DS #: 4792

APN: 126.13.501.022

PROJECT: Oxford Commons II - Unit 1

SUBMITTAL: 2nd Submittal

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: June 8, 2016
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **OXFORD COMMONS II – UNIT 1**			**COPIES TO:** Baughman & Turner, Inc.
Cross Streets:	SEC of Grand Teton Blvd. & Egan Crest Dr.			KB Homes
File Number:	F:\Depot\DSMemos\DS4792B.doc			Bart Anderson, P.E., DevCo
Parcel Number:	126-13-501-022			CCRFCD
Zoning Action:	TMP-63583; WVR-63582 & WVR-63581			
FEMA Flood Zone	YES	NO	**X**	
Proposed Storm Drain	YES	NO	**X**	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	4/20/2016	5/3/2016	Not Approved	$400.00	441243: $400
2nd Submittal	5/24/2016	6/8/2016	See Comments Below	$400.00	445002: $400
			TOTAL FEES (LDDRS):	**$800.00**	**----**

REMARKS:

The Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.

1. Revise all drop inlets to Type "CM" per Uniform Standard Drawing No. 422.
2. The proposed wrought iron fence must utilize Uniform Standard Drawing 425.S1.
3. Private streets must be public drainage easements. Provide a note on the grading plans "Note: All private streets are P.U.E., Public Sewer Easements and Public Drainage Easements to be Privately Maintained by the HOA."
4. All drainage easements must be public drainage easements to be privately maintained and common lots to be labeled on the grading plans and to be dedicated as such in the final map.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Update and accepted by the *City of Las Vegas Flood Control Section.* Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

END OF REMARKS

ays

T/R/S: T19S/R59E/13

AREA F-13

****
*** FAX TX REPORT ***
****

TRANSMISSION OK

JOB NO.	0180
DESTINATION ADDRESS	7028782695
PSWD/SUBADDRESS	
DESTINATION ID	
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USAGE T	00'34
PGS.	2
RESULT	OK

CITY OF LAS VEGAS
INTER-OFFICE MEMORANDUM

DATE: June 8, 2016

TO:
Land Development Services
Department of Building & Safety

FROM:
Albert Sung, P.E.
Flood Control Project Engineer
Department of Public Works

SUBJECT: Drainage Study for:
OXFORD COMMONS II – UNIT 1

COPIES TO:
Baughman & Turner, Inc.
KB Homes
Bart Anderson, P.E., DevCo
CCRFCD

Cross Streets:	SEC of Grand Teton Blvd. & Egan Crest Dr.		
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****
*** FAX TX REPORT ***
****

TRANSMISSION OK

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PSWD/SUBADDRESS	
DESTINATION ID	
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PGS.	2
RESULT	OK

CITY OF LAS VEGAS
INTER-OFFICE MEMORANDUM

DATE: June 8, 2016

TO:
Land Development Services
Department of Building & Safety

FROM:
Albert Sung, P.E.
Flood Control Project Engineer
Department of Public Works

SUBJECT: Drainage Study for:
OXFORD COMMONS II – UNIT 1

COPIES TO:
Baughman & Turner, Inc.
KB Homes
Bart Anderson, P.E., DevCo
CCRFCD

Cross Streets:	SEC of Grand Teton Blvd. & Egan Crest Dr.		
File Number:	F:\Depot\DSMemos\DS4792B.doc		
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Zoning Action:	TMP-63583; WVR-63582 & WVR-63581		
FEMA Flood Zone	YES	NO	X
Proposed Storm Drain	YES	NO	X

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
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LARRY R. NELSON, P.E.
President

May 3, 2016

City of Las Vegas
City Planning and Development Department
333 N. Rancho Drive
Las Vegas, NV 89106

- STRUCTURAL
- CIVIL
- SURVEY
- PLANNING
- FORENSICS

Attn: City Planning Department

Ref: Oxford Commons II – Unit 1
DS4792
APN: 126-13-501-022

This justification letter is in response to Mr. Albert Sung's drainage study comment stating that sites with a grade difference of 2 feet above or below existing are required to have approval from the City Planning and Development Department prior to resubmittal.

The above referenced project has an elevation difference across the entire site of 53 feet, more or less. Because of this elevation difference across the site, it is necessary to terrace the site and divide the 53 feet into smaller retaining walls with an average height of 7 feet, more or less. Unit 1 is one of a group of terraced pads. The future Units will also have several terraced pads.

We respectfully request Planning approval based on the above justification. If you have any questions or require additional information, please do not hesitate to contact me.

Best regards,

Claro Perez
Project Manager

PLANS APPROVED
PLANNING
Building & Safety Dept.
City of Las Vegas, Nevada
2 FOOT GRADE DIFFERENCE ONLY
LHM MAY 12 2016

Conforms to the Applicable Elements of LVMC Title 19 applicable Master Plan development standards and/or Conditions of Approval. Make No Change Without Approval. Plan is not a Permit to Violate Any Ordinance.

PD
TMP-63583
CLIFF'S EDGE

NEVADA

L. R. NELSON CONSULTING ENGINEERS, INC.

6765 West Russell Road, Suite 200
Las Vegas, NV 89118-1885

Phone 702 / 798-7978
FAX 702 / 451-2296
Email lrnelson@lrneng.com

UTAH

L. R. NELSON CONSULTING ENGINEERS, L.L.C.

51 West 9000 South
Sandy, UT 84070-2008

Phone 801 / 565-8580
FAX 801 / 565-9340
Email lrnengineers@lrnslc.com

Baughman & Turner, Inc.
Consulting Engineers & Land Surveyors
1210 Hinson Street
Las Vegas, Nevada 89102
Telephone (702) 870-8771

LETTER OF TRANSMITTAL

DATE: **May 24, 2016**
JOB NO.: **13-19-59**
ATTENTION: **Albert Sung**
RE: **Oxford Commons II, Unit 1**

TO: **City of Las Vegas- Land Development**
333 N Rancho Dr.
Las Vegas, NV 89106

DS4792

To whom it may concern:
We are sending: o Attached o Under separate cover via *Delivery* the following items:
o Certifications o Original o Drawings o Prints o Check o Deeds
o Tax Letters o Check Prints o Copy of Letter o Sepias o Other

Copies	Dated	Pgs.	Description
1	5/24/16		Wet Stamped copy of Drainage Study Addendum
1	5/24/16		DWG CD
1	5/11/16	4883948	Fee Check: $400.00

These are transmitted as checked below:
o For approval o For submittal o For your use o For re-submittal
o As requested o For review and comment o Other_____

REMARKS: If you should have any questions, please contact Sunshine Woods @ 870-8771.
Thank you!

RECEIVED BY:		DATE:	

COPY TO FILE

SIGNED: _____
Josh Harney, Project Coordinator

If enclosures are not as noted, kindly notify us at once

TECHNICAL DRAINAGE STUDY ADDENDUM FOR
OXFORD COMMONS II, UNIT 1
SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST
CITY OF LAS VEGAS, NEVADA

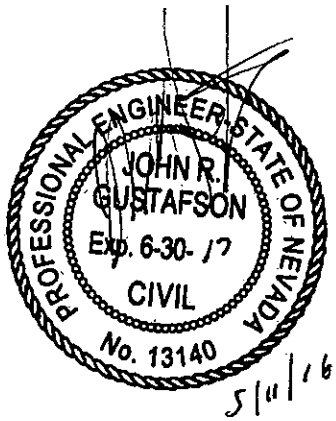
May 11, 2016

PREPARED FOR:

KB HOMES
750 PILOT ROAD, SUITE F
LAS VEGAS, NEVADA 89119

PREPARED BY:

BAUGHMAN & TURNER, INC.
1210 HINSON STREET
LAS VEGAS, NEVADA 89102
TEL: (702) 870-8771/FAX: (702) 878-2695



HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Oxford Common II, Unit 1 Date: May 11, 2016

Location of Development: a) Descriptive (Cross Streets) North/South: Grand Teton Drive
East/West: Hualapai Way

b) Section: 13 Township: 19 S Range: 59 E

c) APN: 126-13-501-022

Name of Owner: KB Homes

Telephone No.: (702) 798-7978 Fax No.: (702) 878-2695 E-Mail Address:

Address: 750 Pilot Road, Suite F Las Vegas, NV 89119

Contact Person-Name: Sunshine Woods **Telephone No.:** 702-870-8771

***E-Mail Address:** sunshinew@baughman-turner.com **Fax No.:** 702-878-2695

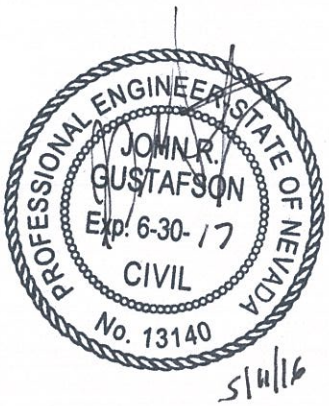
Firm: Baughman & Turner, Inc.

Address: 1210 Hinson Street Las Vegas, NV 89102

Type of Land Development/Land Disturbance Process:

☐	Rezoning	☒	Subdivision Map	☐	Clearing and Grading Only
☐	Parcel Map	☐	Planned Unit Development	☐	Other (Please specify below)
☐	Large Parcel Map	☐	Building Permit		

1. Total Owned Land Area: At Site: 18.02 ac Being Developed/Disturbed: 5.18 ac
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ Yes** ☒ No
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ Yes** ☐ No
4. Proposed type of development (Residential, Commercial, Etc.): Single Family residential subdivision
5. Approximate upstream land area which drains to the subject site: 0 acres
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: TDS for Picerne @ Providence Ph 3 (DS 4207) by DRC & Oxford Commons at Cliffs Edge (DS3678) by Carter Burgess
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: East to APN 126-13-501-020 And to Grand Teton
8. Briefly describe your proposed schedule for the subject project: Construction to begin in Spring 2017



Engineer's Seal

Submit this form as part of the required drainage study to the local entity which has jurisdiction over the subject property. This form may provide sufficient information to serve as the Conceptual Drainage Study

***New Required Field**

****Review and concurrence of the Clark County Regional Flood Control District is required.**

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

Baughman & Turner, Inc.
Consulting Engineers & Land Surveyors
1210 HINSON ST. PHONE (702) 870-8771
LAS VEGAS, NEVADA 89102-1604 FAX (702) 878-2695

May 24, 2016

City of Las Vegas
Department of Public Works
Attn: Albert Sung, P.E.
333 North Rancho Drive
Las Vegas, Nevada 89106

Re: Technical Drainage Study for Oxford Commons II – Unit 1

Dear Mr. Sung,

In the previously submitted report, the CN values for the developed site were based on Table 602A for lot sizes 6,000 sq ft or less. This table suggests that for this lot size, a commercial land use should be used. As such, the CN value for the developed lots would be slightly higher. To be conservative in determining finished floors and the discharge calculations, a revised HEC-1 analysis has been prepared using this higher CN value. Although there was little or no change, all associated calculations, figures and tables have been revised to reflect the new flow values. See Tables 2-5 and Appendix D. It should be noted that the discharge to the east is still less than the discharge approved in the previous studies for this site.

Table 2. Peak Flow Summary

Interim (Unit 1) Condition				
Source	**Area (acres)**	**Area (mi^2)**	**100-Year Flow (cfs)**	**10-Year Flow (cfs)**
DON2	12.42	0.0194	33	15
GTETON	1.52	0.0024	6	3
DEV3	0.42	0.0007	2	1
CREST1	0.34	0.0005	1	1
CP1			39	18
DEV1	2.59	0.004	9	4
DEV2	1.31	0.002	5	2
DON1	1.28	0.002	4	2
CP2			17	9
CREST2	0.26	0.0004	1	1
EGAN CREST2*			20	0

* Flows referenced from TDS for Picerne @ Providence (DS4207)

Table 3. Peak Flow Summary

Developed (Future) Condition				
Source	Area (acres)	Area (mi^2)	100-Year Flow (cfs)	10-Year Flow (cfs)
DEV5	12.42	0.0194	32	16
75% to CP2			24	12
DEV1	2.59	0.004	9	4
DEV2	1.31	0.002	5	2
DEV4	1.28	0.002	4	2
CP2			41	21
25% of DEV5 to CP3			8	4
DEV3	0.42	0.0007	2	1
CP3			10	5
GTETON	1.52	0.0024	6	3
CREST1	0.34	0.0005	1	1
CP1			17	9
CREST2	0.26	0.0004	1	1
EGAN CREST2*			20	0

* Flows referenced from TDS for Picerne @ Providence (DS4207)

Table 4. Street Capacity Summary

Street Capacity Summary							
Section	Location	Slope	Q (cfs)	D (ft)	V (fps)	V x D	Remarks
10-Year Flow – Developed Conditions							
#1	Formitch	0.50%	4	0.35	1.51	0.53	VxD <6 is met; D less than 1;
#2	Brook Rise Downstream	0.50%	21	0.64	3.04	1.95	VxD <6 is met; D less than 1;
#3	Brookside Falls	1.20%	5	0.54	2.54	1.37	VxD <6 is met; D less than 1;
#4	Brook Rise Upstream	3.20%	14	0.45	5.35	2.41	VxD <6 is met; D less than 1;
#5	Future Brook Rise	3.30%	16	0.47	5.51	2.59	VxD <6 is met; D less than 1;
#6	Grand Teton Downstream	3.30%	9	0.35	4.04	1.41	VxD <6 is met; D less than 1; 10-yr dry lane is met
100-Year Flow – Developed Conditions							
#1	Formitch	0.50%	9	0.43	1.82	0.78	VxD <8 is met; D less than 2
#2	Brook Rise Downstream	0.50%	41	0.76	3.95	3.00	VxD <8 is met; D less than 2
#3	Brookside Falls	1.20%	10	0.67	3.02	2.02	VxD <8 is met; D less than 2
#4	Brook Rise Upstream	3.20%	28	0.56	6.17	3.46	VxD <8 is met; D less than 2

#5	Future Brook Rise	3.30%	32	0.59	6.38	3.76	VxD <8 is met; D less than 2
#6	Grand Teton Downstream	3.30%	17	0.42	4.72	0.82	VxD <8 is met; D less than 2

Table 5.

Minimum Finished Floor Elevation Determination

	Top of Curb	Free-board	Finished Floor Based on top of curb	Flowline Elevation	Depth of Flow	Free-board	Finished Floor Based on Depth of Flow	Required Minimum Finished Floors	Cross Section Reference	FF Require-ment Met?
1	93.32	1.	93.82	92.82	0.56	0.56	93.94	**93.94**	HS4	**YES**
2	91.73	1.	92.23	91.23	0.56	0.56	92.35	**92.35**	HS4	**YES**
3	90.20	1.	90.70	89.70	0.56	0.56	90.82	**90.82**	HS4	**YES**
4	88.80	1.	89.30	88.30	0.56	0.56	89.42	**89.42**	HS4	**YES**
5	88.27	1.	88.77	87.77	0.56	0.56	88.89	**88.89**	HS4	**YES**
6	88.13	1.	88.63	87.63	0.56	0.56	88.75	**88.75**	HS4	**YES**
7	87.87	1.	88.37	87.37	0.76	0.76	88.89	**88.89**	HS2	**YES**
8	87.69	1.	88.19	87.19	0.76	0.76	88.71	**88.71**	HS2	**YES**
9	88.08	1.	88.58	87.58	0.43	0.43	88.44	**88.58**	HS1	**YES**
10	88.21	1.	88.71	87.71	0.43	0.43	88.57	**88.71**	HS1	**YES**
11	88.89	1.	89.39	88.39	0.43	0.43	89.25	**89.39**	HS1	**YES**
12	89.06	1.	89.56	88.56	0.43	0.43	89.42	**89.56**	HS1	**YES**
13	89.24	1.	89.74	88.74	0.43	0.43	89.60	**89.74**	HS1	**YES**
14	89.41	1.	89.91	88.91	0.43	0.43	89.77	**89.91**	HS1	**YES**
15	89.59	1.	90.09	89.09	0.43	0.43	89.95	**90.09**	HS1	**YES**
16	89.76	1.	90.26	89.26	0.43	0.43	90.12	**90.26**	HS1	**YES**
17	89.94	1.	90.44	89.44	0.43	0.43	90.30	**90.44**	HS1	**YES**
18	90.11	1.	90.61	89.61	0.43	0.43	90.47	**90.61**	HS1	**YES**
19	90.43	1.	90.93	89.93	0.43	0.43	90.79	**90.93**	HS1	**YES**
20	90.62	1.	91.12	90.12	0.43	0.43	90.98	**91.12**	HS1	**YES**
21	90.88	1.	91.38	90.38	0.43	0.43	91.24	**91.38**	HS1	**YES**
22	90.88	1.	91.38	90.38	0.43	0.43	91.24	**91.38**	HS1	**YES**
23	90.67	1.	91.17	90.17	0.43	0.43	91.03	**91.17**	HS1	**YES**
24	90.47	1.	90.97	89.97	0.43	0.43	90.83	**90.97**	HS1	**YES**
25	90.14	1.	90.64	89.64	0.43	0.43	90.50	**90.64**	HS1	**YES**
26	89.96	1.	90.46	89.46	0.43	0.43	90.32	**90.46**	HS1	**YES**

27	89.79	1.	90.29	89.29	0.43	0.43	90.15	**90.29**	HS1	**YES**
28	89.61	1.	90.11	89.11	0.43	0.43	89.97	**90.11**	HS1	**YES**
29	89.44	1.	89.94	88.94	0.43	0.43	89.80	**89.94**	HS1	**YES**
30	89.26	1.	89.76	88.76	0.43	0.43	89.62	**89.76**	HS1	**YES**
31	89.09	1.	89.59	88.59	0.43	0.43	89.45	**89.59**	HS1	**YES**
32	88.91	1.	89.41	88.41	0.43	0.43	89.27	**89.41**	HS1	**YES**
33	88.74	1.	89.24	88.24	0.43	0.43	89.10	**89.24**	HS1	**YES**

The following is our response to the comments and conditions of approval placed on the above-referenced project. In a memo dated May 3, 2016, the City of Las Vegas expressed concern about the following items:

> **Comment No. 1: Provide a copy of the zoning/planning conditions associated with this site (TMP-63583; WVR-63582; WVR-63581) with the next submittal to verify compliance with conditions. *Flood Control* will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the *City Council*). Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.**

Response: A copy of the zoning/planning conditions associated with this site have been provided as requested. See Appendix A.

> **Comment No. 2: Sites with a grade difference of 2 feet above or below existing are required to have approval from the *City Planning and Development Department.* The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide Planning approval with the next submittal.**

Response: A copy of the Planning approval for the grade difference of 2 feet or more has been provided, see Appendix B.

> **Comment No. 3: It is understood that the master plan of *Cliff's Edge* (aka *Providence*) allowed the discharge from the subject site into the adjacent site to the east. However, that was a conceptual, planning and preliminary tool at a very early stage based on the natural terrain. The current situation is that the perimeter street (*Grand Teton Boulevard*) is fully developed and the elevation of the proposed site is high enough to gravity flow northerly into the street. There is no reason to drain into the adjacent property to the east.**

Please review and revise the onsite drainage to discharge at the main entrance driveway, as well as, the northeast corner of the proposed development.

Response: Per conversations with Mr. Sung of the City of Las Vegas, the discharge to the east will be allowed as approved in the master plan of Cliff's Edge (See Appendix C). The drainage easement will be concrete lined as noted in Comment No. 11. See revised grading plan and detail sheet.

Comment No. 4: Figure 10 (Developed Drainage Basin Map): The flow values at "CP3" in *Grand Teton Boulevard* (Q_{10} = 8cfs, Q_{100} = 16 cfs) are less than the flow values in onsite basin "DEV5" which discharge through the entrance driveway to *Grand Teton Boulevard* and combine at "CP3". This does not make sense. Review and revise all pertinent hydrologic data and all drainage basin maps accordingly.

Response: As discussed in the Developed Onsite Drainage Conditions section of the previously submitted report, Section III.C, Basin DEV5, a 12.42 acre basin that generates 16/32 cfs in the 10/100 year storm will split at the intersection of Brookside Falls and Brook Rise. Although there is a crown across the Brookside Falls intersection to try and turn the flows to the north, the velocity head on the flows entering the intersection are above this crown (See HS5). Using a conservative best engineering judgement, it was estimated that about 25% of the flows would turn and travel north to Grand Teton while the balance would continue east down Brooke Rise. With this conservative estimate, approximately 8 (4) cfs will turn north and 24 (12) cfs in the 100-yr (10-yr) storm will continue east on Brook Rise. This additional flow was added to the flows developed with Unit 1 (DEV4 (2 and 4 cfs), DEV1 (4 cfs and 9 cfs), and DEV2 (2 and 5 cfs) at a concentration point, CP2, generating 21 cfs and 41 cfs in the 10 and 100 year, 6 hour storm events. The combined flows will head east passing over the curb, entering the concrete lined easement. From here it will then pass over the grouted riprap and exit the site through the wall opening and drain to the site to the east. These patterns are consistent with the previously approved Drainage Study for Picerne at Providence, DS#4207. Street Cross Sections and weir flow calculations to establish finished floor elevations used this higher flow. There is a storm drain system in Brook Rise which will collect nuisance flows. It is not intended to collect or reduce storm water flow although this may be a small benefit. The flow values at CP3 have been revised on Figure 10 to reflect the revised CN values as discussed above. All pertinent hydrologic data and basin maps have been revised accordingly. See Appendix D.

Comment No. 5: Detail I/11 shows the cross-sections of *Formitch Court* and *Brook Rise Avenue* which are normal crown streets. However, the hydraulic calculations presented in the drainage study did not reflect normal crown sections. Review and revise all pertinent plans, details and calculations accordingly in the next submittal.

Response: The cross sections and the grading plans have been reviewed for consistency. All pertinent plans, details and calculations have been revised accordingly. See Appendix E.

Comment No. 6: Details G/11 and H/11 show a 4'-wide common element between two walls which will be difficult to maintain. Consult with *City of Las Vegas Planning Department* whether this common element is necessary and may be eliminated.

Response: The 4'-wide common element shown on Details G/11 and H/11 is existing and is constructed per the approved master plan. No changes have been made. See the Planning approval in Appendix F.

Comment No. 7: Label "PRIVATE" clearly for all onsite streets on the grading plans.

Response: All onsite streets have been clearly labeled "PRIVATE" on the grading plans.

Comment No. 8: Private streets must be public drainage easements. Provide a note on the grading plans "Note: All private streets are P.U.E., Public Sewer Easements and Public Drainage Easements to be Privately Maintained by the HOA."

Response: A note has been added to the Grading Plan noting that the private streets are P.U.E's as requested.

Comment No. 9: Revise all drop inlets to Type "CM" or Neenah Pre-cast inlets. Contact Raul Cruz at 229-3224 or email at rsantiago@lasvegasnevada.gov for an AutoCAD detail to be included within the improvement plans if Type "CM" drop inlets are used. Note that the lengths of "CM" inlets are in the multiple of 2.5'. Revise all pertinent construction notes and callouts accordingly.

Response: All drop inlets have been revised to Type "CM" with the exception of Inlet #3 and #5, which will be NDOT Type 2 inlet. All pertinent construction notes and callouts have been revised accordingly. See appendix H for 5' CM inlet capacity.

Comment No. 10: All drainage easements must be public drainage easements to be privately maintained and common lots to be labeled on the grading plans and to be dedicated as such in the final map.

Response: All drainage easements will be "public drainage easements to be privately maintained". Drainage easements and common lots will be labeled on the grading plans and dedicated on the final map.

Comment No. 11: The *City Council* of the *City of Las Vegas* recently adopted an amendment to Title 20 of the Municipal Code in which Section 20.10.030 requires all public drainage easements to be concrete lined. Revise all pertinent plans, details and construction notes accordingly.

Response: All pertinent plans, details and construction notes have been revised to indicate concrete lining in the public drainage easements. Per the conversation between L.R. Nelson and Mr. Sung, a concrete lined easement will be used, with the exception of the last five feet that will consist of grouted riprap. See Appendix F for email conversation.

Comment No. 12: The engineer must provide a table on the grading plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected.

Response: A quantity list of all drainage improvements within public Drainage Easements has been shown on the Notes Sheet C1.02.

Comment No. 13: The proposed wrought iron fence must utilize *City of Las Vegas* Standard Drawing 421B. Contact Raul Cruz at 229-3224 or rsantiago@lasvegasnevada.gov for the AutoCAD details (421 series) to be included with the improvement plans.

Response: The City of Las Vegas Standard Drawing 421B for wrought iron fences has been utilized.

Comment No. 14: Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

Response: A note for the construction of all storm drain inlets per USDCCA has been added to all pertinent sheets.

We trust that this letter addresses the comments and conditions raised with the Technical Drainage Study for Oxford Commons II – Unit 1. If you have any further questions, please feel free to contact this office.

Sincerely,
Baughman & Turner, Inc.

Sunshine M. Woods
Engineering Intern

PJP/aw/sw

cc: LR Nelson – Grand Teton & Egan Crest file

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/city of las vegas

April 13, 2016

Mr. Michael Gray
KB Home Nevada Inc.
5795 W. Badura Avenue, Ste. #180
Las Vegas, Nevada 89118

RE: TMP-63583 [PRJ-63164] - TENTATIVE MAP RELATED TO WVR-63581 AND WVR-63582
PLANNING COMMISSION MEETING OF APRIL 12, 2016

Dear Applicant:

Your request for a Tentative Map FOR A 158-LOT SINGLE FAMILY RESIDENTIAL SUBDIVISION on 18.02 acres at the southeast corner of Grand Teton Drive and Egan Crest Drive (APN 126-13-501-022), PD (Planned Development) Zone [M (Medium Density Residential) Cliff's Edge Special Land Use Designation], Ward 6 (Ross) [PRJ-63164], was considered by the Planning Commission on April 12, 2016.

The Planning Commission voted to ***APPROVE*** your request, subject to the following amended conditions:

Planning

1. Lot #85 shall be revised to be a common lot utilized for open space compromized of a tot lot.

2. The subdivision shall be gated and conform to Standard Drawings 222.1.

3. Approval of and conformance to the Conditions of Approval for a Waiver of Title 19.02 (WVR-63581) and a Waiver of the Cliff's Edge Design Guidelines (WVR-63582) shall be required, if approved.

4. Approval of the Tentative Map shall be for no more than four (4) years. If a Final Map is not recorded on all or a portion of the area embraced by the Tentative Map with four (4) years of the approval of the Tentative Map, this action is void.

5. All development shall conform to the Cliff's Edge Development Agreement, Cliff's Edge Master Development Plan and Design Guidelines and as approved by the Cliff's Edge (Providence) Design Review Committee.

6. Street names must be provided in accordance with the City's Street Naming Regulations.

7. A fully operational fire protection system, including fire apparatus roads, fire hydrants and water supply, shall be installed and shall be functioning prior to construction of any combustible structures.

8. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.

9. In conjunction with creation, declaration and recordation of the subject common-interest community, and prior to recordation of the Covenants, Codes and Restrictions ("CC&R"), or conveyance of any unit within the community, the Developer is required to record a Declaration of Private Maintenance Requirements ("DPMR") as a covenant on all associated properties, and on behalf of all current and future property owners. The DPMR is to include a listing of all privately owned and/or maintained infrastructure improvements, along with assignment of maintenance responsibility for each to the common interest community or the respective individual property owners, and is to provide a brief description of the required level of maintenance for privately maintained components. The DPMR must be reviewed and approved by the City of Las Vegas Department of Field Operations prior to recordation, and must include a statement that all properties within the community are subject to assessment for all associated costs should private maintenance obligations not be met, and the City of Las Vegas be required to provide for said maintenance. Also, the CC&R are to include a statement of obligation of compliance with the DPMR. Following recordation, the Developer is to submit copies of the recorded DPMR and CC&R documents to the City of Las Vegas Department of Field Operations.

10. All development is subject to the conditions of City Departments and State Subdivision Statutes.

Public Works

11. Correct all Americans with Disabilities Act (ADA) deficiencies on the sidewalks adjacent to this site in accordance with code requirements of Title 13.56.040, if any, to the satisfaction of the City Engineer concurrent with development of this site.

12. The private streets for this site must be granted as Public Utility Easements, Public Sewer Easements, and Public Drainage Easements with private surface maintenance by the Homeowner's Association.

13. A working sanitary sewer connection shall be in place prior to final inspection of any units within this development. Full permanent improvements on all major access streets, including all required landscaped areas between the perimeter wall and adjacent public street, shall be constructed and accepted by the City prior to issuance of any building permits beyond 50% of all units within this development. All off-site improvements adjacent to this site, including all required landscaped areas between the perimeter walls and adjacent public streets, shall be constructed and accepted prior to issuance of building permits beyond 75%. The above thresholds notwithstanding, all required improvements shall be constructed in accordance with Title 19.02.130.D.

14. All landscaping and private improvements installed with this project shall be situated and maintained so as to not create sight visibility obstructions for vehicular traffic at all development access drives and abutting street intersections.

15. Prior to the release of a Final Map for recordation on this site, the property owner must contact the Special Improvement District Section of the Department of Public Works (702-229-2136) and sign a notarized affidavit acknowledging and agreeing to a per lot assessment of all lots that will be created through a Final Map for this site. The City shall prepare an apportionment report following recordation of the Final Map and this apportionment report must be signed by the property owner prior to the release of any building permits for this site.

16. A Drainage Plan and Technical Drainage Study must be submitted to and approved by the Department of Public Works prior to the issuance of any building or grading permits or submittal of any construction drawings, whichever may occur first. Provide and improve all drainageways recommended in the approved drainage plan/study. The developer of this site shall be responsible to construct such neighborhood or local drainage facility improvements as are recommended by the City of Las Vegas Neighborhood Drainage Studies and approved Drainage Plan/Study concurrent with development of this site.

17. As per Unified Development Code (UDC) 19.16.060.G, all requirements must be complied with or such future compliance must be guaranteed by an approved performance security method in accordance with UDC sections 19.02.130.C and 19.02.130.E.

18. The approval of all Public Works related improvements shown on this Tentative Map is in concept only. Specific design and construction details relating to size, type and/or alignment of improvements, including but not limited to street, sewer and drainage improvements, shall be resolved prior to approval of the construction plans by the City. No deviations from adopted City Standards shall be allowed unless specific written approval for such is received

from the City Engineer prior to the recordation of a Final Map or the approval of subdivision-related construction plans, whichever may occur first. Approval of this Tentative Map does not constitute approval of any deviations. If such approval cannot be obtained, a revised Tentative Map must be submitted showing elimination of such deviations.

This action by the Planning Commission on **April 12, 2016** is final unless a written appeal is filed with the City Clerk within seven days of the date of the Planning Commission's decision as allowed by code or there is a review action filed by the City Council within the same time period. For additional information on appeals or review requests submitted please access http://www.lasvegasnevada.gov/CheckStatus/DevelopmentApp.htm, or contact the Department of Planning and Development at 702.229.6301 after ***April 19, 2016***. No building permits or business licenses related to these items shall be issued prior to the expiration of the required ten day waiting period, or until any filed appeal is resolved pursuant to LVMC Title 19.18.

Sincerely,

Peter Lowenstein, AICP
Planning Section Manager

PL:nl

cc:

Ms. Kelly Wittwer
Triton Engineering
6757 W. Charleston Blvd., Ste. B.
Las Vegas, Nevada 89146

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/city of las vegas

April 13, 2016

Mr. Michael Gray
KB Home Nevada Inc.
5795 W. Badura Avenue, Ste. #180
Las Vegas, Nevada 89118

RE: WVR-63582 [PRJ-63164] - WAIVER RELATED TO WVR-63581 AND TMP-63583
PLANNING COMMISSION MEETING OF APRIL 12, 2016

Dear Applicant:

Your request for a Waiver of the Cliff's Edge Design Guidelines TO ALLOW 5,823 SQUARE FEET OF COMMON OPEN SPACE WHERE 15,800 SQUARE FEET IS REQUIRED on 18.02 acres at the southeast corner of Grand Teton Drive and Egan Crest Drive (APN 126-13-501-022), PD (Planned Development) Zone [M (Medium Density Residential) Cliff's Edge Special Land Use Designation], Ward 6 (Ross) [PRJ-63164], was considered by the Planning Commission on April 12, 2016.

