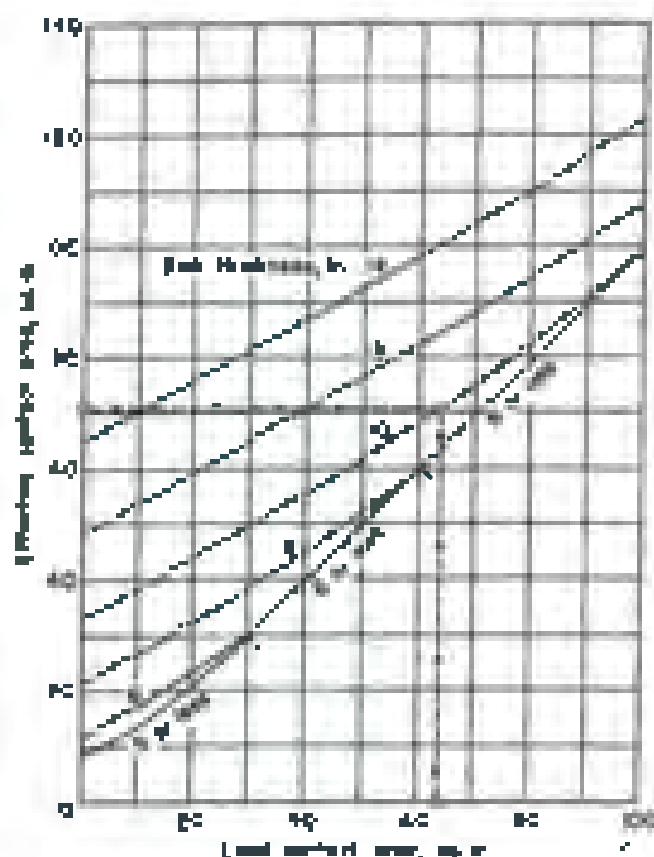


Fig. 3-4. Graph used for slabs and beams with square or round supports

given by the factor F . Then, using the square wheel load, Fig. 3-4 is used to determine the circular stress on the slab.

The load collection area below the ground contact area is one way across the slab, regardless of the tire tread design. If the data are not available, the contact area may be estimated for pneumatic tires by dividing wheel load by inflation pressure, and roughly approximated for solid or cushion tires by multiplying the wheel load by three or less if the tire size is known. For tire data may be obtained from *Design Engineers' Tables* (The and Elmer Association 1974 and Goodyear 2001).

When the tire contact area has been determined, Fig. 3-3 is used to find the effective contact area for use in the design steps. The correction is made because slab stress for small load contact areas are overestimated when computed by conventional theory. The basis for the adjustment is given in *Reinforcement* 1975 (The Reinforcement is used for joint loads discussed in a later section). In using Fig. 3-4 it is necessary to square and cube the loads. This is a trial-and-error process to be checked against the final required design procedure. The degree of correction increases as contact area becomes smaller and slab depth runs become greater.

DESIGN EXAMPLE—VEHICLE LOADS, SINGLE WHEEL

The following example problem illustrates the use of Figs. 3-4 and 3-5 for slab thickness design for vehicle loads. NOTE: CONVERT ALL WEIGHT VALUES TO PSY (lb/ft²).

Data for Left Truck A

axle load	11.2 k (25 kips)
wheel spacing	760 mm (27 in.)
No. of wheels on side	3
Tire inflation pressure	0.26 MPa (117 psi)

$$\begin{aligned} \text{Total contact area} &= \frac{\text{wheel load}}{\text{inflation pressure}} \\ &= \frac{11,200}{117} = 95.73 \text{ ft}^2 \end{aligned}$$

Subgrade and Concrete Data

subgrade modulus, k	21 MPa/m (120 pci)
Concrete flexural strength, MPa	4.1 MPa (595 psi)
	at 28 days

STRUCTURAL CALCULATIONS

**City Of North Las Vegas
Fire Station 53
North Las Vegas, NV**

Miscellaneous

- SOIL PARAMETERS :
(PER GEO TECHNICAL REPORT)
- SEE ATTACHED

- Adjacent Footing Loads

- **WEEK: ONE FROM ESO**

Pr. 8,900.00

7/1/93 320 lbs

SECRET

P = 20, 120 lbs

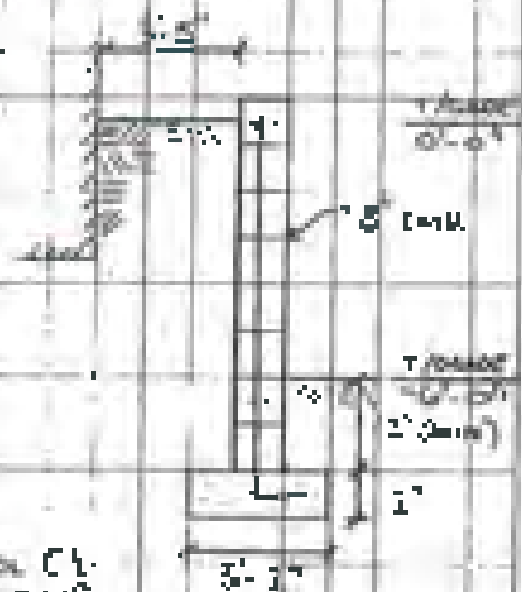
At 1000

$$P_{\text{in}} = 200 \text{ lbs}$$
$$P_{\text{CL}} = G'_{\text{EFF}} \times \tau_{\text{CL}} = 4.7 \text{ lbs}$$

(SEE EVENTUAL FOR DESIGN)

- USE Binary Partitioning with 2-5% error

CF38 FOOTING = 3-#5' LONG AND #4 @ 8" OC
TRANS. REIN AT BOTTOM. = #3 @ 18" OC. AT TOP



[illegible]

Summary of Overturning & Resisting Forces & Moments

[illegible]

47-7888 10/10/2014 2:24 PM 10/10/2014 2:24 PM 10/10/2014 2:24 PM

Traffic Enclosure

- Deck Design:

$L = 0.8$;

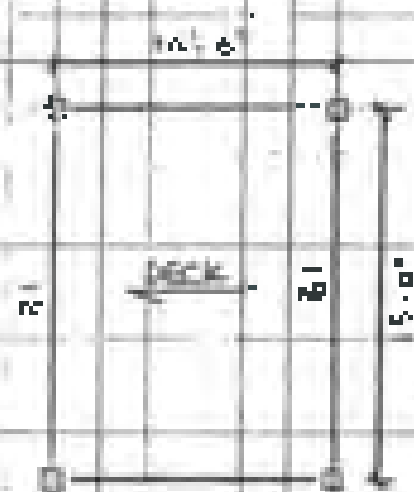
$D_L = 2.5 \text{ PSF}$

$L_L = 20 \text{ PSF}$

$T_L = 23 \text{ PSF}$

Use 153-206 Deck w/ 3'-0" span

Actual Total Load = $23 \text{ PSF} \therefore \text{OK}$



- Framing Design:

Beam B1

Loads: $W_{DL} = 3 \text{ PSF} \times 6 \text{ ft} = 18 \text{ PSF}$

$W_{LL} = 20 \text{ PSF} \times 6 \text{ ft} = 120 \text{ PSF}$

$W_{TL} = 138 \text{ PSF}$

(SEE ENERCAK FOR DESIGN)

USE HSS 8x4x1/8 BEAM

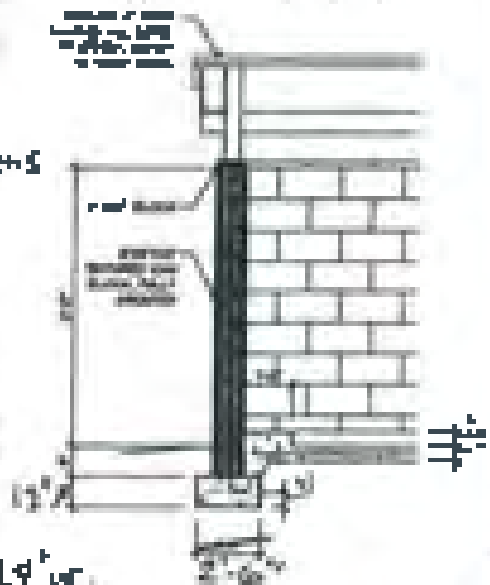
CMU WALL DESIGN:

LOADS:

$$\begin{aligned}
 P_{DL} &= 220 \text{ lbs} \\
 P_{LL} &= 1,120 \text{ lbs}
 \end{aligned}
 \left. \begin{array}{l} \text{FROM 2nd FLOOR} \\ \text{BEAM 2' x 12" x 12"} \end{array} \right\}$$

SOIL PARAMETERS
 PER SOILS REPORT

(SEE EROSION/FIR DESIGN)



⇒ USE 8" CMU WALL w/ #5 @ 16" OC
 FULLY GRAVITY

⇒ 2'-6" x 12" THICK FOOTING w/ 3-#4 CONT
 & #4 @ 18" OC TRANS. REIN.





Colson/Parish/Robinson
4900 Bermuda, Suite 100
Las Vegas, NV 89176
Tel: 702-496-4954
Fax: 702-496-4956

Title: PET-75 Beam #51
Design: R.R.
Description:

Job # C-750000
Date: 7/20/94 09:44:07

NAME

1/12

Colson/Parish/Robinson
4900 Bermuda, Suite 100
Las Vegas, NV 89176

Steel Beam Design

Page: 3

Revised: 10/20/94 10:00:00

Description: Truck Enclosure Framing - B1

Sketch & Diagram

Length: 10.000 ft (3.048 m)



Beam #51
Length: 10.000 ft

Beam #51
Page: 3 of 3

Beam #51
Page: 3 of 3





E.C. CONSULTING, INC.
 4744 Bermuda Oaks Dr
 Las Vegas, NV 89121
 Tel: 702-494-4444
 Fax: 702-494-4444

Title: PLATE GIRDER
 Design: Full
 Description:

Job # 07000000
 Date: 8/17/04 10:40:00

Drawn:

1/1/04

Check: 1/1/04 10:40:00, 1/1/04 10:40:00, 1/1/04 10:40:00

File Name:

E.C. CONSULTING, INC.
 4744 Bermuda Oaks Dr
 Las Vegas, NV 89121

Restrainted Retaining Wall Design

Page: 3

Revision: 1/1/04 10:40:00

Description:

Summary of Forces on Footing: Wall is NOT resisting sliding, there is FORWARD at footing

Forces on footing are shown in the following table, in kips

Component Name
 - kips
 Horizontal
 Vertical

Active Pressure
 - 10.0
 10.0

Sliding Force
 - 10.0
 10.0

Overturning Moment
 - 10.0
 10.0

Footing Capacity
 - 10.0
 10.0

Net Moment
 - 10.0
 10.0

Component Name
 - kips
 Horizontal
 Vertical

Active Pressure
 - 10.0
 10.0

Sliding Force
 - 10.0
 10.0

Overturning Moment
 - 10.0
 10.0

Footing Capacity
 - 10.0
 10.0

Net Moment
 - 10.0
 10.0

Total Vertical Force
 - 10.0
 10.0

Resultant Force
 - 10.0
 10.0

Project: NLYFD Station #53
 Date: 09502-01
 Location: Fence Post
 Drawing: A-18 Date: 08/29/07
 Scale: _____
 Author: JMT

SECURITY GATE / FENCE POST

- APPLIED LOADS:

$$155 \text{ lb/2' x } 2 = 6.8 \text{ ksf}$$

$$1" \text{ sq ft } 2' \times 2' = 20 \text{ ksf}$$

$$A_s = 7'-4"$$

$$P = (6.8 \text{ ksf} \times 7'-4") + (20 \text{ ksf} \times 2'-0")$$

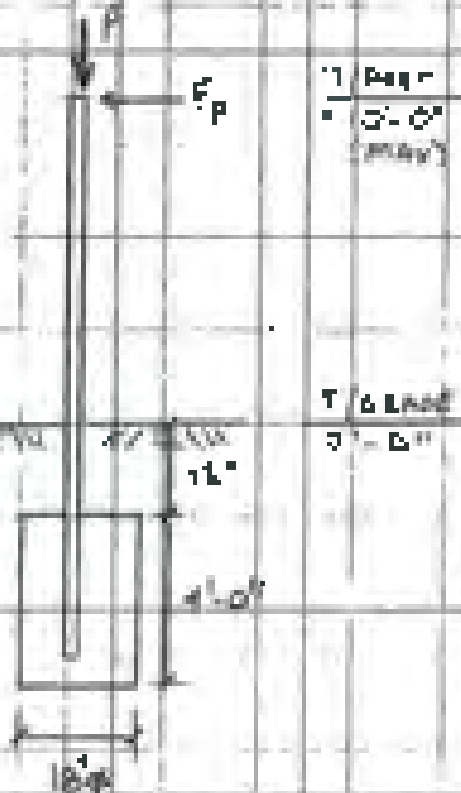
$$P = 110 \text{ lbs}$$

- LATERAL LOAD:

$$+ p = 200 \text{ lbs}$$

(SEE EMERGEAL FOR DESIGN)

USE 18" x 4' x 1'-0" CONCRETE FOOTING



Full Text:
 View Full Text: [View Full Text](#)
 Download Full Text: [Download Full Text](#)

Post-Embedding in Bold

1

Figure 1

Description:	Light Area Pooling (LAP)
---------------------	--------------------------

Keywords: *work engagement, organizational commitment, turnover intentions, organizational citizenship behaviors, job satisfaction, organizational trust*

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Active Pipeline	1993.00 gpd	Applied Loads...	
Non-Industrial	1,120,000 gpd	Field Load	979,000 gpd
Landfill Leachate System	1,000	Sanitary Sewer System	10,000 gpd
Process Effluents			
Quantity	14,000 gpd	Combined Load	11,000 gpd
Retention in Storage		Retention in Storage	14,000 gpd
		Retention in Storage	3,000 gpd

Summary

Statement of Earnings			
Particulars	2019	2018	2017
Revenue	1,000,000	950,000	900,000
Cost of Sales	(400,000)	(380,000)	(360,000)
Gross Profit	600,000	570,000	540,000
Operating Expenses	(200,000)	(190,000)	(180,000)
Operating Income	400,000	380,000	360,000
Other Income	10,000	20,000	10,000
Income Before Tax	410,000	400,000	370,000
Income Tax Expense	(100,000)	(90,000)	(80,000)
Net Income	310,000	310,000	290,000

$Y_p = 280 \text{ pcf}$ (Per Soil Report)

$$P_{\text{perm}}/Y_{FD} = 280 \text{ psi} \times 400 = 1120 \text{ PSI}$$

EXHIBIT 10

ALL DRAWINGS, SPECIFICATIONS AND SPECIAL TECHNICAL REQUIREMENTS ASSOCIATED WITH THE PROJECT AND IMPROVEMENTS PRESENTED HEREIN HAS BEEN ACKNOWLEDGED UNDER THE SUPERVISION OF RESPONSIBLE PROFESSIONAL(S) HAVING THE APPROPRIATE NOTIFICATION TO BE IN THIS CAPACITY BASED ON THE SCOPE OF THIS SPECIFIC PROJECT AND IN ACCORDANCE WITH THE STATUTORY PROVISIONS OF THE NEVADA REVISED STATUTES (NRS) AND THE NEVADA ADMINISTRATIVE CODE (NAC) INCLUDING NRS 218.236 AND NAC 218.236. NAC 218.236 AND NAC 218.236 NOTIFICATION SIGNING COMPLIANCE WITH STATUTORY AND RELATED ADMINISTRATIVE CODE REQUIREMENTS IS HEREBY PROVIDED BY THE RESPONSIBLE PROFESSIONAL(S) IN THE FORM OF A STAMP OR SEAL PLACED ON THE PROJECT DOCUMENTS.

SHEET INDEX

SHT. NO.	DWG. NO.	DRAWING TITLE
GENERAL		
1	01.00	COVER SHEET
2	01.01	GENERAL INTRODUCTION
3	01.02	CODE ANALYSIS & EXISTING PLAN
CIVIL		
4	C1.00	COVER SHEET
5	C1.01	GENERAL NOTES SHEET
6	C2.00	HORIZONTAL CONTROL PLAN
7	C3.00	UTILITY PLAN
8	C4.00	TRAFFIC & FIRE CONTROL PLAN 1
9	C5.00	TRAFFIC & FIRE CONTROL PLAN 2
10	C6.00	SECTIONS AND DETAILS
11	C7.00	DETAILS
12	C8.00	SEWERAGE PLAN & PROFILE
STRUCTURAL		
13	S0.01	GENERAL STRUCTURAL NOTES
14	S1.00	FOUNDATION PLAN
15	S2.00	ROOF FRAMING PLAN
16	S3.01	FOUNDATION & SOIL DETAILS
17	S3.02	FRAMING SECTION, DETAILS, ELEVATION
18	S3.03	WALL SECTION & FRAMING DETAILS
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20	A0.01	ARCHITECTURAL SITE PLAN
21	A0.02	SITE DETAILS
22	A1.00	FLOOR PLAN
23	A1.01	ENLARGED PLANS
24	A1.02	TOILET ROOM ELEVATIONS
25	A1.03	TOILET ROOM ELEVATIONS
26	A1.04	PLAN DETAILS
27	A2.00	ROOF PLAN & DETAILS
28	A2.01	ROOF DETAILS
29	A2.02	EXTERIOR BUILDING ELEVATION
30	A2.03	EXTERIOR BUILDING ELEVATION
31	A2.04	BUILDING SECTION
32	A2.05	WALL SECTIONS
33	A2.06	WALL SECTIONS
34	A2.07	WALL SECTIONS
35	A2.08	ENLARGED DETAILS
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51	M2.1	MECHANICAL ROOF PLAN
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65	E0.5	DETAILS AND DIAGRAMS
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DEPARTMENT OF PUBLIC WORKS

CNLV FIRE STATION 53

BID NO. 1287

LABOR COMMISSION NO. PWP-CL-2008-4

FUNDED BY:

GENERAL OBLIGATION BOND
APNS: 139-08-601-007, 139-08-601-008



BASIS OF BEARINGS

THE SOUTH HALF (SH/2) OF THE SOUTHWEST QUARTER (SW/4) OF THE SOUTHWEST QUARTER (SW/4) OF THE NORTHEAST QUARTER (NE/4) OF SECTION 8, TOWNSHIP 20 NORTH RANGE 91 EAST, NEAD.

NAVD88 BENCHMARK

NEVADA - ELEVATION 686.385 METERS (2253.00 FEET) MUST BE USED AS THE BENCHMARK FOR ALL CONSTRUCTION WORK AT THE INTERSECTION OF THE TOP OF CURB AT THE SOUTHWEST CORNER OF THE INTERSECTION OF DOWNS ROAD AND CHANDLER STREET.



VICINITY MAP
NOT TO SCALE

* APPROVALS:

Robert E. Huggins, P.E. 11/17/07
DIRECTOR OF PUBLIC WORKS/CITY ENGINEER
DATE
Robert E. Huggins, P.E. 11/17/07
MANAGER OF CONSTRUCTION MANAGEMENT
DATE

REVIEWED BY:

Robert E. Huggins, P.E. 11/17/07
PROJECT WORKS PROJECT MANAGER
DATE
CITY OF NORTH LAS VEGAS FIRE DEPARTMENT
DATE
Mike Huggins, Director 11/17/07
CITY OF NORTH LAS VEGAS PARKS AND RECREATION DEPARTMENT
DATE

Mike Huggins, P.E. 11/17/07
NEVADA POWER COMPANY
DATE
NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY CHANGES OR FUTURE CONFLICTS SINCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCORDINGLY PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

Mike Huggins, P.E. 11/17/07
SOUTHWEST GAS CORPORATION
DATE
SOUTHWEST GAS CORPORATION ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL GAS REQUIREMENTS ASSOCIATED WITH THIS PROJECT. SOUTHWEST GAS CORPORATION RESERVES THE RIGHT TO ADDRESS ANY CHANGES OR FUTURE CONFLICTS SINCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCORDINGLY PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

Mike Huggins, P.E. 11/17/07
SOUTHERN NEVADA WATER AUTHORITY
DATE
SOUTHERN NEVADA WATER AUTHORITY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL WATER REQUIREMENTS ASSOCIATED WITH THIS PROJECT. SOUTHERN NEVADA WATER AUTHORITY RESERVES THE RIGHT TO ADDRESS ANY CHANGES OR FUTURE CONFLICTS SINCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCORDINGLY PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

Mike Huggins, P.E. 11/17/07
CITY OF NORTH LAS VEGAS INC.
DATE
CITY OF NORTH LAS VEGAS INC. ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL CITY REQUIREMENTS ASSOCIATED WITH THIS PROJECT. CITY OF NORTH LAS VEGAS INC. RESERVES THE RIGHT TO ADDRESS ANY CHANGES OR FUTURE CONFLICTS SINCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCORDINGLY PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

Mike Huggins, P.E. 11/17/07
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DATE
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APPROVAL OF THESE IMPROVEMENT PLANS AND SPECIFICATIONS IS MADE BASED ON THE REPRESENTATIONS MADE BY THE PROFESSIONAL(S) THAT THEY HAVE DISCHARGED THEIR RESPONSIBILITIES AND PREPARED COMPLETE DOCUMENTS WHICH COMPLY WITH CITY OF NORTH LAS VEGAS REQUIREMENTS FOR CONSTRUCTION OF THE IMPROVEMENTS SPECIFIED HEREON.

Call before you Overhead
1-702-693-6111
ELECTRIC POWER AND SAFETY SERVICES DEPARTMENT

Call before you Dig
1-800-227-2800
UNDERGROUND UTILITY LINES, P.E. SERVICE

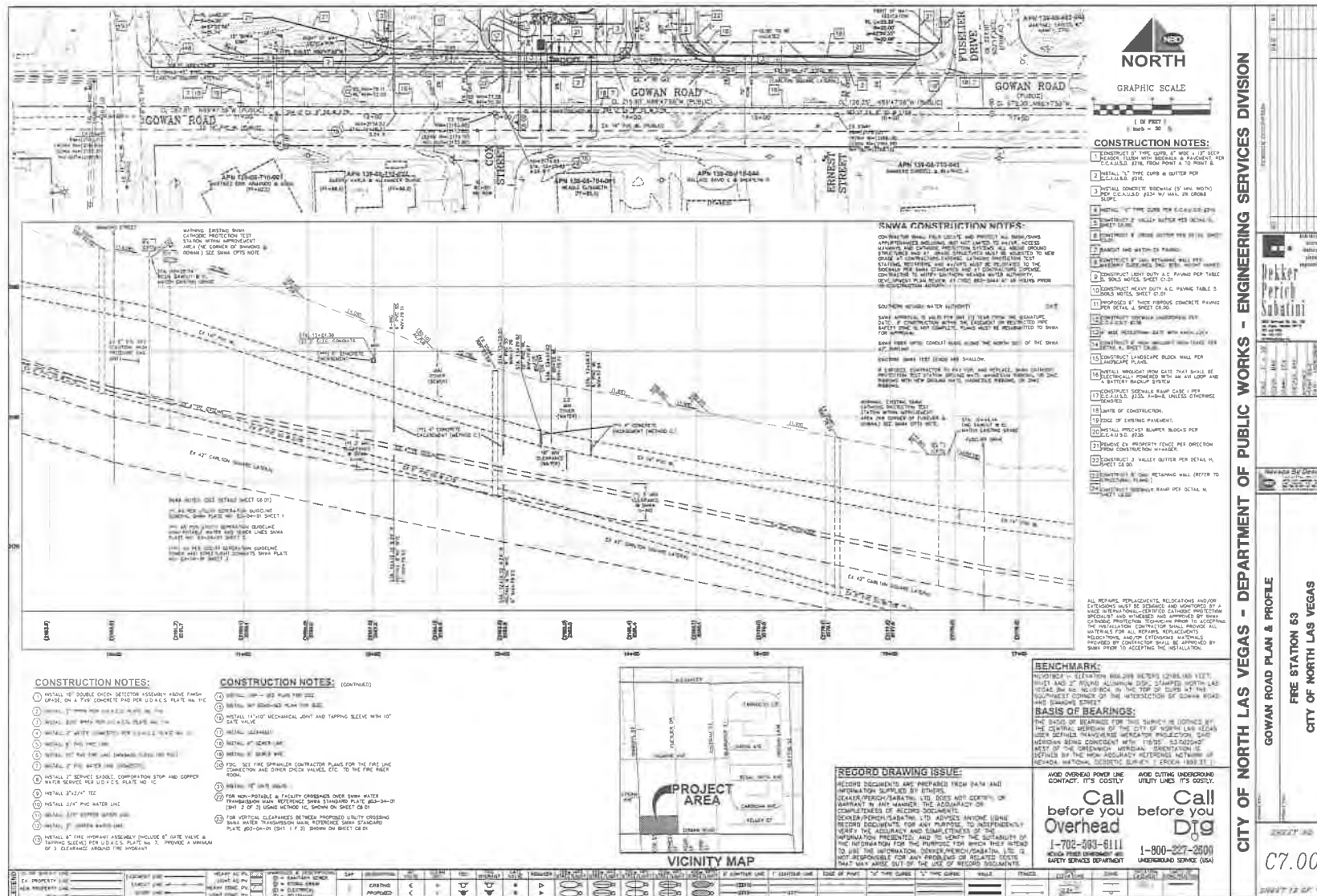
CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

COVER SHEET

FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

SHEET NO.
G1.00
SHEET 1 OF 77

PET.APP.000570



A community review

- ### 1. STRUCTURAL STEEL :

- STRUCTURAL MODEL

- 5. CONCLUSIONS**

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- #### A. ESTIMATED COEFFICIENTS AND TESTS

- 1. Introduction**

- ADDITIONAL FACTORS CONSIDERED IN HAVE CONSIDERED THE HORIZONTAL DANCE AND W

A QUALITY ASSURANCE PROGRAM

- 2. STRUCTURAL ANALYSIS**

- [illegible]

2000年12月

- ### 3. LOADS

- HORIZONTAL**

- $$\begin{aligned} Y_{\text{obs}} &= O_1 \\ Y &= E_1 \end{aligned}$$

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PROPOSED SUBGRADE	RECOMMENDED STRUCTURAL FILL THICKNESS*
1. 100% FILL	12"
2. 90% FILL	12"
3. 80% FILL	12"
4. 70% FILL	12"
5. 60% FILL	12"
6. 50% FILL	12"
7. 40% FILL	12"
8. 30% FILL	12"
9. 20% FILL	12"
10. 10% FILL	12"
11. 0% FILL	12"

1. GENERAL CRITERIA

- ## B. FIELD OBSERVATION

- ### EXAMINATION OF A TEST OF MAX

- #### 4. BINDING OF THE

- STRUCTURE

- COMPACT
BUTTA

- 6.20 FCT
CONTINUED

7. Mr. [REDACTED]

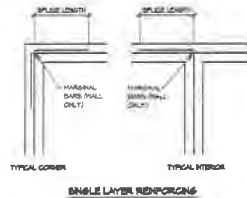
- D. STRICKLAND, P. J. THOMAS

- CONFIDENTIAL

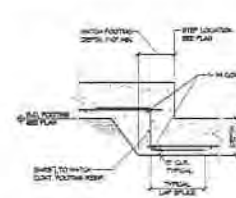
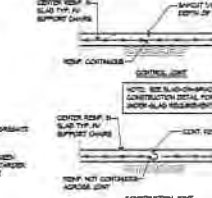
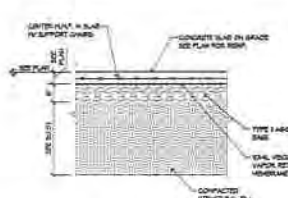
- 2000

BAR SIZE	SPICE LENGTH	DEVELOPMENT	SPICE DEVELOPMENT
#4	2'-0"	1'-0"	1'-0"
#5	2'-0"	1'-0"	1'-0"
#6	2'-0"	1'-0"	1'-0"
#7	2'-0"	1'-0"	1'-0"
#8	2'-0"	1'-0"	1'-0"
#9	2'-0"	1'-0"	1'-0"
#10	2'-0"	1'-0"	1'-0"
#11	2'-0"	1'-0"	1'-0"

1. SLAB LENGTHS ARE TYPICAL UNLESS OTHERWISE NOTED ON PLANS AND DETAILS.
2. SPICES SHALL BE STaggered AT LEAST 30" AND SHALL BE SPACED 6" ON CENTER ON TRANSVERSE OR 12" ON CENTER ON LONGITUDINAL SPICES.
3. VERTICAL WALL REINFORCING SHALL LAP A MINIMUM OF 48" ON CENTER OF CONSTRUCTION JOINTS.
4. REINFORCING SHALL BE LAPPED A MINIMUM OF 48" ON CENTER OF CONSTRUCTION JOINTS.
5. FOR HORIZONTAL WALLS, REINFORCING SHALL BE LAPPED A MINIMUM OF 48" ON CENTER OF CONSTRUCTION JOINTS.