The Planning Commission voted to ***APPROVE*** your request, subject to the following amended conditions:

Planning

1. A minimum of 7,500 square feet of open space shall be provided.

2. Approval of and conformance to the Conditions of Approval for a Waiver (WVR-63581) and Tentative Map (TMP-63583) shall be required, if approved.

3. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.

4. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Department of Building and Safety.

5. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.

6. All City Code requirements and design standards of all City departments must be satisfied, except as modified herein.

This action by the Planning Commission on **April 12, 2016** is final unless a written appeal is filed with the City Clerk within ten days of the date of the Planning Commission's decision as allowed by code or there is a review action filed by the City Council within the same time period. For additional information on appeals or review requests submitted please access http://www.lasvegasnevada.gov/CheckStatus/DevelopmentApp.htm, or contact the Department of Planning and Development at 702.229.6301 after ***April 25, 2016***. No building permits or business licenses related to these items shall be issued prior to the expiration of the required ten day waiting period, or until any filed appeal is resolved pursuant to LVMC Title 19.18.

Sincerely,

Peter Lowenstein, AICP
Planning Section Manager

PL:nl

cc:

Ms. Kelly Wittwer
Triton Engineering
6757 W. Charleston Blvd., Ste. B.
Las Vegas, Nevada 89146

LAS VEGAS CITY COUNCIL

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BOB BEERS

ELIZABETH N. FRETWELL
CITY MANAGER

April 13, 2016

Mr. Michael Gray
KB Home Nevada Inc.
5795 W. Badura Avenue, Ste. #180
Las Vegas, Nevada 89118

RE: WVR-63581 [PRJ-63164] - WAIVER RELATED TO WVR-63582 AND TMP-63583
PLANNING COMMISSION MEETING OF APRIL 12, 2016

Dear Applicant:

Your request for a Waiver TO ALLOW A 102-FOOT INTERNAL INTERSECTION OFFSET WHERE 125 FEET IS REQUIRED on 18.02 acres at the southeast corner of Grand Teton Drive and Egan Crest Drive (APN 126-13-501-022), PD (Planned Development) Zone [M (Medium Density Residential) Cliff's Edge Special Land Use Designation], Ward 6 (Ross) [PRJ-63164], was considered by the Planning Commission on April 12, 2016.

The Planning Commission voted to ***APPROVE*** your request, subject to the following:

Planning

1. Approval of and conformance to the Conditions of Approval for a Waiver (WVR-63582) and Tentative Map (TMP-63583) shall be required, if approved.

2. This approval shall be void two years from the date of final approval, unless exercised pursuant to the provisions of LVMC Title 19.16. An Extension of Time may be filed for consideration by the City of Las Vegas.

3. All necessary building permits shall be obtained and final inspections shall be completed in compliance with Title 19 and all codes as required by the Department of Building and Safety.

4. These Conditions of Approval shall be affixed to the cover sheet of any plan set submitted for building permit.

5. All City Code requirements and design standards of all City departments must be satisfied, except as modified herein.

This action by the Planning Commission on **April 12, 2016** is final unless a written appeal is filed with the City Clerk within ten days of the date of the Planning Commission's decision as allowed by code or there is a review action filed by the City Council within the same time period. For additional information on appeals or review requests submitted please access http://www.lasvegasnevada.gov/CheckStatus/DevelopmentApp.htm, or contact the Department of Planning and Development at 702.229.6301 after ***April 25, 2016***.

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No building permits or business licenses related to these items shall be issued prior to the expiration of the required ten day waiting period, or until any filed appeal is resolved pursuant to LVMC Title 19.18.

Sincerely,

Peter Lowenstein, AICP
Planning Section Manager

PL:nl

cc:

Ms. Kelly Wittwer
Triton Engineering
6757 W. Charleston Blvd., Ste. B.
Las Vegas, Nevada 89146

LARRY R. NELSON, P.E.
President

- STRUCTURAL
- CIVIL
- SURVEY
- PLANNING
- FORENSICS

May 3, 2016

City of Las Vegas
City Planning and Development Department
333 N. Rancho Drive
Las Vegas, NV 89106

Attn: City Planning Department

Ref: Oxford Commons II – Unit 1
DS4792
APN: 126-13-501-022

This justification letter is in response to Mr. Albert Sung's drainage study comment stating that sites with a grade difference of 2 feet above or below existing are required to have approval from the City Planning and Development Department prior to resubmittal.

The above referenced project has an elevation difference across the entire site of 53 feet, more or less. Because of this elevation difference across the site, it is necessary to terrace the site and divide the 53 feet into smaller retaining walls with an average height of 7 feet, more or less. Unit 1 is one of a group of terraced pads. The future Units will also have several terraced pads.

We respectfully request Planning approval based on the above justification. If you have any questions or require additional information, please do not hesitate to contact me.

Best regards,

Claro Perez
Project Manager

PLANS APPROVED
PLANNING
Building & Safety Dept.
City of Las Vegas, Nevada
2 FOOT GRADE DIFFERENCE ONLY
LHM MAY 12 2016

Conforms to the applicable requirements of LVMC Title 19 applicable Master Plan development standards and/or Conditions of Approval. Make No Change Without Approval. Plan is Not a Permit to Violate Any Ordinance.

PD
TMP-63593
CLIFF'S EDGE

NEVADA

L. R. NELSON
CONSULTING ENGINEERS, INC.

6765 West Russell Road, Suite 200
Las Vegas, NV 89118-1885

Phone 702 / 798-7978
FAX 702 / 451-2296
Email lrnelson@lrneng.com

UTAH

L. R. NELSON
CONSULTING ENGINEERS, L.L.C.

51 West 9000 South
Sandy, UT 84070-2008

Phone 801 / 565-8580
FAX 801 / 565-9340
Email lrnengineers@lrnslc.com

Pamela Pitcher

From: Claro Perez <Claro.Perez@lrneng.com>
Sent: Tuesday, May 10, 2016 8:34 AM
To: Pamela Pitcher
Cc: Jon Hayslip; Tim S. Moreno
Subject: FW: DS4792 Oxford Commons II -Unit 1

Pam – fyi below.

From: Albert Sung [mailto:YSung@LasVegasNevada.GOV]
Sent: Tuesday, May 10, 2016 8:34 AM
To: Claro Perez <Claro.Perez@lrneng.com>
Subject: RE: DS4792 Oxford Commons II -Unit 1

Since previous grading and walls had already been built, Flood Control has no further issue.

From: Claro Perez [mailto:Claro.Perez@lrneng.com]
Sent: Monday, May 09, 2016 3:40 PM
To: Albert Sung
Cc: Jon Hayslip; Pamela Pitcher
Subject: DS4792 Oxford Commons II -Unit 1

Hello Albert,

Per our phone conversation this morning, please provide email stating that easterly discharge as originally designed is acceptable, so that we may attach to our addendum. Thank you very much!

Best regards,

Claro Perez
Project Manager
L. R. NELSON CONSULTING ENGINEERS, INC.
6765 WEST RUSSELL ROAD, SUITE 200
LAS VEGAS, NEVADA 89118
Phone: 702.798.7978
Fax: 702.451.2296
Claro.Perez@lrneng.com

RUNOFF CURVE NUMBERS
(URBAN AREAS[1])

Cover description: Cover type and hydrologic condition	Average percent impervious area[2]	Curve numbers for hydrologic soil group— A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size: **See Table 602A**					
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system. Impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using Figure 603.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using Figure 603 based on the impervious area percentage (CN #98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using Figure 603 based on the degree of development impervious area percentage) and the CN's for the newly graded pervious areas.

Revision	Date

Hydrologic Soil Curve Number Analysis

Soil Name:	TENCEE	**Soil No.:**	400
Description:	Gravelly Fine Sandy Loam		
Soil Name:	DALIAN	**Soil No.:**	191
Description:	Cobbly Fine Sandy Loam		

Existing Condition

Cover Type: Desert Shrub - Poor

Soil Sub-Group	HSG	% of Group	CN	Computed CN %
Tencee	D	91.2	94	85.73
Dalian	A	8.5	77	6.55
		Weighted CN		92.28

Soil Name:	TENCEE	**Soil No.:**	400
Description:	Gravelly Fine Sandy Loam		
Soil Name:	DALIAN	**Soil No.:**	191
Description:	Cobbly Fine Sandy Loam		

Developed Condition

Cover Type: Residential

Soil Sub-Group	HSG	% of Group	CN	Computed CN %
Tencee	D	91.2	95	86.64
Dalian	A	8.5	89	7.56
		Weighted CN		94.2

* Ref. USDA SCS Soil Survey Las Vegas Valley Area Nevada (August 22, 2014)

** Ref. CCRFCD HC&DDM Table 602 (1 & 4 of 4)

Interim

DON1 - Newly graded - 94

DON2 - Desert Shrub composit - 92 (see above)

DEV1-3 - Commercial - 95

Developed

DEV4 - Commercial - 95

DEV5 - Composit - 94.2 (See above)

DEV1-3 - Commercial - 95

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

BAUGHMAN & TURNER, INC.
CONSULTING ENGINEERS

PROJECT NO. : 13-19-59 **DEVELOPMENT : Grand Teton**

FILE : Existing & Developed Condition **CALCULATED BY: sw** **DATE : 05/09/16**

Sub-Basin Data					Initial/Overland Time (T_i)			Travel Time (T_t)					T_c	T_c Check (Urbanized Basins)		Final T_c	T_{lag}	Remarks
DESIG	CN	K	AREA (acres)	AREA (mi^2)	LENGTH (ft)	SLOPE (%)	T_i (min)	LENGTH (ft)	SLOPE (%)	V_1 (fps)	V_2 (fps)	T_t (min)	$T_c=T_i+T_t$ (min)	TOTAL (ft)	T_c (min)	T_c (min)	T_{lag} (hrs)	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Existing Condition																		
EON1	92	0.824	18.02	0.0282	1130	2.60	12.1	1900	1.80	1.99	3.94	10.1	22.2	N/A	N/A	22.2	0.222	EX
GTETON	98	0.904	1.52	0.0024	50	2.00	2.0	1320	4.000	4.04	6.12	4.3	6.3	1370.0	17.6	6.3	0.063	DEV
CREST1	98	0.904	0.34	0.0005	45	2.00	1.9	330	0.90	1.92	N/A	2.9	4.8	375.0	12.1	4.8	0.050	DEV
CREST2	98	0.904	0.26	0.0004	40	1.90	1.8	280	1.100	2.12	N/A	2.2	4.0	320.0	11.8	4.0	0.050	DEV
Interim (Unit 1) Condition																		
DON1	94	0.851	1.28	0.0020	120	4.2	3.0	577	0.50	1.05	2.08	8.6	11.6	N/A	N/A	11.6	0.116	EX
DON2	92	0.824	12.42	0.0194	800	2.4	10.5	1140	2.80	2.48	4.92	5.5	16.0	N/A	N/A	16.0	0.160	EX
DEV1	95	0.864	2.59	0.0040	120	2.0	3.7	440	0.70	1.69	N/A	4.3	8.0	560.0	13.1	8.0	0.080	DEV
DEV2	95	0.864	1.31	0.0020	160	1.8	4.4	330	1.50	2.47	N/A	2.2	6.6	490.0	12.7	6.6	0.066	DEV
DEV3	95	0.864	0.42	0.0007	60	2.2	2.5	160	1.40	2.39	N/A	1.1	3.6	220.0	11.2	3.6	0.050	DEV
GTETON	98	0.904	1.52	0.0024	50	2.00	2.0	1320	4.000	4.04	6.12	4.3	6.3	1370.0	17.6	6.3	0.063	DEV
CREST1	98	0.904	0.34	0.0005	45	2.00	1.9	330	0.90	1.92	N/A	2.9	4.8	375.0	12.1	4.8	0.050	DEV
CREST2	98	0.904	0.26	0.0004	40	1.90	1.8	280	1.100	2.12	N/A	2.2	4.0	320.0	11.8	4.0	0.050	DEV

$T_i=(1.8(1.1-K)L^{(1/2)})/(S^{1/3})$

$T_c=T_i+T_t$

$K=0.0132(CN)-.39$

$T_{lag} = 0.6T_c$

For the travel time (T_t) calculations,
V_1 applies to the first 500 feet of travel distance;
V_2 applies to the remaining travel distance.

Travel Time Velocity Formulas

Existing	Developed
$V_1 = 14.8*(S/100)^{1/2}$	$V_1 = 20.2*(S/100)^{1/2}$
$V_2 = 29.4*(S/100)^{1/2}$	$V_2 = 30.6*(S/100)^{1/2}$

All basins over one square mile are calculated by the equation $T_{lag}=20Kn(L*L_c/S^{0.5})^{0.33}$ and denoted by shaded gray (See Worksheet).

REFERENCE:

STANDARD FORM 4

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

BAUGHMAN & TURNER, INC.
CONSULTING ENGINEERS

PROJECT NO. : 13-19-59 **DEVELOPMENT : Grand Teton**

FILE : Existing & Developed Condition **CALCULATED BY: sw** **DATE : 05/09/16**

Sub-Basin Data					Initial/Overland Time (T_i)			Travel Time (T_t)					T_c	T_c Check (Urbanized Basins)		Final T_c	T_{lag}	Remarks
DESIG	CN	K	AREA (acres)	AREA (mi^2)	LENGTH (ft)	SLOPE (%)	T_i (min)	LENGTH (ft)	SLOPE (%)	V_1 (fps)	V_2 (fps)	T_t (min)	$T_c=T_i+T_t$ (min)	TOTAL (ft)	T_c (min)	T_c (min)	T_{lag} (hrs)	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Developed Condition																		
DEV1	95	0.864	2.59	0.0040	120	2.0	3.7	440	0.70	1.69	N/A	4.3	8.0	560.0	13.1	8.0	0.080	DEV
DEV2	95	0.864	1.31	0.0020	160	1.8	4.4	330	1.50	2.47	N/A	2.2	6.6	490.0	12.7	6.6	0.066	DEV
DEV3	95	0.864	0.42	0.0007	60	2.2	2.5	160	1.40	2.39	N/A	1.1	3.6	220.0	11.2	3.6	0.050	DEV
DEV4	95	0.864	1.28	0.0020	120	4.2	2.9	577	0.50	1.43	2.16	6.4	9.3	697.0	13.9	9.3	0.093	DEV
DEV5	94	0.853	12.42	0.0194	800	2.4	9.4	1140	0.50	1.43	2.16	10.8	20.1	1940.0	20.8	20.1	0.201	DEV
CREST1	98	0.904	0.34	0.0005	45	2.00	1.9	330	0.900	1.92	N/A	2.9	4.8	375.0	12.1	4.8	0.050	DEV
CREST2	98	0.904	0.26	0.0004	40	1.90	1.8	280	1.100	2.12	N/A	2.2	4.0	320.0	11.8	4.0	0.050	DEV
GTETON	98	0.904	1.52	0.0024	50	2.00	2.0	1320	4.000	4.04	6.12	4.3	6.3	1370.0	17.6	6.3	0.063	DEV

$T_i=(1.8(1.1-K)L^{(1/2)})/(S^{1/3})$

$T_c=T_i+T_t$

$K=0.0132(CN)-.39$

$T_{lag} = 0.6T_c$

For the travel time (T_t) calculations,
V_1 applies to the first 500 feet of travel distance;
V_2 applies to the remaining travel distance.

Existing
$V_1 = 14.8*(S/100)^{1/2}$
$V_2 = 29.4*(S/100)^{1/2}$

Developed
$V_1 = 20.2*(S/100)^{1/2}$
$V_2 = 30.6*(S/100)^{1/2}$

are calculated by the equation
$T_{lag}=20Kn(L*L_c/S^{0.5})^{0.33}$
and denoted by shaded gray
(See Worksheet).

REFERENCE:

STANDARD FORM 4

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN   1998               *
 *            VERSION 4.1                *
 *                                       *
 *  RUN DATE   09MAY16  TIME  17:37:24   *
 *                                       *
 *****************************************
```

```
*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS   *
*    HYDROLOGIC ENGINEERING CENTER  *
*          609 SECOND STREET        *
*       DAVIS, CALIFORNIA 95616     *
*            (916) 756-1104         *
*                                   *
*************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID
    2         ID   LR Nelson Grand Teton
    3         ID   Interim Unit 1 Condition
    4         ID
    5         ID    File  N:\LRNelson.GrandTeton\Docs\Hydrology\HEC1\LRGrandTetonINTERIM.hc1
    6         ID
    7         IT       5                    300
    8         IO       5
    9         IN       5
   10         JR    PREC    0.56     1.0
              * ************************ *
              * Interim (Unit 1) Condition *
              * ************************ *

   11         KK    DON2
   12         BA   .0194
   13         PB    3.00
   14         PC    0.00       2     5.7       7     8.7    10.8    12.4      13      13      13
   15         PC      13      13      13    13.3      14    14.2    14.8    15.8    17.2    18.1
   16         PC      19    19.7    19.7    20.1    20.1    20.4    21.4    22.9    24.1    24.9
   17         PC    25.1    25.6      27    27.8    28.1    28.3    29.5    32.2    35.2    40.9
   18         PC    49.9      59      71    74.4    78.1    81.2    81.9    83.5    85.1    85.6
   19         PC      86    86.8    87.6    88.8      91    92.6    93.7      95      97    97.6
   20         PC    98.2    98.5    98.7    98.9      99    99.3    99.3    99.4    99.5    99.8
   21         PC    99.8    99.9     100
   22         LS              92
   23         UD   0.160

   24         KK    DEV3
   25         BA  0.0007
   26         LS              95
   27         UD   0.050

   28         KK  GTETON
   29         BA  0.0024
   30         LS              98
   31         UD   0.063

   32         KK  CREST1
   33         BA  0.0005
   34         LS              98
   35         UD   0.050

   36         KK     CP1
   37         HC       4

   38         KK    DEV1
   39         BA  0.0040
   40         LS              95
   41         UD   0.080
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   42         KK    DEV2
   43         BA  0.0020
   44         LS              95
   45         UD   0.066
```

```
            46          KK    DON1
            47          BA  0.0020
            48          LS              94
            49          UD   0.116

            50          KK     CP2
            51          HC       3

            52          KK  CREST2
            53          BA  0.0004
            54          LS              98
            55          UD   0.050
            56          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    11       DON2
                .
                .
    24          .        DEV3
                .           .
                .           .
    28          .           .      GTETON
                .           .           .
                .           .           .
    32          .           .           .      CREST1
                .           .           .           .
                .           .           .           .
    36        CP1.....................................
                .
                .
    38          .        DEV1
                .           .
                .           .
    42          .           .        DEV2
                .           .           .
                .           .           .
    46          .           .           .        DON1
                .           .           .           .
                .           .           .           .
    50          .         CP2.........................
                .           .
                .           .
    52          .           .      CREST2

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *              JUN  1998               *
 *            VERSION 4.1               *
 *                                      *
 *  RUN DATE   09MAY16  TIME  17:37:24  *
 *                                      *
 ****************************************

 ****************************************
 *                                      *
 *    U.S. ARMY CORPS OF ENGINEERS      *
 *    HYDROLOGIC ENGINEERING CENTER     *
 *          609 SECOND STREET           *
 *       DAVIS, CALIFORNIA 95616        *
 *           (916) 756-1104             *
 *                                      *
 ****************************************

                        LR Nelson Grand Teton
                        Interim Unit 1 Condition

                         File  N:\LRNelson.GrandTeton\Docs\Hydrology\HEC1\LRGrandTetonINTERIM.hc1

   8 IO          OUTPUT CONTROL VARIABLES
                       IPRNT          5  PRINT CONTROL
                       IPLOT          0  PLOT CONTROL
                       QSCAL         0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN          5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2    0  ENDING DATE
                      NDTIME        0055  ENDING TIME
                       ICENT          19  CENTURY MARK

                    COMPUTATION INTERVAL      .08 HOURS
                         TOTAL TIME BASE   24.92 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
               STORAGE VOLUME         ACRE-FEET
               SURFACE AREA           ACRES
               TEMPERATURE            DEGREES FAHRENHEIT
```

```
      JP          MULTI-PLAN OPTION
                       NPLAN          1  NUMBER OF PLANS

      JR          MULTI-RATIO OPTION
                      RATIOS OF PRECIPITATION
                      .56      1.00
1
```

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .56	RATIO 2 1.00
HYDROGRAPH AT						
+	DON2	.02	1	FLOW	15.	33.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	DEV3	.00	1	FLOW	1.	2.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	GTETON	.00	1	FLOW	3.	6.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	CREST1	.00	1	FLOW	1.	1.
				TIME	3.50	3.50
4 COMBINED AT						
+	CP1	.02	1	FLOW	18.	39.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	DEV1	.00	1	FLOW	4.	9.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DEV2	.00	1	FLOW	2.	5.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DON1	.00	1	FLOW	2.	4.
				TIME	3.58	3.50
3 COMBINED AT						
+	CP2	.01	1	FLOW	9.	17.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	CREST2	.00	1	FLOW	1.	1.
				TIME	3.50	3.50

*** NORMAL END OF HEC-1 ***

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN  1998                *
 *            VERSION 4.1                *
 *                                       *
 *  RUN DATE   09MAY16  TIME  17:40:34   *
 *                                       *
 *****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X       XX
X     X  X        X             X
XXXXXXX  XXXX     X       XXXXX X
X     X  X        X             X
X     X  X        X     X       X
X     X  XXXXXXX   XXXXX        XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID
    2         ID   LR Nelson Grand Teton
    3         ID   Developed Condition
    4         ID
    5         ID    File  N:\LRNelson.GrandTeton\Docs\Hydrology\HEC1\LRGrandTetonDEV.hc1
    6         ID
    7         IT       5                    300
    8         IO       5
    9         IN       5
   10         JR    PREC    0.56     1.0
              * ****************** *
              * Developed Condition *
              * ****************** *

   11         KK    DEV5
   12         BA   .0194
   13         PB    3.00
   14         PC    0.00       2     5.7       7     8.7    10.8    12.4      13      13      13
   15         PC      13      13      13    13.3      14    14.2    14.8    15.8    17.2    18.1
   16         PC      19    19.7    19.7    20.1    20.1    20.4    21.4    22.9    24.1    24.9
   17         PC    25.1    25.6      27    27.8    28.1    28.3    29.5    32.2    35.2    40.9
   18         PC    49.9      59      71    74.4    78.1    81.2    81.9    83.5    85.1    85.6
   19         PC      86    86.8    87.6    88.8      91    92.6    93.7      95      97    97.6
   20         PC    98.2    98.5    98.7    98.9      99    99.3    99.3    99.4    99.5    99.8
   21         PC    99.8    99.9     100
   22         LS            94.2
   23         UD   0.201

   24         KK    DEV1
   25         BA  0.0040
   26         LS              95
   27         UD   0.080

   28         KK    DEV2
   29         BA  0.0020
   30         LS              95
   31         UD   0.066

   32         KK    DEV4
   33         BA  0.0020
   34         LS              95
   35         UD   0.093

   36         KK     CP1
   37         HC       3

   38         KK    DEV3
   39         BA  0.0007
   40         LS              95
   41         UD   0.050
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   42         KK  GTETON
   43         BA  0.0024
   44         LS              98
   45         UD   0.063
```

```
            46          KK  CREST1
            47          BA  0.0005
            48          LS              98
            49          UD   0.050

            50          KK     CP2
            51          HC       3

            52          KK  CREST2
            53          BA  0.0004
            54          LS              98
            55          UD   0.050
            56          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    11       DEV5
                .
                .
    24          .        DEV1
                .           .
                .           .
    28          .           .        DEV2
                .           .           .
                .           .           .
    32          .           .           .       DEV4
                .           .           .         .
                .           .           .         .
    36          .         CP1.......................
                .           .
                .           .
    38          .           .        DEV3
                .           .           .
                .           .           .
    42          .           .           .     GTETON
                .           .           .         .
                .           .           .         .
    46          .           .           .         .     CREST1
                .           .           .         .        .
                .           .           .         .        .
    50          .           .         CP2.......................
                .           .           .
                .           .           .
    52          .           .           .     CREST2

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN   1998              *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   09MAY16  TIME  17:40:34  *
*                                      *
****************************************

****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*            (916) 756-1104            *
*                                      *
****************************************

                        LR Nelson Grand Teton
                        Developed Condition

                         File  N:\LRNelson.GrandTeton\Docs\Hydrology\HEC1\LRGrandTetonDEV.hc1

   8 IO          OUTPUT CONTROL VARIABLES
                       IPRNT           5  PRINT CONTROL
                       IPLOT           0  PLOT CONTROL
                       QSCAL          0.  HYDROGRAPH PLOT SCALE

     IT          HYDROGRAPH TIME DATA
                        NMIN           5  MINUTES IN COMPUTATION INTERVAL
                       IDATE      1    0  STARTING DATE
                       ITIME        0000  STARTING TIME
                          NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                      NDDATE      2    0  ENDING DATE
                      NDTIME        0055  ENDING TIME
                       ICENT          19  CENTURY MARK

                    COMPUTATION INTERVAL      .08 HOURS
                        TOTAL TIME BASE   24.92 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
               STORAGE VOLUME         ACRE-FEET
               SURFACE AREA           ACRES
               TEMPERATURE            DEGREES FAHRENHEIT
```

JP MULTI-PLAN OPTION
NPLAN 1 NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION
.56 1.00
1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .56	RATIO 2 1.00
HYDROGRAPH AT						
+	DEV5	.02	1	FLOW	16.	32.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	DEV1	.00	1	FLOW	4.	9.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DEV2	.00	1	FLOW	2.	5.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DEV4	.00	1	FLOW	2.	4.
				TIME	3.50	3.50
3 COMBINED AT						
+	~~CP1~~ CP2	.01	1	FLOW	9.	17.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DEV3	.00	1	FLOW	1.	2.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	GTETON	.00	1	FLOW	3.	6.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	CREST1	.00	1	FLOW	1.	1.
				TIME	3.50	3.50
3 COMBINED AT						
+	~~CP2~~ CP1	.00	1	FLOW	5.	9.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	CREST2	.00	1	FLOW	1.	1.
				TIME	3.50	3.50

+ 75% of DEV5 = 21, 41

+25% of DEV5 = 9, 17

*** NORMAL END OF HEC-1 ***

WALL OPENING CALCULATION

Description: Wall opening at north property line
Project: Oxford Commons II, Developed Condition
Reference: Clark County Regional Flood Control District (CCRFCD) Manual
Date: May-16

Calculations:

Use Weir Equation: $Q = CLH^{3/2}$

where:

Q = 100-Year flow = 41 cfs
C = Weir coefficient = 3
L = Weir Opening Width = 20.00 ft wrought iron fence
H = Head Above the Bottom of the Opening

Solve for H;

$$H = \left[\frac{Q}{CL} \right]^{2/3}$$

$$H = \left[\frac{41 \text{ cfs}}{3*20 \text{ ft}} \right]^{2/3}$$

H = 0.78 ft
H = **9.31 in**

Assuming a 50% Clogging Factor:

H = **18.62 in**

WEIR CALCULATION

Description: Broad-crested weir calculation showing overflow over HP in detention area
Project: Oxford Commons II
Future Condition

Calculations:

Use Weir Equation: $Q = CLH^{3/2}$

where:

Q =	Design flow =	41.00 cfs
C =	Weir coefficient =	3
L =	Weir length =	20.00 ft
H =	Head over crest =	

Solve for H;

$$H = \left[\frac{Q}{CL}\right]^{2/3}$$

$$H = \left[\frac{41\ cfs}{3*20\ ft}\right]^{2/3}$$

$H = 0.78$ ft

$H =$ **9.31 in**

Comments:

Cross Section for Circular Pipe - 1

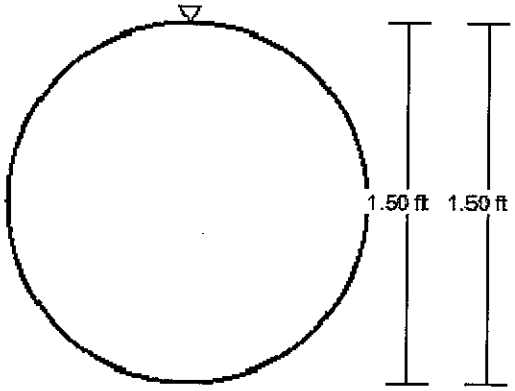
Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01100	ft/ft
Normal Depth	1.50	ft
Diameter	1.50	ft
Discharge	11.02	ft³/s

Cross Section Image



V: 1
H: 1

Worksheet for Circular Pipe - 1

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01100	ft/ft
Normal Depth	1.50	ft
Diameter	1.50	ft
Discharge	11.02	ft³/s

Results

Discharge	11.02	ft³/s
Normal Depth	1.50	ft
Flow Area	1.77	ft²
Wetted Perimeter	4.71	ft
Hydraulic Radius	0.38	ft
Top Width	0.00	ft
Critical Depth	1.27	ft
Percent Full	100.0	%
Critical Slope	0.01041	ft/ft
Velocity	6.23	ft/s
Velocity Head	0.60	ft
Specific Energy	2.10	ft
Froude Number	0.00	
Maximum Discharge	11.85	ft³/s
Discharge Full	11.02	ft³/s
Slope Full	0.01100	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

Worksheet for Circular Pipe - 1

GVF Output Data

Normal Depth Over Rise	100.00	%
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.50	ft
Critical Depth	1.27	ft
Channel Slope	0.01100	ft/ft
Critical Slope	0.01041	ft/ft

RIP-RAP CALCULATION

Description: Determine rip-rap size for project for the Future Condition
Project: Oxford Commons II
Northeast corner
Reference: The Clark County Regional Flood Control District (CCRFCD) Manual

Rip-Rap Equation (735)

$V= 3*(d_{50}^{0.50})*(Ss-1)/ S^{0.17}$

where:

V= Mean Velocity = 3.40 ft/s
S= Longitudinal channel slope = 16.00%
S_s= Specific gravity of rock (min. 2.65) = 2.65
d_{50}= Rock size (ft) for which 50% of the rip-rap by weight is smaller

Solve for d_{50}: Northeast corner

$$d_{50} = \left[\frac{V*S^{0.17}}{3*(S_s-1)}\right]^2$$

$$d_{50} = \left[\frac{(3.4ft/s*(0.16\ ft/ft)\text{^}0.17}{3*(2.65-1)}\right]^2$$

d_{50} = **0.25 ft** or 4 in

5/23/2016

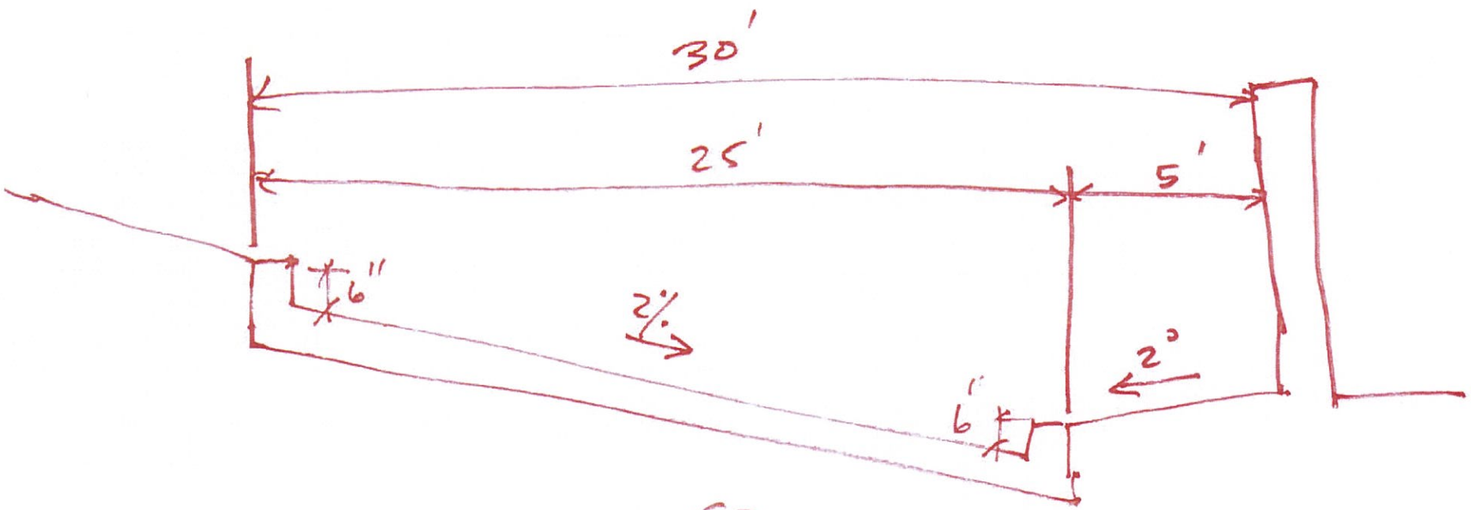
JOB NO.

DATE

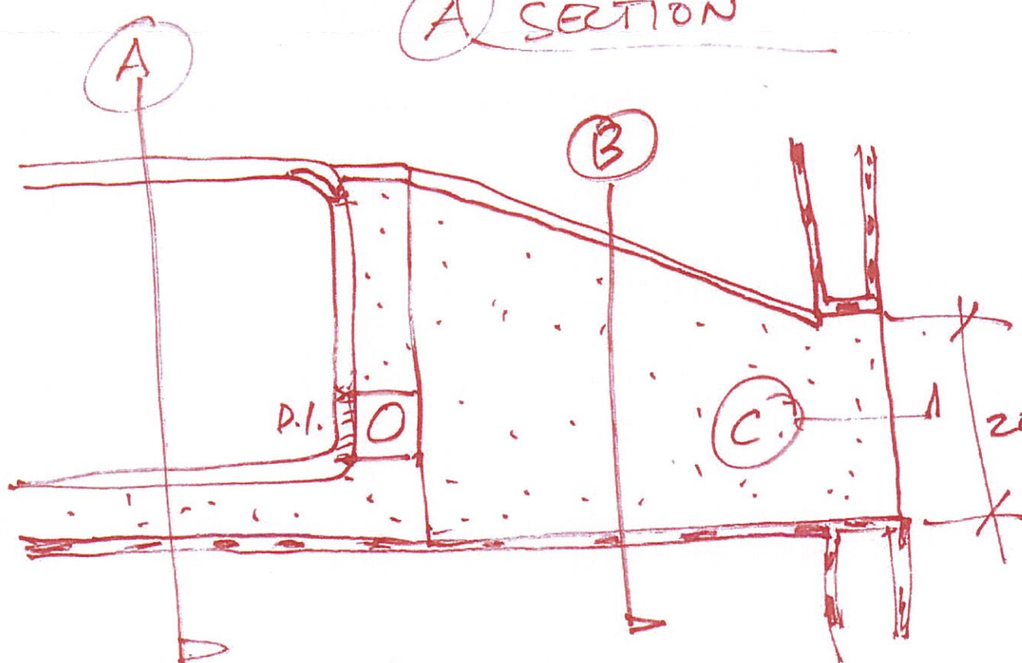
PROJECT OXFORD COMMONS II - UNIT 1 PUBLIC DRAINAGE ESMT

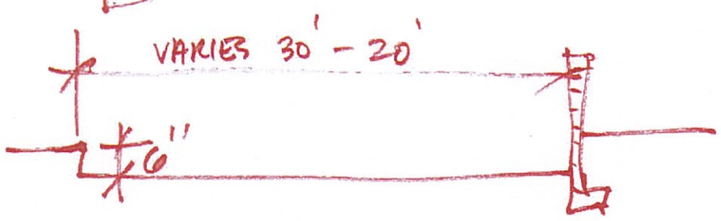
SHEET OF

SUBJECT DESIGNED CHECKED



A SECTION





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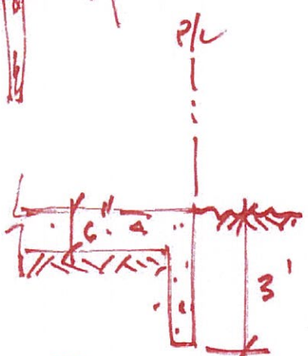


C SECTION

NEVADA • 6765 West Russell Road, Suite 200 • Las Vegas, NV 89118-1885 • 702 / 798-7978 • FAX 702 / 451-2296
UTAH • 51 West 9000 South • Sandy, UT 84070 • 801 / 565-8580 • FAX 801 / 565-9340

Cross Section for Formitch HS1 100 year

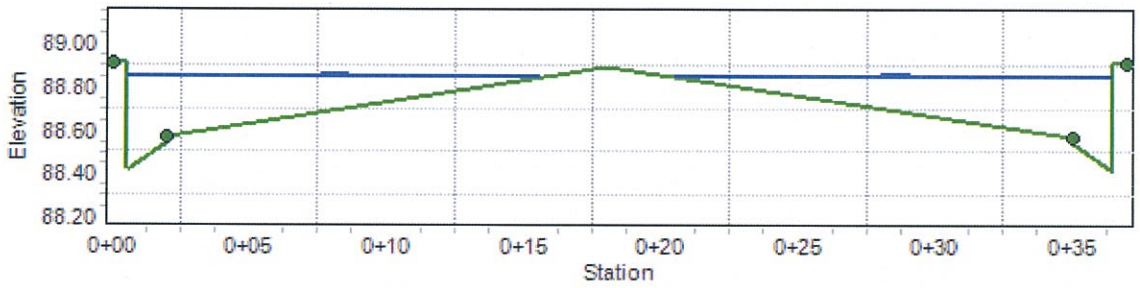
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.43	ft
Discharge	9.00	ft³/s

Cross Section Image



Worksheet for Formitch HS1 100 year

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	9.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.91
0+00.50	88.91
0+00.50	88.41
0+02.00	88.54
0+02.00	88.57
0+18.00	88.89
0+35.00	88.57
0+35.00	88.54
0+36.50	88.41
0+36.50	88.91
0+37.00	88.91

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.91)	(0+02.00, 88.57)	0.013
(0+02.00, 88.57)	(0+35.00, 88.57)	0.017
(0+35.00, 88.57)	(0+37.00, 88.91)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Formitch HS1 100 year

Results

Normal Depth		0.43	ft
Elevation Range	88.41 to 88.91 ft		
Flow Area		4.94	ft²
Wetted Perimeter		32.06	ft
Hydraulic Radius		0.15	ft
Top Width		31.12	ft
Normal Depth		0.43	ft
Critical Depth		0.41	ft
Critical Slope		0.00791	ft/ft
Velocity		1.82	ft/s
Velocity Head		0.05	ft
Specific Energy		0.48	ft
Froude Number		0.81	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.43	ft
Critical Depth	0.41	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00791	ft/ft

Cross Section for Formitch HS1 10 year

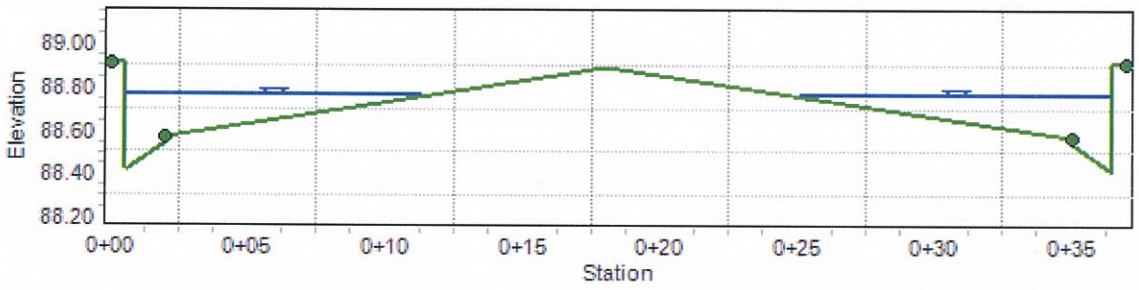
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.35	ft
Discharge	4.00	ft³/s

Cross Section Image



Worksheet for Formitch HS1 10 year

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	4.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.91
0+00.50	88.91
0+00.50	88.41
0+02.00	88.54
0+02.00	88.57
0+18.00	88.89
0+35.00	88.57
0+35.00	88.54
0+36.50	88.41
0+36.50	88.91
0+37.00	88.91

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.91)	(0+02.00, 88.57)	0.013
(0+02.00, 88.57)	(0+35.00, 88.57)	0.017
(0+35.00, 88.57)	(0+37.00, 88.91)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Formitch HS1 10 year

Results

Normal Depth		0.35	ft
Elevation Range	88.41 to 88.91 ft		
Flow Area		2.64	ft²
Wetted Perimeter		23.02	ft
Hydraulic Radius		0.11	ft
Top Width		22.25	ft
Normal Depth		0.35	ft
Critical Depth		0.32	ft
Critical Slope		0.00864	ft/ft
Velocity		1.51	ft/s
Velocity Head		0.04	ft
Specific Energy		0.38	ft
Froude Number		0.77	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.35	ft
Critical Depth	0.32	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00864	ft/ft

Cross Section for Brook Rise downstream of HS2 100 year no common Aveq

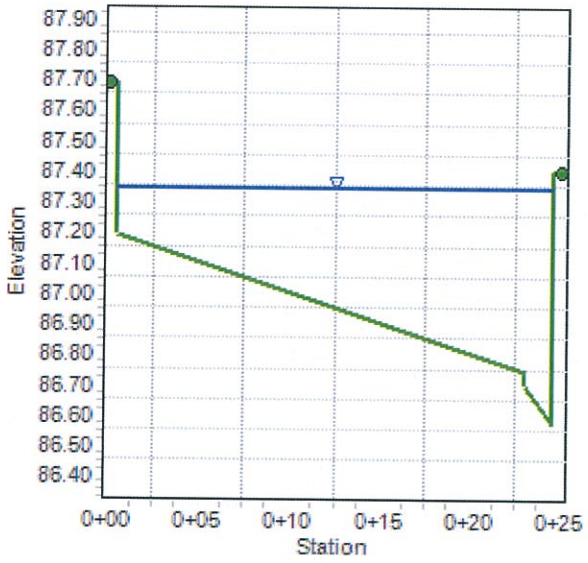
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.77	ft
Discharge	41.00	ft³/s

Cross Section Image



Worksheet for Brook Rise downstream of HS2 100 year no common

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	41.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	87.69
0+00.50	87.69
0+00.50	87.19
0+23.00	86.74
0+23.00	86.70
0+24.50	86.57
0+24.50	87.40
0+25.00	87.40

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 87.69)	(0+25.00, 87.40)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.77	ft
Elevation Range	86.57 to 87.69 ft	
Flow Area	9.60	ft²
Wetted Perimeter	24.98	ft
Hydraulic Radius	0.38	ft

Worksheet for Brook Rise downstream of HS2 100 year no common

Results

Top Width		24.00	ft
Normal Depth		0.77	ft
Critical Depth		0.82	ft
Critical Slope		0.00341	ft/ft
Velocity		4.27	ft/s
Velocity Head		0.28	ft
Specific Energy		1.06	ft
Froude Number		1.19	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.77	ft
Critical Depth	0.82	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00341	ft/ft

Cross Section for Copy of Brook Rise downstream of HS2 10 year no

common area

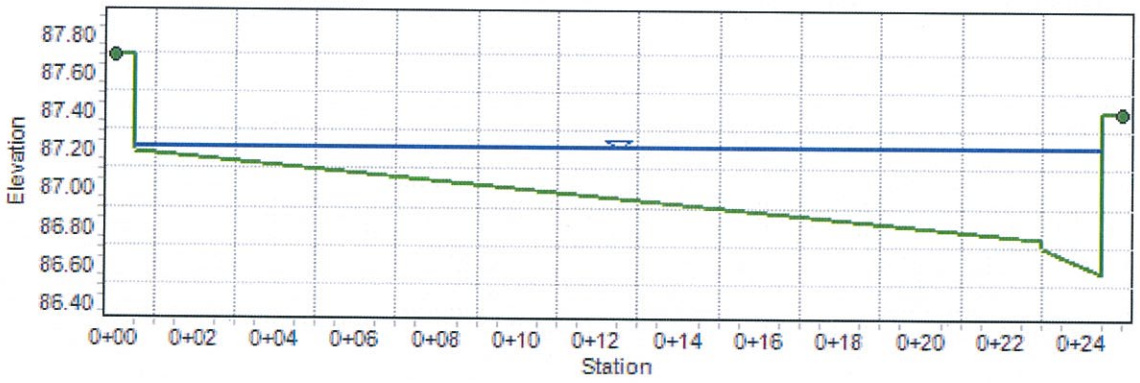
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Normal Depth	0.64	ft
Discharge	21.00	ft³/s

Cross Section Image



Worksheet for Copy of Brook Rise downstream of HS2 10 year no

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00500	ft/ft
Discharge	21.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	87.69
0+00.50	87.69
0+00.50	87.19
0+23.00	86.74
0+23.00	86.70
0+24.50	86.57
0+24.50	87.40
0+25.00	87.40

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 87.69)	(0+25.00, 87.40)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.64	ft
Elevation Range	86.57 to 87.69 ft	
Flow Area	6.40	ft²
Wetted Perimeter	24.71	ft
Hydraulic Radius	0.26	ft

Worksheet for Copy of Brook Rise downstream of HS2 10 year no

Results

Top Width		24.00	ft
Normal Depth		0.64	ft
Critical Depth		0.66	ft
Critical Slope		0.00389	ft/ft
Velocity		3.28	ft/s
Velocity Head		0.17	ft
Specific Energy		0.81	ft
Froude Number		1.12	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.64	ft
Critical Depth	0.66	ft
Channel Slope	0.00500	ft/ft
Critical Slope	0.00389	ft/ft

HS3

Cross Section for Brookside Falls 100 yr Future

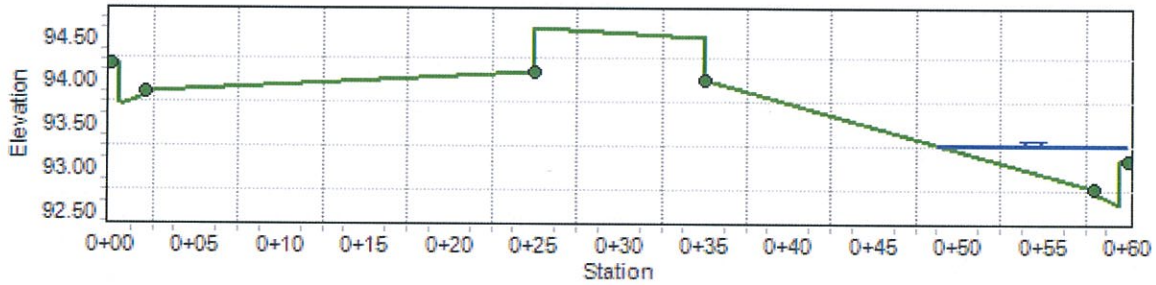
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Normal Depth	0.67	ft
Discharge	10.00	ft^3/s

Cross Section Image



HS3

Worksheet for BROOKSIDE FALLS 100 yr Future

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Discharge	10.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	94.20
0+00.50	94.20
0+00.50	93.70
0+02.00	93.83
0+02.00	93.87
0+25.00	94.10
0+25.00	94.60
0+35.00	94.50
0+35.00	94.00
0+58.00	92.76
0+58.00	92.72
0+59.50	92.59
0+59.50	93.09
0+60.00	93.09

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 94.20)	(0+02.00, 93.87)	0.013
(0+02.00, 93.87)	(0+25.00, 94.10)	0.017
(0+25.00, 94.10)	(0+35.00, 94.00)	0.013
(0+35.00, 94.00)	(0+58.00, 92.76)	0.017
(0+58.00, 92.76)	(0+60.00, 93.09)	0.013

HS3

Worksheet for Brookside Falls 10 yr Future

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		0.67	ft
Elevation Range	92.59 to 94.60 ft		
Flow Area		3.31	ft²
Wetted Perimeter		12.01	ft
Hydraulic Radius		0.28	ft
Top Width		11.28	ft
Normal Depth		0.67	ft
Critical Depth		0.67	ft
Critical Slope		0.00626	ft/ft
Velocity		3.02	ft/s
Velocity Head		0.14	ft
Specific Energy		0.81	ft
Froude Number		0.98	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.67	ft
Critical Depth	0.67	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00626	ft/ft

HS3

Cross Section for Brookside Falls: 10 yr Future

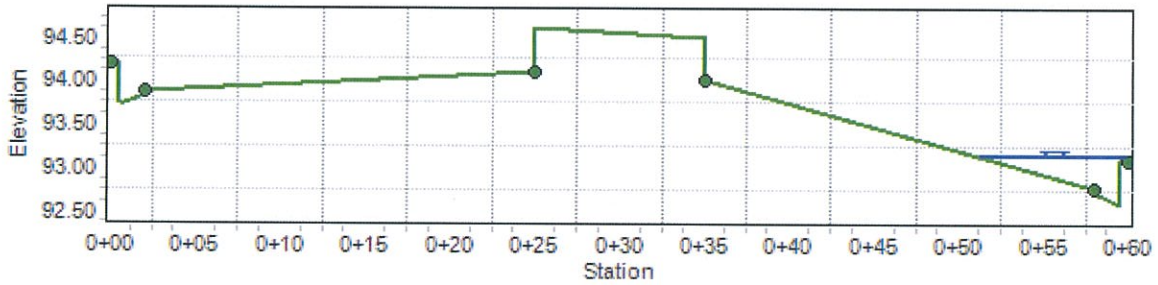
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Normal Depth	0.54	ft
Discharge	5.00	ft³/s

Cross Section Image



HS3

Worksheet for Brookside Falls: 10 yr Future

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Discharge	5.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	94.20
0+00.50	94.20
0+00.50	93.70
0+02.00	93.83
0+02.00	93.87
0+25.00	94.10
0+25.00	94.60
0+35.00	94.50
0+35.00	94.00
0+58.00	92.76
0+58.00	92.72
0+59.50	92.59
0+59.50	93.09
0+60.00	93.09

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 94.20)	(0+02.00, 93.87)	0.013
(0+02.00, 93.87)	(0+25.00, 94.10)	0.017
(0+25.00, 94.10)	(0+35.00, 94.00)	0.013
(0+35.00, 94.00)	(0+58.00, 92.76)	0.017
(0+58.00, 92.76)	(0+60.00, 93.09)	0.013

HS3

Worksheet for Brookside Falls 10 yr Future

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		0.54	ft
Elevation Range	92.59 to 94.60 ft		
Flow Area		1.97	ft²
Wetted Perimeter		9.39	ft
Hydraulic Radius		0.21	ft
Top Width		8.79	ft
Normal Depth		0.54	ft
Critical Depth		0.53	ft
Critical Slope		0.00676	ft/ft
Velocity		2.54	ft/s
Velocity Head		0.10	ft
Specific Energy		0.64	ft
Froude Number		0.95	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.54	ft
Critical Depth	0.53	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00676	ft/ft

Cross Section for Brook Rise HS4 100 year future

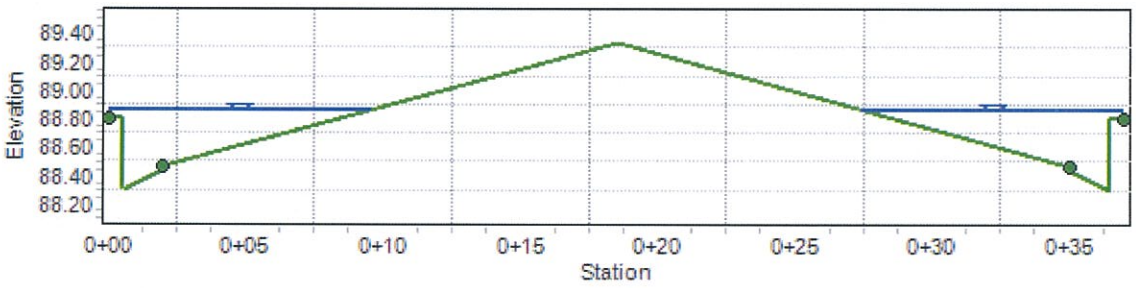
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Normal Depth	0.56	ft
Discharge	28.00	ft³/s

Cross Section Image



Worksheet for Brookrise HS4 100 year future

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Discharge	28.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.80
0+00.50	88.80
0+00.50	88.30
0+02.00	88.43
0+02.00	88.47
0+18.50	89.33
0+35.00	88.47
0+35.00	88.43
0+36.50	88.30
0+36.50	88.80
0+37.00	88.80

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.80)	(0+02.00, 88.47)	0.013
(0+02.00, 88.47)	(0+35.00, 88.47)	0.017
(0+35.00, 88.47)	(0+37.00, 88.80)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Brookrise HS4 100 year future

Results

Normal Depth		0.56	ft
Elevation Range	88.30 to 89.33 ft		
Flow Area		4.54	ft²
Wetted Perimeter		20.35	ft
Hydraulic Radius		0.22	ft
Top Width		19.11	ft
Normal Depth		0.56	ft
Critical Depth		0.74	ft
Critical Slope		0.00590	ft/ft
Velocity		6.17	ft/s
Velocity Head		0.59	ft
Specific Energy		1.16	ft
Froude Number		2.23	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.56	ft
Critical Depth	0.74	ft
Channel Slope	0.03300	ft/ft
Critical Slope	0.00590	ft/ft

Cross Section for Brookrise HS4 10 year future

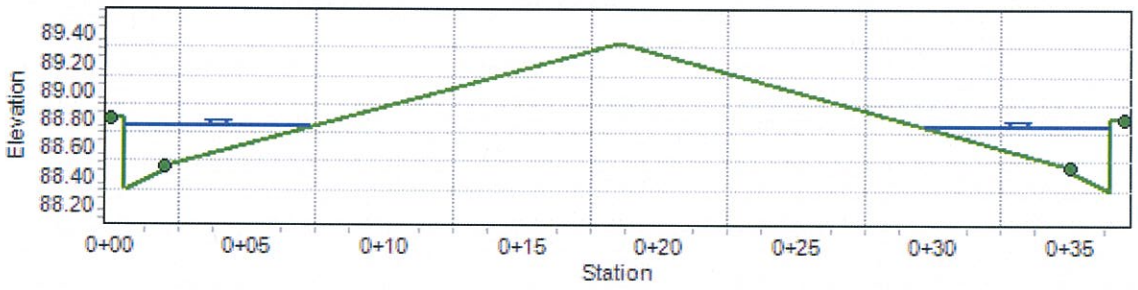
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Normal Depth	0.45	ft
Discharge	14.00	ft³/s

Cross Section Image



Worksheet for Brook Rise HS4 10 year future

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Discharge	14.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.80
0+00.50	88.80
0+00.50	88.30
0+02.00	88.43
0+02.00	88.47
0+18.50	89.33
0+35.00	88.47
0+35.00	88.43
0+36.50	88.30
0+36.50	88.80
0+37.00	88.80

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.80)	(0+02.00, 88.47)	0.013
(0+02.00, 88.47)	(0+35.00, 88.47)	0.017
(0+35.00, 88.47)	(0+37.00, 88.80)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Brook Rise HS4 10 year future

Results

Normal Depth		0.45	ft
Elevation Range	88.30 to 89.33 ft		
Flow Area		2.62	ft²
Wetted Perimeter		14.62	ft
Hydraulic Radius		0.18	ft
Top Width		13.62	ft
Normal Depth		0.45	ft
Critical Depth		0.59	ft
Critical Slope		0.00646	ft/ft
Velocity		5.35	ft/s
Velocity Head		0.45	ft
Specific Energy		0.89	ft
Froude Number		2.15	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.45	ft
Critical Depth	0.59	ft
Channel Slope	0.03300	ft/ft
Critical Slope	0.00646	ft/ft

Cross Section for Brook Rise HS5 100 year future

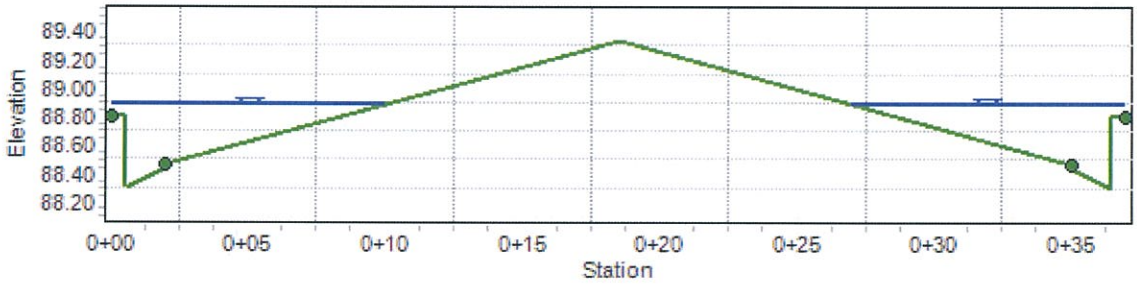
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Normal Depth	0.59	ft
Discharge	32.00	ft³/s

Cross Section Image



Worksheet for Brook Rise HS5 100 year future

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Discharge	32.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.80
0+00.50	88.80
0+00.50	88.30
0+02.00	88.43
0+02.00	88.47
0+18.50	89.33
0+35.00	88.47
0+35.00	88.43
0+36.50	88.30
0+36.50	88.80
0+37.00	88.80

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.80)	(0+02.00, 88.47)	0.013
(0+02.00, 88.47)	(0+35.00, 88.47)	0.017
(0+35.00, 88.47)	(0+37.00, 88.80)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Brook Rise HS5 100 year future

Results

Normal Depth		0.59	ft
Elevation Range	88.30 to 89.33 ft		
Flow Area		5.02	ft²
Wetted Perimeter		21.34	ft
Hydraulic Radius		0.24	ft
Top Width		20.06	ft
Normal Depth		0.59	ft
Critical Depth		0.78	ft
Critical Slope		0.00581	ft/ft
Velocity		6.38	ft/s
Velocity Head		0.63	ft
Specific Energy		1.22	ft
Froude Number		2.25	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.59	ft
Critical Depth	0.78	ft
Channel Slope	0.03300	ft/ft
Critical Slope	0.00581	ft/ft

Cross Section for Brook RS e HS5 10 year future

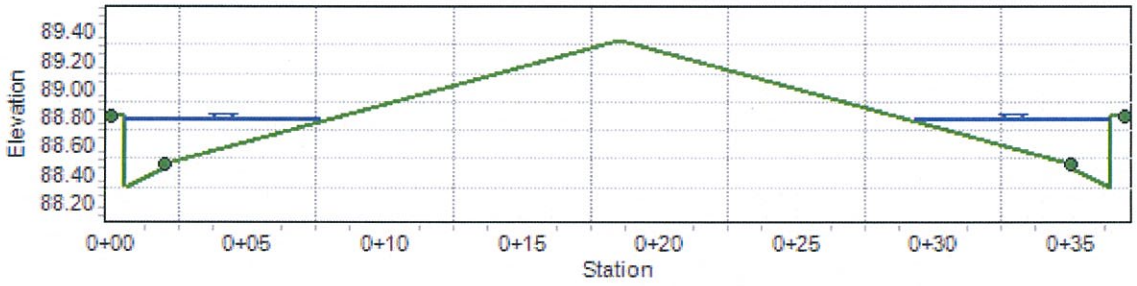
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Normal Depth	0.47	ft
Discharge	16.00	ft³/s

Cross Section Image



Worksheet for Brook Rise HS5 10 year future

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Discharge	16.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.80
0+00.50	88.80
0+00.50	88.30
0+02.00	88.43
0+02.00	88.47
0+18.50	89.33
0+35.00	88.47
0+35.00	88.43
0+36.50	88.30
0+36.50	88.80
0+37.00	88.80

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.80)	(0+02.00, 88.47)	0.013
(0+02.00, 88.47)	(0+35.00, 88.47)	0.017
(0+35.00, 88.47)	(0+37.00, 88.80)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Brook Rise HS5 10 year future

Results

Normal Depth		0.47	ft
Elevation Range	88.30 to 89.33 ft		
Flow Area		2.90	ft²
Wetted Perimeter		15.45	ft
Hydraulic Radius		0.19	ft
Top Width		14.40	ft
Normal Depth		0.47	ft
Critical Depth		0.61	ft
Critical Slope		0.00637	ft/ft
Velocity		5.51	ft/s
Velocity Head		0.47	ft
Specific Energy		0.94	ft
Froude Number		2.17	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.47	ft
Critical Depth	0.61	ft
Channel Slope	0.03300	ft/ft
Critical Slope	0.00637	ft/ft

HS6

Cross Section for Grand Teton down stream 100 yr Future

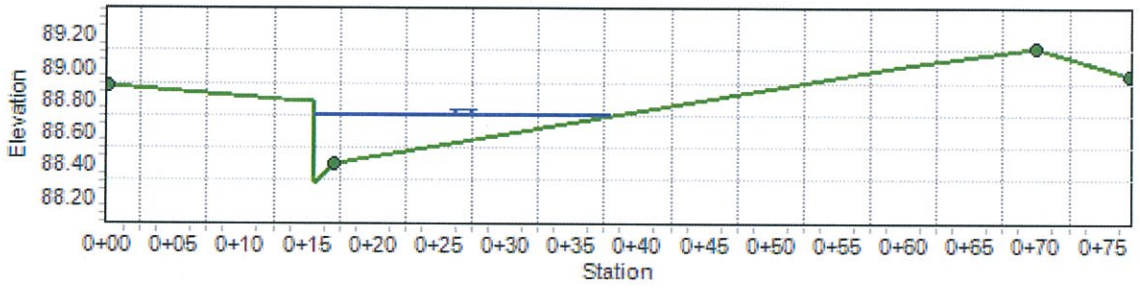
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Normal Depth	0.42	ft
Discharge	17.00	ft³/s

Cross Section Image



HSG

Worksheet for Grand Teton down stream 100 yr Future

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Discharge	17.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.89
0+15.00	88.79
0+15.50	88.79
0+15.50	88.28
0+17.00	88.41
0+60.00	89.01
0+70.00	89.12
0+75.00	89.00
0+77.00	88.95

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.89)	(0+17.00, 88.41)	0.013
(0+17.00, 88.41)	(0+70.00, 89.12)	0.017
(0+70.00, 89.12)	(0+77.00, 88.95)	0.035

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.42	ft
Elevation Range	88.28 to 89.12 ft	

HS6

Worksheet for Grand Teton down stream 100 yr Future

Results

Flow Area		3.60	ft²
Wetted Perimeter		22.90	ft
Hydraulic Radius		0.16	ft
Top Width		22.47	ft
Normal Depth		0.42	ft
Critical Depth		0.54	ft
Critical Slope		0.00721	ft/ft
Velocity		4.72	ft/s
Velocity Head		0.35	ft
Specific Energy		0.77	ft
Froude Number		2.08	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.42	ft
Critical Depth	0.54	ft
Channel Slope	0.03300	ft/ft
Critical Slope	0.00721	ft/ft

HS6

Cross Section for Grand Teton downstream 10 yr Future

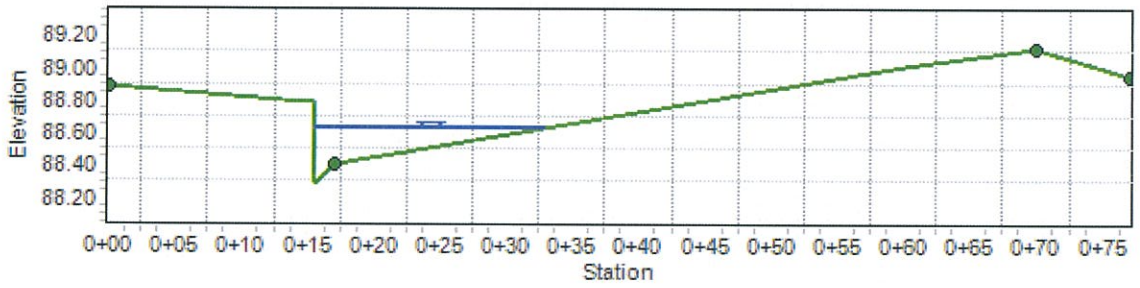
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Normal Depth	0.35	ft
Discharge	9.00	ft³/s

Cross Section Image



HS6

Worksheet for Grand Teton downstream 10 yr Future

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Discharge	9.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.89
0+15.00	88.79
0+15.50	88.79
0+15.50	88.28
0+17.00	88.41
0+60.00	89.01
0+70.00	89.12
0+75.00	89.00
0+77.00	88.95

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.89)	(0+17.00, 88.41)	0.013
(0+17.00, 88.41)	(0+70.00, 89.12)	0.017
(0+70.00, 89.12)	(0+77.00, 88.95)	0.035