SINGLE LAYER REINFORCING



A1 LAP SPICE & EMBED SCHEDULE

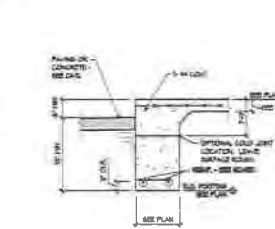
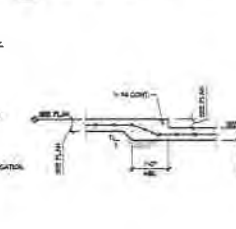
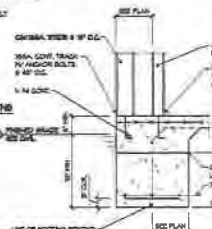
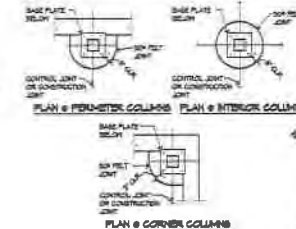
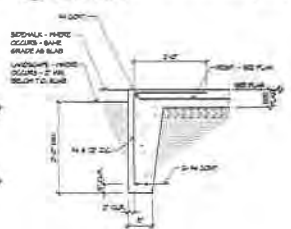
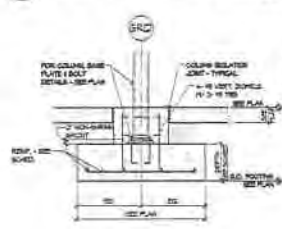
A2 WALL & FOOTING INTERSECTION REINFORCING

A3 SLAB-ON-GRADE CONSTRUCTION

A4 CONSTRUCTION JOINTS

A5 STEPPED FOOTING

A6 SLAB ON GRADE EDGE



B1 COLUMN FOOTING

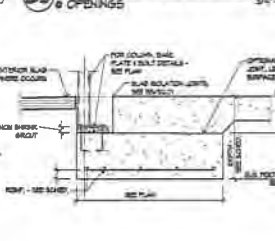
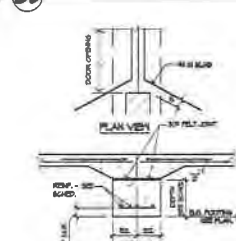
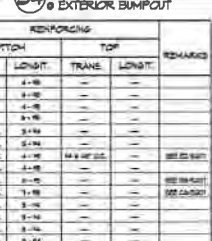
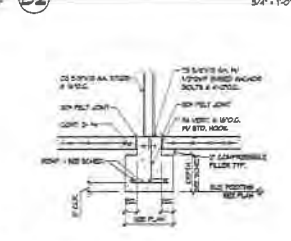
B2 SLAB ON GRADE EDGE

B3 ISOLATION JOINT

B4 SLAB EDGE

B5 SLAB DEPRESSION (1" TO 8")

B6 SLAB ON GRADE EDGE



C1 INTERIOR BEARING WALL

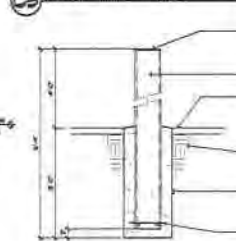
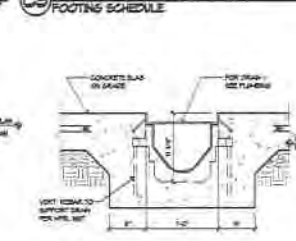
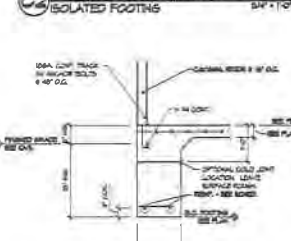
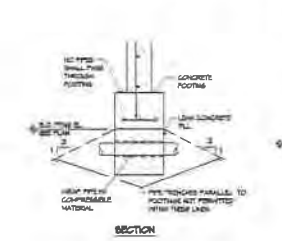
C2 ISOLATED FOOTING

C3 CONTINUOUS AND SPREAD

C4 FOOTING SCHEDULE

C5 DOOR THRESHOLD

C6 PERIMETER FOOTING



D1 PIPE NEAR GRADE BEAMS

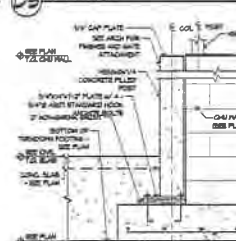
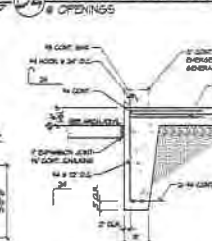
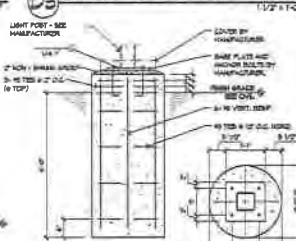
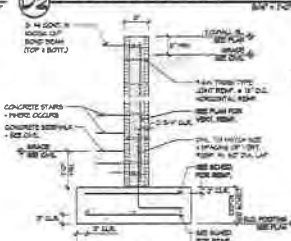
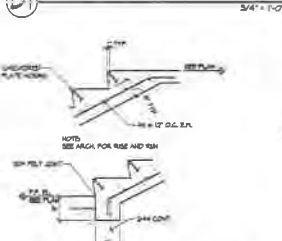
D2 SLAB ON GRADE EDGE

D3 INTERIOR DRAIN DETAIL

D4 SLAB ON GRADE EDGE

D5 BOLLARD

D6 HOUSEKEEPING SLAB



E1 CONCRETE STEPS ON GRADE

E2 8" CMU RETAINING WALL

E3 UTILITY POLE

E4 EQUIPMENT PAD

E5 GATE POST DETAIL

E6 HOUSEKEEPING SLAB

E1 CONCRETE STEPS ON GRADE

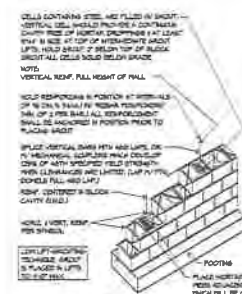
E2 8" CMU RETAINING WALL

E3 UTILITY POLE

E4 EQUIPMENT PAD

E5 GATE POST DETAIL

E6 HOUSEKEEPING SLAB



B' CMU CORNER

12" CMU CORNER

12" CMU INTERSECTION WITH MCJ

12" CMU WALL END

8" CMU WALL END

B1 TYPICAL REINFORCED CONCRETE MASONRY CONSTRUCTION

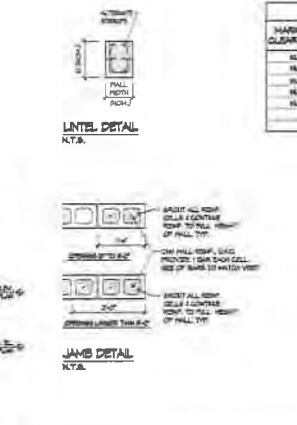
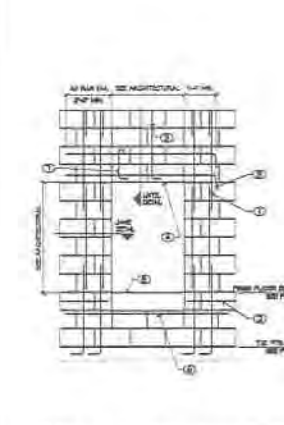
B2 8" CMU INTERSECTION

B3 MCJ-MASONRY CONTROL JOINT

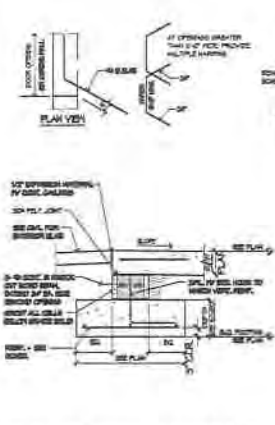
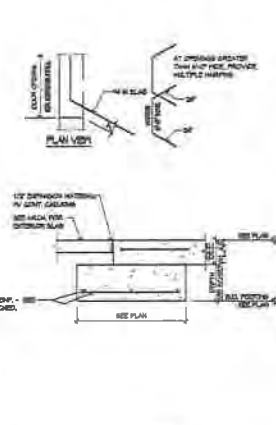
B4 MASONRY PLASTER REINFORCING

B5 SECTION

B6 INTERIOR CMU WALL FOOTING



MARK OR CLEAR SPAN	DEPTH (IN)	DEPTH (IN)	TOP REINFORCING	STRUTS AND BRACING
1/4"	12"	12"	3-#4	
1/2"	12"	12"	3-#4	
3/4"	12"	12"	3-#4	
1"	12"	12"	3-#4	
1 1/4"	12"	12"	3-#4	
1 1/2"	12"	12"	3-#4	
1 3/4"	12"	12"	3-#4	
2"	12"	12"	3-#4	
2 1/4"	12"	12"	3-#4	
2 1/2"	12"	12"	3-#4	
2 3/4"	12"	12"	3-#4	
3"	12"	12"	3-#4	
3 1/4"	12"	12"	3-#4	
3 1/2"	12"	12"	3-#4	
3 3/4"	12"	12"	3-#4	
4"	12"	12"	3-#4	
4 1/4"	12"	12"	3-#4	
4 1/2"	12"	12"	3-#4	
4 3/4"	12"	12"	3-#4	
5"	12"	12"	3-#4	
5 1/4"	12"	12"	3-#4	
5 1/2"	12"	12"	3-#4	
5 3/4"	12"	12"	3-#4	
6"	12"	12"	3-#4	
6 1/4"	12"	12"	3-#4	
6 1/2"	12"	12"	3-#4	
6 3/4"	12"	12"	3-#4	
7"	12"	12"	3-#4	
7 1/4"	12"	12"	3-#4	
7 1/2"	12"	12"	3-#4	
7 3/4"	12"	12"	3-#4	
8"	12"	12"	3-#4	
8 1/4"	12"	12"	3-#4	
8 1/2"	12"	12"	3-#4	
8 3/4"	12"	12"	3-#4	
9"	12"	12"	3-#4	
9 1/4"	12"	12"	3-#4	
9 1/2"	12"	12"	3-#4	
9 3/4"	12"	12"	3-#4	
10"	12"	12"	3-#4	
10 1/4"	12"	12"	3-#4	
10 1/2"	12"	12"	3-#4	
10 3/4"	12"	12"	3-#4	
11"	12"	12"	3-#4	
11 1/4"	12"	12"	3-#4	
11 1/2"	12"	12"	3-#4	
11 3/4"	12"	12"	3-#4	
12"	12"	12"	3-#4	



B6 INTERIOR CMU WALL FOOTING

D1 TYPICAL MASONRY WALL OPENING

D2 8" CMU INTERSECTION

D3 MCJ-MASONRY CONTROL JOINT

D4 CMU STEM WALL @ DOOR

D5 CMU STEM WALL @ BAY DOOR

D6 PARTIAL CMU WALL

E1 MASONRY POST

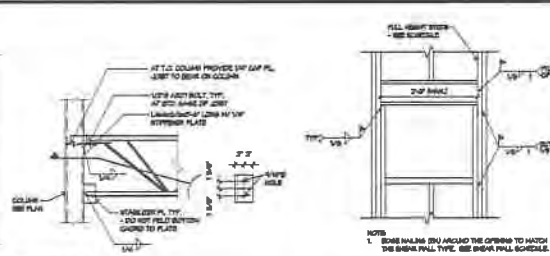
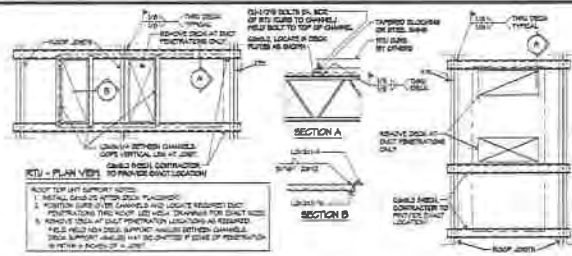
E2 8" TO 12" CMU CORNER

E3 8" TO 12" CMU INTERSECTION

E4 CMU STEM WALL @ DOOR

E5 CMU STEM WALL @ DOOR

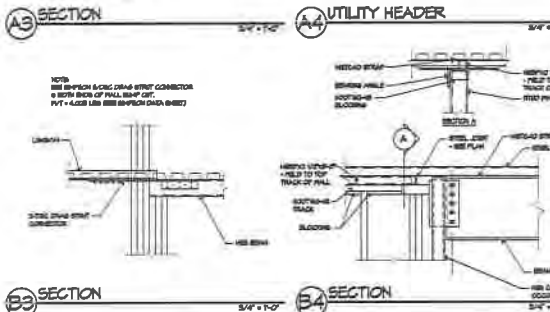
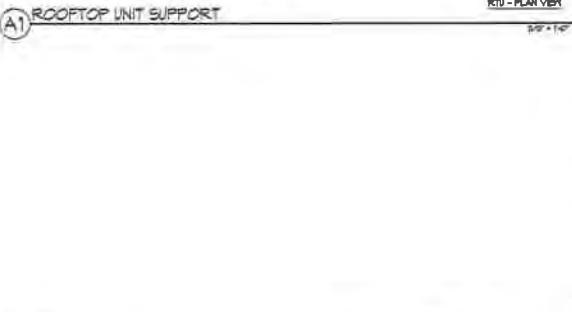
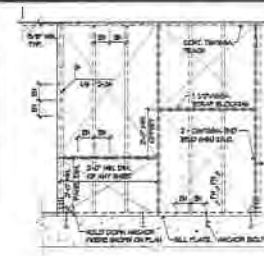
E6 SECTION



A4 UTILITY HEADER
5/4" x 1/4"

MARK	SECTION	REINFORCEMENT	NOTES
1	SECTION 1	1 # 4 TOP, 1 # 4 BOTTOM	1
2	SECTION 2	1 # 4 TOP, 1 # 4 BOTTOM	2
3	SECTION 3	1 # 4 TOP, 1 # 4 BOTTOM	3
4	SECTION 4	1 # 4 TOP, 1 # 4 BOTTOM	4

NOTES:
1. REINFORCEMENT SHALL BE 60% YIELD STRENGTH.
2. ALL REINFORCEMENT SHALL BE LAP SPICED.
3. ALL REINFORCEMENT SHALL BE DEVELOPED.
4. ALL REINFORCEMENT SHALL BE PROTECTED.



B4 SECTION
5/4" x 1/4"

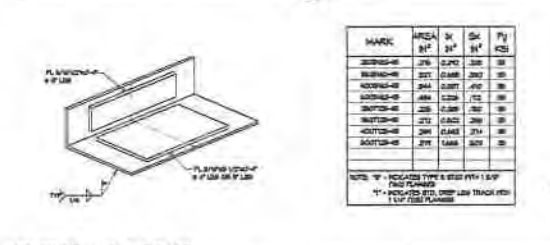
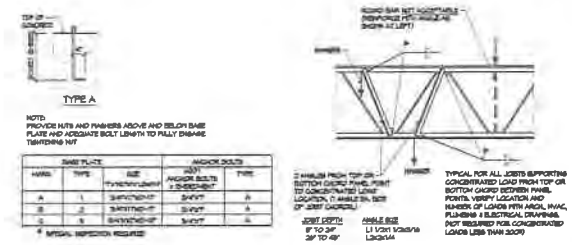
MARK	SECTION	REINFORCEMENT	NOTES
1	SECTION 1	1 # 4 TOP, 1 # 4 BOTTOM	1
2	SECTION 2	1 # 4 TOP, 1 # 4 BOTTOM	2
3	SECTION 3	1 # 4 TOP, 1 # 4 BOTTOM	3
4	SECTION 4	1 # 4 TOP, 1 # 4 BOTTOM	4

NOTES:
1. REINFORCEMENT SHALL BE 60% YIELD STRENGTH.
2. ALL REINFORCEMENT SHALL BE LAP SPICED.
3. ALL REINFORCEMENT SHALL BE DEVELOPED.
4. ALL REINFORCEMENT SHALL BE PROTECTED.

B5 BEAM/GIRDER CONNECTION
5/4" x 1/4"

MARK	SECTION	REINFORCEMENT	NOTES
1	SECTION 1	1 # 4 TOP, 1 # 4 BOTTOM	1
2	SECTION 2	1 # 4 TOP, 1 # 4 BOTTOM	2
3	SECTION 3	1 # 4 TOP, 1 # 4 BOTTOM	3
4	SECTION 4	1 # 4 TOP, 1 # 4 BOTTOM	4

NOTES:
1. REINFORCEMENT SHALL BE 60% YIELD STRENGTH.
2. ALL REINFORCEMENT SHALL BE LAP SPICED.
3. ALL REINFORCEMENT SHALL BE DEVELOPED.
4. ALL REINFORCEMENT SHALL BE PROTECTED.



C4 LIGHTGAGE STUD & TRACK
5/4" x 1/4"

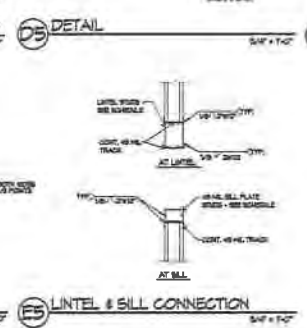
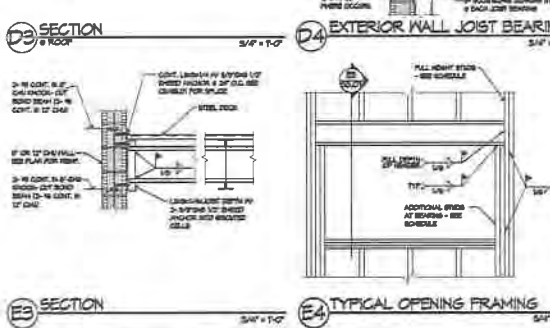
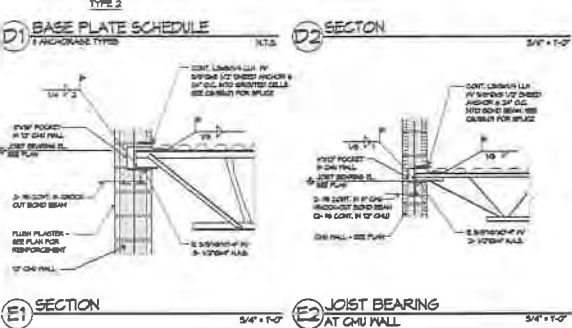
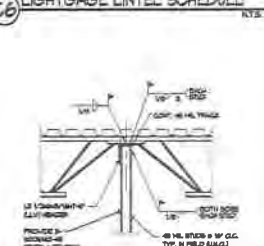
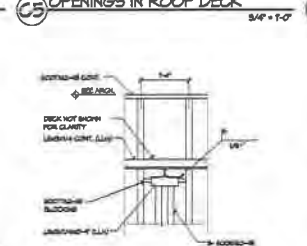
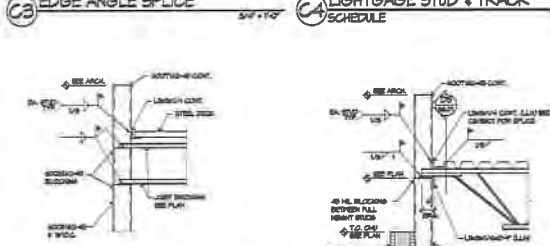
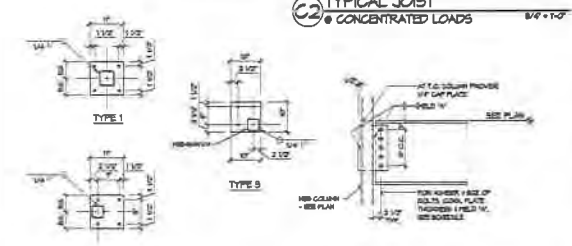
MARK	SECTION	REINFORCEMENT	NOTES
1	SECTION 1	1 # 4 TOP, 1 # 4 BOTTOM	1
2	SECTION 2	1 # 4 TOP, 1 # 4 BOTTOM	2
3	SECTION 3	1 # 4 TOP, 1 # 4 BOTTOM	3
4	SECTION 4	1 # 4 TOP, 1 # 4 BOTTOM	4

NOTES:
1. REINFORCEMENT SHALL BE 60% YIELD STRENGTH.
2. ALL REINFORCEMENT SHALL BE LAP SPICED.
3. ALL REINFORCEMENT SHALL BE DEVELOPED.
4. ALL REINFORCEMENT SHALL BE PROTECTED.

C5 OPENINGS IN ROOF DECK
5/4" x 1/4"

MARK	SECTION	REINFORCEMENT	NOTES
1	SECTION 1	1 # 4 TOP, 1 # 4 BOTTOM	1
2	SECTION 2	1 # 4 TOP, 1 # 4 BOTTOM	2
3	SECTION 3	1 # 4 TOP, 1 # 4 BOTTOM	3
4	SECTION 4	1 # 4 TOP, 1 # 4 BOTTOM	4

NOTES:
1. REINFORCEMENT SHALL BE 60% YIELD STRENGTH.
2. ALL REINFORCEMENT SHALL BE LAP SPICED.
3. ALL REINFORCEMENT SHALL BE DEVELOPED.
4. ALL REINFORCEMENT SHALL BE PROTECTED.



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

RECORD DRAWING ISSUE

FRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

SHEET NO.
S3.01

SHEET 18 OF 22

DATE: 11/17/21

BY: [Signature]

CHECKED BY: [Signature]

DESIGNED BY: [Signature]

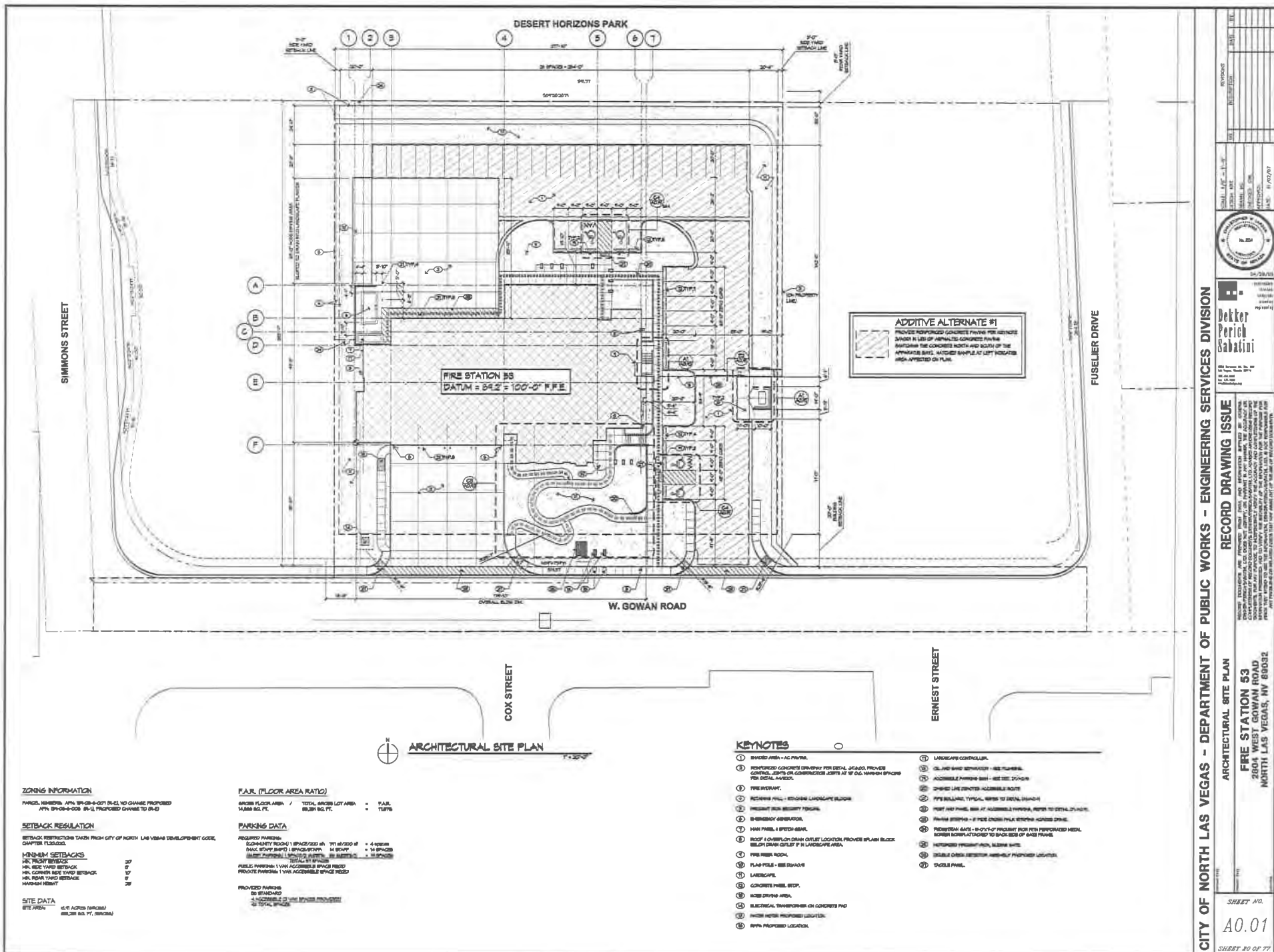
APPROVED BY: [Signature]

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

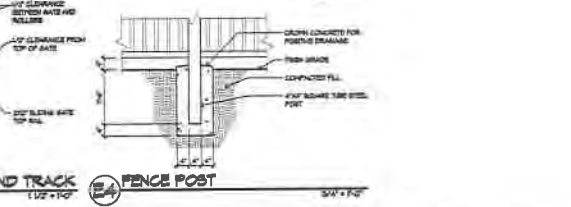
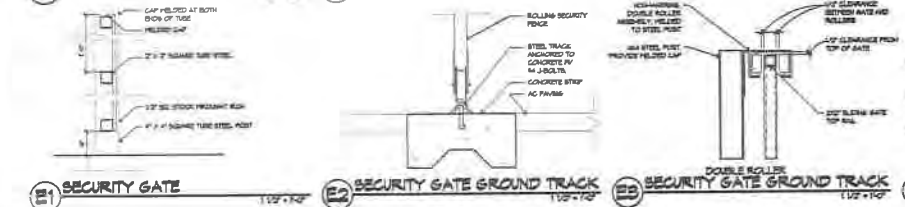
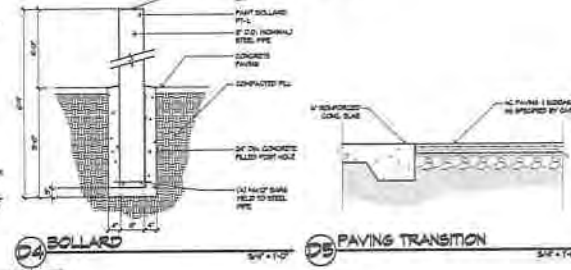
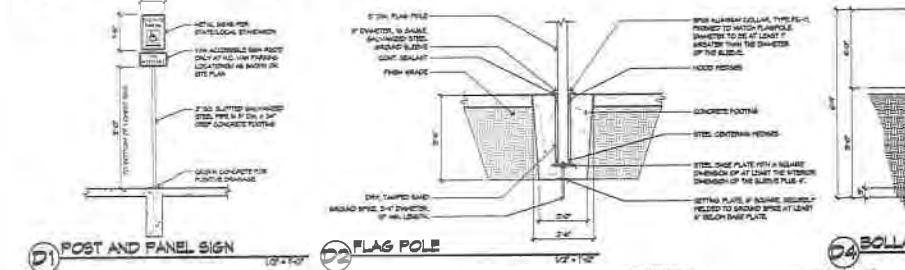
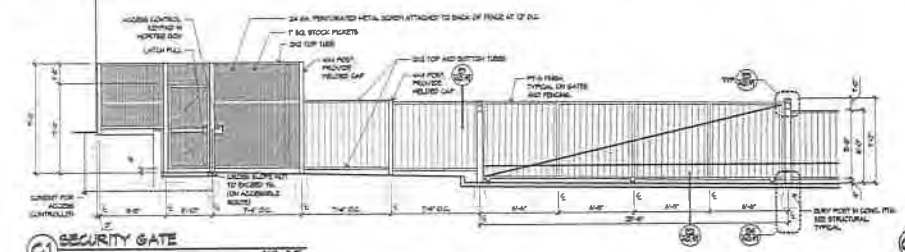
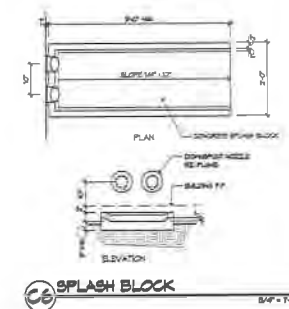
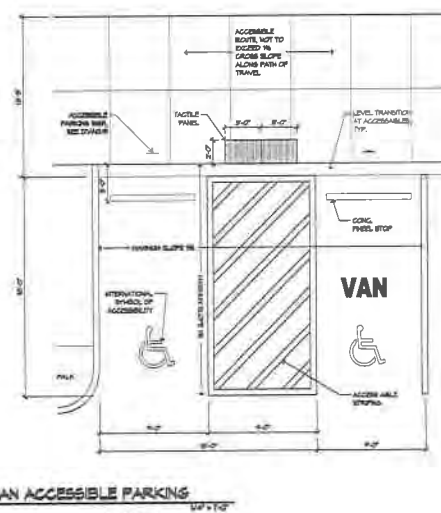
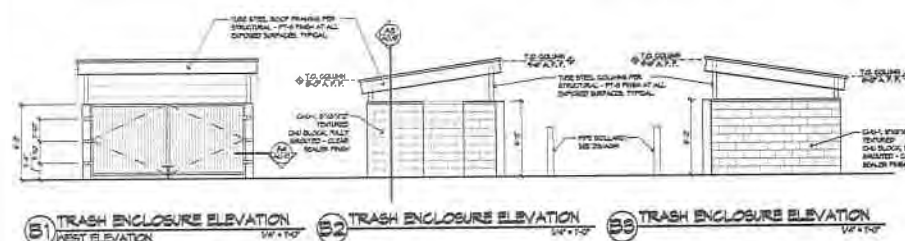
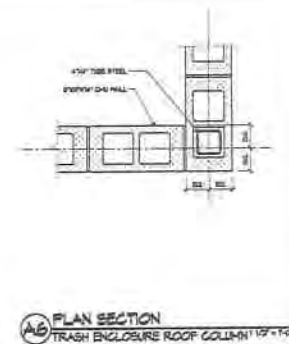
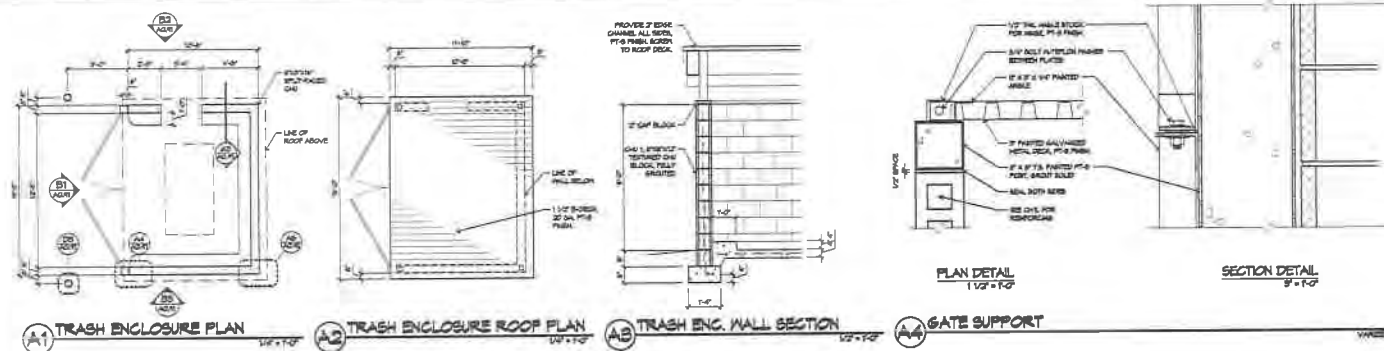
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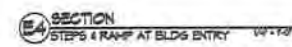
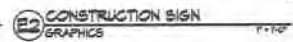
1. ALL REINFORCEMENT SHALL BE 60% YIELD STRENGTH.
2. ALL REINFORCEMENT SHALL BE LAP SPICED.
3. ALL REINFORCEMENT SHALL BE DEVELOPED.
4. ALL REINFORCEMENT SHALL BE PROTECTED.