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.35	ft
Elevation Range	88.28 to 89.12 ft	

H56

Worksheet for Grand Teton downstream 10 yr Future

Results

Flow Area		2.23	ft²
Wetted Perimeter		17.89	ft
Hydraulic Radius		0.12	ft
Top Width		17.53	ft
Normal Depth		0.35	ft
Critical Depth		0.43	ft
Critical Slope		0.00751	ft/ft
Velocity		4.04	ft/s
Velocity Head		0.25	ft
Specific Energy		0.61	ft
Froude Number		2.00	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.35	ft
Critical Depth	0.43	ft
Channel Slope	0.03300	ft/ft
Critical Slope	0.00751	ft/ft

HS 3

Cross Section for Brookside Falls 100 yr Interim

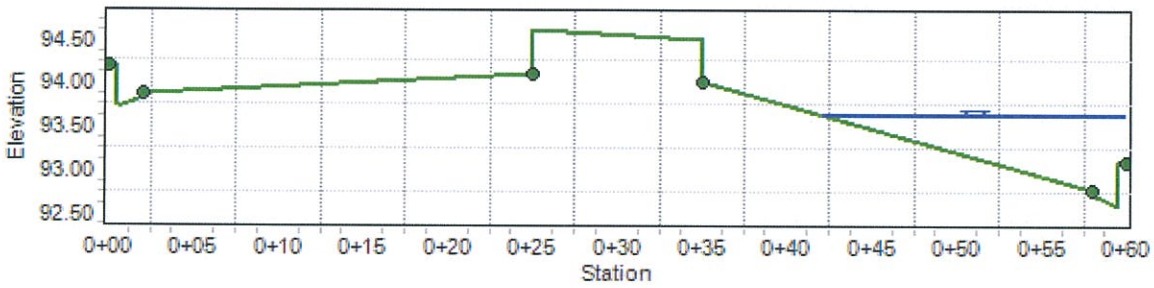
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Normal Depth	1.03	ft
Discharge	35.00	ft³/s

Cross Section Image



HS3

Worksheet for Brookside Falls : 100 yr Interim

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Discharge	35.00	ft^3/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	94.20
0+00.50	94.20
0+00.50	93.70
0+02.00	93.83
0+02.00	93.87
0+25.00	94.10
0+25.00	94.60
0+35.00	94.50
0+35.00	94.00
0+58.00	92.76
0+58.00	92.72
0+59.50	92.59
0+59.50	93.09
0+60.00	93.09

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 94.20)	(0+02.00, 93.87)	0.013
(0+02.00, 93.87)	(0+25.00, 94.10)	0.017
(0+25.00, 94.10)	(0+35.00, 94.00)	0.013
(0+35.00, 94.00)	(0+58.00, 92.76)	0.017
(0+58.00, 92.76)	(0+60.00, 93.09)	0.013

HS3

Worksheet for Brookside Falls 100 yr Interim

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		1.03	ft
Elevation Range	92.59 to 94.60 ft		
Flow Area		8.52	ft²
Wetted Perimeter		19.00	ft
Hydraulic Radius		0.45	ft
Top Width		17.90	ft
Normal Depth		1.03	ft
Critical Depth		1.05	ft
Critical Slope		0.00541	ft/ft
Velocity		4.11	ft/s
Velocity Head		0.26	ft
Specific Energy		1.29	ft
Froude Number		1.05	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.03	ft
Critical Depth	1.05	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00541	ft/ft

HS3

Cross Section for Brookside Falls - 10 yr Interim

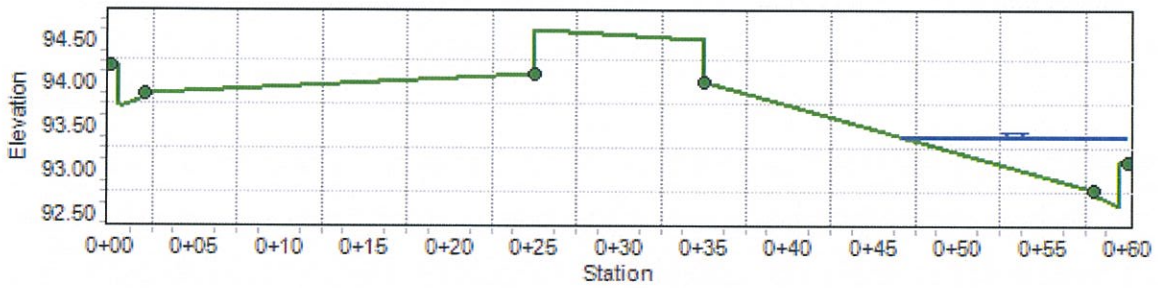
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Normal Depth	0.78	ft
Discharge	16.00	ft^3/s

Cross Section Image



HS3

Worksheet for Brookside Falls 10 yr Interim

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00600	ft/ft
Discharge	16.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	94.20
0+00.50	94.20
0+00.50	93.70
0+02.00	93.83
0+02.00	93.87
0+25.00	94.10
0+25.00	94.60
0+35.00	94.50
0+35.00	94.00
0+58.00	92.76
0+58.00	92.72
0+59.50	92.59
0+59.50	93.09
0+60.00	93.09

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 94.20)	(0+02.00, 93.87)	0.013
(0+02.00, 93.87)	(0+25.00, 94.10)	0.017
(0+25.00, 94.10)	(0+35.00, 94.00)	0.013
(0+35.00, 94.00)	(0+58.00, 92.76)	0.017
(0+58.00, 92.76)	(0+60.00, 93.09)	0.013

HS3

Worksheet for Brookside Falls : 10 yr Interim

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth		0.78	ft
Elevation Range	92.59 to 94.60 ft		
Flow Area		4.72	ft²
Wetted Perimeter		14.24	ft
Hydraulic Radius		0.33	ft
Top Width		13.40	ft
Normal Depth		0.78	ft
Critical Depth		0.79	ft
Critical Slope		0.00593	ft/ft
Velocity		3.39	ft/s
Velocity Head		0.18	ft
Specific Energy		0.96	ft
Froude Number		1.01	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.78	ft
Critical Depth	0.79	ft
Channel Slope	0.00600	ft/ft
Critical Slope	0.00593	ft/ft

HS6

Cross Section for Grand Teton downstream 10 yr Interim

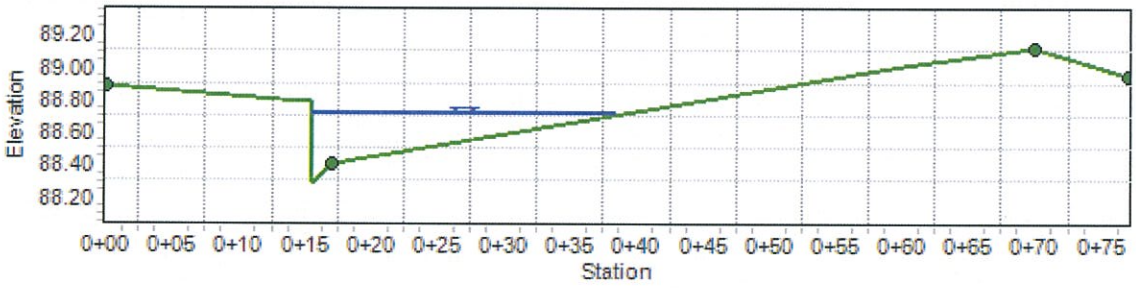
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Normal Depth	0.43	ft
Discharge	18.00	ft³/s

Cross Section Image



HS6

Worksheet for Grand Teton downstream 10 yr

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Discharge	18.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.89
0+15.00	88.79
0+15.50	88.79
0+15.50	88.28
0+17.00	88.41
0+60.00	89.01
0+70.00	89.12
0+75.00	89.00
0+77.00	88.95

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.89)	(0+17.00, 88.41)	0.013
(0+17.00, 88.41)	(0+70.00, 89.12)	0.017
(0+70.00, 89.12)	(0+77.00, 88.95)	0.035

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.43	ft
Elevation Range	88.28 to 89.12 ft	

H56

Worksheet for Grand Teton downstream 10 yr

Results

Flow Area		3.77	ft²
Wetted Perimeter		23.43	ft
Hydraulic Radius		0.16	ft
Top Width		22.99	ft
Normal Depth		0.43	ft
Critical Depth		0.55	ft
Critical Slope		0.00722	ft/ft
Velocity		4.77	ft/s
Velocity Head		0.35	ft
Specific Energy		0.78	ft
Froude Number		2.08	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.43	ft
Critical Depth	0.55	ft
Channel Slope	0.03300	ft/ft
Critical Slope	0.00722	ft/ft

HS6

Cross Section for Grand Teton down stream 100 yr Interim

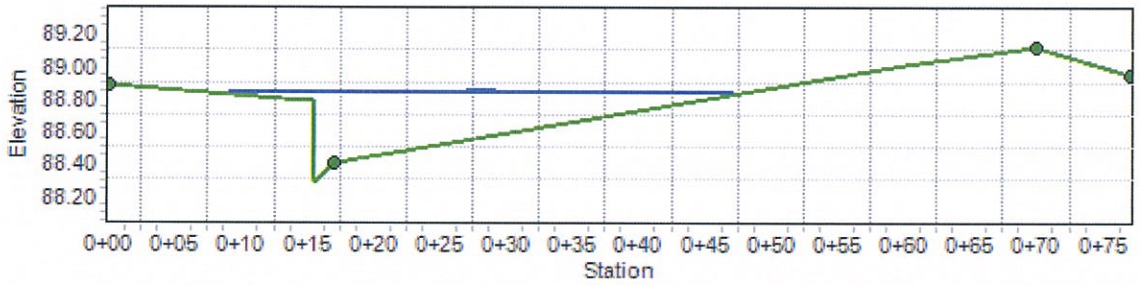
Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Normal Depth	0.55	ft
Discharge	39.00	ft³/s

Cross Section Image



H56

Worksheet for Grand Teton down stream 100 yr Interim

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.03300	ft/ft
Discharge	39.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00.00	88.89
0+15.00	88.79
0+15.50	88.79
0+15.50	88.28
0+17.00	88.41
0+60.00	89.01
0+70.00	89.12
0+75.00	89.00
0+77.00	88.95

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00.00, 88.89)	(0+17.00, 88.41)	0.013
(0+17.00, 88.41)	(0+70.00, 89.12)	0.017
(0+70.00, 89.12)	(0+77.00, 88.95)	0.035

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results

Normal Depth	0.55	ft
Elevation Range	88.28 to 89.12 ft	

H56

Worksheet for Grand Teton down stream 100 yr Interim

Results

Flow Area		7.19	ft²
Wetted Perimeter		38.61	ft
Hydraulic Radius		0.19	ft
Top Width		38.09	ft
Normal Depth		0.55	ft
Critical Depth		0.69	ft
Critical Slope		0.00622	ft/ft
Velocity		5.43	ft/s
Velocity Head		0.46	ft
Specific Energy		1.01	ft
Froude Number		2.20	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.55	ft
Critical Depth	0.69	ft
Channel Slope	0.03300	ft/ft
Critical Slope	0.00622	ft/ft

Cross Section for grouted riprap 1% slope

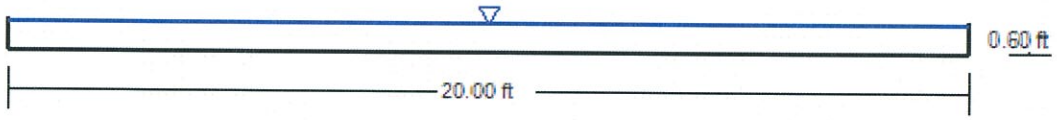
Project Description

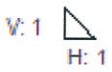
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.01000	ft/ft
Normal Depth	0.60	ft
Bottom Width	20.00	ft
Discharge	41.00	ft³/s

Cross Section Image





Worksheet for grouted riprap 1% slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.01000	ft/ft
Bottom Width	20.00	ft
Discharge	41.00	ft^3/s

Results

Normal Depth	0.60	ft
Flow Area	12.06	ft^2
Wetted Perimeter	21.21	ft
Hydraulic Radius	0.57	ft
Top Width	20.00	ft
Critical Depth	0.51	ft
Critical Slope	0.01756	ft/ft
Velocity	3.40	ft/s
Velocity Head	0.18	ft
Specific Energy	0.78	ft
Froude Number	0.77	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.60	ft
Critical Depth	0.51	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.01756	ft/ft

Cross Section for concrete lined 18% slope

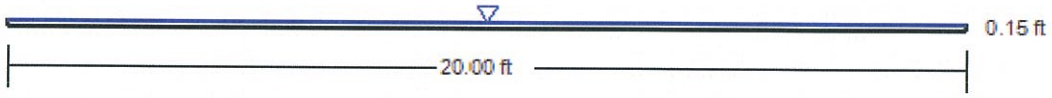
Project Description

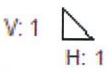
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.18000	ft/ft
Normal Depth	0.15	ft
Bottom Width	20.00	ft
Discharge	41.00	ft^3/s

Cross Section Image





Worksheet for concrete lined 18% slope

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.18000	ft/ft
Bottom Width	20.00	ft
Discharge	41.00	ft^3/s

Results

Normal Depth	0.15	ft
Flow Area	3.01	ft^2
Wetted Perimeter	20.30	ft
Hydraulic Radius	0.15	ft
Top Width	20.00	ft
Critical Depth	0.51	ft
Critical Slope	0.00330	ft/ft
Velocity	13.61	ft/s
Velocity Head	2.88	ft
Specific Energy	3.03	ft
Froude Number	6.18	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.15	ft
Critical Depth	0.51	ft
Channel Slope	0.18000	ft/ft
Critical Slope	0.00330	ft/ft

Pamela Pitcher

Subject: FW: Oxford Commons II - Unit 1

From: Steve Swanton [mailto:sswanton@LasVegasNevada.GOV]
Sent: Thursday, May 12, 2016 9:06 AM
To: Mark Bangan
Cc: Steve Gebeke
Subject: RE: Oxford Commons II - Unit 1

Mark,

I don't see how we would object, given that the wall exists, it is built to Cliff's Edge standards, the HOA will maintain the area in between and the tentative map shows the step as a common area. Not the greatest situation, since it is in the back between two pods and is something of a no man's land.

Steve Swanton
Senior Planner
Department of Planning
333 N. Rancho Drive, 3rd Floor
Las Vegas, Nevada 89106
Voice: (702) 229-4714 | Fax: (702) 474-7463

Planning Department

Your opinion is important! Click here to take a short survey.

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From: Mark Bangan [mailto:mark.bangan@lrneng.com]
Sent: Wednesday, May 11, 2016 8:41 AM
To: Steve Swanton
Subject: Oxford Commons II - Unit 1

Steve,

We received a comment from Albert Sung (see attached CLV response.pdf) item #6. They have a question about the 4' wide common element located along the east side of the property.

Our client would like to leave this common element since there is already a retaining wall built 4' off of the property line. They have agreed that their association would maintain the area in perpetuity.

Is planning ok with leaving the common element at 4' off of property line.

Regards,

Mark Bangan
Planning Department Manager
L. R. NELSON CONSULTING ENGINEERS, INC.
6765 WEST RUSSELL ROAD, SUITE 200

LAS VEGAS, NEVADA 89118
Phone: 702.798.7978 Fax: 702.451.2296

Sunshine W

From: Claro Perez <Claro.Perez@lrneng.com>
Sent: Thursday, May 19, 2016 1:46 PM
To: Albert Sung
Cc: Jon Hayslip; Tim S. Moreno; 'Sunshine W'; Pamela Pitcher
Subject: RE: DS4792 Oxford commons II - Unit 1 TDS

Hi albert,

Per our conversation today, you found the concrete channel design acceptable. You wanted DI#4 to be drawn more like a curb inlet Type CM on the plan (rectangular with grates at the gutter pan in lieu of the solid dark square). We will make these changes to the grading plan and proceed with next week submittal of the addendum. Thank you for all your help.

Claro

From: Albert Sung [mailto:YSung@LasVegasNevada.GOV]
Sent: Wednesday, May 18, 2016 5:51 PM
To: Claro Perez <Claro.Perez@lrneng.com>
Cc: Jon Hayslip <Jon.Hayslip@lrneng.com>
Subject: RE: DS4792 Oxford commons II - Unit 1 TDS

Hi Claro and Jon,

Please either one of you call me to discuss a final detail I want on the plan. Thanks.

Albert

From: Claro Perez [mailto:Claro.Perez@lrneng.com]
Sent: Wednesday, May 18, 2016 2:00 PM
To: Albert Sung
Cc: Jon Hayslip; Tim S. Moreno; Pamela Pitcher
Subject: DS4792 Oxford commons II - Unit 1 TDS

Hello Albert,

In response to Comment #11, we are proposing a concrete lined channel with variable length of 30' to 32'. The bottom 5' will be grouted rip-rap. Please see attached Grading Plan and Details for your review. We hope that you find the design acceptable. If you have any questions, please do not hesitate to call me or Jon. We would greatly appreciate your response soon as we plan on submitting the addendum this week. Thank you!

Best regards,

Claro Perez
Project Manager
L. R. NELSON CONSULTING ENGINEERS, INC.
6765 WEST RUSSELL ROAD, SUITE 200
LAS VEGAS, NEVADA 89118
Phone: 702.798.7978
Fax: 702.451.2296
Claro.Perez@lrneng.com

Drop Inlet Capacity Calculation (Sump)

1. Grate Inlet Calculations

d=	0.50	Gutter flow depth in ft
L=	3.00	Grate length in ft
W=	1.50	Grate width in ft
r=	0.60	Clear Opening Ratio of Grate
	1	Number of Grates
C=	0.50	Clogging factor
Curb?	1	yes=1 or no=0

Weir Flow

P= 4.5 ft — Wetted perimeter (incl. clogging) — P=2(L+CW) without curb; P=2CW+L with curb

Qw= 5 cfs — Qw=3.0Pd^1.5

Orifice Flow

A= 1.4 ft^2 — Grate Open Area (incl. Clogging) — A=C*L*W*r

Qo= 5 cfs — Qo=0.67A(2gd)^0.5

Qg= 5 cfs — Grate Inlet Capacity*
(Weir Flow)

2. Curb Opening Calculations

L=	5.00	Designed curb opening length in ft
h=	0.50	Curb opening Height
wg=	11.00	Lateral width of depression in ft
a=	2	Curb depression in inches

Weir Flow (d<=h+a/12)

Qw= 18 cfs — Qw=C2.30Ld^1.5 wo/curb depression; Qw=2.30(CL+1.8wg)d^1.5 w/curb depression

Orifice Flow (d>1.4h)

Qo= 6 cfs — Qo=0.67*C*L*h*(2gD)^0.5; D=d-(h/2)sinT (Inclined Throat)

Qc= 18 cfs — Curb Opening Capacity**
(Weir Flow)

3. Total DI Capacity

Qt= 23 cfs — **Total Drop Inlet Capacity** — Qt=Qg+Qc

Formulas from "Drainage of Highway Pavement", US Department of Transportation, March 1984

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: May 3, 2016
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **OXFORD COMMONS II – UNIT 1**			**COPIES TO:** Baughman & Turner, Inc.
Cross Streets:	SEC of Grand Teton Blvd. & Egan Crest Dr.			KB Homes
File Number:	F:\Depot\DSMemos\DS4792A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	126-13-501-022			CCRFCD
Zoning Action:	TMP-63583; WVR-63582 & WVR-63581			
FEMA Flood Zone	YES	NO	X	
Proposed Storm Drain	YES	NO	X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	4/20/2016	5/3/2016	See Comments Below	$400.00	441243: $400
			TOTAL FEES (LDDRS):	**$400.00**	-----

REMARKS:

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
X	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.

1. Provide a copy of the zoning/planning conditions associated with this site (**TMP-63583; WVR-63582 & WVR-63581**) with the next submittal to verify compliance with conditions. *Flood Control* will not issue conditional approval of the drainage study without the associated zoning/planning conditions (issued by the *City Council*). Any associated conditions of approval that revise the site drainage parameters will require that the drainage study be revised and resubmitted.

2. Sites with a grade difference of 2 feet above or below existing are required to have approval from the *City Planning and Development Department*. The engineer must submit copies of the grading plans and detail sheet with a letter justifying the grade difference to the *City Planning Department* (229-6301). The engineer must provide Planning approval with the next submittal.

3. It is understood that the master plan of *Cliff's Edge* (aka *Providence*) allowed the discharge from the subject site into the adjacent site to the east. However, that was a conceptual, planning and preliminary tool at a very early stage based on the natural terrain. The current situation is that the perimeter street (*Grand Teton Boulevard*) is fully developed and the elevation of the proposed site is high enough to gravity flow northerly into the street. There is no reason to drain into the adjacent property to the east.

   Please review and revise the onsite drainage to discharge at the main entrance driveway as well as the northeast corner of the proposed development.

4. **Figure 10 (Developed Drainage Basin Map)**: The flow values at "**CP3**" in *Grand Teton Boulevard* (Q_{10} = 8cfs, Q_{100} = 16cfs) are less than the flow values in onsite basin "**DEV5**" which discharge through the entrance driveway to *Grand Teton Boulevard* and combine at "**CP3**". This does not make sense. Review and revise all pertinent hydrologic data and all drainage basin maps accordingly.

5. **Detail I/11** shows the cross sections of *Formitch Court* and *Brook Rise Avenue* which are normal crown streets. However, the hydraulic calculations presented in the drainage study did not reflect normal crown sections. Review and revise all pertinent plans, details and calculations accordingly in the next submittal.

6. **Details G/11** and **H/11** show a 4'-wide common element between two walls which will be difficult to maintain. Consult with *City of Las Vegas Planning Department* whether this common element is necessary and may be eliminated.

7. Label "PRIVATE" clearly for all onsite streets on the grading plans.

8. Private streets must be public drainage easements. Provide a note on the grading plans "Note: All private streets are P.U.E., Public Sewer Easements and Public Drainage Easements to be Privately Maintained by the HOA."

9. Revise all drop inlets to Type "CM" or Neenah Pre-cast inlets. Contact Raul Cruz at 229-3224 or email at rsantiago@lasvegasnevada.gov for an AutoCAD detail to be included within the improvement plans if Type "CM" drop inlets are used. Note that the lengths of "CM" inlets are in the multiple of 2.5'. Revise all pertinent construction notes and callouts accordingly.

10. All drainage easements must be public drainage easements to be privately maintained and common lots to be labeled on the grading plans and to be dedicated as such in the final map.

11. The *City Council* of the *City of Las Vegas* recently adopted an amendment to Title 20 of the Municipal Code in which Section 20.10.030 requires all public drainage easements to be concrete lined. Revise all pertinent plans, details and construction notes accordingly.

12. The engineer must provide a table on the grading plans that shows a quantity estimate of all drainage improvements within Public Drainage Easements. All drainage improvements within Public Drainage Easements must be bonded and inspected.

13. The proposed wrought iron fence must utilize *City of Las Vegas* Standard Drawing 421B. Contact Raul Cruz at 229-3224 or rsantiago@lasvegasnevada.gov for the AutoCAD details (421 series) to be included with the improvement plans.

14. Add a note in all pertinent sheets for the construction of all storm drain drop inlets per a newly adopted USDCCA Drawing No. 421 (*Stormwater Quality Management Stamp and Sign Detail*).

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the *Nevada Division of Environmental Protection* a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

END OF REMARKS

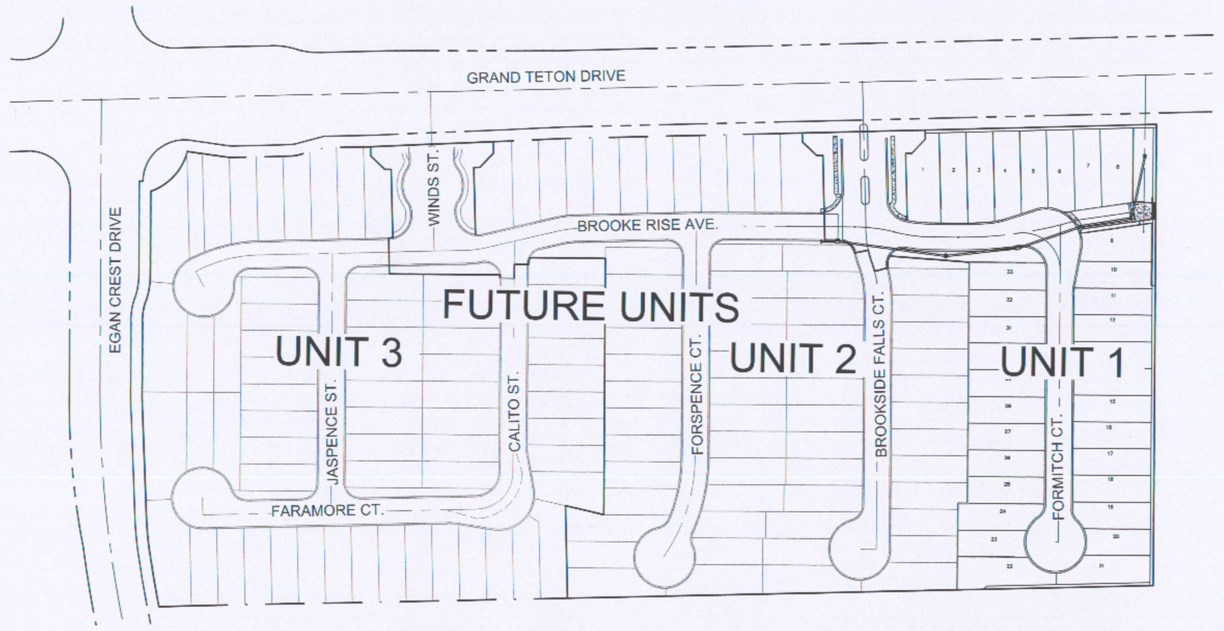
ays

T/R/S: T19S/R59E/13
AREA F-13

OXFORD COMMONS II
IMPROVEMENT PLANS
UNIT 1

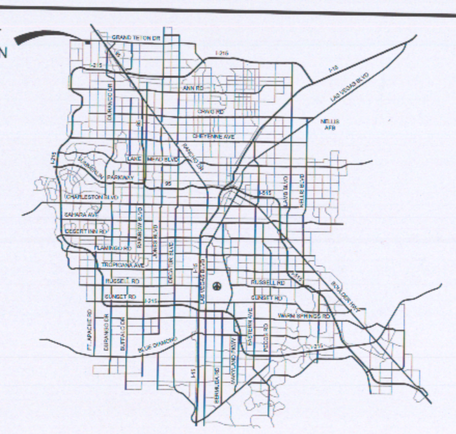
CITY OF LAS VEGAS
STATE OF NEVADA
APN #126-13-501-022
18.02 ACRES
UNIT 1 = 4.125 ACRES
33 UNITS

Sheet Index	
Sheet Number	Sheet Title
C1.01	COVER SHEET
C1.02	GENERAL NOTES
C4.01	GRADING 1
C4.02	GRADING 2
C5.01	UTILITY PLAN
C6.01	PLAN & PROFILES 1
C6.02	PLAN & PROFILES 2
C6.03	PLAN & PROFILES 3
C7.01	TRAFFIC PLAN
C9.01	DETAILS 1
C9.02	DETAILS 2



SITE MAP

SCALE: NTS



VICINITY MAP

SCALE: NTS

APPROVED FOR CONSTRUCTION

ALLEN PAVELKA, P.E. No. 9029
CITY OF LAS VEGAS CITY ENGINEER — DATE

APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHT-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND/OR SPECIFICATIONS, EXCEPT THOSE SPECIFICALLY LISTED UNDER DEVIATIONS FROM STANDARD. THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN DEVIATIONS FROM STANDARD IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA.

CHRIS KNIGHT, DIRECTOR OF BUILDING & SAFETY — DATE
THIS PLAN MEETS THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER. PROJECT No. _____ (SHEETS C1.01, C1.02, C5.01, C6.01, C6.02, C6.03) — DATE
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

CITY FIRE DEPARTMENT — DATE

NEVADA POWER d.b.a. NV ENERGY — DATE
NEVADA POWER d.b.a. NV ENERGY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICES TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER d.b.a. NV ENERGY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

CENTRAL TELEPHONE CO. d.b.a. CENTURYLINK — DATE
"THE AFFIXED CENTURYLINK APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS."

COX COMMUNICATIONS LAS VEGAS, INC. — DATE

SOUTHWEST GAS CORPORATION — DATE

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES FOR THE COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Call before you Dig — Call 811 — 1-800-227-2600
CALL BEFORE YOU DIG — 1-702-227-2929
FAST — Call before you UnderGround. — 1-702-432-5300

OWNER

KB HOME
5795 BADURA AVENUE, SUITE 180
PHONE: 702-266-8512
FAX: 702-266-8623

DEVELOPER

KB HOME
5795 BADURA AVENUE, SUITE 180
PHONE: 702-266-8512
FAX: 702-266-8623
CONTACT: MICHAEL GRAY
PHONE: 702-266-8451

ENGINEER

L.R. NELSON CONSULTING ENGINEERS, INC.
6765 WEST RUSSELL ROAD, SUITE 200
LAS VEGAS, NEVADA 89118-1811
CONTACT:
PHONE: (702)798-7978

SOILS REPORT

WRIGHT ENGINEERS
DATED: JANUARY 06, 2016
PROJECT NO. 152531

LEGAL DESCRIPTION

THE NORTH HALF (N ½) OF THE NORTH HALF (N ½) OF THE NORTHWEST QUARTER (NW¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.DM., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA

BASIS OF BEARINGS

NORTH 00° 36' 19" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW ¼) OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN FILE 123, PAGE 32 OF SURVEYS.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK STATION BLV99 13NE66
RIVET AND PLATE IN CONCRETE CYLINDER AT THE SW CORNER OF HUALAPAI AND GILCREASE

DESIGNED BY: CP, MH	DRAWN BY: TSM
JOB NUMBER: 1262-112-162	DATE: April 16
NO.	REVISION	DATE	APPR.
---	---	---	---

L. R. NELSON CONSULTING ENGINEERS, INC.
• STRUCTURAL
• CIVIL
• PLANNING
• SURVEY
6765 West Russell Road, Suite 200
Las Vegas, Nevada 89118
(702) 798-7978
(702) 451-2256 FAX

KB HOME

COVER SHEET
OXFORD COMMONS II
UNIT 1
CITY OF LAS VEGAS NEVADA

5/23/16

SHEET NUMBER
C1.01
OF 11 SHEETS
CLV# -

H:\Land Projects\1262112 - Oxford Commons\DWG\mprov\01-1262112- COVER.dwg (CLARO PEREZ) 5/23/2016 (1:05:45 PM)

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER AND OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 4500 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED-TYPE CURB.
8. AC PAVEMENT TO BE ONE-HALF INCH (½") ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS.
9. CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY OF LAS VEGAS SHALL BE REMOVED AND REPLACED PER STANDARD DRAWING 216.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF THE TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY THE (GEOTEK, INC. REPORT #12108-LV6, DATE, NOVEMBER 26, 2014) UPDATED BY ADDENDUM DATED MAY 27, 2015 APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWCUT LINES MAY BE ADJUSTED OR DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS ENGINEER IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATIONS.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE No. 625.380 AND CITY OF LAS VEGAS TITLE 18, APPENDIX D.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC., SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOWLINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.