PET.APP.000590



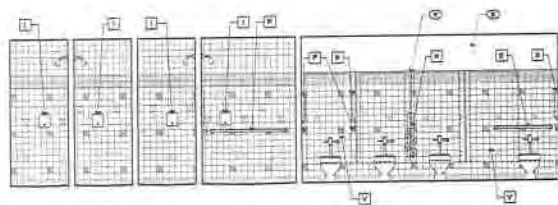




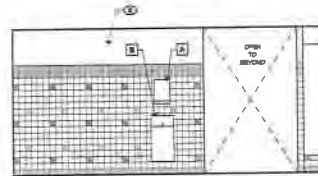
GENERAL NOTES

A. SEE ALSO FOR PRESENT TYPE, 2000 TYPE, AND 2000-2000.





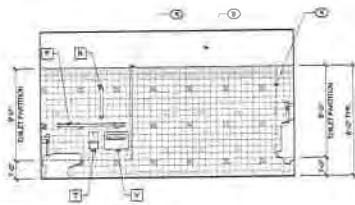
A1 MALE CREN RESTROOM 5'0" x 1'0"



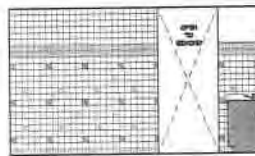
A4 MALE CREN RESTROOM 5'0" x 1'0"

KEYNOTES

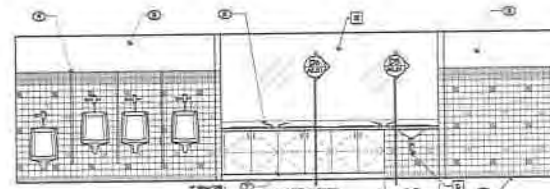
1. BENCH, SEE CHAIRS
2. WALL MOUNTED SHELVING
3. 1/4" HOLE PAPER DISPOSER, RECYCLE BOTTLES ONLY
4. TILE SHELF
5. SCHEDULED DOOR
6. ALUMINUM SHOWER DOOR, ANTI-SLIP, TYP. ALL SHOWERS
7. CADDIS, SEE CHAIRS
8. SOAP DISPENSER, TYP. ALL LAVS
9. TOILET PARTITION
10. SHOWER, PLUMBING, 1" x 1" TYP.
11. SHOWER CONTROL, AREA, SEE TOILET ACCESSORY SCHEDULE AND TYPICAL MOUNTING HEIGHTS
12. SHOWER VALVE TO SWITCH BETWEEN REAR WALL SHOWER HEAD AND ACCESSIBLE SHOWER HEAD



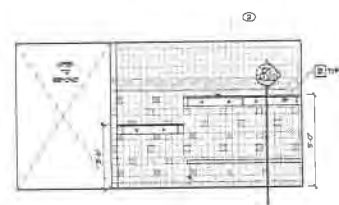
B1 MALE CREN RESTROOM 5'0" x 1'0"



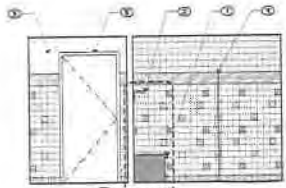
B3 MALE CREN RESTROOM 5'0" x 1'0"



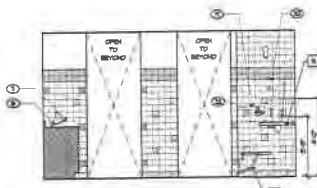
B5 MALE CREN RESTROOM 5'0" x 1'0"



C1 MALE CREN RESTROOM 5'0" x 1'0"



C3 MALE CREN RESTROOM 5'0" x 1'0"



C4 MALE CREN RESTROOM 5'0" x 1'0"

GENERAL NOTES

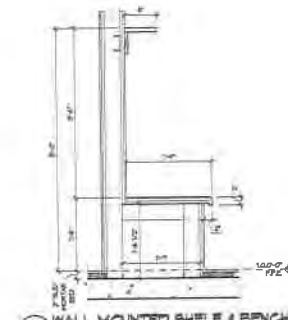
- A. PROVIDE SET HOOKS, CLIPS, PINS, ETC. AT ALL TOILET PARTITION JOINTS.
- B. TOILET COMPARTMENT DOORS, OR ACCESSIBLE STALLS, SHALL BE DESIGNED & CONSTRUCTED TO BE OPENED FROM THE SIDE WALL OR PARTITION PARTITION FROM THE INSIDE CLONE.
- C. THE STRUCTURAL STRENGTH OF ACCESSIBLE ACCESSORIES, SHOWERS, SHOWER HEADS, SHOWER CONTROLS, SHOWER VALVES, AND SHOWER HEADS, SHALL NOT BE LESS THAN THAT OF THE WALLS OR PARTITIONS TO WHICH THEY ARE ATTACHED.
- D. SEE ACCESSORY SCHEDULE FOR TYPICAL PARTITION AND WALL PARTITION DETAILS.

TILE LEGEND

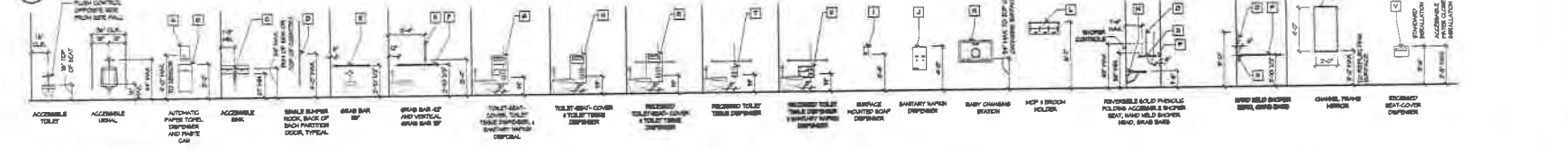
- PORCELAIN TILE (CT)
- CT-1
 - CT-2
 - CT-3
 - CT-4

TOILET ACCESSORY SCHEDULE	MODEL #
1. AUTOMATIC TOILET DISPOSER	10000-10
2. WHITE RESISTANT	10000-10
3. 1/4" HOLE PAPER DISPOSER	10000-10
4. 1/4" HOLE PAPER DISPOSER	10000-10
5. 1/4" HOLE PAPER DISPOSER	10000-10
6. 1/4" HOLE PAPER DISPOSER	10000-10
7. 1/4" HOLE PAPER DISPOSER	10000-10
8. 1/4" HOLE PAPER DISPOSER	10000-10
9. 1/4" HOLE PAPER DISPOSER	10000-10
10. 1/4" HOLE PAPER DISPOSER	10000-10
11. 1/4" HOLE PAPER DISPOSER	10000-10
12. 1/4" HOLE PAPER DISPOSER	10000-10
13. 1/4" HOLE PAPER DISPOSER	10000-10
14. 1/4" HOLE PAPER DISPOSER	10000-10
15. 1/4" HOLE PAPER DISPOSER	10000-10
16. 1/4" HOLE PAPER DISPOSER	10000-10
17. 1/4" HOLE PAPER DISPOSER	10000-10
18. 1/4" HOLE PAPER DISPOSER	10000-10
19. 1/4" HOLE PAPER DISPOSER	10000-10
20. 1/4" HOLE PAPER DISPOSER	10000-10

TOILET ACCESSORY SCHEDULE	MODEL #
1. SHOWER HEAD	10000-10
2. 1/4" HOLE PAPER DISPOSER	10000-10
3. 1/4" HOLE PAPER DISPOSER	10000-10
4. 1/4" HOLE PAPER DISPOSER	10000-10
5. 1/4" HOLE PAPER DISPOSER	10000-10
6. 1/4" HOLE PAPER DISPOSER	10000-10
7. 1/4" HOLE PAPER DISPOSER	10000-10
8. 1/4" HOLE PAPER DISPOSER	10000-10
9. 1/4" HOLE PAPER DISPOSER	10000-10
10. 1/4" HOLE PAPER DISPOSER	10000-10
11. 1/4" HOLE PAPER DISPOSER	10000-10
12. 1/4" HOLE PAPER DISPOSER	10000-10
13. 1/4" HOLE PAPER DISPOSER	10000-10
14. 1/4" HOLE PAPER DISPOSER	10000-10
15. 1/4" HOLE PAPER DISPOSER	10000-10
16. 1/4" HOLE PAPER DISPOSER	10000-10
17. 1/4" HOLE PAPER DISPOSER	10000-10
18. 1/4" HOLE PAPER DISPOSER	10000-10
19. 1/4" HOLE PAPER DISPOSER	10000-10
20. 1/4" HOLE PAPER DISPOSER	10000-10



D1 WALL MOUNTED SHELF & BENCH 5'0" x 1'0"



E1 TYP. MOUNTING HEIGHTS 5'0" x 1'0"

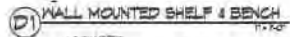
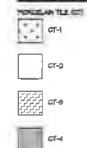


- ⑦ BENCH SEE DRAWING
- ⑧ PAUL MOUNTED SHELVING
- ⑨ THE FRONT PANEL IS AN OPEN FRONTED SHEDDING SYSTEM
- ⑩ THE BASE
- ⑪ REMOVABLE DOOR
- ⑫ ALUMINUM BRACKET (SEE DRAWING) TYP. ALL SHEDS
- ⑬ GARDENING, SEE DRAWING
- ⑭ LIGHT DIFFUSION, TYP. ALL LIGHTS
- ⑮ TIGHT PARTITION
- ⑯ DRAWING, PLEASE CHECK, SEE TYPICAL
- ⑰ SHOWER CONTROL AREA, SEE TYPICAL ACCESSORY SCHEDULES AND TYPICAL MOUNTING DETAIL DRAWING
- ⑱ BENCH AT SHOWER PLUMBING, LAYOUTS OVER THESE ELEMENTS, SEE DRAWING
- ⑲ TYPICAL ANGLE PLUMB AT BODS OF BENCH AND AT C.C. - LANE BELT PLUMB TO PLUMB LINE OF C.C. AND BENCH BODS
- ⑳ STRUCTURAL STEEL BEAMS



- A. PROVIDE AT LEAST ONE (1) TIE-ROD PERMITTED AT ALL TOILET SECTIONS.
- B. TOILET COMPARTMENT DOORS, ON ACCESSIBLE SIDEWALKS SHALL BE OPENED AT LEAST 60 INCHES FROM THE SIDE WALK OR WALKWAY SURFACE FROM THE FRONT EDGE.
- C. THE STRUCTURAL STRENGTH OF ACCESSIBLE ACCESSORIES FROM BARS, CHAIRS, SEATS, BENCHES, PARTITIONS, SUPPORTING STRUCTURES, AND MOUNTING DEVICES SHALL BE AT LEAST AS STRONG AS 300 LBS FOR BENCHES SEATS, BARS, SEATS, BENCHES, PARTS, AND TIE-ROD FORCE.
- D. SEE CHAPTER FOR TYPICAL WALL TIE-ROD AND WALL PARTITION.

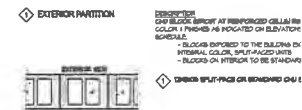
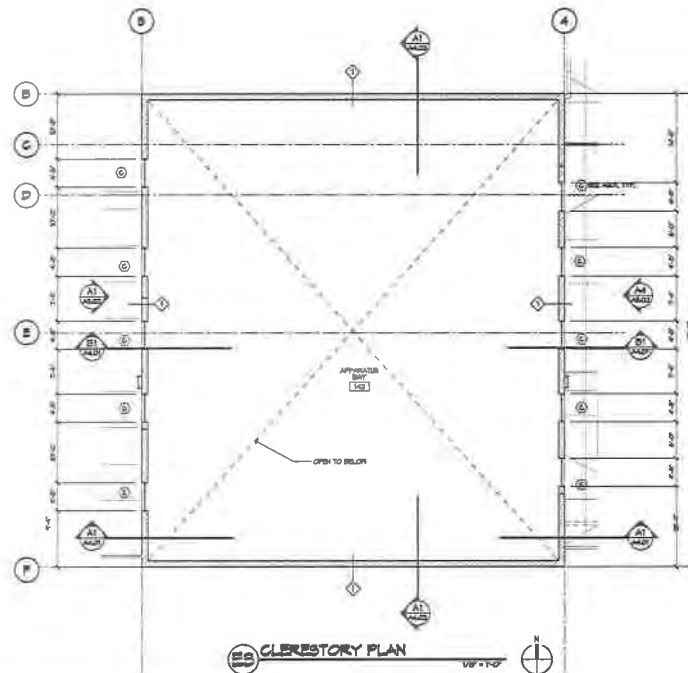
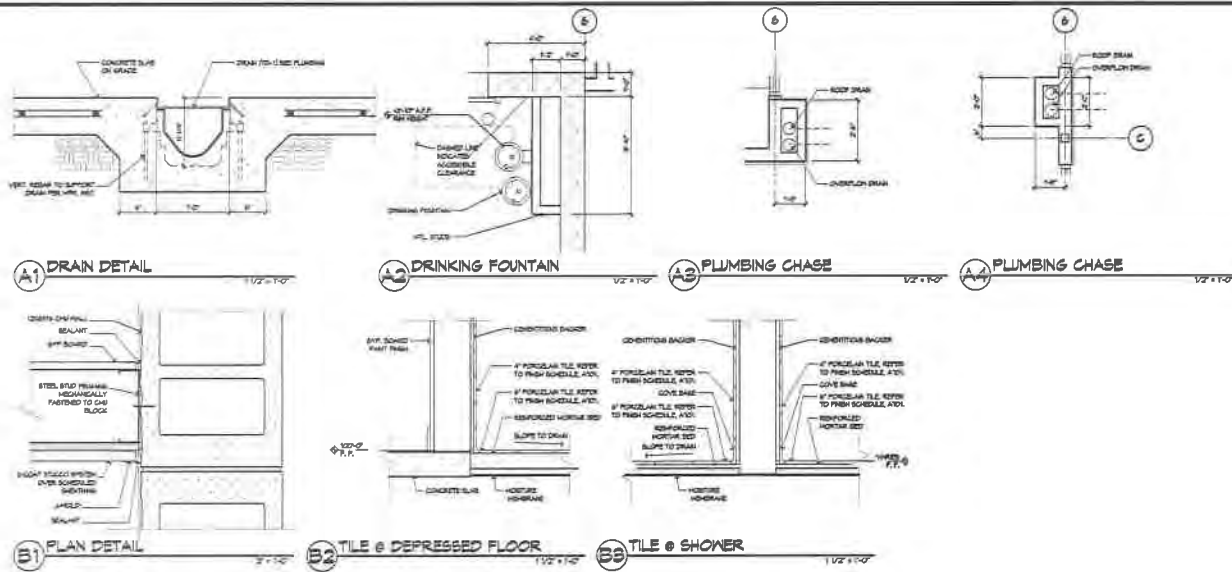
- NOVELAS Y TERCER



TOILET ACCESSORY SCHEDULE		MODEL
W	WIPER SWAY	W-001
W	WIPER SWAY	W-002
W	WIPER SWAY	W-003
W	WIPER SWAY	W-004
W	WIPER SWAY	W-005
W	WIPER SWAY	W-006
W	WIPER SWAY	W-007
W	WIPER SWAY	W-008
W	WIPER SWAY	W-009
W	WIPER SWAY	W-010
W	WIPER SWAY	W-011
W	WIPER SWAY	W-012
W	WIPER SWAY	W-013
W	WIPER SWAY	W-014
W	WIPER SWAY	W-015
W	WIPER SWAY	W-016
W	WIPER SWAY	W-017
W	WIPER SWAY	W-018
W	WIPER SWAY	W-019
W	WIPER SWAY	W-020
W	WIPER SWAY	W-021
W	WIPER SWAY	W-022
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W	WIPER SWAY	W-031
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NOTE: BASIS OF DESIGN - BORROR DUCT DRAIN FIVE
REGULATION AND IMPROVE HEAD-CONTROLS





CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

PLAN DETAILS

FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

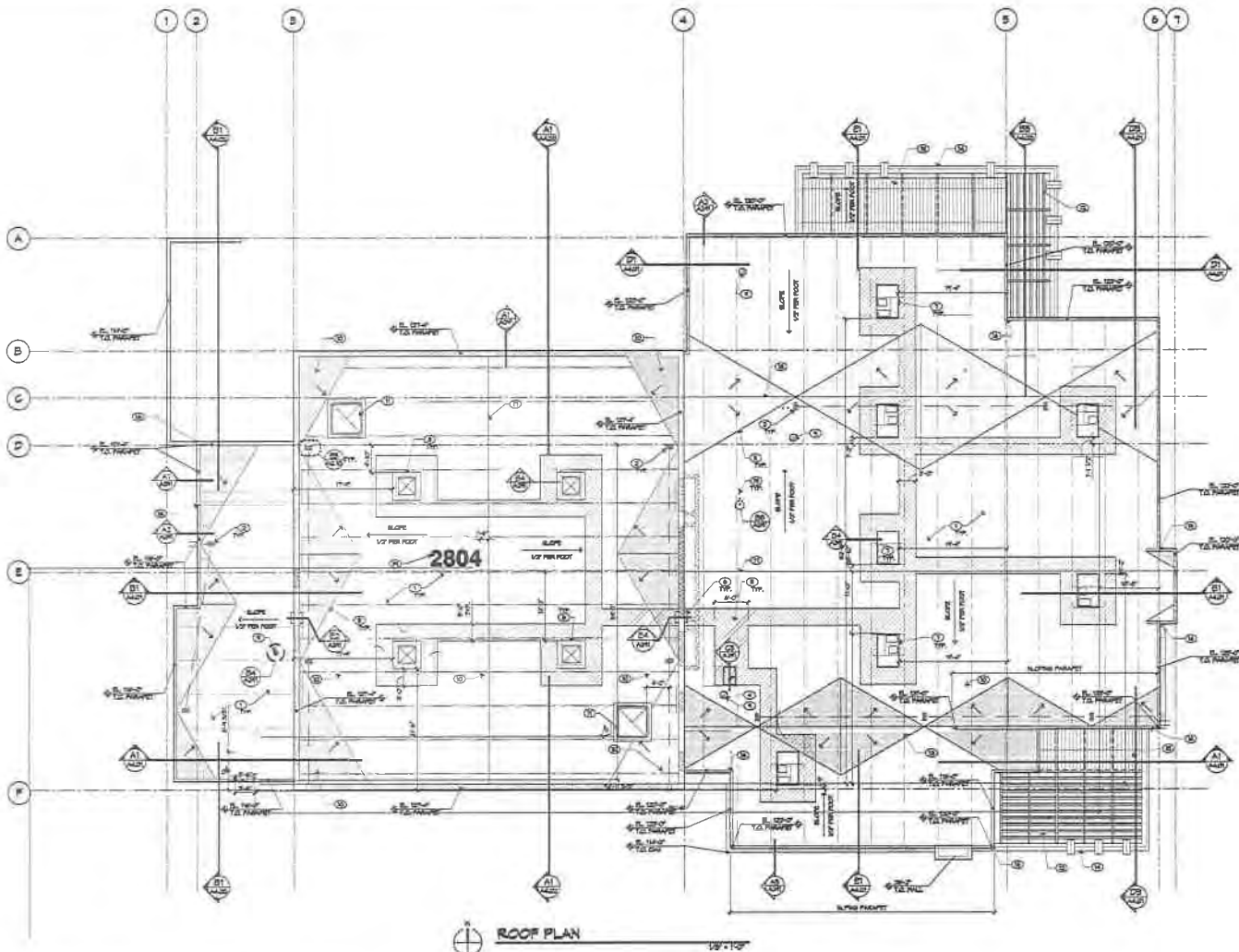
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REVISIONS

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SKETCH 27 OF 77

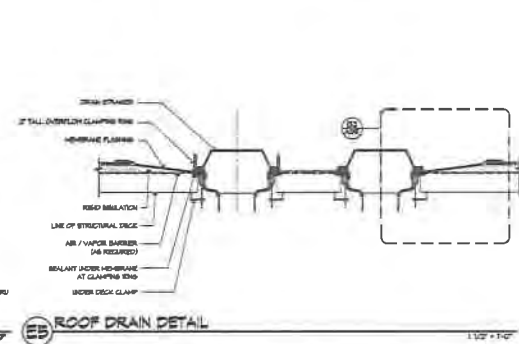
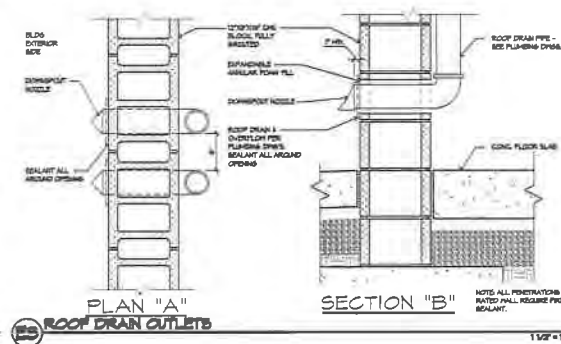
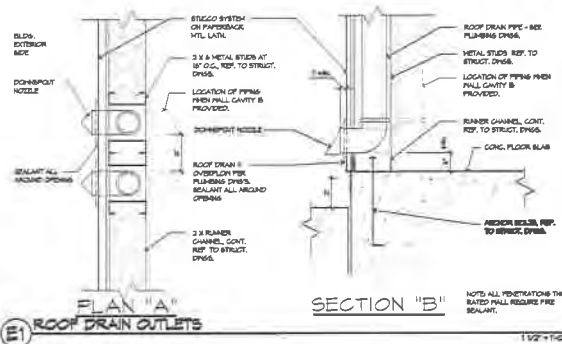


KEYNOTES

- ① SINGLEPLY THERMOPLASTIC ROOF MEMBRANE MECHANICALLY FASTENED TO 4" EXTRUDED POLYM INSULATION ON METAL ROOF DECK.
- ② ROOF DRAIN OVERFLOW DRAIN.
- ③ ROOF CRACKS, SLOPE AT 1/4" PER FOOT MINIMUM.
- ④ ROOF PATCH.
- ⑤ MAINTENANCE PASSWAY FWD.
- ⑥ APPROXIMATE ROOF ACCESS LADDER SHW.
- ⑦ HANG GUT.
- ⑧ SUPPLEMENTARY COOLER UNIT.
- ⑨ DRAINAGE PILE.
- ⑩ MECHANICAL VENT.
- ⑪ MECHANICAL RELIEF VENT.
- ⑫ 2" X 8" G. P. STEEL RAINWATER CHANNEL, PAINT FINISH.
- ⑬ 1/2" X 8" DECK OVER METAL TRUSS/RAIL FRAMING, PAINT FINISH.
- ⑭ STEEL OVER METAL FRAMING, SPT.
- ⑮ CONDUIT PENETRATION AT ROOF.
- ⑯ CHIMNEY & PENETRATION HEAT.
- ⑰ ROOFING OF ROOF DECK.
- ⑱ ROOF DECK LIFT POINT.
- ⑲ PARTIAL JOIST - 8" DIMENSION TALL CHIMNEY.