WALL NOTES:

16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR THE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.
20. WHEN INSTALLING UNDERGROUND FACILITIES THAT REQUIRE UNDERGROUND LOCATING DEVICES SUCH AS MARKER BALLS, LOCATING RIBBON, ETC, THE CONTRACTOR SHALL PROVIDE WRITTEN DOCUMENTATION TO OFFSITE INSPECTION AND TESTING CERTIFYING THAT ALL DEVICES HAVE BEEN PLACED AND VERIFIED TO BE IN GOOD WORKING CONDITION PRIOR TO THE CONSTRUCTION OF ANY ROAD BASE.
21. ~~SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S) SHALL BE PROVIDED TO THE CITY AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION. THE MAP(S) SHALL INCLUDE THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES AND TRANSITION STRUCTURES, STORM DRAIN LATERALS AT THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY, AND STORM DRAIN ALIGNMENT, INCLUDING DEFLECTION POINTS. THE LOCATION SHALL BE DESCRIBED BY COORDINATES WHICH SHALL BE BASED ON THE OFFICIAL HORIZONTAL AND VERTICAL CONTROL NETWORKS OF THE CITY OF LAS VEGAS. FINAL LOCATION MAPS MUST BE SEALED AND CERTIFIED BY A NEVADA PROFESSIONAL LAND SURVEYOR TO HAVE POSITIONAL CERTAINTIES OF ±0.09 METERS (±0.3 FEET) HORIZONTALLY AND VERTICALLY. A SEPARATE ELECTRONIC COMMA DELIMITED FILE FOR THE SANITARY SEWER AND STORM DRAIN COORDINATES SHALL ALSO ACCOMPANY THE SANITARY SEWER AND STORM DRAIN FINAL LOCATION MAP(S).~~
    OR
    SANITARY SEWER AND STORM DRAIN FACILITIES SHOWN ON THESE PLANS SHALL BE USED TO MEET THE REQUIREMENTS OF NRS 455 AND SHALL SHOW AT A MINIMUM THE HORIZONTAL AND VERTICAL (INVERT) LOCATION OF PUBLIC SEWER MANHOLES, STORM DRAIN MANHOLES, STORM DRAIN LATERALS AT THE CONNECTION TO THE STORM DRAIN MAIN AND AT THE CONNECTION TO A DROP INLET, AND THE CONNECTION OF SEWER SERVICE LATERALS TO THE SEWER MAIN AND WHERE THE SEWER SERVICE LATERALS EXIT THE PUBLIC RIGHT-OF-WAY. ANY DEVIATIONS FROM THE INFORMATION SHOWN SHALL BE NOTED AND SUBMITTED AS A REVISION TO THE PLANS AND APPROVED PRIOR TO ACCEPTANCE OF FACILITY VIDEO INSPECTION.
22. CCTV VIDEO INSPECTION IS REQUIRED FOR ALL SEWER AND STORM DRAINS. THE CCTV VIDEO INSPECTIONS NEED TO BE PERFORMED PER THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS LATEST EDITION.
22. A SEPARATE BORING PERMIT IS REQUIRED FOR ALL BORING ACTIVITIES.

REVISED 02/03/15

CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORSEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BY IMMEDIATELY NOTIFIED FOR DIRECTION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.
3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OR FACILITIES AND/OR CAVING OF THE EXCAVATION.
4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.
6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITH THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED.

COMPACTION	HORIZONTAL	VERTICAL
A. PAVEMENT AREA SUBGRADE SEE SOILS REPORT	0.1±	+0.0' TO -0.1'
B. ENGINEERED FILL SEE SOILS REPORT	0.5±	+0.1 TO -0.1'

COMPACTION TESTING WILL BE PERFORMED BY THE OWNER AND HIS REPRESENTATIVE.

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSON CONTROL HAS BEEN ESTABLISHED
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOILS, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

DEVIATION FROM STANDARDS

NONE

CITY OF LAS VEGAS SEWER NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENT OF THE ABOVE SPECIFICATIONS.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION AS PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY ENGINEER.
3. CHISEL "S" OR "G" IN CURBS WHERE SEWER OR GAS LATERALS PASS UNDER THE CURB.
4. POLYVINYL (PVC) SEWER PIPE SHALL MEET ASTM D-3034 SDR 35 SPECIFICATIONS, INSTALLED WITH SAND BEDDING AND BACKFILL OF TYPE II AGGREGATE BASE.
5. ALL MANHOLES PAVED IN STREETS EIGHTY (80') FOOT R/W AND LARGER SHALL HAVE CONCRETE COLLARS. STREET LESS THAN EIGHTY (80') FOOT R/W WILL REQUIRE RETROFIT IF PAVING DOES NOT CONFORM TO CITY STANDARDS AT THE MANHOLE.
6. TEE SADDLES SHALL BE USED TO CONNECT SEWER LATERALS TO EXISTING MAIN LINES UP TO TWELVE INCH (12") DIAMETER. CONNECTIONS TO FIFTEEN INCH (15") OR LARGER MAINS SHALL REQUIRE SPECIAL PROCEDURES. IN LINE "Y" 'S SHALL BE USED ON LINES TWELVE INCHES (12") AND ABOVE.
7. WATER MAINS SHALL BE PROTECTED IN ACCORDANCE WITH LVVWD STANDARDS WHENEVER A SEWER MAIN CROSSES OVER A WATER MAIN OR THE SEWER IS LESS THAN EIGHTEEN INCHES (18") UNDER A WATER MAIN.
8. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF LAS VEGAS MUST BE STATE OF NEVADA CLASS "A" CONTRACTORS.
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTIONS PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PVC PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

CITY OF LAS VEGAS TRAFFIC NOTES

1. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.
2. THE STREET SIGN CONTRACTOR SHALL OBTAIN STREET NAMES AND BLOCK NUMBERING FROM THE PLANNING DEPARTMENT PRIOR TO CONSTRUCTION.
3. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS WHERE WARRANTED IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
4. WHEN A DESIGNATED "SAFE ROUTE TO SCHOOL" IS ENCROACHED UPON BY A CONSTRUCTION WORK ZONE AND PUBLIC WORKS STAFF IDENTIFIES A NEED FOR STUDENTS TO BE ASSISTED IN THE SAFE CROSSING THROUGH THAT WORK ZONE, THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A QUALIFIED "CROSSING GUARD". THE GUARD SHALL BE PRESENT FOR THE FULL DURATION OF TIME THAT CHILDREN ARE LIKELY TO BE PRESENT.
5. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL PERMANENT SIGNS SHOWN ON THE PLANS. ALL NEW TRAFFIC SIGNS SHALL BE FABRICATED WITH DIAMOND GRADE VIP CLASS 6 REFLECTIVE SHEETING OR APPROVED EQUAL. ALL NEW TRAFFIC SIGNS, EXCEPT STREET NAME AND SCHOOL SPEED LIMIT SIGNS, SHALL HAVE A 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE OVERLAY FILM; SCHOOL ZONE SIGNS SHALL HAVE 3M SERIES 1150 ANTI-GRAFFITI PROTECTIVE OVERLAY FILM. STREET NAMES SIGNS SHALL CONFORM IN THEIR ENTIRETY TO CURRENT CITY STANDARDS. ALL OTHER SIGNS SHALL BE STANDARD SIZE UNLESS OTHERWISE SPECIFIED ON THE PLANS. ALL SIGN POSTS SHALL BE INSTALLED IN ACCORDANCE WITH THE CURRENT CITY STANDARD.
7. WHEN A PROPOSED STREET LIGHT STANDARD IS LOCATED WITHIN FIVE (5') FEET OF ANY PROPOSED SIGN SHOWN ON THE PLANS TO BE MOUNTED ON A SIGNPOST, THE SIGN SHALL BE MOUNTED ON THE STREETLIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.
8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FINAL POSITION PRIOR TO ALLOWING ANY PUBLIC TRAFFIC ONTO THE PORTIONS OF THE ROAD(S) BEING IMPROVED HERE UNDER, REGARDLESS OF THE STATUS OF COMPLETION OF PAVING OR OTHER OFF-SITE IMPROVEMENTS CALLED FOR BY THESE PLANS.
9. STREET SIGNS AND STOPS SIGNS SHALL BE INSTALLED PER CITY STANDARD SPECIFICATIONS FOR PLACEMENT OF STREET NAME SIGNS.
10. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TRAFFIC CONTROL DEVICES AND FLAGGERS TO INSURE THE SAFETY OF THE PUBLIC IN OR AROUND THE WORK AREA. THE CONTRACTOR SHALL HAVE A CERTIFIED ATSSA TRAFFIC CONTROL TECHNICIAN OR IMSA WORK ZONE SAFETY SPECIALIST SET UP, MAINTAIN AND/OR REMOVE ALL TRAFFIC CONTROL DEVICES IN THE CITY OF LAS VEGAS RIGHT OF WAY.
11. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE EXPEDITED TO COMPLETION SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING CITIZENS AREA TRANSIT (C.A.T.) IF THE CONSTRUCTION INTERRUPTS OR RELOCATES A BUS STOP OR HAS AN ADVERSE EFFECT ON BUS SERVICE ON THAT STREET TO ARRANGE FOR TEMPORARY RELOCATION OF STOP.
13. GUARDS SHALL BE OBTAINED BY CONTACTING THE METROPOLITAN POLICE DEPARTMENT SPECIAL EVENTS UNIT (PHONE # 828-3442) WHO WILL PROVIDE OFFICERS PROPERLY TRAINED IN TRAFFIC CONTROL. FEES FOR THE USE OF THESE OFFICERS SHALL BE SET BY METRO AND WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR ALL ARRANGEMENTS WITH METRO.
14. ANY WORK WITHIN 300' OF A SIGNALIZED INTERSECTION WILL BE NIGHT WORK, UNLESS OTHERWISE DIRECTED BY THE CITY OF LAS VEGAS TRAFFIC ENGINEER.
15. THE CONTRACTOR SHALL CONTACT THE TRAFFIC ENGINEERING DIVISION (TRANSPORTATION SECTION) THROUGH THE PROJECT'S OFFSITE INSPECTOR PRIOR TO INITIATING PAVING TO RECEIVE DIRECTION FOR ANY PERMANENT OR TEMPORARY MODIFICATIONS TO THE APPROVED DRAWINGS REGARDING FINAL PAVEMENT TRANSITIONS, MARKINGS AND SIGNING THAT ARE REQUIRED TO MATCH ADJACENT ROADWAY SEGMENTS. THE CONTRACTOR SHALL PROVIDE A DRAWING FOR APPROVAL BY THE TRAFFIC ENGINEERING DIVISION DEPICTING ANY ADJUSTMENTS TO THE FINAL PAVEMENT MARKINGS AND SIGNAGE, WHICH MAY INCLUDE OMITTING, ADDING OR MODIFYING PAVEMENT MARKINGS AND TRAFFIC CONTROL SIGNS SUCH THAT ADEQUATE TRANSITIONS AND LANE TERMINATIONS BETWEEN ADJACENT ROADWAY SEGMENTS ARE CONSTRUCTED.

CITY OF LAS VEGAS STREET LIGHT NOTES

1. ALL STREET LIGHTING INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE STREET LIGHTING PLANS, THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA", LATEST REVISION, AND ANY ADOPTED SPECIAL AREA STANDARD.
2. NO DEVIATION OF STREETLIGHT, PULL BOX, CONDUITS (ETC.) LOCATIONS SHALL BE PERMITTED WITHOUT WRITTEN APPROVAL OF TRAFFIC ENGINEERING AND THE CITY ENGINEER.
3. ALL EXISTING STREET LIGHTING SHALL REMAIN OPERATIONAL DURING CONSTRUCTION.
4. ALL STREET LIGHTING CONDUITS STUB SHALL AT LEAST ONE GREEN #8 THW WIRE INSTALLED, AS TRACER WIRE. WHEN "EMPTY" CONDUIT IS COMPLETELY INSTALLED FROM PB TO PB, IT SHALL HAVE MINIMUM OF 2 #4 AND 1 #8 THW WIRE WITH THE ENDS TAPED OR "SAFE OFF" PRIOR TO FINAL INSPECTION.
5. ANY STRUCTURE SUCH AS BLOCK WALLS, CHAIN LINK FENCES, RETAINING WALLS, ETC., SHALL LEAVE A MINIMUM CLEARANCE IN ACCORDANCE WITH THE USD No. 320A.
6. AS-BUILT DRAWINGS SHALL BE SUPPLIED TO THE TEFO PRIOR TO ANY PRE-FINAL INSPECTION. THE AS-BUILT DRAWING NEEDS TO BE STAMPED AS-BUILT AND SIGNED BY THE PREPARER.
7. SERVICE POINT SHALL BE COORDINATED WITH NV ENERGY COMPANY, AND WHEREVER POSSIBLE, BE LOCATED NEAR THE CENTER OF THE CIRCUIT. SERVICE POINTS SHALL BE SHOWN ON THE CIVIL PLANS.
8. IT SHALL BE ASSUMED THAT IN THE ABSENCE OF AN EXISTING, WORKABLE CIRCUIT TO ATTACH TO, ALL INSTALLATIONS SHALL REQUIRE A NEW SERVICE FOR OPERATION OF THE CIRCUIT.
9. WHEREVER THERE IS AN OVERHEAD UTILITY THAT MAY CONFLICT WITH THE INSTALLATION OF STREET LIGHTING CIRCUITS AND/OR POLES, THESE CONFLICTS MUST BE RESOLVED BETWEEN THE DEVELOPER AND THE UTILITIES INVOLVED, AT NO EXPENSE TO THE CITY OF LAS VEGAS, BEFORE STREETLIGHT BASE ARE INSTALLED.
10. THE CONTRACTOR SHALL FURNISH COMPLETE SERVICE TO TRANSFORMERS AND CONTROL SYSTEMS IF REQUIRED ON PLANS.
11. THE DEVELOPER/OWNER WILL BE REQUIRED TO SUPPLY POWER TO ALL NEW PUBLIC STREET LIGHTS INSTALLED UNDER THIS DESIGN PRIOR TO BOND RELEASE OR PROJECT COMPLETION. THE DEVELOPER/OWNER WILL BE RESPONSIBLE FOR ALL ITEMS ASSOCIATED WITH THE INSTALLATION, CONSTRUCTION, ENERGIZING, MAINTENANCE AND OPERATIONAL COST OF SAID STREET LIGHTS PRIOR TO PROJECT COMPLETION. REFER TO THE PLAN OF ANY NEW SERVICE REQUIREMENTS. THE TRANSFER OF OWNERSHIP FROM THE DEVELOPER/OWNER TO THE CITY OF LAS VEGAS FOR ALL NEW PUBLIC STREET LIGHT/S AND/OR SERVICE/S INSTALLED UNDER THIS PLAN DESIGN WILL BE IN CONJUNCTION WITH THIS PROJECT COMPLETION. COORDINATE ALL MAINTENANCE AND OPERATIONAL TRANSFERS WITH THE CITY OF LAS VEGAS TRAFFIC ENGINEERING DEPARTMENT (TEFO) AT (702) 229-6331.

STORM WATER POLLUTION PREVENTION PLAN (S.W.P.P.P.) NOTES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATE IN, THE PUBLIC RIGHTS OF WAYS OF THE CITY OF LAS VEGAS AS A RESULT OF CONSTRUCTION PROJECT. SUCH MATERIALS SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN THE CITY OF LAS VEGAS AND THE LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES MANUAL.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REFER TO NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.5.
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT AREA EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS AND ALL BMPs WEEKLY, AND WITHIN 24 HOURS AFTER ANY ACTUAL RAIN EVENT OF 0.5 INCHES OR MORE. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.
5. ACCUMULATED SEDIMENT IN BMPs SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT, WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.

LAS VEGAS FIRE AND RESCUE GENERAL NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6325 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. AUTHORIZED FIRE HYDRANTS ARE AS FOLLOWS:
   - KENNEDY - GUARDIAN MODELS K81A AND K81D
   - MUELLER - SUPER CENTURION 250, MODEL A-423
   - CLOW - MEDALLION MODEL F-2546LVD
   - U.S.PIPE - METROFLOW/M-03
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONSTRUCTION MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FROM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. **[IFC 105.7.12]**
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. **[IFC 3310, 3312]**
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. **[IFC 507.5.7.3]**
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TEST WITH PRIOR FIRE PREVENTION APPROVAL. **[IFC 108.3]**
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. **[IFC 507.2.1, NFPA 24]**
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. **[IFC 507]**
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. **[IFC 507.5.7.1]**
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY THE LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. **[IFC 507]**
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: **[IFC C102]**
    - RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
    - COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. **[IFC C102.8]**
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. **[IFC C102.12]**
15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. **[IFC C102.4]**
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. **[IFC C102.7]**
17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. **[IFC C102.6]**
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. SECTIONAL CONTROL VALVE SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS CAN BE OUT OF SERVICE DUE TO A BREAK IN A WATER MAIN. **[IFC C104]**
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. **[IFC 503.2.3]**
20. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12%. ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT TO THE STRUCTURES GRADIENT SHALL NOT EXCEED 6%. **[IFC 503.2.7, 503.2.8]**
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. **[IFC 503.2.4]**
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13 FT 6 INS. **[IFC 503.2.1]**
23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 40 FT FLOW LINE TO FLOW LINE WITH PARALLEL PARKING PERMITTED ON BOTH SIDES. NOT LESS THAN 32 FT WIDE, FLOW-LINE TO FLOW-LINE, WHERE PARKING IS PERMITTED ONLY ON ONE SIDE OF THE FIRE APPARATUS ACCESS ROAD. NOT LESS THAN 24 FT WIDE, FLOW-LINE TO FLOW-LINE, WHERE NO PARKING IS PERMITTED ON EITHER SIDE. FIRE LANES THROUGH PARKING LOTS SHALL BE NOT LESS THAN 24 FT. **[IFC 503.2.1.1]**
24. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. THIS DISTANCE COULD BE INCREASED TO 250 FT IF THE BUILDING IS SPRINKLERED. **[IFC 503.1.1]**
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 100 OR MORE DWELLING UNITS, ROAD(S) WITH DEAD-ENDS OR WITH A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. COMMERCIAL AND INDUSTRIAL DEVELOPMENTS WHERE BUILDINGS EXCEED 2 STORIES OR 30 FEET IN HEIGHT, OR EXCEEDING 62,000 SQUARE FEET IN AREA. **[IFC 503.1.2]**
26. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. **[IFC 503.2.5]**
27. ALL FIRES APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT (IF NO CURB IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. **[IFC 503.3]**
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. SAID SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH **IFC 503.6** AND **IFC APPENDIX M.**

LAS VEGAS VALLEY WATER DISTRICT STANDARD NOTES

LVVWD PROJECT NO. XXXXXX

1. NO WORK SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE LVVWD. FOLLOWING WATER PLAN APPROVAL, NOTICE SHALL BE GIVEN TO THE LVVWD COMMUNICATION SUPPORT CENTER (258-7171) TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. FOR FUTURE INSPECTIONS, NOTICE MUST BE GIVEN BY 2:00 P.M. THE BUSINESS DAY PRIOR TO THE REQUESTED LVVWD INSPECTION. **WHEN REQUESTING INSPECTIONS, PLEASE REFER TO THE PROJECT # IDENTIFED ABOVE.**
2. ALL WORK SHALL CONFORM TO LVVWD STANDARD PLATES, DRAWINGS, AND SPECIFICATIONS, AND TO THE 2010 EDITION OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS). **THE LATEST EDITION OF UDACS SHALL SUPERSEDE ANY CONFLICTS CONTAINED IN THE APPROVED DRAWINGS AND/OR SPECIFICATIONS.**
3. ALL WORK, EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2 ABOVE, SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT DRAFT OR EDITION OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENT, CLARK COUNTY AREA.
4. A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.
5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVWD APPROVED SERVICE SADDLES.
6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
7. ALL VALVES SHALL BE LOCATED OUTSIDE DRIVEWAYS, VALLEY AND CURB GUTTERS.
8. ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE **2010** EDITION OF THE UDACS.
9. ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED, AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LVVWD DISTRIBUTION SYSTEM.
10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES, TELEPHONE 258-3152 OR 258-3802, TWO (2) WORKING DAYS PRIOR TO METER PICKUP.
11. ANY INTERRUPTION OF SERVICE MUST BE PERFORMED IN ACCORDANCE WITH UDACS SECTION 3.14.01, AND APPROVED BY THE LVVWD INSPECTION DIVISION PRIOR TO SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.
12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE AS LISTED ON THE LVVWD PRE-APPROVED MATERIALS AND MANUFACTURER'S LISTING FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.
13. TELEPHONE "CALL BEFORE YOU DIG" AT "811" OR 1-800-227-2600.
14. THE INSTALLATION OF LAS VEGAS VALLEY WATER DISTRICT (LVVWD) MUNICIPAL WATER FACILITIES WITHIN ALL STREETS IS ASSUMED TO BE IN COMPLIANCE WITH THE UNIFORM STANDARDS, INCLUDING THE PLACEMENT OF ASPHALT PAVING STREET SURFACES. ANY REPAIR WORK DONE BY THE LVVWD TO THE MUNICIPAL WATER FACILITIES WILL INCLUDE THE PLACEMENT OF ANY APPROPRIATELY SIZED ASPHALT REPAIR PATCH ON STREET SURFACE.

ANY DECORATIVE PAVING SURFACE WITH IN THE STREET IS RESPONSIBILITY OF THE OWNER'S ASSOCIATION, OR THE INDIVIDUAL PROPERTY OWNERS IF NO OWNER'S ASSOCIATION IS IN EXISTENCE, OR THE AGENCY HAVING JURISDICTION. DECORATIVE SURFACE MATERIALS PLACED WITHIN THE TEN FOOT EASEMENT ABUTTING A PUBLIC OR PRIVATE STREET, IF DISTURBED BY THE LVVWD DURING THE REPAIR OR OPERATION OF ITS FACILITIES, WILL BE REPLACED BY THE LVVWD WITH AN APPROPRIATELY SIZED PLAIN FINISH CONCRETE PATCH. THE LVVWD WILL NOT RESTORE, AND WILL NOT RESPONSIBLE FOR THE RESTORATION OF, ANY DECORATIVE PAVING SURFACE WITHIN THE STREET. THE LVVWD WILL NOT ATTEMPT TO MATCH COLOR FINISH OF ADJACENT MATERIALS.

ESTIMATED QUANTITIES

ROADWAY

DESCRIPTION	PUBLIC	PRIVATE
2" AC	0 SY	4164 SY
TYPE II GRAVEL	0 CY	462 CY
CURB AND GUTTER (24")	0 LF	2050 LF
CONCRETE VALLEY GUTTER	0 SF	428 SF
4" CONCRETE SIDEWALK	0 SF	1156 SF
RESIDENTIAL DRIVEWAY	0 SF	3960 SF
SURVEY MONUMENTS	0 EA	14 EA
ADA RAMPS W/ TRUNCATED DOMES	0 EA	2 EA
EXCAVATION AND EMBANKMENT	0 CY	9619 CY

TRAFFIC

DESCRIPTION	PUBLIC	PRIVATE
INSTALL RED PAINTED CURB WITH "NO PARKING FIRE LANE" TEXT	0 LF	480 LF
INSTALL D-3 STREET NAME SIGNS	0 EA	6 EA
INSTALL CLIFF'S EDGE 100W HPS STREETLIGHT	0 EA	5 EA
INSTALL 30" STOP SIGN (R1-1)	0 EA	1 EA
INSTALL "NO PARKING BEYOND THIS POINT" SIGN (R7-96)	0 EA	1 EA
BLUE REFLECTIVE PAVEMENT MARKERS	0 EA	3 EA
INSTALL 200 AMP SERVICE PEDESTAL	0 EA	1 EA
INSTALL 1-1/4" STREETLIGHT CONDUIT	0 LF	615 LF
INSTALL PULL BOX	0 EA	1 EA

DRAINAGE ITEMS

DESCRIPTION	PUBLIC	PRIVATE
18" CLASS III RCP SD	499 LF	LF
TYPE CM DROP INLET (10' DEEP)	3 EA	EA
NDOT TYPE 2 DROP INLET	2 EA	EA
CONCRETE CHANNEL	670 SF	SF
MANHOLE	1 EA	EA

WATER

DESCRIPTION	PUBLIC	PRIVATE
6" C-900 PVC	117 LF	LF
8" C-900 PVC	1203 LF	LF
2" TYPE K COPPER (DOMESTIC)	633 LF	LF
2" TYPE K COPPER (IRRIGATION)	30 LF	LF
INSTALL 8" GATE VALVE PER UDACS PLT No. 30 & 39	3 EA	EA
INSTALL FH ASSEMBLY PER UDACS PLT No. 39 & 40	3 EA	EA
INSTALL 12" X 8" MJ TAPPING SLEEVE WITH 8" TAPPING VALVE PER UDACS PLT No. 35	1 EA	EA
INSTALL 3/4" WATER METER (DOMESTIC) PER UDACS PLT No. 4	33 EA	EA
INSTALL 3/4" WATER METER (IRRIGATION) PER UDACS PLT No. 4	1 EA	EA
INSTALL 1" RPPA (IRRIGATION) PER UDACS PLT No. 8	1 EA	EA
INSTALL 6" CAP AND 2" BLOWOFF ASSEMBLY	5 EA	EA
INSTALL 8" X 8" TEE PER UDACS PLT No. 31	5 EA	EA
INSTALL 8" - 90° BEND WITH THRUST BLOCK	1 EA	EA
INSTALL 8" - 45° BEND WITH THRUST BLOCK	2 EA	EA
INSTALL 8" - CROSS WITH THRUST BLOCK	0 EA	EA
INSTALL 8" X 6" REDUCER PER UDACS PLT No. 30	2 EA	EA

SEWER

DESCRIPTION	PUBLIC	PRIVATE
48" MANHOLE PER STD. DWG. SD1-A AND 1B. > 6'	5 EA	EA
48" MANHOLE PER STD. DWG. SD1-A AND 1B. < 6'	2 EA	EA
8" SDR-35 PVC SANITARY SEWER MAIN PER STD DWG SD-14 & SD-15	816 LF	LF
8" C900 PVC SANITARY SEWER MAIN PER STD DWG SD-14 & SD-15	95 LF	LF
4" SDR-35 PVC SANITARY SEWER LATERAL PER STD DWG SD-22 & SEC's 2.219 & 2.2.20	845 LF	LF
4" C900 PVC SANITARY SEWER LATERAL PER STD DWG SD-22 & SEC's 2.219 & 2.2.20	60 LF	LF

CONTRACTOR QUANTITIES NOTE:

1. QUANTITIES SHOWN ARE APPROXIMATIONS BASED ON BOND ESTIMATE CALCULATIONS. THE CONTRACTOR IS RESPONSIBLE FOR CALCULATING THE EXACT QUANTITIES NECESSARY TO CONSTRUCT THE PROJECT BASED ON THE IMPROVEMENT PLANS PROVIDED FOR BID PURPOSES. CONTRACTOR SHALL NOTIFY THE CLIENT OR THE RESPONSIBLE PERSON IN CHARGE PRIOR TO SUBMITTAL OF BID FOR CLARIFICATION ON ANY POSSIBLE DISCREPANCIES WITHIN THE PROVIDED IMPROVEMENT PLANS. CHANGE ORDERS PLACED DURING CONSTRUCTION THAT WERE NOT SUBMITTED FOR CLARIFICATION AND WERE BASED SOLELY ON CONTRACTOR'S ASSUMPTION WILL NOT BE AWARDED, AND SHALL BE THE CONTRACTORS FINANCIAL RESPONSIBILITY TO CORRECT IN THE FIELD.

ABBREVIATIONS

AC	ASPHALT CONCRETE	GM	GAS METER
BCR	BACK OF CURB RETURN	GR	DRAIN GRATE
BFE	BASE FLOOD ELEVATION	GV	GATE VALVE
BLDG	BUILDING	H	HEIGHT
BO	BLOW OFF	HP	HIGH POINT
BSW	BACK OF SIDEWALK	INV	INVERT
C or CL	CENTERLINE	IRR	IRRIGATION
CCAUSD	CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS	L	LENGTH
CO	CLEANOUT	LF	LINEAR FEET
CONC	CONCRETE	LP	LOW POINT
CONT	CONTINUE	LS	LANDSCAPE
DIA	DIAMETER	LVVWD	LAS VEGAS VALLEY WATER DISTRICT
DI	DROP INLET	MAX	MAXIMUM
DIP	DUCTILE IRON PIPE	MH	MANHOLE
DOM	DOMESTIC	MIN	MINIMUM
EA	EACH	MOD	MODIFIED
EG	EXISTING GROUND	MUE	MUNICIPAL UTILITY EASEMENT
EOP or EP	EDGE OF PAVEMENT	NTS	NOT TO SCALE
EL or ELEV	ELEVATION	No. or #	NUMBER
EX	EXISTING	OC	ON CENTER
FC or FOC	FACE OF CURB	OFF	OFFSET
FF	FINISH FLOOR	PC	POINT OF CURVATION
FG	FINISH GRADE	PCC	POINT OF COMPOUND CURVATION
FH or HYD	FIRE HYDRANT	POC	POINT OF CONNECTION
FL	FLOW LINE	P or PL	PROPERTY LINE
FO	FIBER OPTIC	PP	POWER POLE
FS	FINISH SURFACE	PT	POINT OF TANGENCY
G	GAS	PVC	POLYVINYL CHLORIDE PIPE
GB	GRADE BREAK		
GF	GARAGE FINISH FLOOR		

RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT-OF-WAY
SW	SIDEWALK
S	SLOPE
SHT	SHEET
STA	STATION
SD	STORM DRAIN
SNWA	SOUTHERN NEVADA WATER AUTHORITY
SS or SWR	SANITARY SEWER
T or TEL	TELEPHONE
TB	TOP OF BOX
TBC or TC	TOP BACK OF CURB
TE	TRASH ENCLOSURE
TF	TOP OF FOOTING
TOP	TOP OF PIPE
TRW	TOP OF RETAINING WALL
TSW	TOP OF SIDEWALK
TYP	TYPICAL
UDACS	UNIFORM DESIGN & CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS
VG	VALLEY GUTTER
UP	UTILITY POLE
W/	WITH
W or WTR	WATER
WM	WATER METER

LEGEND

- EXISTING GRADE ELEVATION
- PROPOSED GRADE ELEVATION
- EXISTING GRADE SLOPE
- PROPOSED GRADE SLOPE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED GRADE BREAK
- PROPOSED SCARP
- PROPOSED SWALE
- PROPOSED LOT LINE
- PROPOSED RETAINING WALL
- PROPOSED RIGHT-OF-WAY
- CENTERLINE OF ROAD
- PROPOSED CURB & GUTTER
- PROPOSED SIDEWALK
- SAWCUT LINE
- XX.XX LF EX. X" PVC (PUBLIC) SS @ X.XX% — EXISTING SANITARY SEWER
- SANITARY SEWER CONSTRUCTION NOTE
- XX.XX LF X" PVC (PUBLIC) SS @ X.XX% — PROPOSED SANITARY SEWER
- XX.XX LF EX. X" PVC (PUBLIC) W — EXISTING WATER MAIN
- WATER CONSTRUCTION NOTE
- XX.XX LF X" PVC (PUBLIC) W — PROPOSED WATER MAIN
- EX. X" SD (HTE#XX-XXXXX) — EXISTING STORM DRAIN
- STORM DRAIN CONSTRUCTION NOTE
- XX.XX LF X" CLASS III RCP @ X.XX% — PROPOSED STORM DRAIN
- EXISTING DROP INLET
- PROPOSED DROP INLET
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- RAISED BLUE REFLECTIVE MARKER
- EXISTING GATE VALVE
- PROPOSED GATE VALVE
- PROPOSED SEWER LATERAL
- PROPOSED CLEANOUT
- PROPOSED WATER LATERAL AND METER
- BWV — BACK WATER VALVE
- GRADING CONSTRUCTION NOTE
- TRAFFIC & FIRE CONSTRUCTION NOTE
- EXISTING STREETLIGHT
- PROPOSED STREETLIGHT
- PROPOSED STREETLIGHT CONDUIT
- PROPOSED SERVICE PEDESTAL
- EXISTING SIGN
- PROPOSED SIGN

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICE MANAGER DATE
PROJECT NO XXXXXX

LVVWD APPROVED FIRE FLOW X,XXX GPM AT 20 PSI RESIDUAL

DISCLAIMER NOTE

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DESIGNED BY: CP, MH	DRAWN BY: CP, MH	CHKD BY: TSM
JOB NUMBER: 1262-112-162	DATE: April 16	
NO.	REVISION	DATE APPL

L. R. NELSON CONSULTING ENGINEERS, INC.
6765 West Russell Road, Suite 200
Las Vegas, Nevada 89118
(702) 798-7978
(702) 451-2296 FAX
•STRUCTURAL •CIVIL •PLANNING •SURVEY