ROOF LEGEND

- PENETRATION MECHANICAL UNIT
- RELIEF VENT
- SUPPLEMENTARY COOLER UNIT
- CRACK
- MAINTENANCE PASSWAY



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

RECORD DRAWING ISSUE

ROOF PLAN AND DETAILS

FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

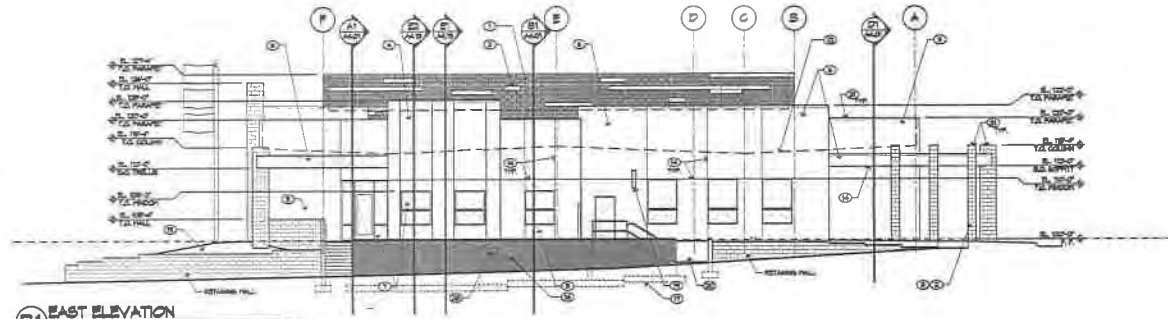
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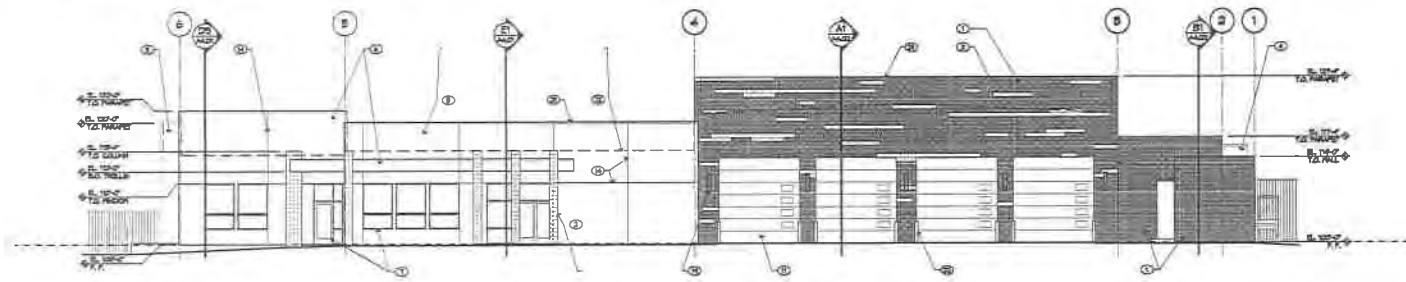




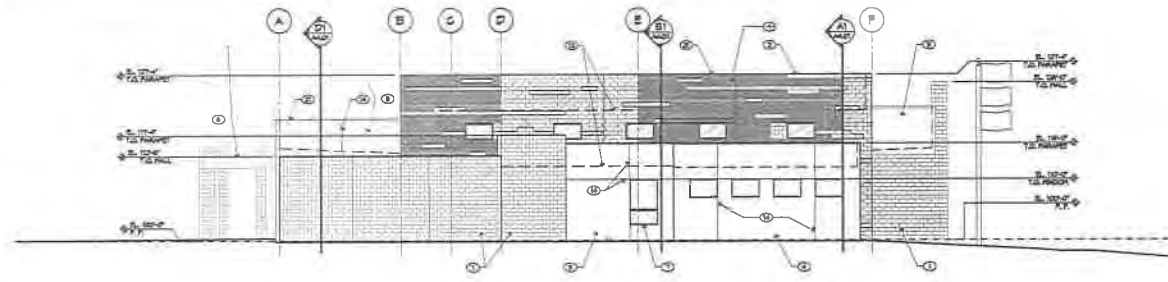
A1 SOUTH ELEVATION
VF - 1/4"



B1 EAST ELEVATION
VF - 1/4"



D1 NORTH ELEVATION
VF - 1/4"



E1 WEST ELEVATION
VF - 1/4"

KEYNOTES

- 1 FIELD COLOR ONE - DARK COLOR (24-0)
- 2 ROOF COLOR ONE - LIGHT COLOR (24-0)
- 3 ONE COLOR, TYP.
- 4 BRICK, PINK, 8" X 8"
- 5 BRICK, PINK, 8" X 8"
- 6 BRICK, PINK, 8" X 8"
- 7 LIGHT INSULATED ALUMINUM WINDOW FRAME, LIGHT BRONZE FINISH
- 8 2" SHOUT GUT ALUMINUM WINDOW, BRONZE FINISH
- 9 2" SHOUT GUT ALUMINUM WINDOW, BRONZE FINISH
- 10 2" SHOUT GUT ALUMINUM WINDOW, BRONZE FINISH
- 11 INSULATED OVERHUNG SECTIONAL METAL DOOR, TYPICAL
- 12 SHAW-WALKER RAMP, RAMP
- 13 SHAW-WALKER RAMP, RAMP
- 14 BRICK CONTROL JOINT
- 15 LANDSCAPE AREA
- 16 ONE REMAINING WALL (24-0)
- 17 SHAW-WALKER RAMP, RAMP
- 18 BRICK, PINK, 8" X 8"
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- 100 BRICK, PINK, 8" X 8"

CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

RECORD DRAWING ISSUE

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EXTERIOR BUILDING ELEVATIONS

FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

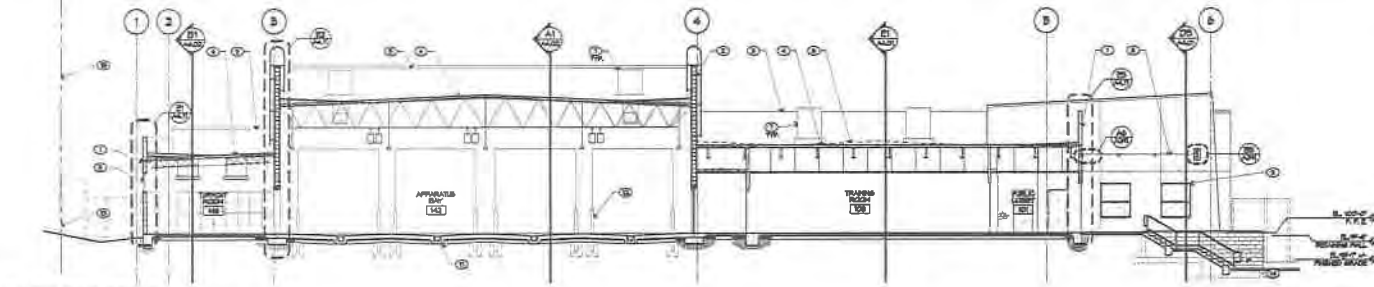
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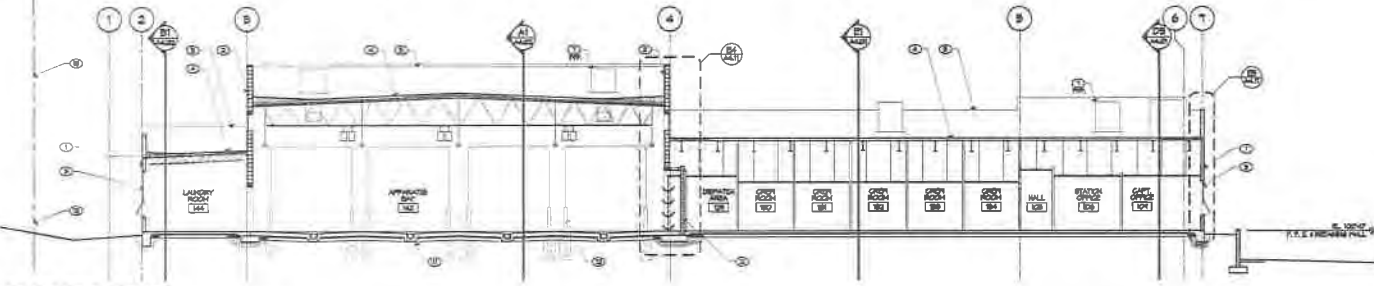


- ① FIELD COLOR CH1 - DARK COLOR (204-1)
- ② ACCENT COLOR CH1 - LIGHT COLOR (204-2)
- ③ DASHED LINE INDICATES ROOF BEYOND
- ④ CH1 CONTROL JOINT
- ⑤ REPRESENTS HIGH PITCH WHICH FALLS AT APPROX 30°
- ⑥ INTERIOR ROOF AREA ONLY AT APPARATUS BAY, EXTEND STANDARD BLOCK AS NOTED VERTICALLY FOR ROOF PREDICATION

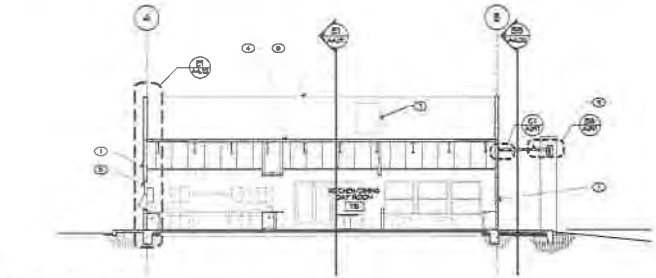
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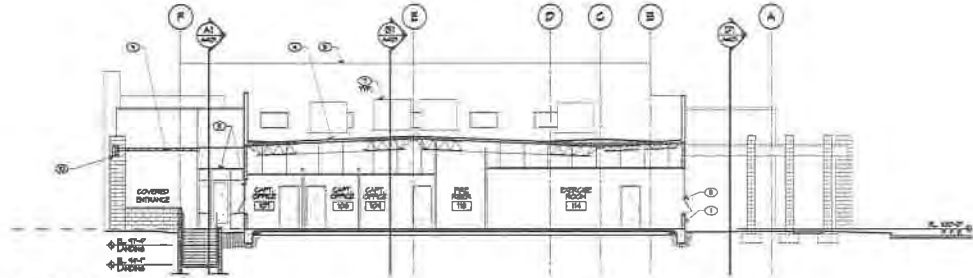
A1 BUILDING SECTION
1/8" = 1'-0"



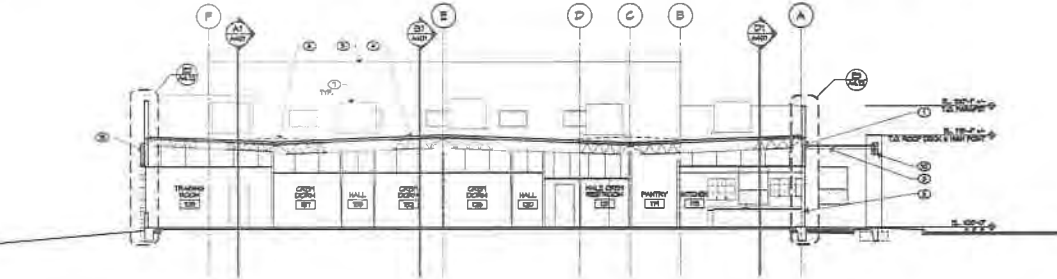
B1 BUILDING SECTION
1/8" = 1'-0"



D1 BUILDING SECTION
1/8" = 1'-0"



D2 BUILDING SECTION
1/8" = 1'-0"



E1 BUILDING SECTION
1/8" = 1'-0"

KEYNOTES

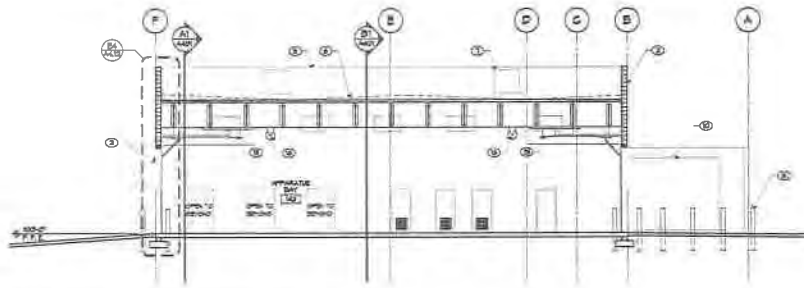
- ① BRIDGE FRAME OVER METAL DECK FINISHED FOR HIGH DRAINAGE WITH BRIDGE
- ② ONE WALL, FULLY BRIDGED
- ③ LOW RISE BRIDGE FRAME IS ALUMINUM EXTERIOR FINISH
- ④ FULLY BRIDGED BRIDGE PLAT, TWO HIGHWAYS OVER BRIDGED FRAME FINISHES OF METAL DECK
- ⑤ PAINTED BRIDGE
- ⑥ CHASED LINE FINISHES ROOF CHASES BRIDGE
- ⑦ MECHANICAL EQUIPMENT ON GARD
- ⑧ PAINTED METAL, 8-DECK OVER ROOF, FINISHES
- ⑨ IF 2-1/2" IN PAINTED METAL, CHASES, FINISHES BRIDGE ATTACHED TO CLIPS CONNECTED TO TUBE FINISHES
- ⑩ BRIDGE ROOF OVER STEEL, BRIDGE
- ⑪ BRIDGE ROOF, 8-DECK FINISHES
- ⑫ PIPE BRIDGE, 8-DECK FINISHES
- ⑬ FINISHES ROOF BRIDGE FINISHES
- ⑭ FINISHES ROOF, 8-DECK
- ⑮ LINE-UP OF CONSTRUCTION / FINISHES FINISHES

CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

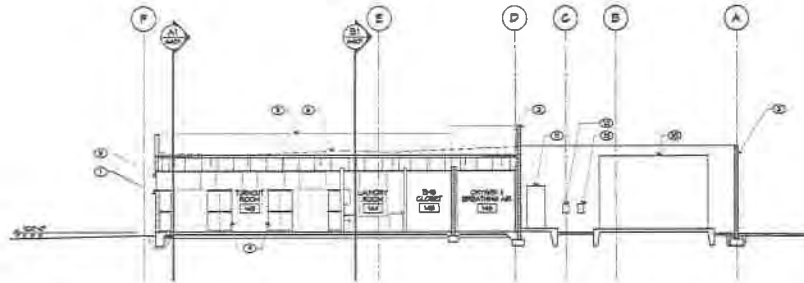
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BUILDING SECTIONS
FIRE STATION 53
2804 WEST COWAN ROAD
NORTH LAS VEGAS, NV 89032

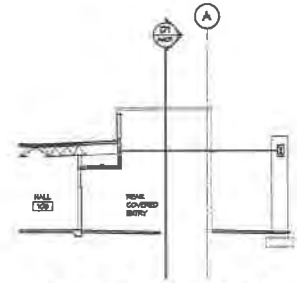
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SHEET 22 OF 77



A-1 BUILDING SECTION
1/8" = 1'-0"



B-1 BUILDING SECTION
1/8" = 1'-0"



C-1 PARTIAL BUILDING SECTION
1/8" = 1'-0"

KEYNOTES

- ① STEEL FRAM (GIRDS, BEAMS, RIBS) FINISHED WITH 1/2" POLYURETHANE BUTT INSULATION
- ② ON WALL FULLY BRIDGED
- ③ LATE INSULATED BRIDGE IN ALUMINUM EXTRUSION FINISH
- ④ FULLY ADHERED, 5/8" PLY, TO INSULATE OVER EXISTING FORM INSULATION ON METAL DECK
- ⑤ FINISH FLOOR
- ⑥ EXISTING INSULATED ROOF CRACKS BEYOND
- ⑦ MECHANICAL EQUIPMENT ON ROOF
- ⑧ FIVE BOLLARDS ON ROOF
- ⑨ VENT AND LOOSE
- ⑩ EXISTING INSULATION TO BE EXISTING SUPPORT FRAME
- ⑪ ELECTRICAL SERVICE WITH PANELS IN EXISTING FLOOR ENCLOSURE
- ⑫ AUTOMATIC TRUNKING SYSTEM
- ⑬ UNDERFLOOR PANEL CONTROL BOX
- ⑭ HOT DECK
- ⑮ GARAGE DOOR CRACKS EXISTING FROM EXISTING SUPPORT FRAME ROOF TRUSSES
- ⑯ HVAC RISER, 1/4" POWER & GROUND, AIR HOSES HOISTED TO SUPPORT SYSTEM BEYOND FROM ROOF TRUSSES

CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

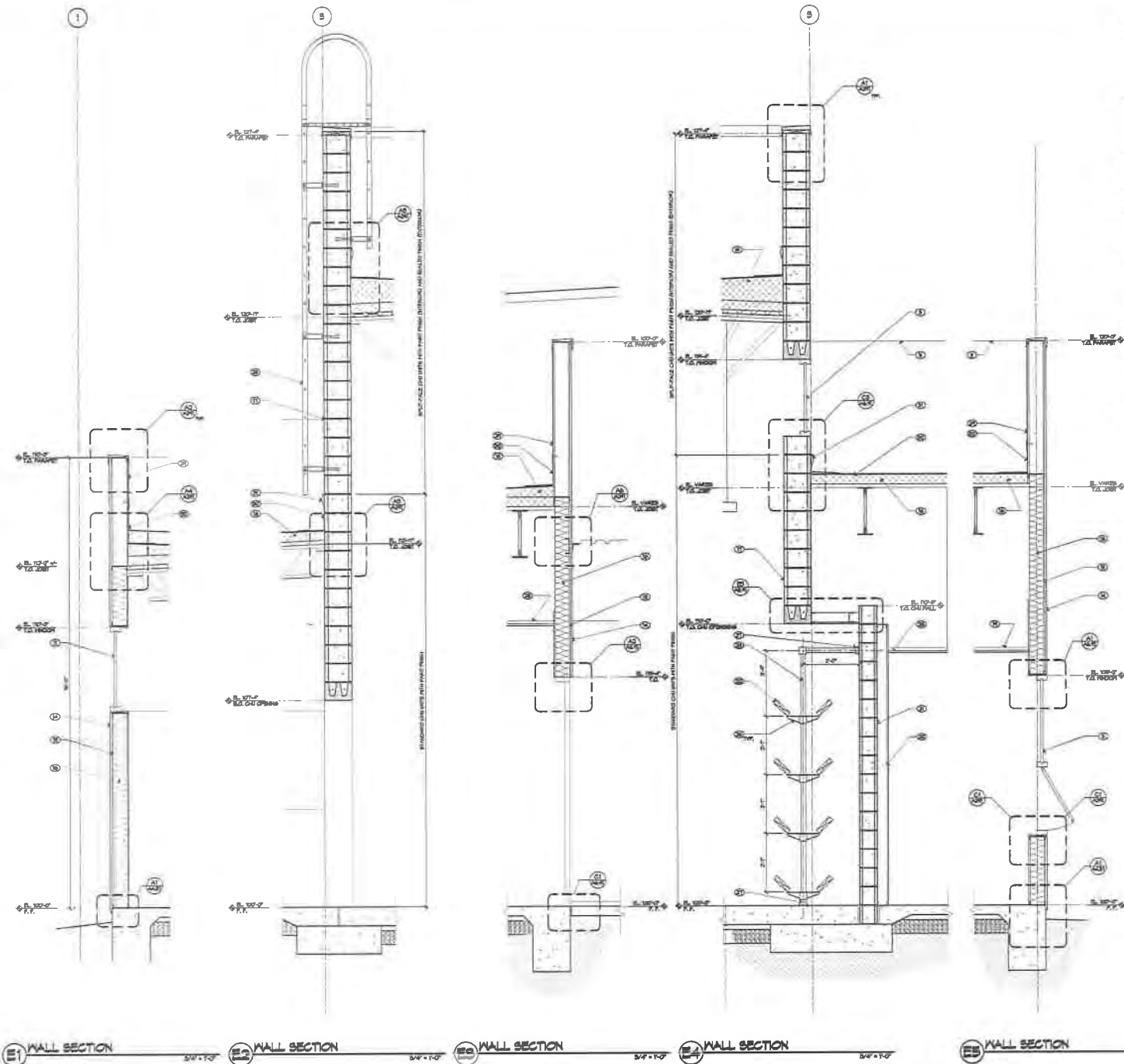
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BUILDING SECTIONS
FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

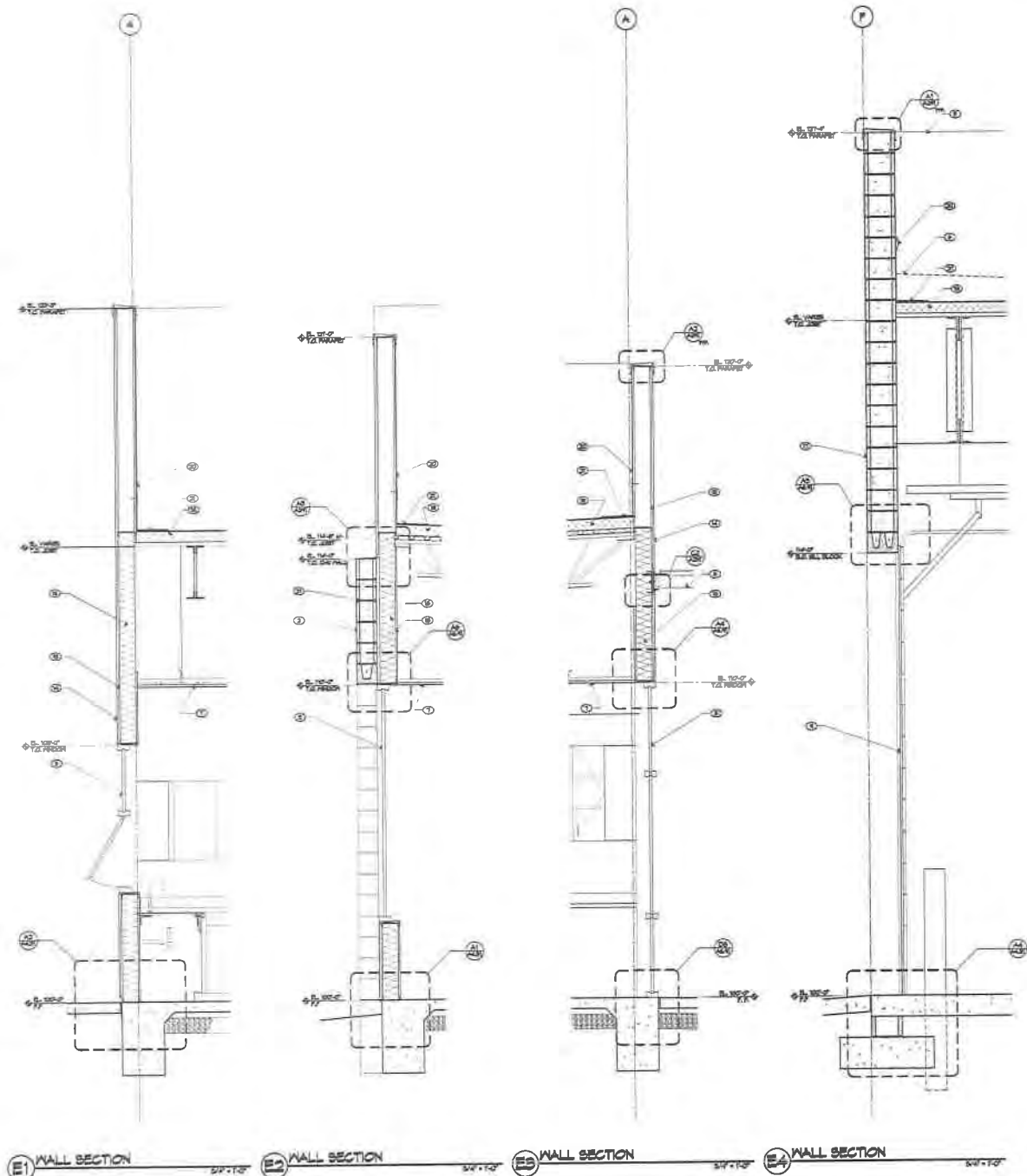
PROJECT INFORMATION

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SHEET NO.
A4.02
SHEET 33 OF 77



- # KEYNOTES
- ① SQUEEZE PUMP OVER METAL WALL THROUGH WITH 1/2" GALVANIZED STEEL WALL THICKNESS
 - ② PULL DOWN PUMP OVER METAL WALL, PUMP RESPONSES FOR STRUCTURAL
 - ③ PULL DOWN PUMP, SQUEEZE PUMP OVER METAL WALL, PUMP RESPONSES FOR STRUCTURAL
 - ④ PULL DOWN PUMP, SQUEEZE PUMP OVER METAL WALL, PUMP RESPONSES FOR STRUCTURAL
 - ⑤ PUMP RESPONSES FOR STRUCTURAL
 - ⑥ PUMP RESPONSES FOR STRUCTURAL
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E1 WALL SECTION 3/4" = 1'-0" E2 WALL SECTION 3/4" = 1'-0" E3 WALL SECTION 3/4" = 1'-0" E4 WALL SECTION 3/4" = 1'-0"

- KEYNOTES**
1. BRICK OR BLOCK OVER METAL DECK WITH 2" POLYURETHANE FOAM INSULATION
 2. 2" X 2" X 1/2" CHIMNEY
 3. 1/2" INSULATED ALUMINUM IN ALUMINUM EXTRUSION FRAMING
 4. FULLY ADHESIVE MOUNTED, TWO VENEER LAYER EXTERIOR FINISH INSULATION ON METAL DECK
 5. FINISHED SIDING
 6. SHIMMED LINE LOCATED ROOF CRACKS BEYOND
 7. REINFORCED WY. BOWED CEILING
 8. FINISHED METAL BOWED CEILING
 9. INSULATED, OVERLAP SECTIONAL METAL DECK
 10. BRICK OR BLOCK OVER METAL DECK
 11. TYPICAL CORNER, SEE PLAN
 12. PIPE BOLLARD, SEE DETAIL
 13. CHIMNEY OVER METAL DECK
 14. BRICK OVER METAL DECK, 2" POLYURETHANE FOAM, OVER SHIMMING
 15. 2" X 2" X 1/2" CHIMNEY
 16. 1/2" POLYURETHANE INSULATION
 17. 2" X 2" X 1/2" CHIMNEY, FULLY ADHESIVE
 18. 1/2" POLYURETHANE INSULATION
 19. LAY IN GRID CEILING
 20. HAN FRAMING TO CAP SHEET
 21. FINISHED CAP SHEET 1/2" THICKNESS, 1/2" HAN FRAMING TO ROOF VENEER
 22. BALANCED VENEER SET IN DAY JOINT

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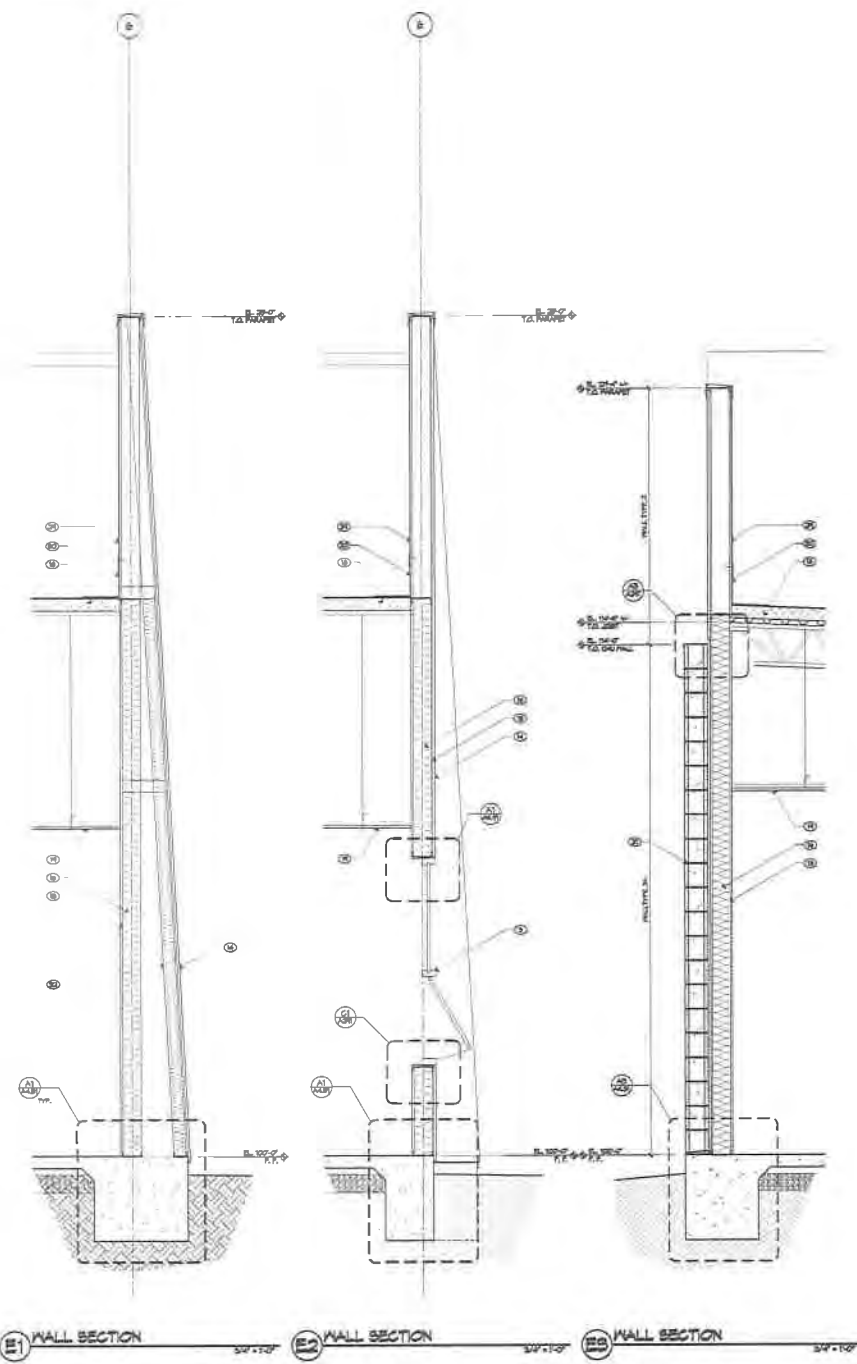
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 NO. 1
 DATE 11/27/2013
 BY [Signature]
 CHECKED [Signature]
 APPROVED [Signature]
 PROJECT NO. 11/27/2013

WALL SECTION

FIRE STATION 53
 2804 WEST GOWAN ROAD
 NORTH LAS VEGAS, NV 89032

SHEET NO. 44.12



- KEYNOTES**
1. BRICK FRAM OVER MED. LATE CORR. FRAM FOR EXT. POLYESTER SHEET INSULATION
 2. CH. WALL, FULL BRICKED
 3. 1/2\"/>

CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

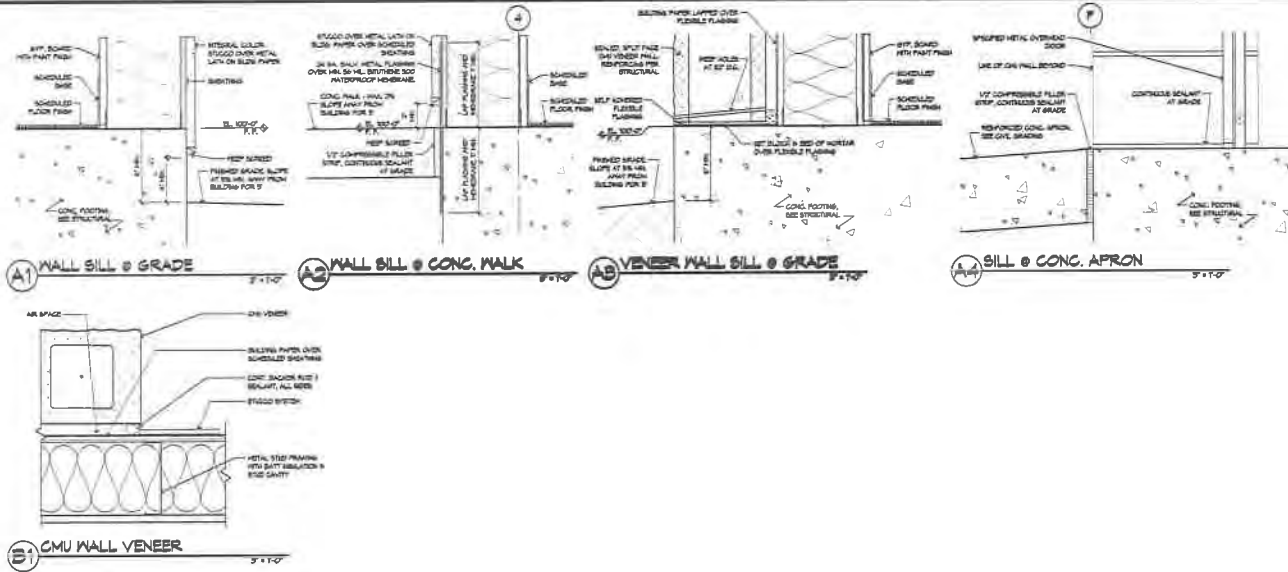
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WALL SECTION

FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

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A4.13

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CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

ENLARGED DETAILS

FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

RECORD DRAWING ISSUE

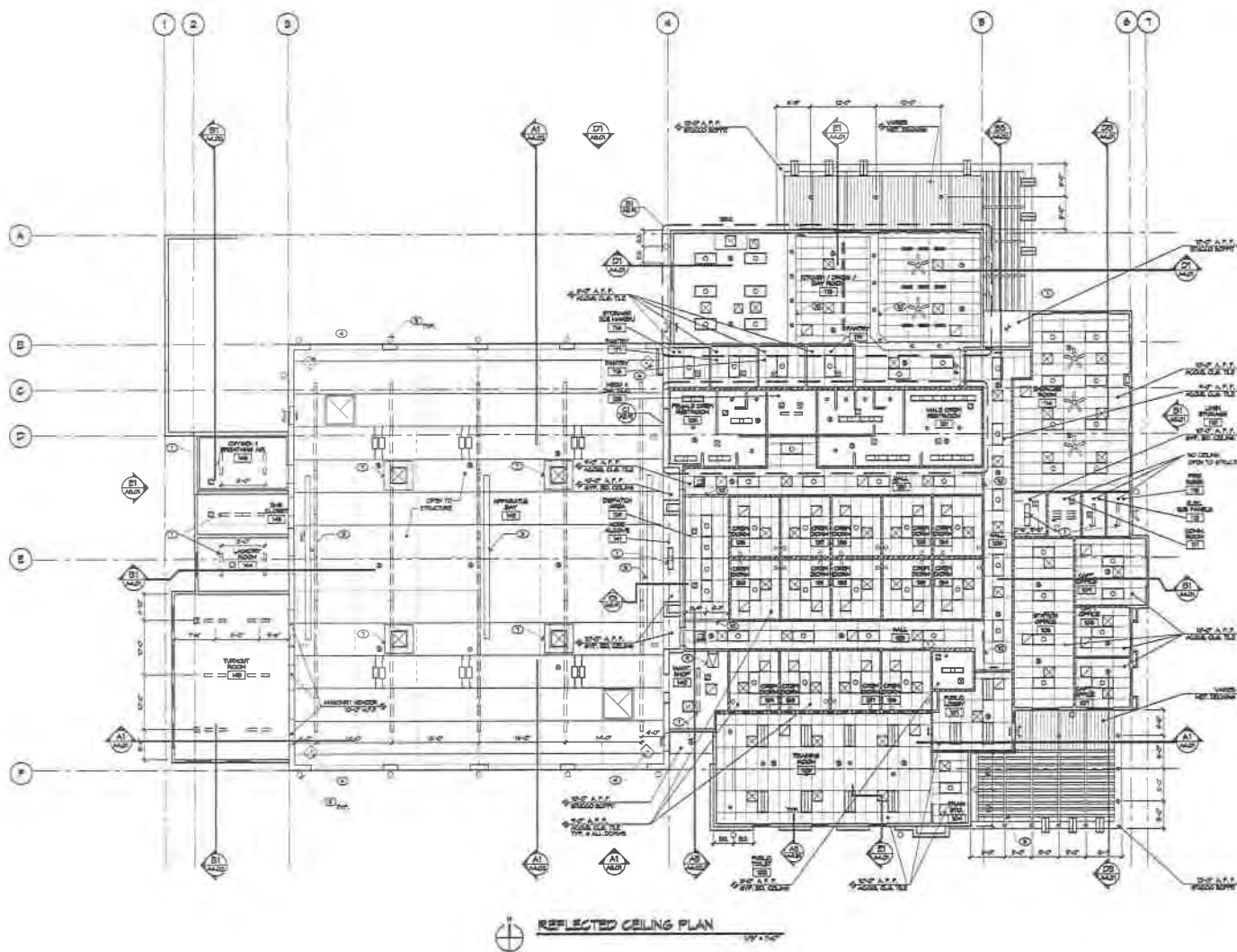
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Dektor
Perich
Sabatini



DATE	1/1/21
BY	11/17/20
CHECKED	11/17/20
APPROVED	11/17/20
SCALE	1/4" = 1'-0"
PROJECT	11/17/20
REVISION	11/17/20
NO.	11/17/20
DATE	11/17/20

SHEET NO.
A4.51
SHEET 37 OF 77



KEYNOTES

- ① CENTER LIGHT FIXTURE IN CEILING
- ② HANGING HEAD FOR COMPRESSOR AIR AND POWER
- ③ SLOTTED HANGER
- ④ MECHANICAL EQUIPMENT
- ⑤ WALL MOUNTED LIGHT FIXTURE
- ⑥ RELIEF VENT
- ⑦ EXHAUSTIVE COOLER
- ⑧ TIEBACK # 27 IN DIA. CORNERS & IN O.C. SEE DETAIL
- ⑨ ROOF RACK
- ⑩ SCOFF / SMOKE PULL, ETC.