KBHOME

GENERAL NOTES
OXFORD COMMONS II UNIT 1

CITY OF LAS VEGAS NEVADA

SHEET NUMBER C1.02 OF 11 SHEETS
CLV# -

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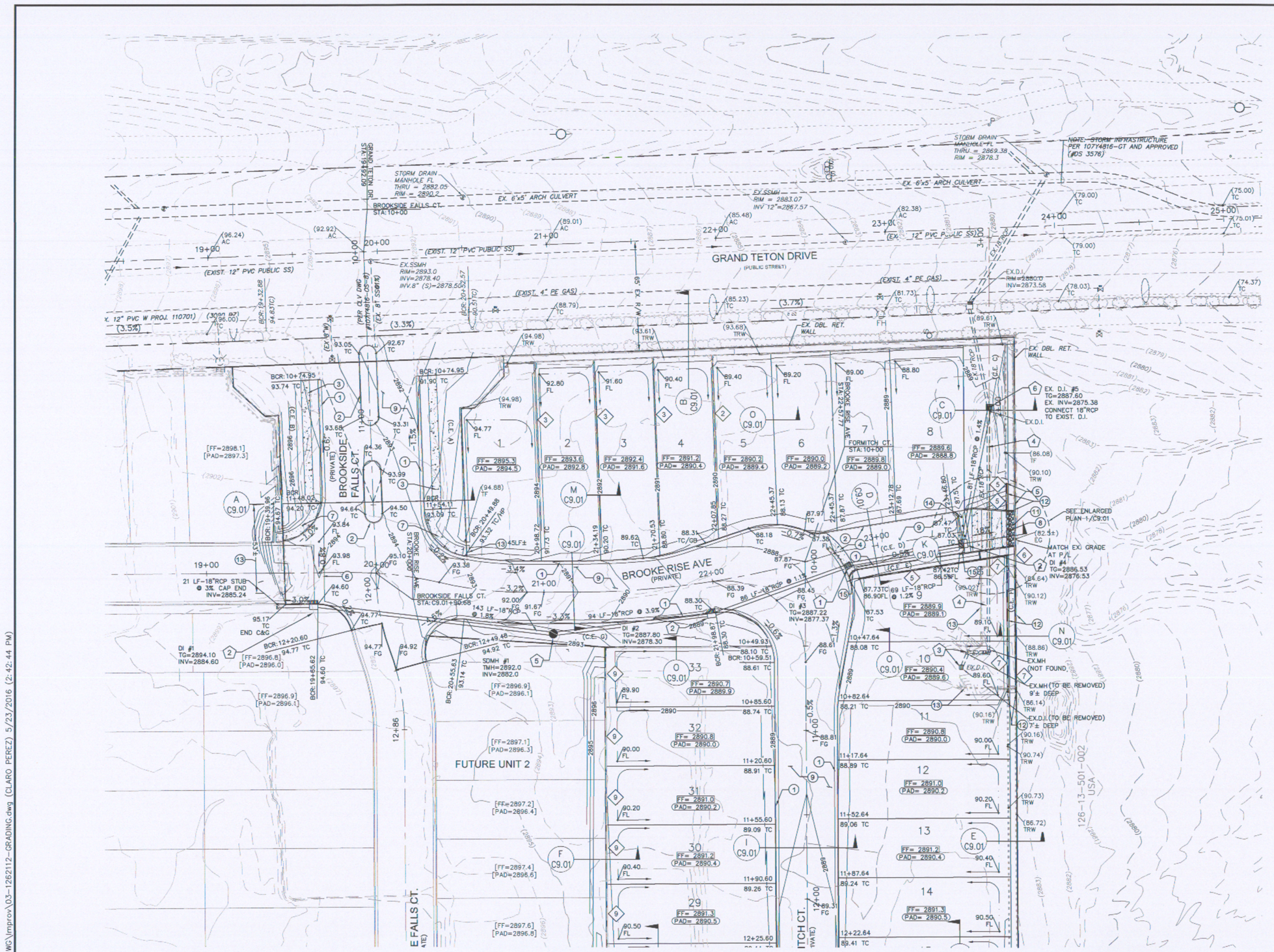

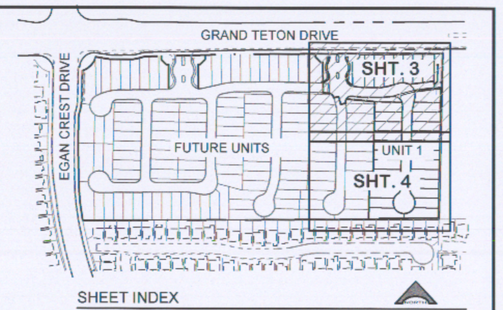

SHEET INDEX

GRADING CONSTRUCTION NOTES

1. CONSTRUCT "L" TYPE CURB & GUTTER PER CCAUSD #216
2. CONSTRUCT A-CURB PER CCAUSD#219
3. CONSTRUCT 5' CONCRETE SIDEWALK PER CCAUSD #234
4. CONSTRUCT DRIVEWAY APRON PER CCAUSD #227.S1
5. CONNECT TO EXIST. RETAINING WALL
6. CONSTRUCT 8' CROSS GUTTER PER CCAUSD #228
7. CONSTRUCT SIDEWALK RAMPS WITH ARMOR TILE TRUNCATED DOMES OR EQUIVALENT PER CCAUSD NO. 235 (CASE III). A & B = 6'
8. INSTALL 6' WROUGHT IRON FENCE PER CLV STD DWG. 421B. SEE ELEVATION VIEW J/C9.01
9. CONSTRUCT 2" AC PAVEMENT WITH 4" TYPE II AGGREGATE BASE
10. CONSTRUCT RESIDENTIAL DRIVEWAYS PER CCAUSD #223
11. INSTALL GROUTED RIP-RAP D50=12" THK=48"
12. CONSTRUCT RETAINING WALL AND CONNECT TO EXIST., SEE STRUCTURAL PLANS
13. DEMOLISH EX. CMU WALL
14. INSTALL 4"DIA. CONC. FILLED BOLLARDS @ 6' O.C., SEE DETAIL L/C9.01
15. TRANSITION CURB HEIGHT FROM 6" TO 10".

STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT NDOT TYPE 2 DROP INLET WITH SINGLE 2'X2' GRATE. CONFORM WITH USDCCA DRAWING NO.421
2. CONSTRUCT TYPE-CM CURB INLET, L=5' SEE DETAIL ON SHEET C9.02. CONFORM WITH USDCCA DRAWING NO.421
3. REMOVE EXISTING MH AND DROP INLET
4. REMOVE EXISTING 18"RCP
5. CONSTRUCT CCAUSD #403 TYPE 1 MANHOLE
6. EXIST. D.I. BOX TO REMAIN. ADJUST RIM TO ELEVATION SHOWN AND INSTALL LID AND 2'X2' GRATE. CONFORM WITH USDCCA DRAWING NO.421

RETAINING WALL TABLE

NUMBER OF COURSES	RETAINING WALL HEIGHT
2	1.0' – 1.4'
3	1.4' – 2.0'
4	2.0' – 2.7'
5	2.7' – 3.3'
6	3.3' – 4.0'
7	4.0' – 5.3'
8	5.3' – 6.0'
9	6.0' – 6.7'

NOTE: ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS AND PUBLIC UTILITY EASEMENTS TO BE PRIVATELY MAINTAINED BY THE H.O.A.

LEGAL DESCRIPTION

THE NORTH HALF (N ½) OF THE NORTH HALF (N ½) OF THE NORTHWEST QUARTER (NW¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.DM., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA

BASIS OF BEARINGS

NORTH 00° 36' 19" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW ¼) OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.DM., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN FILE 123, PAGE 32 OF SURVEYS.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK STATION BLV99 13NE6
RIVET AND PLATE IN CONCRETE CYLINDER AT THE SW CORNER OF HUALAPAI AND GILCREASE.

NORTH
GRAPHIC SCALE
30 0 15 30
(IN FEET)
1 inch = 30 ft.

NOTES:

1. ALL WORK PERFORMED UNDER THE GRADING PERMIT REQUIRES SPECIAL INSPECTION PER SECTION 1704. (APPENDIX SECTION J105.2).
2. THE GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHER STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE. (APPENDIX SECTION J103.1 AS AMENDED)"
3. ALL AREAS NOT OCCUPIED BY A BUILDING AREA A PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED.
4. EASEMENTS FOR PRIVATE UTILITIES, ALL FIRE APPURTENANCES, TOGETHER WITH RIGHTS OF PRIVATE VEHICULAR AND PEDESTRIAN INGRESS/EGRESS AND PARKING ON ALL AREAS NOT OCCUPIED BY BUILDINGS TO BE RESERVED AND GRANTED FOR ALL DEVELOPMENT PARCELS CREATED WITH RECORDED PARCEL MAP DOC#

SOILS REPORT

WRIGHT ENGINEERS
DATED: JANUARY 06, 2016
PROJECT NO. 152531

FEMA FLOOD PLAIN INFORMATION

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY–PANEL NUMBER 32003C1750 E, EFFECTIVE DATE 09–27–2002, THE SITE IS LOCATED WITHIN A ZONE "X". A ZONE "X" IS DESCRIBED BY FEMA AS AN AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

ESTIMATED EARTHWORK QUANTITIES

CUT:	10,564 CY
FILL:	945 CY
NET CUT:	9,619 CY

THESE QUANTITIES ARE FOR ESTIMATING PURPOSE ONLY. THE FILL FIGURE INCLUDES A 15% AVERAGE SHRINKAGE FACTOR. OTHER CONSIDERATIONS SUCH AS OVEREXCAVATION, CALICHE, BOULDERS, ETC. WILL LIKELY AFFECT THE ACTUAL FIELD FILL AND CUT QUANTITIES. IT IS RECOMMENDED THAT THE CONTRACTOR CONSULT WITH THE SOILS ENGINEER AND PROVIDE HIS OWN FINAL QUANTITIES PRIOR TO BIDDING THE PROJECT. THE CIVIL ENGINEER ACCEPTS NO LIABILITY FOR VARIATIONS IN THE ACTUAL EARTHWORK QUANTITIES.

DRAINAGE STUDY

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT #

TIMOTEO S. MORENO, PE #10361 — DATE

DISCLAIMER NOTE

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Call before you Dig — Call 811 — 1-800-227-2600
Call before you Dig — 1-702-227-2929
FAST Call before you UnderGround. 1-702-432-5300

DESIGNED BY: CP, MH | DRAWN BY: CP, MH | CHKD BY: TSM
JOB NUMBER: 1263-112-162 | DATE: May 16
NO. | REVISION | DATE | APPD.

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• STRUCTURAL
• CIVIL
• PLANNING
• SURVEY

KB HOME

GRADING 1
OXFORD COMMONS II
UNIT 1
CITY OF LAS VEGAS NEVADA

TIMOTEO S. MORENO EXP 12/31/17 CIVIL No. 10361 — 5/23/16

SHEET NUMBER
C4.01
OF 11 SHEETS
CLV# -

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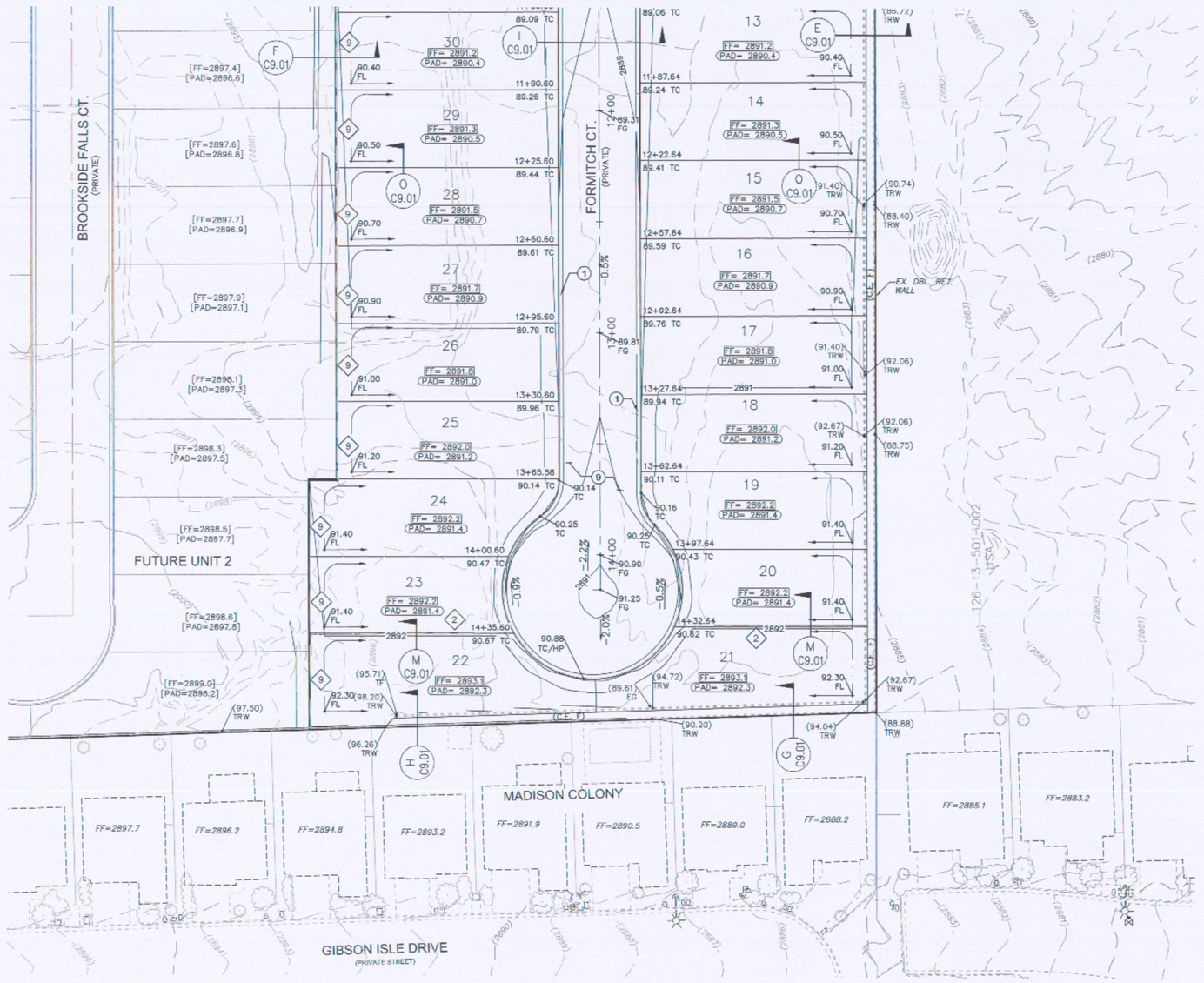

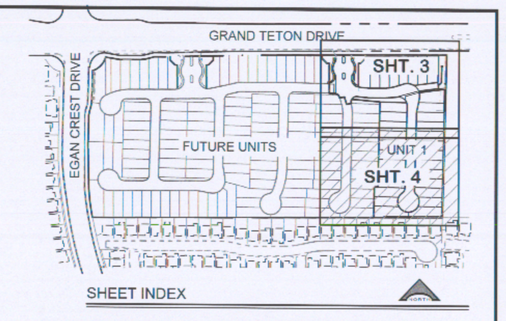

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9. CONSTRUCT 2" AC PAVEMENT WITH 4" TYPE II AGGREGATE BASE
10. CONSTRUCT RESIDENTIAL DRIVEWAYS PER CCAUSD #223
11. INSTALL GROUTED RIP-RAP D50=12" THK=48"
12. CONSTRUCT RETAINING WALL AND CONNECT TO EXIST., SEE STRUCTURAL PLANS
13. DEMOLISH EX. CMU WALL
14. INSTALL 4"DIA. CONC. FILLED BOLLARDS @ 6' O.C., SEE DETAIL L/C9.01
15. TRANSITION CURB HEIGHT FROM 6" TO 10".

STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT NDOT TYPE 2 DROP INLET WITH SINGLE 2'X2' GRATE. CONFORM WITH USDCCA DRAWING NO.421
2. CONSTRUCT TYPE-CM CURB INLET, L=5' SEE DETAIL ON SHEET C9.02. CONFORM WITH USDCCA DRAWING NO.421
3. REMOVE EXISTING MH AND DROP INLET
4. REMOVE EXISTING 18"RCP
5. CONSTRUCT CCAUSD #403 TYPE 1 MANHOLE
6. EXIST. D.I. BOX TO REMAIN. ADJUST RIM TO ELEVATION SHOWN AND INSTALL LID AND 2'X2' GRATE. CONFORM WITH USDCCA DRAWING NO.421

RETAINING WALL TABLE	
NUMBER OF COURSES	RETAINING WALL HEIGHT
2	1.0' – 1.4'
3	1.4' – 2.0'
4	2.0' – 2.7'
5	2.7' – 3.3'
6	3.3' – 4.0'
7	4.0' – 5.3'
8	5.3' – 6.0'
9	6.0' – 6.7'

NOTE: ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS AND PUBLIC UTILITY EASEMENTS TO BE PRIVATELY MAINTAINED BY THE H.O.A.

LEGAL DESCRIPTION

THE NORTH HALF (N ½) OF THE NORTH HALF (N ½) OF THE NORTHWEST QUARTER (NW¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.DM., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA

BASIS OF BEARINGS

NORTH 00° 36' 19" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW ¼) OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN FILE 123, PAGE 32 OF SURVEYS.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK STATION BLV99 13NEE6
RIVET AND PLATE IN CONCRETE CYLINDER AT THE SW CORNER OF HUALAPAI AND GILCREASE

NORTH
GRAPHIC SCALE
30 0 15 30
(IN FEET)
1 inch = 30 ft.

NOTES:

1. ALL WORK PERFORMED UNDER THE GRADING PERMIT REQUIRES SPECIAL INSPECTION PER SECTION 1704. (APPENDIX SECTION J105.2).
2. THE GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHER STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE. (APPENDIX SECTION J103.1 AS AMENDED)"
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4. EASEMENTS FOR PRIVATE UTILITIES, ALL FIRE APPURTENANCES, TOGETHER WITH RIGHTS OF PRIVATE VEHICULAR AND PEDESTRIAN INGRESS/EGRESS AND PARKING ON ALL AREAS NOT OCCUPIED BY BUILDINGS TO BE RESERVED AND GRANTED FOR ALL DEVELOPMENT PARCELS CREATED WITH RECORDED PARCEL MAP DOC#_____

SOILS REPORT

WRIGHT ENGINEERS
DATED: JANUARY 08, 2016
PROJECT NO. 152531

FEMA FLOOD PLAIN INFORMATION

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY-PANEL NUMBER 32003C1750 E, EFFECTIVE DATE 09-27-2002, THE SITE IS LOCATED WITHIN A ZONE 'X'. A ZONE 'X' IS DESIGNATED BY FEMA AS AN AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

ESTIMATED EARTHWORK QUANTITIES

CUT: 10,564 CY
FILL: 945 CY
NET CUT: 9,619 CY

THESE QUANTITIES ARE FOR ESTIMATING PURPOSE ONLY. THE FILL FIGURE INCLUDES A 15% AVERAGE SHRINKAGE FACTOR. OTHER CONSIDERATIONS SUCH AS OVEREXCAVATION, CALICHE, BOULDERS, ETC. WILL LIKELY AFFECT THE ACTUAL FIELD FILL AND CUT QUANTITIES. IT IS RECOMMENDED THAT THE CONTRACTOR CONSULT WITH THE SOILS ENGINEER AND PROVIDE HIS OWN FINAL QUANTITIES PRIOR TO BIDDING THE PROJECT. THE CIVIL ENGINEER ACCEPTS NO LIABILITY FOR VARIATIONS IN THE ACTUAL EARTHWORK QUANTITIES.

Call before you Dig
Call
811
1-800-227-2600

CALL BEFORE YOU DIG
1-702-227-2929

FAST
Call
Before you UnderGround.
1-702-432-5300

DRAINAGE STUDY

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT #

TIMOTEO S. MORENO, PE #10361 DATE

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATIONS OF EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER IS NOT RESPONSIBLE FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION

DESIGNED BY CP, MH	DRAWN BY CP, MH	CHKD BY TSM
JOB NUMBER: 1262-112-162	DATE: May-16	DATE APPD.
NO.	REVISION	

L. R. NELSON CONSULTING ENGINEERS, INC.
• STRUCTURAL • CIVIL • PLANNING • SURVEY
6765 West Russell Road, Suite 200
Las Vegas, Nevada 89118
(702) 798-7978
(702) 451-2296 FAX

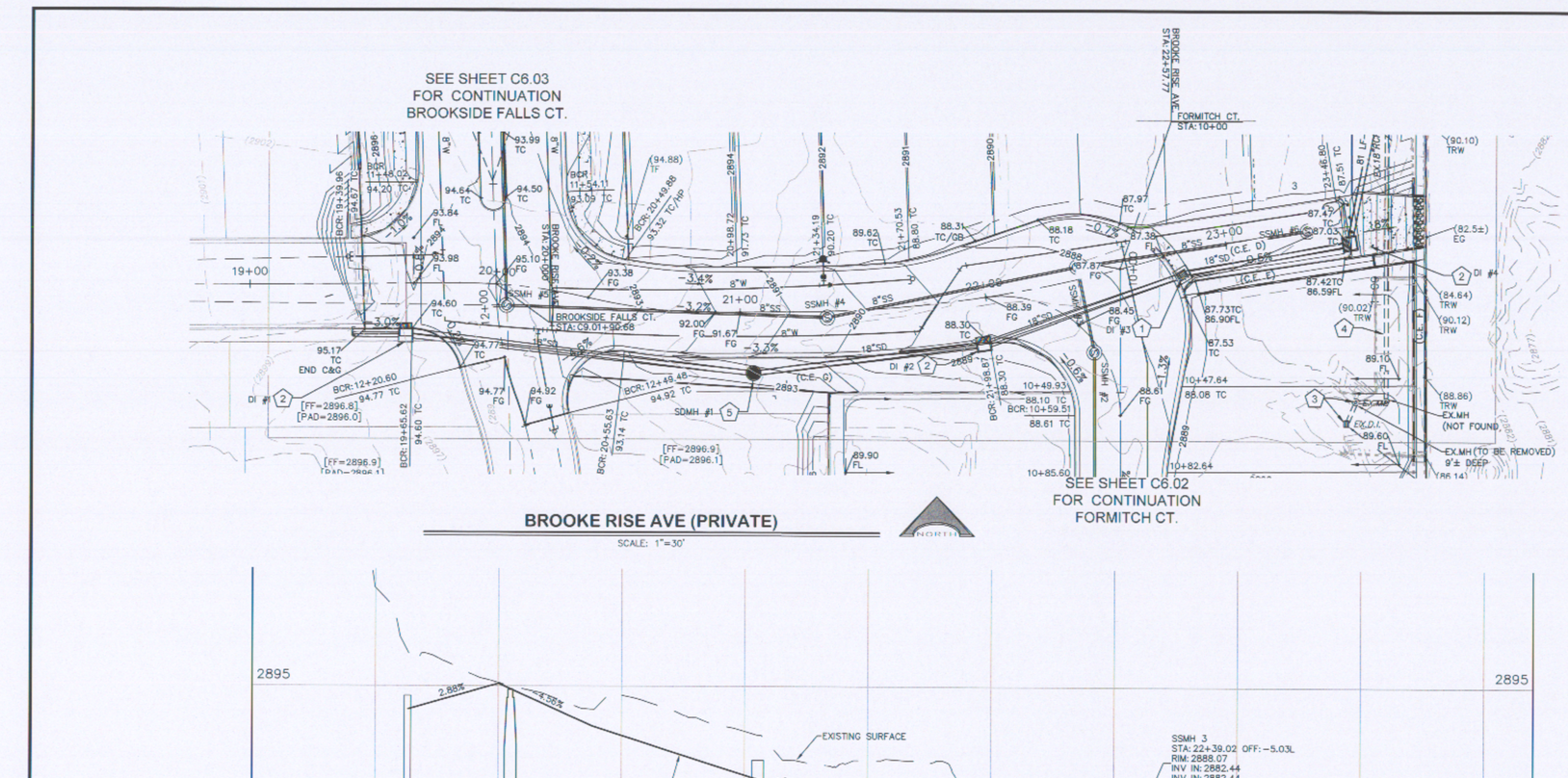
KBHOME

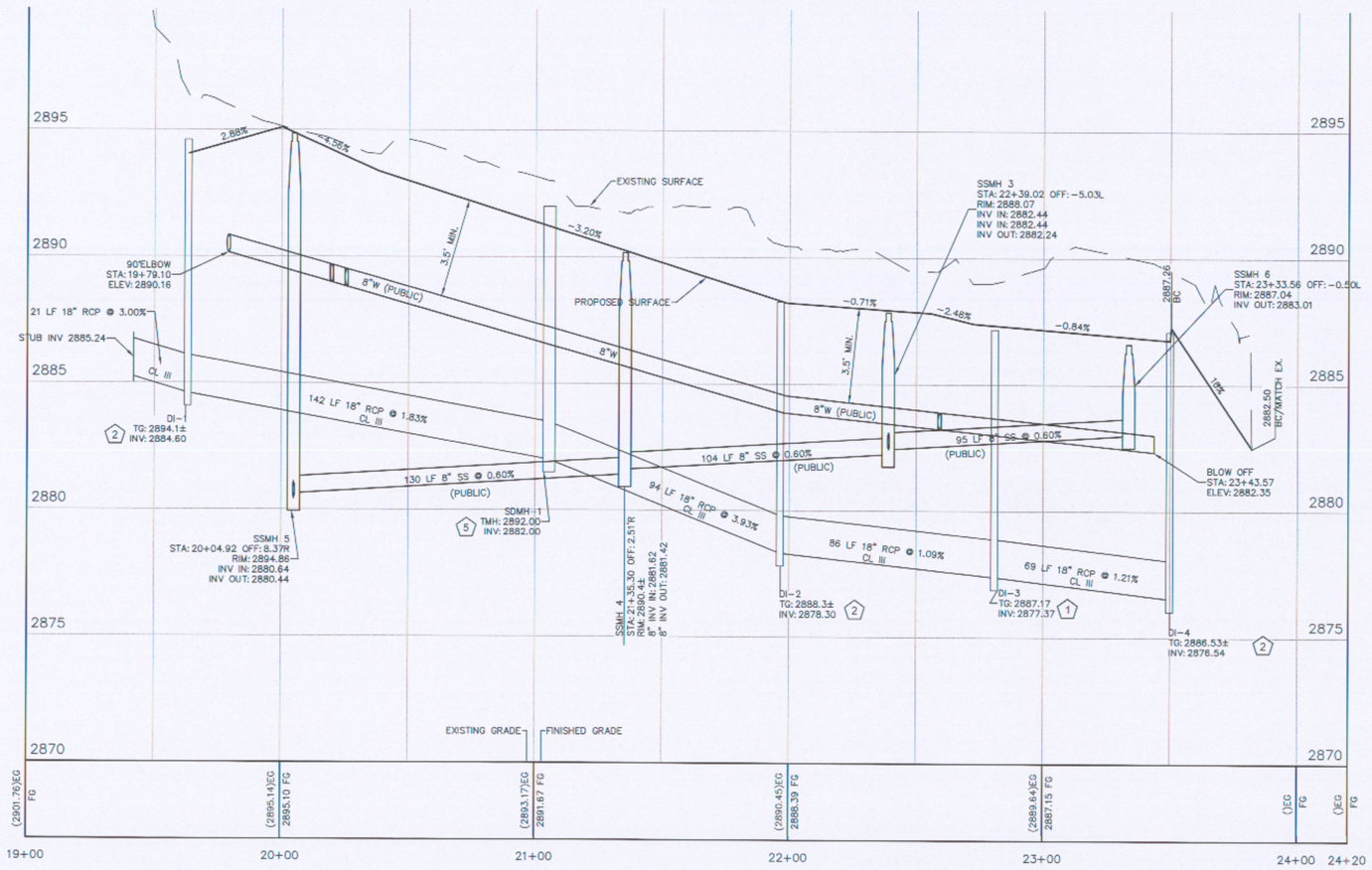
GRADING 2
OXFORD COMMONS II
UNIT 1
CITY OF LAS VEGAS NEVADA

TIMOTEO S. MORENO EXP 12/31/17 CIVIL No. 10361 STATE OF NEVADA
5/24/16

SHEET NUMBER
C4.02
OF 11 SHEETS
CLV#

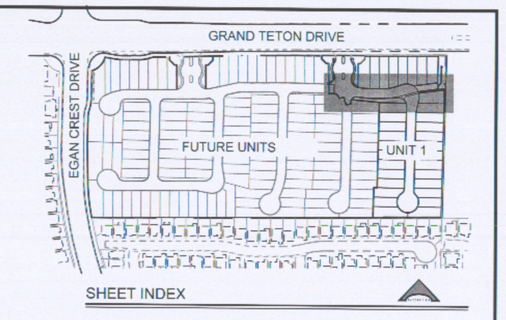
H:\Land Projects\1262112 – Oxford Commons\DWG\Improv\03-1262112-GRADING.dwg (CLARO PEREZ) 5/23/2016 (11:06:31 PM)





BROOKE RISE AVE (PRIVATE)

SCALE: HORIZ: 1"=30'
VERT: 1"=3'



15 TRANSITION CURB HEIGHT FROM 6" TO 10".

STORM DRAIN CONSTRUCTION NOTES

1. CONSTRUCT NDOT TYPE 2 DROP INLET WITH SINGLE 2'X2' GRATE. CONFORM WITH USDCCA DRAWING NO.421
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LEGAL DESCRIPTION

THE NORTH HALF (N ½) OF THE NORTH HALF (N ½) OF THE NORTHWEST QUARTER (NW¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.DM., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA

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NORTH 00° 36' 19" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW ¼) OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN FILE 123, PAGE 32 OF SURVEYS.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK STATION BLV99 13NE66
RIVET AND PLATE IN CONCRETE CYLINDER AT THE SW CORNER OF HUALAPAI AND GILCREASE

NOTES:

1. ALL WORK PERFORMED UNDER THE GRADING PERMIT REQUIRES SPECIAL INSPECTION PER SECTION 1704. (APPENDIX SECTION J105.2).
2. THE GRADING PERMIT DOES NOT INCLUDE THE CONSTRUCTION OF RETAINING WALLS AND OTHER STRUCTURES. SEPARATE PERMITS AND APPLICATIONS ARE REQUIRED FOR THESE. (APPENDIX SECTION J103.1 AS AMENDED)"
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SOILS REPORT

WRIGHT ENGINEERS
DATED: JANUARY 06, 2016
PROJECT NO. 152531

FEMA FLOOD PLAIN INFORMATION

ACCORDING TO THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) COMMUNITY-PANEL NUMBER 3200327750 E, EFFECTIVE DATE 09-27-2002, THE SITE IS LOCATED WITHIN A ZONE "X". A ZONE "X" IS DESCRIBED BY FEMA AS AN AREA OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

ESTIMATED EARTHWORK QUANTITIES

CUT:	10,564 CY
FILL:	945 CY
NET CUT:	9,619 CY

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DRAINAGE STUDY

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT #

TIMOTEO S. MORENO, PE #10361 — DATE

L. R. NELSON CONSULTING ENGINEERS, INC.
6765 West Russell Road, Suite 200
Las Vegas, Nevada 89118
• STRUCTURAL (702) 798-7978
• CIVIL (702) 451-2296 FAX
• PLANNING
• SURVEY

DESIGNED BY: CP, MH | DRAWN BY: CP, MH | CHKD BY: TSM
JOB NUMBER: 1262-112-152 | DATE: May-16
NO. | REVISION | DATE | APPD.