PARTITION CONSTRUCTION LEGEND

- 11-11 1 HR FIRE RATED WALL
 Hatched pattern: WALL PARTITION TO BOTTOM OF DECK

CEILING FIXTURE LEGEND

- PLACEMENT LIGHT WITH BRACKET HEIGHT
- RECESSED CASE LIGHT FIXTURE
- WALL MOUNTED LIGHT FIXTURE
- EMERGENCY EXIT LIGHT
- SUPPLY AIR DIFFUSER
- RETURN AIR DIFFUSER
- EXHAUST FAN
- J-BLOCK FOR EXHAUST
- EMERGENCY FLUORESCENT LIGHT FIXTURE
- 2'-0" X 4'-0" RECESSED PLACEMENT LIGHT FIXTURE
- 1'-0" X 4'-0" RECESSED PLACEMENT LIGHT FIXTURE
- SQUARE FAN
- PLACEMENT PENDANT - DIRECT FIXTURE
- SPOTLIGHT
- SHOWER TELEPHONE
- RECTANGULAR GRID LIGHT FIXTURE
- CORPUSCULE AIR OR POWER HANG, ETC.
- PLACEMENT PENDANT - INDIRECT FIXTURE
- ACCESS PANEL

CEILING MATERIAL LEGEND

- OPEN TO STRUCTURE
- SUSPENDED BETWEEN BEAMS CEILING
- 2'-0" X 4'-0" SUSPENDED ACCELSIL CEILING TILE
- BRASS SCOFF

CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

RECORD DRAWING ISSUE

REFLECTED CEILING PLAN

FIRE STATION 53
 2804 WEST GOWAN ROAD
 NORTH LAS VEGAS, NV 89032

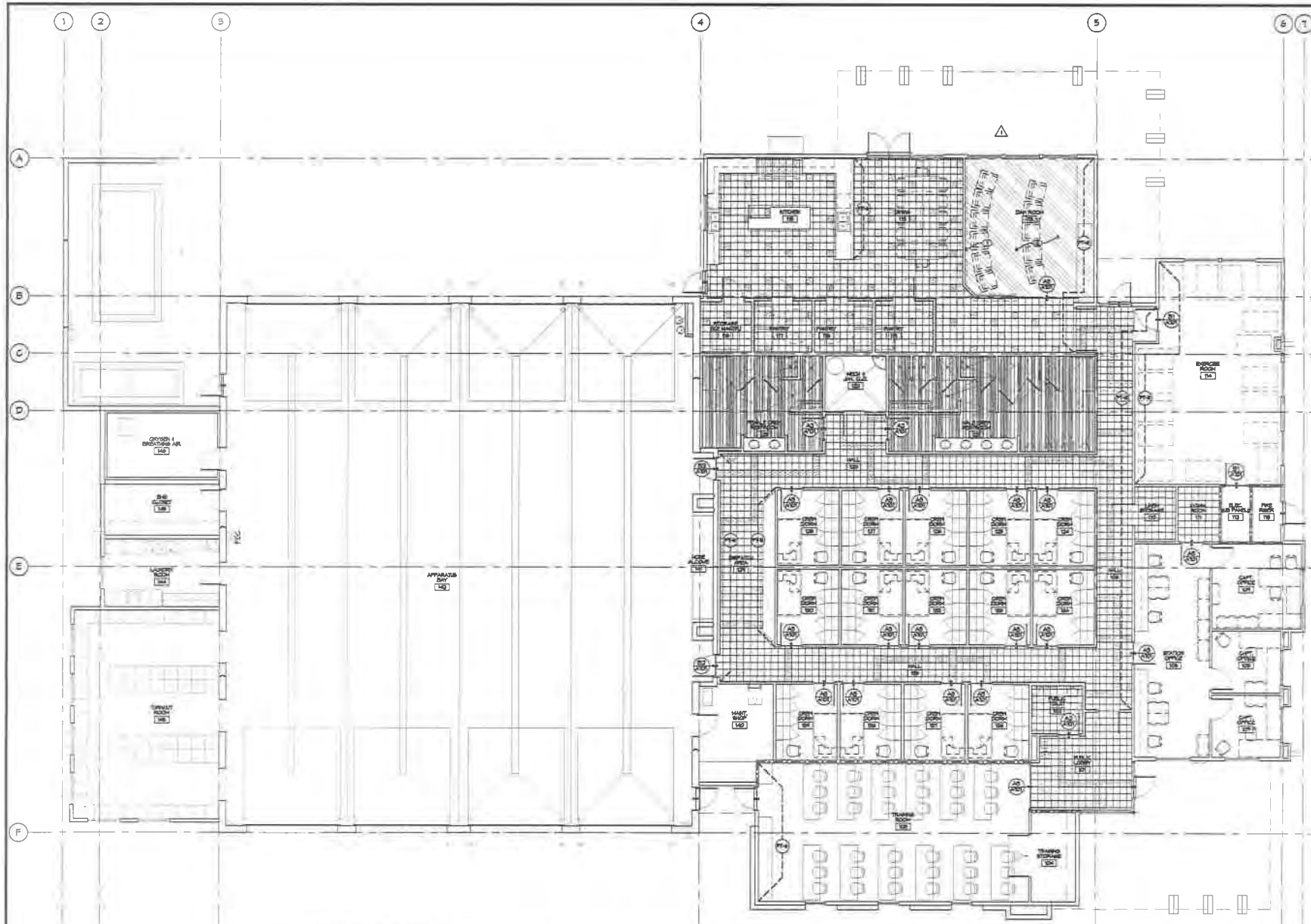
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PROJECT NO.	11-2000-100	
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 PROJECT: 11-2000-100
 DRAWING: 45.10
 SHEET: 1 OF 1
 SCALE: 1/8" = 1'-0"





FINISH FLOOR PLAN
1/8" = 1'-0"

KEYNOTES

- ① CONTINUED TO PLAN OF P.F. 5.
- ② OPT-1 CARPET TILE

FINISH PLAN LEGEND



FLOORING LEGEND

PORCELAIN TILE (CT)	PORCELAIN TILE (VCT)	CARPET TILE (OPT)
CT-1	VCT-1	OPT-1
CT-2	VCT-2	OPT-2
CT-3	VCT-3	OPT-3
CT-4	VCT-4	OPT-4

CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

FINISH FLOOR PLAN
FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

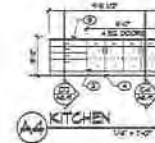
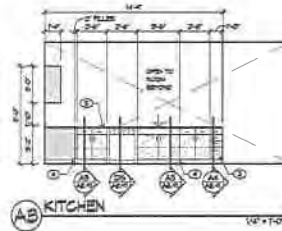
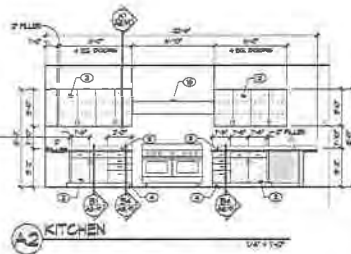
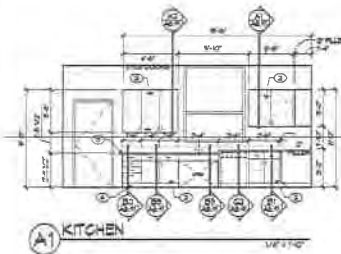
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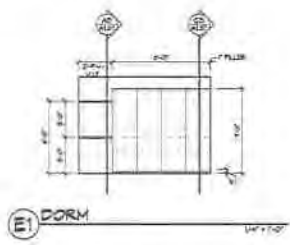
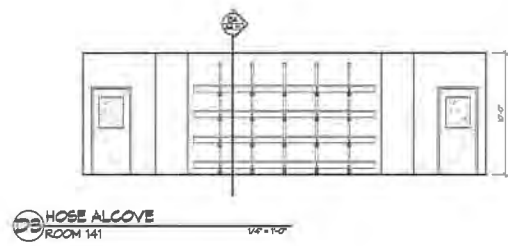
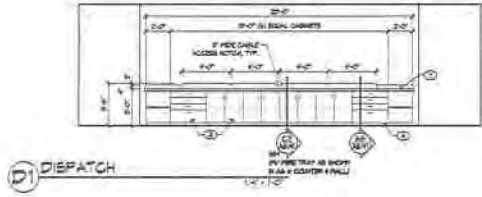
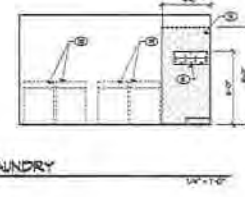
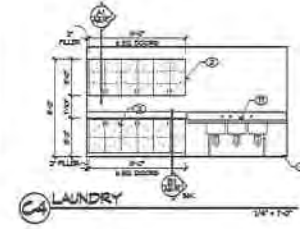
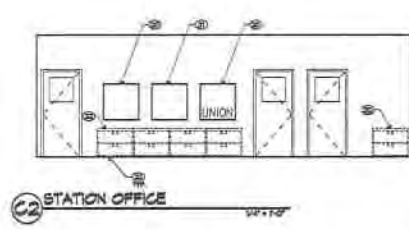
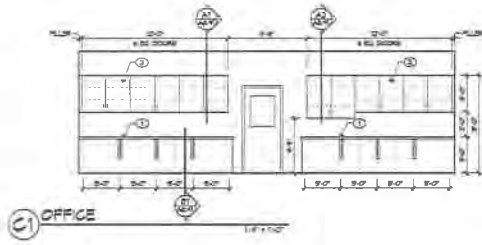
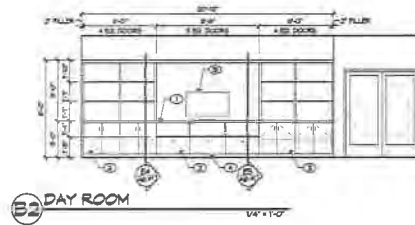
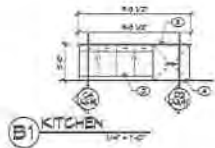
SHEET NO.
A7.10
SHEET 43 OF 77

PET.APP.000613



KEYNOTES

1. COMBUSTION PV PLUMBING
2. GASKET PV PLUMBING
3. GASKET TOP PV PLUMBING
4. FLEXIBLE DRAINAGE
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CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

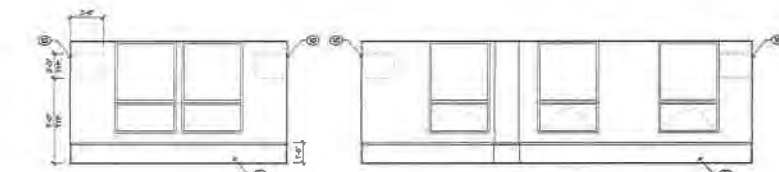
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INTERIOR ELEVATIONS

FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

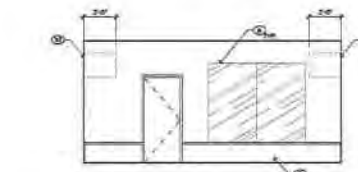
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SHEET 45 OF 77

PET.APP.000615

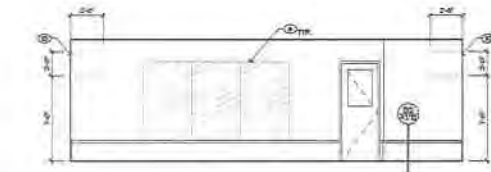


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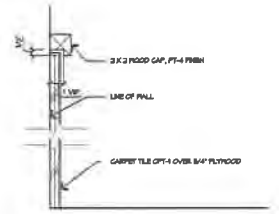
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EAST



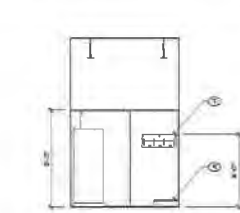
A3 SOUTH



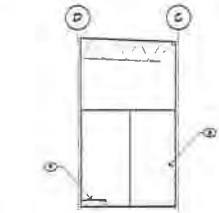
B1 EXERCISE ROOM
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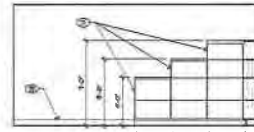
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EXERCISE ROOM



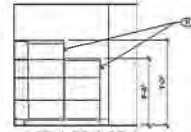
C1 MECH. & JANITOR CLOSET



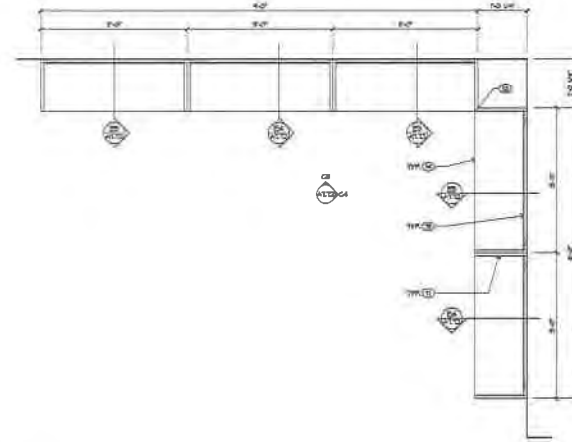
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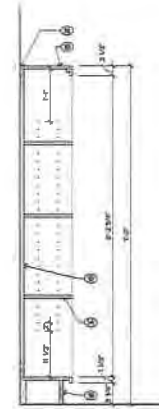
C3 DAY ROOM



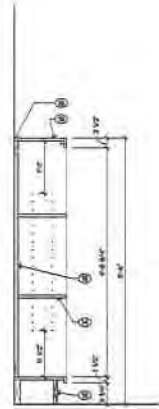
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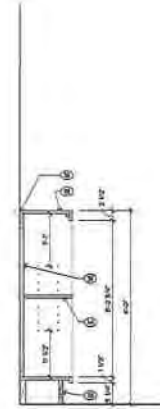
E1 DAY ROOM



E2 DAY ROOM



E3 DAY ROOM



E4 DAY ROOM

KEYNOTES

1. PL-4 SEE FINISH SCHEDULE
2. PL-4 SEE FINISH SCHEDULE
3. PL-4 SEE FINISH SCHEDULE
4. PL-4 SEE FINISH SCHEDULE
5. UNLESS OTHERWISE NOTED, ALL FINISHES TO BE PL-4 SEE FINISH SCHEDULE
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8. UNLESS OTHERWISE NOTED, ALL FINISHES TO BE PL-4 SEE FINISH SCHEDULE
9. UNLESS OTHERWISE NOTED, ALL FINISHES TO BE PL-4 SEE FINISH SCHEDULE
10. UNLESS OTHERWISE NOTED, ALL FINISHES TO BE PL-4 SEE FINISH SCHEDULE
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20. UNLESS OTHERWISE NOTED, ALL FINISHES TO BE PL-4 SEE FINISH SCHEDULE

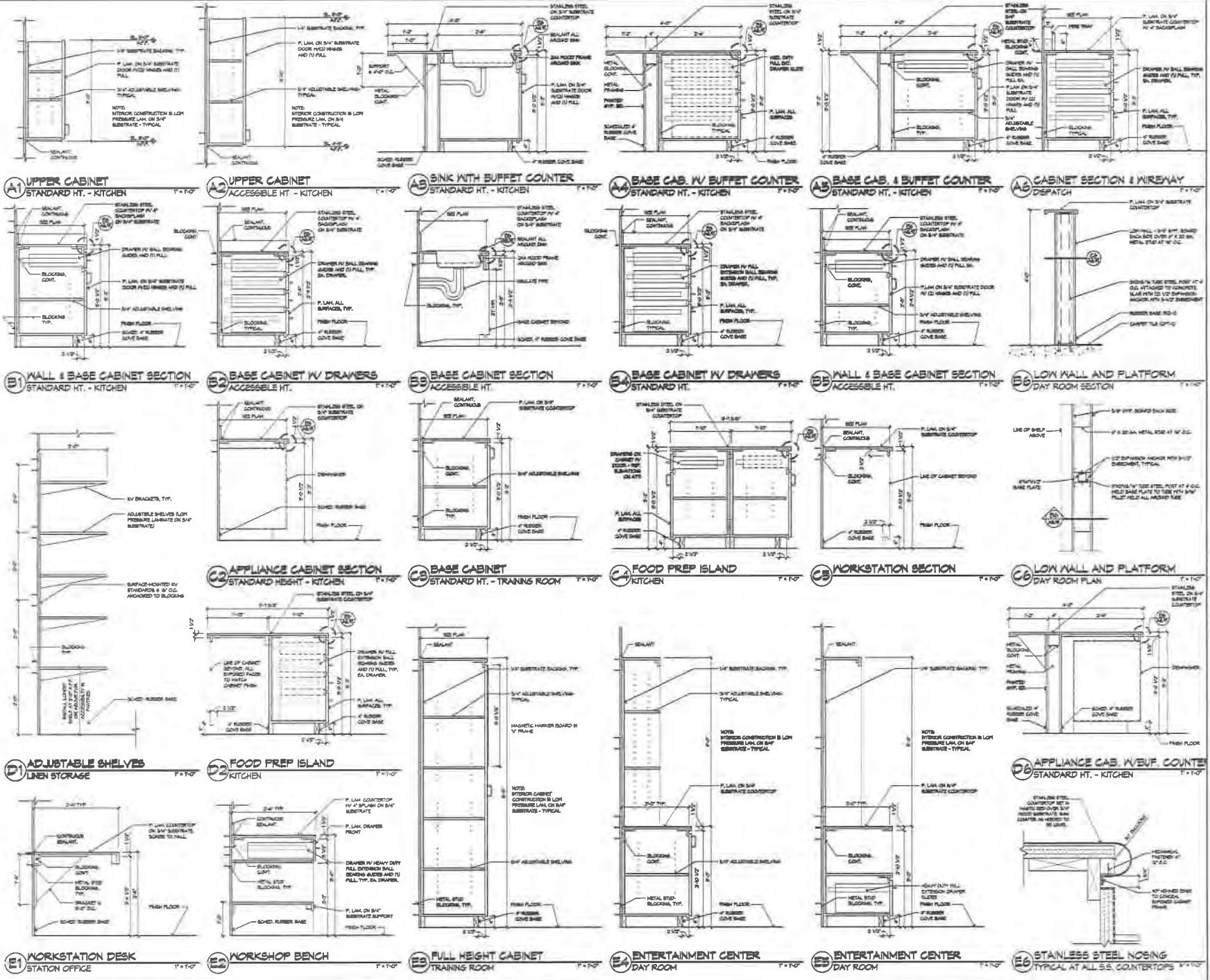
CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

RECORD DRAWING ISSUE

INTERIOR ELEVATIONS

FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

47.72
SHEET 46 OF 77



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

RECORD DRAWING ISSUE

CABINET DETAILS

FIRE STATION 53
2804 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

SHEET NO.
48.91

DATE
11/20/18

BY
[Signature]

CHECKED BY
[Signature]

DESIGNED BY
[Signature]

DATE
11/20/18

SCALE
1/8" = 1'-0"

NOTES

1. ALL DIMENSIONS ARE IN FEET AND INCHES. FRACTIONS SHALL BE IN 16THS OF AN INCH. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE NOTED.

2. ALL MATERIALS SHALL BE AS SHOWN OR OF EQUAL OR BETTER QUALITY. ALL MATERIALS SHALL BE APPROVED BY THE ARCHITECT PRIOR TO ORDERING.

3. ALL FABRICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL FABRICATION SHALL BE APPROVED BY THE ARCHITECT PRIOR TO ORDERING.

4. ALL FABRICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL FABRICATION SHALL BE APPROVED BY THE ARCHITECT PRIOR TO ORDERING.

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9. ALL FABRICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL FABRICATION SHALL BE APPROVED BY THE ARCHITECT PRIOR TO ORDERING.

10. ALL FABRICATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. ALL FABRICATION SHALL BE APPROVED BY THE ARCHITECT PRIOR TO ORDERING.

MECHANICAL/PLUMBING ABBREVIATIONS

NOTE: THIS IS A MASTER SCHEDULE. NOT ALL SYMBOLS CONTAINED HEREIN MAY APPEAR ON THE DRAWINGS.

ABC	AMERICAN AIR BALANCE COIL	S	GAS	P	PUMP
ACC	AUTOMATIC CONTROL DAMPER	GA	GALVE	PC	PRESSURE CONTROL
AD	AIR DUCT-UP / DOWN	GAL	GALLONS PER MINUTE	PC	PLATE HEAT EXCHANGER
AD	AIR DUCT-UP / DOWN	GA	GALVE	PC	PLATE HEAT EXCHANGER
AD	AIR DUCT-UP / DOWN	GA	GALVE	PC	PLATE HEAT EXCHANGER
AD	AIR DUCT-UP / DOWN	GA	GALVE	PC	PLATE HEAT EXCHANGER
AD	AIR DUCT-UP / DOWN	GA	GALVE	PC	PLATE HEAT EXCHANGER
AD	AIR DUCT-UP / DOWN	GA	GALVE	PC	PLATE HEAT EXCHANGER
AD	AIR DUCT-UP / DOWN	GA	GALVE	PC	PLATE HEAT EXCHANGER
AD	AIR DUCT-UP / DOWN	GA	GALVE	PC	PLATE HEAT EXCHANGER
AD	AIR DUCT-UP / DOWN	GA	GALVE	PC	PLATE HEAT EXCHANGER

MECHANICAL/PLUMBING SYMBOL LIST

NOTE: THIS IS A MASTER SCHEDULE. NOT ALL SYMBOLS CONTAINED HEREIN MAY APPEAR ON THE DRAWINGS.

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
[Symbol]	SUPPLY AIR DUCT-UP (RAD)	[Symbol]	AMPHLOU DIRECTION
[Symbol]	RETURN AIR DUCT-UP (RAD)	[Symbol]	DIRECTION OF FLOW
[Symbol]	EXHAUST AIR DUCT-UP (RAD)	[Symbol]	CONDENSER WATER SUPPLY
[Symbol]	EXHAUST AIR DUCT-DOWN (RAD)	[Symbol]	CONDENSER WATER RETURN
[Symbol]	EXHAUST AIR DUCT-DOWN (RAD)	[Symbol]	CONDENSER WATER RETURN
[Symbol]	EXHAUST AIR DUCT-DOWN (RAD)	[Symbol]	CONDENSER WATER RETURN
[Symbol]	EXHAUST AIR DUCT-DOWN (RAD)	[Symbol]	CONDENSER WATER RETURN
[Symbol]	EXHAUST AIR DUCT-DOWN (RAD)	[Symbol]	CONDENSER WATER RETURN
[Symbol]	EXHAUST AIR DUCT-DOWN (RAD)	[Symbol]	CONDENSER WATER RETURN
[Symbol]	EXHAUST AIR DUCT-DOWN (RAD)	[Symbol]	CONDENSER WATER RETURN
[Symbol]	EXHAUST AIR DUCT-DOWN (RAD)	[Symbol]	CONDENSER WATER RETURN

DRAWING INDEX

SHEET NUMBER	SHEET TITLE	DATE	BY	CHKD	APPD
100	SYMBOL LIST AND DRAWING INDEX				
101	MECHANICAL DETAILS				
102	MECHANICAL DETAILS				
103	MECHANICAL DETAILS				
104	MECHANICAL DETAILS				
105	MECHANICAL DETAILS				
106	MECHANICAL DETAILS				
107	MECHANICAL DETAILS				
108	MECHANICAL DETAILS				
109	MECHANICAL DETAILS				
110	MECHANICAL DETAILS				



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

SYMBOL LIST AND DRAWING INDEX
FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

SHEET NO
MP0.0
SHEET 48 OF 77

PET.APP.000618



- ### QUIET NOTES

- ▶ PROVIDE PROGRAMMABLE THERMOSTAT AND WIRING UP TO A/C UNIT AS INDICATED.
- ▶ PROVIDE CONTROL PANEL AND WIRING UP TO EVAP COILS. MAKE SURE EACH DRAIN COOLER SHALL HAVE IT'S OWN DRAIN OUT.
- ▶ PROVIDE THERMOSTAT AND WIRING UP TO EACH HEATER AS INDICATED.
- ▶ W/4" EXHAUST DUCT UP TO REEL
- ▶ PROVIDE EXHAUST DUCT UP TO REEL
- ▶ 6" EXHAUST DUCT THROUGH ROOF WITH APPROVED ROOF CAP.
- ▶ REFER TO DETAIL ASSESS OPTIMICAL BANGSH DUCT TAKE-OUT
- ▶ REFER TO DETAIL CHASE FROM ROOF FOR ANY CONDITIONING UNIT
- ▶ REFER TO DETAIL CHASE FROM EXHAUSTIVE COILS.
- ▶ REFER TO DETAIL CHASE FROM ROOF EXHAUST FAN
- ▶ REFER TO DETAIL CHASE FROM GAS PRESS UP HEATER
- ▶ REFER TO DETAIL CHASE FROM GAS VENT THROUGH ROOF
- ▶ REFER TO DETAIL CHASE FROM CELLAR EXHAUST FAN
- ▶ 6" ENTER CHASE THROUGH WALL WITH APPROVED WALL CAP (1" REEF)
- ▶ PROVIDE CHASE DOWN LEVEL
- ▶ PROVIDE 1" HANG 7" EXHAUST UP THROUGH ROOF WITH APPROVED ROOF CAP. REFER TO MANUFACTURER RECOMMENDATIONS FOR INSTALLATION.
- ▶ PROVIDE CAPTIVE AIR MAKEUP EXHAUST FAN MODEL, 1/2HP, 115V, 1PH, 1/2" BANGSH, 1/2" STATIC PRESSURE, RANGE 1000 CFM, 1/2" FOR INSTALL.
- ▶ FOR INSTALLATION, INTERLOCK EXHAUST WITH HANG UP OF NEW UNIT.
- ▶ CONNECT THEIR GASES DUCT DOWN TO HOOD.
- ▶ PROVIDE CAPTIVE AIR MAKEUP, PAIR UNIT, MODEL, 1/2HP, 115V, 1PH, 1/2" BANGSH, 1/2" STATIC PRESSURE, RANGE 1000 CFM, 1/2" FOR INSTALL.
- ▶ W/4" EXHAUST DUCT DOWN TO HOOD
- ▶ REFER TO DETAIL, FIRST EXHAUSTIVE, MAKE EXHAUST FAN
- ▶ PROVIDE TIGHT CURB AND W/4" X 4" OPENING CAPMED FOR FUTURE PLUMBING 8" DIA.
- ▶ PROVIDE DOWNWELL CONTROL PANEL, ONLY DACHED TO ALL TURBOCAPS
- ▶ 6" EXHAUST DUCT THROUGH ROOF WITH APPROVED ROOF CAP

RECORD DRAWING

"THESE INDIVIDUALS NEED TO HAVE BEEN PREPARED IN ADVANCE ON THE BASIS OF INFORMATION WEISS AND OTHERS ON THE CONTRACTING OF OTHERS INVOLVED WITH THE PROJECT. AMER ENGINEERING'S CHARGE, SINCE IT IS NOT RESPONSIBLE FOR ANY DEFECT OF THE BRIDGE, WHY HAS SUCH ACTION NOT BEEN TAKEN AS A RESULT?" OFFICIAL EXAMINATION OF ACHIEVING CONTRACTORS MAY IDENTIFY MORE TO EXPLAIN THE COLLAPSE. IN CONNECTION OF THE DISASTROUS COLLAPSE,

INZ

7115 Arlington Avenue
Suite 111
Los Angeles, CA 90045

On the 2nd of 1994
F. 750.000.13

CALC 45 NOTED		REVISIONS	
REV	DATE	BY	CHK
1	10/10/10	10/10/10	10/10/10
2	10/10/10	10/10/10	10/10/10
3	10/10/10	10/10/10	10/10/10
4	10/10/10	10/10/10	10/10/10
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6	10/10/10	10/10/10	10/10/10
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69	10/10/10	10/10/10	10/10/10
70	10/10/10	10/10/10	10/10/10
71	10/10/10	10	

**Dekker
Perich
Sabatini**

MECHANICAL PLAN

FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

CONFIRMED BID ISSUE

SHEET NO.

M1 1

SHEET 52 OF 77

PET.APP.000622



- ### GENERAL NOTES:
1. EXIST. ROADS SHOWN ARE THE EXISTING ROADWAY DIMENSIONS.
 2. THE MECHANICAL CONTRACTOR SHALL VERIFY THE LOCATION OF ALL ROOF HUNG/ROOFED EQUIPMENT AND ROOF PENETRATIONS WITH ARCHITECT AND WITH THE ROOFING CONTRACTOR PRIOR TO ANY ROOFING WORK.
 3. THE MECHANICAL CONTRACTOR SHALL COORDINATE LOCATION AND ROUTING OF HVAC EQUIPMENT AND DUCTWORK WITH OTHER TRADES PRIOR TO COMMENCING WORK.
 4. ALL EXHAUST FANS SHALL BE LOCATED FAN TO 10'-0" FROM ANY OUTSIDE AIR INTAKE.
 5. THE CUTTING, NOTCHING AND BORING OF HOLES IN FLOOR JOIST AND WALL STUDS SHALL BE IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE INTERNATIONAL BUILDING CODE.
 6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING AS REQUIRED TO ACCOMMODATE HIS WORK.

MEET NOTES

- ④ 14"Ø EXHAUST DUCT DOWN THROUGH ROOF.
- ④ 14"Ø EXHAUST DUCT DOWN THROUGH ROOF.
- ④ 8" EXHAUST DUCT DOWN THROUGH ROOF.
- ④ FURNACE SUPPLY AND RETURN DUCT DOWN THROUGH ROOF. REFER TO DETAIL G312 FOR ROOFTOP AIR CONDITIONING UNIT.
- ④ 50"Ø SUPPLY 1 DUCT DOWN THROUGH ROOF.
- ④ 60"Ø RETUR 1 DUCT DOWN THROUGH ROOF.
- ④ 4" VENT DOWN THROUGH ROOF ORBAT BT ASMT FROM PARAMET. REFER TO DETAIL H162 FOR GAS VENT THROUGH ROOF.
- ④ 20"Ø EXHAUST DUCT DOWN THROUGH ROOF.
- ④ 11"Ø FLUE AND COMBUSTION AIR INTAKE.
- ④ 8" EXHAUST DUCT DOWN THROUGH ROOF.

CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

MECHANICAL ROOF PLAN

FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

CONFORMED BID ISSUE

SHEET NO.
M2.1
SHEET TOTAL

[illegible][illegible]

PET.APP.000623

[illegible]

NAME	ENGINE DATA		FUEL CONSUMPTION	REMARKS
	MANUFACTURER	MODEL NUMBER		
ENGINE A	HYDROTROL	5000	100	
ENGINE B	HYDROTROL	5010	110	
ENGINE C	HYDROTROL	5020	120	

LINE DESCRIPTION	AMOUNT	PLAN	HEAD	POSTION	NUMBER OF DAYS	REMARKS
IN LINE	1200	NR	NR	NR	NR	NR

NAME	NO OF DEANS	PRECEDENCE MODEL NO OR ATTACHED PRE-DOD PREPARE SITE	DISTRIBUTION UNIT	REMARK
7/1	1	PRE-DOD PREPARE SITE	NONE	

(107)	GROSS FLOW RATE	MG
(108)	WASTE FLOW RATE	MG GAL
(109)	RETENTION RATE	HOURS
(110)	STORAGE FACTOR	2

$(107) \times (108) \times (109) \times (110) = \text{TOTAL}$
 $(107) \times (108) \times (109) \times (110) = \text{AND GALLONS}$
 PROVIDED TO GALLON BANDS INTERCEPTION

MARK	GENERAL DATA							TECHNICAL			
	MANUFACTURER	MODEL NUMBER OR APPROVED EQUIV.	STORAGE CAPACITY	DATA RATE MB/s	GAS CONNECTION	WATER EFFICIENCY	GW RECOVERY	TEMPERATURE RISE °F	EQUIPMENT WEIGHT	VOLUME/NUMBER	REMARKS
10	AG 84TH	8TH-755	500 GALLON	75.0	3/4"	80%	143	80	1000	100-100	1000 GALLON AND 1000 GALLON

PROJECT NO. 1076-20-0000 DATE: 11/02/97
PROJECT NO. 1076-20-0000 PROJECT NO. 1076-20-0000

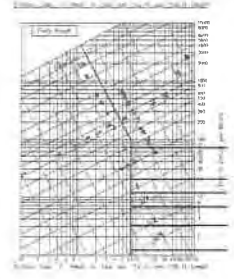
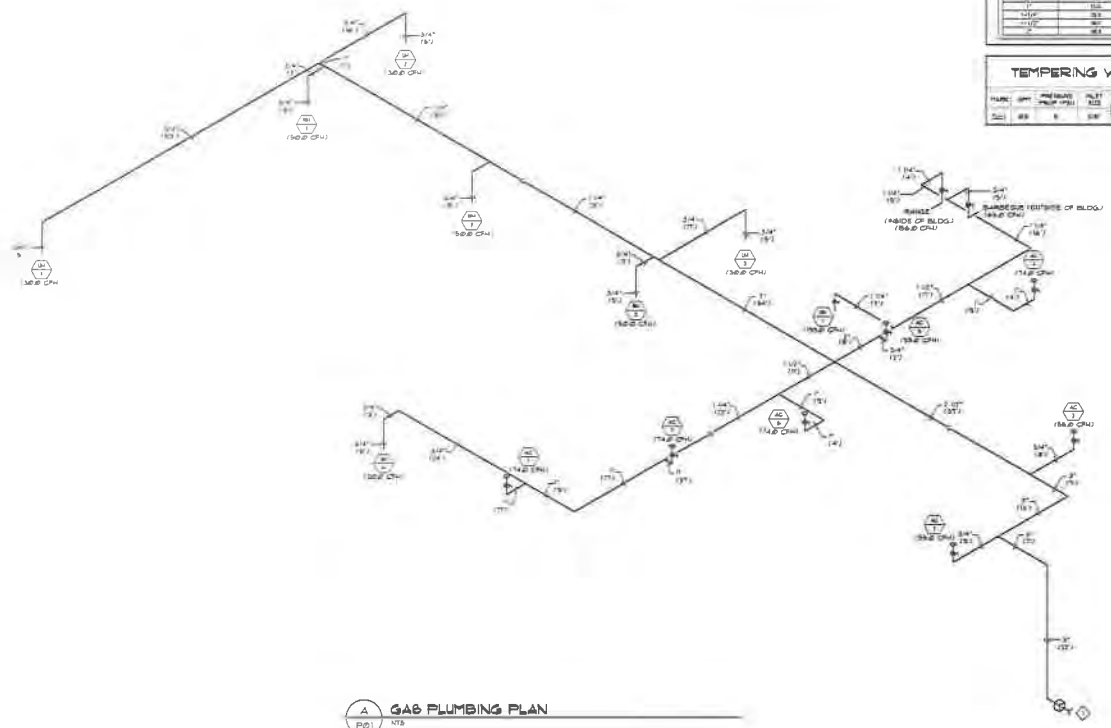


PLATE	UNIT	TIME RELATIVE TO REF. TIME	PLATE ALT.	UNIT SIZE	STANDARD MODEL NO.	REMARK
100	40	0	0.0	0.0	0.00-00	

NAME	DESCRIPTION
10001	MAJOR CLOSET - DOUBLE DOOR ON ENTRANCE HALL, VESTIBULE AREA, DISCONNECTED FROM

[illegible]

PLANE	FEATURE	Wavelength (nm)	Temp	Remarks
1	1	400	25	
2	2	400	25	
3	3	400	25	
4	4	400	25	
5	5	400	25	
6	6	400	25	
7	7	400	25	
8	8	400	25	
9	9	400	25	
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88	88	400	25	
89	89	400	25	
90	90	400	25	

[illegible]

SHEET NOTES:

1. GAS PIPING AND METER PROVIDED BY SOUTHWEST GAS CORPORATION
SIZED BASED ON 15MB CFH WITH A TOTAL DEVELOPED LENGTH OF 300
FEET.

GAS PLUMBING PLAN

CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

**Dekker
Perich
Sabatini**

CONFIRMED BID ISSUE

PLUMBING SCHEDULES AND GAS ISOMETRIC

FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

INLET NO
P0.1
INLET 14 OF 1

[illegible][illegible]

PET.APP.000624

 TYPICAL CONDENSATE DRAIN DETAIL


CLEANOUT DETAILS


SAMPLE BOX
 FBI

② GAS WATER HEATER W/RECIRC
412

FLOOR CLEANOUT

WALL CLEANOUT

 FIRE SPRINKLER STAND PIPE DETAIL

RAINWATER LEADER TO GRADE

150 GALLON BAND-OIL INTERCEPTOR

KITCHEN SINK DETAIL

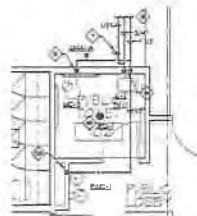
RAINWATER LEADER TO GRADE


HOSE BIBB DETAIL
 PQJ 179

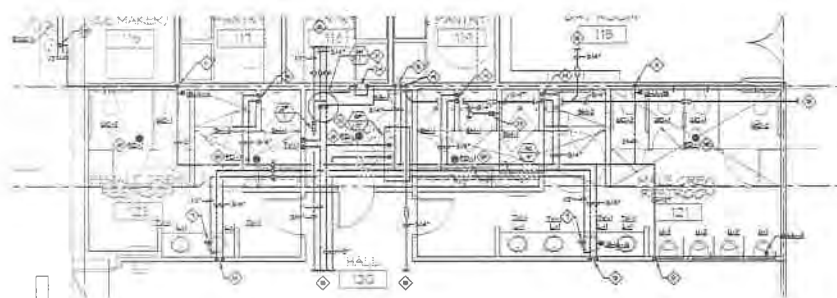

DUPLEX BOOSTER PUMP PIPING DIAGRAM

[illegible]

THS:
1919 Angelo Court
Bella 173
Las Vegas NV 89119
PH: 702.735.1120
F: 702.735.1123



ENLARGED PLUMBING PLAN - DOMESTIC WATER



ENLARGED PLUMBING PLAN - DOMESTIC WATER

1. ALL WATER PIPES SHALL BE INSTALLED ON THE INTERIOR SIDE OF THE BUILDING.
2. THE CUTTING, NOTCHING AND BORING OF HOLES IN FLOOR JOIST AND WALL SHALL BE IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE 2006 INTERNATIONAL BUILDING CODE.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL PLUMBING WITHIN THE BUILDING TO THE ARCHITECTURAL DRAWINGS FOR FIXTURES AND EQUIPMENT LOCATIONS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING OF WALLS AND FLOORS IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE 2006 INTERNATIONAL BUILDING CODE.
5. ALL SANITARY DRAINAGE PIPING SHALL BE SLOPED AT 1/8" PER FOOT.
6. PLUMBING CONTRACTOR SHALL COORDINATE ROUTING OF PIPING WITH ALL OTHER TRADES PRIOR TO COMMENCING WORK.
7. ALL PLUMBING FIXTURES SHALL BE WATER CONSERVATION TYPE AS REQUIRED BY LOCAL ORDINANCES AND REQUIREMENTS.
8. ALL WATER CLOSETS DESIGNATED AS HANDICAP SHALL BE INSTALLED SUCH THAT THE ACTUATOR IS OPERABLE FROM THE JOSE SIDE OF THE WATER CLOSURE.
9. PRIOR TO INSTALLATION OF SILENT AND WATER PIPING BELLIFY GRADE CONDITIONS, EXISTING LOCATIONS AND DEPTHS OF BURIAL WITH CIVIL AND ELECTRICAL ENGINEERING AND ARCHITECTURAL CONSULTANTS.

FEET NOTES

- 17) GETS TO 1ST VENT UP
 18) GETS TO 2ND VENT UP
 19) VENT UP THROUGH NOSE
 20) VENT UP THROUGH NOSE
 21) 1ST GOLD WATER DOWN TO SELL
 22) 3RD GOLD AND HOT WATER DOWN TO SELL
 PROVIDES LINE BOLD BALANCING VALUES AND CREDIT BETTER.
 23) GETS TO 2ND VENT UP
 24) VENT UP
 25) TRAVEL TRAP REPAIR. ROUTE 17 GOLD WATER BY BACK OFF VALVE FROM NEAREST MAIN IN HALL TO TRAP REPAIR. PROVIDE CREDIT AS WELL AS REQUIRED
 26) 1ST GOLD WATER DOWN. EXTEND 17 TO EACH SELL AND SELL
 27) 2ND GOLD WATER DOWN. EXTEND 17 TO EACH SELL AND SELL
 28) 3RD GOLD AND HOT WATER DOWN. EXTEND 17 TO EACH SELL
 29) 3RD GOLD AND HOT WATER DOWN. EXTEND 17 GOLD AND HOT WATER TO EACH SELL AND SELL
 30) VENT UP THROUGH NOSE
 REFER TO DETAIL. SELLER NOW SHALL CLEANER
 REFER TO DETAIL. PU ON CORRELATION
 31) CONDENSATE DRAIN DOWN TO SELL
 32) 1ST GOLD WATER DOWN TO SELL
 REFER TO DETAIL. DRYED MORE WATER HEATER DETAIL.
 REFER TO DETAIL. LINE UP FROM CONDENSER FROM
 33) CONDENSATE DRAIN UP TO RECEPTION UNIT
 34) HOT WATER DOWN

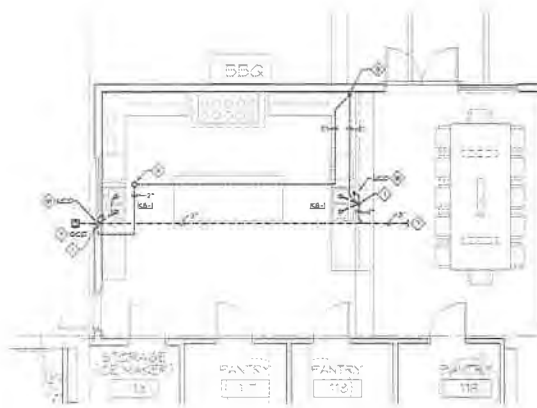
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**Dekker
Perich
Sabatini**

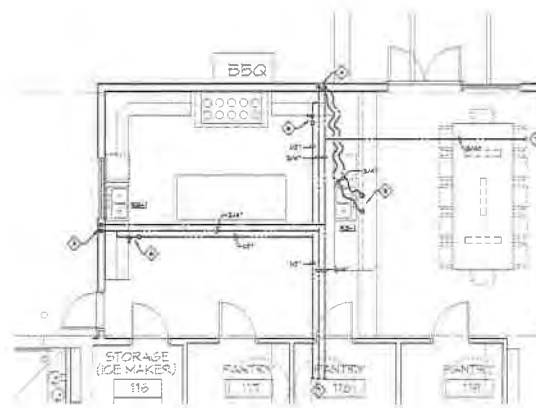
CONFIRMED BID ISSUE

FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS NV 89032

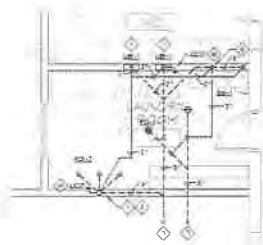
SHEET NO.
P0.5
SHEET 56 OF



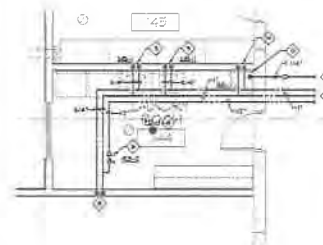
A ENLARGED PLUMBING PLAN - WASTE AND VENT
1/4" = 1'-0"



B ENLARGED PLUMBING PLAN - DOMESTIC WATER
1/4" = 1'-0"



C ENLARGED PLUMBING PLAN - WASTE AND VENT
1/4" = 1'-0"



D ENLARGED PLUMBING PLAN - DOMESTIC WATER
1/4" = 1'-0"

- GENERAL NOTES:**
1. ALL WATER PIPING SHALL BE INSTALLED ON THE INTERIOR SIDE OF THE BUILDING.
 2. THE CUTTING, NOTCHING AND BORING OF HOLES IN FLOOR JOIST AND WALL STUD SHALL BE IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE 2004 INTERNATIONAL BUILDING CODE.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL PLUMBING ROOMS IN LOCATION. REFER TO ARCHITECTURAL DRAWINGS FOR FIXTURES AND EQUIPMENT LOCATIONS.
 4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING AS REQUIRED TO ACCOMMODATE HIS WORK.
 5. ALL SANITARY DRAINAGE PIPING SHALL BE SLOPED AT 1/4" PER FOOT.
 6. PLUMBING CONTRACTOR SHALL COORDINATE ROUTING OF PIPING WITH ALL OTHER TRADES PRIOR TO COMMENCING WORK.
 7. ALL PLUMBING FIXTURES SHALL BE WATER CONSERVATION TYPE AS MANDATED BY LOCAL BUILDING DEPARTMENT.
 8. PRIOR TO INSTALLATION OF BELIER AND WATER PIPING BELOW GRADE COORDINATE EXACT LOCATIONS AND DEPTHS OF BURIAL WITH CIVIL AND FOUNDATION DRAINAGE AND CORRESPONDING ENGINEERS.
- SHEET NOTES:**
- ◇ 2" SHOTS AND 2" VENT UP
 - ◇ 2" VENT UP THROUGH ROOF
 - ◇ 3/4" COLD AND HOT WATER DOWN TO SINK. EXTEND 1/2" HOT WATER TO DISHWASHER. REFER TO DETAIL 1102 FOR KITCHEN SINK.
 - ◇ 3/4" COLD AND HOT WATER DOWN TO SINK. EXTEND 1/2" HOT WATER TO DISHWASHER. REFER TO DETAIL 1102 FOR KITCHEN SINK.
 - ◇ 3/4" COLD AND HOT WATER DOWN TO SINK. EXTEND 1/2" HOT WATER TO DISHWASHER. REFER TO DETAIL 1102 FOR KITCHEN SINK.
 - ◇ 2" VENT UP
 - ◇ PROVIDE 1/2" TRAP PRIMER FOR 1/2" COLD WATER WITH 1/2" OFF VALVE FROM NEAREST COLD WATER MAIN TO TRAP PRIMER IN WALL. PROVIDE ACCESS PANEL. AS REQUIRED - 1/4" DRAIN DOWN TO SERVICE SINK.
 - ◇ 3/4" COLD AND HOT WATER DOWN TO SERVICE SINK.



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

ENLARGED PLUMBING PLANS

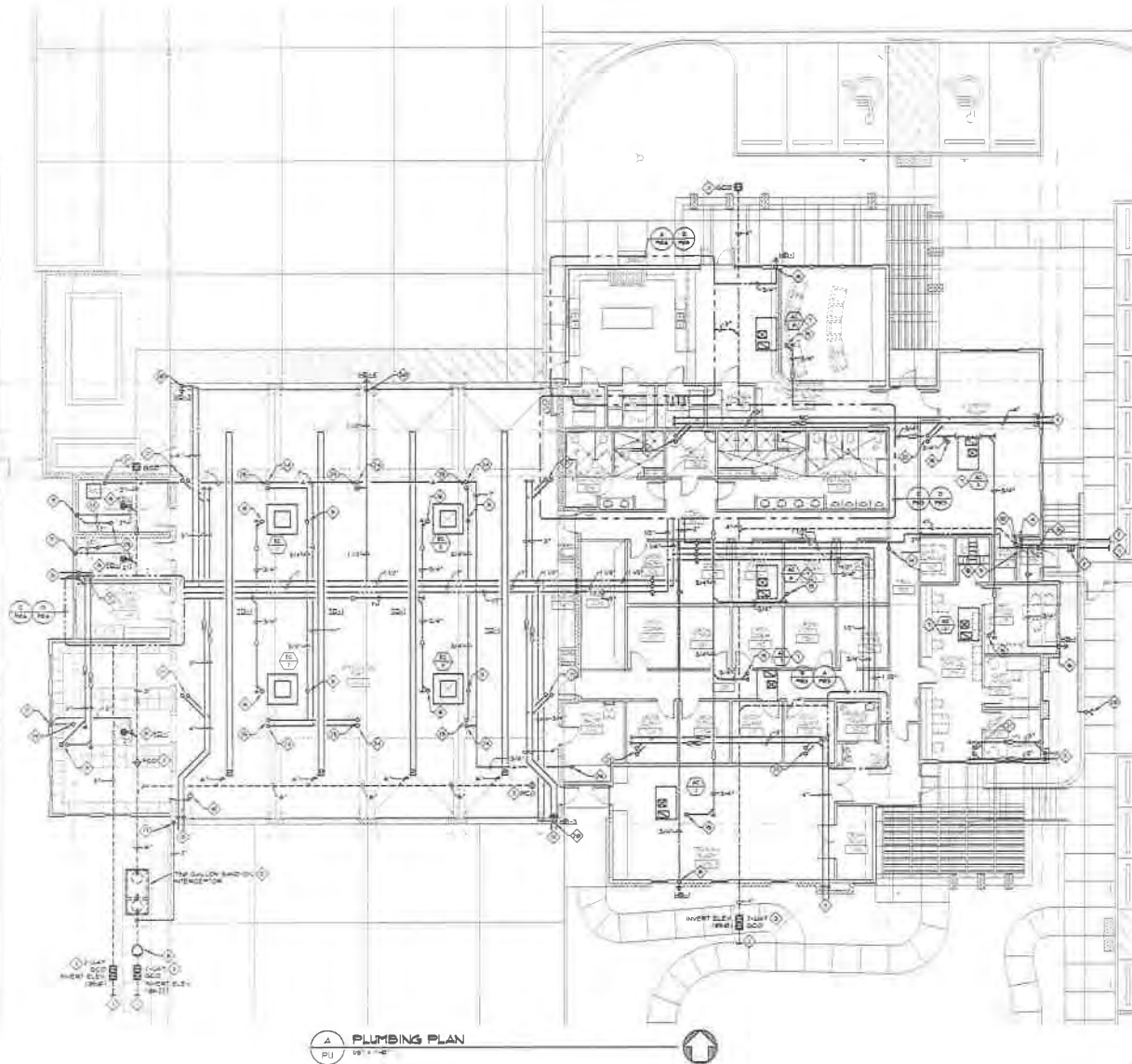
FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032



CONFORMED BID ISSUE

SHEET NO.
P.0.6
SHEET 27 OF 29

PET.APP.000627



- GENERAL NOTES:**
1. ALL WATER PIPING SHALL BE INSTALLED ON THE INTERIOR SIDE OF THE BUILDING.
 2. THE CUTTING NOTATIONS AND BORING OF HOLES IN FLOOR JOIST AND WALL STUDS SHALL BE IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE 2009 INTERNATIONAL BUILDING CODE.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL PLUMBING ROUGH IN LOCATIONS REFER TO ARCHITECTURAL DRAWINGS FOR FIXTURES AND EQUIPMENT LOCATIONS.
 4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING AS REQUIRED TO ACCOMMODATE HIS WORK.
 5. ALL SANITARY DRAINAGE PIPING SHALL BE SLOPED AT 1/4\"/>

- SHEET NOTES:**
1. REFER TO CIVIL DRAWINGS FOR INSTALLATION.
 2. PROVIDE SHUT-OFF VALVE IN YARD BOX.
 3. REFER TO DETAIL SHEET FOR TYPICAL TUG-HUNT CLEAN-OUT.
 4. FIRE ROOM.
 5. 1\"/>



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

PLUMBING PLAN

FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

SHEET NO.
P1.1
SHEET 28 OF 37

CONFORMED BID ISSUE

DATE	AS NOTED	DATE	BY
10/1/10	10/1/10	10/1/10	10/1/10
10/1/10	10/1/10	10/1/10	10/1/10
10/1/10	10/1/10	10/1/10	10/1/10
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PET.APP.000628



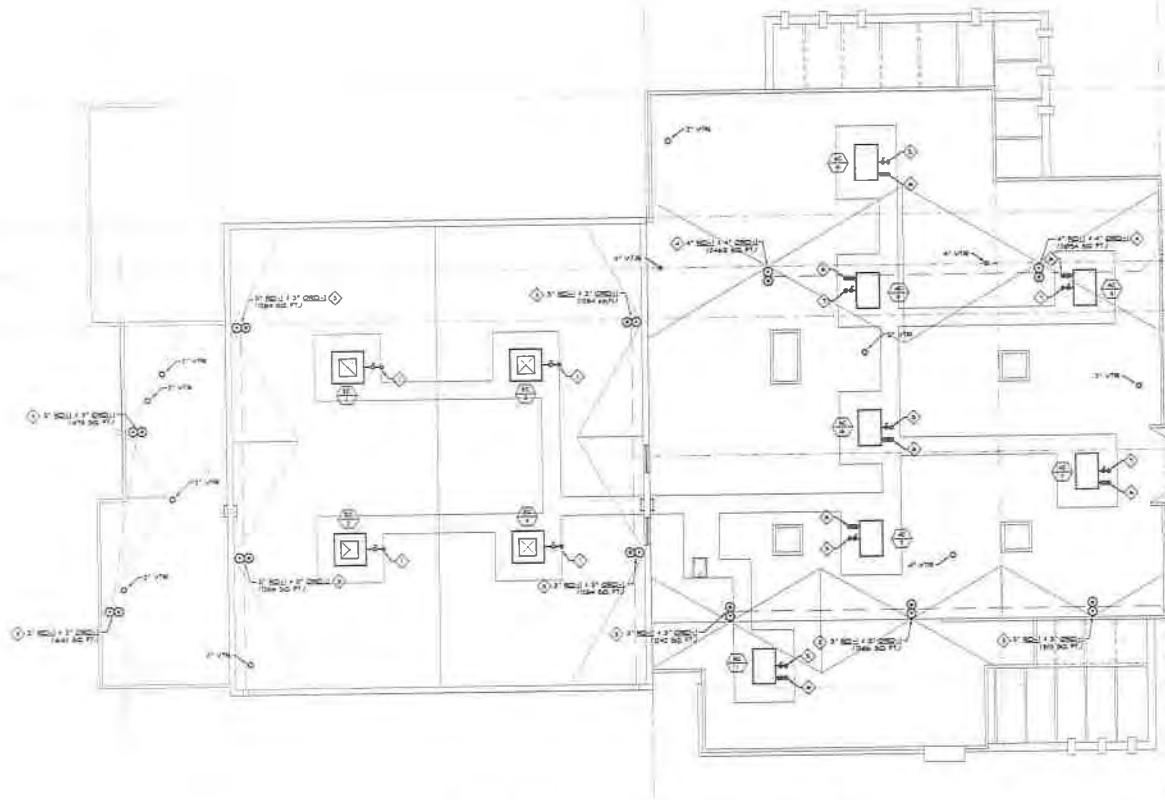
- SHIRT NOTES:**
- 1 GAS UP TO A R CONDITIONING.
- 2 GAS PETER PROVIDED BY SOUTHEAST GAS CORPORATION. SEE GAS METERING AND FLOW CONTROL. GAS METER LOCATION AND ALL PIPING TO BE INSTALLED BY CONTRACTOR.
- 3 GAS DOWN TO BARRELING. (SEE CHD.)
- 4 GAS DOWN TO SARGE. (SEE CHD.)
- 5 GAS UP AIR CONDITIONING.
- 6 GAS DOWN TO WATER HEATER.
- 7 GAS DOWN HEATER (SEE CHD.)
- 8 GAS TO KITCHEN HEATER (SEE CHD.)