KB HOME

PLAN & PROFILES 1
OXFORD COMMONS II
UNIT 1
CITY OF LAS VEGAS — NEVADA

TIMOTEO S. MORENO EXP 12/31/17 CIVIL No. 10361 — 5/23/16

SHEET NUMBER
C6.01
OF 11 SHEETS
CLV# -

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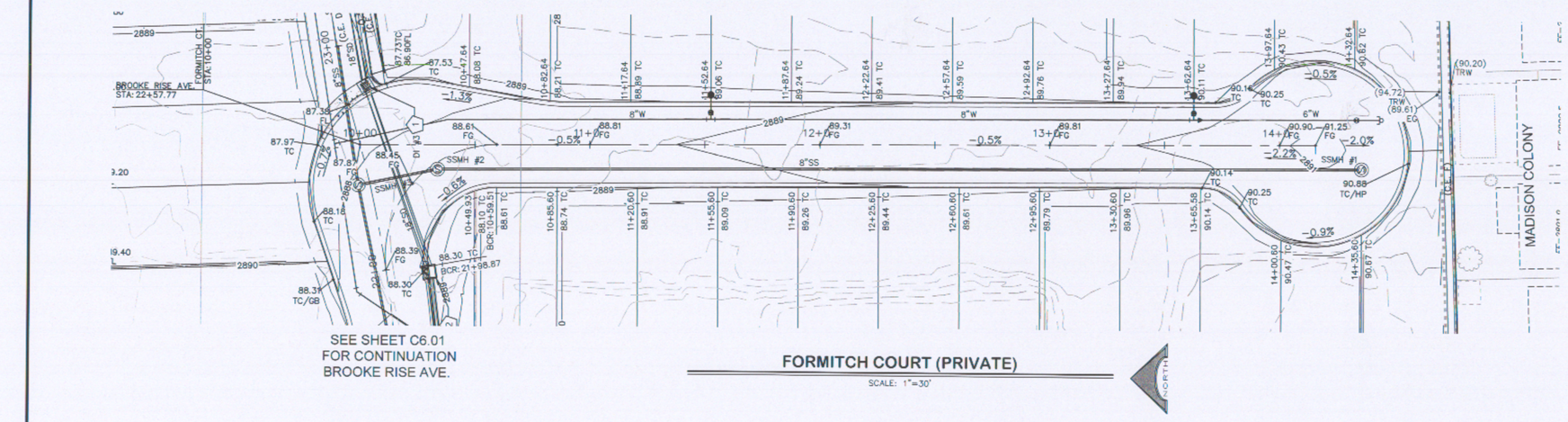
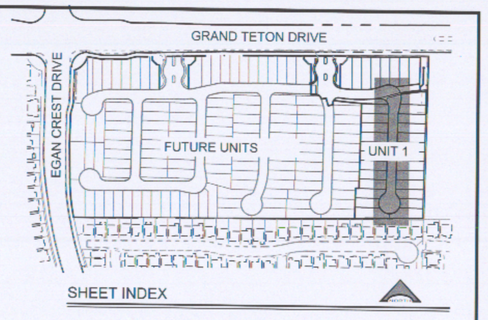


FORMITCH COURT (PRIVATE)

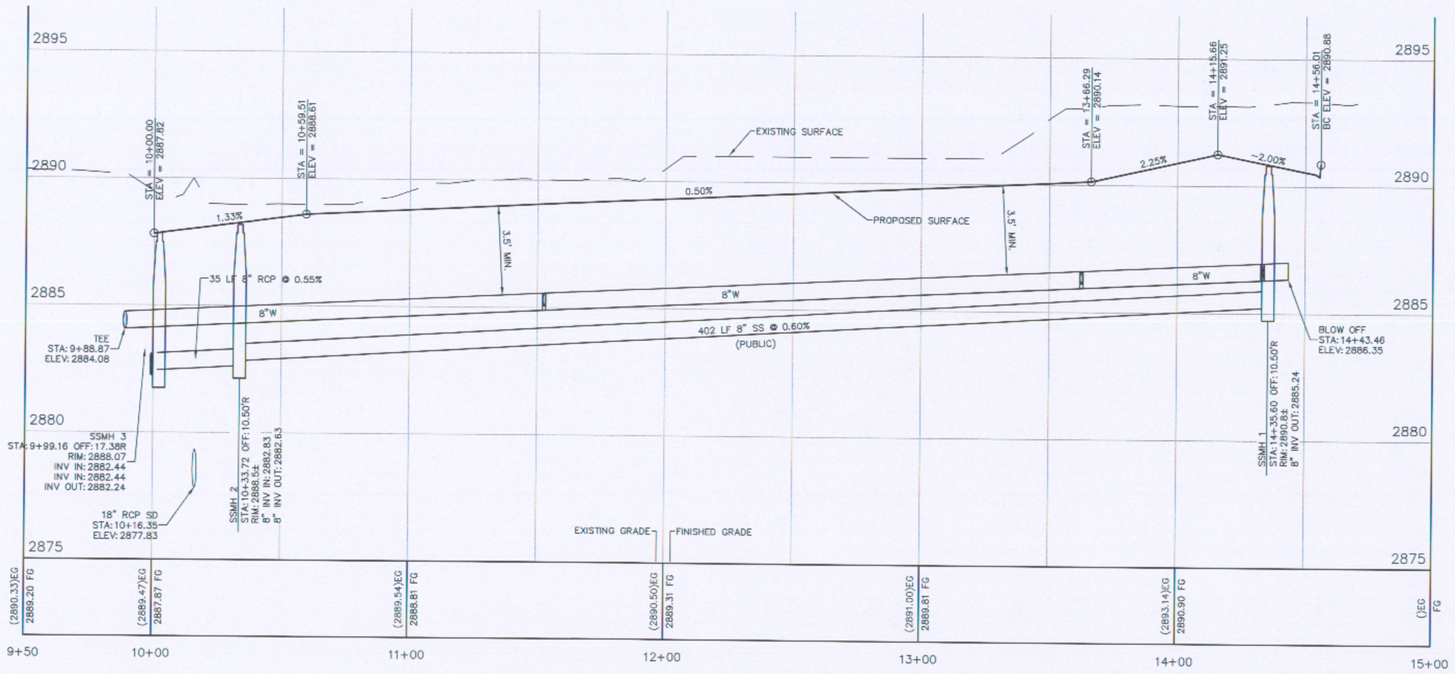
SCALE: 1"=30'



SHEET INDEX

GRAPHIC SCALE

(IN FEET)
1 inch = 30 ft.



FORMITCH COURT (PRIVATE)

SCALE: HORIZ: 1"=30'
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BENCHMARK

CITY OF LAS VEGAS BENCHMARK STATION BLV99 13NE66
RIVET AND PLATE IN CONCRETE CYLINDER AT THE SW CORNER OF HUALAPAI AND GILCREASE

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SOILS REPORT

WRIGHT ENGINEERS
DATED: JANUARY 06, 2016
PROJECT NO. 152231

FEMA FLOOD PLAIN INFORMATION

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DRAINAGE STUDY

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT #

TIMOTEO S. MORENO, PE #10361 — DATE

DESIGNED BY: CPI, MH | DRAWN BY: CPI, MH | CHKD BY: TSM
JOB NUMBER: 1262-112-162 | DATE: May-16
NO. | REVISION | DATE | APPL

L. R. NELSON CONSULTING ENGINEERS, INC.
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PLAN & PROFILES 2
OXFORD COMMONS II
UNIT 1
CITY OF LAS VEGAS — NEVADA

TIMOTEO S. MORENO
EXP. 12/31/17
CIVIL
NO. 10361
5/20/16

SHEET NUMBER
C6.02
OF 11 SHEETS
CLV# -

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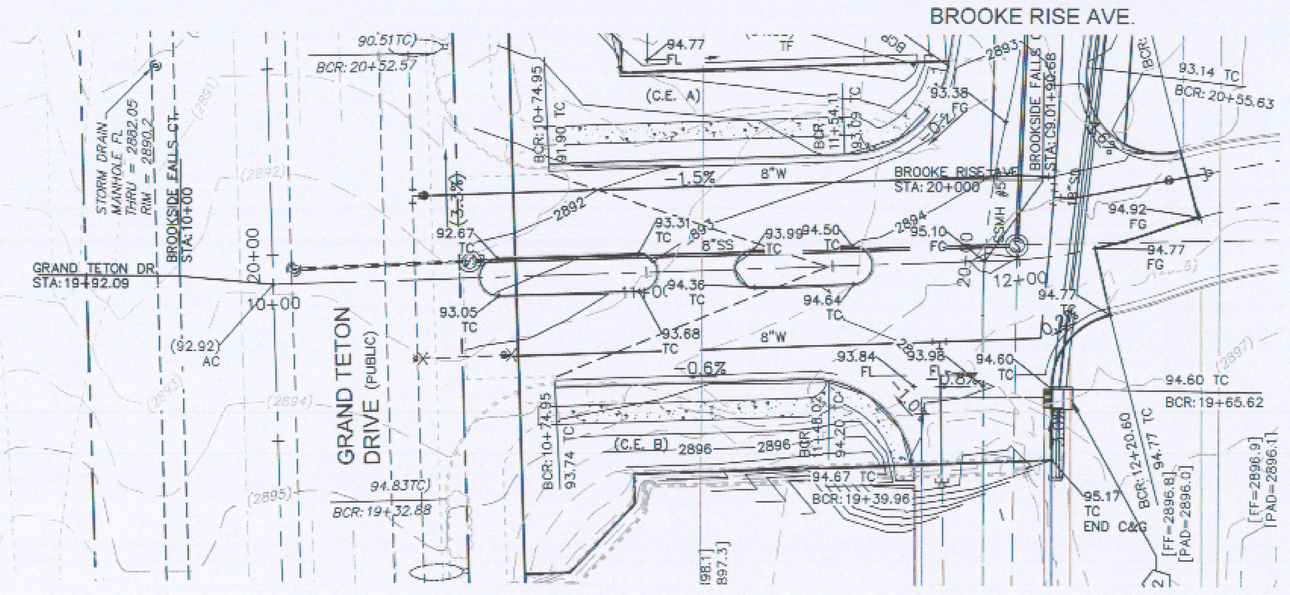
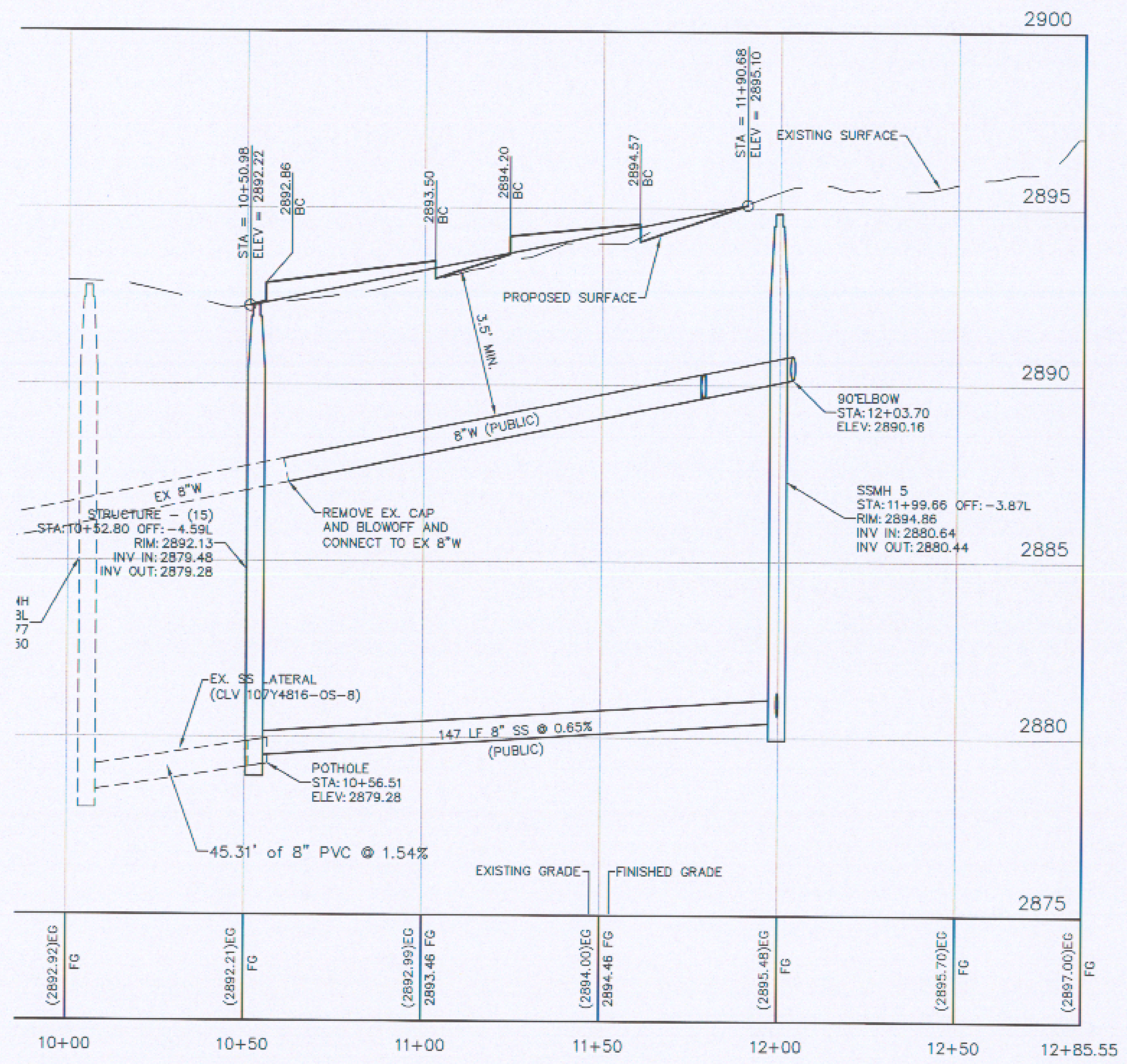
SEE SHEET
C6.01 FOR CONTINUATION
BROOKE RISE AVE.



BROOKSIDE FALLS COURT (PRIVATE)

SCALE: 1"=30'



BROOKSIDE FALLS COURT (PRIVATE)

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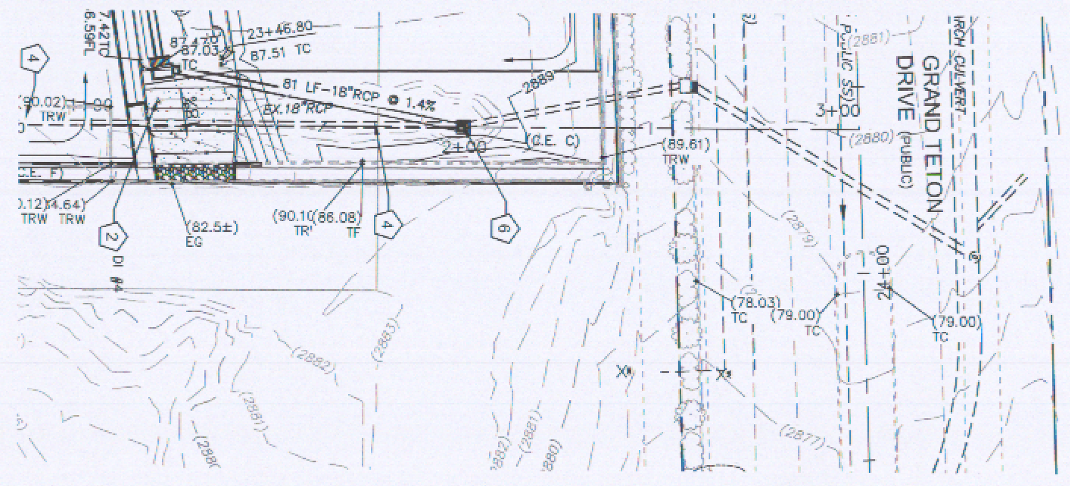
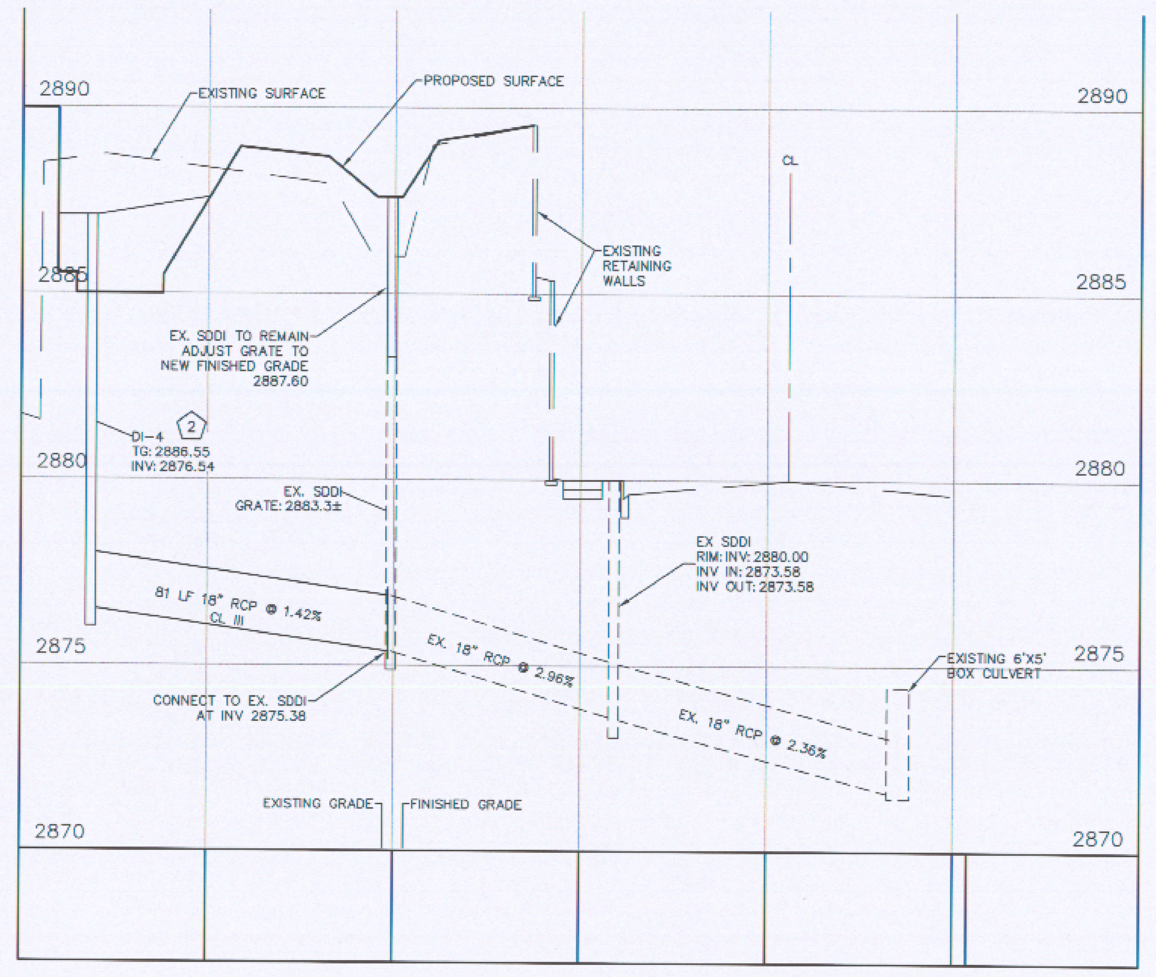
VERT: 1"=3'

SEE SHEET
C6.01 FOR CONTINUATION



PUBLIC DRAINAGE EASEMENT

SCALE: 1"=30'



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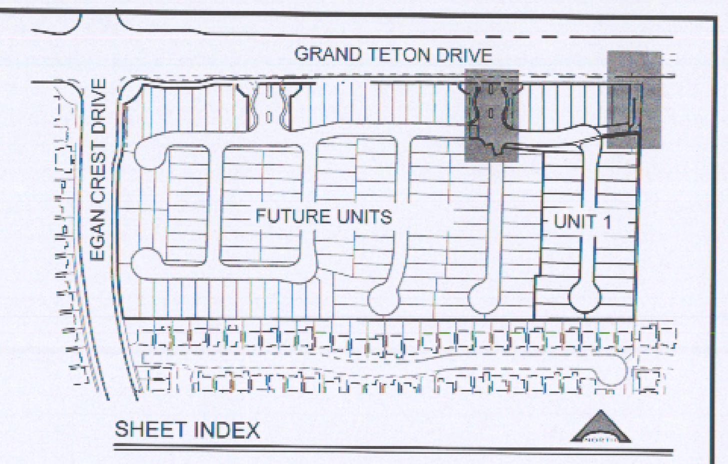

SHEET INDEX

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.

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BENCHMARK

CITY OF LAS VEGAS BENCHMARK STATION 8LV99 13NEE6
RIVET AND PLATE IN CONCRETE CYLINDER AT THE SW CORNER OF HUALAPAI AND GILCREASE

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SOILS REPORT

WRIGHT ENGINEERS
DATED: JANUARY 06, 2016
PROJECT NO. 152531

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DRAINAGE STUDY

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT #

TIMOTEO S. MORENO, PE #10361 DATE

DESIGNED BY: CP, MH	DRAWN BY: CP, MH	CHKD BY: TSM	
JOB NUMBER: 1262-112-162	DATE: May 16		
NO.	REVISION	DATE	APPL

L. R. NELSON CONSULTING ENGINEERS, INC.
• STRUCTURAL • CIVIL • PLANNING • SURVEY
6765 West Russell Road, Suite 200
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(702) 798-7978
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KB HOME

PLAN & PROFILES 3
OXFORD COMMONS II
UNIT 1
CITY OF LAS VEGAS NEVADA

PROFESSIONAL ENGINEER STATE OF NEVADA
TIMOTEO S. MORENO
EXP 12/31/17
CIVIL
No. 10361
5/23/16

SHEET NUMBER
C6.03
OF 11 SHEETS
CLV# -

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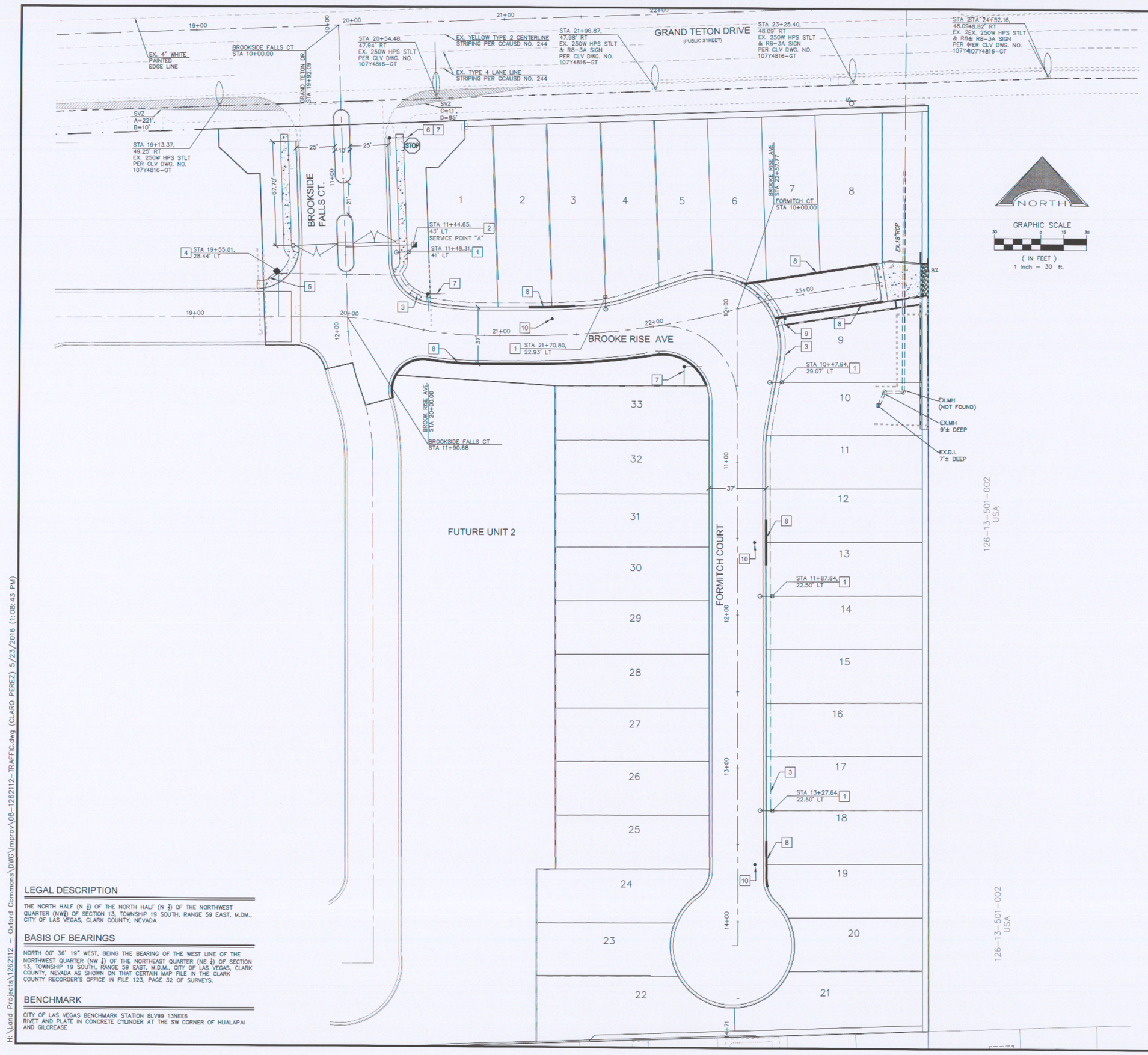

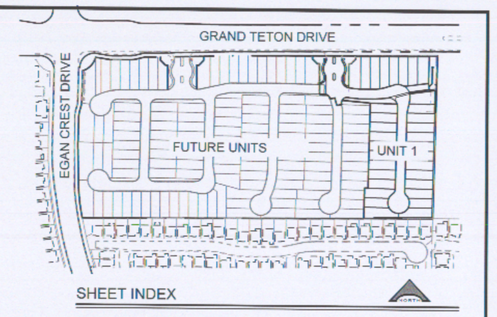

SHEET INDEX

TRAFFIC CONSTRUCTION NOTES

1. INSTALL 100W HPS DECORATIVE STREETLIGHT PER CLIFF'S EDGE REQUIREMENTS. SEE CLIFFS EDGE EXHIBIT 14B & 14C STREETLIGHT DETAILS, SHEET C9.02.
2. INSTALL PAD MOUNTED SERVICE PEDESTAL
3. INSTALL (1) 3" PVC CONDUIT WITH (2) #4 & (1) #8 THW COPPER CONDUCTORS (TYP)
4. INSTALL NO. 3-1/2 PULLBOX PER CCAUSD NO.'S 326 & 329
5. STUB AND CAP CONDUIT 5' BEYOND PULLBOX
6. INSTALL 30" R1-1 (STOP SIGN)
7. INSTALL (2) D-3 9" MINOR STREET NAME SIGNS PER CCAUSD NO. 250
8. INSTALL RED PAINTED CURB (NO PARKING)
9. INSTALL "NO PARKING BEYOND THIS POINT" "R7-9B" SIGNS AT THE ENTRANCE TO EACH STUB STREET.
10. INSTALL BLUE REFLECTIVE MARKER TO INDICATE HYDRANT LOCATION

LEGEND

- 1 — CONSTRUCTION NOTE
- RIGHT-OF-WAY – PROPERTY LINE
- STREET CENTERLINE
- STREET LIGHT CONDUIT
- RED CURB (NO PARKING)
- STOP — STOP SIGN WITH POST (30" R1-1)
- PROPOSED 100 HPS DECORATIVE STREETLIGHT PER CLIFF'S EDGE REQUIREMENTS
- SIGHT VISIBILITY RESTRICTION ZONE
- 9" STREET NAME SIGN (D-3, (2) PER POLE)
- PULLBOX (SEE CONSTRUCTION NOTES)
- NEW 200 AMP SERVICE PEDESTAL

LEGAL DESCRIPTION

THE NORTH HALF (N ½) OF THE NORTH HALF (N ½) OF THE NORTHWEST QUARTER (NW¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.DM., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA

BASIS OF BEARINGS

NORTH 00° 36' 19" WEST, BEING THE BEARING OF THE WEST LINE OF THE NORTHWEST QUARTER (NW ¼) OF THE NORTHEAST QUARTER (NE ¼) OF SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN ON THAT CERTAIN MAP FILE IN THE CLARK COUNTY RECORDER'S OFFICE IN FILE 123, PAGE 32 OF SURVEYS.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK STATION BLV99 13NE66
RIVET AND PLATE IN CONCRETE CYLINDER AT THE SW CORNER OF HUALAPAI AND GILCREASE

SVZ NOTE

NO WALLS, FENCES, TREES, SHRUBS, UTILITY APPURTENANCES OR ANY OTHER OBJECT OTHER THAN TRAFFIC CONTROL DEVICES AND STREET LIGHT POLES, MAY BE CONSTRUCTED OR INSTALLED WITHIN THE SIGHT VISIBILITY ZONE UNLESS SAID OBJECT IS MAINTAINED AT LESS THAN 24 INCHES IN HEIGHT, MEASURED FROM TOP OF CURB, OR WHERE NO CURB EXISTS, A HEIGHT OF 27 INCHES MEASURED FROM THE TOP OF ADJACENT ASPHALT, GRAVEL OR PAVEMENT STREET SURFACE.

DISCLAIMER NOTE

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ASK YOUR UTILITIES TO LOCATE AND MARK THEIR LINES — CALL BEFORE YOU DIG — 1-702-227-2929

FAST — Call before you UnderGround. — 1-702-432-5300

DESIGNED BY CP, MH | DRAWN BY CP, MH | CHKD BY TSM
JOB NUMBER: 1262-112-162 | DATE: April 16
NO. | REVISION | DATE | APP'L

L. R. NELSON CONSULTING ENGINEERS, INC.
6765 West Russell Road, Suite 200
Las Vegas, Nevada 89118
•STRUCTURAL •CIVIL •PLANNING •SURVEY
(702) 798-7978
(702) 451-2296 FAX

KBHOME

TRAFFIC PLAN
OXFORD COMMONS II UNIT 1
CITY OF LAS VEGAS NEVADA

TIMOTEO S. MORENO — EXP 12/31/17 — CIVIL — NO. 10361 — 5/23/16

SHEET NUMBER C7.01
OF 11 SHEETS
CLV# -

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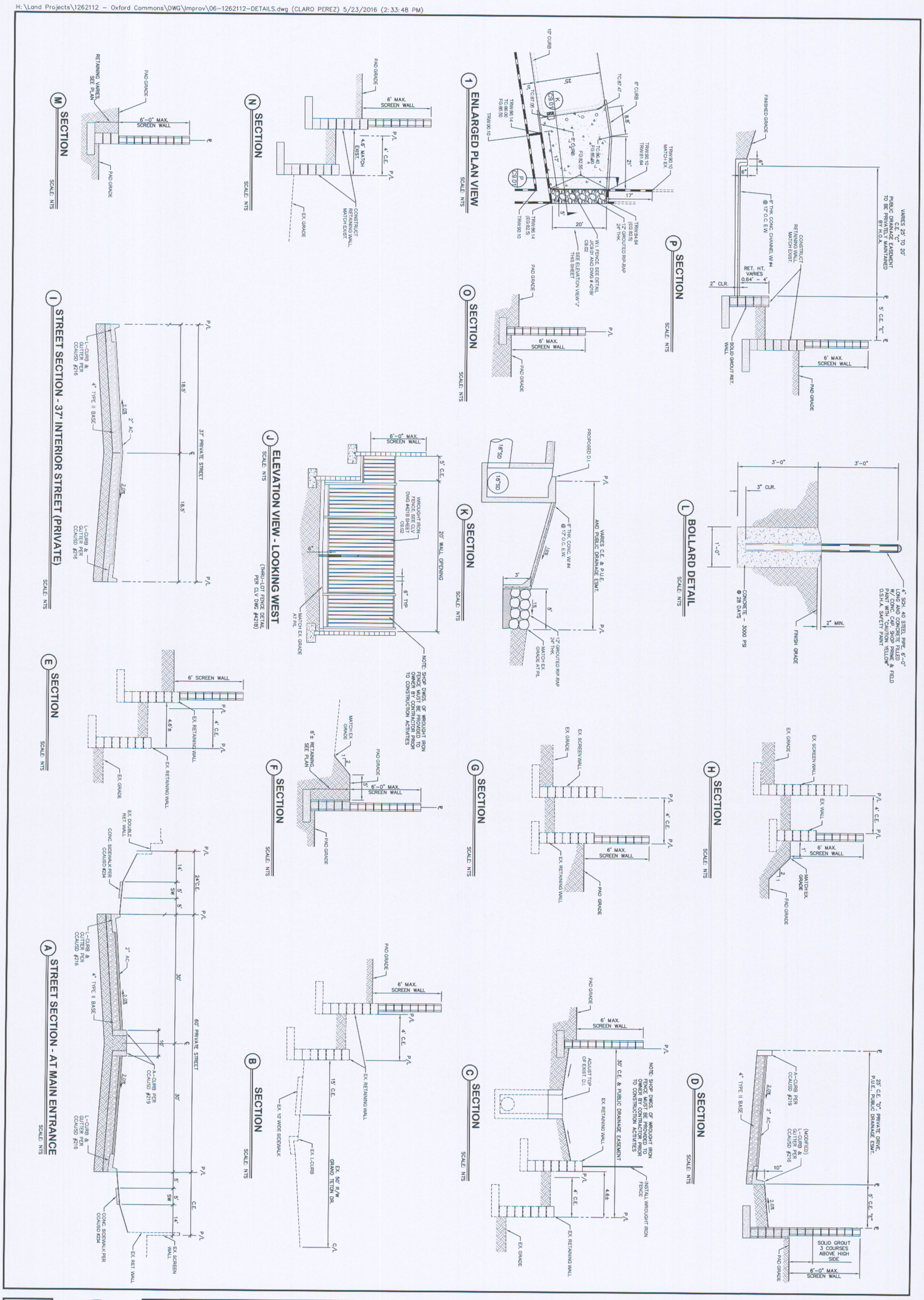

SHEET NUMBER C9.01 OF 11 SHEETS
CLV# -

PROFESSIONAL ENGINEER STATE OF NEVADA NOTED R. MORENO JR. EXP: 12/31/17 CIVIL No. 10361

5/23/16

DETAIL SHEETS

OXFORD COMMONS II
UNIT 1

CITY OF LAS VEGAS NEVADA

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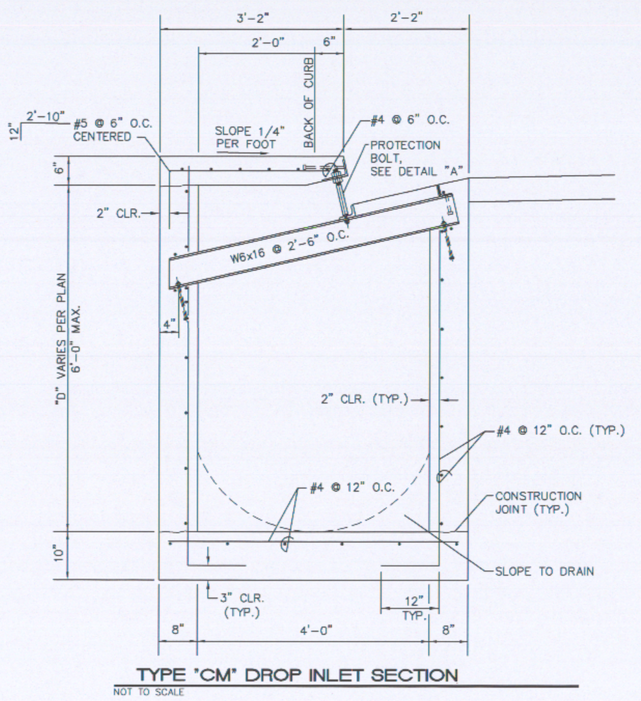
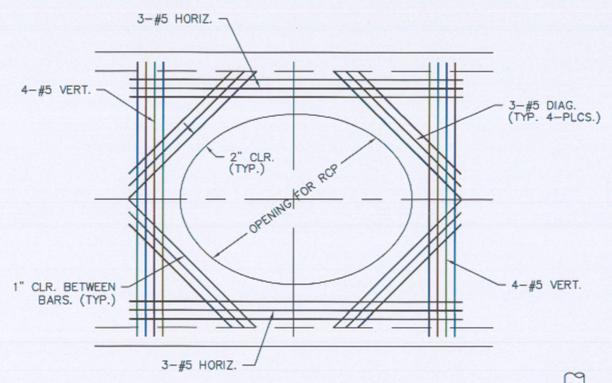
Las Vegas, Nevada 89118
(702) 798-7978
(702) 451-2296 FAX

DESIGNED BY: CP, MH	DRAWN BY: CP, MH	CHKD BY: TSM
JOB NUMBER: 1262-112-162	DATE: May 16	

NO.	REVISION	DATE	APPL



TYPE "CM" DROP INLET SECTION
NOT TO SCALE



SECTION "A"
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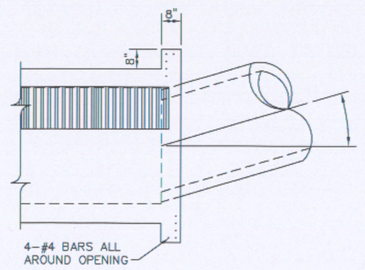

ALTERNATE CONNECTION DETAIL
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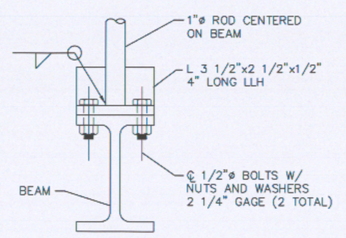

DETAIL "B"
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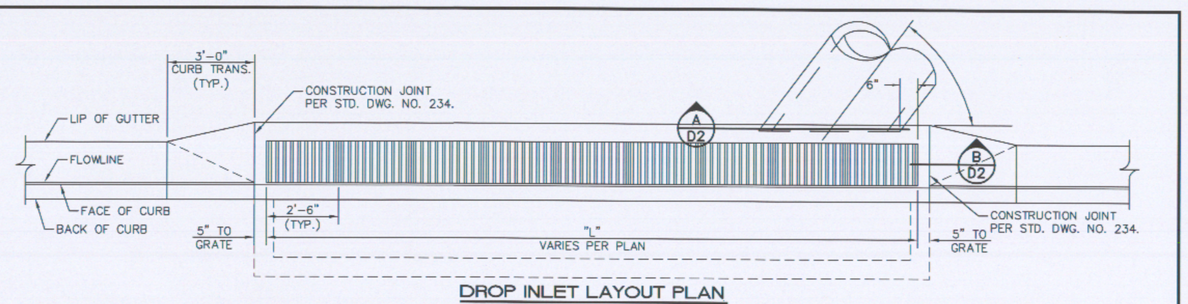
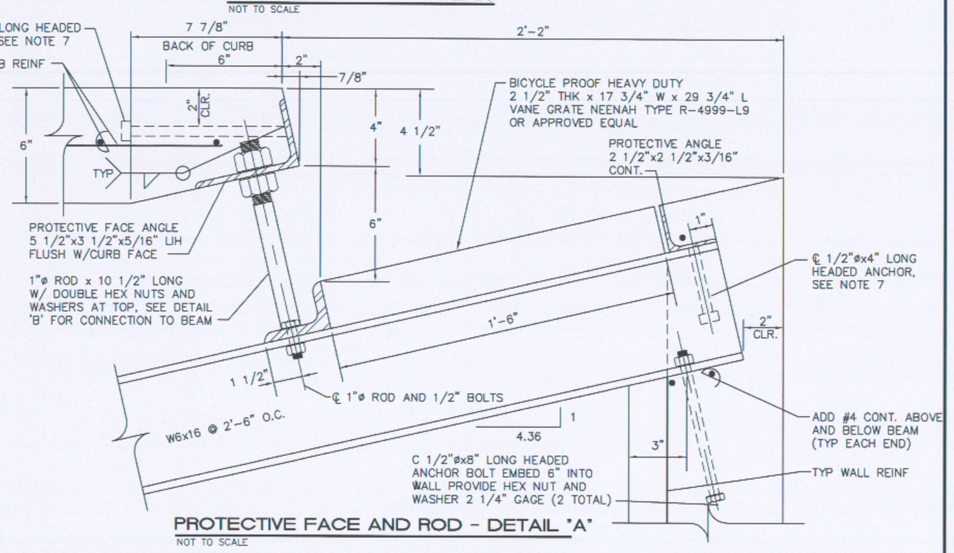
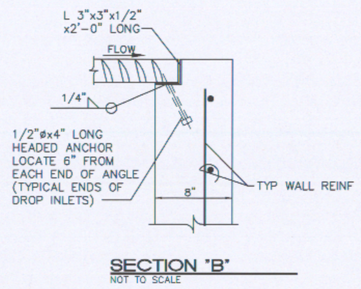


DROP INLET LAYOUT PLAN
NOT TO SCALE

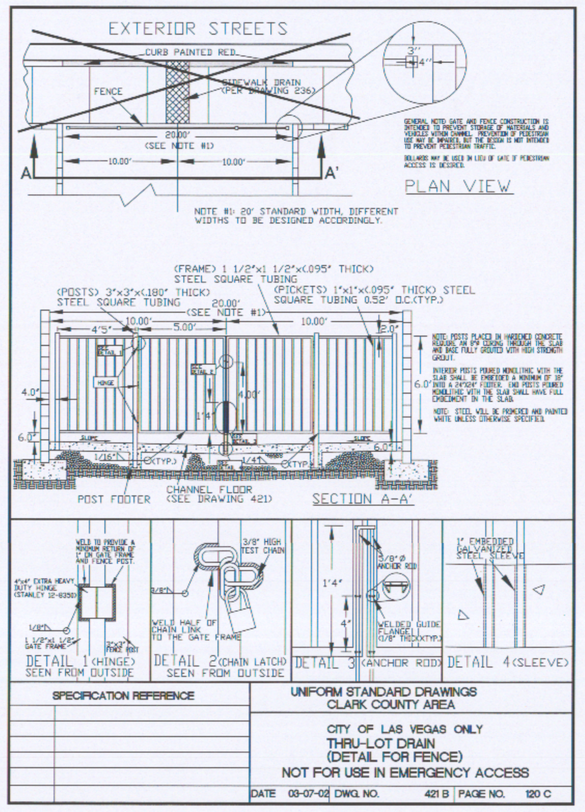


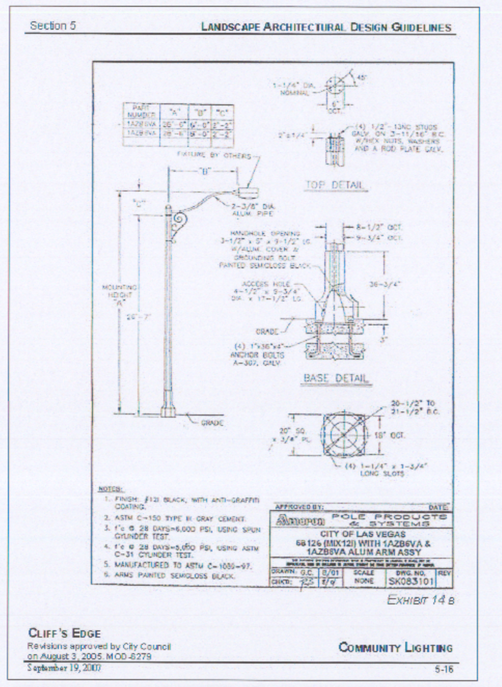
PROTECTIVE FACE AND ROD - DETAIL "A"
NOT TO SCALE



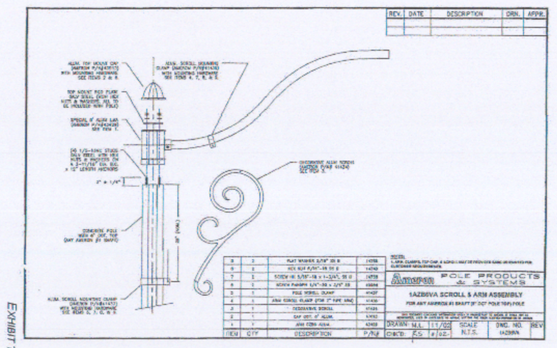
SECTION "B"
NOT TO SCALE

MODIFIED (SIDEWALK NOT APPLICABLE)





CLIFFS EDGE EXHIBIT 14B STREETLIGHT DETAIL
NOT TO SCALE



CLIFFS EDGE EXHIBIT 14C STREETLIGHT DETAIL
NOT TO SCALE

NOTES:

1. ALL EXPOSED METALS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
2. PROVIDE 1/2" (MIN.) CLEARANCE ALL AROUND THE STEEL BEAM, DRY PACK AFTER INSTALLATION.
3. WHEN REQUIRED BY LENGTH OF OPENING, PLATE ANGLE MAYBE DELIVERED IN SECTIONS AND BUTT WELDED IN PLACE.
4. ALL GALVANIZING DAMAGED BY WELDING SHALL RECEIVE TWO COATS OF GALVALLOY OR EQUAL.
5. CONCRETE SHALL BE MODIFIED CLASS DA, SEE SPECIAL PROVISIONS SECTION 501.
6. SEE GENERAL NOTES FOR STRUCTURES ON DWG D8.
7. ANGLE ANCHORS SHALL BE EMBEDDED MIDPOINT IN EACH ENDWALL AND EVENLY SPACED. (MAXIMUM SPACING OF 2')

DESIGNED BY: CP, MH | DRAWN BY: CP, MH | CHKD BY: TSM
JOB NUMBER: 1262-112-162 | DATE: May 16
NO. | REVISION | DATE | APPL.

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KB HOME

DETAILS 2
OXFORD COMMONS II
UNIT 1
CITY OF LAS VEGAS NEVADA

TIMOTEO S. MORENO EXP 12/31/17 CIVIL No. 10361

SHEET NUMBER
C9.02
OF 11 SHEETS
CLV# -

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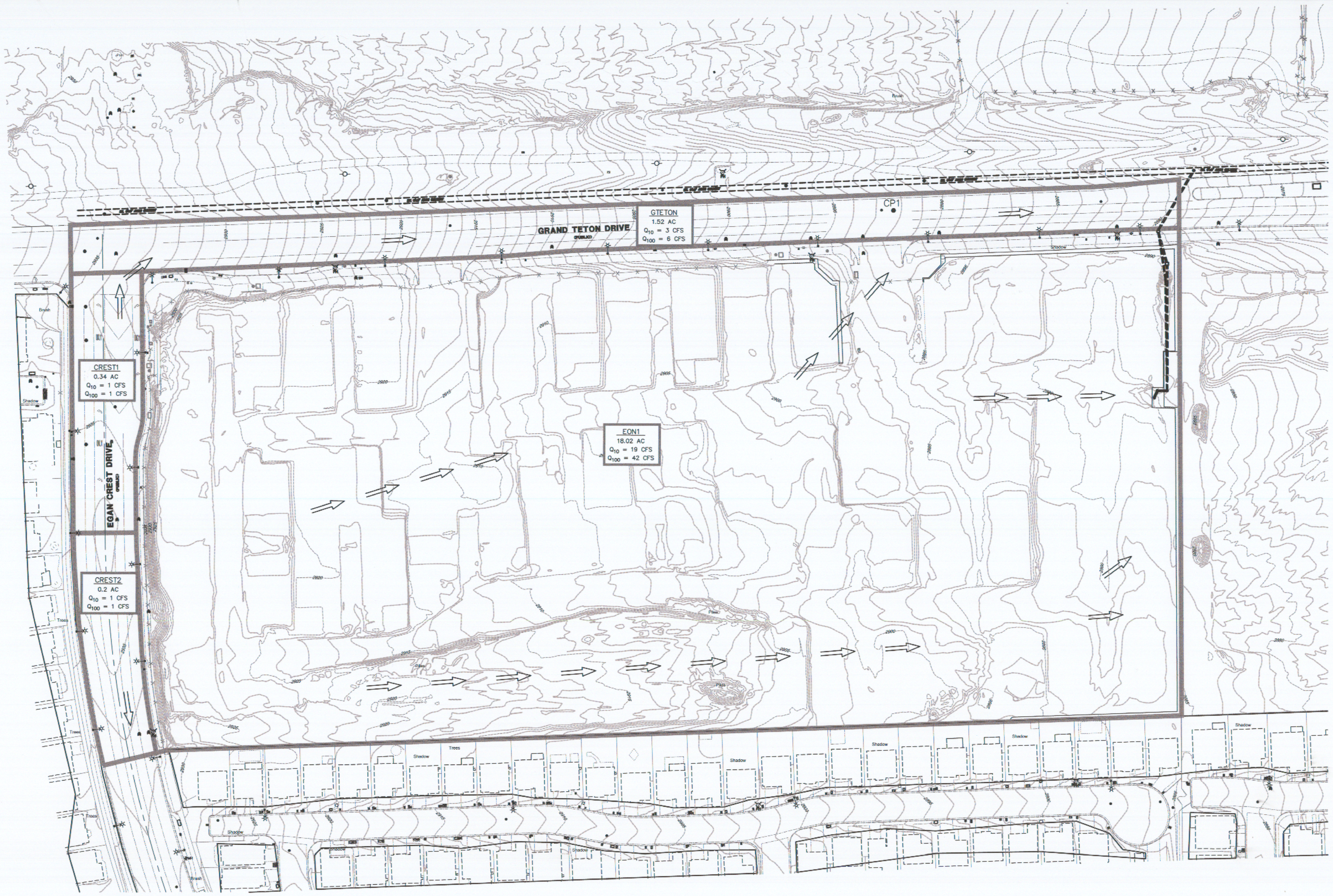

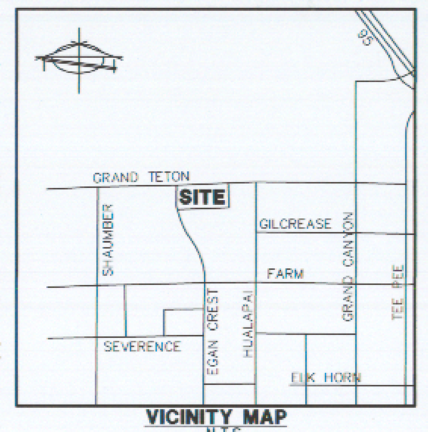

VICINITY MAP
N.T.S.

GRAPHIC SCALE

(IN FEET)
1 inch = 60 ft.

DRAINAGE LEGEND

Symbol	Description
	PROPERTY LINE
	LOT LINE
	STREET CENTERLINE
	PROPOSED WALL
	EXISTING WALL
	RETAINING FLOOD WALL
	PROPOSED "L" CURB & GUTTER
	EXISTING "L" CURB & GUTTER
XXXX	EXISTING CONTOUR LINES
XXXX	PROPOSED CONTOUR LINES
	EXISTING EDGE OF PAVEMENT
00.00 LOC	PROP. ELEVATION & LOCATION
(00.00) LOC	EX. ELEVATION & LOCATION
0.00%	PROPOSED GRADE
	EXISTING DRAINAGE FLOW
CL	CENTERLINE
TC	TOP OF CURB
EP	EDGE OF PAVEMENT
FG	FINISHED GRADE
GB	GRADE BREAK
F.F.	FINISHED FLOOR
HP	HIGHPOINT
AC	ASPHALTIC CONCRETE
THK	BLANKET THICKNESS
	OVERHEAD ELECTRIC LINES
	DRAINAGE BASIN BOUNDARY
●CP1	COMBINATION POINT
NAME Q_{10} = - CFS Q_{100} = - CFS	BASIN NAME & FLOW DATA
Q_{10} = - CFS Q_{100} = - CFS	DIRECTION OF FLOWS

Existing Condition

Source	Area (acres)	Area (mi^2)	100-Year Flow (cfs)	10-Year Flow (cfs)
EON1	18.02	0.0282	42	19
GTETON	1.52	0.0024	6	3
CREST1	0.34	0.0005	1	1
CP1			46	21
CREST2	0.26	0.0004	1	1
EGAN CREST2*			20	0
CP3			21	1

* Flows referenced from TDS for Picerne @ Providence (DS4207)

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1-702-432-5300

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1-702-455-6000

Avoid overhead power line contact
Call before you OVERHEAD
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NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

DATE CREATED	REV NO.	REVISIONS	APP'D INITIALS	DATE APPROVED

PREPARED FOR :
KB HOMES

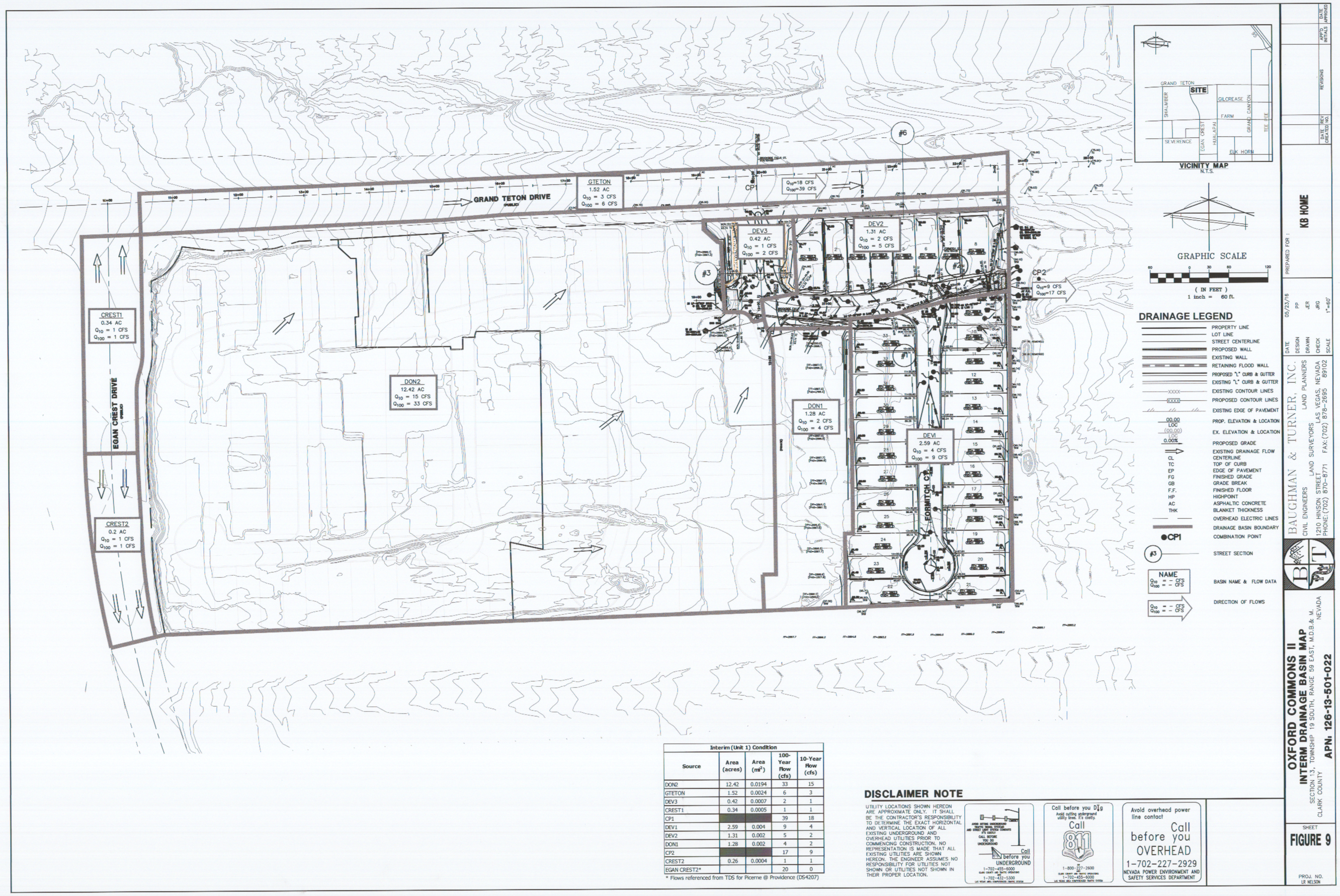
DATE	05/23/16
DESIGN	PP
DRAWN	JER
CHECK	JRG
SCALE	1"=40'

BAUGHMAN & TURNER, INC.
CIVIL ENGINEERS
LAND PLANNERS
LAND SURVEYORS
1210 HINSON STREET
LAS VEGAS, NEVADA 89102
PHONE:(702) 870-8771 FAX:(702) 878-2695

OXFORD COMMONS II
EXISTING DRAINAGE BASIN MAP
SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.B.& M.
CLARK COUNTY NEVADA
APN. 126-13-501-022

SHEET
FIGURE 8

PROJ. NO.
LR NELSON



Interim (Unit 1) Condition				
Source	Area (acres)	Area (mi^2)	100-Year Flow (cfs)	10-Year Flow (cfs)
DON2	12.42	0.0194	33	15
GTETON	1.52	0.0024	6	3
DEV3	0.42	0.0007	2	1
CREST1	0.34	0.0005	1	1
CP1			39	18
DEV1	2.59	0.004	9	4
DEV2	1.31	0.002	5	2
DON1	1.28	0.002	4	2
CP2			17	9
CREST2	0.26	0.0004	1	1
EGAN CREST2*			20	0

* Flows referenced from TDS for Picerne @ Providence (DS4207)

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BAUGHMAN & TURNER, INC.
CIVIL ENGINEERS LAND SURVEYORS LAND PLANNERS
1210 HINSON STREET, LAS VEGAS, NEVADA 89102
PHONE (702) 878-2340 FAX (702) 878-4771

PREPARED FOR : KB HOME

DATE	05/23/16
DESIGN	PP
DRAWN	JCR
CHECK	JRG
SCALE	1"=60'

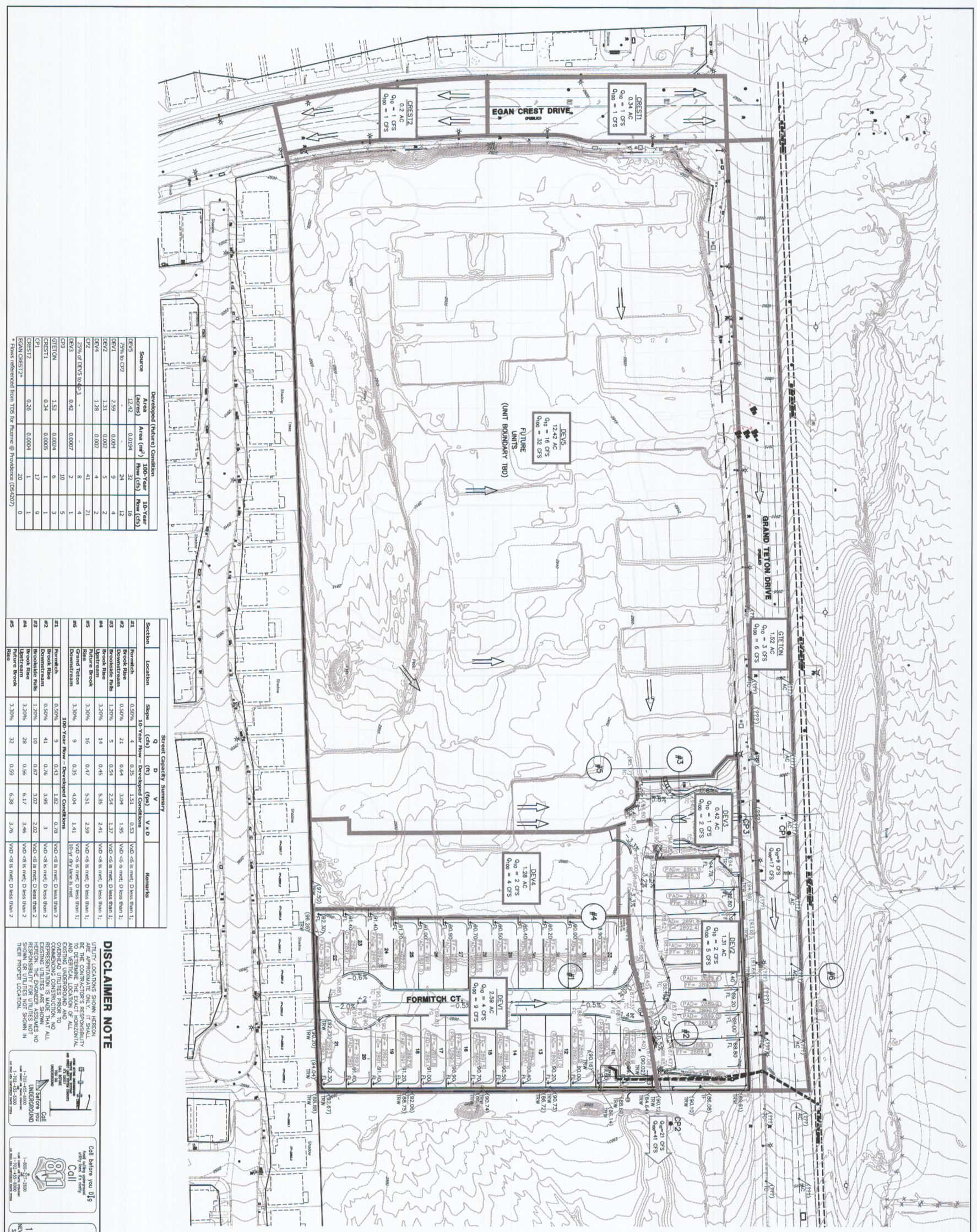
DATE REV. (MO.DAY.YR)	REVISIONS	APP'D (INITIALS)	DATE APPROVED

OXFORD COMMONS II
INTERM DRAINAGE BASIN MAP

SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.B.& M. NEVADA
CLARK COUNTY **APN. 126-13-501-022**

SHEET
FIGURE 9

PROJ. NO.
LE NELSON



Developed (Future) Condition

Source	Area (acres)	100-Year Area (mi^2)	100-Year Flow (cfs)	10-Year Flow (cfs)
DEV5	12.42	0.0194	32	16
75% to CP2	-	-	24	12
DEV1	2.59	0.0004	9	4
DEV2	1.31	0.002	5	2
DEV4	1.28	0.002	4	2
CP2			41	21
25% of DEV5 to CP3	-	-	8	4
DEV3	0.42	0.0007	2	1
CP3			10	5
GTETON	1.52	0.0024	6	3
CREST1	0.34	0.0005	1	1
CP1			17	9
CREST2	0.26	0.0004	1	1
EGAN CREST2*			20	0

* Flows referenced from TDS for Picerne @ Providence (DS4207)

Street Capacity Summary

Section	Location	Slope	Q (cfs)	D (ft)	V (fps)	V x D	Remarks
10-Year Flow – Developed Conditions							
#1	Formitch	0.50%	4	0.35	1.51	0.53	VxD <6 is met; D less than 1;
#2	Brook Rise Downstream	0.50%	21	0.64	3.04	1.95	VxD <6 is met; D less than 1;
#3	Brookside Rills	1.20%	5	0.54	2.54	1.37	VxD <6 is met; D less than 1;
#4	Brook Rise Upstream	3.20%	14	0.45	5.35	2.41	VxD <6 is met; D less than 1;
#5	Future Brook Rise	3.30%	16	0.47	5.51	2.59	VxD <6 is met; D less than 1;
#6	Grand Teton Downstream	3.30%	9	0.35	4.04	1.41	VxD <6 is met; D less than 1; 10-yr dry lane is met
100-Year Flow – Developed Conditions							
#1	Formitch	0.50%	9	0.43	1.82	0.78	VxD <8 is met; D less than 2
#2	Brook Rise Downstream	0.50%	41	0.76	3.95	3	VxD <8 is met; D less than 2
#3	Brookside Rills	1.20%	10	0.67	3.02	2.02	VxD <8 is met; D less than 2
#4	Brook Rise Upstream	3.20%	28	0.56	6.17	3.46	VxD <8 is met; D less than 2
#5	Future Brook Rise	3.30%	32	0.59	6.38	3.76	VxD <8 is met; D less than 2

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1-702-385-5391

Avoid overhead power line contact!
Call before you OVERHEAD
1-702-227-2929
NEVADA POWER ENVIRONMENT AND SAFETY SERVICES DEPARTMENT

OXFORD COMMONS II
DEVELOPED DRAINAGE BASIN MAP

SECTION 13, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.B.& M.
CLARK COUNTY NEVADA

APN: 126-13-501-022

SHEET **FIGURE 10**

PROJ. NO. LR NELSON

BAUGHMAN & TURNER, INC.
CIVIL ENGINEERS LAND PLANNERS
LAND SURVEYORS
1210 HINSON STREET LAS VEGAS, NEVADA
PHONE:(702) 870-8771 FAX:(702) 878-2695 89102

DATE	05/23/16
DESIGN	PP
DRAWN	JER
CHECK	JRG
SCALE	1"=60'

PREPARED FOR :

KB HOME

DATE CREATED	REV NO.	REVISIONS	APP'D INITIALS	DATE APPROVED