1111 Michigan Avenue
 Chicago, IL 60606
 Tel: (312) 237-1000
 Fax: (312) 237-1001
 E-mail: tbs@tbs.com

**Decker
Perich
Sabatini**

PET.APP.000629



PLUMBING ROOF PLAN
1/8" = 1'-0"

- GENERAL NOTES:**
1. ALL WATER PIPING SHALL BE INSTALLED ON THE INTERIOR SIDE OF THE BUILDING.
 2. THE CUTTING NOTATIONS AND SIZES OF HOLES IN FLOOR JOIST AND SHALL BE IN ACCORDANCE WITH THE LATEST APPROVED EDITION OF THE 2004 INTERNATIONAL BUILDING CODE.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR THE COORDINATION OF ALL PLUMBING ROOM-IN LOCATIONS. REFER TO ARCHITECTURAL DRAWINGS FOR FIXTURES AND EQUIPMENT LOCATIONS.
 4. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING AS REQUIRED TO ACCOMMODATE HIS WORK.
 5. PLUMBING CONTRACTOR SHALL COORDINATE ROUTING OF PIPING WITH ALL OTHER TRADES PRIOR TO COMMENCING WORK.
 6. PRIOR TO INSTALLATION OF SEWER AND DRAIN PIPING, SEWER GRADE DETERMINE EXACT LOCATIONS AND DEPTHS OF REMAIN WITH CIVIL AND FOUNDATION DRAWINGS AND CORRESPONDING ENGINEERS.
- SHEET NOTES:**
1. 1/2" COLD WATER DOWN THROUGH ROOF.
 2. 3/4" COLD WATER DOWN THROUGH ROOF.
 3. 3" ROOF DRAIN AND 3" OVER FLOW DRAIN DOWN THROUGH ROOF.
 4. 4" ROOF DRAIN AND 4" OVER FLOW DRAIN DOWN THROUGH ROOF.
 5. 3/4" GAS DOWN THROUGH ROOF.
 6. 8" CONCRETE DOWN THROUGH ROOF.
 7. 8" HALL DOWN THROUGH ROOF.



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

PLUMBING ROOF PLAN
FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

CONFORMED BID ISSUE

SHEET NO.
P2.1
SHEET 60 OF 77

NO.	DATE	REVISIONS
1	10/10/08	REVISION
2	10/10/08	REVISION
3	10/10/08	REVISION
4	10/10/08	REVISION
5	10/10/08	REVISION
6	10/10/08	REVISION
7	10/10/08	REVISION
8	10/10/08	REVISION
9	10/10/08	REVISION
10	10/10/08	REVISION



PET.APP.000630

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SHEET NUMBER	SHEET TITLE	SHEET NO.				
		1	2	3	4	5
001	GENERAL LAYOUT AND SPECIFICATIONS					
002	WHALE LINE DIAGRAM, NOTES AND SCHEDULES					
003	LIGHTING FIXTURE SCHEDULE AND BGC COMPLIANCE CERTIFICATE					
004	DETAILS AND DIAGRAMS					
005	DETAILS AND DIAGRAMS					
006	LOW VOLTAGE DETAIL AND DIAGRAMS					
007	ELECTRICAL SITE PLAN					
008	POWER PLAN					
009	LOW VOLTAGE TELE DATA PLAN					
010	LOW VOLTAGE A / V PLAN					
011	LOW VOLTAGE LOCATION PLAN					
012	LIGHTING PLAN					
013	MECHANICAL CONNECTION PLAN					
	TOTAL	13	13	13	13	13

RECORD DRAWING

THE WORK OF RECORDS OFFICIALS HAS BEEN RECOGNIZED BY THE CONGRESS OF THE UNITED STATES AND THE NATIONAL ARCHIVES. THE CONGRESS HAS PASSED A BILL TO ESTABLISH A NATIONAL RECORDS DRAWING ACT. THE BILL IS THE FIRST OF ITS KIND IN THE HISTORY OF THE UNITED STATES. IT WILL GIVE RECORDS OFFICIALS THE AUTHORITY TO REQUIRE THE PRODUCTION OF RECORDS FOR DRAWING PURPOSES. THE BILL WILL ALSO GIVE RECORDS OFFICIALS THE AUTHORITY TO REQUIRE THE PRODUCTION OF RECORDS FOR DRAWING PURPOSES. THE BILL WILL ALSO GIVE RECORDS OFFICIALS THE AUTHORITY TO REQUIRE THE PRODUCTION OF RECORDS FOR DRAWING PURPOSES.

INSA
F113 Arroyo Guadalupe
Sala 113
Los Angeles, NV 88116
P: 702/461-1191
F: 702/461-1113

CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

SYMBOL LIST AND SPECIFICATIONS

FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

CONFIRMED BID ISSUE

**Dekker
Perich
Sabatini**

**Dekker
Perich
Sabatini**

[illegible]



LIGHTING CONTROL PANEL (LCP) BUTCHING SCENARIOS		
SIGNAL	DESCRIPTION OF CONTROL	ASSUMPTION/SCENARIO
1	1. KITCHEN BATH TALKIE IS BUZZING 2. TONE AUTO OFF AND TALKIEALLY 3. RESET ON	1. TALKIE RESET ON 2. RADIO TONE AUTO OFF 3. RADIO TONE AUTO ON/DRIVER
2	1. LIGHTS ARE TURNED OFF ON AND 2. OFF AT MAXIMUM OVERDUE 3. SHOWN AT ONE LOCATION	1. MAXIMA, DRIVER 2. TIME/LOGIC OFF 3. PHOTOCELL ON/TIME/LOGIC OFF RADIO TONE AUTO ON/DRIVER PHOTOCELL ON/DRIVER
3	1. HALL LIGHTS ARE TURNED OFF 2. CONTROLLED DRIVER AT HALL 3. LOCATION AND RADIO TONE AUTO 4. ON AND DELAYED OFF THE	1. PHOTOCELL ON/DRIVER 2. MAXIMA, IN/TIME/LOGIC OFF 3. PHOTOCELL ON/TIME/LOGIC OFF 4. RADIO TONE AUTO ON/DRIVER PHOTOCELL ON/DRIVER TIME/LOGIC OFF/DRIVER
4	1. EXTERIOR ROOM TALKIE LIGHT 2. IS RADIO TONE AUTO ON AND 3. DELAYED OFF THE	1. MAXIMA, ON/TIME/LOGIC OFF 2. PHOTOCELL ON/TIME/LOGIC OFF 3. RADIO TONE AUTO ON/DRIVER PHOTOCELL ON/DRIVER TIME/LOGIC OFF/DRIVER
5	1. OFFICE AREAS ARE TURNED OFF 2. CONTROLLED DRIVER	1. MAXIMA, DRIVER 2. PHOTOCELL ON/TIME/LOGIC OFF RADIO TONE AUTO ON/DRIVER PHOTOCELL ON/DRIVER



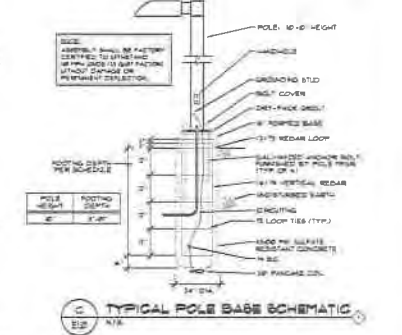
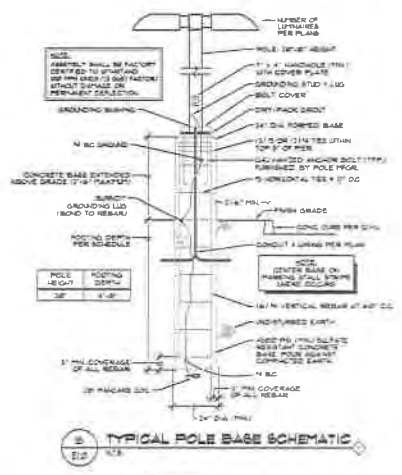
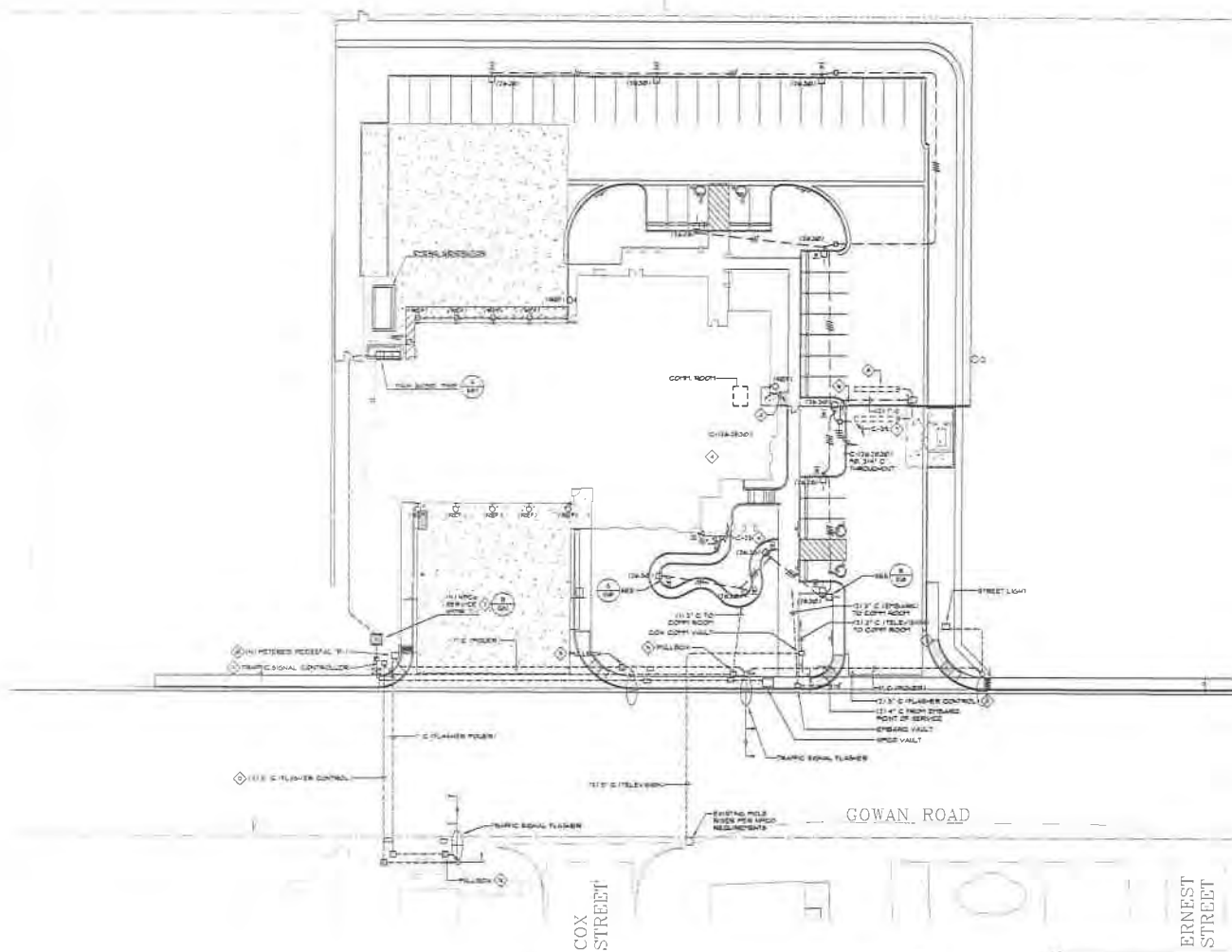
1115 Avenida Cesar
Suite 111
San Jose, CA 95128
Tel: (408) 298-1115
Fax: (408) 298-1116

GENERAL NOTES

1. REFERENCE RISE AND SINGLE-LINE DIAGRAM AND NOTES SHEETS "E6", "E6.1" AND "E6.2" SHEETS FOR ADDITIONAL BELOW GRADE CONDUIT REQUIREMENTS THAT MAY NOT BE SHOWN ON THIS SITE PLAN.
2. ELECTRICAL CONTRACTOR SHALL REVIEW ALL UTILITY COMPANIES AND CIVIL ENGINEERING DOCUMENTS PRIOR TO COMMENCEMENT OF WORK TO ENSURE THERE ARE NO CONFLICTS BETWEEN BELOW GRADE CONDUIT AND PUMPING PUMPS.

SHEET NOTES

- ◆ POLE BASE SCHEMATIC SHOWN FOR ELECTRICAL INFORMATION ONLY. REFER ALSO TO CLARK COUNTY BUILDING DEPARTMENT STANDARD BOLTED POLE BASE DETAIL FOR ADDITIONAL REQUIREMENTS.
- ◆ PROVIDE CONCRETE FILLED PROTECTIVE BOLLARDS AS REQUIRED PER NEVADA POWER COMPANY STANDARDS.
- ◆ PROVIDE 1" CONDUIT WITH PULL CORED STUBBED 6" ABOVE FINISHED FLOOR AT RIVER LOCATION TO 200'X' AND/OR 15'X' LOCATIONS ON SITE FOR SIGNALING INTERFACE PROVISION WITH RAIL AND TAMPON BATTERIES. REFER TO CIVIL DRAWINGS AND/OR COORDINATE WITH SITE UTILITIES CONTRACTOR PRIOR TO INSTALLATION.
- ◆ ROUTE CIRCUIT VIA LIGHTING CONTRACTOR WITH LIGHTING CONTROL PANEL ADJACENT PARKING LOT LOCATED. REFER ALSO TO PANEL SCHEDULES AND SINGLE LINE DIAGRAMS.
- ◆ PROVIDE (1) 4" X 6" TO POWER COMPANY PRELIMINARY POINT OF CONNECTION.
- ◆ PROVIDE 1" C TO COMMUNICATION BOARD FOR SECURITY CONTROLLED ACCESS THROUGH GATE.
- ◆ CONNECT MOTORIZED GATE PER MANUFACTURER RECOMMENDATIONS.
- ◆ EXIT AND SAFETY SENSOR VERIFY CONTROL USING UTILITY MANUFACTURER PRIOR TO INSTALLATION.
- ◆ PROVIDE UNDERGROUND PULLBOX WITH TRAFFIC RATED LID. COORDINATE LABELING AND EXACT LOCATION WITH CIVIL AND TRAFFIC ENGINEER PRIOR TO INSTALLATION.
- ◆ RETIEVE PEDESTAL "W" SEE S602. CONNECT TRAFFIC SIGNAL PLASHER TO PEDESTAL "W" AS REQUIRED. VERIFY ELECTRICAL REQUIREMENTS.
- ◆ TRAFFIC SIGNAL CONTROLLER CABINET CONNECT TO PEDESTAL "W" AS REQUIRED. INSTALL DISCONNECT ON CABINET. COORDINATE INSTALLATION REQUIREMENTS WITH CIVIL AND TRAFFIC ENGINEER.
- ◆ PROVIDE (1) 3" CONDUITS FROM TRAFFIC SIGNAL PLASHER TO CONTROLLER. VERIFY SIZE AND QUANTITIES WITH CIVIL AND TRAFFIC ENGINEER.
- ◆ CONNECT TO PEDESTAL "W" VERIFY ELECTRICAL REQUIREMENTS PRIOR TO INSTALLATION.



ELECTRICAL SITE PLAN
A
E1.0

Call before you Overhead
1-702-503-6111
WHEN FIRST TAPPOINT AND SAFETY SERVICES AVAILABLE

Call before you Dig
1-800-227-2600
UNDERGROUND SERVICE (USA)

RECORD DRAWING
THIS DRAWING IS NOT TO BE USED FOR CONSTRUCTION OF ANY PROJECT WITHOUT THE WRITTEN CONSENT OF THE ENGINEER. THE ENGINEER'S RESPONSIBILITY IS NOT TO BE USED FOR CONSTRUCTION OF ANY PROJECT WITHOUT THE WRITTEN CONSENT OF THE ENGINEER.



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

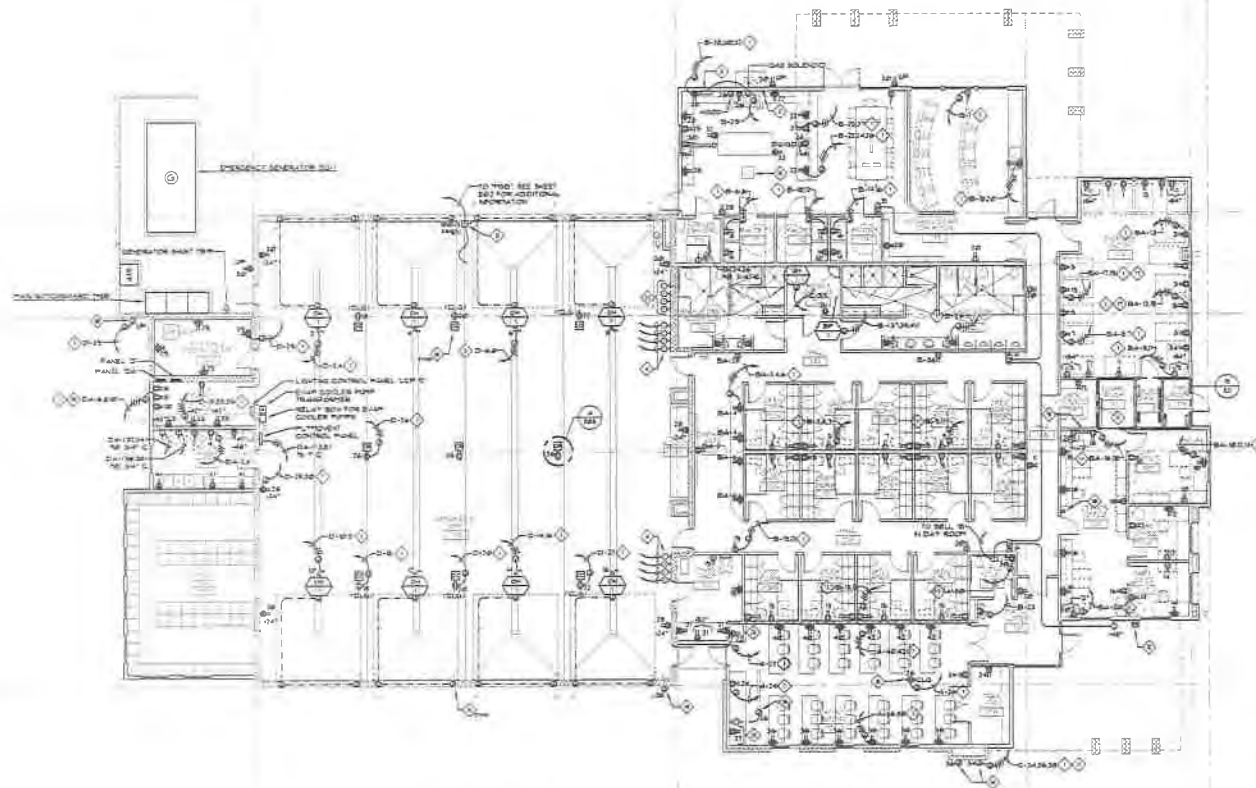
Dekker Perich Sabatin
Professional Engineer
State of Nevada
License No. 10847

ELECTRICAL SITE PLAN
FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

CONFORMED BID ISSUE

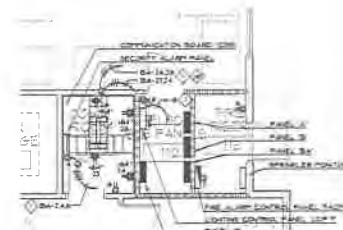
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SHEET 27 OF 77

PET.APP.000637



A POWER AND SIGNAL PLAN
 1/8" = 1'-0"

- GENERAL NOTES:**
- ALL CIRCUITS SHALL CARRY A GREEN GROUND CONDUCTOR
 - WIRE NOTES:**
 - EXTEND AND CONNECT CIRCUITING FROM JUNCTION BOX TO LIGHTING FIXTURES/RECEPTACLES A AREA WITH SAME CIRCUIT NUMBER, ROUTE TO CONDUCTIONS THROUGHOUT, UNLESS NOTED OTHERWISE
 - PROVIDE AND INSTALL RED PUSH-ROCK HEAD PUSH-BUTTON 3-WIRE MAINTAINED SWITCH FOR GAS VALVE CONTROL, PROVIDE AND INSTALL NAMEPLATE AT SWITCH LOCATION, SEE DETAIL C-11 NAMEPLATE SHALL BE SET WITH 1/2" HIGH LETTERS, COORDINATE LOCATION OF SWITCH AND NAMEPLATE WITH FIRE DEPARTMENT PRIOR TO INSTALLATION
 - NOTE: REPRESSION SWITCH, VERIFY EXACT LOCATION WITH NEVILLE
 - 1/2" CONDUIT AND CONTROL WIRE FOR DOOR CONTROLLER
 - PUSH JUNCTION BOX FOR INFLARED DOOR CONTROL, PROVIDE 3/4" CONDUIT AND CONTROL WIRE BETWEEN JUNCTION BOX AND DOOR CONTROLLER
 - INSTALL DEVICES RECEPTACLE VOICE/DATA OUTLET CATV OUTLET ABOVE DRINK CABBINET
 - NOT USED
 - PROJECTOR AND NOTORIZED SCREEN, COORDINATE LOCATION WITH ALVIO AND ARCHITECT PRIOR TO ROUGH-IN
 - APPROPRIATE LOCATION OF GENERATOR STATUS PANEL, COORDINATE FINAL LOCATION IN FIELD PRIOR TO ROUGH-IN
 - PROVIDE CONNECTION TO IRRIGATION CONTROLLER, VERIFY EXACT LOCATION IN FIELD WITH LANDSCAPE CONTRACTOR PRIOR TO ROUGH-IN
 - REFERENCE DETAIL B-10 FOR ADDITIONAL INFORMATION IN THIS ROOM
 - COORDINATE HEIGHT AND LOCATION OF JUNCTION BOX WITH ALVIO PRIOR TO ROUGH-IN
 - VERIFY MOUNTING HEIGHT WITH ALVIO PRIOR TO ROUGH-IN
 - VERIFY ELECTRICAL REQUIREMENTS WITH SIGNAGE CONTRACTOR PRIOR TO INSTALLATION
 - ACCESS PANEL, COORDINATE LOCATION WITH ARCHITECT
 - CONNECT DROP CORD PER MANUFACTURERS RECOMMENDATIONS, MOUNTING HEIGHTS SHALL BE COORDINATED AS TO NOT TO INTERFERE WITH OVERHEAD DOORS
 - DEDICATED RECEPTACLES FOR OWNER PROVIDED EXERCISE EQUIPMENT, VERIFY LOCATION OF EQUIPMENT WITH OWNER
 - HANDAL OVERSIDE SWITCH FOR GATE CONTROLLER, PROVIDE 3/4" CONDUIT AND REQUIRED CABLE TO GATE CONTROLLER, REFERENCE MANUFACTURERS INSTALLATION INSTRUCTIONS
 - VERIFY LOCATION OF BATTERY CHARGERS WITH OWNER PRIOR TO ROUGH-IN
 - PROVIDE LABEL ON OUTLET, LABEL SHALL READ AS FOLLOWS: DEDICATED ELECTRICAL CIRCUIT
 - VERIFY MOUNTING HEIGHT OF DISCONNECT SWITCH WITH ALVIO PRIOR TO INSTALLATION, SECURE OWNER SUPPLIED EQUIPMENT CABLE TO WALL, BELONG DISCONNECT SWITCH, OWNER SHALL PROVIDE MEANS OF TIGHTENING CORD (CORD REEL, HANGING, ETC.)
 - REMOVE 24" EXPOSED CONDUIT



B ENLARGED ELEC ROOM
 1/4" = 1'-0"

GAS VALVE RESET
 PULL TO TURN GAS ON
 PUSH TO TURN GAS OFF
 SHUT STOVE AND BBQ VALVES
 OFF BEFORE RESETTNG

C GAS VALVE NAMEPLATE
 1/8" = NONE



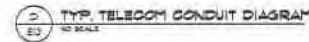
CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

POWER AND SIGNAL PLAN

FIRE STATION 53
 2800 WEST COWAN ROAD
 NORTH LAS VEGAS, NV 89032

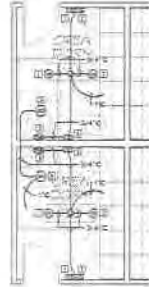
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 SHEET 68 OF 77

PET.APP.000638

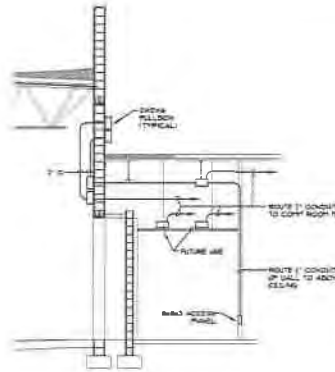


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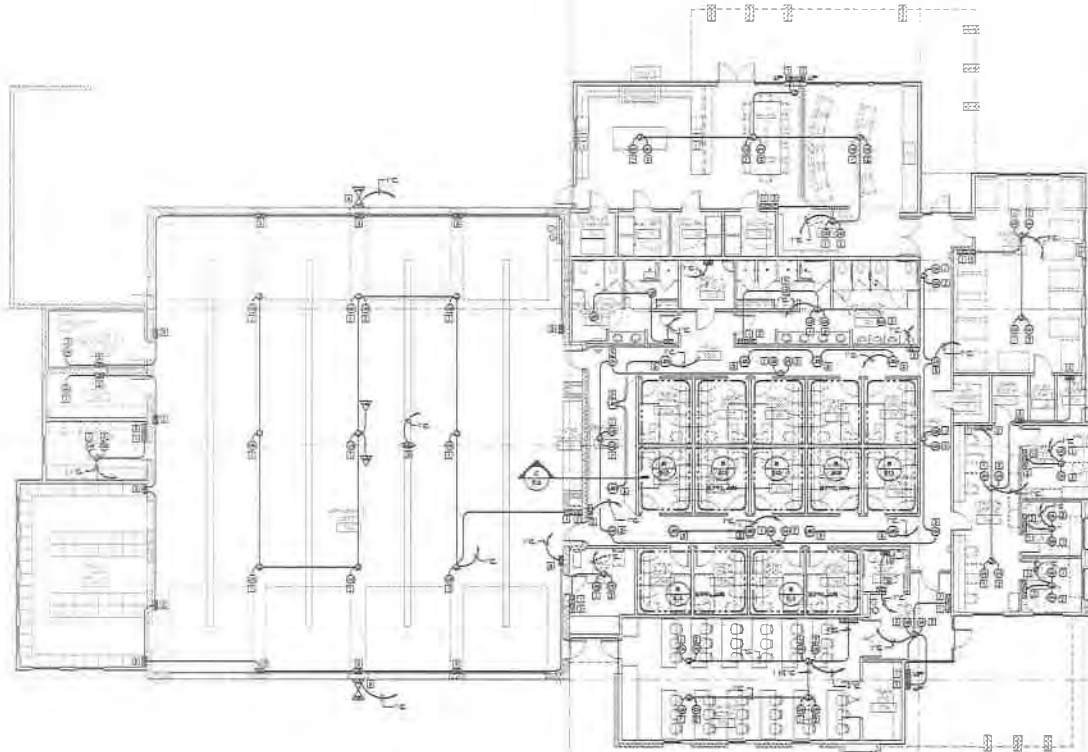
B TYPICAL DORM ROOM RACEWAY SYSTEM
1/8" = 1'-0"



C WALL SECTION
1/8" = 1'-0"



A AUDIO AUXILIARY PLAN
1/8" = 1'-0"



GENERAL NOTES:

- ALL EQUIPMENT TO BE 3/4" UNLESS NOTED OTHERWISE.
- ALL CONDUIT SYSTEMS SHALL BE 1" UNLESS NOTED OTHERWISE AND SHALL EXTEND TO POP CORN ROOM 14 ABOVE SOUND AUDIO / EQUIPMENT RACK.
- CONTRACTOR TO VERIFY SIZE OF ALL ROUGH-IN BOXES WITH AUDIO SYSTEMS INSTALLER PRIOR TO BUILD-OUT.
- ALL CEILING SPEAKERS TO BE TAPPED AT 1/4" UNLESS NOTED OTHERWISE. ALL WALL SPEAKERS ARE TO BE TAPPED AT 3/4" UNLESS NOTED OTHERWISE. HORN SPEAKERS ARE TO BE TAPPED AT 5/8" UNLESS NOTED OTHERWISE.
- ALL WALL SPEAKERS ARE 1/4" BRACKET TYPE TYPICAL TO A STANDARD 4 SQUARE JUNCTION BOX COVER. PROVIDE STANDARD 4 SQUARE JUNCTION BOX TO MATCH SURFACE OR FLUSH MOUNT REQUIREMENTS. ALL OUTSIDE HORN SPEAKERS TYPICAL TO A 4 SQUARE JUNCTION BOX / CEILING SPEAKERS REQUIRE A 1/4" RATED BACKLASH.

SHEET NOTES:

- PRESENT WALL SPEAKERS IN A SQUARE JUNCTION BOX - 1/4" TYPICAL

SYSTEM LEGEND

- DEVICE PROVIDED FOR VOICE LADY SYSTEM, FUTURE LOCATION SYSTEM DEVICE LOCATION.
- DEVICE PROVIDED FOR FACILITY INTERCOM, THIS DEVICE NOT UTILIZED AS PART OF FUTURE LOCATION SYSTEM.
- FUTURE LOCATION SYSTEM DEVICE PROVIDE JUNCTION BOX AND CONDUIT AT LOCATION INDICATED.

DEVICE LEGEND

- WALL SPEAKER
- POCKET WALL SPEAKER
- CEILING SPEAKER
- HORN SPEAKER
- STATION CODE TRACKER
- LOW VOLTAGE LED RECESSED CEILING FUTURE
- VOLUME CONTROL, (SINGLE GAND 7-3/4" DEEP BY CONTRACTOR)
- SPEEDY SOUND LEVELING MICROPHONE



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

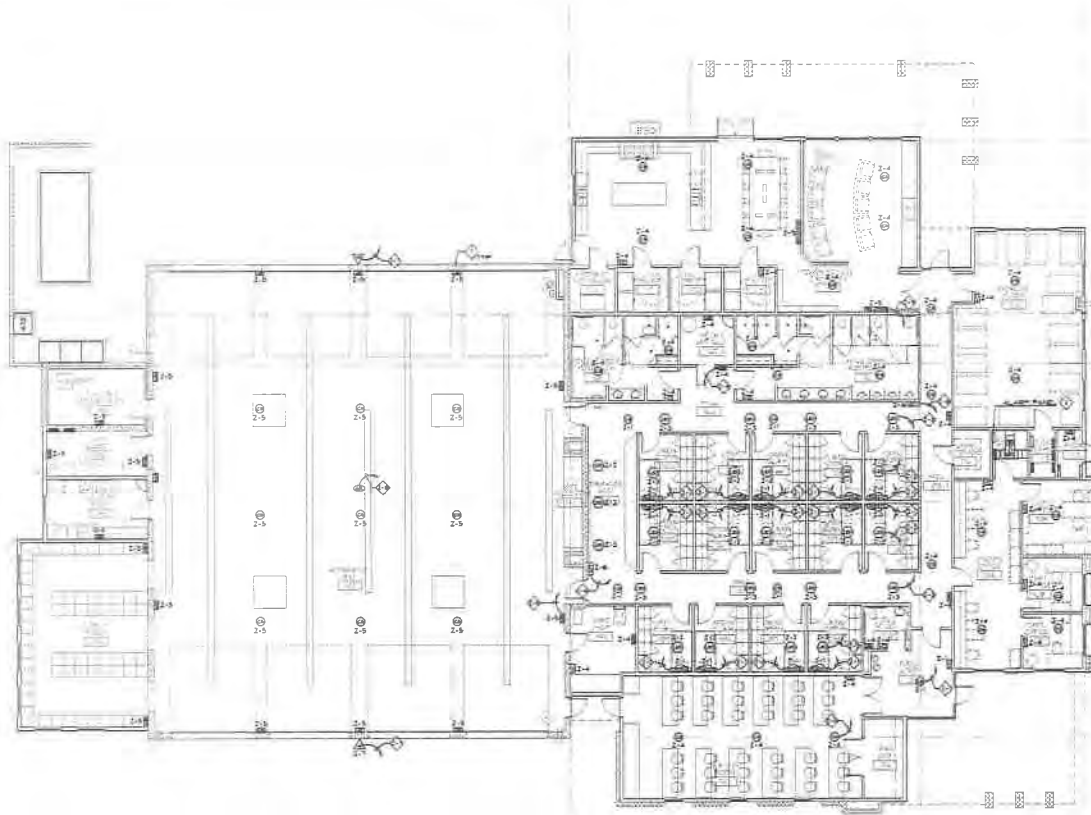
AUDIO/VIDEO PLAN

FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

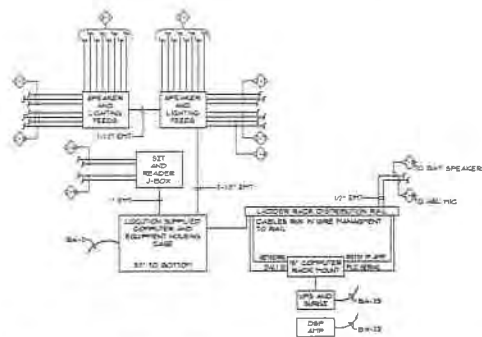
CONFORMED BID ISSUE

SHEET NO.
E1.3
SHEET TOTAL 21

PET.APP.000640



A LOW VOLTAGE LOCATION PLAN
E14 1/8" = 1'-0"



B ALARM SYSTEM DIAGRAM
E14 NO SCALE

GENERAL NOTES:

1. ALL CONDUITS TO BE 3/4" UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY SIZE OF ALL ROOMS IN BONES WITH AUDIO SYSTEMS INSTALLER PRIOR TO ROUGH-IN.
3. LOCATION SYSTEMS TO PROVIDE ALL DEVICES, BACKGANGS AND CABLEING. CONTRACTOR TO INSTALL PER LOCATION REQUIREMENTS.
4. ALL WIRING FROM STATION ZONE TRACKERS WILL BE (1) CAT 5a CABLE AND (2) PURPLE STRIPE POWER CABLE. DALL LIGHT DRIVERS IS ALSO (1) CAT 5a CABLE AND (2) PURPLE STRIPE POWER CABLE WITH PLUMBING BETWEEN FIXTURES.
5. SPEAKER WIRING IS (1) 16 AWG TUNED SPEAKER CABLE. MAX LENGTH IS 300' 4" PER CONDUIT RUN TO EQUIPMENT.
6. CAT 5 CABLE WILL BE RUN TO THE EQUIPMENT CABINET FROM THE IT HUB AT THE STATION.
7. EXTERIOR LIGHTING IS A FULLY GATED 10W FUNCTION. ALL BUNK ROOMS ARE DIFFERABLE VIA LOCATION PROGRAM CONTROL. THE DALL CONTROLLER IS PLACED IN THE SHIP COVER A-BOX ON THE RECEIVED LIGHTING FUTURE WHICH IS IN THE MIDDLE OF THREE FIXTURES. EACH DALL CONTROLLER POWERS (3) FIXTURES.
8. ALL CEILING SPEAKERS TO BE TAPPED AT UNLESS NOTED OTHERWISE. ALL WALL SPEAKERS ARE TO BE TAPPED AT UNLESS NOTED OTHERWISE. HORN SPEAKERS ARE TO BE TAPPED AT UNLESS NOTED OTHERWISE.
9. ALL DALL SPEAKERS ARE 1/2" BRACKET TYPE POINT TO A STANDARD 4 SQUARE JUNCTION BOX COVER PROVIDE STANDARD 4 SQUARE JUNCTION BOX TO MATCH SURFACE OR FLUSH MOUNT REQUIREMENTS. ALL OUTSIDE HORN SPEAKERS POINT TO A 4 SQUARE JUNCTION BOX. CEILING SPEAKERS REQUIRE A 1/2" VATED BACKGAL LOCATION SYSTEMS PROVIDES A QUARTER 1/2" VATED BACKGAL AND 1/2" VATED POINTING RAIL FOR BARRIQUADE CEILING AND QUART 1/2" VATED 1/2" VATED DECK/CORRUGAL LOCATION DEPENDENT ON THE INSTALLATION REQUIREMENTS.

ALARM SYSTEM NOTES:

1. HORNERS TO LOCATION EQUIPMENT CABINET FROM EACH INDIVIDUAL DORM SPEAKER/VOLUME CONTROL. ASSEMBLY WITH 16 AWG SPEAKER WIRE PER BUNK.
2. HORNERS TO LOCATION EQUIPMENT CABINET FROM DALL ALERT LIGHTS (3) MAINLY LOW VOLTAGE LED FIXTURES. DALL DRIVER IS CONNECTED IN THE CENTER FUTURE (1) CAT 5a AND (2) 16 AWG PURPLE STRIPE LOCATION SUPPLIED POWER WIRE TO EQUIPMENT CABINET (1) 16 AWG PURPLE STRIPE LOCATION SUPPLIED POWER WIRE BETWEEN FIXTURES.
3. HORNERS TO LOCATION EQUIPMENT CABINET FROM EACH GROUP OF BUNKER ALERT LIGHTS (1) 16 AWG PURPLE STRIPE LOCATION SUPPLIED POWER WIRE TO EQUIPMENT CABINET. RELAY SWITCHED NON DALL DRIVER.
4. HORNERS TO LOCATION DALL AUDIO POWER WIRE PER PLAN CHANNEL. OUTPUT 1/2" VATED 1/2" VATED VOLTAGE AUDIO DISTRIBUTION TO NON-INDEXED SPEAKERS AS BUNKER.
5. HORNERS TO LOCATION DALL AUDIO POWER WIRE PER PLAN CHANNEL. OUTPUT 1/2" VATED 1/2" VATED VOLTAGE AUDIO DISTRIBUTION TO NON-INDEXED SPEAKERS AS BUNKER.
6. HORNERS TO LOCATION EQUIPMENT CABINET FROM EACH STATION ZONE TRACKER PANEL. FAST (1) CAT 5a AND (2) 16 AWG PURPLE STRIPE LOCATION SUPPLIED POWER WIRE TO EACH FAST LOCATION. DO NOT MIX WITH SPEAKER OR DALL WIRING.
7. HORNERS TO LOCATION EQUIPMENT CABINET FROM ANY OUTSIDE SPEAKER. OUTSIDE SPEAKERS MAY BE GROUPED TOGETHER BUT ARE SEPARATED BY INTERNAL BUNKER BUS TO ALLOW NIGHT PROGRAM. BATT-OFF (1) 16 AWG LOCATION SUPPLIED SPEAKER WIRE TO LOCATION INDICATED.
8. HORNERS TO LOCATION EQUIPMENT CABINET ALL LATEST BUNKER BUILDING REQUIREMENTS. TEST BE BE NON-INDEXED POSITION (1) 16 AWG SHIELDED (1) GROUND TERMINATE IN A SQUARE JUNCTION BOX MOUNTED IN BUNKER CEILING. HORNERS FROM HORN SPEAKERS. HORNERS FROM OTHER DIRECT BUNKER BUNKER.
9. HORNERS TO LOCATION EQUIPMENT CABINET FROM READER BOARD (1) CAT 5a CABLE AND (2) LOCATION SUPPLIED 16 AWG PURPLE STRIPE POWER CABLE. READER BOARD LOCATION TO HAVE WIRE PULLED WITH READER BOARD TO BE INSTALLED IN THE FUTURE.

DETAIL NOTES:

1. POINT WALL SPEAKERS IN A SQUARE JUNCTION BOX 1/2" 4"
2. PROVIDE AND INSTALL 1/2" 24" x 3/4" 8" HOFFMAN A-2400ALP CABINET WITH BACK PANEL ADAPTOR.

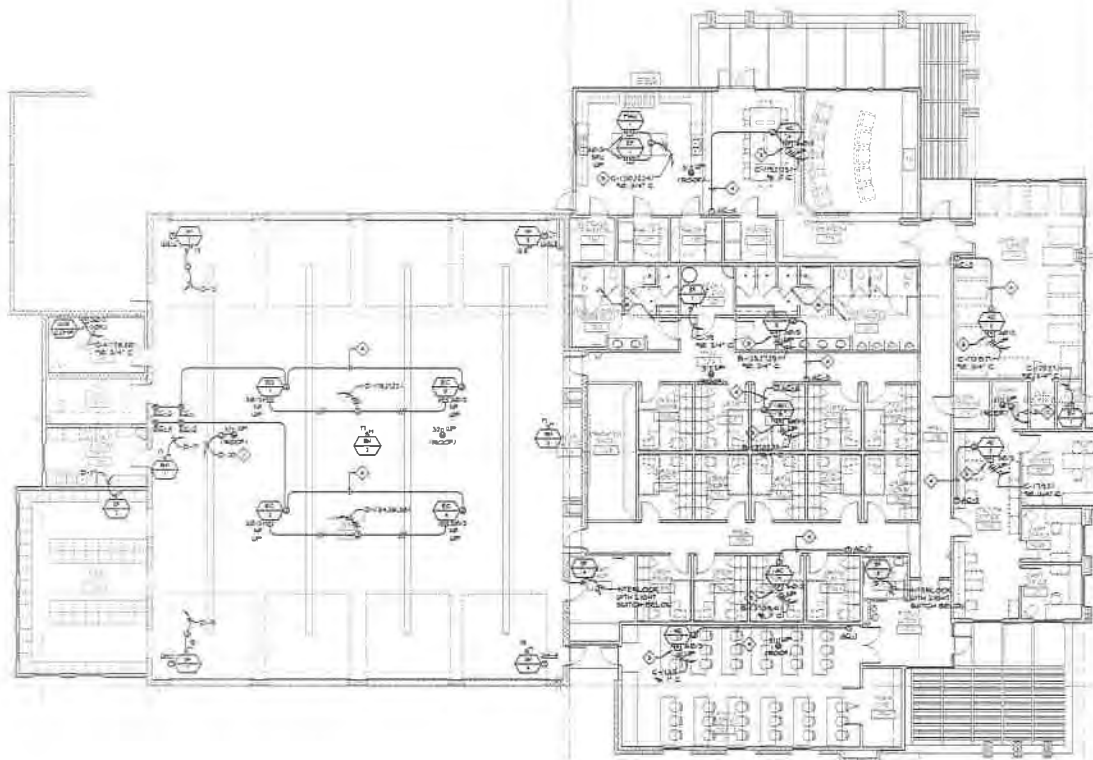
DEVICE LEGEND

- 1. WALL SPEAKER
- 2. POINTED WALL SPEAKER
- 3. CEILING SPEAKER
- 4. HORN SPEAKER
- 5. STATION ZONE TRACKER
- 6. LOW VOLTAGE LED RECESSED CEILING FIXTURE
- 7. VOLUME CONTROL (BUNKER GANG 2-3/4" DEEP BY CONTRACTOR)
- 8. AMBIENT SOUND LEVELS MICROPHONE



THIS SHEET FOR REFERENCE ONLY TO BE INSTALLED IN THE FUTURE CONDUIT TO BE INSTALLED PER E1.3

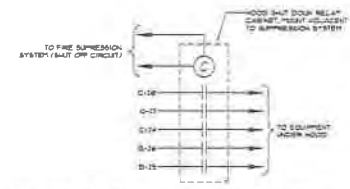
PET.APP.000641



A
E31 MECHANICAL CONNECTION PLAN
1/8" = 1'



- GENERAL NOTES:**
- 1. ALL CIRCUITS SHALL CARRY A GREEN GROUND CONDUCTOR.
- SHEET NOTE:**
- ◆ EXTEND AND CONNECT CIRCUITS FROM JUNCTION BOX TO LIGHTING FIXTURES/RECEPT ACROSS AREA WITH SAME CIRCUIT NUMBERS. ROUTE TO CONDUITS OVER/UNDER THROUGH-OUT, UNLESS NOTED OTHERWISE.
 - ◆ COORDINATE WITH MECHANICAL CONTRACTOR TO ENSURE CONDUIT FOR CONTROL WIRING TO THERMOSTATS IS INSTALLED PER PLANS - REFER ALSO TO MECHANICAL DRAWINGS.
 - ◆ PROVIDE OVERCURRENT PROTECTION AND DISCONNECTING MEANS PER MANUFACTURER'S NAMEPLATE - VERIFY PRIOR TO PURCHASE.
 - ◆ COORDINATE WITH MECHANICAL CONTRACTOR TO ENSURE CONDUIT FOR CONTROL WIRING TO THERMOSTATS IS INSTALLED PER PLANS - REFER ALSO TO MECHANICAL DRAWINGS.
 - ◆ ROUTE CIRCUITS THROUGH HOOD CONTACTOR SEE E31.
 - ◆ INTERLOCK EXHAUST FANS IN RESTROOM AREA WITH POTION SENSOR CONTROLLING LIGHTS IN THIS AREA.



B
E31 HOOD SHUTDOWN CONTROL DIAGRAM
1/8" = 1'



CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

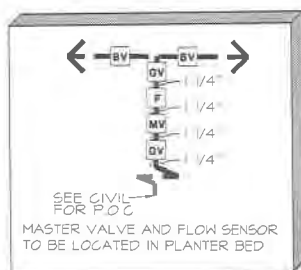
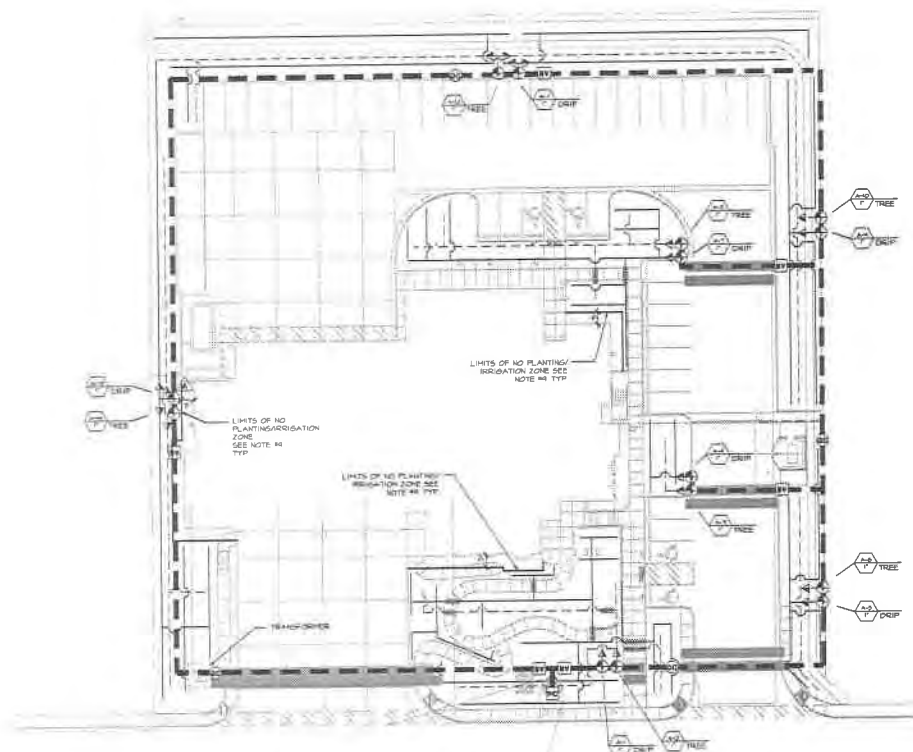
MECHANICAL CONNECTION PLAN

FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

CONFORMED BID ISSUE

SHEET NO.
E3.1
SHEET 73 OF 77

PET.APP.000643



MASTER VALVE/FLOW SENSOR SCHEMATIC

LANDSCAPE IRRIGATION PLAN SCALE: 1/8" = 1'-0"

IRRIGATION EQUIPMENT LEGEND

SYMBOL	DESCRIPTION	MANUFACTURER	MODEL	SIZE
PC	POINT OF CONNECTION	SEE CIVIL DRAWINGS		
QC	QUICK COUPLING VALVE WKEY	RAINBIRD	88-018C	3/4"
RCV	REMOTE CONTROL VALVE	INSTRON	100 SERIES	SIZE AS PER PLAN
WFV	WAVE FILTER & BALL VALVE	AGRICULTURE PRODUCTS	4E-H-B-200	1"
PRV	PRESSURE REDUCING VALVE	SENNER	PHR-HF	3/4"
BV	BRONZE BALL VALVE	MATTI	B-8000	SIZE AS PER LINE
IC	IRRIGATION CONTROLLER	SALSBURY	ET20000+10-R-F-6	10 STATIONS
FM	FLOW METER/SENSOR	DATA INDUSTRIAL	40-225P/V-2	2"
ML	PVC MAINLINE	----	SCHEDULE 40	1 1/4" UNLESS OTHERWISE NOTED
LL	PVC LATERAL LINE (SHRUBS)	----	SCHEDULE 40	3/4"
FL	PVC FLEXIBLE TUBING	EXCALBUR	----	1/2" IPS
LT	PVC LATERAL LINE (TREES)	----	SCHEDULE 40	3/4"
EM	EMITTER	OLSON	6034/603P	SEE EMITTER SCHEDULE
SL	SLEEVE UNDER PAVED AREAS	----	SCHEDULE 40	SEE NOTE #5
IC	IRRIGATION CONTROLLER	----	----	----
MT	TYPE - PLANT MATERIAL	----	----	----
VS	VALVE SIZE	----	----	----

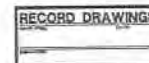
EMITTER SCHEDULE

PLANT SIZE	G.P.H.	QTY.	EMITTER	MANUFACTURER
24" BOX	10	2	(0220)	OLSON
3 GAL	2	2	(0224)	OLSON

IRRIGATION NOTES

- THE CONTRACTOR SHALL VERIFY THE STATIC PRESSURES AT THE POINT OF CONNECTION AND MAKE FINAL CONNECTIONS ALLOWING FOR ANY POSSIBLE DEVIATIONS FROM LOCATION SHOWN ON PLANS DUE TO SITE CONDITIONS. ANY DEVIATIONS FROM THE DESIGN SHALL BE INDICATED TO THE ATTENTION OF THE CONSTRUCTION MANAGER.
 - THE IRRIGATION PLAN IS DRAWN FOR GRAPHIC CLARITY. WHERE PIPING AND VALVES ARE SHOWN IN CONCRETE AREAS, THE INTENT IS FOR THE PIPING AND VALVES TO BE PLACED IN THE ADJACENT PLANTING AREAS, EXCEPT WHERE SLEEVES ARE REQUIRED. PLACE ALL VALVE BOXES IN SHRUB BEDS.
 - SEE CIVIL DRAWINGS FOR LOCATION OF POINT OF CONNECTION, METER SIZE, ETC.
 - INSTALL SLEEVINGS BASED ON THE SIZING GUIDE BELOW.
- | PIPE SIZE | REQUIRED SLEEVING |
|-----------------|--------------------------|
| 2 1/4" x 3" PVC | 1 - 8" SCH 40 PVC SLEEVE |
| 1 1/4" x 2" PVC | 1 - 4" SCH 40 PVC SLEEVE |
| 3/4" x 1" PVC | 1 - 2" SCH 40 PVC SLEEVE |
- CONTRACTOR TO PROVIDE ALL NECESSARY SLEEVINGS UNDER ROADS, CONCRETE SLABS, ETC.
 - VALVE BOXES TO BE PERMANENTLY BRANDED WITH CONTROLLER LETTER & STATION (EXAMPLES: STATION # A3, QUICK COUPLER # 50). LETTER AND STATION IDENTIFICATION SHALL BE 2 INCH HIGH MIN. VALVE BOXES TO HAVE LOCKING CAPABILITY. VALVE BOXES TO BE TWIN IN COLOR. VALVE BOXES TO BE LOCATED IN PLANTING BEDS ONLY.
 - CONTRACTOR IS RESPONSIBLE TO VERIFY UTILITY LOCATION, OBTAIN COORDINATE AND PAY FOR ANY PERMITS AND ALL INSPECTIONS AS REQUIRED.
 - CONTRACTOR RESPONSIBLE FOR POWER CONNECTION TO IRRIGATION CONTROLLER.
 - LIMITS OF NO PLANTING/IRRIGATION ZONE: NO PLANTING OR IRRIGATION IS PERMITTED WITHIN 5'-0" OF THE BUILDING STRUCTURE. SEE PLAN FOR LIMIT LINE.
 - PVC FLEXIBLE TUBING SHALL BE 1/2" IPS WITH 8'-0" MAXIMUM LENGTH RUN.

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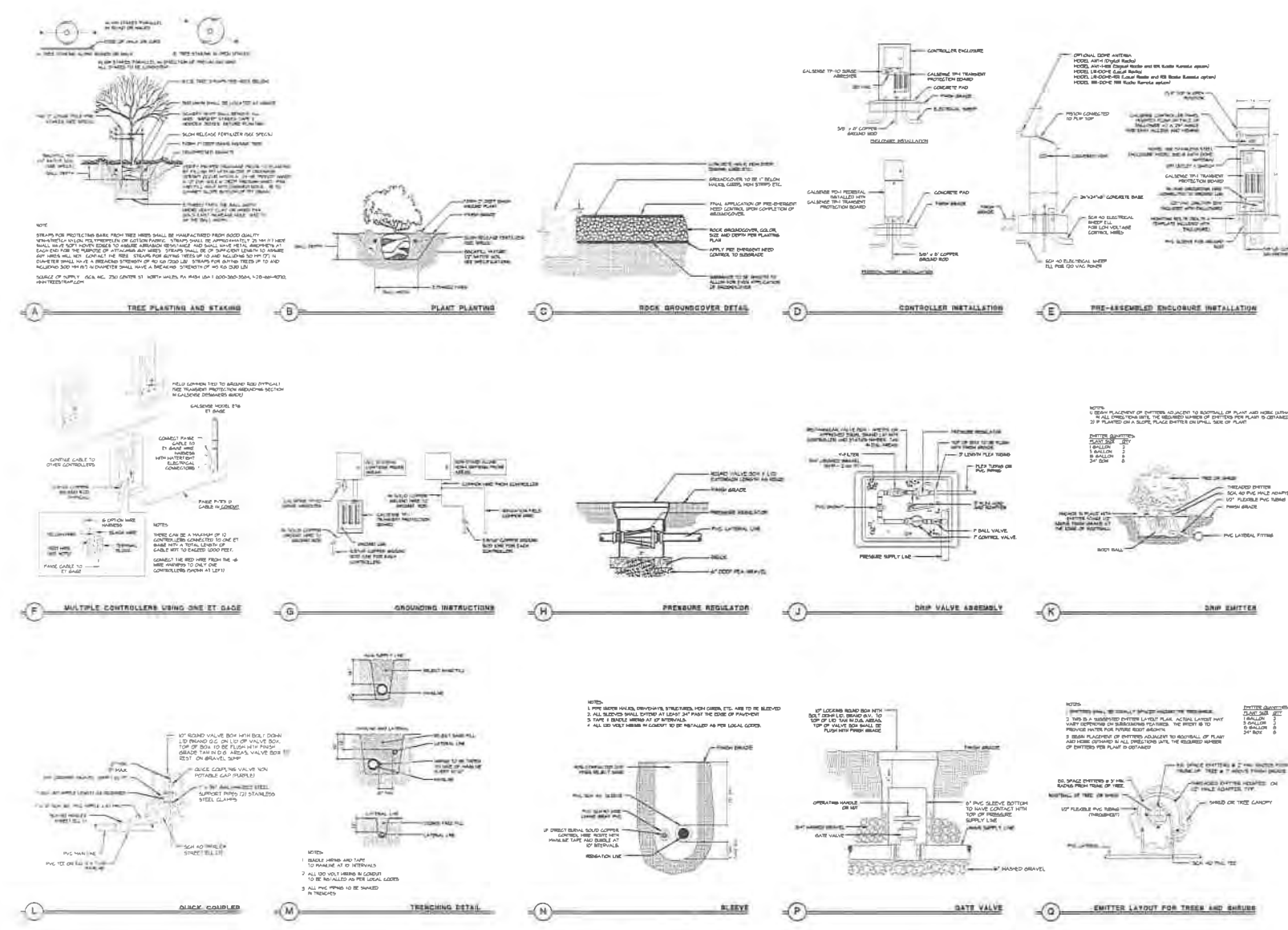
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SAFETY SERVICES DIVISION

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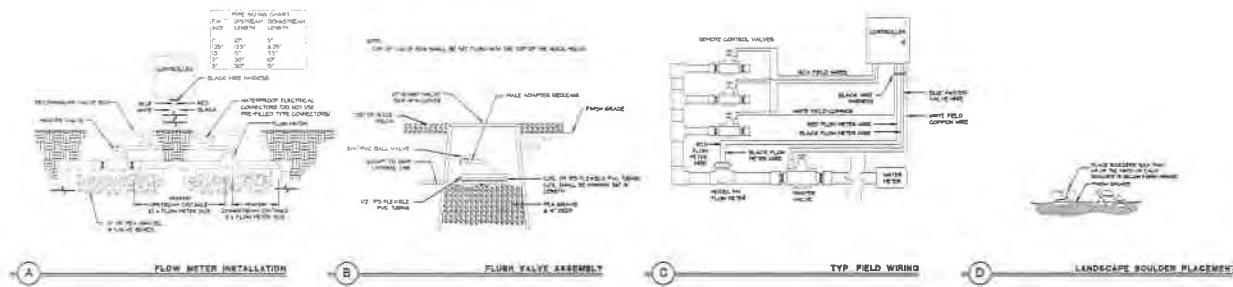




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RECORD DRAWINGS
DATE: 04/28/2023

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RECORD DRAWINGS

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CITY OF NORTH LAS VEGAS - DEPARTMENT OF PUBLIC WORKS - ENGINEERING SERVICES DIVISION

RECORD DRAWING ISSUE

LANDSCAPE DETAILS
FIRE STATION 53
2800 WEST GOWAN ROAD
NORTH LAS VEGAS, NV 89032

L302

PET.APP.000647